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Manual

# SENTRON

## Monitoring Devices

3KC ATC6300
Transfer Control Device

Edition 03/2018

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# Transfer switching equipment and load transfer switches 3KC ATC6300 transfer control device

Manual




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# Legal information

## Warning notice system

This manual contains notices you have to observe in order to ensure your personal safety, as well as to prevent damage to property. The notices referring to your personal safety are highlighted in the manual by a safety alert symbol, notices referring only to property damage have no safety alert symbol. These notices shown below are graded according to the degree of danger.

**⚠ DANGER**

indicates that death or severe personal injury **will** result if proper precautions are not taken.

**⚠ WARNING**

indicates that death or severe personal injury **may** result if proper precautions are not taken.

**⚠ CAUTION**

indicates that minor personal injury can result if proper precautions are not taken.

**NOTICE**

indicates that property damage can result if proper precautions are not taken.

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The product/system described in this documentation may be operated only by **personnel qualified** for the specific task in accordance with the relevant documentation, in particular its warning notices and safety instructions. Qualified personnel are those who, based on their training and experience, are capable of identifying risks and avoiding potential hazards when working with these products/systems.

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We have reviewed the contents of this publication to ensure consistency with the hardware and software described. Since variance cannot be precluded entirely, we cannot guarantee full consistency. However, the information in this publication is reviewed regularly and any necessary corrections are included in subsequent editions.

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# Table of contents

# Introduction

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## 1.1 About this documentation

### Purpose of this manual

The information contained in this manual enables you to install, operate and use the 3KC ATC6300 transfer control device.

The manual contains information on:

- Product specifications
- Installation
- Operation
- Configuration
- Commissioning
- Application

### Scope of validity of this document

This manual is a reference manual for technical information that users will need for configuration and operation.

### Knowledge required

To understand this manual, you will need to have a general knowledge of low-voltage controls and power distribution.

### Target readers

The information contained in this manual is provided for the benefit of:

- Users
- Electrically skilled persons
- Switchgear manufacturers
- Maintenance personnel

# 1.2 Product-specific information

## 1.2.1 Certification


## 1.2.2 Reference documents

### Further documents and information

You will find further information in the following documents:

| Title | Article number | Link |
|---|---|---|
| Siemens switching devices home page | | Siemens switching devices (http://www.siemens.com/switching-devices) |
| Operating instructions 3KC ATC6300 transfer control device | 3ZW1012-0KC00-1AA0 | 3KC ATC6300 transfer control device (https://support.industry.siemens.com/cs/ww/en/view/109751946) |
| Operating instructions ATC6 DI/DO expansion modules | 3ZW1012-0KC00-2AA0 | ATC6 DI/DO expansion modules (https://support.industry.siemens.com/cs/ww/en/view/109751947) |
| Operating instructions ATC6 Ethernet expansion modules | 3ZW1012-0KC00-3AA0 | ATC6 Ethernet expansion modules (https://support.industry.siemens.com/cs/ww/en/view/109751948) |
| Operating instructions ATC6 RS485 expansion modules | 3ZW1012-0KC00-4AA0 | ATC6 RS485 expansion modules (https://support.industry.siemens.com/cs/ww/en/view/109751949) |
| MODBUS over Serial Line Specification and Implementation Guide | | MODBUS over Serial Line Specification and Implementation Guide (http://www.modbus.org/docs/Modbus_over_serial_line_V1_02.pdf) |

## 1.2.3 Technical Support

You can find further support on the Internet at:

Technical Support (http://www.siemens.com/lowvoltage/technical-support)

# General information 2

## 2.1 Properties of the ATC6300 transfer control device

The ATC6300 transfer control device, in combination with Siemens circuit breakers with motor operators (ACB, MCCB) or remotely operated transfer switching equipment (RTSE), enables a transfer between a main and an alternative power source. The stability of the power supply is analyzed by means of voltage taps upstream of the switching devices. User limit thresholds (voltage, frequency, phase sequence) function as boundary conditions for analyzing the quality of the power supply. If a threshold is undershot or exceeded for a specific defined time, the ATC6300 transfer control device initiates a transfer to an alternative power source. Thanks to the ATC6300 transfer control device, in combination with Siemens circuit breakers with motor operators and transfer switching equipment (3VA, 3VL, 3WL, 3WT, 3KC3, 3KC4 - see chapter Compatible Siemens SENTRON switching devices (Page 11)), a user-defined source transfer can be performed in accordance with IEC 60947-6-1.

The interaction of the ATC6300 with the switching devices has been exhaustively tested, but does not absolve plant operators from their own responsibility. The functionality, comparable with the ATSE, is provided by the assembly of RTSE with a controller.

### Features

The key features of the ATC6300 transfer control device are:

- Backlit LCD (128 px x 80 px) for displaying measurements, events and alarms in five languages (German, English, French, Spanish, Italian)
- Expandable with a maximum of two additional expansion modules with digital inputs and outputs, and by means of communications interfaces (RS485, Ethernet)
- 3KC9000-8TL73 USB front interface for setting parameters on the front panel. It is not necessary to open the control cabinet.

### Technical functions

- Auxiliary voltage supply is possible by means of taps from the supply sources (110-240 V AC 50/60 Hz) or by means of a separate DC source (12-24 V DC).
- Measurement of three-phase networks with or without neutral conductor, of two-phase networks, and of single-phase networks.
- Control of circuit breakers with motor operator, remote transfer switching equipment or contactors.
- Suitable for network/network, network/generator or generator/generator applications.
- 6 freely programmable digital inputs and 7 programmable relay outputs fitted to the device.

## Metering functions

The ATC6300 permits voltage measurement not only between L-L, but also between N-L.

The following parameters are measured by the ATC6300:

- Phase sequence and phase failure
- Minimum and maximum voltage
- Voltage unbalance
- Minimum and maximum frequency

## Area of application

The ATC6300 transfer control device can be used in conjunction with Siemens switching devices, e.g. in the following industrial areas in which a continuous power supply needs to be ensured.

- Industry
  - Production lines in continuous operation
  - Engine rooms
  - Auxiliary facilities in essentially important thermal power stations
  - Pumps
  - Cooling systems
  - Fans

## 2.2 Compatible Siemens SENTRON switching devices

The ATC6300 permits the transfer between two supply sources using the following Siemens products.

**Note**

A motor operator must be implemented to transfer between circuit breakers.

Precise connection diagrams can be obtained from chapter Connection (Page 65). For further information about testing, please refer to chapter Accessories for switching devices (Page 76).

**Compatible Siemens products**

**Air circuit breakers (ACB)**

3WL FS I-III (IEC, UL)

3WT

**Molded case circuit breakers (MCCB)**

3VA1 160-250, 3VA2 100-630 (IEC)
3VA5 125-250, 3VA6 150-600 (UL)


3VL160 - 3VL1600 (IEC)
3VL150X - 3VL1600 (UL)

**Remotely operated transfer switching equipment (RTSE)**

3KC3

3KC4

# Applications

# 3

The following chapter contains information on:

- Transfer control
- Controlling the switching devices
- Voltage control

## 3.1 Transfer control

Fundamental information on the topic of transfer control is provided below.

In accordance with IEC 60947-6-1 we differentiate between two classes of transfer switching equipment:

**Class PC:**

Motorized switching devices are required for this application. These can make short-circuit currents and conduct them to a limited extent (1 sec. current), but cannot break them. In connection with the remotely operated Siemens 3KC3 or 3KC4 transfer switching equipment, a user-defined transfer can be realized according to class PC.

**Class CB:**

The transfer in this case is performed by means of circuit breakers with motor operators. These can make and conduct short-circuit currents, and also break them in the event of an overload. The ATC6300 functions as class CB transfer switching equipment in connection with two Siemens 3VA or 3VL molded case circuit breakers with motor operators, and in connection with two 3WL or 3WT air circuit breakers.

### 3.1.1 Network/network application

In the network/network application the load is normally connected to the main supply source and is switched to the secondary supply source if an anomaly occurs in the main supply or if an external signal is issued. By means of various setting options (interlock time, etc.) the transfer behavior can be defined on a customer-specific basis.

You can find more information on this in the chapter Parameterization (Page 115).

### 3.1.2 Network/generator application

For the network/generator application the load is normally connected to the main source (Line 1). Following a deviation in the voltage or frequency, and after the defined delay time, a start signal is sent to the generator (Line 2). If the generator supplies the desired voltage, the load is transferred to the secondary source (generator) until the main source supplies the desired supply quality.

The load is then transferred back to the main source and the generator is kept in operation without load to allow it to cool (duration can be set by user). The ATC6300 sends a start / stop command to the generator through a relay output and can receive digital signals from the generator indicating its status (generator ready, OK to accept load, etc.) through programmable inputs.

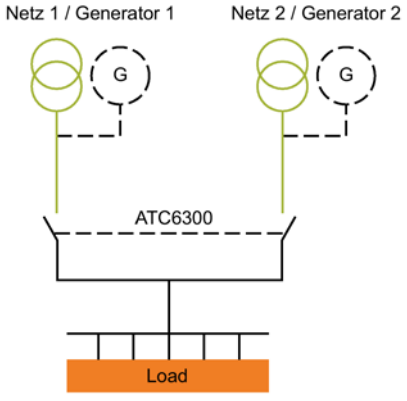
An automatic generator test can be programmed, i.e. the generator can be started at set times to check its correct operation, even if the network is within the thresholds.

This is done by setting the execution interval, starting time, days of the week on which the test is to be carried out, duration, etc. More information on the various setting options can be found in chapter Parameterization (Page 115).

### 3.1.3 Generator/generator application

In this case two generators are controlled, each with a start-stop relay and feedback signals, if available. In this application a rotation between generators can be programmed, i.e. the load can be switched from one to the other at regular intervals, with the purpose of sharing out the generator work equally. It is also possible to set the time of day when rotation is to occur, so that the load supply is cut off at a specified time. In case of a problem in either generator, the load is always transferred to the one in standby mode.

The following simplified diagram illustrates the possible applications:



## 3.2 Controlling the switching devices

The ATC6300 can control various devices for automatic transfer switching.

How the control of the switching devices can be implemented is shown below.

- Depending on the type of transfer device used, the appropriate wiring diagram shall be used (see chapter Connection (Page 65)), as well as the programmable inputs/outputs on the ATC6300 (see chapter Description and designation of the outputs (Page 110)).
- Programmable outputs are set by default for the use of circuit breakers (see chapter Description and designation of the outputs (Page 110))
- The device status inputs (e.g. status of circuit breakers) shall be wired according to the circuit diagram, so as to ensure reliable system operation.
- Nonetheless, it is possible to manage without wiring the status inputs. This enables the programmable inputs to be used for other functions. In this case the device behaves as if the status feedback messages were received immediately.
- If the device status inputs are not used, then after power-on the ATC6300 sends an "open" command, in order to put the switching devices in a defined status.
- If the device status inputs are used, then after power-on the ATC6300 does not send any commands to the switching device. The corresponding switching devices are not controlled until anomalies occur in the network.
- Internal control relays are neither electrically nor mechanically interlocked.

### 3.2.1 Controlling circuit breakers with motor operator

The control of circuit breakers with motor operator requires 4 outputs (open and close commands for Line 1 and Line 2) and 2 inputs for circuit breaker status feedback, plus any additional optional inputs for alarm signaling and TRIP, as well as optional outputs for controlling undervoltage releases.

- Open and close commands can be output as a continuous signal or a pulse. For the continuous signal, the pulse is applied continuously until the circuit breaker has reached the required position.
- The command mode (continuous signal or pulse) can be selected by setting the appropriate parameter under P05.07 in menu P05 to "Chg. Pul." or "Chg. Con."
- The TRIP status is ignored for a 15-second window every time an open command is sent to the circuit breakers. This prevents a false alarm from being triggered if the circuit breakers temporarily send a TRIP signal through their alarm switches while opening. This has no effect on the function of the circuit breaker.
- If feedback inputs (circuit breaker status) are used and the circuit breaker does not close, a second attempt is made before triggering an alarm.

Precise circuit diagrams as well as the parameters to be set can be found in chapter Connection (Page 65) or in chapter Parameterization (Page 115).

### 3.2.2 Controlling remotely operated transfer switching equipment

The control of remotely operated transfer switching equipment (single motor operator) is similar to the control of circuit breakers with motor operator, however it requires only three outputs (close Line 1, open both lines, close Line 2) and two inputs for the status of the transfer switching equipment.

- The command mode (continuous signal or pulse) can be selected by setting the appropriate parameter under P05.07 in menu P05 to "Chg. Pul." or "Chg. Con."

Precise circuit diagrams as well as the parameters to be set can be found in chapter Connection (Page 65) or in chapter Parameterization (Page 115).

### 3.2.3 Controlling contactors

If two contactors are used, two outputs (CL.1 and CL.2) and two status inputs are required.

- In this case the appropriate parameter under P05.07 in menu P05 must be set to "Contactors" in the command mode.

Precise circuit diagrams as well as the parameters to be set can be found in chapter Connection (Page 65) or in chapter Parameterization (Page 115).

## 3.3 Voltage control

This section illustrates how a voltage measurement is achieved for the ATC6300.

**Note**

**Procedure for voltage measurement**

The fundamentals of the procedure for adjusting the voltage measurement are explained below.
The exact parameters can be found in chapter Parameterization (Page 115).

All parameters and settings can be adjusted by the user in the menus P02 (General), P05 (Changeover), P06 (Parameter Line 1) and P07 (Parameter Line 2).

- The general system settings can be adjusted in Menu P02, including the rated voltage and frequency. These are used as a reference for setting the percentage thresholds.
- A voltage ratio (VT) can be set if a voltage is applied to the measurement inputs of the device which is higher or lower that the set rated voltage. In this case the display and setting of limit thresholds are also performed on the actual variables in relation to the system.
- The device can be adjusted for the voltage measurement of three-phase networks with or without neutral conductor, two-phase or single-phase networks (P02.06).

- In the case of three- or two-phase power supplies you can choose whether you want to monitor the phase-to-phase voltage, the phase-to-neutral voltage, or both (P02.07). In each case, the rated voltage set in P02.01 must be equal to the phase-to-phase voltage.
- The table below lists the measurements of the two lines. Some thresholds can also be deactivated for triggering the transfer.

| Measurement | Description | Can be deactivated |
|---|---|---|
| Minimum voltage | One or more phases too low | No |
| Maximum voltage | One or more phases too high | Yes |
| Phase failure | Threshold value at which the device responds faster than when falling below the minimum voltage | Yes |
| Voltage unbalance | Voltage phases are not symmetrical to one another | Yes |
| Minimum frequency | Frequency too low | Yes |
| Maximum frequency | Frequency too high | Yes |
| Phase sequence | Checking the rotational direction of the phases | Yes |

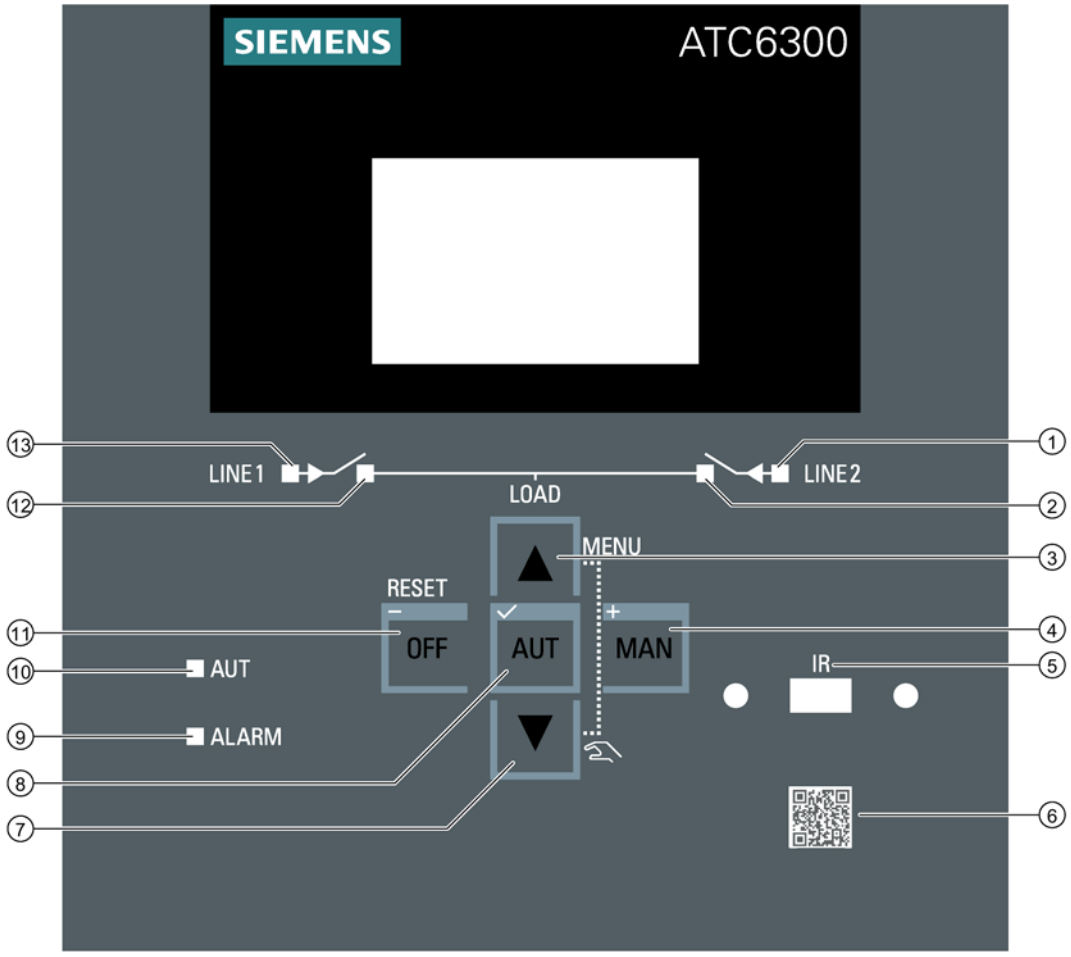
- Each measurement can be assigned a specific delay time. Measured anomalies (beyond the threshold values) must be present for longer than the set delay times, before it can be concluded that there is a line fault.
- When all the line parameters are restored within the specified thresholds, the delay time must elapse before the restored line may be reconnected. This delay period is determined by two independent parameters:
  - P06.07 or P07.07 - delay time if the line is within the specified thresholds again (and Line 2 or Line 1 is not available)
  - P06.08 or P07.08 - delay time if the line is within the specified thresholds again (and Line 2 or Line 1 is available)
- For the minimum and maximum voltages, two thresholds are defined in each case. One for the point beyond which the voltage is no longer considered sufficient (e.g. P06.01, threshold MIN trip voltage); and another which is closer to the rated voltage, defining the point beyond which it is sufficient again (e.g. P06.02, threshold MIN reset).
  The distance between these two thresholds determines the hysteresis. It is possible to stipulate, for example, that the voltage may no longer be used when it falls below 80% of the rated voltage, and that in order to be usable again, it must rise above 85%. This defines a hysteresis of 5% (dead zone). The same principle is applied to the maximum voltage.
- If the voltage is within the set thresholds when the device is switched on or reset, both sources are considered to be in order (without considering the delay times), except when the load is already supplied by a circuit breaker; then the delay times are taken into consideration.

# Product description

# 4

## 4.1 Product description

### User interface



## Status LEDs

The LEDs on the operator panel indicate the status of the device and/or the controlled switching devices. The meaning of the various LEDs is shown in the following table:

| No. | LED | LED ON | LED OFF | LED FLASHING |
|---|---|---|---|---|
| ① | **Line 2 available** | Shows a steady green light if the voltage and frequency are within the defined thresholds. | Does not light up if the voltage and/or frequency are outside the defined thresholds. | Flashes green until the voltage is back within the defined thresholds. You can find more information in chapter P07 - Line 2 parameters (Page 132) |
| ② | **Line 2 closed** | Shows a steady orange light if the switching device of Line 2 is closed. | Does not light if the switching device of Line 2 is not closed. | Flashes orange if there is a discrepancy between the desired status of the ATC6300 transfer control device and the actual status detected from the feedback signal. |
| ⑨ | **ALARM** | — | — | Flashes red if an alarm is active. You can find more information on this in chapter Alarms (Page 46). |
| ⑩ | **AUT** | Shows a steady green light if the ATC6300 transfer control device is in the automatic mode. | Does not light if the ATC6300 transfer control device is in the manual or OFF mode. | — |
| ⑫ | **Line 1 closed** | Shows a steady orange light if the switching device of Line 1 is closed. | Does not light if the switching device of Line 1 is not closed. | Flashes orange if there is a discrepancy between the desired status of the ATC6300 transfer control device and the actual status detected from the feedback signal. |
| ⑬ | **Line 1 available** | Shows a steady green light if the voltage and frequency are within the defined thresholds. | Does not light up if the voltage and frequency are outside the defined thresholds. | Flashes green until the voltage is back within the defined thresholds. You can find more information in chapter P06 - Line 1 parameters (Page 130) |

## Keys

| No. | Key | Function |
|---|---|---|
| ③ | **Key ▲** | • Pressing this key switches between menu pages. Within the menus, it is used to switch between the parameters. |
| ④ | **MAN / +** | • Pressing the **MAN / +** key for at least 0.5 seconds selects the Manual operating mode.<br>• If the **MAN / +** key is pressed within the individual menus, the parameters can be increased. |
| ⑦ | **Key ▼** | • Pressing this key switches between menu pages. Within the menus, it is used to switch between the parameters. |
| ⑧ | **AUT / ✓** | • Pressing the **AUT / ✓** key for more than 0.5 seconds selects the automatic mode.<br>• Pressing the **AUT / ✓** key also confirms any settings that have been made. |
| ⑪ | **OFF / -** | • Pressing the **OFF / -** key for more than 0.5 seconds selects the OFF mode.<br>• If the **OFF / -** key is pressed within the individual menus, the parameters can be reduced. |

Simultaneously pressing the ▲ and ▼ keys returns you to the main menu. You can find more information in chapter Menu navigation (Page 22).

## Interface

A 3KC9000-8TL73 USB front interface can be attached to interface 5. This enables the ATC6300 transfer control device to be parameterized from the front using powerconfig (Version 3.10 or higher).

Further information on the 3KC9000-8TL73 USB front interface can be found in chapter Parameterization via the front interface (Page 119) or in chapter USB front interface - 3KC9000-8TL73 (Page 194)

## QR code

The QR code 6 contains information that refers to the Industry Mall page of the ATC6300 transfer control device, where further information is available, e.g. operating instructions and certificates.

## 4.2 Menu navigation

The following section describes the front-mounted LCD. This display enables the device to be parameterized (see chapter Parameterization (Page 115)).

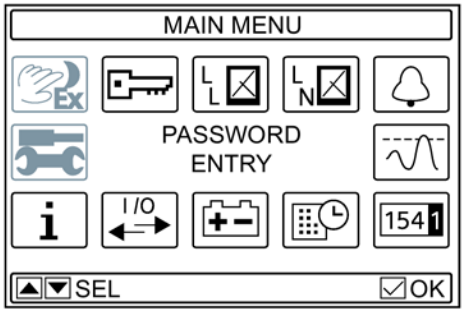
In addition, measured values relating to voltage and frequency can be read from it.

## 4.3 Description of the main menu

### Procedure for opening the main menu

Simultaneously pressing the ▲ and ▼ keys brings you to the main menu.

### Structure of the main menu




**Note**

**Password protection**

Access to some menu items can be restricted by setting a password (see chapter Password protection (Page 36)). The unavailable icons are grayed out (shown here in the example of the setup menu and Command menu). In addition, the message ACCESS LOCKED indicates that a password is active. In its factory setting, the ATC contains a stored password. Therefore, these menu options can only be accessed after entering a password.

## Description of the symbols

The symbols  are used as shortcuts, with which the display pages of the measurements can be retrieved faster.

They enable a jump to be made directly to the selected group of messages. From there, it is possible to scroll forward or back as usual.

| Symbol | Meaning |
|---|---|
|  | Access point to the command menu in which the authorized user can execute certain resetting and restoring processes. Grayed out if the password has not been entered. |
|  | Input of the numerical code that allows access to the protected functions (see chapter Password protection (Page 36)). |
|  | Access point for displaying the real-time values of the voltage between L-L. |
|  | Access point for displaying the real-time values of the voltage between L-N. |
|  | Access point for displaying the active alarms. |
|  | Access point for displaying the set thresholds relating to the triggering of a transfer (see chapter Parameterization (Page 115)). |
|  | Access point to the statistical operating data of the control device. |
|  | Access point for displaying the stored events of the ATC6300. |
|  | Access point for displaying the real-time values of the battery. If no additional DC supply / battery is used, this window is grayed out. |
|  | Access point that enables the operator to view the status of the inputs and outputs used. |
|  | Access point for displaying the system information via the ATC6300. |
|  | Access point to the setup menu. Grayed out if there is password protection and the password has not yet been entered. |

## 4.4 Navigation through the main menu

Press ▲ or ▼ to scroll through the main menu functions in a clockwise / counter-clockwise direction.

Alternatively, you can also scroll clockwise / counter-clockwise through the options using the + / - keys .

The selected symbol is highlighted and the description of the function is shown in the center of the display .

The selected function can then be activated by pressing the ✓ key.

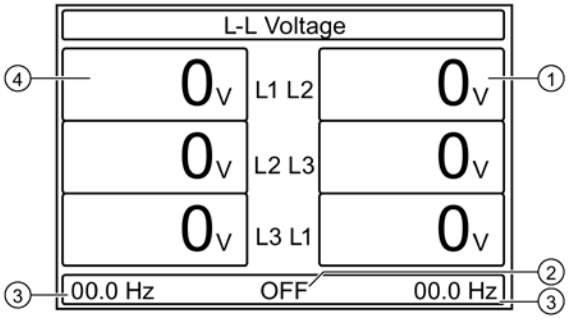
## 4.5 Display pages of the ATC6300

### 4.5.1 Description of the display pages

Some of the display pages listed below may possibly not be available if the function has been deactivated. Likewise, additional display pages can be displayed if supplementary functions are activated, e.g. limit thresholds. Some of the following display pages can only be viewed via the main menu; you can scroll freely between the remaining pages.

The following display pages are available on the ATC6300.

#### L-L Voltage




① Real-time voltage L2 from Line 2
② Operating mode
③ Frequency (Line 1 / Line 2)
④ Real-time voltage L1 from Line 1

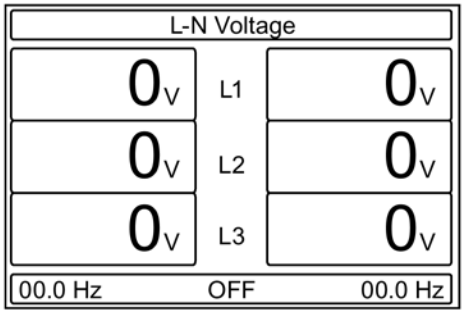
The submenu L-L Voltage shows the voltage between the phases.

The menu shows

- the voltages currently being measured
- the frequency of both lines currently being measured
- the current operating mode

This view is not available in single-phase supplies.

## L-N Voltage

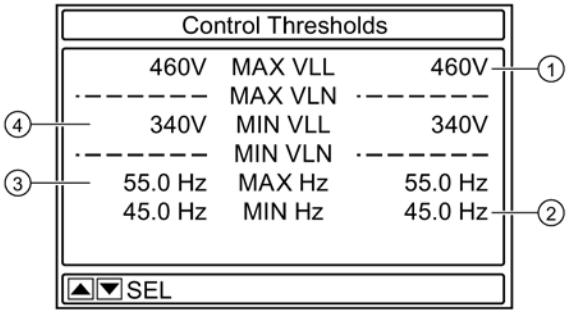



The submenu L-N Voltage shows the voltage between the phase and the neutral conductor.

The menu shows

- the voltages currently being measured
- the frequency of both lines currently being measured
- the current operating mode

## Control Thresholds




① Maximum control threshold for Voltage (L-L) Line 2
② Minimum control threshold for Frequency Line 2
③ Maximum control threshold for Frequency Line 1
④ Minimum control threshold for Voltage (L-L) Line 1

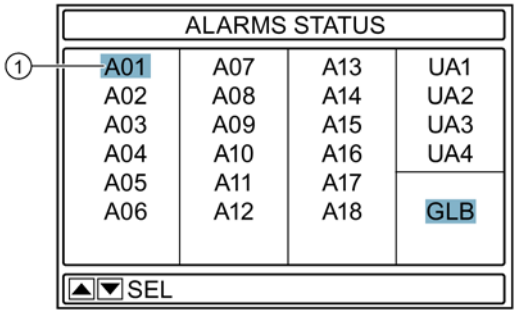
The Control Thresholds submenu shows the maximum and minimum threshold values for triggering the transfer.

It shows

- the threshold values of the voltage between L-L and between L-N (if set)
- the threshold values of the minimum and maximum frequency

If a threshold value is exceeded/undershot, it is shown with a black background, which means that it is possible to check in real time in the Control Thresholds menu which parameter of the voltage supply is causing problems.

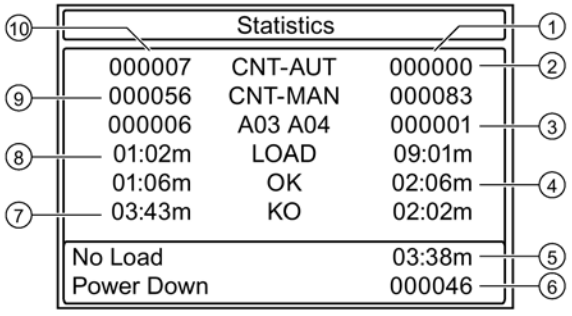
## Alarms status




① Active alarm

The Alarms Status submenu lists all possible alarms of the ATC6300. If an alarm is active the corresponding alarm has a black background.

## Statistics



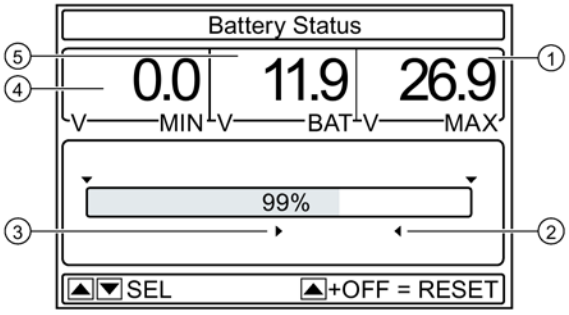

① Line 2
② Counter of the switching operations in the automatic mode for Line 2
③ Alarm counter A04
④ Time during which the line is within the defined thresholds
⑤ Elapsed time in which the load has zero current
⑥ Counter of the deactivation processes
⑦ Time during which the line was outside the defined thresholds
⑧ Time in which the power supply was maintained by Line 1
⑨ Counter of the switching operations in the manual mode for Line 1
⑩ Line 1

The transfer behavior is shown in the Statistics submenu.

This shows:

- how often one of the two sources has been switched to the automatic and manual mode
- how often the alarms A03 and A04 (see chapter Alarms (Page 46)) have been active
- how long a supply has been maintained by the sources
- how long the sources have been within and and outside the defined thresholds
- how long the load has been without current
- how many shutdowns have been initiated

## Battery Status




① Measured maximum voltage of the DC battery power supply
② Upper limit of the battery voltage
③ Lower limit of the battery voltage
④ Measured minimum voltage of the DC battery power supply
⑤ Current battery voltage

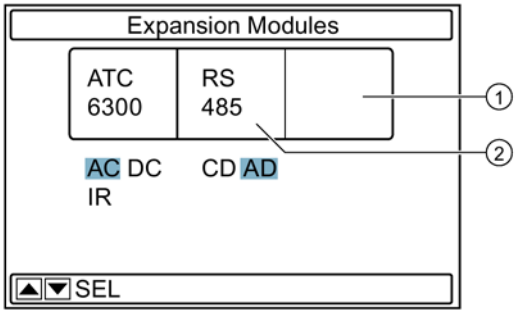
The Battery Status submenu indicates the current battery/DC supply voltage.

It shows:

- the lower and upper thresholds of the battery voltage
- the measured minimum and maximum values of the battery voltage

If no DC supply is used, then this menu is not visible.

## Expansion Modules



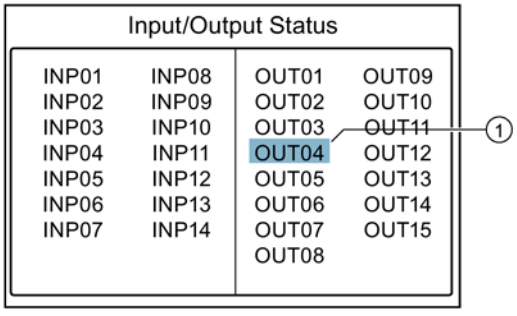

① Slot 2

② Slot 1

The Expansion Modules submenu indicates whether additional modules (e.g. communication modules) are plugged into the ATC6300, and which ones.

It shows how the ATC is being supplied (via AC or DC) and whether the USB front interface has been inserted.

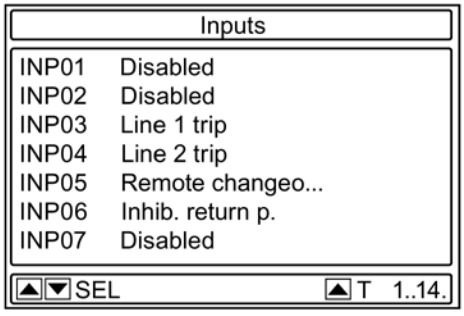
## Input/Output Status




① Output activated

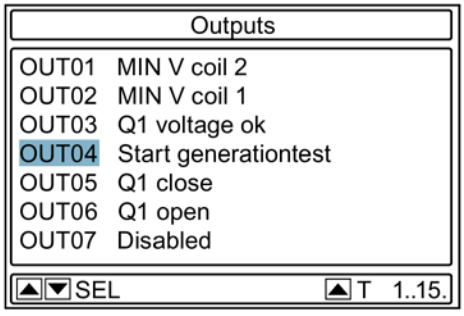
In the Input/Output Status submenu all digital inputs and outputs can be viewed. If an input/output is active, the corresponding input or output is shown with a black background. In addition to the permanently integrated inputs and outputs (6 inputs and 7 outputs) of the ATC6300, the possible inputs and outputs of the expansion modules are also shown here.

## Inputs



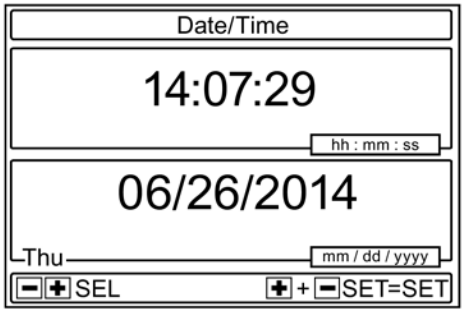

In the Inputs submenu the functions of the individual inputs can be viewed in detail. Here, too, only those inputs that are shown with a black background are activated.

## Outputs




In the Outputs submenu the functions of the individual outputs can be viewed in detail. Here, too, only those outputs that are shown with a black background are activated.

## Date/Time

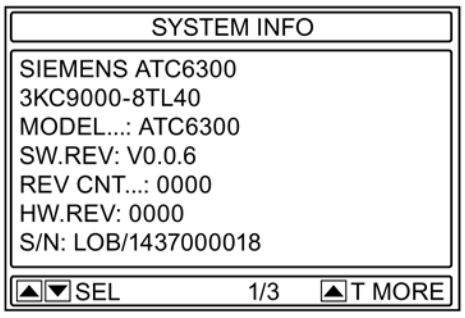



The Date/Time submenu enables you to view the current date and time.

From this page, it is also possible to adjust the date and / or the time (see chapter Setting the real-time clock (Page 35)).

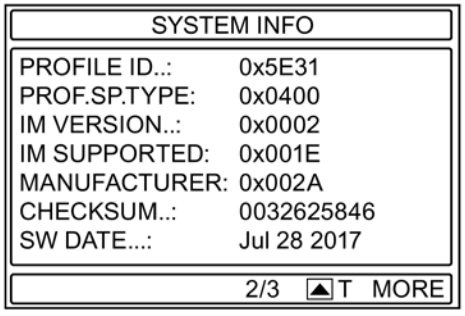
## Information page 1

On the "Systeminfo" page you can read out information regarding the software and the device.



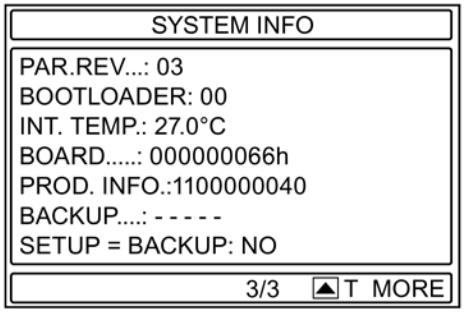

The SIEMENS ATC6300 field can be freely designated by means of Menu P01, Parameter P01.10 (see chapter P01 - Settings (Page 121)).

## Information page 2




On the "Systeminfo" page you can read out information regarding the software and the device.

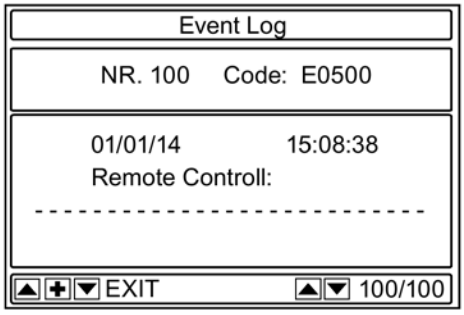
## Information page 3




On the "Systeminfo" page you can read out information regarding the software and the device.

## Event Log

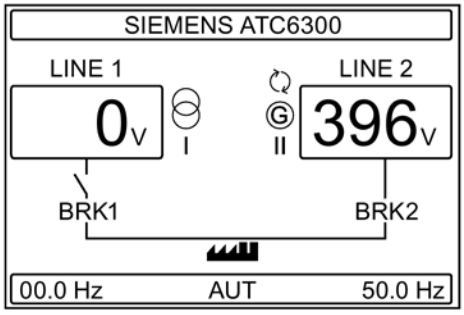
The event log is only visible if the  symbol was selected on the main menu.




The event log allows you to view the last 100 events. In addition to the code a message is shown in plain text.

For more information, see chapter Event log (Page 56).

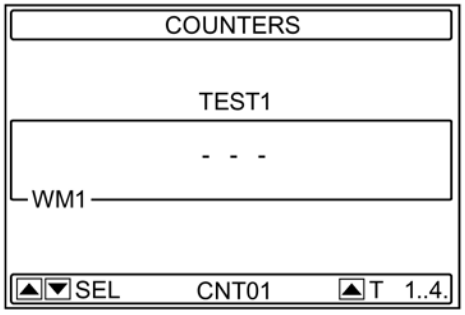
## Overview




In the Overview submenu you can view the current voltage and frequency at each line. It also shows which of the two switches is activated. The symbols for generator and network applications change according to the application that is set. The designation in the SIEMENS ATC6300 field can be freely set by the user. (Menu P01, Parameter P01.10 (see chapter P01 Settings (Page 121)).

## Counters

This page is only visible if the Counters function has been activated.

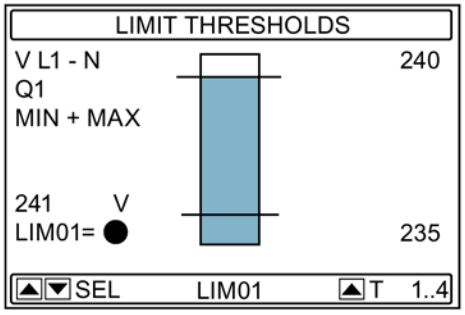



In the Counters menu the status of active counters can be viewed.

It shows how often the defined status has occurred. The designation (**Test1** in this example) and the unit (**WM1** in this example) can be freely defined by the user. For more information, refer to chapter Counters (Page 61).

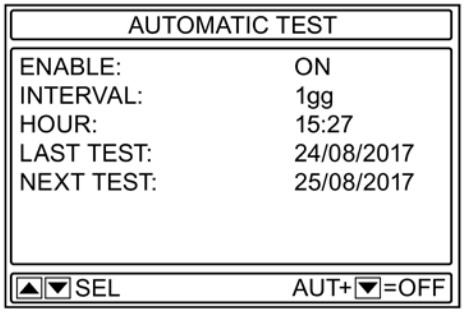
## User limit thresholds

This page is only visible if the Limit Thresholds menu has been activated.




The Limit Thresholds menu enables you to view the limits as well as the real-time value of the selected function. For more information, refer to chapter Limit Threshold LIMx (Page 57).

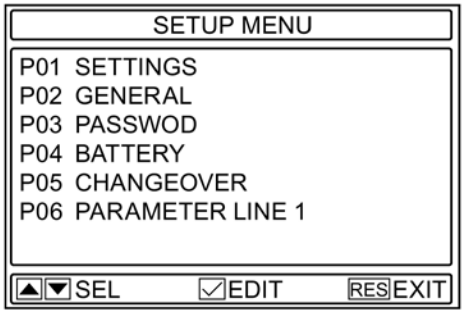
## Automatic test




In the Automatic Test menu you can view all settings regarding the automatic test function. For more information, refer to chapter Automatic Test (Page 51).

## Setup menu

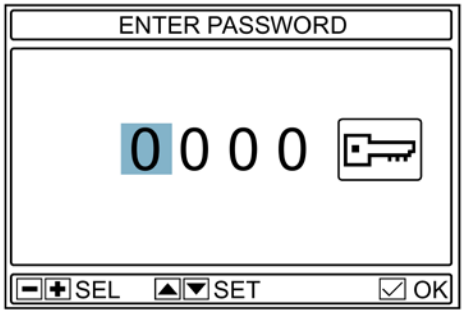
This menu is only visible if the symbol was selected on the main menu.




Using the setup menu, you can modify the parameters on the device. You can find a detailed description in chapter Parameterization (Page 115).

## Password

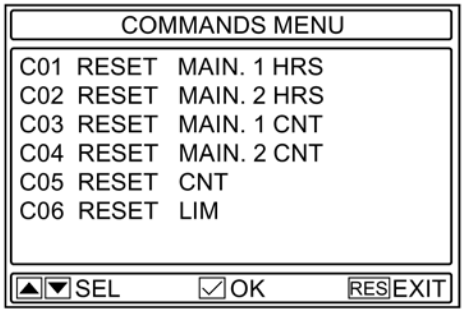
The Password menu is only visible if the symbol was selected on the main menu.




This menu is used for entering the password. You can find more information in chapter Password protection (Page 36).

## Command menu

The command menu is only visible if the symbol was selected on the main menu.




This menu enables commands to be executed. You can find more information in chapter Command menu (Page 53).

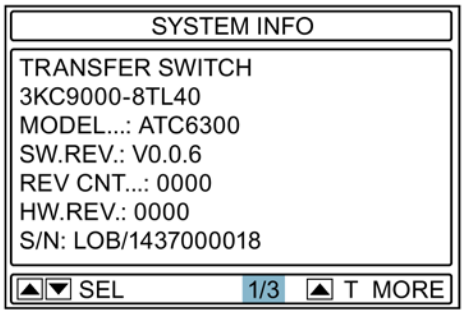
## 4.5.2 Scrolling through the display pages

You can scroll through any display pages on the ATC6300 using the ▲ or ▼ keys.

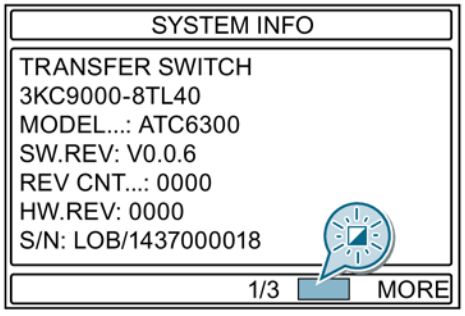
**Note**

Several pages are available for some menus.

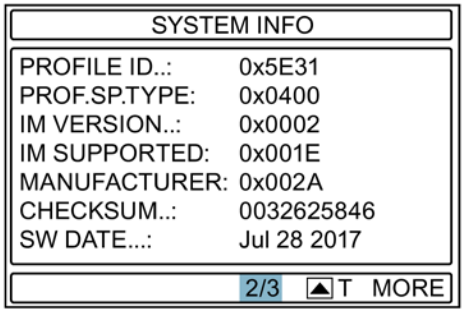
Using the example of the Systeminfo menu, the following instructions show how additional pages can be displayed:




1. Press the ▲ key for at least 2 seconds.
   The ▲ symbol next to the page number starts flashing.




2. Press the ▲ key to scroll to page 2.




3. Press the ▲ key for at least 2 seconds again to stop scrolling through the pages.

# Functions

# 5

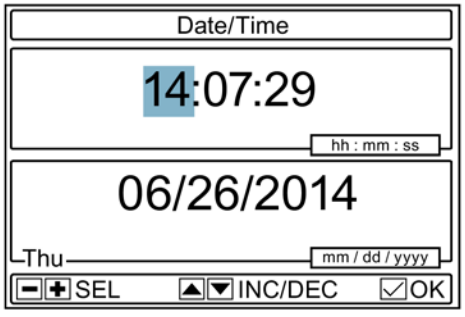
The following chapter contains information on:

- Basic functions
- Advanced functions

## 5.1 Basic functions

### 5.1.1 Setting the real-time clock

The virtual calendar clock of the ATC6300 must be set when the device is first commissioned. You can select whether the clock is to be reset after each device restart. This can be set using parameter P01.02 (refer to chapter P01 Settings (Page 121)).




Even if the ATC6300 is currently in operation, you can still set the real-time clock.

**Procedure**

1. Select the display page **Date / Time**.
2. Press the + and – keys simultaneously to activate the adjustment of the date / time. The value to be adjusted is then highlighted.
3. Change the setting.
   Using the + and - keys you can jump back and forward between the hours / minutes / seconds or between month / day / year.

   The individual values are changed using the ▲ or ▼ key.
4. Confirm the setting by pressing the ✓ key.

## 5.1.2 Password protection

Access to the ATC6300 can be denied by means of a password. Both the physical access to the device and the access via MODBUS can be protected with a password.

**Note**
**Default setting**

On new devices the factory setting is as follows: one password is activated for the user level, one for the advanced level, and one password for remote access.

**Note**
**Incorrect password**

If the password is entered incorrectly using MODBUS three times in succession, access to the device is blocked for fifteen minutes.

The default password is:

User level: 1000

Advanced level: 2000

Remote password: 3000

For the activation / deactivation of the password, please refer to chapter P03 Password (Page 123).

### 5.1.2.1 Password protection against physical access

In order to prevent physical access via the user interface on the front of the device, passwords can be assigned for two levels:

**User password:**

Permits the execution of some commands and the modification of some parameters.

The table below lists the executable commands with the password at the user level:

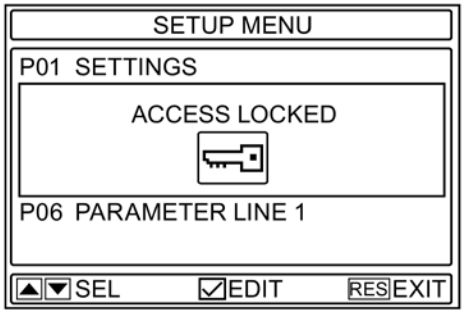
| Command menu | Executable command |
|---|---|
| C05 | Reset counter CNT |
| C06 | Reset limit threshold LIM |

The table below lists the adjustable parameters with the password at the user level:

| Setup menu | Adjustable parameters |
|---|---|
| P01 Settings | Parameters P01.01 – P.01.10 |
| P06 Parameter Line 1 | Parameters P06.01 – P06.20 |
| P07 Parameter Line 2 | Parameters P07.01 – P07.20 |
| P08 Communication | Parameters P08.01.01 – P08.02.13 |
| P09 Automatic Test | Parameters P09.01 – P09.13 |

The remaining parameters / commands are grayed out.

If an attempt is made to select a parameter that is not available, the following message is displayed:




**Advanced password**

With the advanced password, all parameters can be changed and all commands executed.

### 5.1.2.2 Password protection against remote access (remote password)

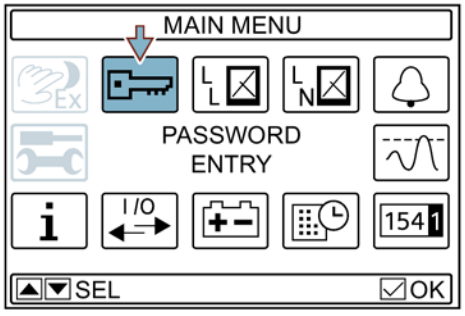
To restrict remote access to the device via MODBUS, a 4-digit numerical code can also be assigned for this purpose.

This can be set in Menu P03 (see chapter Parameterization (Page 115)).

For entering the password by means of MODBUS, see chapter Password entry using MODBUS (Page 156).

### 5.1.2.3 Entering the password via user interface

To enter the password, the symbol in the main menu must be selected with the ✓ key.

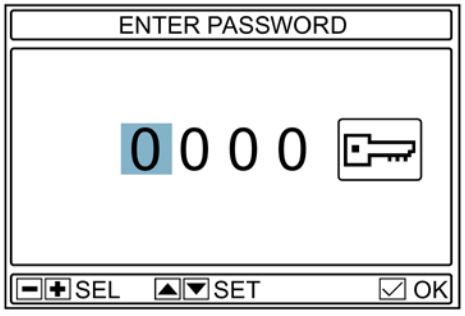



**Note**

**Visibility**

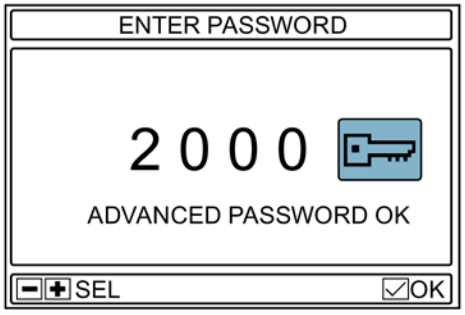
The password entry can only be selected if the password has been activated in menu P03 (see chapter P03 - Password (Page 123)).

After you have clicked on the symbol, the following window appears:




**Procedure for password entry:**

1. Change the value of the selected digit with the ▲ and ▼ keys.
2. Move from digit to digit with the + and – keys.
3. Enter all the digits of the password.
4. Finally, position the cursor on the password symbol and wait.
   If the password that you have entered corresponds with the password of the user level or the password of the advanced level, the appropriate enabling message is displayed.




5. The ✓ key is used to terminate the password entry and close the window.

Access to the device remains open until:

- the device is switched off
- the device is reset (after closing the setup menu)
- more than two minutes have passed without a key being pressed (not adjustable)

## 5.1.3 Keypad lock

In addition to password protection, the operator panel of the ATC6300 can also be disabled.

The purpose of this is to prevent any unintended changes being made to the ATC6300 by accidentally touching the keys.

The keypad lock can be implemented in two different ways:

- Activation of a programmable input
- Pressing a combination of keys on the front panel

When the keypad is locked, it is only possible to read messages. It is not possible to change the operating mode or perform a manual transfer.

**Note**

**Return to main page**

When the main menu is displayed and the keypad is locked, it is only possible to return to the main page after a wait time of two minutes (in accordance with parameter P01.09).

If an attempt is made to operate the locked keypad, the message KEYBOARD LOCKED is shown.

### 5.1.3.1 Activation of the keypad lock by means of a programmable input

In order to lock the keypad by means of an input, the corresponding Keypad Lock function must be selected and activated in Menu P10.

You can find more information on this in the chapter Parameterization - P10 - Digital inputs (Page 137).

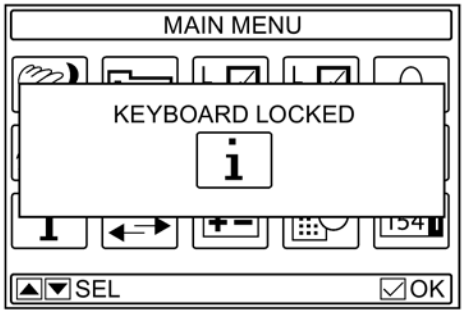
### 5.1.3.2 Activation of the keypad lock by means of a key combination on the operator panel

**Procedure for locking and unlocking the keypad:**

1. While holding down the ▲ key, press the ▼ key three times without releasing it at the end
2. Release the ▲ key and then press the ▲ key five times
3. Release both keys.

When the keypad is locked, the message KEYBOARD LOCKED appears on the display.

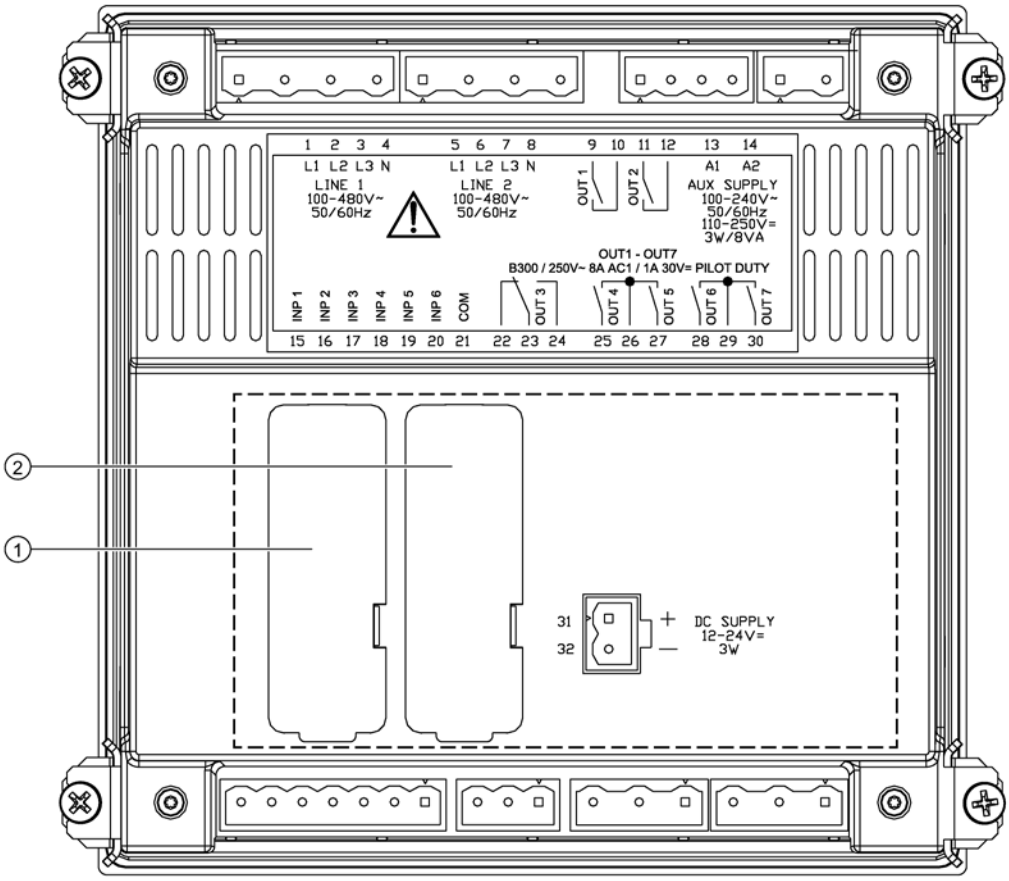
Conversely, when it has been unlocked, the message KEYBOARD UNLOCKED appears.



## 5.1.4 Expandability by modules

On the back of the ATC6300 there are two slots for expansion modules.

These can be used to extend the functionality of the device. For additional information on installing the expansion modules, please refer to the chapter Inserting an expansion module (Page 43).




① Slot 1
② Slot 2

The expansion modules can be classified as:

- Digital inputs and outputs
- Communication modules

### 5.1.4.1 Enabling additional resources

The expansion modules provide additional resources that can be used via the corresponding setup menus.

**Note**

**Availability during physical absence of modules**

The setup menus for the expansions are also available if the modules are not physically present, i.e. the inputs 6-14 on the device can be parameterized, even though no module is inserted and these inputs are therefore not available.

As it is possible to add several modules of the same type (for example, two communication interfaces), several of the corresponding setup menus are available and are identified by consecutive numbering.

The table below shows how many modules of each type can be installed simultaneously and in which slots they may be used. There must be no more than two modules.

| Module type | Article number | Function | Maximum number that can be inserted |
|---|---|---|---|
| Communication | 3KC9000-8TL74 | RS485 (MODBUS RTU) | 2 |
| | 3KC9000-8TL75 | Ethernet (MODBUS TCP) | 1 |
| Digital inputs and outputs | 3KC9000-8TL60 | 4 digital inputs | 2 |
| | 3KC9000-8TL61 | 4 digital outputs, SSR (4 NO contacts) | 2 |
| | 3KC9000-8TL62 | 2 digital inputs and 2 digital outputs, SSR (2 NO contacts) | 2 |
| | 3KC9000-8TL63 | 2 digital relay outputs (2 changeover contacts) | 2 |
| | 3KC9000-8TL64 | 2 digital inputs and 2 relay outputs (2 NO contacts) | 2 |

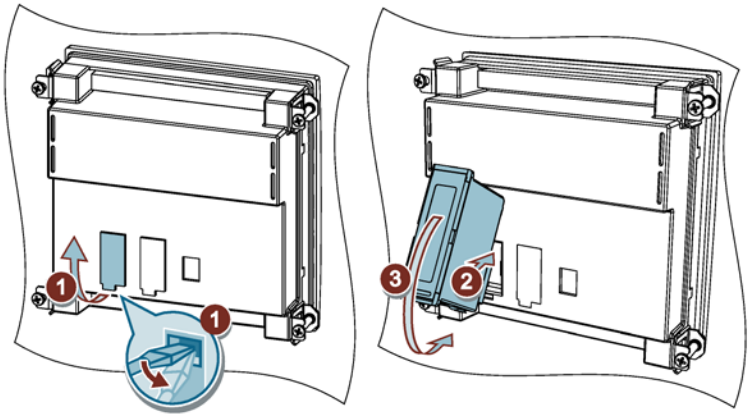
### 5.1.4.2 Inserting an expansion module

In order to insert an expansion module, proceed as follows:

| ⚠ WARNING |
| --- |
| **Hazardous voltage. Will cause death or serious injury.**<br>Turn off and lock out all power supplying this equipment before working on the device.<br>Replace all covers before power supplying this device is turned on. |

Disconnect the power supply of the device.

1. Remove the protective cover of the slots.
2. Attach the upper hook of the expansion module to the fixture of the ATC6300.
3. Insert the expansion module.
   Press on the expansion module until it latches into place.




You will find further information on the expansion modules in the operating instructions

- ATC6 DI/DO expansion modules
  (https://support.industry.siemens.com/cs/ww/en/view/109751947)
- ATC6 Ethernet expansion modules
  (https://support.industry.siemens.com/cs/ww/en/view/109751948)
- ATC6 RS485 expansion modules
  (https://support.industry.siemens.com/cs/ww/en/view/109751949)

### 5.1.4.3 Behavior of the ATC6300 after inserting a module

As soon as the power supply is connected to the ATC6300, it automatically detects a new expansion module.

If the system configuration deviates from the last configuration stored (if, for example, a module has been inserted or removed), the ATC6300 prompts the user to confirm the new configuration.

After confirmation the ATC6300 will restart. After this, the module can be parameterized.

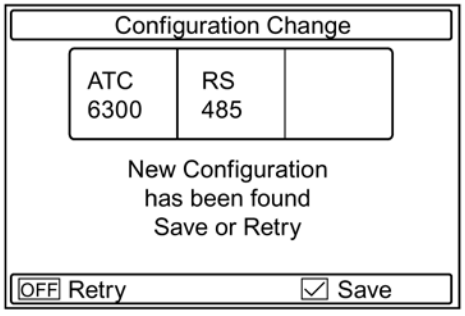
If the change is not accepted a reference is made to the change every time it starts up.

**Note**

**Addressing the modules**

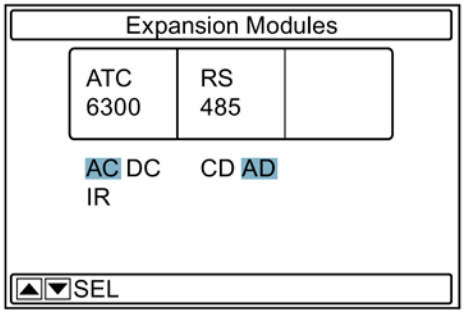
When subsequently removing an expansion module, attention must be paid to the addressing of the module.

The following message is displayed if a new configuration has been detected:




The current system configuration is displayed on the corresponding display page (Expansion Modules), stating the number, type and status of the connected modules:

- The I/O numbering is shown under each module.
- The status (activated / deactivated) of the I/O and of the communication channels is indicated by the message displayed in negative.



## 5.1.5 Communication COMx

No more than two communication modules identified as COMn may be connected to the ATC6300.

The communications setup menu therefore contains two sections (n=1 ... 2) with parameters for the configuration of the communication ports.

The communication channels are completely independent, both in terms of the hardware (type of physical interface) and in terms of the communication protocol. The communication channels are able to function simultaneously.

The Ethernet expansion module enables communication via MODBUS TCP and the RS485 expansion module enables communication via MODBUS RTU.

For additional information on MODBUS, please refer to chapter P08 - Communication (Page 134).

### Addressing the expansion modules for communication

If only one expansion module for communication is installed in the ATC6300 it is designated COM1, regardless of whether it is inserted in slot 1 or 2.

If there are two communication modules in the ATC6300, the module in slot 1 is addressed as COM1 and the module in slot 2 as COM2.

---

**Note**

**Addressing on removal of a module**

If there are two modules in the device and the module in slot 1 is subsequently removed, then the addressing of the remaining module changes from COM2 to COM1.

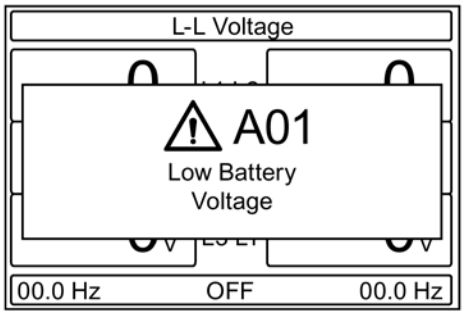
The device will point out this change at the necessary restart (see chapter Behavior of the ATC6300 after inserting a module (Page 44)).

---

## 5.1.6 Alarms

The ATC6300 has 18 predefined alarms and can also display an additional 4 user alarms.

On occurrence of an alarm, an alarm symbol appears on the display with an identification code and the description of the alarm in the selected language.




If the navigation keys on the pages are actuated, the popup window with the alarm details is temporarily hidden and then reappears after a few seconds.

As long as an alarm is active, the red LED next to the alarm symbol on the front panel continues flashing.

If enabled, the local and remote alarm tones are activated.

### Resetting an alarm

The alarms are reset by pressing the OFF key. If the cause of the alarm still exists, the alarm cannot be reset.

Following the occurrence of one or more alarms, the behavior of the ATC6300 depends on the properties of the active alarms.

### 5.1.6.1 Properties of the alarms

Various properties can be assigned to each alarm, including the user alarms (UAx see chapter User alarms (Page 50)).

- Alarms enabled (active)
  General enabling of the alarm.
  If an alarm has not been enabled, the procedure is as if the alarm did not exist.
- Only AUT (Aut)
  The alarm can only be triggered if the ATC6300 is in automatic mode.
- Retention alarm (Retent)
  Remains stored, even after the triggering cause has been removed.
- Global alarm (Glb Al)
  Activates the output which is assigned to this global alarm function (see chapter Table of functions of the digital outputs (Page 112))
- Lock BRK1 (Lock 1)
  On occurrence of the alarm, no further commands are sent to switching device 1.
- Lock BRK2 (Lock 2)
  On occurrence of the alarm, no further commands are sent to switching device 2.
- Siren (Siren)
  Activates the output assigned to this function, as configured in the Table of alarms (Page 49)
- Inhibit (Inhib.)
  The alarm can be temporarily deactivated by activating a programmable input with the alarm inhibit function.
- No LCD (No LCD)
  The alarm is managed normally, but not shown on the display.

### 5.1.6.2 Alarm description

The predefined alarms have the following properties:

| Code | Description | Cause of alarm |
|---|---|---|
| A01 | Battery voltage too low | The voltage of the DC supply is below the lower threshold limit for longer than the set time. |
| A02 | Battery voltage too high | The voltage of the DC supply is above the upper threshold limit for longer than the set time. |
| A03 | Line 1 circuit breaker timeout | The Line 1 switching device has not performed any opening or closing operation within the set maximum period. Once the alarm has been triggered, the ON or OFF command is inhibited. The alarms are only triggered if at least one of the two energy sources is available, that is to say it is within the limits. |
| A04 | Line 2 circuit breaker timeout | The Line 2 switching device has not performed any opening or closing operation within the set maximum period. Once the alarm has been triggered, the ON or OFF command is inhibited. The alarms are only triggered if at least one of the two energy sources is available, that is to say it is within the limits. |
| A05 | Line 1 wrong phase sequence | The phase sequence measured on Line 1 does not match the programmed phase sequence. |
| A06 | Line 2 wrong phase sequence | The phase sequence measured on Line 2 does not match the programmed phase sequence. |
| A07 | Load not powered timeout | Either because the power supplies were not available, or because both switching devices have remained open, the load has been de-energized for longer than the time programmed with P05.11. |
| A08 | External battery charger failure | This alarm is triggered by the input programmed for the charger alarm function if at least one energy source is within the limits. |
| A09 | Emergency | Alarm triggered by opening the external emergency input. Both switching devices are opened (see Table of functions of the digital inputs (Page 108)). |
| A10 | Line 1 breaker protection trip | The Line 1 breaker has opened because an overcurrent protection device has tripped. This is signaled by activation of the input with function Line 1 breaker protection trip (see Table of functions of the digital inputs (Page 108)). |
| A11 | Line 2 breaker protection trip | The Line 2 breaker has opened because an overcurrent protection device has tripped. This is signaled by activation of the input with function Line 2 breaker protection trip. |
| A12 | Line 1 generator not available | If the input with the function "Generator ready 1" is opened, this alarm is triggered (see Table of functions of the digital inputs (Page 108)). |
| A13 | Line 2 generator not available | If the input with the function "Generator ready 2" is opened, this alarm is triggered (see Table of functions of the digital inputs (Page 108)). |
| A14 | Maintenance Hours 1 | This alarm is triggered if the maintenance hours for Line 1 reach the value zero. See Menu P12 - Miscellaneous (Page 139) Use this in order to reset operating hours and alarm. |
| A15 | Maintenance Hours 2 | This alarm is triggered if the maintenance hours for Line 2 reach the value zero. See Menu P12 - Miscellaneous (Page 139) Use this in order to reset operating hours and alarm. |
| A16 | Maintenance operations 1 | This alarm is triggered if the number of operating cycles for Line 1 reaches the value set in Menu P12. Use command menu to restore operation and reset the alarm. |
| A17 | Maintenance operations 2 | This alarm is triggered if the number of operating cycles for Line 2 reaches the value set in Menu P12. Use command menu to restore operation and reset the alarm. |
| A18 | Auxiliary voltage failure | The device that manages the draw of auxiliary voltage supply from one of the available lines signals a failure or improper operation. |
| UA1. UA4 | User alarm | The user alarm is generated by enabling the variable or associated input in Menu P15. |

### 5.1.6.3 Alarm table

The alarms have the following properties (for a definition of the properties, please refer to chapter Properties of the alarms (Page 47):

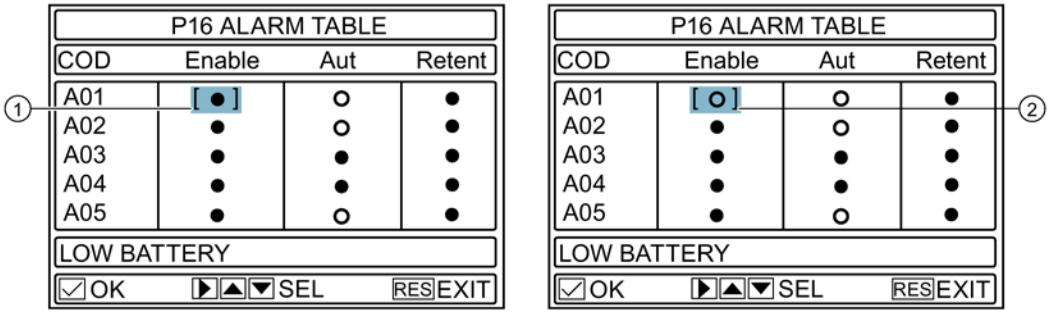
The properties of the alarms can be modified using Menu P16. This can be selected from the setup menu. For information on the selection procedure, please refer to chapter Parameterization of the user interface (Page 115).

| Code | Description | Ena-bled | Only AUT | Re-tained | Global alarm | Lock BRK 1 | Lock BRK 2 | Siren | Lock | No LCD |
|---|---|---|---|---|---|---|---|---|---|---|
| A01 | Battery voltage too low | x | | x | x | | | x | | |
| A02 | Battery voltage too high | x | | x | x | | | x | | |
| A03 | Fault breaker Line 1 | x | x | x | x | x | | x | | |
| A04 | Fault breaker Line 2 | x | x | x | x | | x | x | | |
| A05 | Line 1 wrong phase sequence | x | | x | x | | | x | | |
| A06 | Line 2 wrong phase sequence | x | | x | x | | | x | | |
| A07 | Load not powered timeout | x | x | | x | | | x | | |
| A08 | External battery charger failure | | | | x | | | x | | |
| A09 | Emergency | x | | x | x | | | x | | |
| A10 | Line 1 breaker protection trip | x | | x | x | x | x | x | | |
| A11 | Line 2 breaker protection trip | x | | x | x | x | x | x | | |
| A12 | Line 1 generator not available | x | | | x | | | x | | |
| A13 | Line 2 generator not available | x | | | x | | | x | | |
| A14 | Maintenance Hours 1 | x | | | | | | | | |
| A15 | Maintenance Hours 2 | x | | | | | | | | |
| A16 | Maintenance operations 1 | x | | | | | | | | |
| A17 | Maintenance operations 2 | x | | | | | | | | |
| A18 | Auxiliary voltage failure | x | | | x | | | x | | |

**Note**

The "Inhibited" and "No LCD" functions are not activated in the factory settings, but can be selected or deselected by the user.

To activate or deactivate the property of an alarm, the option must be selected or deselected for the corresponding alarm:




① Alarm 01 Enabled property activated

② Alarm 01 Enabled property deactivated

- Press the ▲ or ▼ keys to jump from one alarm to the next (A01, A02, etc.)
- The **+ / MAN** key is for switching between the properties
- The **- / RESET** key is used for closing the alarm table
- Properties can be selected/deselected with the ✓ key

### 5.1.6.4 User alarms

The user can define up to four programmable alarms (UA1…UA4). For each alarm, the following can be specified:

- The **source**, i.e. the condition that triggers the alarm.
  The following functions can be used as alarm sources:
  - LIMx: The alarm is triggered if a user limit is exceeded
  - INPx: An alarm can be triggered by a signal via an input
  - OUTx: An alarm can also be triggered by the activation of an output
  - REMx: Using a remote variable, an alarm can be activated/deactivated via Modbus
- or **text of the message** that must appear on the display when this condition occurs (see example in chapter P15 - User alarms (Page 143)).
- the **properties of the alarm** (see chapter on Alarms (Page 46))

If several alarms occur simultaneously, they are displayed sequentially, with an indication of the total number of alarms.

By pressing the OFF-RESET key, retained alarms can be canceled, provided the causes of the alarms have been eliminated.

An alarm programmed with a memory is reset using the corresponding command in the command menu.

For the definition of the alarms, please refer to the setup menu P15 - User alarms (Page 143)

## 5.1.7 Automatic test

The automatic test is a periodic test performed at set intervals (which can be defined during setup), if the system is in automatic mode and the function has been enabled.

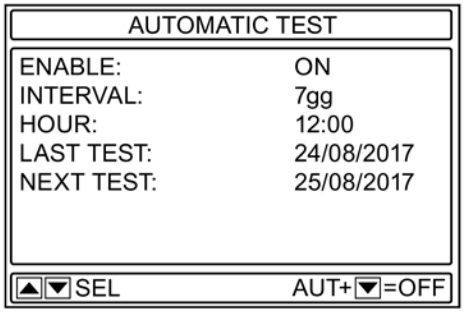
The typical application is to check the efficiency of a generating set used as an emergency power source. It is possible to specify on which days of the week and at what times (hours / minutes) the test can be performed. For detailed information on the programming, see the menu P09 - Automatic test (Page 136).

After starting, the generating set runs for a programmable period of time, after which it stops. Before the generator starts, the message "T.AUT" is shown on the display.

It is possible to select whether the test is to be performed

- without load changeover to the alternative line source
- with load changeover or
- with load simulation

.




**Note**

**Cooling time**

In the automatic test the cooling time of the generator is not taken into consideration.

### 5.1.7.1 Enabling the automatic test

The automatic test can be implemented in two different ways:

- by means of the menu P09 (see Parameterization)
- by opening the AUTOMATIC TEST page
  - To enable the function, press the AUT and ▲ keys simultaneously
  - To disable the function, press the AUT and ▼ keys simultaneously

### 5.1.7.2 Stopping the automatic test

The automatic test can be stopped by pressing the **OFF / RESET** key.

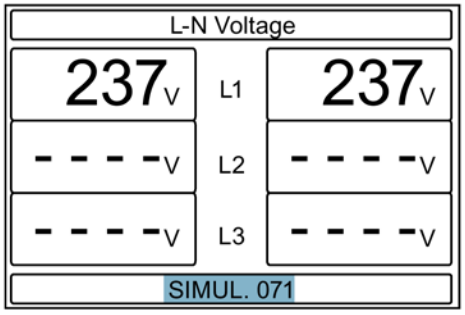
## 5.1.8 Simulation of priority line failure

The ATC6300 offers the possibility of simulating a power failure. This enables the system to be tested.

This simulation can be performed in two ways:

- Via the command menu, using the command C16
- Through a digital input with the function C16

The simulation involves considering a two-minute absence of the priority line, even if it is actually present. During this time the message SIMUL xxx appears on the main page with a countdown of the simulation time:




The simulation will cause the start of the generator (if present) and a load transfer exactly as in the automatic cycle.

### Stopping the simulation

The simulation can be stopped at any time by pressing the OFF key, thereby placing the device in the OFF mode.

**Note**

If the simulation is performed through the command menu, it must be started from the OFF mode. Only in the OFF mode is it possible to execute commands (see chapter Command menu (Page 53)).

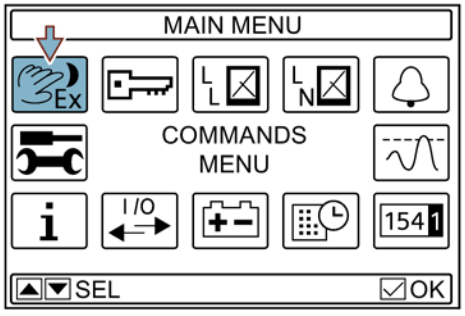
After selecting and confirming the command C.16 the command menu is exited. The device switches automatically to the automatic mode and starts the simulation.

## 5.1.9 Command menu

By means of a command menu, any processes, such as the resetting of measurements, counters, alarms etc., can be executed.

### 5.1.9.1 Executing a command

In order to reach the command menu, it is necessary to click on the corresponding symbol in the main menu:

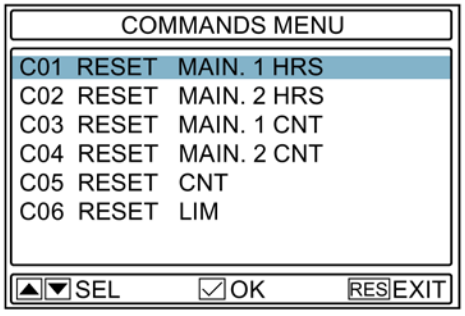



**Note**

**Password protection**

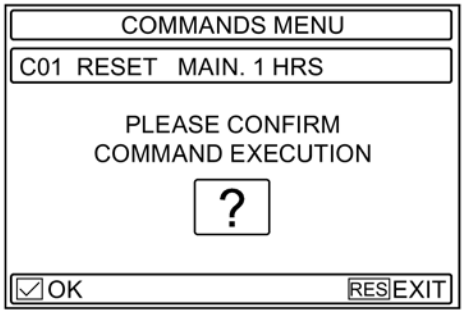
If there is a password, some commands cannot be executed (see chapter Password protection (Page 36)).

After actuating the symbol, the following window opens:




Press the ▲ or ▼ key to switch between the commands. The command is selected with the ✓ key.

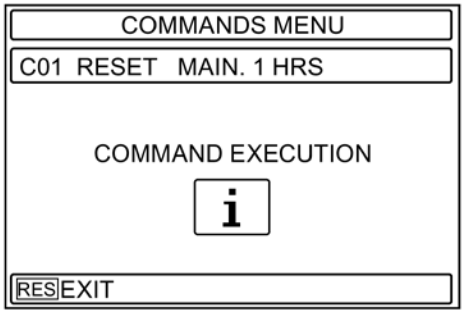
The following message is displayed:




By pressing the ✓ key again, the command is executed.

In order to cancel the execution of a selected command, press **RESET**.

The following message is displayed if the command has been selected.




Press **RESET** in order to exit the command menu.

### 5.1.9.2 Table of commands

The following table lists the available commands:

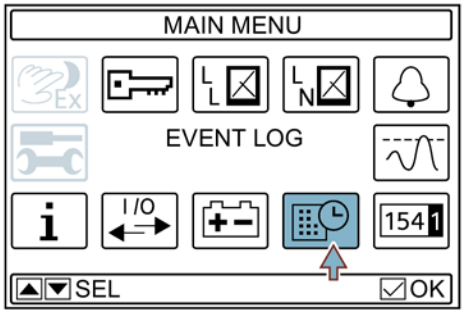
| Code | Command | Access level required | Description |
|---|---|---|---|
| C01 | Reset maintenance 1 | Advanced | Reset maintenance interval hours 1 |
| C02 | Reset maintenance 2 | Advanced | Reset maintenance interval hours 2 |
| C03 | Reset maintenance operations 1 | Advanced | Reset maintenance interval for operating cycles 1 |
| C04 | Reset maintenance operations 2 | Advanced | Reset maintenance interval for operating cycles 2 |
| C05 | Reset general counters CNTx | User | Sets the generic counter CNTx to zero |
| C06 | Reset LIMx limits | User | Resets the status of the retained LIMx limits |
| C07 | Reset hours counter Line 1 / Line 2 | Advanced | Resets the hours counter for the presence / absence of Line 1 and Line 2 within the respective limits |
| C08 | Reset hour counters Breaker 1 / Breaker 2 | Advanced | Resets the hour counters for the closing / opening processes of breakers 1 and 2 |
| C09 | Reset breaker operation | Advanced | Resets the counting of operating cycles for breakers 1 and 2 |
| C10 | Reset event log | Advanced | Deletes the list of historical events |
| C11 | Reset default parameters | Advanced | Resets all the parameters in the setup menu to the default values |
| C12 | Save parameters in backup memory | Advanced | Stores a copy of the currently set parameters in a backup memory, so that they can be restored at a later date |
| C13 | Reload parameters from backup memory | Advanced | Transfers the parameters stored in the backup memory to the memory of the active settings |
| C14 | Forced I/O | Advanced | Enables test mode so you can manually energize any output.<br>**Note:** In this mode, the installation technician has sole responsibility for the control of the outputs |
| C15 | Reset A03 - A04 alarms | Advanced | Restores the opening or closing command of the switching devices after generating the alarms A03 - A04 |
| C16 | Simulates line failure | Advanced | The device switches to the AUT mode and for two minutes simulates the failure of the priority line. After this, it performs a load switchover as programmed. |

## 5.1.10 Event log

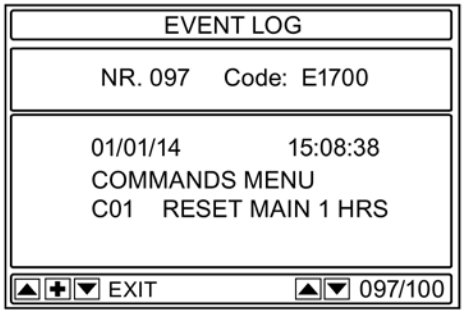
In the event log of the ATC6300 you can view the last 100 events.

You can reach the event log as follows:

Select the event log symbol from the main menu:




The following window opens:




You can scroll through the events using the ▲ and ▼ keys.

The event log is closed by simultaneously pressing the ▲ and ▼ keys.

# 5.2 Extended functions

## 5.2.1 Remote variables REMx

The ATC6300 can control a maximum of 8 remote variables.

Fundamentally, a remote variable is a variable used internally that can be switched on and off by the user.

It is switched on and off via MODBUS (see chapter Commands (Use with MODBUS function 06) (Page 164)).

**Note**

**Expansion modules required**

The remote variables can only be used in combination with the expansion modules for communication, 3KC9000-8TL74 (RS485) and 3KC9000-8TL75 (Ethernet) and with the USB front interface (3KC9000-8TL73).

The remote variables can be used as a source for the following functions:

- User alarm UA
- Counters
- Digital output

Example: If a digital output is set as a source for the remote variable, it can be switched on and off by remote access via MODBUS.

## 5.2.2 User limit LIMx

The ATC6300 provides the option of specifying four user limits.

The LIMx limits are internal variables whose status is dependent on whether one of the measurements performed by the system has exceeded the limit specified by the user (example: voltage between L1-L2 higher than 400 V).

**Note**

**Limit settings**

The user limits have no influence on the automatic switchover between the lines.

They can, for example, be used for analyses of the power supply quality.

For each LIMx limit both the reference measurement and the reference source must be set.

**Possible reference measurements:**

| Designation on the ATC6300 | Description |
|---|---|
| OFF | The user limit is deactivated. |
| V L1-N | The voltage of L1-N serves as a source for the limit threshold. |
| V L2-N | The voltage of L2-N serves as a source for the limit threshold. |
| V L3-N | The voltage of L3-N serves as a source for the limit threshold. |
| V L1-L2 | The voltage of L1-L2 serves as a source for the limit threshold. |
| V L2-L3 | The voltage of L2-L3 serves as a source for the limit threshold. |
| V L3-L1 | The voltage of L3-L1 serves as a source for the limit threshold. |
| V L-N EQV | The mean value of all voltages between L-N serves as a source for the limit threshold. |
| V L-L EQV | The mean value of all voltages between L-L serves as a source for the limit threshold. |
| Hz | The frequency serves as a source for the limit threshold. |
| ASY V L-L | The voltage unbalance of L-L serves as a source for the limit threshold. |
| ASY V L-N | The voltage unbalance of L-N serves as a source for the limit threshold. |
| CNT x | The user-defined counter CNTx serves as a source for the limit threshold. |
| CNT AUT | The defined counter CNT AUT serves as a source for the limit threshold. |
| CNT MAN | The defined counter CNT MAN serves as a source for the limit threshold. |
| A 03 | The occurrence of the alarm A03 (Line 1 circuit breaker timeout) serves as a source for the limit threshold. |
| A 04 | The occurrence of the alarm A04 (Line 2 circuit breaker timeout) serves as a source for the limit threshold. |
| Time Load | The time for which the power is supplied by the selected power supply source serves as a source for the limit threshold. |
| No Load | The total time without a power supply serves as a source for the limit threshold. |
| Switch off | The source for the limit threshold is the number of times that the ATC6300 has been de-energized. |
| Year | The year serves as a source for the limit threshold. |
| Month | The current month serves as a source for the limit threshold. |
| Day | The current day serves as a source for the limit threshold. |
| Hour | The current hour serves as a source for the limit threshold. |
| Minute | The current minute serves as a source for the limit threshold. |
| Sec | The current second serves as a source for the limit threshold. |
| Week day | The current day of the week serves as a source for the limit threshold. |

### Possible reference sources

- Line 1
- Line 2

The limits thresholds can be defined in Menu P13 (see chapter P13 - User limits (Page 140)).

In order to simplify the specification of limits that can have a very wide range, each limit is to be set with a basic value and a multiplication factor (example: 400 x 1 = 400).

For each LIM two thresholds are available (one upper and one lower). The upper threshold must always be set to a higher value than the lower one. The following functions can be defined for exceeding the upper and lower thresholds of the limits:

### Min function

In the Min function the lower threshold defines the trip point, while the upper threshold is for resetting. If the value of the selected measurement falls below the lower threshold, the device is tripped after the set delay time. If the value of the measurement exceeds the upper threshold, the device is reset after the set delay time.

### Max function

In the Max function the upper threshold defines the trip point, while the lower threshold is for resetting. If the value of the selected measurement exceeds the upper threshold, the device is tripped after the set delay time. If the value of the measurement falls below the lower threshold, the device is reset after the set delay time.

### Min+Max function

In the Min+Max function, both the upper and lower thresholds are for tripping. If the value of the selected measurement falls below the lower threshold or exceeds the upper threshold, the device is tripped after the set delay times.

As soon as the measured value is within the limits again, the device is immediately reset. Depending on the setting, tripping denotes either activation or deactivation of the LIMn limit. If the LIMn limit is configured with a memory, the reset must take place manually, using the dedicated command in the command menu.

The user limit thresholds can be viewed on the device if they have been activated (see chapter P13 - Limit thresholds (Page 140)).

**Example:**

A user limit LIM1 of the voltage V L1-N of Line 1 is to be defined. The upper limit should be 250 V AC, and the lower limit should be 220 V AC.

Setting:

LIM1 Reference measurement: V L1-N

Source: Line 1

Channel number: 1

Function: Min + Max

Upper limit: 250 V

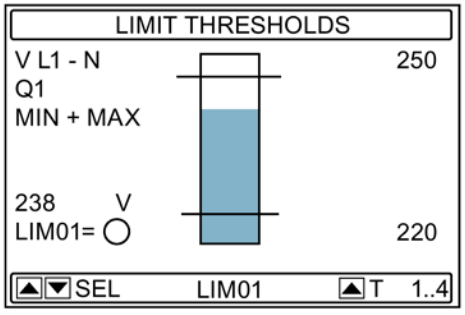
Multiplier: 1

Delay: 0.0 s

Lower limit 220 V

Multiplier: 1

Delay: 0.0 s




You can find a more detailed description in chapter P13 - Limit thresholds (Page 140).

## See also

Description of the display pages (Page 24)

## 5.2.3 Counter CNTx

In addition to the counters that are set automatically and which can be viewed under the menu option Statistics (see chapter Description of the display pages (Page 24)) further counters can also be defined by the user.

The ATC6300 provides the option of setting four counters.

The counters enable pulses coming from an external source to be counted. In addition, it is possible to count how frequently a defined condition has occurred.

The following functions can be used as a counter source:

- Input INPx
- Output OUTx
- User limit LIMx
- Remote variable REMx

**Example:**

The limit LIM 1 defined in the chapter User limit LIMx (Page 57) should serve as a counter source. This means that counting should start when the values exceed or fall below the thresholds of 250 V and 220 V from LIM1.

Counter source: LIMx

Channel number: 1

The channel number refers to the counter source. As the number of instances the values exceed or fall below user limit threshold LIM**1** are to counted, channel number **1** shall then be selected.

Multiplier: 1

Divider: 1

Description: freely selectable text

Measurement unit: freely selectable text

Reset counter: Setting that determines how the counter is to be reset

Channel number: 1

The exact parameters can be found in the chapter P14 - Counters (Page 142).

# Installation

# 6

The following chapter contains information on:

- Dimensions for the door cutout
- Installation of the ATC6300

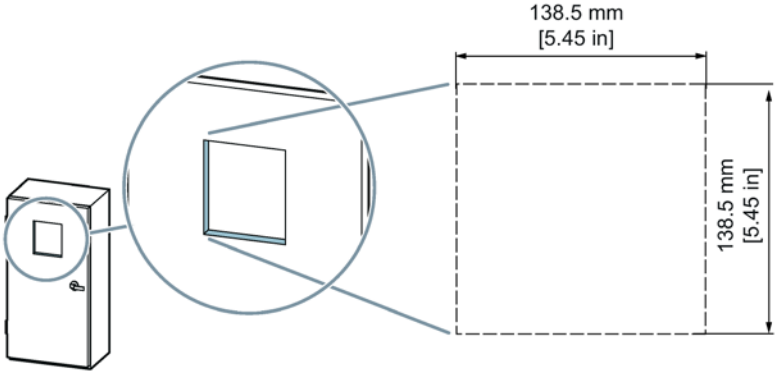
Additional information can be found in the Operating instructions for 3KC ATC6300 transfer control device (https://support.industry.siemens.com/cs/ww/en/view/109751946).

## 6.1 Dimensions for the door cutout

The ATC6300 is intended for door mounting.

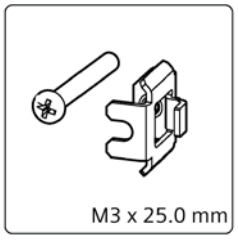
When correctly installed and with simultaneous use of the cover frame 3KC9000-8TL67, IP65 protection is achieved at the front.

The door cutout for the ATC6300 must have the following dimensions:




## 6.2 Installation of the ATC6300

The ATC6300 is attached to the door using the clips included in the scope of delivery.

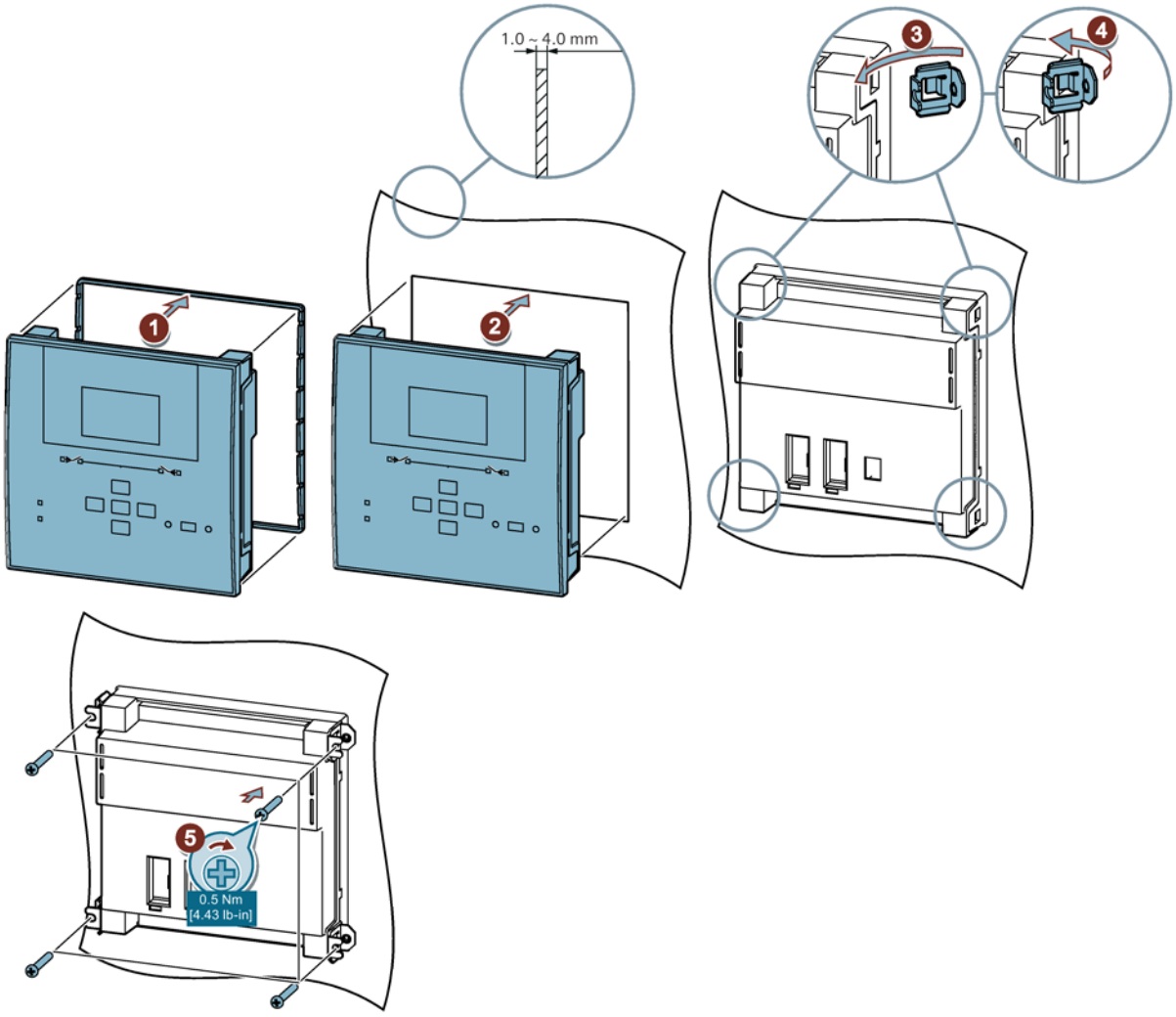


### Installation procedure

**Note**

**Sequence of operations during installation**

If you are using the cover frame 3KC9000-8TL67, fit this before installing the ATC6300.




1. Attach the cover frame 3KC9000-8TL67 to the ATC6300.
2. Mount the ATC6300 in the door cutout.
3. Attach the two clips on the side of the ATC6300 and press these toward the back to engage them.
4. Repeat this procedure for the other side.
5. Tighten the fixing screws with a torque of 0.5 Nm until the device is firmly mounted in the door cutout.

To remove the ATC6300, perform these steps in reverse order.

# Connection

7

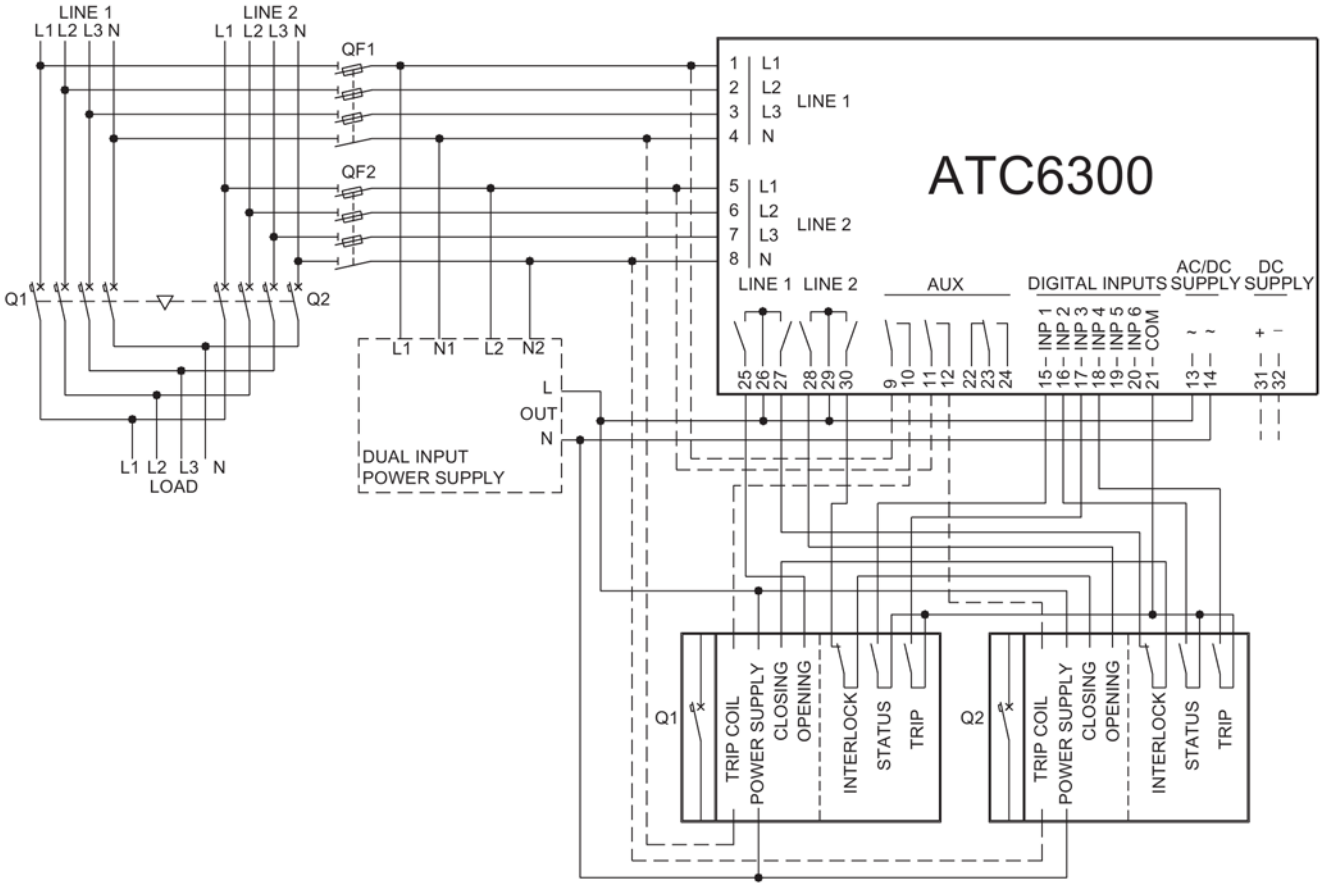
The following chapter contains information on:

- General connection drawings
- Connection of the power supply
- Connection of the Siemens switching devices

# 7.1 General connection drawings

The connection drawings for the various switching devices are listed below.

## 7.1.1 Connection of circuit breakers with motor operator




**Note**

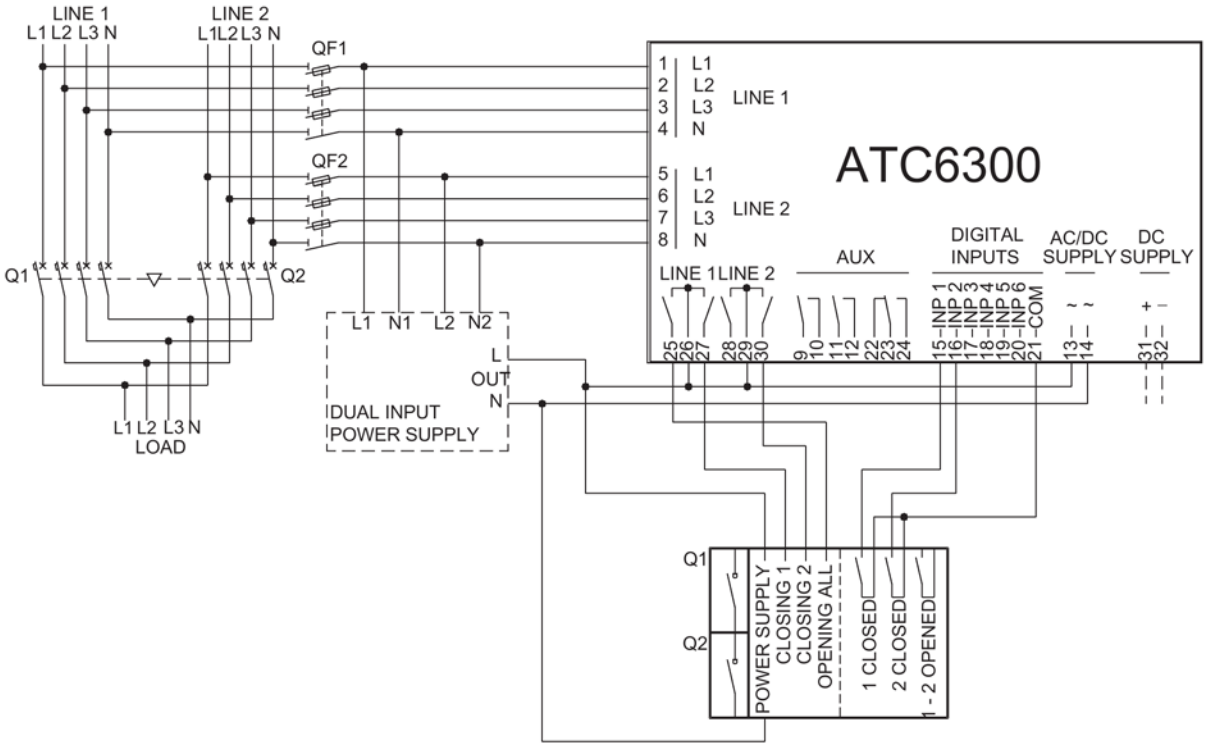
**Implementation of the power supply**

If you do not use an external DC source via inputs 31 and 32, the continuous power supply of the ATC6300 must be provided by a dual network connection or, for example, by means of a voltage relay (see chapter Connection of the power supply (Page 70)).

For the circuit diagram illustrated here, the following parameters are to be set:

| Terminal | Parameter code | Setting |
|---|---|---|
| | P05.07 | Breaker pulse or breaker continuous |
| 15(INP1) | P10.01.01 | Line 1 breaker closed (feedback 1) |
| 16(INP2) | P10.02.01 | Line 2 breaker closed (feedback 2) |
| 17(INP3) | P10.03.01 | Line 1 circuit breaker protection (Trip 1) |
| 18(INP4) | P10.04.01 | Line 2 circuit breaker protection (Trip 1) |
| 25(OUT4) | P11.04.01 | Open Line 1 circuit breaker |
| 27(OUT5) | P11.05.01 | Close Line 1 contactor/circuit breaker |
| 28(OUT6) | P11.06.01 | Open Line 2 circuit breaker |
| 30(OUT7) | P11.07.01 | Close Line 2 contactor/circuit breaker |

## 7.1.2 Connection of remotely operated transfer control devices




**Note**

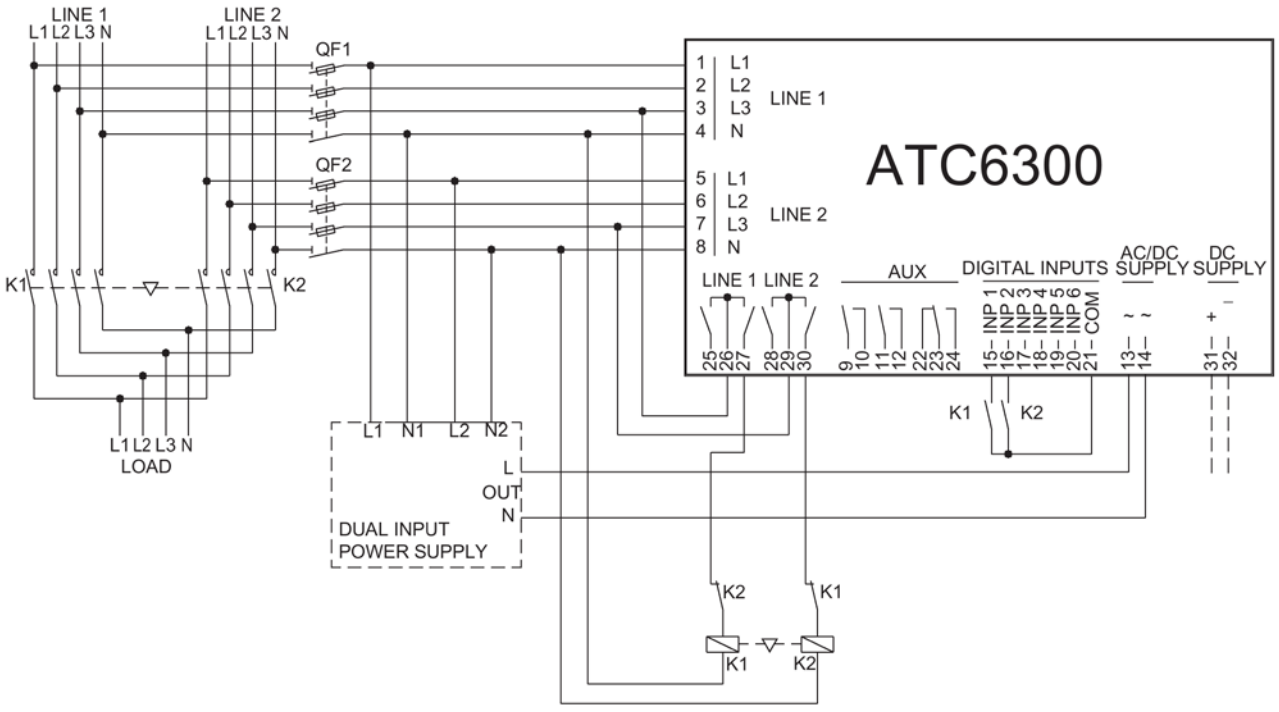
**Implementation of the power supply**

If you do not use an external DC source via inputs 31 and 32, the continuous power supply of the ATC6300 must be provided by a dual network connection or, for example, by means of a voltage relay (see chapter Connection of the power supply (Page 70)).

For the circuit diagram illustrated here, the following parameters are to be set:

| Terminal | Parameter code | Setting |
|---|---|---|
| | P05.07 | Changeover pulse or changeover continuous |
| 15(INP1) | P10.01.01 | Line 1 breaker closed (feedback 1) |
| 16(INP2) | P10.02.01 | Line 2 breaker closed (feedback 2) |
| 25(OUT4) | P11.04.01 | Open Line I and Line II |
| 27(OUT5) | P11.05.01 | Close Line 1 contactor/circuit breaker |
| 30(OUT7) | P11.07.01 | Close Line 2 contactor/circuit breaker |

### 7.1.3 Connection of contactors




**Note**

**Implementation of the power supply**

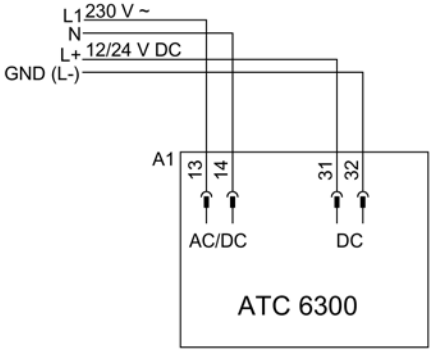
If you do not use an external DC source via inputs 31 and 32, the continuous power supply of the ATC6300 must be provided by a dual network connection or, for example, by means of a voltage relay (see chapter Connection of the power supply (Page 70)).

For the circuit diagram illustrated here, the following parameters are to be set:

| Terminal | Parameter code | Setting |
|---|---|---|
| | P05.07 | Contactors |
| 15(INP1) | P10.01.01 | Line 1 breaker closed (feedback 1) |
| 16(INP2) | P10.02.01 | Line 2 breaker closed (feedback 2) |
| 27(OUT5) | P11.05.01 | Close Line 1 contactor/circuit breaker |
| 30(OUT7) | P11.07.01 | Close Line 2 contactor/circuit breaker |

## 7.2 Connection of the power supply

The ATC6300 has inputs for an auxiliary power supply and inputs for a supply by means of a separate DC power source.




**Note**

- The ATC6300 has a dual power supply circuit, i.e. it can be operated with AC and DC, or with just one of the two.
- If both power supplies are connected, the power is drawn from the AC source. In this case only a little current is drawn from the DC source for operating the power supply circuit.

If no additional DC source is used, the permanent auxiliary power supply of the ATC6300 can be provided via terminals 13 and 14 by the following devices:

- Dual network connection
- Voltage relay
- Electromechanical relay
- UPS

## 7.2.1 Implementation of the dual power supply by means of dual network connection 3KC9625-1 (for IEC applications only)

The ATC6300 can be supplied from two 230 V AC power supply systems with the dual network connection (3KC9625-1).

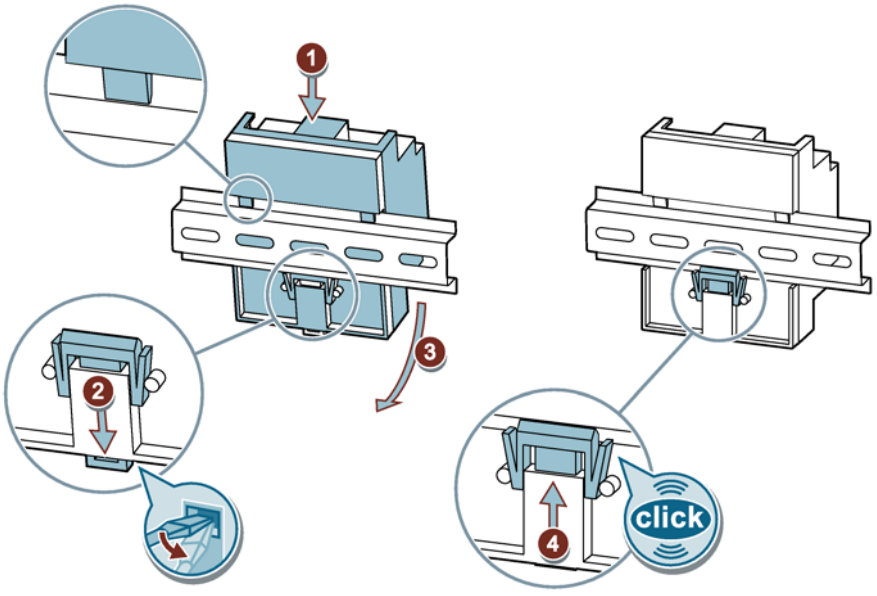
Properties of the dual network connection

- Active as from 200 V AC
- Maximum voltage: 288 V AC, frequency: 45 ... 65 Hz
- Internal fuse: Each input is protected with a fuse up to 3.15 A.

### Mounting the dual network connection

The dual network connection must be mounted on a standard mounting rail.

1. Place the dual network connection (3KC9625-1) with plug connection from above onto the standard mounting rail.



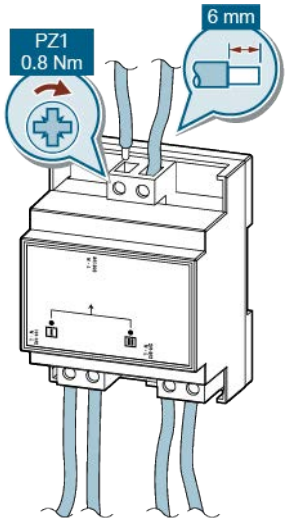

2. Align the clip assembly with a screwdriver as shown in the figure.
3. Align the plug connection on the underside.
4. Carefully push the device back until the plug connection audibly engages on the underside

### Connecting the dual network connection

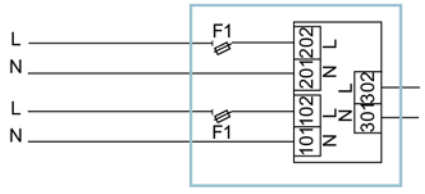
See the table below for the requirements of the supply lines needed for the connection:

| CU | Cable diameter | $V_e$ = 240 V AC<br>$V_{imp}$ = 4 kV |
|---|---|---|
|  | 0.5 ... 2.5 mm²<br>AWG 20 - 14 | $I_e$ = 3 A |
|  | 0.5 ... 1.5 mm²<br>AWG 20 - 16 | |

1. Connect the dual network connection (3KC9625-1) using the appropriate tool as shown in the diagram.



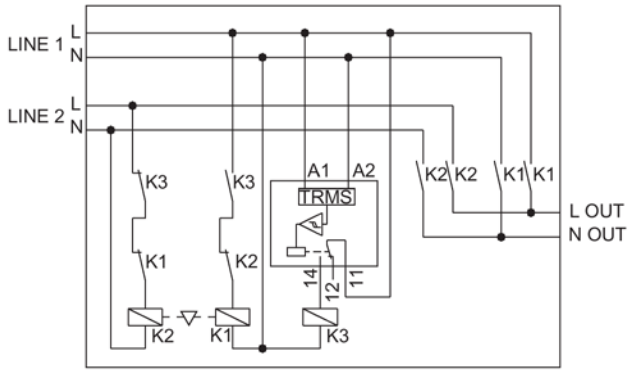

### Connection drawing




F1 1x 3NW6003-1 10 A, gG
1x 3NW7013

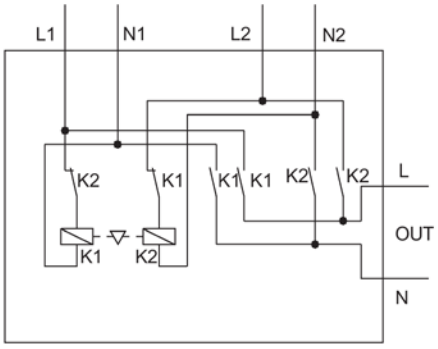
### 7.2.2 Implementation of the dual power supply by means of a voltage monitoring relay

If a dual power supply by means of a voltage relay is used, it must be connected as follows:




### 7.2.3 Implementation of the dual power supply by means of an electromechanical relay

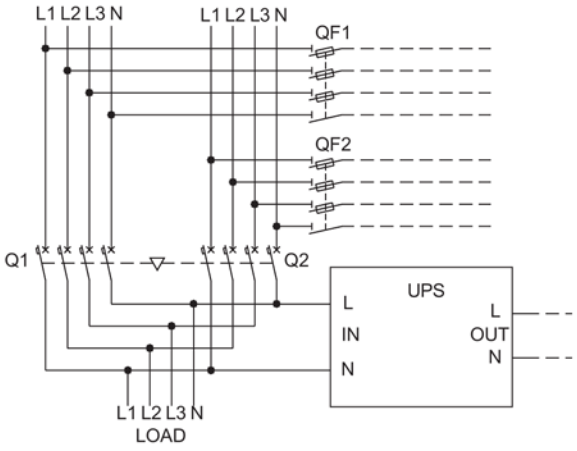
If a dual power supply by means of an electromechanical relay is used, it must be connected as follows:




**Info:** Do not use this application in conjunction with generators.

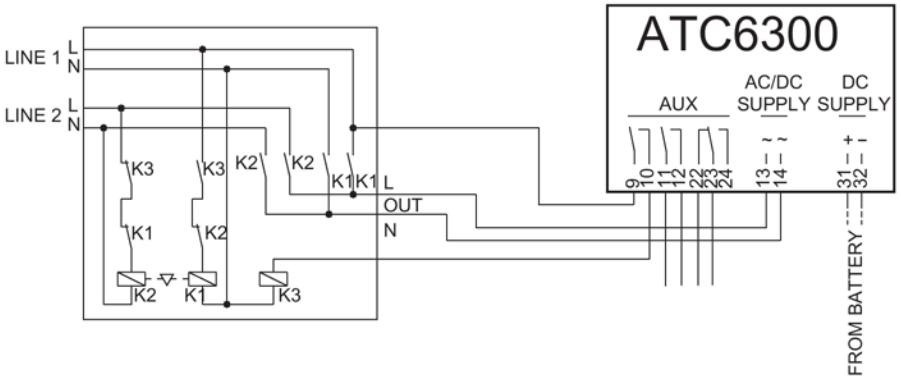
## 7.2.4 Implementation of the dual power supply by means of a UPS

If the dual powers supply is implemented via terminals 13 and 14 by means of an uninterruptible power supply (UPS), this must be connected as follows:




## 7.2.5 Recommended implementation for gen-set application (with power supply by means of a DC source)

If gen-sets are used, the following connection is recommended:




The auxiliary power supply is controlled by the ATC6300. The use of the dual network connection accessory is optional.

| Connection | Parameter | Setting |
|---|---|---|
| OUT (1) 9 - 10 | P11.01.01 | Line 1 status |

### Network/generator transfer

The output **Control Generator 2** must then be programmed in such a way that the generator is started when the ATC6300 is de-energized.

| Connection | Parameter | Output type | Setting |
|---|---|---|---|
| OUT (3) 22 - 23 | P11.03.01 | NOR | Control Generator 2 |

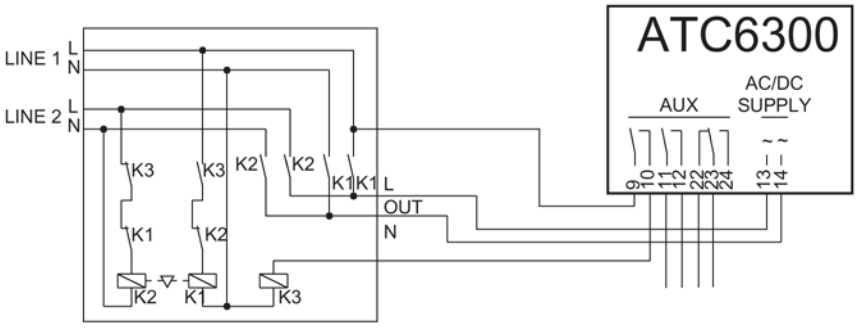
### Generator/generator transfer

The output **Control Generator 2** must then be programmed in such a way that the generator is started when the ATC6300 is de-energized.

| Connection | Parameter | Output type | Setting |
|---|---|---|---|
| OUT (3) 22 - 23 | P11.03.01 | NOR | Control Generator 2 |
| OUT (2) 11 - 12 | P11.02.01 | REV | Control Generator 1 |

## 7.2.6 Recommended implementation for gen-set application (without power supply by means of a DC source)

If gen-sets are used, the following connection is recommended:




The auxiliary power supply is controlled by the ATC6300. The use of the dual network connection accessory is optional.

| Connection | Parameter | Setting |
|---|---|---|
| OUT (1) 9 - 10 | P11.01.01 | Line 1 status |

### Network/generator transfer

The output **Control Generator 2** must then be programmed in such a way that the generator is started when the ATC6300 is de-energized.

| Connection | Parameter | Output type | Setting |
|---|---|---|---|
| OUT (3) 22 - 23 | P11.03.01 | NOR | Control Generator 2 |

### Generator/generator transfer

The output **Control Generator 2** must then be programmed in such a way that the generator is started when the ATC6300 is de-energized.

| Connection | Parameter | Output type | Setting |
|---|---|---|---|
| OUT (3) 22 - 23 | P11.03.01 | NOR | Control Generator 2 |
| OUT (2) 11 - 12 | P11.02.01 | REV | Control Generator 1 |

## 7.3 Connection of Siemens SENTRON switching devices

The connection of the Siemens switching devices is shown below

### 7.3.1 Accessories for switching devices

The following accessories are necessary for the Siemens switching devices:

| Circuit breaker | Accessories required |
|---|---|
| 3KC | Emergency pushbutton |
| 3VA | Auxiliary switch (interlock) |
| | Auxiliary switch (status) |
| | Alarm auxiliary switch (trip) |
| | Motor operator |
| 3VL | Auxiliary switch, normally open (NO) (interlock) |
| | Auxiliary switch, normally closed (NC) (status) |
| | Alarm auxiliary switch (trip) |
| | Motor operator |
| 3WL | Auxiliary switch (interlock) |
| | Auxiliary switch (status) |
| | Tripped signaling switch (trip) |
| | Auxiliary trip unit (shunt release) F1 |
| | Closing solenoid Y1 |
| | Motor operator |
| 3WT | Auxiliary switch (interlock) |
| | Auxiliary switch (status) |
| | Tripped signaling switch (trip) |
| | Auxiliary trip unit (shunt release) F1 |
| | Closing solenoid Y1 |
| | Motor operator |

## 7.3.2 Accessories for mechanical interlocking

### Permissible mechanical interlocking combinations

IEC 60947-6-1 contains the requirements for electrical and/or mechanical interlocking for automatic transfer switching equipment (ATSE), which serves to prevent possible short-circuits due to the coupling of non-synchronized networks. The circuit diagrams below for the Siemens switching devices show the electrical interlocking that is required in order to comply with the requirements of IEC 60947-6-1. Customers who wish to have a mechanical interlocking in addition to, or instead of the electrical interlocking, can obtain the possible combinations of Siemens breakers from the table below. For detailed information, please refer to the corresponding operating manual for the product.

### Mechanical interlocking combinations for 3VA

| Mechanical Interlocking Combinations | | | IEC | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 3VA1 160A | | | 3VA1 250A | | | 3VA2 100A | | | 3VA2 160A | | | 3VA2 250A | | | 3VA2 400A | | | 3VA2 630A | | |
| | | | Rear Int. - Fixed | Rear Int. - Withdraw | Bowden | Rear Int. - Fixed | Rear Int. - Withdraw | Bowden | Rear Int. - Fixed | Rear Int. - Withdraw | Bowden | Rear Int. - Fixed | Rear Int. - Withdraw | Bowden | Rear Int. - Fixed | Rear Int. - Withdraw | Bowden | Rear Int. - Fixed | Rear Int. - Withdraw | Bowden | Rear Int. - Fixed | Rear Int. - Withdraw | Bowden |
| IEC | 3VA1 160A | Rear Int. - Fixed | ✓ | – | – | ✓ | – | – | ✓ | – | – | ✓ | – | – | ✓ | – | – | ✓ | – | – | ✓ | – | – |
| | | Rear Int. - Withdraw | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| | | Bowden | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| | 3VA1 250A | Rear Int. - Fixed | ✓ | – | – | ✓ | – | – | ✓ | – | – | ✓ | – | – | ✓ | – | – | ✓ | – | – | ✓ | – | – |
| | | Rear Int. - Withdraw | – | – | – | – | ✓ | – | – | ✓ | – | – | ✓ | – | – | ✓ | – | – | ✓ | – | – | ✓ | – |
| | | Bowden | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| | 3VA2 100A | Rear Int. - Fixed | ✓ | – | – | ✓ | – | – | ✓ | – | – | ✓ | – | – | ✓ | – | – | ✓ | – | – | ✓ | – | – |
| | | Rear Int. - Withdraw | – | – | – | – | ✓ | – | – | ✓ | – | – | ✓ | – | – | ✓ | – | – | ✓ | – | – | ✓ | – |
| | | Bowden | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| | 3VA2 160A | Rear Int. - Fixed | ✓ | – | – | ✓ | – | – | ✓ | – | – | ✓ | – | – | ✓ | – | – | ✓ | – | – | ✓ | – | – |
| | | Rear Int. - Withdraw | – | – | – | – | ✓ | – | – | ✓ | – | – | ✓ | – | – | ✓ | – | – | ✓ | – | – | ✓ | – |
| | | Bowden | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| | 3VA2 250A | Rear Int. - Fixed | ✓ | – | – | ✓ | – | – | ✓ | – | – | ✓ | – | – | ✓ | – | – | ✓ | – | – | ✓ | – | – |
| | | Rear Int. - Withdraw | – | – | – | – | ✓ | – | – | ✓ | – | – | ✓ | – | – | ✓ | – | – | ✓ | – | – | ✓ | – |
| | | Bowden | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| | 3VA2 400A | Rear Int. - Fixed | ✓ | – | – | ✓ | – | – | ✓ | – | – | ✓ | – | – | ✓ | – | – | ✓ | – | – | ✓ | – | – |
| | | Rear Int. - Withdraw | – | – | – | – | ✓ | – | – | ✓ | – | – | ✓ | – | – | ✓ | – | – | ✓ | – | – | ✓ | – |
| | | Bowden | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| | 3VA2 630A | Rear Int. - Fixed | ✓ | – | – | ✓ | – | – | ✓ | – | – | ✓ | – | – | ✓ | – | – | ✓ | – | – | ✓ | – | – |
| | | Rear Int. - Withdraw | – | – | – | – | ✓ | – | – | ✓ | – | – | ✓ | – | – | ✓ | – | – | ✓ | – | – | ✓ | – |
| | | Bowden | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |

✓ Supported
- Not supported

| Mechanical Interlocking Combinations | | | UL | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 3VA5 125 A | | | 3VA5 250 A | | | 3VA6 150 A | | | 3VA6 250 A | | | 3VA6 400 A | | | 3VA6 600 A | | |
| | | | Rear Int. - Fixed | Rear Int. - Withdraw | Bowden | Rear Int. - Fixed | Rear Int. - Withdraw | Bowden | Rear Int. - Fixed | Rear Int. - Withdraw | Bowden | Rear Int. - Fixed | Rear Int. - Withdraw | Bowden | Rear Int. - Fixed | Rear Int. - Withdraw | Bowden | Rear Int. - Fixed | Rear Int. - Withdraw | Bowden |
| UL | 3VA5 125 A | Rear Int. - Fixed | ✓ | – | – | ✓ | – | – | ✓ | – | – | ✓ | – | – | ✓ | – | – | ✓ | – | – |
| | | Rear Int. - Withdraw | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| | | Bowden | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| | 3VA5 250 A | Rear Int. - Fixed | ✓ | – | – | ✓ | – | – | ✓ | – | – | ✓ | – | – | ✓ | – | – | ✓ | – | – |
| | | Rear Int. - Withdraw | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| | | Bowden | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| | 3VA6 150 A | Rear Int. - Fixed | ✓ | – | – | ✓ | – | – | ✓ | – | – | ✓ | – | – | ✓ | – | – | ✓ | – | – |
| | | Rear Int. - Withdraw | – | – | – | – | – | – | – | ✓ | – | – | ✓ | – | – | – | – | – | – | – |
| | | Bowden | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| | 3VA6 250 A | Rear Int. - Fixed | ✓ | – | – | ✓ | – | – | ✓ | – | – | ✓ | – | – | ✓ | – | – | ✓ | – | – |
| | | Rear Int. - Withdraw | – | – | – | – | – | – | – | ✓ | – | – | ✓ | – | – | – | – | – | – | – |
| | | Bowden | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| | 3VA6 400 A | Rear Int. - Fixed | ✓ | – | – | ✓ | – | – | ✓ | – | – | ✓ | – | – | ✓ | – | – | ✓ | – | – |
| | | Rear Int. - Withdraw | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| | | Bowden | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| | 3VA6 600 A | Rear Int. - Fixed | ✓ | – | – | ✓ | – | – | ✓ | – | – | ✓ | – | – | ✓ | – | – | ✓ | – | – |
| | | Rear Int. - Withdraw | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| | | Bowden | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |

✓ Supported
- Not supported

## Mechanical interlocking combinations for 3VL

| Mechanical Interlocking Combinations | | | IEC | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 3VL 160X | | | 3VL 160 | | | 3VL 250 | | | 3VL 400 | | | 3VL 630 | | | 3VL 800 | | | 3VL 1250 | | | 3VL 1600 | | |
| | | | Rear Int. - Fixed | Rear Int. - Withdraw | Bowden | Rear Int. - Fixed | Rear Int. - Withdraw | Bowden | Rear Int. - Fixed | Rear Int. - Withdraw | Bowden | Rear Int. - Fixed | Rear Int. - Withdraw | Bowden | Rear Int. - Fixed | Rear Int. - Withdraw | Bowden | Rear Int. - Fixed | Rear Int. - Withdraw | Bowden | Rear Int. - Fixed | Rear Int. - Withdraw | Bowden | Rear Int. - Fixed | Rear Int. - Withdraw | Bowden |
| IEC | 3VL 160X | Rear Int. - Fixed | ✓ | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| | | Rear Int. - Withdraw | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| | | Bowden | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| | 3VL 160 | Rear Int. - Fixed | – | – | – | ✓ | – | – | ✓ | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| | | Rear Int. - Withdraw | – | – | – | – | ✓ | – | – | ✓ | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| | | Bowden | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| | 3VL 250 | Rear Int. - Fixed | – | – | – | ✓ | – | – | ✓ | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| | | Rear Int. - Withdraw | – | – | – | – | ✓ | – | – | ✓ | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| | | Bowden | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| | 3VL 400 | Rear Int. - Fixed | – | – | – | – | – | – | – | – | – | ✓ | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| | | Rear Int. - Withdraw | – | – | – | – | – | – | – | – | – | – | ✓ | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| | | Bowden | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| | 3VL 630 | Rear Int. - Fixed | – | – | – | – | – | – | – | – | – | – | – | – | ✓ | – | – | ✓ | – | – | – | – | – | – | – | – | – |
| | | Rear Int. - Withdraw | – | – | – | – | – | – | – | – | – | – | – | – | – | ✓ | – | – | ✓ | – | – | – | – | – | – | – | – |
| | | Bowden | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| | 3VL 800 | Rear Int. - Fixed | – | – | – | – | – | – | – | – | – | – | – | – | ✓ | – | – | ✓ | – | – | – | – | – | – | – | – | – |
| | | Rear Int. - Withdraw | – | – | – | – | – | – | – | – | – | – | – | – | – | ✓ | – | – | ✓ | – | – | – | – | – | – | – | – |
| | | Bowden | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| | 3VL 1250 | Rear Int. - Fixed | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | ✓ | – | – | ✓ | – | – |
| | | Rear Int. - Withdraw | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | ✓ | – | – | ✓ | – |
| | | Bowden | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| | 3VL 1600 | Rear Int. - Fixed | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | ✓ | – | – | ✓ | – | – |
| | | Rear Int. - Withdraw | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | ✓ | – | – | ✓ | – |
| | | Bowden | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |

✓ Supported
- Not supported

| Mechanical Interlocking Combinations | | | UL489 | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 3VL 150X | | | 3VL 150 | | | 3VL 250 | | | 3VL 400 | | | 3VL 400X | | | 3VL 800 | | | 3VL 1200 | | | 3VL 1600 | | |
| | | | Rear Int. - Fixed | Rear Int. - Withdraw | Bowden | Rear Int. - Fixed | Rear Int. - Withdraw | Bowden | Rear Int. - Fixed | Rear Int. - Withdraw | Bowden | Rear Int. - Fixed | Rear Int. - Withdraw | Bowden | Rear Int. - Fixed | Rear Int. - Withdraw | Bowden | Rear Int. - Fixed | Rear Int. - Withdraw | Bowden | Rear Int. - Fixed | Rear Int. - Withdraw | Bowden | Rear Int. - Fixed | Rear Int. - Withdraw | Bowden |
| UL489 | 3VL 150X | Rear Int. - Fixed | ✓ | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| | | Rear Int. - Withdraw | – | ✓ | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| | | Bowden | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| | 3VL 150 | Rear Int. - Fixed | – | – | – | ✓ | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| | | Rear Int. - Withdraw | – | – | – | – | ✓ | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| | | Bowden | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| | 3VL 250 | Rear Int. - Fixed | – | – | – | – | – | – | ✓ | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| | | Rear Int. - Withdraw | – | – | – | – | – | – | – | ✓ | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| | | Bowden | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| | 3VL 400 | Rear Int. - Fixed | – | – | – | – | – | – | – | – | – | ✓ | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| | | Rear Int. - Withdraw | – | – | – | – | – | – | – | – | – | – | ✓ | – | – | – | – | – | – | – | – | – | – | – | – | – |
| | | Bowden | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| | 3VL 400X | Rear Int. - Fixed | – | – | – | – | – | – | – | – | – | – | – | – | ✓ | – | – | – | – | – | – | – | – | – | – | – |
| | | Rear Int. - Withdraw | – | – | – | – | – | – | – | – | – | – | – | – | – | ✓ | – | – | – | – | – | – | – | – | – | – |
| | | Bowden | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| | 3VL 800 | Rear Int. - Fixed | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | ✓ | – | – | – | – | – | – | – | – |
| | | Rear Int. - Withdraw | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| | | Bowden | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| | 3VL 1200 | Rear Int. - Fixed | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | ✓ | – | – | – | – | – |
| | | Rear Int. - Withdraw | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| | | Bowden | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| | 3VL 1600 | Rear Int. - Fixed | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | ✓ | – | – |
| | | Rear Int. - Withdraw | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| | | Bowden | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |

✓ Supported

\- Not supported

**Mechanical interlocking combinations for 3WL**

| Mechanical interlocking combinations | 3WL FS 1 | 3WL FS 2 |
|---|---|---|
| 3WL FS 1 | ✓ | ✓ |
| 3WL FS 2 | ✓ | ✓ |

✓ Supported
Frame size FS

For the network of the 3WL, the mechanical interlocking between all ACBs can be achieved by means of the Bowden cable system.

**Mechanical interlocking combinations for 3WT**

| Mechanical interlocking combinations | 3WT8 FS 1 | 3WT8 FS 2 | 3WT8 FS 3 |
|---|---|---|---|
| 3WT8 FS 1 | ✓ | ✓ | ✓ |
| 3WT8 FS 2 | ✓ | ✓ | ✓ |
| 3WT8 FS 3 | ✓ | ✓ | ✓ |

✓ Supported
Frame size FS

For the network of the 3WT, the mechanical interlocking between all frame sizes can be achieved by means of the Bowden cable system.

## 7.3.3 Technical specifications of the Siemens SENTRON switching devices in accordance with IEC 60947-6-1 (IEC only)

Reference is made to the fact that the following information must be specified on the device or rating plate for the combination of RTSE with a controller in accordance with IEC 60947-6-1:

**Basic features:**

1. Name or mark of origin of the manufacturer
2. Type designation or catalog number
3. Specification of the standard, in case compliance with this standard is claimed

**Features of the transfer switching equipment:**

1. Device class: PC, CB, CC
2. Rated operational voltage
3. Utilization category and rated operational current with the rated operational voltage
4. Rated conditional short-circuit current for classes PC and CC
5. Rated operational voltage
6. Rated short-time withstand current if class PC

7. Rated impulse withstand voltage
8. Switch position of the TSE

The following table lists the required data of the air circuit breakers and molded case circuit breakers.

**Note**

Still check the data of the circuit breaker used against the corresponding catalog or manual. Take the required data for the RTSE variants PC, 3KC3 and 3KC4 from the corresponding manual or catalog.

Take the required data for the RTSE variants PC, 3KC3 and 3KC4 from the corresponding manual or catalog.

**Key features of the 3VA**

| | Unit | 3VA1 160A | 3VA1 250A | 3VA2 100A | 3VA2 160A | 3VA2 250A | 3VA2 400A | 3VA2 630A |
|---|---|---|---|---|---|---|---|---|
| Compatible with standard for transfer switching equipment | | IEC60947-6-1 | IEC60947-6-1 | IEC60947-6-1 | IEC60947-6-1 | IEC60947-6-1 | IEC60947-6-1 | IEC60947-6-1 |
| Device class | | CB[1] | CB[1] | CB | CB | CB | CB | CB |
| Rated operational voltage $U_e$ AC 50 / 60 Hz | [V AC] | 480[3] | 480[3] | 480[3] | 480[3] | 480[3] | 480[3] | 480[3] |
| Rated operational current $I_n$ at 50 °C ambient temperature | [A] | 16 … 160 | 16 … 250 | 25 … 100 | 25 … 160 | 160 … 250 | 250 … 400 | 400 … 630 |
| Utilization category according to IEC 60947-6-1 | | AC-32B | AC-32B | AC-32B | AC-32B | AC-32B | AC-32B | AC-32B |
| Rated operational frequency | [Hz] | 50 / 60 | 50 / 60 | 50 / 60 | 50 / 60 | 50 / 60 | 50 / 60 | 50 / 60 |
| Short-time withstand current $I_{cw}$ at 1s | [kA] | 2[2] | 3[2] | n.a. | n.a. | n.a. | n.a. | n.a. |
| Impulse withstand voltage ($U_{imp}$) of the main circuit | [kV] | 8 | 8 | 8 | 8 | 8 | 8 | 8 |
| Impulse withstand voltage ($U_{imp}$) of the control circuit | [kV] | 4 | 4 | 4 | 4 | 4 | 4 | 4 |

1 PC if the 3VA is used as a switch disconnector
2 Applies to 3VA switch disconnector
3 Reduction due to maximum nominal voltage $U_n$ of the ATC6300 controller of 480 V AC

**Key features of the 3VL:**

| | Unit | 3VL 160X | 3VL 160 | 3VL 250 | 3VL 400 | 3VL 630 | 3VL 800 | 3VL 1250 | 3VL1600 |
|---|---|---|---|---|---|---|---|---|---|
| Compatible with standard for transfer switching equipment | | IEC60947 -6-1 | IEC60947 -6-1 | IEC60947 -6-1 | IEC60947 -6-1 | IEC60947 -6-1 | IEC60947 -6-1 | IEC60947 -6-1 | IEC60947 -6-1 |
| Device class | | CB | CB | CB | CB | CB | CB | CB | CB |
| Rated operational voltage $U_e$ AC 50/60 HZ | [V AC] | 480[1] | 480[1] | 480[1] | 480[1] | 480[1] | 480[1] | 480[1] | 480[1] |
| Rated operational current $I_n$ at 50 °C ambient temperature | [A] | 16 … 160 | 50 … 160 | 200 … 250 | 200 … 400 | 315 … 630 | 800 | 1000 … 1250 | 1600 |
| Utilization category according to IEC 60947-6-1 | | AC-32B | AC-32B | AC-32B | AC-32B | AC-32B | AC-32B | AC-32B | AC-32B |
| Rated operational frequency | [Hz] | 50 / 60 | 50 / 60 | 50 / 60 | 50 / 60 | 50 / 60 | 50 / 60 | 50 / 60 | 50 / 60 |
| Short-time withstand current $I_{cw}$ at 1s | [kA] | n.a. | n.a. | n.a. | n.a. | n.a. | n.a. | n.a. | n.a. |
| Impulse withstand voltage ($U_{imp}$) of the main circuit | [kV] | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 |
| Impulse withstand voltage ($U_{imp}$) of the control circuit | [kV] | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 |

[1] Reduction due to maximum nominal voltage $U_n$ of the ATC6300 controller of 480 V AC

### Key features of the 3WL, frame size 1-3:

| | | FS I | FS II | FS III |
|---|---|---|---|---|
| | **Unit** | **3WL11** | **3WL12** | **3WL13** |
| Compatible with standard for transfer switching equipment | | IEC60947-6-1 | IEC60947-6-1 | IEC60947-6-1 |
| Device class | | CB | CB | CB |
| Rated operational voltage $U_e$ AC 50 / 60 Hz | [V AC] | 480[1] | 480[1] | 480[1] |
| Rated operational current $I_n$ at 50 °C ambient temperature | [A] | 1000 ... 2000 | 800 ... 1600 | 4000 ... 6300 |
| Utilization category according to IEC 60947-6-1 | | AC-32B | AC-32B | AC-32B |
| Rated operational frequency | [Hz] | 50 / 60 | 50 / 60 | 50 / 60 |
| Short-time withstand current $I_{cw}$ at 1s | [kA] | 42, 50, 66[2] | 55; 66; 85; 100[2] | 100[2] |
| Impulse withstand voltage ($U_{imp}$) of the main circuit | [kV] | 12 | 12 | 12 |
| Impulse withstand voltage ($U_{imp}$) of the control circuit | [kV] | 2.5[3] | 2.5[3] | 2.5[3] |

1 Reduction due to maximum nominal voltage $U_n$ of the ATC6300 controller of 480 V AC
2 Dependent on the breaking capacity of the 3WL, see manual or catalog for further information.
3 For the motor operator, the $U_{imp}$ is 1.2 kV

### Key features of the 3WT:

| | | FS I | FS II |
|---|---|---|---|
| | **Unit** | **3WT8** | **3WT8** |
| Compatible with standard for transfer switching equipment | | IEC60947-6-1 | IEC60947-6-1 |
| Device class | | CB | CB |
| Rated operational voltage $U_e$ AC 50 / 60 Hz | [V AC] | 480[1] | 480[1] |
| Rated operational current $I_n$ at 50 °C ambient temperature | [A] | 400 ... 1600 | 630 ... 4000 |
| Utilization category according to IEC 60947-6-1 | | AC-32B | AC-32B |
| Rated operational frequency | [Hz] | 50 / 60 | 50 / 60 |
| Short-time withstand current $I_{cw}$ at 1s | [kA] | 35[2] / 50 | 66 |
| Impulse withstand voltage ($U_{imp}$) of the main circuit | [kV] | 12 | 12 |

1 Reduction due to maximum nominal voltage $U_n$ of the ATC6300 controller of 480 V AC
2 Applies to Ecoline. For further information, see the manual of the 3WT air circuit breaker.

### 7.3.3.1 Typical operating times of the Siemens SENTRON switching devices in accordance with IEC 60947-6-1 (IEC only)

The following typical operating times can be achieved with the ATC and Siemens circuit breakers in accordance with IEC 60947-6-1. Take the operating times for the 3KC3 and 3KC4 remotely operated transfer switching equipment from the corresponding manual or catalog.

**Note**

The tables below contain typical operating values. Check the operating times of the respective total installation under real conditions.

**Operating times of the 3VA**

| | Unit | 2x 3VA1 160A + 2x MO | 2x 3VA1 250A + 2x MO | 2x 3VA2 100A + 2x MO | 2x 3VA2 100A + 2x SEO | 2x 3VA2 160A + 2x MO |
|---|---|---|---|---|---|---|
| **Contact transfer time, off-time*** | ms | 900 | 900 | 1100 | 180 | 1100 |
| **Operating time I-O, II-O** | ms | 800 | 800 | 1000 | 80 | 1000 |
| **Transfer time I-O-II, II-O-I (for min parameter)*** | ms | 1700 | 1700 | 2100 | 260 | 2100 |

* Comprises the minimum delay time from Line I to Line II of 100 ms (see parameter P05.03) in the OFF position

| | Unit | 2x 3VA2 160A + 2x SEO | 2x 3VA2 250A + 2x MO | 2x 3VA2 250A + 2x SEO | 2x 3VA2 400A + 2x MO | 2x 3VA2 630A + 2x MO |
|---|---|---|---|---|---|---|
| **Contact transfer time, off-time*** | ms | 180 | 1100 | 180 | 1800 | 1800 |
| **Operating time I-O, II-O** | ms | 80 | 1000 | 80 | 1400 | 1400 |
| **Transfer time I-O-II, II-O-I (for min parameter)*** | ms | 260 | 2100 | 260 | 3200 | 3200 |

* Comprises the minimum delay time from Line I to Line II of 100 ms (see parameter P05.03) in the OFF position

### Operating times of the 3VL

| | Unit | 2x 3VL 160X + 2x MO | 2x 3VL 160X + 2x SEO | 2x 3VL 160 + 2x MO | 2x 3VL 160 + 2x SEO | 2x 3VL 250 + 2x MO | 2x 3VL 250 + 2x SEO | 2x 3VL 400 + 2x MO |
|---|---|---|---|---|---|---|---|---|
| **Contact transfer time, off-time*** | ms | 1100 | 200 | 1100 | 200 | 1100 | 200 | 1100 |
| **Time II-O, I-O** | ms | 1000 | 5000 | 1000 | 5000 | 1000 | 5000 | 1000 |
| **Time I-O-II (for min parameter)*** | ms | 2100 | 5200 | 2100 | 5200 | 2100 | 5200 | 2100 |

* Comprises the minimum delay time from Line I to Line II of 100 ms (see parameter P05.03) in the OFF position

| | Unit | 2x 3VL 400 + 2x SEO | 2x 3VL 630 + 2x MO | 2x 3VL 630 + 2x SEO | 2x 3VL 800 + 2x MO | 2x 3VL 800 + 2x SEO | 2x 3VL 1250 + 2x MO | 2x 3VL 1600 + 2x MO |
|---|---|---|---|---|---|---|---|---|
| **Contact transfer time, off-time*** | ms | 300 | 1100 | 350 | 1100 | 350 | 5100 | 5100 |
| **Time II-O, I-O** | ms | 5000 | 1000 | 5000 | 1000 | 5000 | 5000 | 5000 |
| **Time I-O-II (for min parameter)*** | ms | 5300 | 2100 | 5350 | 2100 | 5350 | 10100 | 10100 |

* Comprises the minimum delay time from Line I to Line II of 100 ms (see parameter P05.03) in the OFF position

### Operating times of the 3WL

| | Unit | 2 x 3WL11 | 2 x 3WL12 | 2 x 3WL13 |
|---|---|---|---|---|
| **Contact transfer time, off-time*** | ms | 180 | 200 | 200 |
| **Time I-O, time II-O** | ms | 73 | 73 | 73 |
| **Time I-O-II (for min parameter)*** | ms | 253 | 273 | 273 |

* Comprises the minimum delay time from Line I to Line II of 100 ms (see parameter P05.03) in the OFF position

### Operating times of the 3WT

| | Unit | 2x 3WT FSI | 2x 3WT FSII |
|---|---|---|---|
| **Contact transfer time, off-time*** | ms | 180 | 180 |
| **Time I-O, time II-O** | ms | 80 | 80 |
| **Time I-O-II (for min parameter)*** | ms | 260 | 260 |

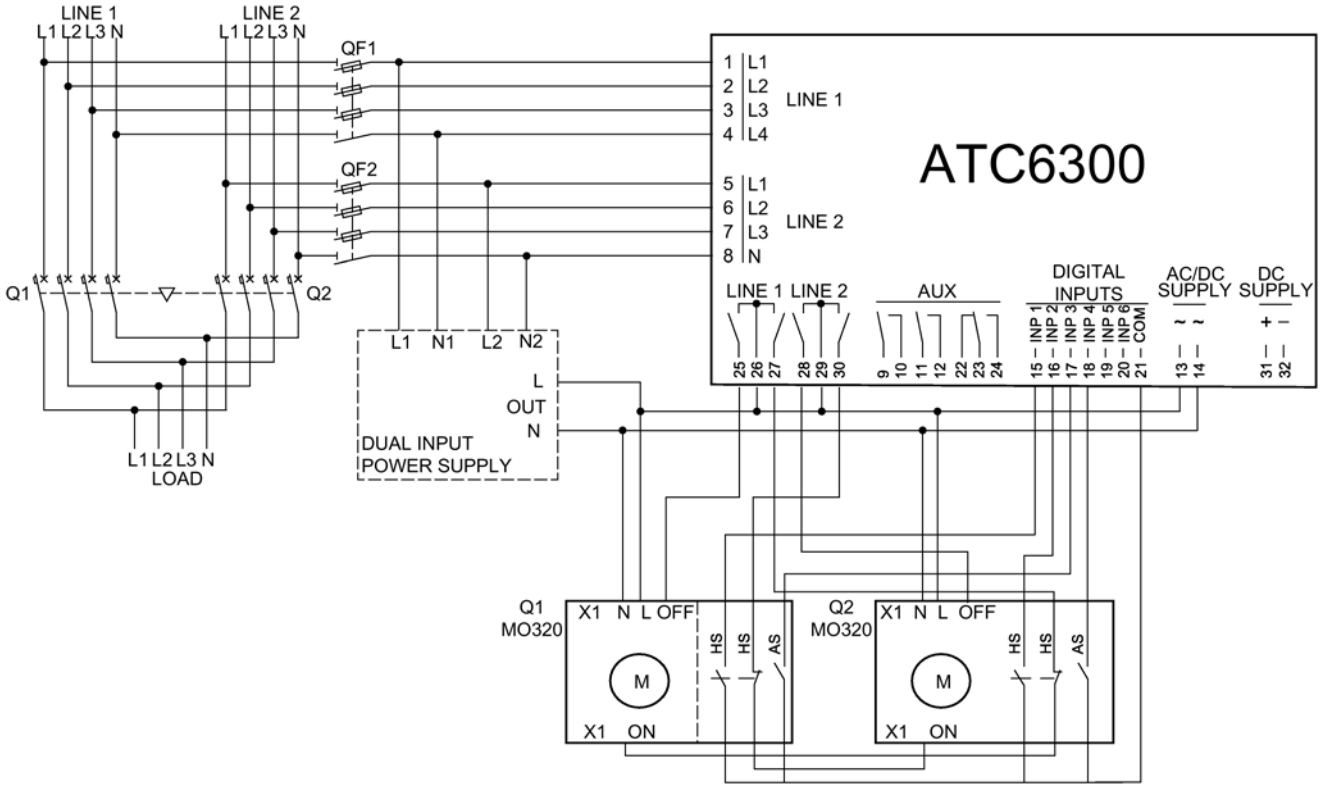
* Comprises the minimum delay time from Line I to Line II of 100 ms (see parameter P05.03) in the OFF position

**Note**

Observe the specifications of IEC 60947-6-1 when planning transfer switching equipment.

## 7.3.4 Connection of 3VA molded case circuit breakers

### 7.3.4.1 Connection of 3VA molded case circuit breakers - MO320 (IEC, UL)




| Code | Description |
|---|---|
| HS | Auxiliary switch (interlock) |
| HS | Auxiliary switch (status) |
| AS | Alarm auxiliary switch (trip) |
| X1 | Terminals of the motor operator |

**Note**

According to IEC regulations, the fusible element must be connected via a cable compliant with IEC 61439-1 which is protected against ground faults and short circuits. To this end, please observe the applicable national standards for electrical installations.

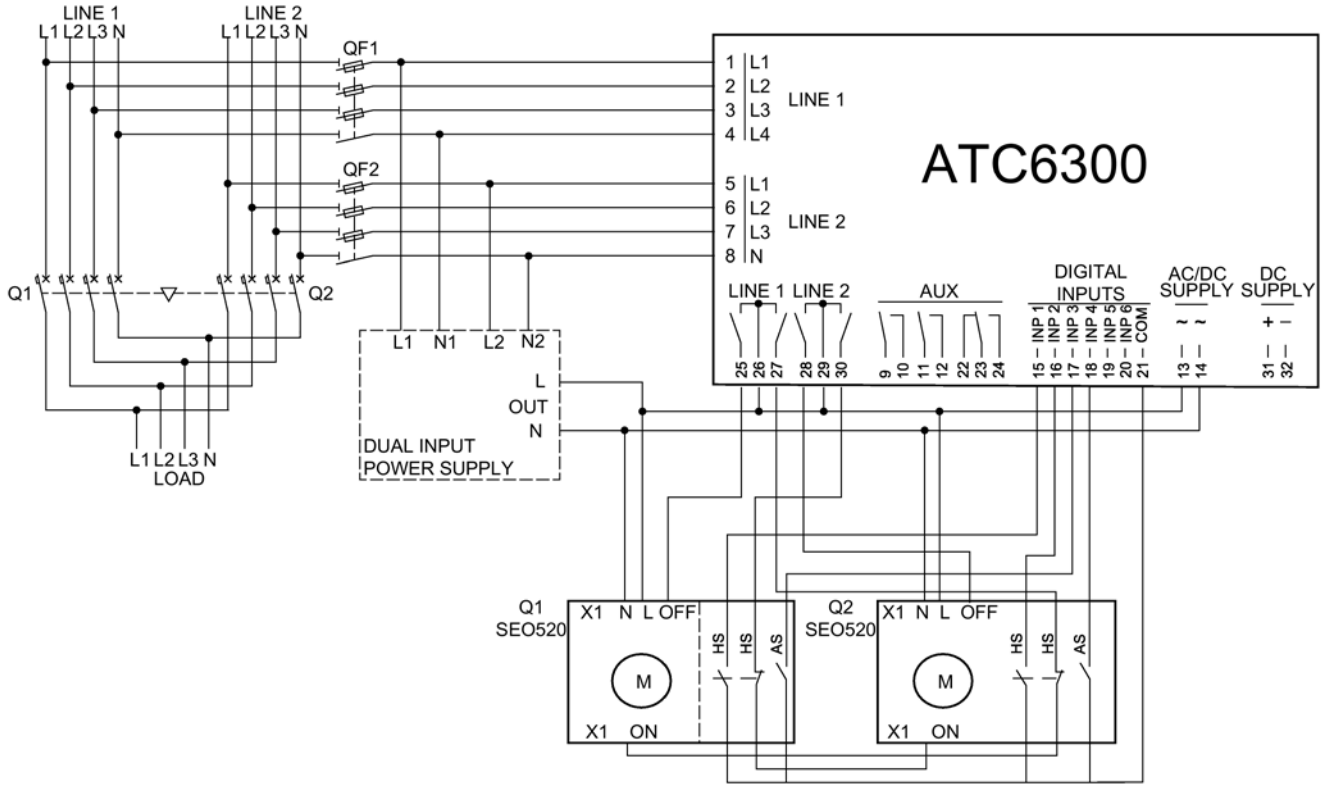
**Note**

The connection diagram shows a typical connection of the ATC with 3VA The connection diagram is valid for 230 V AC. All MO320 drives can be used. For this purpose the relevant technical specifications of the drive, the circuit breaker and the ATC6300 have to be observed. You can find more information on the technical specifications in the corresponding manuals.

You can find further information on this in the Operating instructions for the 3KC ATC6300 transfer control device (https://support.industry.siemens.com/cs/ww/en/view/109751946).

| General setting | | Table: Output function | | | Table: Input function | | |
|---|---|---|---|---|---|---|---|
| Parameter | Setting | Connection | Parameter | Setting | Connection | Parameter | Setting |
| P05.07 | Chg. Pul. | 25 | P11.04.01 | Open Line 1 circuit breaker | 15 | P10.01.01 | Line 1 breaker closed (feedback 1) |
| | | 27 | P11.05.01 | Close Line 1 circuit breaker | 16 | P10.02.01 | Line 2 breaker closed (feedback 2) |
| | | 28 | P11.06.01 | Open Line 2 circuit breaker | 17 | P10.03.01 | Line 1 circuit breaker protection (Trip 1) |
| | | 30 | P11.07.01 | Close Line 2 circuit breaker | 18 | P10.04.01 | Line 2 circuit breaker protection (Trip 1) |

### 7.3.4.2 Connection of 3VA molded case circuit breakers - SEO520 (IEC)




| Code | Description |
|---|---|
| HS | Auxiliary switch (interlock) |
| HS | Auxiliary switch (status) |
| AS | Alarm auxiliary switch (trip) |
| X1 | Terminals of the motor operator |

**Note**

According to IEC regulations, the fusible element must be connected via a cable compliant with IEC 61439-1 which is protected against ground faults and short circuits. To this end, please observe the applicable national standards for electrical installations.

**Note**

The connection diagram shows a typical connection of the ATC with 3VA The connection diagram is valid for 230 V AC. All SEO drives can be used. For this purpose the relevant technical specifications of the drive, the circuit breaker and the ATC6300 have to be observed. You can find more information on the technical specifications in the corresponding manuals.

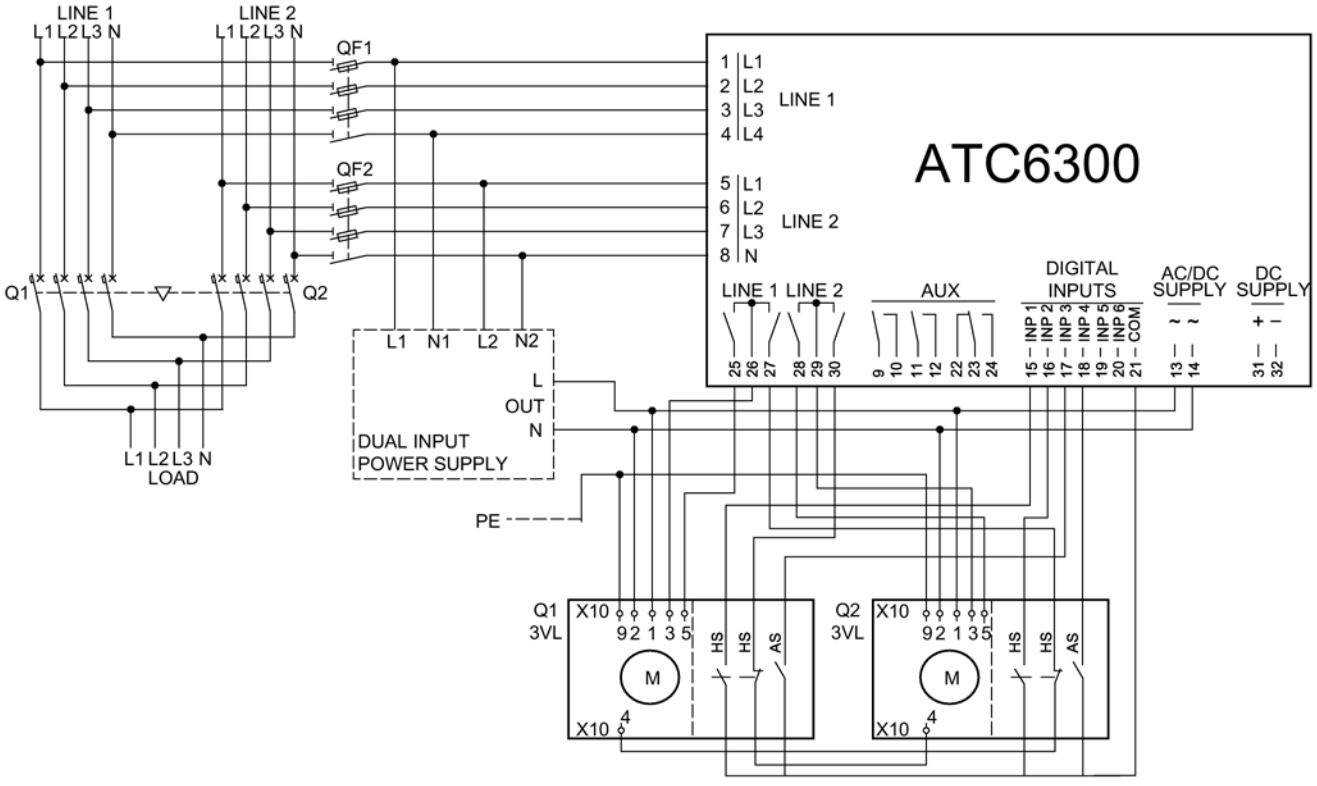
| **General setting** | | **Table: Output function** | | | **Table: Input function** | | |
|---|---|---|---|---|---|---|---|
| Param-eter | Setting | Con-nection | Param-eter | Setting | Con-nection | Param-eter | Setting |
| P05.07 | Chg. Pul. | 25 | P11.04.01 | Open Line 1 circuit breaker | 15 | P10.01.01 | Line 1 breaker closed (feedback 1) |
| | | 27 | P11.05.01 | Close Line 1 circuit breaker | 16 | P10.02.01 | Line 2 breaker closed (feedback 2) |
| | | 28 | P11.06.01 | Open Line 2 circuit breaker | 17 | P10.03.01 | Line 1 circuit breaker protection (Trip 1) |
| | | 30 | P11.07.01 | Close Line 2 circuit breaker | 18 | P10.04.01 | Line 2 circuit breaker protection (Trip 1) |

If the 3VA molded case circuit breaker is used in combination with an SEO, the following minimum parameters must be observed:

| | **P05.06 Delay, feedback signal** | **P06.07 Delay, voltage present** | **P06.08 Delay, Line 2 OK** | **P07.07 Delay, voltage present** | **P07.08 Delay, Line 1 OK** |
|---|---|---|---|---|---|
| 3VA22 | 2 s | 2 s | 2 s | 2 s | 2 s |

## 7.3.5 Connection of 3VL molded case circuit breakers

### 7.3.5.1 Connection of molded case circuit breakers 3VL 160X - 3VL 800 MO (IEC)




| Code | Description |
|---|---|
| HS | Auxiliary switch (interlock) |
| HS | Auxiliary switch (status) |
| AS | Alarm auxiliary switch (trip) |
| X10 | Terminals of the motor operator |

**Note**

According to IEC regulations, the fusible element must be connected via a cable compliant with IEC 61439-1 which is protected against ground faults and short circuits. To this end, please observe the applicable national standards for electrical installations.

**Note**

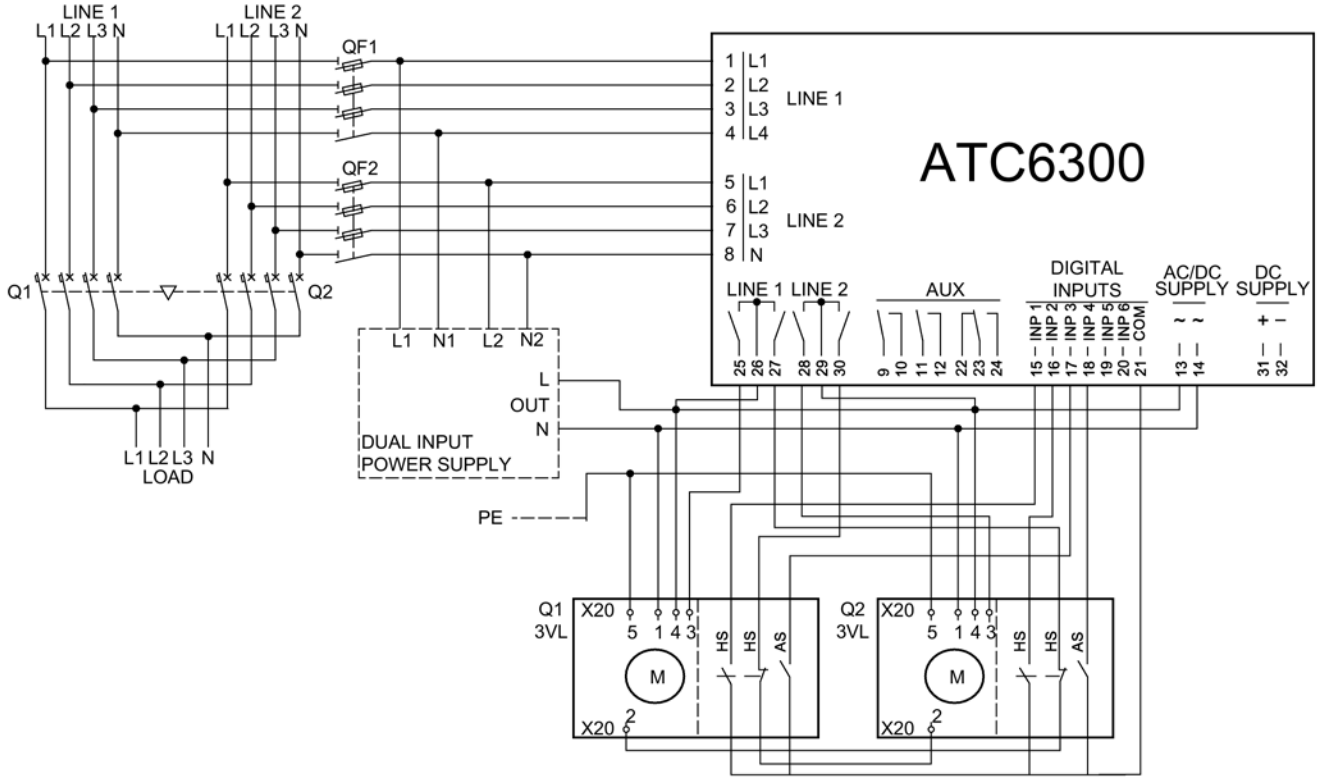
The connection diagram shows a typical connection of the ATC with 3VL. The connection diagram is valid for 230 V AC. All MO drives can be used. For this purpose the relevant technical specifications of the drive, the circuit breaker and the ATC6300 have to be observed. You can find more information on the technical specifications in the corresponding manuals.

| **General setting** | | **Table: Output function** | | | **Table: Input function** | | |
|---|---|---|---|---|---|---|---|
| Parameter | Setting | Connection | Parameter | Setting | Connection | Parameter | Setting |
| P05.07 | Chg. Pul. | 25 | P11.04.01 | Open Line 1 circuit breaker | 15 | P10.01.01 | Line 1 breaker closed (feedback 1) |
| | | 27 | P11.05.01 | Close Line 1 circuit breaker | 16 | P10.02.01 | Line 2 breaker closed (feedback 2) |
| | | 28 | P11.06.01 | Open Line 2 circuit breaker | 17 | P10.03.01 | Line 1 circuit breaker protection (Trip 1) |
| | | 30 | P11.07.01 | Close Line 2 circuit breaker | 18 | P10.04.01 | Line 2 circuit breaker protection (Trip 1) |

If the 3VL molded case circuit breaker is used in combination with MO, the following minimum parameters must be observed:

| | **P05.06 Delay, feedback signal** | **P06.07 Delay, voltage present** | **P06.08 Delay, Line 2 OK** | **P07.07 Delay, voltage present** | **P07.08 Delay, Line 1 OK** |
|---|---|---|---|---|---|
| 3VL8 | 5 s | 5 s | 5 s | 5 s | 5 s |

### 7.3.5.2 Connection of molded case circuit breakers 3VL 1250-1600 MO (IEC), 3VL 1200-1600 MO (UL), 3VL SEO (UL, IEC)




| Code | Description |
|---|---|
| HS | Auxiliary switch (interlock) |
| HS | Auxiliary switch (status) |
| AS | Alarm auxiliary switch (trip) |
| X20 | Terminals of the motor operator |

**Note**

According to IEC regulations, the fusible element must be connected via a cable compliant with IEC 61439-1 which is protected against ground faults and short circuits. To this end, please observe the applicable national standards for electrical installations.

**Note**

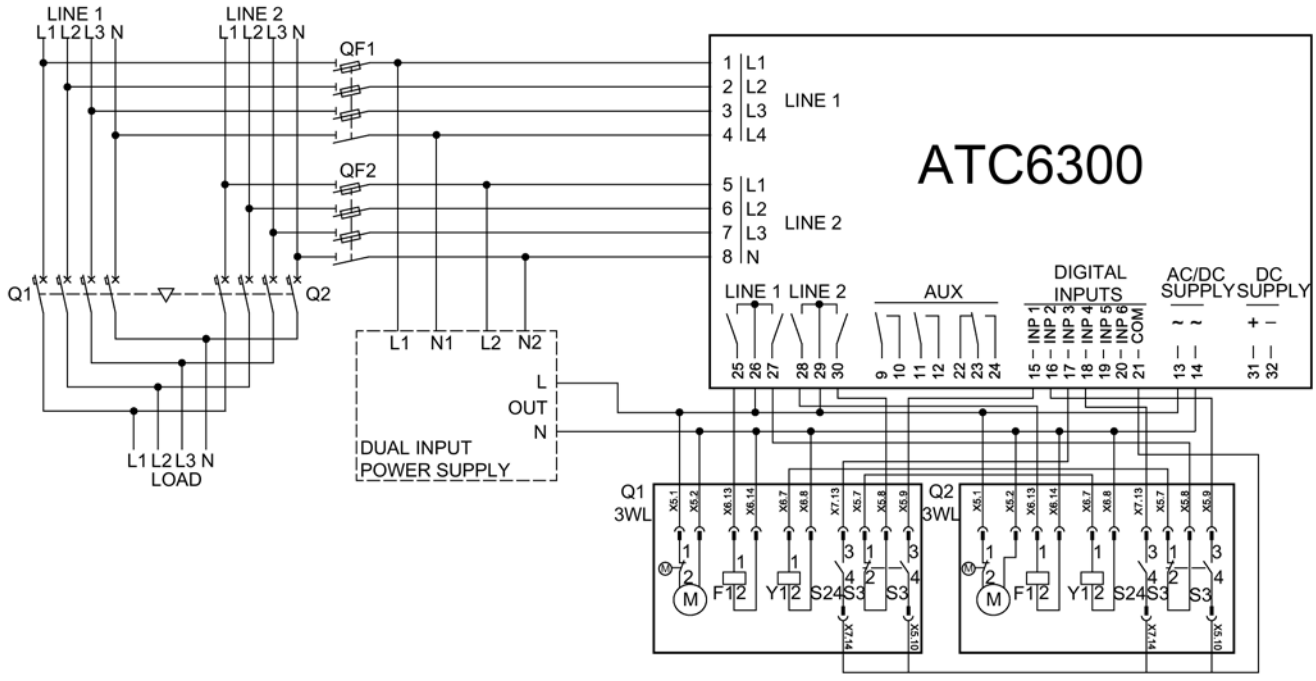
The connection diagram shows a typical connection of the ATC with 3VL. The connection diagram is valid for 230 V AC. All the above drives can be used. For this purpose the relevant technical specifications of the drive, the circuit breaker and the ATC6300 have to be observed. You can find more information on the technical specifications in the corresponding manuals.

| **General setting** | | **Table: Output function** | | | **Table: Input function** | | |
|---|---|---|---|---|---|---|---|
| Parameter | Setting | Connection | Parameter | Setting | Connection | Parameter | Setting |
| P05.07 | Chg. Pul. | 25 | P11.04.01 | Open Line 1 circuit breaker | 15 | P10.01.01 | Line 1 breaker closed (feedback 1) |
| | | 27 | P11.05.01 | Close Line 1 circuit breaker | 16 | P10.02.01 | Line 2 breaker closed (feedback 2) |
| | | 28 | P11.06.01 | Open Line 2 circuit breaker | 17 | P10.03.01 | Line 1 circuit breaker protection (Trip 1) |
| | | 30 | P11.07.01 | Close Line 2 circuit breaker | 18 | P10.04.01 | Line 2 circuit breaker protection (Trip 1) |

If the 3VL is used in combination with an SEO, the following minimum parameters must be observed:

| | **P05.06 Delay, feedback signal** | **P06.07 Delay, voltage present** | **P06.08 Delay, Line 2 OK** | **P07.07 Delay, voltage present** | **P07.08 Delay, Line 1 OK** |
|---|---|---|---|---|---|
| 3VL2 | 4 s | 4 s | 4 s | 4 s | 4 s |
| 3VL5 | 3 s | 3 s | 3 s | 3 s | 3 s |

## 7.3.6 Connection of 3WL air circuit breakers, FS I - III (IEC, UL)




| Code | Description |
|---|---|
| S3 (NC) | Auxiliary switch (interlock) |
| S3 (NO) | Auxiliary switch (status) |
| S24 | Alarm auxiliary switch (trip) |
| F1 | Auxiliary trip unit (shunt release) F1 |
| Y1 | Closing solenoid Y1 |
| M | Motor operator |

**Note**

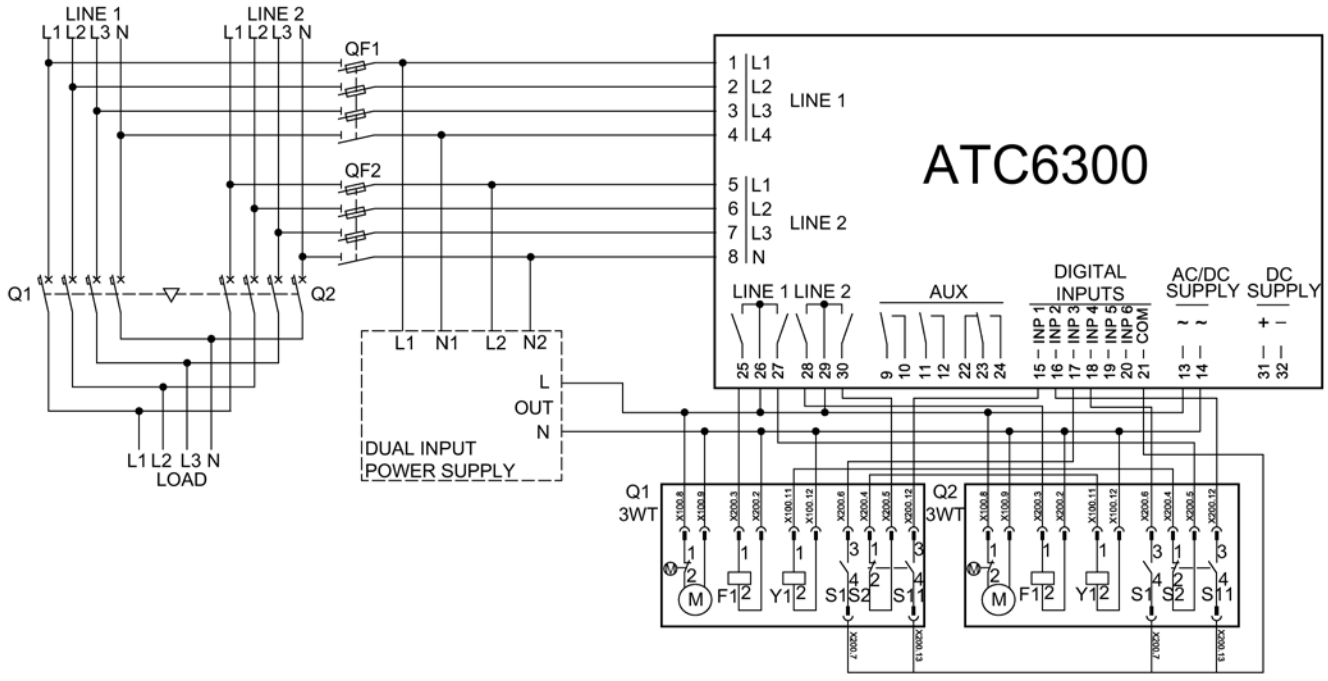
According to IEC regulations, the fusible element must be connected via a cable compliant with IEC 61439-1 which is protected against ground faults and short circuits. To this end, please observe the applicable national standards for electrical installations.

**Note**

The connection diagram shows a typical connection of the ATC with 3WL. The connection diagram is valid for 230 V AC. All drives can be used. For this purpose the relevant technical specifications of the drive, the circuit breaker and the ATC6300 have to be observed. You can find more information on the technical specifications in the corresponding manuals.

| **General setting** | | **Table: Output function** | | | **Table: Input function** | | |
|---|---|---|---|---|---|---|---|
| Parameter | Setting | Connection | Parameter | Setting | Connection | Parameter | Setting |
| P05.07 | Chg. Pul. | 25 | P11.04.01 | Open Line 1 circuit breaker | 15 | P10.01.01 | Line 1 breaker closed (feedback 1) |
| | | 27 | P11.05.01 | Close Line 1 circuit breaker | 16 | P10.02.01 | Line 2 breaker closed (feedback 2) |
| | | 28 | P11.06.01 | Open Line 2 circuit breaker | 17 | P10.03.01 | Line 1 circuit breaker protection (Trip 1) |
| | | 30 | P11.07.01 | Close Line 2 circuit breaker | 18 | P10.04.01 | Line 2 circuit breaker protection (Trip 1) |

## 7.3.7 Connection of 3WT air circuit breakers (IEC)




| Code | Description |
|---|---|
| S3 (NC) | Auxiliary switch (interlock) |
| S3 (NO) | Auxiliary switch (status) |
| S24 | Alarm auxiliary switch (trip) |
| F1 | Auxiliary trip unit (shunt release) F1 |
| Y1 | Closing solenoid Y1 |
| M | Motor operator |

**Note**

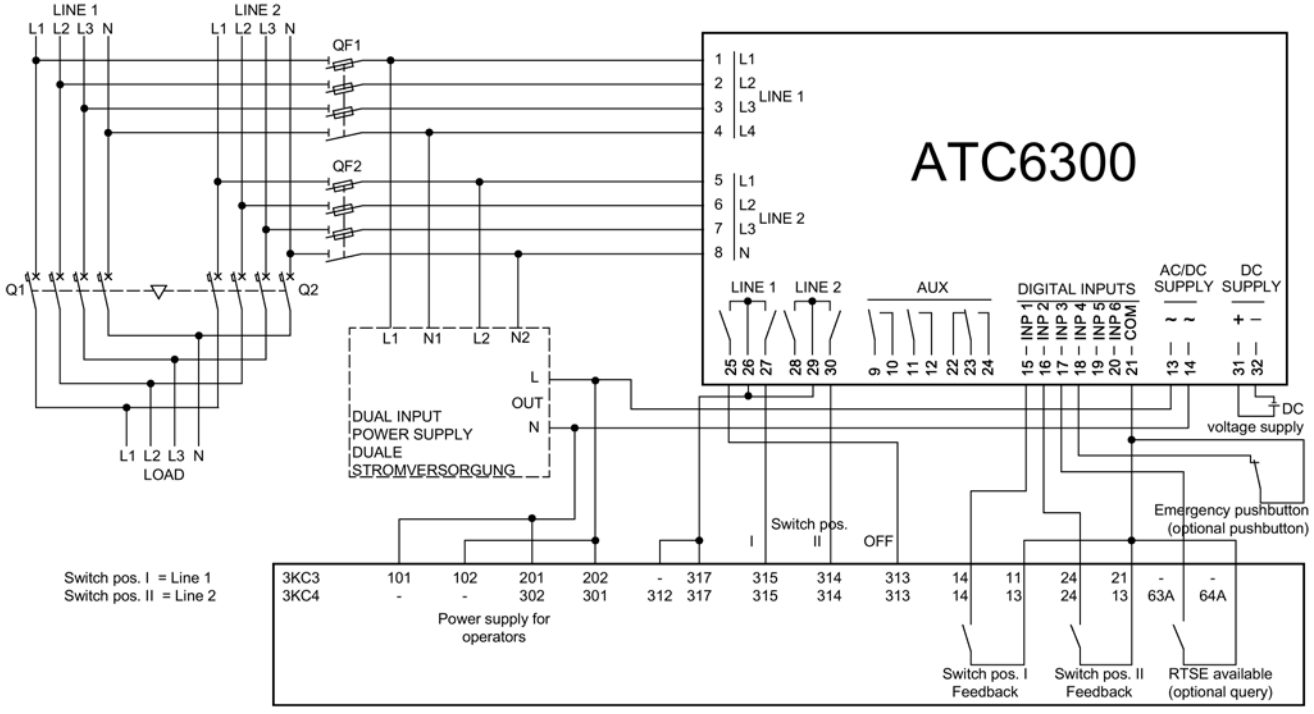
According to IEC regulations, the fusible element must be connected via a cable compliant with IEC 61439-1 which is protected against ground faults and short circuits. To this end, please observe the applicable national standards for electrical installations.

**Note**

The connection diagram shows a typical connection of the ATC with 3WT. The connection diagram is valid for 230 V AC. All drives can be used. For this purpose the relevant technical specifications of the drive, the circuit breaker and the ATC6300 have to be observed. You can find more information on the technical specifications in the corresponding manuals.

| General setting | | Table: Output function | | | Table: Input function | | |
|---|---|---|---|---|---|---|---|
| Parameter | Setting | Connection | Parameter | Setting | Connection | Parameter | Setting |
| P05.07 | Chg. Pul. | 25 | P11.04.01 | Open Line 1 circuit breaker | 15 | P10.01.01 | Line 1 breaker closed (feedback 1) |
| | | 27 | P11.05.01 | Close Line 1 circuit breaker | 16 | P10.02.01 | Line 2 breaker closed (feedback 2) |
| | | 28 | P11.06.01 | Open Line 2 circuit breaker | 17 | P10.03.01 | Line 1 circuit breaker protection (Trip 1) |
| | | 30 | P11.07.01 | Close Line 2 circuit breaker | 18 | P10.04.01 | Line 2 circuit breaker protection (Trip 1) |

## 7.3.8 Connection of the 3KC3 / 3KC4 transfer switching equipment




**Note**

According to IEC regulations, the fusible element must be connected via a cable compliant with IEC 61439-1 which is protected against ground faults and short circuits. To this end, please observe the applicable national standards for electrical installations.

**Programming of the parameters for the circuit diagram illustrated here**

| Terminal | Parameter code | Setting |
|---|---|---|
| --- | P05.07 | Changeover pulse or changeover continuous |
| 15(INP1) | P10.01.01 | Line 1 breaker closed (feedback 1) |
| 16(INP2) | P10.02.01 | Line 2 breaker closed (feedback 2) |
| 25(OUT4) | P11.04.01 | Open Line 1 / Line 2 |
| 27(OUT5) | P11.05.01 | Close Line 1 contactor/circuit breaker |
| 30(OUT7) | P11.07.01 | Close Line 2 contactor/circuit breaker |
| **Optional:** | | |
| 17(INP3) | P10.03.01 | Configurable |
| | P10.03.03 | NC (normally closed contacts) |
| | P15.01.01 | INPx |
| | P15.01.02 | 3 |
| | P15.01.03 | RTSE not available [1] |
| 18(INP4) | P10.04.03 | |
| | P10.04.01 | Emergency [2] |

[1] This message appears if the 3KC3 / 4 is in the manual mode, if it is de-energized, or if there is a mechanical defect on the RTSE.

[2] When the optional emergency pushbutton is confirmed, this message appears and the ATC switches the RTSE to the OFF position.

The following parameters must be observed for the 3KC3 / 3KC4.

| Parameter code | Description | Setting |
|---|---|---|
| P05.03 | Line 1 → Line 2 interlock time | ≥ 6 s |
| P05.04 | Line 1 ← Line 2 interlock time | ≥ 6 s |
| P05.06 | Maximum operating switch time | ≥ 5 s |
| P05.08 | Opening pulse duration | ≥ 1 s |
| P06.03 | Min voltage delay (Line 1) | ≥ 1 s |
| P06.06 | Max voltage delay (Line 1) | ≥ 1 s |
| P06.07 | Presence delay (when Line 2 source not available) | ≥ 5 s |
| P06.08 | Presence delay (when Line 2 source available) | ≥ 5 s |
| P07.03 | Min voltage delay (Line 2) | ≥ 1 s |
| P07.06 | Max voltage delay (Line 2) | ≥ 1 s |
| P07.07 | Presence delay (when Line 1 source not available) | ≥ 5 s |
| P07.08 | Presence delay (when Line 1 source available) | ≥ 5 s |
| A03 | Property: Retained alarm (see chapter Properties of alarms (Page 47) and Alarm table (Page 49)) | Disabled |
| | Property: Lock BRK1 (see chapter Properties of alarms (Page 47) and Alarm table (Page 49)) | |
| A04 | Property: Retained alarm (see chapter Properties of alarms (Page 47) and Alarm table (Page 49)) | Disabled |
| | Property: Lock BRK2 (see chapter Properties of alarms (Page 47) and Alarm table (Page 49)) | |

# Operation

# 8

## 8.1 Operating modes of the ATC6300

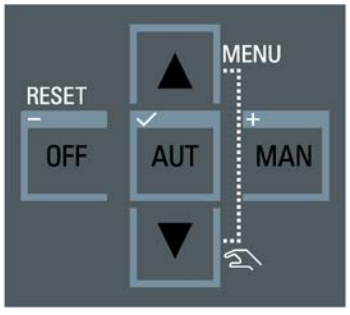
The ATC6300 transfer control device has three operating modes:

- OFF mode
- Manual mode
- Automatic mode

### 8.1.1 Setting the operating mode

The operating mode can be set using the keys on the ATC6300.

To set the mode, press the appropriate key OFF, MAN or AUT for 0.5 s.




**Note**

**Further procedure in manual mode**

In manual mode a dialog opens for selection of the line. For further information, please refer to chapter Manual mode (Page 102).

## 8.1.2 OFF mode (OFF)

In this mode the device is disabled and performs no actions.

All displays, both of the measurements and status LEDs, remain active.

If the transfer control devices are pulse controlled, both Open and Close controllers remain disabled in the OFF mode. In the case of continuous signal control, on the other hand, the behavior can be selected by means of Parameter P05.10.

To call up programming menus, you must always switch to the OFF mode first. By pressing the OFF/RESET key, retained alarms can be canceled, provided the causes of the alarms have been eliminated.

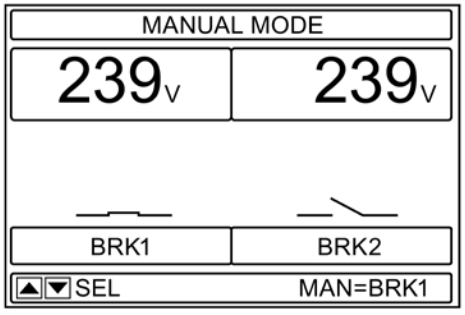
## 8.1.3 Manual mode (MAN)

In manual mode the switching devices can be controlled manually. This enables the user to switch freely between the power sources.

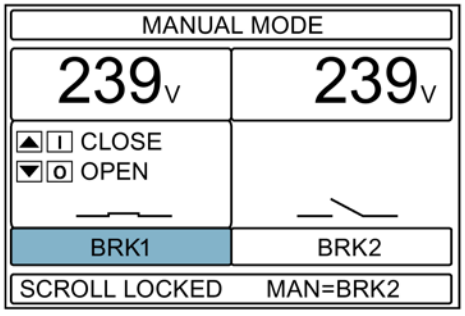
### Procedure for manual switching via the operator panel

**For the network/network application:**

1. Select the MAN operating mode.
   On selection of the mode, the following window opens:




2. Using the MAN key, select the source that you want to close.




3. Press the ▲ and ▼ keys to open or to close the selected source.

If the closing of one switching device is manually controlled, and provided the other is still closed, the mechanism first opens the other switching device and then closes the controlled switching device after the programmed delay time.

**Note**

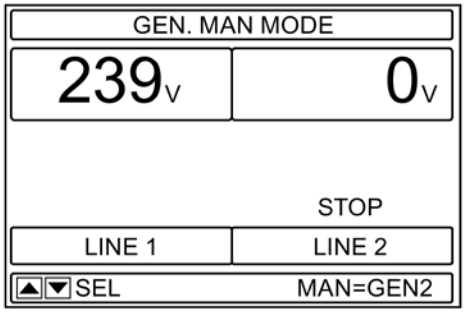
**Releasing locked pages**

As long as the opening/closing of the switching devices is enabled, scrolling through the pages is locked. By repeatedly pressing the MAN key, it can be released in order to open other pages.

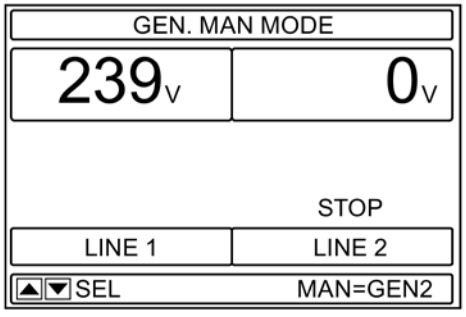
**In the case of a network/generator or generator/generator application:**

If gen-sets are used, these must first be started manually before they can be connected.

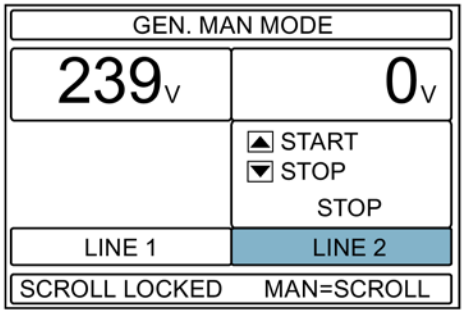
1. Select the MAN operating mode.
   On selection of the mode, the following window opens:



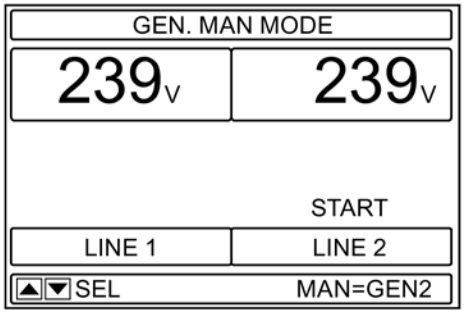

2. Press the ▼ key.
   This opens the window for manually starting the generator.



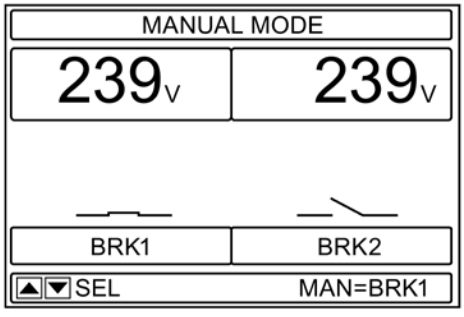
3. Using the MAN key, select the line that you want to close (in this case the generator is located on Line 2).




4. Press the ▲ and ▼ keys to start or stop the selected generator.
5. After starting the generator, press the MAN key again to return to the manual control (item 2).
   The generator has now been started.




6. Press the ▲ key to switch back to the manual activation of the switching devices.




7. Press the MAN key in order to select the switching device of Line 2 (see procedure for network/network application).
   The selected line is opened and closed by pressing ▲ and ▼.

If the closing of one switching device is manually controlled, and provided the other is still closed, the mechanism first opens the other switching device and then closes the controlled switching device after the programmed delay time.

If generators are being used, the generator continues running in the cooling mode after stopping.

### 8.1.4 Automatic mode (AUT)

The AUT mode is indicated by the illumination of the corresponding green LED.

In the automatic mode the mechanism automatically performs not only the opening and closing of the breakers, but also the switching on and off of the gen-sets, where present.

If the values of the priority line are outside the thresholds (green LED "Line presence" goes out), the unit disconnects the load from the priority line after expiry of the set delay and connects it to the secondary line. Not only the startup of any available generator, but also the switching and interlock time are controlled in this process.

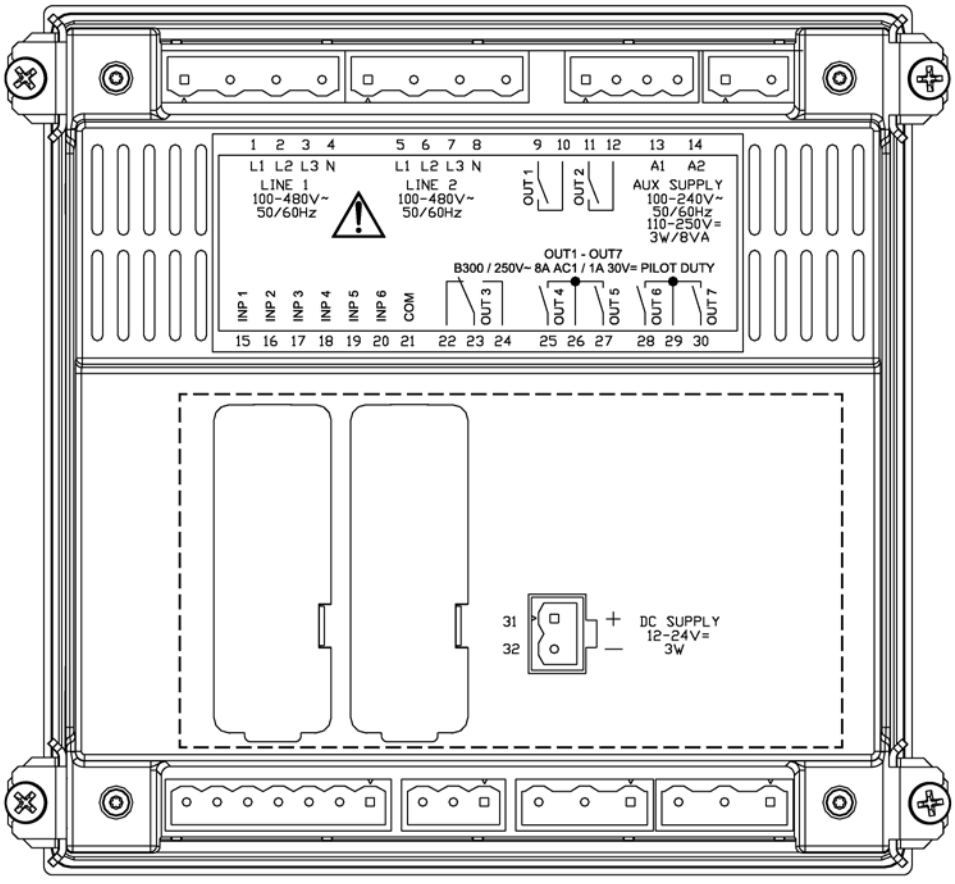
Using the parameter P05.05 in menu P05 Changeover, the unit can be programmed so that the priority line breaker is opened before or after the secondary line has been made available.

As soon as the priority line comes back within the limits, the unit will switch back the load on it and initiate the cooling of the generator. Furthermore, the parameter P05.12 can also be used to lock the automatic return to the priority line.

The cycles of automation operation vary not only according to the type of application (network/network, network/generator, generator/generator), but also depending on the type of switching device used (breakers with motor operators, transfer switching equipment with motor operators or contactors).

## 8.2 Designation and description of the inputs

The following inputs and outputs are present on the 3KC ATC6300 transfer control device.




### 8.2.1 Voltage measuring inputs

Inputs 1-8 are used for voltage measurement and thus for the automatic transfer system of the ATC6300.

| Designation | Pin | | Properties | Recommended cable cross-section |
|---|---|---|---|---|
| Voltage measurement Line I | 1 | L1 | 576 V AC (L-L) max.<br>333 V AC (L-N) max. | 0.2 - 2.5 mm² (24 - 12 AWG)<br>acc. to UL 508: 0.75 - 2.5 mm² (18 - 12 AWG) |
| | 2 | L2 | | |
| | 3 | L3 | | |
| | 4 | N | | |
| Voltage measurement Line II | 5 | L1 | | |
| | 6 | L2 | | |
| | 7 | L3 | | |
| | 8 | N | | |

## 8.2.2 Digital inputs INPx

The ATC6300 has 6 permanently integrated digital inputs which are designated as INPx. The number of digital inputs can be increased by using expansion modules. For further information on the expansion modules, please refer to chapter Expandability by modules (Page 41) and chapter Expansion modules (Page 175).

| Designation | Description | Mounted on the device | Maximum number with expansion modules |
|---|---|---|---|
| INPx | Digital input | 1 - 6 | 7 - 14 |

The function of the integrated digital inputs can be freely parameterized by the user:

- Maximum input current: 8 mA
- Maximum signal voltage for <0>: 2.2 V
- Minimum signal voltage for <1>: 3.4 V
- Minimum input signal delay: 50 ms

The following inputs are installed on the ATC6300:

| Designation | Pin | | | Recommended cable cross-section |
|---|---|---|---|---|
| Digital inputs INPx | 15 | INP1 | Digital input 1 | 0.2 - 2.5 $mm^2$ (24 - 12 AWG) acc. to UL 508 0.75 - 2.5 $mm^2$ (18 - 12 AWG) |
| | 16 | INP2 | Digital input 2 | |
| | 17 | INP3 | Digital input 3 | |
| | 18 | INP4 | Digital input 4 | |
| | 19 | INP5 | Digital input 5 | |
| | 20 | INP6 | Digital input 6 | |
| | 21 | COM | Common control terminal for inputs 1 - 6 | |

## 8.2.3 Addressing the expansion modules with digital inputs

If only one expansion module with digital inputs is installed in the ATC6300 it is designated INP7, 8 ... regardless of whether it is inserted in slot 1 or 2.
If there are 2 modules with inputs in the ATC6300, the module in slot 1 is addressed as INP7, 8 ... and the module in slot 2 as INP9, 10 ....

**Note**

**Expansion module removed**

If there are 2 modules in the device and the module in slot 1 is subsequently removed, then the addressing of the remaining module in slot 2 changes from INP9,10 to INP7, 8. The unit will point out this change at the necessary restart (see chapter Behavior of the ATC6300 after inserting a module (Page 44)).

### 8.2.4 Table of functions of the digital inputs

The table below lists all functions that can be assigned to the programmable digital inputs INPx.

Each input can be set for the reverse function NO, as well as delayed energizing or de-energizing, at independently set times. Some functions require another numeric parameter; this is defined in the index (x) specified by parameter **P10.n.02 Index (x)**.

For detailed information, see menu P10 - Digital inputs (Page 137).

**Note**

**Use of an index**

An index is used, if additional functions are to be used as a source for the input. For example, an input can function as a source for a counter or for a user alarm.

| Function | Description |
|---|---|
| Disabled | Input disabled |
| Configurable | Free configuration by the user |
| Feedback Line 1 | Auxiliary contact informing the ATC6300 whether the breaker of Line 1 is open / closed. If this signal is not connected, the breaker for the ATC6300 has the same status as the control outputs. |
| Feedback Line 2 | Auxiliary contact informing the ATC6300 whether the breaker of Line 2 is open / closed. If this signal is not connected, the breaker for the ATC6300 has the same status as the control outputs. |
| Fault breaker Line 1 tripped (Trip 1) | If the contact is closed, it generates an alarm of Line 1 circuit breaker protection intervention. |
| Fault breaker Line 2 tripped (Trip 1) | If the contact is closed, it generates an alarm of Line 2 circuit breaker protection intervention. |
| Transfer to secondary line (remote switching) | If this contact is closed, the transfer to the secondary line is initiated even if the voltage of the priority line is within the limit thresholds. It can be used for switching the priorities between Line 1 and Line 2. The secondary line circuit breaker remains activated for as long as this line is within the limit thresholds. Can be used for the EJP function. |
| Inhibit automatic return to priority line | If this contact is closed, it inhibits the automatic return to the priority line if this supply is within the limit thresholds again. It is used to prevent automatic return from causing a further power cut at an unforeseeable time. |
| Generator start (remote start without load) | If this contact is closed, it causes the generator to start after the time set in P05.14 when in the AUT mode. Can be used for the EJP function. |

| Function | Description |
|---|---|
| Emergency | If this NC contact is open, both circuit breakers are opened and alarm A09 is triggered (the locking properties of A09 have priority). |
| Generator ready 1 | The closed contact signals that the generator connected to Line 1 is available for use. If this signal is missing, alarm A12 is triggered. |
| Generator ready 2 | The closed contact signals that the generator connected to Line 2 is available for use. If this signal is missing, alarm A13 is triggered. |
| External Line 1 control | Line 1 voltage control signal received from external device. When enabled, it indicates that the voltage is within the limit thresholds. |
| External Line 2 control | Line 2 voltage control signal received from external device. When enabled, it indicates that the voltage is within the limit thresholds. |
| Enable load on Line 1 | Issues the enable for the connection of the load to Line 1, in addition to the internal controls. |
| Enable load on Line 2 | Issues the enable for the connection of the load to Line 2, in addition to the internal controls. |
| Set Delay 1 Bypass to zero (Bypass Del. 1) | Sets the times defined under parameters P06.07 and P06.08 to the minimum value. |
| Set Delay 2 Bypass to zero (Bypass Del. 2) | Sets the times defined under parameters P07.07 and P07.08 to the minimum value. |
| Keypad lock | If this contact is closed, it locks all functions from front keypad except for display of measurements. |
| Lock parameters | If this contact is closed, the access to the setup menu is locked. |
| Lock remote control | Prevents the execution of command and write processes over the serial interface. The reading of data remains possible. |
| Reset siren | Disables the siren. |
| Start automatic test | Starts the periodic test managed by an external timer. |
| Battery charger alarm | When input is enabled, this generates alarm A08 "External battery charger fault". The alarm is only generated if there is mains voltage. |
| Alarms inhibition | If enabled, this function disables the alarms that have the property "Inhibit alarms" activated. |
| Alarms reset | Reset of the retained alarms the triggering cause of which no longer exists. |
| Command menu C(xx) | Executes the command from the command menu defined by the parameter index (xx). |
| Key OFF simulation | Closing the input is the equivalent of pressing the OFF key. The operating mode is changed accordingly. |
| Key MAN simulation | Closing the input is the equivalent of pressing the MAN key. The operating mode is changed accordingly. |

| Function | Description |
|---|---|
| Key AUT simulation | Closing the input is the equivalent of pressing the AUT key. The operating mode is changed accordingly. |
| Automatic test inhibition | Inhibits the automation test. |
| LED test | Makes all the LEDs on the front panel flash. |
| Close Breaker 1 (BRK 1) | In the manual mode this function closes the Breaker 1. |
| Open Breaker 1 (BRK 1) | In the manual mode this function opens the Breaker 1. |
| Toggle Breaker 1 (BRK 1) | In the manual mode this function toggles the status of Breaker 1. |
| Close Breaker 2 (BRK 2) | In the manual mode this function closes the Breaker 2. |
| Open Breaker 2 (BRK 2) | In the manual mode this function opens the Breaker 2. |
| Toggle Breaker 2 (BRK 2) | In the manual mode this function toggles the status of Breaker 2. |
| Auxiliary voltage ready | If this NC contact is open, alarm A18 is triggered. |
| Revision | If enabled, this function causes the following reactions during revision of the system:<br>• switch to OFF mode<br>• disabling of feedback alarms A03-A04<br>• enabling of any undervoltage release |

# 8.3 Designation and description of the outputs

## 8.3.1 Digital outputs OUTx

The ATC6300 has 7 permanently integrated digital outputs which are designated as OUTx.

| Designation | Description | Mounted on the device | Maximum number with expansion modules |
|---|---|---|---|
| OUTx | Digital output | 1 - 7 | 8 - 15 |

The function of the integrated digital outputs can be freely parameterized by the user:

The following outputs are installed on the ATC6300:

| Designation | Pin | | | | Recommended cable cross-section |
|---|---|---|---|---|---|
| Digital outputs OUTx | 9<br>10 | OUT 1 | Digital output 1 | 1 NO contact<br>8 A AC1 250 V AC<br>8 A DC1 30 V DC<br>1.5 A AC15 250 V DC | 0.2 - 2.5 mm²<br>(24 - 12 AWG)<br>acc. to UL 508:<br>0.75 - 2.5 mm²<br>(18 - 12 AWG) |
| | 11<br>12 | OUT 2 | Digital output 2 | 1 NO contact<br>8 A AC1 250 V AC<br>8 A DC1 30 V DC<br>1.5 A AC15 250 V DC | |
| | 22<br>23<br>24 | OUT 3 | Digital output 3 | 1 CO contact<br>8 A AC1 250 V AC<br>1.5 A AC15 250 V DC | |
| | 25 | OUT 4 | Digital output 4 | 2x 1 NO contacts<br>8 A AC1 250 V AC<br>8 A DC1 30 V DC<br>1.5 A AC15 250 V DC | |
| | 26 | | Common control terminal for pins 25 and 27 | | |
| | 27 | OUT 5 | Digital output 5 | | |
| | 28 | OUT 6 | Digital output 6 | 2x 1 NO contacts<br>8 A AC1 250 V AC<br>8 A DC1 30 V DC<br>1.5 A AC15 250 V DC | |
| | 29 | | Common control terminal for pins 28 and 30 | | |
| | 30 | OUT 7 | Digital output 7 | | |

The function of the outputs can be selected from preprogrammed functions.

The setting is made via the Menu P11 (see chapter P11 - Digital outputs (Page 138)). Every output can be configured for normal or reverse function (NOR or REV).

Some functions require another numeric parameter. This is specified by parameters by means of an index.

**Note**

**Use of an index**

An index is used if additional functions are to be used as a source for the output.

For example, an output can function as a source for a counter or for a user alarm.

On replacement or subsequent modification of the modules, attention must be paid to the addressing. This behaves like the addressing of the digital inputs (see chapter Addressing the expansion modules with digital inputs (Page 107)).

## 8.3.2 Table of functions of the digital outputs

The table below lists all functions that can be assigned to the programmable digital outputs OUTx.

| Function | Description |
|---|---|
| Disabled | Output disabled |
| Configurable | Free configuration by the user. |
| Close Line 1 contactor/circuit breaker | Command to close the contactor/circuit breaker of Line 1. |
| Open Line 1 contactor/circuit breaker | Command to open the circuit breaker of Line 1 with possible spring load. |
| Close Line 2 contactor/circuit breaker | Command to close contactor/circuit breaker of Line 2. |
| Open Line 2 contactor/circuit breaker | Command to open the circuit breaker of Line 2 with possible spring load. |
| Open Line 1 and Line 2 | Open both circuit breakers / neutral position of the transfer switching equipment with motor operator. |
| Min coil Line 1 | Controls the undervoltage release by opening breaker 1 before the spring load cycle. |
| Min coil Line 2 | Controls the undervoltage releases by opening breaker 2 before the spring load cycle. |
| Line 1 generator control | Control of the Start / Stop remote control of the generator on Line 1. |
| Line 2 generator control | Control of the Start / Stop remote control of the generator on Line 2. |
| ATC ready | ATC in automatic mode, without alarms, ready to switch. |
| Global alarm | Output enabled in the presence of any alarm with the property "Global alarm enabled". |
| Line 1 status | This output is enabled if all conditions for the connection of the load to Line 1 have been met. |
| Line 2 status | This output is enabled if all conditions for the connection of the load to Line 2 have been met. |
| Siren | Supplies power to the siren for the acoustic signal. |
| Operating mode | This output is enabled if the ATC is in one of the operating modes set with parameter P12.03. |
| OFF mode | Enabled if the ATC is in the OFF mode. |
| MAN mode | Enabled if the ATC is in the MAN mode. |
| AUT mode | Enabled if the ATC is in the AUT mode. |
| Remote variable REM (x) | Output controlled by remote variable REMx (x=1..8). |
| Limit threshold LIM (x) | Output controlled by the status of the limit threshold LIM(x), (x=1..4); defined by the Index parameter. |
| Dummy (dummy load) | This output is enabled if the automatic test is performed with dummy load. |

| Function | Description |
|---|---|
| Load connected to Line 1 | Breaker 1 closed. |
| Load connected to Line 2 | Breaker 2 closed. |
| Alarms A01-Axx | This output is enabled if the alarm Axx is active (xx=1…Number of alarms) |
| Alarms UA1..Uax | This output is enabled if the alarm Uax is active (x=1…4) |

# Parameterization

# 9

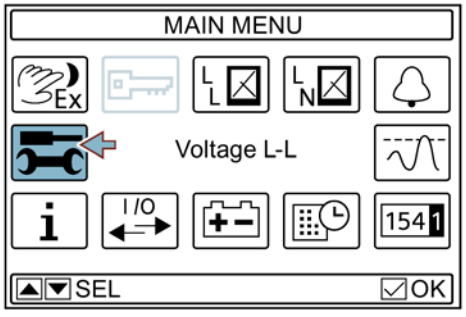
The ATC6300 can be parameterized in various ways:

- Via the user interface
- Via the powerconfig software (Version 3.10 or higher)

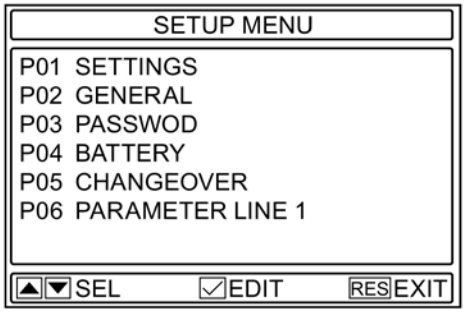
## 9.1 Parameterization via the user interface

The device can be parameterized on site using the setup menu on the ATC6300.

1. Make sure that the ATC is in the OFF mode
2. Then open the main menu, as described in chapter Description of main menu (Page 22).
3. Enter the password (see chapter Password protection (Page 36)).
4. Select the Setup symbol.




On selecting the setup menu, the following window opens:




This contains submenus listing all parameters according to function-related criteria.

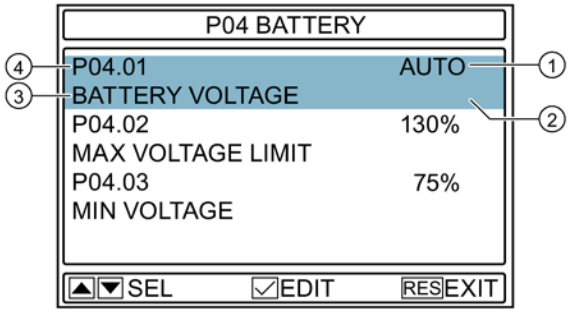
5. Select the required menu with the ▲ or ▼ keys and confirm with ✓.
6. To exit the setting and return to the display of measurements, press RESET/OFF.

The following submenus are available in the setup menu:

| Code | Designation | Description |
|---|---|---|
| P01 | SETTINGS | Language, brightness, display pages etc. |
| P02 | GENERAL | Key system data |
| P03 | PASSWORD | Setting of the access code |
| P04 | BATTERY | Battery parameters |
| P05 | CHANGEOVER | Basic settings regarding load changeover |
| P06 | PARAMET. LINE1 | Limit thresholds relating to Line I |
| P07 | PARAMET. LINE2 | Limit thresholds relating to Line II |
| P08 | COMMUNICATION | Communication parameters |
| P09 | AUTOMAT. TEST | Period, duration, mode of automatic test |
| P10 | DIGIT. INPUTS | Programmable functions of the digital inputs |
| P11 | DIGIT. OUTPUTS | Programmable functions of the digital outputs |
| P12 | MISCELLANEOUS | Functions such as maintenance etc. |
| P13 | LIMITS | Programmable limit thresholds |
| P14 | COUNTERS | Programmable generic counters |
| P15 | USER ALARMS | Programmable alarms |
| P16 | ALARM TABLE | Alarms effect enabling |

The submenus list all parameters with their code, description and actual setting

The example below shows the P04 Battery submenu:




① Present setting value
② Currently selected parameter
③ Parameter description
④ Parameter code

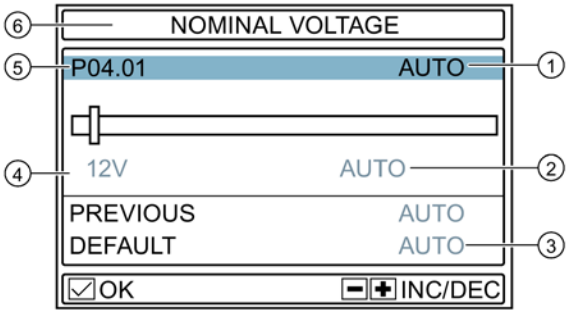
To change the value of a parameter, select it and press ✓.

**Note**

**Access denial**

If the password has been enabled for the advanced level, access to this editing page is not possible and the access denied message is displayed.

If access is possible, the following window appears:




① New value entered
② Maximum possible setting
③ Factory default setting
④ Minimum possible setting
⑤ Parameter code
⑥ Parameter description

This window contains information on the range of values, the minimum and maximum values, the previous setting, and the factory default setting.

## 9.1.1 Changing the parameters

- The parameters can be changed using the **+** and **–** keys.
- Pressing the **+** and **–** keys simultaneously leads to the factory setting.
- For a text string entry, the character is selected using the ▲ and ▼ keys and the cursor is moved through the text using the **+** and **–** keys.
- By pressing ▲ and ▼ simultaneously in the case of a text entry, the character selection is set to the letter A.
- By pressing the ✓ key, the currently selected parameter is stored.
  The device then returns to the menu one level above this (in this case, to the P04 Battery diagram).
- You can exit the setup menu by pressing OFF.

**Note**

**Restart after parameter change**

After each parameter change the device executes a restart. If it remains in the setup menu for more than two minutes without any changes being made, the device will also restart. After the restart, the ATC is in the OFF mode.

**Note**

**Saving parameters**

Only those parameters that can be changed via the keypad are stored in the backup memory of the device. Via the command menu (Page 53) the current parameters can be saved with the C12 command and the stored parameters can be loaded from the backup memory with the C13 command.

## 9.2 Parameterization via the powerconfig software

### 9.2.1 Procedure for parameterization via powerconfig

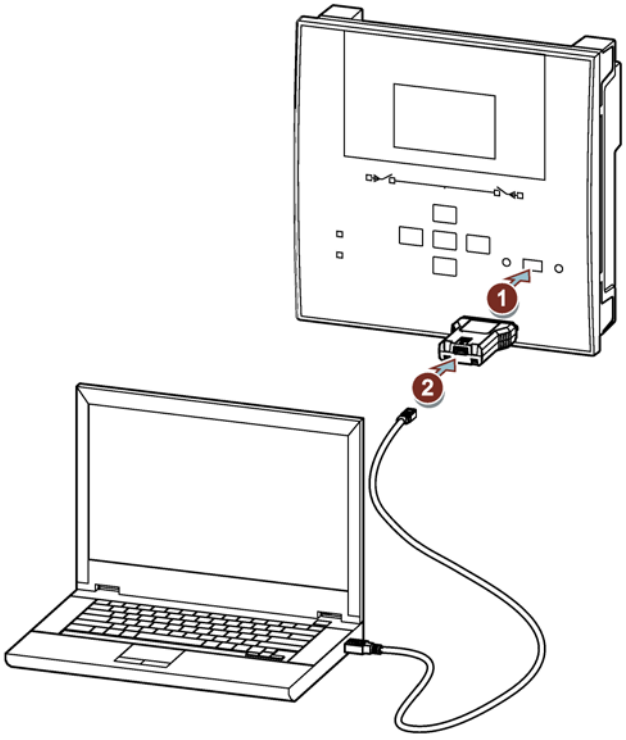
In order to parameterize the device using the powerconfig software you require one of the following accessories:

- USB front interface 3KC9000-8TL73
- One of the expansion modules for communication: 3KC9000-8TL74 (RS-485) or 3KC9000-8TL75 (Ethernet).

## 9.2.2 Parameterization via the front interface

### 9.2.2.1 Attaching the front interface

1. Secure the adapter for the front interface in the ATC6300.
2. Connect the supplied USB connecting cable (length 1.5 m) to the adapter and to your PC.
3. Launch the powerconfig software.
4. Parameterize the device.




Further information on the subject of powerconfig (https://support.industry.siemens.com/cs/ww/en/ps/19790) can be found on the Internet.

By means of the USB front interface, the device can be parameterized without the need for a cutout in the cabinet door (3KC9000-8TL73).

This is electrically isolated from the circuits of the ATC6300.

**Note**

**Software required**

In order to parameterize the device using the USB front interface you require the powerconfig software, version 3.10 or higher.

### 9.2.3 Parameterization via the expansion modules for communication

**Note**

**Requirement**

In order to parameterize the device using the expansion modules for communication you require the powerconfig software, version 3.10 or higher.

#### Procedure for parameterization

1. Attach the corresponding expansion module 3KC9000-8TL74 (RS-485) or 3KC9000-8TL75 (Ethernet). See chapter Inserting an expansion module (Page 43).
2. Connect the expansion module to your PC using a suitable cable.
   - For the expansion module RS485 see chapter Expansion module RS485 (Page 190).
   - For the expansion module Ethernet see chapter Expansion module Ethernet (Page 192).
3. Launch the powerconfig software.
4. Parameterize the device.

Further information on the subject of powerconfig (https://support.industry.siemens.com/cs/ww/en/ps/19790) can be found on the Internet.

#### See also

Expandability by modules (Page 41)

## 9.3 Parameters

The parameters of the ATC6300 that can be set are listed below. Due to the limited space in the diagram, abbreviations are used on the ATC6300. The full and precise description of the parameters on the device can be seen in the tables below.

## 9.3.1 P01 - Settings

| P01 Settings | Designation on ATC display | Description | Unit | Default | Range |
|---|---|---|---|---|---|
| P01.01 | Language | Sets the language<br>– This parameter is used for setting the language of the user interface. | | English | English<br>Italiano<br>Francais<br>Espanol<br>Deutsch |
| P01.02 | Clock setting PWR ON | Setting of the real-time clock when switching on the power supply<br>– This parameter determines whether the real-time clock is to be reset or not after each startup. | | OFF | OFF-ON |
| P01.03 | Op. mode at power on | Operating mode after switching on<br>– This parameter determines which mode the ATC6300 enters after switching on. It can either be always switched on in the operating mode OFF, or in the last operating mode used before the device was switched off. | | Previous | OFF mode<br>Previous |
| P01.04 | Display contrast | Display contrast<br>– This can be used to adjust the contrast of the LCD display. | % | 50 | 0-100 |
| P01.05 | High backlight level | High backlight level<br>– This parameter sets the bright LCD backlighting. | % | 100 | 0-100 |
| P01.06 | backlight delay | Low backlight level<br>– This parameter sets the low LCD backlighting. | % | 25 | 0-50 |
| P01.07 | Load no backlight delay | Delay low LCD backlighting<br>– This allows you to set a delay time, after which the ATC6300 switches to low backlighting. | s | 180 | 5-600 |
| P01.08 | ret. page return | Default page return<br>– This parameter controls whether the device switches to a default page defined under P01.09 if no key is pressed within a specific time. If this parameter is set to OFF, the ATC6300 always remains on the last page to be opened. | s | 300 | OFF / 10-600 |
| P01.09 | Default page | Selection of the default page<br>– This parameter is used to select a new default page from the existing display pages of the ATC6300. In connection with P01.08, a switch is made to this page after a certain time. | | VL-L | (List with display pages) |
| P01.10 | Transfer Switch ID | Plant identifier<br>– You can enter any alphanumeric description of the plant here. | | SIEMENS ATC6300 | String 20 chr. |

## 9.3.2 P02 - General

| P02 General | Designation on ATC display | Description | Unit | Default | Range |
|---|---|---|---|---|---|
| P02.01 | Nominal voltage | Nominal voltage of the plant<br>– The nominal voltage of the power supplies must be specified here.<br>**Note:** In the case of polyphase systems, always specify the line-to-line voltage (L-L). | VAC | 400 | 50-50000 |
| P02.02 | VT Use | Use of a voltage transformer (VT)<br>– This parameter is used if the line-to-line voltage is higher than 480 VAC and thus voltage transformers are used at the measuring inputs. | | OFF | OFF-ON |
| P02.03 | VT Primary | Primary circuit of the voltage transformer<br>– The primary circuit of a possible voltage transformer is defined here. | V | 100 | 50-50000 |
| P02.04 | VT Secondary | Secondary circuit of the voltage transformer<br>– The secondary circuit of a possible voltage transformer is defined here. | V | 100 | 50-500 |
| P02.05 | Phase sequence | Checking the phase sequence<br>– This parameter enables the checking of the phase sequence.<br>OFF = no check<br>Direct = L1-L2-L3.<br>Reverse = L3-L2-L1.<br>**Note:** Enable the corresponding alarms for this as well. | | OFF | OFF<br>L1-L2-L3<br>L3-L2-L1 |
| P02.06 | Wiring configuration | Wiring configuration<br>– The type of the system is defined here:<br>Three-phase with neutral conductor L1 – L2 – L3 - N<br>Three-phase without neutral conductor L1 – L2 – L3<br>Two-phase L1 – N – L2<br>Single phase L1 – N | | L1-L2-L3-N | L1-L2-L3-N<br>L1-L2-L3<br>L1-N-L2<br>L1-N |
| P02.07 | Voltage control | Selecting the voltage measurement<br>– This defines how the voltage measurement is to be performed. You can select from the measurement of the line-to-line voltage, the phase voltage, or both at the same time. | | L-L | L-L<br>L-N<br>L-L + L-N |
| P02.08 | Nominal frequency | Nominal frequency of the system<br>– The nominal frequency of the power supplies is defined here. | | 50 Hz | 50 Hz<br>60 Hz |

### 9.3.3 P03 - Password

The parameters for enabling / disabling the password are described below.

For entering the password, please refer to chapter Password protection (Page 36)

**Note**

**Note the password**

Please make a note of the new password that has been entered. Loss of this password means that the device can no longer be parameterized. Please contact Technical Support if you have lost the password.

| P03 Password | Designation on ATC display | Description | Default | Range |
|---|---|---|---|---|
| P03.01 | Password Password | Enabling the password protection<br>– If this parameter is set to OFF, no password protection is enabled. This means that all parameters can be changed on access to the ATC. | ON | OFF-ON |
| P03.02 | User password | User level password<br>– Under this parameter and in connection with parameter P03.01 a numeric code is set for the user level password. (See chapter Password protection (Page 36)) | 1000 | 0-9999 |
| P03.03 | Advanced password | Advanced level password<br>– Under this parameter and in connection with parameter P03.01 a numerical code is set for the advanced level password. (See chapter Password protection (Page 36)) | 2000 | 0-9999 |
| P03.04 | Remote password | Remote password<br>– Under this parameter a numerical code is set for the password for remote access via MODBUS. This is independent from the parameter P03.01. | 3000 | OFF/1-9999 |

## 9.3.4 P04 - Battery

**Note**

**Use of DC power supply**

The following parameters are necessary only if you are using a DC power supply (see chapter Connecting the power supply (Page 70)).

| P04 Battery | Designation on ATC display | Description | Unit | Default | Range |
|---|---|---|---|---|---|
| P04.01 | Battery voltage | Nominal voltage of the DC supply<br>– This parameter defines the voltage of the additional DC supply of the ATC6300.<br>Note: If this parameter is set to OFF, all alarms regarding the DC supply, as well as the indicator for the battery voltage, are disabled. | V | AUTO | AUTO<br>12<br>24<br>OFF |
| P04.02 | Max voltage limit | Maximum voltage limit of the DC supply<br>– This defines the upper limit threshold for the battery voltage. | % | 130 | 110 - 140 |
| P04.03 | Min voltage limit | Minimum voltage limit of the DC supply<br>– This defines the lower limit threshold for the battery voltage. | % | 75 | 60 - 130 |
| P04.04 | Min / Max volt. delay | Minimum / maximum voltage delay of the DC supply<br>– This parameter defines the delay for the minimum / maximum DC supply voltage. If the voltage exceeds the upper or lower limits from P04.02 and P04.03 for the period defined by this parameter, the corresponding alarms are triggered. | s | 10 | 0 - 120 |

## 9.3.5 P05 - Changeover

| P05 Changeo-ver | Designation on ATC display | Description | Unit | Default | Range |
|---|---|---|---|---|---|
| P05.01 | Application type | Type of application<br>– This parameter specifies the type of application and facilitates the management of the corresponding input / output signals.<br>U-G = Utility (network) / Generator<br>U-U = Utility (network) / Utility (network)<br>G-G = Generator / Generator | | U-G | U-G<br>U-U<br>G-G |
| P05.02 | Priority line | Selecting the priority line<br>– Specifies the priority line. It defines the line through which the loads are supplied, if both lines are present. | | - 1 - | -1- Line 1<br>-2- Line 2 |
| P05.03 | Line 1 -> 2 interlock | Line 1 → Line 2 interlock time<br>– Delay that elapses between the disconnection of breaker Line 1 and the opening command for breaker Line 2. For example, if the breaker Line 1 is opened, there is a wait time of 6 seconds in accordance with default settings for an opening command to be sent to the breaker Line 2. | s | 6.0 | 0.1 ... 1800.0 |
| P05.04 | Line 1 -> 2 interlock | Line 1 ← Line 2 interlock time<br>– Delay that elapses between the disconnection of breaker Line 2 and the opening command for breaker Line 1. | s | 6.0 | 0.1 ... 1800.0 |
| P05.05 | Changeover response | Changeover response<br>– This parameter defines the general conditions for a changeover.<br>A selection can be made between OBP (Open before presence) and OAP (Open after presence). | | OBP | OBP[1)]<br>OAP[2)] |
| P05.06 | Feedback delay | Maximum time for switch control -<br>Alarm delay A03 – A04<br>– If a switching device is not in the correct position within this time following an ON or OFF command, alarm A03 or A04 is triggered.<br>For more detailed information on the alarms, please refer to chapter Alarms (Page 46). | s | 5 | 1 … 900 |

| P05 Changeo-ver | Designation on ATC display | Description | Unit | Default | Range |
|---|---|---|---|---|---|
| P05.07 | Switching devices | Type of switching device<br>– This parameter specifies whether the programmable Open / Close outputs must be continuously active (application with contactors or with switching devices without feedback) or operating in the pulse mode, i.e. enabled until the switching device is located in the correct position. If the pulse mode is selected, the command is extended for a certain time (see P5.08 and P5.09), even after the position has been reached. | | Brk. Pul. | Brk. Pul.<br>Brk. Con.<br>Chg. Pul.<br>Chg. Con.<br>Contactors |
| P05.08 | Opening pulse dur. | Opening pulse duration<br>– Minimum duration of an opening command pulse. In the application using circuit breakers with motor operators, a sufficiently long time must be set in order to enable the complete charging of the springs. This time is also taken into consideration when operating in the continuous signal mode. | s | 10 | 1-600 |
| P05.09 | Closing pulse dur. | Closing pulse duration<br>– Pulse duration of the closing pulse. | s | 1 | 1-600 |
| P05.10 | Cont. command in OFF | Continuous command in the RESET / OFF mode<br>– This specifies the behavior of the opening/closing command outputs in the continuous signal mode, if the ATC6300 is in the RESET / OFF mode. Used in applications with contactors.<br>OFF – Opens the command outputs<br>NOC – Leaves the outputs unchanged | | NOC | OFF<br>NOC |
| P05.11 | Load no powered tim. | Maximum time during which the load has no power - response delay for Alarm A07<br>– If both power supplies are simultaneously unavailable for longer than the time set in P5.11, alarm A07 is triggered. | s | 60 | OFF/1…3600 |
| P05.12 | Inh. aut. ret. pr. line | Inhibits the automatic return to the priority line<br>– If this parameter is enabled, the supply is not automatically switched back from the secondary line to the priority line when it becomes available again. Instead, it must be switched back manually.<br>OFF – Disabled<br>ON – Lock enabled | | OFF | OFF/ON |
| P05.13 | EJP mode | EJP mode<br>– Normal = Standard mode in the AUT mode. | | Normal | Normal<br>EJP[3)]<br>EJP-T[4)]<br>SCR[5)] |

| P05 Changeo-ver | Designation on ATC display | Description | Unit | Default | Range |
|---|---|---|---|---|---|
| P05.14 | EJP start delay | EJP start delay<br>– Delay between the EJP start signal and the actual start signal at the generator. | min | 25 | 0-240 |
| P05.15 | EJP changeover delay | EJP changeover delay<br>– Delay in changing over the load from the priority to the secondary line in the EJP and SCR mode. | min | 5 | 0-240 |
| P05.16 | Changeover lock | Locking of the EJP return changeover<br>– If set to ON, the load in the modes EJP, EJP-T and SCR is not switched back to the priority line when a fault occurs in the generator, but only when the signals at the EJP inputs enable the changeover. | | ON | OFF/ON |
| P05.17 | Switch aft. FB alarm | Changeover if closing is incomplete<br>– When this parameter is enabled and the switching device does not close successfully (no feedback on presence of opening command), not only the corresponding feedback alarm (A03 or A04) is triggered, but changeover to the secondary line is also controlled.<br>OFF = Function disabled<br>1 = Check Line 1<br>2 = Check Line 2<br>1+2 = Check both lines. | | OFF | OFF<br>1<br>2<br>1+2 |
| P05.18 | Min. coil pulse dur. | Duration of the opening pulse of the undervoltage release for the opening of the switching devices<br>– If an additional undervoltage release is used, this parameter defines how long the output is opened with the undervoltage release function Line 1 or 2 (see chapter Table of functions of the digital outputs (Page 112)) | s | 1.0 | 0.1 … 10.0 |
| P05.19 | Delay after min. coil | Delay between opening pulse of the undervoltage release and spring reload command<br>– This parameter defines after which time (after parameter P05.18 has elapsed) an opening command to load the springs is sent to the switching device. | s | 0.2 | 0.1 ... 10.0 |

| P05 Changeo-ver | Designation on ATC display | Description | Unit | Default | Range |
|---|---|---|---|---|---|
| P05.20 | Closing retry | Closing retry<br>– In the case of circuit breakers with motor operators, this parameter specifies in which mode the new attempt to close the device can be performed. The new closing attempt is performed when the previous closure has failed, probably because the springs were not loaded. It involves performing a complete opening and spring loading cycle followed by a new closing command. If the breaker fails to close again, feedback alarm A03 or A04 is triggered. | | AUT | OFF[6)]<br>AUT<br>AUT+MAN[7)]CLOSE[8)] |
| P05.21 | Gen. Rot. Interval | Generator start interval<br>- These parameters permit a time-controlled rotation in the G-G application by switching the priority between the two generators. Thus a switch between 2 generators can be implemented at certain times of the day.<br>P05.21 specifies the rotation interval of the two generators. | | OFF | OFF<br>1h-2h-3h<br>4h-6h-8h-12h-<br>1d-2d-3d<br>4d-5d-6d-7d |
| P05.22 | Gen. Rotation Hour | Generator start hour<br>- The time of day at which the rotation is performed is specified by P05.22 and P05.23. If the rotation interval is greater than 24 hours, the rotation is performed at the specified time every n days. If it is less than 24 hours, the rotation is performed at the specified time and at the respective intervals. If, for example, the time is specified as 12:30 and the rotation is every 6 hours, one rotation will take place at 12:30, one at 18:30 the next at 0:30 etc. | h | 0 | 0...23 |
| P05.23 | Gen. Rotation Minutes | Generator start minutes | min | 0 | 0...59 |

[1)] OBP (Open Before Presence) - In the automatic mode the open command of a circuit breaker is generated (when the line concerned goes beyond limits) regardless of the status of the alternative line. As a consequence, the priority line is switched off even if the alternative line is not available.

[2)] OAP (Open After Presence) - In the automatic mode the open command of a circuit breaker is only sent after the alternative line is present within limits.

[3)] EJP = Two programmable inputs are used, which can be configured with the functions Load off and Remote changeover. When the starting input closes, the motor start delay (P05.14) is enabled, after which the start cycle runs. Subsequently, when the remote switching go-ahead is received, the load is transferred from the mains to the generator, if the generator has been started properly. The load is restored to the mains by the remote switching go-ahead opening and the gen-set runs the stop cycle when the start input opens. The EJP function is only enabled if the system is in the automatic mode. The safety devices and alarms function as usual.

[4] EJP-T = The EJP/T function is a simplified version of the EJP function described above, in which the motor start is controlled in the same way, but a timer switches the load instead of an external signal. This function therefore only uses one digital input, the starting input. The delay time for switching starts from when the start command closes, and can be set by means of the parameter P05.15.

[5] SCR = The SCR function is similar to the EJP function. In this operating mode the starting input enables the generator starting as in the EJP function, but without waiting for the start delay P05.14. The remote switching input still has a switching go-ahead function after changeover delay P05.15.

[6] OFF = A closing retry is never executed.

[7] AUT, AUT+MAN = Closing retry is only executed when the ATC6300 is in the set operating mode.

[8] CLOSING = Closing retry is executed only in case of failed closing but not when the breaker opens spontaneously.

### 9.3.6 P06 - Parameter Line 1

The default values for Line 1 and Line 2 are the same, only that they always refer to the corresponding line.

| P06 Parameter Line 1 | Designation on ATC display | Description | Unit | Default | Range |
|---|---|---|---|---|---|
| P06.01 | Min voltage limit | Limit threshold for minimum trip voltage<br>– The first two parameters specify the minimum voltage threshold limit and the related hysteresis upon restoration of power. P6.02 cannot be set to a lower value than P6.01. P6.03 defines the intervention delay of this safety mechanism | % | 85 | 70-100 |
| P06.02 | Min. voltage pick-up | Limit threshold for resetting the minimum trip voltage<br>- see Parameter 06.01 | % | 90 | 70-100 |
| P06.03 | Min voltage delay | Delay time for minimum voltage<br>- see Parameter 06.01 | s | 5 | 0-600 |
| P06.04 | Max voltage limit | Limit threshold for maximum trip voltage<br>– The first two parameters specify the maximum voltage threshold limit and the related hysteresis upon restoration of power. P6.05 cannot be set to a higher value than P6.04. If P6.04 is set to OFF, the<br>maximum voltage measurement is disabled. P6.06 specifies the maximum voltage intervention delay. | % | 115 | 100-130 / OFF |
| P06.05 | Max. voltage pick-up | Limit threshold for resetting the maximum trip voltage<br>- see Parameter 06.04 | % | 110 | 100-130 / OFF |
| P06.06 | Max voltage delay | Delay for maximum voltage<br>- see Parameter 06.04 | s | 5 | 0-600 |
| P06.07 | Presence delay | Presence delay (when Line 2 source not available)<br>– Used if the energy source of Line 2 is not available.<br>This defines after what time the ATC considers the line to be stable (if within the limit thresholds). During this time the LED Line 1 signals availability.<br>Normally this time is shorter than P6.08, as the load is non energized, and voltage needs to be supplied urgently. | s | 10 | 1-6000 |

| P06 Parameter Line 1 | Designation on ATC display | Description | Unit | Default | Range |
|---|---|---|---|---|---|
| P06.08 | Pres.del. Line 2 OK | Presence delay (when Line 2 source available)<br>– Is used if the load on Line 2 can be connected.<br>Normally this time is longer than P6.07, as the load is being energized, and it is possible to wait longer before considering voltage steadily restored. | s | 60 | 1-6000 |
| P06.09 | Phase failure thresh | Threshold limit for phase failure<br>– Voltage threshold below which a phase loss intervention occurs,<br>usually quicker than the drop. The delay for the phase failure is specified by P06.10. | % | 70 | 60 - 80<br>OFF |
| P06.10 | Phase failure delay | Delay time for the phase failure threshold limit<br>- see Parameter 06.09 | s | 0.1 | 0.1 s-30 s |
| P06.11 | Max. asymmetry limit | Maximum limit for asymmetry of the phases<br>- P06.11 specifies the upper threshold for phase asymmetry referred to nominal voltage, and P06.12 defines the related intervention delay.<br>This measurement can be disabled by setting P06.11 to OFF | % | 15 | 1 % - 20 %<br>OFF |
| P06.12 | Max asymmetry delay | Delay time for maximum asymmetry of the phases<br>- see Parameter 06.11 | s | 5 | 0.1-900 |
| P06.13 | Max frequency limit | Limit for the maximum frequency<br>- (can be disabled). | % | 105 | 100-120<br>OFF |
| P06.14 | Max frequency delay | Delay time for the maximum frequency | s | 3 | 0-600 |
| P06.15 | Min frequency limit | Limit threshold for minimum frequency (can be disabled)<br>- Maximum frequency intervention delay. | % | 95 | OFF<br>80-100 |
| P06.16 | Min frequency delay | Delay time for minimum frequency | s | 5 | 0-600 |
| P06.17 | Line cont. OFF mode | Setting of the voltage measurement in the OFF mode | | OFF | OFF[1)]<br>ON[2)]<br>OFF+GLOB[3)]<br>ON+GLOB[4)] |
| P06.18 | Line cont. MAN mode | Line cont. MAN mode<br>- As for Parameter 06.17, but referred to the MANUAL mode | | OFF | OFF<br>ON<br>OFF+GLOB<br>ON+GLOB |

| P06 Parameter Line 1 | Designation on ATC display | Description | Unit | Default | Range |
|---|---|---|---|---|---|
| P06.19 | Generator start delay | Delay of generator start after<br>failure of Line 1<br>– Delay in starting the generator if Line 1 fails to meet set limits. If this value is set to OFF, the starting cycle begins simultaneously with the opening of the line contactor. | s | OFF | OFF / 1-6000 |
| P06.20 | Cooling time | Generator cooling time<br>– Maximum duration of the cooling cycle. Time that elapses between the disconnection of load from the generator and the engine actually stopping. | s | 120 | |

[1] OFF = The voltage measurement for Line 1 in the OFF mode is disabled.

[2] ON = The voltage measurement in the OFF mode is enabled.

[3] OFF+GLOB = The voltage measurement in the OFF mode is disabled but the relay programmed for the global alarm function is either tripped or not, depending on whether the line is present or missing.

[4] ON+GLOB = The voltage measurement in the OFF mode is enabled and the relay programmed for the global alarm function is either tripped or not, depending on whether the line is present or missing.

## 9.3.7 P07 - Parameter Line 2

The default values for Line 1 and Line 2 are the same, only that they always refer to the corresponding line.

For a detailed explanation of the parameters, please refer to chapter P06 - Line1 (Page 130).

| P07 Parameter Line 2 | Designation on ATC display | Description | Unit | Default | Range |
|---|---|---|---|---|---|
| P07.01 | Min voltage limit | Limit threshold for minimum trip voltage | % | 85 | 70 - 100 |
| P07.02 | Min. voltage pick-up | Limit threshold for resetting the minimum trip voltage | % | 90 | 70 - 100 |
| P07.03 | Min voltage delay | Delay time for minimum voltage | s | 5 | 0 - 600 |
| P07.04 | Max voltage limit | Limit threshold for maximum trip voltage | % | 115 | 100 - 130 / OFF |
| P07.05 | Max. voltage pick-up | Limit threshold for resetting the maximum trip voltage | % | 110 | 100 - 130 / OFF |
| P07.06 | Max voltage delay | Delay for maximum voltage | s | 5 | 0 - 600 |
| P07.07 | Presence delay | Presence delay (when Line 1 source not available) | s | 10 | 1 - 6000 |
| P07.08 | Pres.del. Line 1 OK | Presence delay (when Line 1 source available) | s | 60 | 1 - 6000 |

| P07 Parameter Line 2 | Designation on ATC display | Description | Unit | Default | Range |
|---|---|---|---|---|---|
| P07.09 | Phase failure thresh | Threshold limit for phase failure | % | 70 | 60 – 80<br>OFF |
| P07.10 | Phase failure delay | Delay time for the phase failure threshold limit | s | 0.1 | 0.1 s - 30 s |
| P07.11 | Max. asymmetry limit | Maximum limit for asymmetry of the phases | % | 15 | 1 % -<br>20 % / OFF |
| P07.12 | Max asymmetry delay | Delay time for maximum asymmetry of the phases | s | 5 | 0.1 - 900 |
| P07.13 | Max frequency limit | Limit for the maximum frequency | % | 105 | 100 -<br>120 / OFF |
| P07.14 | Max frequency delay | Delay time for the maximum frequency | s | 3 | 0 - 600 |
| P07.15 | Min frequency limit | Limit for minimum frequency | % | 95 | OFF / 80 - 100 |
| P07.16 | Min frequency delay | Delay time for minimum frequency | s | 5 | 0 - 600 |
| P07.17 | Line cont. OFF mode | Setting of the voltage measurement in the OFF mode | | OFF | OFF<br>ON<br>OFF+GLOB<br>ON+GLOB |
| P07.18 | Line cont. MAN mode | Line 2 control in MAN mode | | OFF | OFF<br>ON<br>OFF+GLOB<br>ON+GLOB |
| P07.19 | Generator start delay | Delay of generator start after failure of Line 2 | s | OFF | OFF / 1 - 6000 |
| P07.20 | Cooling time | Generator cooling time | s | 120 | |

## 9.3.8 P08 - Communication

This menu is divided into two sections for the communication channels COM1 and COM2.

**Note**

The parameters for communication only function in combination with the RS485 expansion module (3KC9000-8TL74) or the Ethernet expansion module (3KC9000-8TL75).

The USB front interface (3KC9000-8TL73) has fixed communication parameters and therefore requires no setup menu.

| **P08 Communi-cation COMn (n = 1/2)** | **Designation on ATC display** | **Description** | **Unit** | **Default** | **Range** |
|---|---|---|---|---|---|
| P08.n.01 | Serial node ad-dress | MODBUS node address<br>– Serial address (nodes) of the communication protocol. | | 01 | 01-255 |
| P08.n.02 | Baud rate | Serial speed<br>– Transmission speed of the communication port. | bps | 9600 | 1200<br>2400<br>4800<br>9600<br>19200<br>38400<br>57600<br>115200 |
| P08.n.03 | Data format | Data format<br>– Setting to 7 bits only possible for ASCII proto-col. | | 8 bit – n | 8 bit –no par.<br>8 bit, odd<br>8 bit, even<br>7 bit, odd<br>7 bit, even |
| P08.n.04 | Stop bits | Stop bits<br>– Number of stop bits. | | 1 | 1 - 2 |
| P08.n.05 | Protocol | Protocol<br>– Choice of communication protocol. | | MODBUS RTU | MODBUS RTU<br>MODBUS ASCII<br>MODBUS TCP |

| **P08 Communi-cation COMn (n = 1/2)** | **Designation on ATC display** | **Description** | **Unit** | **Default** | **Range** |
|---|---|---|---|---|---|
| P08.n.06 | IP address | IP address<br>– TCP-IP coordinates for applications with an Ethernet<br>interface.<br>**Note**: Cannot be used with RS458 expansion module. | | 192.168.1.1 | 000.000.000.000 –<br>255.255.255.255 |
| P08.n.07 | Subnet mask | Subnet mask<br>- see Parameter 08.n.06 | | 0.0.0.0 | 000.000.000.000 –<br>255.255.255.255 |
| P08.n.08 | TCP-IP port | TCP-IP port<br>- see Parameter 08.n.06 | | 1001 | 0 - 32000 |
| P08.n.10 | Client / Server | Client / Server<br>– Enabling of the TCP-IP connection.<br>Server = Waiting for connection of<br>a remote client. Client = Establishes the connection with a remote server. | | Server | Client<br>Server |
| P08.n.11 | Remote IP address | Remote IP address<br>– Coordinates for the connection with the remote server, if P08.n.10 is configured on client. | | 000.000.000.000 | 000.000.000.000 –<br>255.255.255.255 |
| P08.n.12 | Remote IP port | Remote IP port<br>- see Parameter 08.n.11 | | 1001 | 0 - 32000 |
| P08.n.13 | IP gateway address | IP gateway address<br>- see Parameter 08.n.11 | | 000.000.000.000 | 000.000.000.000 –<br>255.255.255.255 |

## 9.3.9 P09 - Automatic test

| P09 – Automatic test | Designation on ATC display | Description | Unit | Default | Range |
|---|---|---|---|---|---|
| P09.01 | Auto test enable | Enabling the automatic test<br>– Enables the execution of the periodic test. This parameter can be modified directly from the front operator panel, without invoking the setup procedure. Its current status is displayed on the corresponding display page, see chapter Automatic test (Page 51). | | OFF | OFF / ON |
| P09.02 | Auto test period | Interval between performing the TESTS<br>– Interval between two periodic tests. If the test is not enabled on the day it becomes due, the period is extended to the next enabled day. | | 7 | 1gg-60gg |
| P09.03 | Auto Test Monday | TEST execution on Monday<br>- Enables the performance of the automatic test on the individual days of the week.<br>OFF means that the test is not performed on that day of the week. | | ON | OFF / ON |
| P09.04 | Auto Test Tuesday | TEST execution on Tuesday<br>- see Parameter 09.03 | | ON | OFF / ON |
| P09.05 | Auto Test Wednesday | TEST execution on Wednesday<br>- see Parameter 09.03 | | ON | OFF / ON |
| P09.06 | Auto Test Thursday | TEST execution on Thursday<br>- see Parameter 09.03 | | ON | OFF / ON |
| P09.07 | Auto Test Friday | TEST execution on Friday<br>- see Parameter 09.03 | | ON | OFF / ON |
| P09.08 | Auto Test Saturday | TEST execution on Saturday<br>- see Parameter 09.03 | | ON | OFF / ON |
| P09.09 | Auto Test Sunday | TEST execution on Sunday<br>- see Parameter 09.03 | | ON | OFF / ON |
| P09.10 | Auto test hour | Hour of TEST start<br>- Specifies the hours and the minutes for the start of the periodic test. | h | 12 | 00-23 |
| P09.11 | Auto test minute | Minutes of TEST start<br>- see Parameter 09.11 | min | 00 | 00-59 |

| P09 – Automatic test | Designation on ATC display | Description | Unit | Default | Range |
|---|---|---|---|---|---|
| P09.12 | Auto Test duration | TEST duration<br>– Duration of the periodic test in minutes. | min | 10 | 1-600 |
| P09.13 | Auto Test with load | Automatic TEST with load changeover<br>– Load management during the execution of the periodic test:<br>OFF = The load is not switched.<br>With load = Enables the switching the load from network to generator.<br>Dummy load = The load simulation is switched on, the system load is not switched. | | OFF | OFF<br>With load<br>Dummy load |

## 9.3.10 P10 - Digital inputs

This menu is divided into 14 sections. These refer to 6 possible digital inputs INP1…INP6 that can be managed directly by the ATC6300, and a further 8 inputs that can be managed by the ATC6300 via the expansion modules.

| P10 Digital inputs (INPn, n=1…14) | Designation on ATC display | Description | Unit | Default | Range |
|---|---|---|---|---|---|
| P10.n.01 | Input function | Function of the INPn input<br>– Selects the function of the selected input (see table "Functions of the programmable inputs" in chapter Digital inputs INPx (Page 107)). | | - | See Table of inputs (Page 108) |
| P10.n.02 | Channel number | Function index (x)<br>– Index that is possibly assigned to the function programmed in the previous parameter. **Example**: If the input function is set to Cxx command menu execution, and this input is to perform command C07 in the command menu, then P10.n.02 must be set to the value 7. | | OFF | OFF / 1 … 99 |
| P10.n.03 | Contact type | Contact type<br>– Select the contact type: NO (normally open) or NC (normally closed) | | NO | NO / NC |
| P10.n.04 | Delay ON | Closing delay<br>– Contact closing delay for selected input. | s | 0.05 | 0.00 - 600.00 |
| P10.n.05 | Delay OFF | Opening delay<br>– Contact opening delay for selected input. | s | 0.05 | 0.00 - 600.00 |

## 9.3.11 P11 - Digital outputs

This menu is divided into 15 sections. These refer respectively to the 7 possible digital outputs OUT1 … OUT7 that can be managed directly by the ATC6300, and a further 8 outputs that can be managed by the ATC6300 via the expansion modules.

| **P11**<br>**Digital outputs (OUTn, n = 1…15)** | **Designation on ATC display** | **Description** | **Default** | **Range** |
|---|---|---|---|---|
| P11.n.01 | Output function | Function of the output OUTn<br>– Selects the function of the selected output (See Table of outputs in chapter Digital outputs OUTx (Page 110)) | - | See Table of outputs (Page 112) |
| P11.n.02 | Channel number | Function index (x)<br>– Index that is possibly assigned to the function programmed in the previous parameter.<br>**Example**: If the output function is set to the function Alarms Axx, and this output is to be enabled when the Alarm A16 occurs, P11.n.02 must be set to the value 16. | 1 | OFF / 1 … 99 |
| P11.n.03 | Output type | Normal / reverse output<br>– Sets the status of the output if the function assigned to it is inactive: NOR = Output de-energized, REV = output energized. | NOR | NOR / REV |

## 9.3.12 P12 - Miscellaneous

| P12 Miscella-neous | Designation on ATC display | Description | Unit | Default | Range |
|---|---|---|---|---|---|
| P12.01 | Maintenance inter-val | Maintenance interval hours<br>– Defines in hours the programmed time inter-val for scheduled maintenance. If this parame-ter is set to OFF this maintenance interval is disabled. | h | OFF | OFF<br>1 … 99999 |
| P12.02 | Maintenance Counter | Maintenance interval operating cycles<br>– Defines the programmed time interval for scheduled maintenance in number of operating cycles. If this parameter is set to OFF this maintenance interval is disabled. | | OFF | OFF<br>1 … 99999 |
| P12.03 | Operating mode out. | Output operating mode<br>– Defines in which operating mode the output programmed to the function is to be enabled. For example, if this parameter is set to M-O, the operating mode output is enabled when the ATC6300 is in the MAN or OFF mode. | | OFF | OFF<br>O<br>M<br>M – O<br>A<br>A-O<br>A-M<br>A-M-O |

## 9.3.13 P13 - Limit thresholds

This menu is divided into 4 sections for the limit thresholds LIM1 ... 4.

You can find more information on the user limits in chapter User limit threshold LIMx (Page 57).

| **P13 User limit thresholds (LIMn, n = 1…4)** | **Designation on ATC display** | **Description** | **Unit** | **Default** | **Range** |
|---|---|---|---|---|---|
| P13.n.01 | Reference measurement | Reference measurement<br>- Defines which measurements of the ATC6300 the limit threshold is applied to. For the list of reference measurements, refer to chapter User limit threshold LIMx. (Page 57) | | OFF | OFF-<br>(List of measurements) …. |
| P13.n.02 | Reference source | Source of reference measurement<br>– If the reference measurement involves an electrical measurement, this parameter specifies whether it refers to Line 1 or Line 2. | | OFF | OFF<br>Line 1<br>Line 2 |
| P13.n.03 | Channel number | No. channel No. (x)<br>– If the reference measurement is an internal multi-channel measurement, the channel number is defined here. | | 1 | OFF / 1 ... 99 |
| P13.n.04 | Function | Function<br>– Defines the mode of operation of the limit threshold (see chapter User limit threshold LIMx (Page 57)) | | Max | Max<br>Min<br>Min + Max |
| P13.n.05 | Upper threshold | Upper threshold<br>– Defines the upper threshold obtained by multiplying the value of P13.n.06 by the value of P13.n.05. | | 0 | -9999 - +9999 |
| P13.n.06 | Multiplier | Multiplier<br>- see Parameter 13.05 | | x1 | /100 – x10k |
| P13.n.07 | Delay | Delay<br>– Upper threshold intervention delay. | s | 0 | 0.0 – 600.0 |
| P13.n.08 | Lower threshold | Lower threshold<br>– As above, but relating to the lower threshold. | | 0 | -9999 - +9999 |
| P13.n.09 | Multiplier | Multiplier<br>- see Parameter 13.08 | | x1 | /100 – x10k |
| P13.n.10 | Delay | Delay<br>- see Parameter 13.08 | s | 0 | 0.0 – 600.0 |

| P13<br>User limit thresholds<br>(LIMn, n = 1…4) | Designation on ATC display | Description | Unit | Default | Range |
|---|---|---|---|---|---|
| P13.n.11 | Normal status | Normal status<br>– Used for reversing the status of the threshold LIMn. | | OFF | OFF - ON |
| P13.n.12 | Memory | Memory<br>– Defines whether the threshold remains stored and must be reset manually via the command menu (ON) or is automatically reset (OFF). | | OFF | OFF - ON |

## 9.3.14 P14 - Counters

This menu is divided into 4 sections for the counters CNT1 ... 4.

You can find more information on the user limits in chapter User limit threshold LIMx (Page 57).

| P14 COUNTERS (CNTn, n = 1…4) | Designation on ATC display | Description | Default | Range |
|---|---|---|---|---|
| P14.n.01 | Counter source | Counter source<br>– Signal that increments the counter (at the rising edge). This may involve exceeding a threshold (LIMx) or enabling an external input (INPx) etc. | OFF | OFF<br>ON<br>INPx<br>OUTx<br>LIMx<br>REMx |
| P14.n.02 | Channel number | Channel number (x)<br>– Number of the channel x, with reference to the previous parameter. | 1 | OFF / 1 ... 99 |
| P14.n.03 | Multiplier | Multiplier<br>– Multiplication factor The counted pulses are multiplied by this factor before they are displayed. | 1 | 1 - 1000 |
| P14.n.04 | Divider | Divider<br>– Division factor. The counted pulses are divided by this factor before they are displayed. If this value is not equal to 1, the counter is shown with two decimal places. | 1 | 1 - 1000 |
| P14.n.05 | Description | Description of the counter<br>– Description of the counter. Freely selectable text, 16 characters. | CNTn | (Text – 16 characters) |
| P14.n.06 | Unit of meas. | Unit of measurement<br>– Measurement unit of the counter. Freely selectable text, 6 characters. | Umn | (Text – 6 characters) |
| P14.n.07 | Counter source reset | Reset source<br>– Signal that resets the counter. As long as this signal is enabled, the counter remains at zero. | OFF | OFF-ON-INPx-OUTx-LIMx-REMx |
| P14.n.08 | Channel number | Channel number (x)<br>– Number of the channel x, with reference to the previous parameter. | 1 | OFF / 1 ... 99 |

## 9.3.15 P15 - User alarms

This menu is divided into 4 sections for the definition of the user alarms UA1 ... UA4.

You can find more information in chapter User alarms (Page 50).

| P15 User alarms (UAn, n=1…4) | Designation on ATC display | Description | Default | Range |
|---|---|---|---|---|
| P15.n.01 | Source | Alarm source<br>– Defines the digital input or of the internal variable that generates the user alarm when it is activated. | OFF | OFF<br>INPx<br>OUTx<br>LIMx<br>REMx |
| P15.n.02 | Channel number | Channel number (x)<br>– Channel number, with reference to the previous parameter | 1 | OFF / 1 ... 99 |
| P15.n.03 | Description | Description<br>– Freely selectable text that is shown in the alarm window. | UAn | (Text – 20 chars) |
| P15.n.04 | Breaker opening | Opening of the circuit breaker<br>– It is defined which breaker is to be opened when this alarm occurs.<br>**Example**: The user alarm UA3 must be generated by the closing of input INP5 and must display the message "Doors open".<br>In this case, the menu section 3 must be configured (for alarm UA3):<br>P15.3.01 = INPx<br>P15.3.02 = 5<br>P15.3.03 = ‘Doors open’ | OFF | OFF<br>1<br>2<br>1+2 |

# Commissioning

# 10

The following chapter contains information on commissioning the ATC6300.

**⚠WARNING**

**Hazardous voltage. Will cause death or serious injury.**

Turn off and lock out all power supplying this equipment before working on the device. Replace all covers before power supplying this device is turned on.

**Note**

This description provides basic information regarding commissioning of the ATC6300.

The planning and dimensioning relating to electrical requirements / standards of the control cabinet are not described below.

## Procedure

Ensure there is no live voltage before connecting the ATC6300.

1. Install the ATC6300 as described in chapter Installation (Page 63).
2. Attach any expansion modules that have been purchased in addition (see chapter Expandability by modules (Page 41)).
3. Connect the ATC6300 according to your application, as described in chapter Connection (Page 65).
4. Check whether all requirements have been implemented in accordance with the technical specifications (conductor cross-sections etc.).
5. Check whether all electrical requirements relating to fuse protection, planning and installation of the control cabinet have been implemented.
6. Close the control cabinet.
7. Switch on the power supply.
8. All the LEDs on the ATC6300 flash during startup.
9. When the ATC6300 has started up, set the date and time.
10. Press the ▲ and ▼ keys simultaneously to access the main menu and select the password entry window.

11. Enter the default password (see chapter Password protection (Page 36)).
    - User level: 1000
    - Advanced level: 2000
    - Remote access: 3000
12. Open the setup menu.
13. Change the password in Menu P03.
14. Set the other parameters according to your requirements (see chapter Parameters (Page 120) and chapter Connection of Siemens SENTRON switching devices (Page 76)).
15. Switch to automatic mode (see chapter Setting the operating mode (Page 101)).

# MODBUS communication 11

The following chapter contains:

- General information on MODBUS
- MODBUS RTU protocol
- MODBUS ASCII protocol
- MODBUS functions
- Data library

## 11.1 General information on MODBUS

The ATC6300 supports the MODBUS RTU, MODBUS TCP and MODBUS ASCII protocols via the following interfaces:

- Expansion module RS485 (3KC9000-8TL74)
- Expansion module Ethernet (3KC9000-8TL75)

Via these two interfaces it is possible to modify the status of the ATC6300, as well as of the parameters using third-party supervision software (scada) or by means of other devices such as PLCs.

### Setting the communication parameters

The parameters can be set by means of the P08 - Communication (Page 134) menu.

## 11.2 MODBUS RTU protocol

If the MODBUS RTU protocol is used, the following structure must be observed:

| | | | | | |
|---|---|---|---|---|---|
| T1<br>T2<br>T3 | Address<br>(8 bit) | Function<br>(8 bit) | Data<br>(N x 8 bit) | CRC<br>(16 bit) | T1<br>T2<br>T3 |

Address: Contains the serial address of the slave target device.

Function: Contains the code of the function that is performed by the slave.

Data: Contains the data that is sent to the slave, or the data of a query received by the slave (maximum length 80, 16-bit register).

CRC: This is used for an integrity check. If a message is corrupted by electric noise or interference, the CRC field enables the ATC6300 to detect the error and thus ignore the message.

T1,T2,T3: Corresponds to the time during which the data may not be exchanged via the communication bus. The connected devices use this to detect the end of one command and the beginning of a new one. This time must be at least 3.5 times longer than the time required for sending one character.

**Note**

The ATC6300 measures the time between receiving one character and receiving a new one. If this value exceeds the time required for transmitting 3.5 characters at the selected baud rate, then the next character is regarded as part of a new message.

**Example:**

In order, for example, to read out the number of alarms of an ATC6300 with the serial address 1 for changeovers of breaker 1 (Register: 3Ah9), the following command must be sent:

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 01 | 04 | 00 | 39 | 00 | 02 | A1 | C6 |

01 = Slave address

04 = MODBUS function 04 Read Input Register

00 39 = Register address of the query (number of alarms for changeovers of Breaker 1); reduced by 1 (see chapter Data library (Page 157))

0002 = Number of registers to be read, starting at Address 22

A1 C6 = CRC Checksum

The following reply is sent by the ATC6300:

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 01 | 04 | 04 | 00 | 00 | 00 | 07 | BA | 46 |

01 = ATC address (Slave 01)

04 = Function requested by the master

04 = Number of bytes that the ATC sends

00000007 = Hexadecimal value for the number of alarms for changeovers of Breaker 1 = 07

BA 46: CRC Checksum

## 11.3 MODBUS ASCII protocol

The MODBUS ASCII protocol is normally used for applications in which communication takes place via several modems.

The available functions and addresses are the same as for the RTU version, except that the characters are transmitted in ASCII and the end of a message is transmitted by Carriage return / Line Feed (CR LF).

If the ASCII mode is used in Menu P08 under the parameter P8.x.05, the communication must comply with the following structure:

| | Address | Function | Dates | LRC | CR LF |
|---|---|---|---|---|---|
| : | (2 chars) | (2 chars) | (N chars) | (2 chars) | |

Address: Contains the serial address of the slave target device.

Function: Contains the code of the function that is performed by the slave.

Data: Contains the data that is sent to the slave, or the data of a query received by the slave (maximum length 80, 16-bit register).

LRC: This is used for an integrity check. If a message is corrupted by electric noise or interference, the LRC field enables the ATC6300 to detect the error and thus ignore the message.

CRLF: The message ends with CRLFcontrol characters (0D 0A).

**Example:**

In order, for example, to read the current voltage value of Line 1 between L3-L1 (0Ch) of a slave using the serial address 08, the following message must be sent:

| : | 08 | 04 | 00 | 0B | 00 | 02 | E7 | CRLF |
|---|---|---|---|---|---|---|---|---|

: = ASCII 3Ah Message Start delimiter

08 = Address of the slave

04 = MODBUS function Read Input Register

00 0B = Address of the register (L3 voltage); reduced by 1

00 02 = Number of registers to be read, starting at Address 04

E7 = LRC Checksum

CRLF = ASCII 0Dh0Ah = Message end delimiter

The following reply is sent by the ATC6300:

| : | 08 | 04 | 04 | 00 | 00 | 01 | 90 | 9B | CRLF |
|---|---|---|---|---|---|---|---|---|---|

: = ASCII 3Ah Message Start delimiter

08 = ATC address (Slave 08)

04 = Function requested by the master

04 = Number of bytes sent by the multimeter

00 00 01 90 = Hexadecimal value of the voltage of Line 1 L3-L1 = 400 V

9B = LRC Checksum

CRLF = ASCII 0Dh0Ah = Message End delimiter

## 11.4 MODBUS functions

The following MODBUS functions can be performed with the ATC6300:

| | |
|---|---|
| 03 = Read input register | Allows parameters of the ATC to be read. |
| 04 = Read input register | Allows parameters of the ATC to be read. |
| 06 = Preset single register | Allows parameters of the ATC to be rewritten. |
| 07 = Read execption | Allows the status of the ATC to be viewed. |
| 10 = Preset multiple register | Allows some parameters of the ATC to be rewritten. |
| 17 = Report slave ID | Allows information about the ATC to be read out. |

### Function 04: Read input register

The MODBUS function 04 permits the reading of one or more consecutive registers from a memory of the slave.

The register addresses are contained under the subsection Data library (Page 157). As in the case of MODBUS as standard, the effective register address from the data library must also be reduced by the factor 1 in the case of queries. If the register address is not contained in data library 11.5, or the number of registers specified exceeds the accepted number, an error message is displayed in accordance with the section "Error Messages".

**Querying of the master:**

| | |
|---|---|
| Slave address | 08h |
| Function | 04h |
| MSB address | 00h |
| LSB address | 0Fh |
| MSB register number | 00h |
| LSB register number | 08h |
| LSB CRC | C1h |
| MSB CRC | 56h |

In the previous example, 8 consecutive registers are requested by the slave. Starting with register 10h, the registers 10h to 17h are output. The message is concluded by the CRC Checksum .

### Response of the slave

| | |
|---|---|
| Slave address | 08h |
| Function | 04h |
| Number of bytes | 10h |
| MSB register 10h | 00h |
| LSB register 10h | 00h |
| - | - |
| MSB register 17h | 08h |
| LSB register 17h | C1h |
| LSB CRC | 56h |
| MSB CRC | B1h |

The response always consists of the address of the slave, the code of the function that was queried by the master, and the content of the queried register. The message is concluded by the CRC Checksum .

## Function 06: Preset single register

This function permits writing to the register. It can only be used with registers that have an address greater than 1000 Hex. It is possible, for example, to modify parameters. If the new parameter is not within the range of the ATC an error message is output. An error message is also output in the case of incorrect parameter addresses. The addresses and the valid parameter range can be found in the chapter Data library (Page 157).

### Master message

| | |
|---|---|
| Slave address | 08h |
| Function | 06h |
| MSB address | 2Fh |
| LSB address | 0Fh |
| MSB data | 00h |
| LSB data | 0Ah |
| LSB CRC | 31h |
| MSB CRC | 83h |

### Response of the slave

The response of the slave is an echo to the query.

The slave sends the address and the new value of the parameter back to the master.

## Function 07: Read exception status

Using this function, the status of the ATC6300 can be queried.

**Master message**

| | |
|---|---|
| Slave address | 08h |
| Function | 07h |
| LSB CRC | 47h |
| MSB CRC | B2h |

The following table shows the meaning of the response of the ATC6300.

| BIT | Meaning |
|---|---|
| 0 | OFF / RESET operating mode |
| 1 | Manual operating mode |
| 2 | Auto operating mode |
| 3 | Test operating mode |
| 4 | ATC in fault mode |
| 5 | AC supply OK |
| 6 | DC supply OK |
| 7 | Global alarm enabled |

## Function 16: Preset multiple register

With this function, several parameters can be modified with a single message, or a value longer than one register can be preset.

**Querying of the master:**

| | |
|---|---|
| Slave address | 08h |
| Function | 10h |
| MSB register address | 20h |
| LSB register address | 01h |
| Number of MSB registers | 00h |
| Number of LSB registers | 02h |
| Number of bytes (double that of the above) | 04h |
| MSB data | 00h |
| LSB data | 00h |
| MSB data | 00h |
| LSB data | 00h |
| LSB CRC | 85h |
| MSB CRC | 3Eh |

**Response of the slave**

| | |
|---|---|
| Slave address | 08h |
| Function | 10h |
| MSB register address | 20h |
| LSB register address | 01h |
| Number of MSB bytes | 00h |
| Number of LSB bytes | 02h |
| LSB CRC | 1Bh |
| MSB CRC | 51h |

## Function 17: Report Slave ID

This function enables the ATC6300 to be identified.

**Querying of the master:**

| | |
|---|---|
| Slave address | 08h |
| Function | 10h |
| LSB CRC | 85h |
| MSB CRC | 3Eh |

**Response of the slave**

| | |
|---|---|
| Slave address | 08h |
| Function | 11 h |
| Counter bytes | 08h |
| Data 01 (Type) ① | 76h |
| Data 02 (Software revision) | 01h |
| Data 03 (Hardware revision) | 00h |
| Data 04 (Parameter revision) | 01h |
| Data 05 (Type of device) ② | 04h |
| Data 06 (reserved) | 00h |
| Data 07 (reserved) | 00h |
| Data 08 (reserved) | 00h |
| LSB CRC | B0h |
| MSB CRC | 2Ah |

① 118 – 76h = ATC6300
② 4 – 04h = ATC series

## Error messages

If the slave contains an incorrect message, it responds with a message consisting of the queried function with 80Hex, followed by an error code byte.

The error codes that are sent to the master are listed below:

| Code | Error |
|---|---|
| 01 | Illegal function |
| 02 | Invalid address |
| 03 | Parameter outside the setting range |
| 04 | Version of function not possible |
| 06 | Slave is overloaded, the function is not currently available |

## CRC calculation

Information on the CRC calculation can be found under www.modbus.org in the MODBUS over Serial Line Specification and Implementation Guide (http://www.modbus.org/docs/Modbus_over_serial_line_V1_02.pdf).

## LRC calculation

Information on the LRC calculation can be found under www.modbus.org in the MODBUS over Serial Line Specification and Implementation Guide (http://www.modbus.org/docs/Modbus_over_serial_line_V1_02.pdf).

# 11.5 Password entry by means of MODBUS

**Note**

**Password**

- If the password is entered incorrectly by means of MODBUS three times in succession, access to the device is blocked for two minutes.
- The device is supplied from the factory with a remote password (3000) for communication.

### Entering the password using MODBUS

In order to enter the password, it must be sent with function 06 to the address 0x1FF6.

Example:

Transmission of the password (3000) by the master (if the device is set to address 01):

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 01 | 06 | 1F | F5 | 0B | B8 | 99 | 6E |

Response of the slave if the password is correct:

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 01 | 06 | 1F | F5 | 0B | B8 | 99 | 6E |

When the password has been entered, communication with the device can begin.

If an attempt is made to communicate with the device without entering the password, an error message appears.

Example:

Query by the master:

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 10 | 4F | FF | 00 | 01 | 02 | 00 | 01 | CD | 5B |

Response of the slave:

| | | | | |
|---|---|---|---|---|
| 01 | 90 | 04 | 4D | C3 |

# 11.6 Data library

## 11.6.1 Measured values (use with MODBUS function 03 and 04)

| Address | Measured value | Unit | Format |
|---|---|---|---|
| 02h | Voltage of Line 1 L1-N | V | Unsigned long |
| 04h | Voltage of Line 1 L2-N | V | Unsigned long |
| 06h | Voltage of Line 1 L3-N | V | Unsigned long |
| 08h | Voltage of Line 1 L1-L2 | V | Unsigned long |
| 0Ah | Voltage of Line 1 L2-L3 | V | Unsigned long |
| 0Ch | Voltage of Line 1 L3-L1 | V | Unsigned long |
| 0Eh | Voltage of Line 2 L1-N | V | Unsigned long |
| 10h | Voltage of Line 2 L2-N | V | Unsigned long |
| 12h | Voltage of Line 2 L3-N | V | Unsigned long |
| 14h | Voltage of Line 2 L1-L2 | V | Unsigned long |
| 16h | Voltage of Line 2 L2-L3 | V | Unsigned long |
| 18h | Voltage of Line 2 L3-L1 | V | Unsigned long |
| 1Ah | Frequency Line 1 | Hz /10 | Unsigned long |
| 1Ch | Frequency Line 2 | Hz /10 | Unsigned long |
| 1Eh | Battery voltage (DC source) | V DC / 10 | Unsigned long |
| 20h | Total operation time | s | Unsigned long |
| 22h | Time Line 1 OK | s | Unsigned long |
| 24h | Time Line 2 OK | s | Unsigned long |
| 26h | Time Line 1 not OK | s | Unsigned long |
| 28h | Time Line 2 not OK | s | Unsigned long |
| 2Ah | Time Line 1 breaker closed | s | Unsigned long |
| 2Ch | Time Line 2 breaker closed | s | Unsigned long |
| 2Eh | Total time breaker open | s | Unsigned long |
| 30h | Not used | -- | Unsigned long |
| 32h | Number of operating cycles of Breaker Line 1 in AUT | no. | Unsigned long |
| 34h | Number of operating cycles of Breaker Line 2 in AUT | no. | Unsigned long |
| 36h | Number of operating cycles of Breaker Line 1 in MAN | no. | Unsigned long |
| 38h | Number of operating cycles of Breaker Line 2 in MAN | no. | Unsigned long |
| 3Ah | Number of alarms for changeovers of Breaker 1 | no. | Unsigned long |
| 3Ch | Number of alarms for changeovers of Breaker 2 | no. | Unsigned long |
| 3Eh | Not used | -- | Unsigned long |

| | | | |
|---|---|---|---|
| 40h | Alarms (1) | bits | Unsigned long |
| 50h | Minimum battery voltage | V | Unsigned long |
| 52h | Maximum battery voltage | V | Unsigned long |
| 54h | Maintenance hours Line 1 | no. | Unsigned long |
| 56h | Maintenance hours Line 2 | no. | Unsigned long |
| 58h | Maintenance operating cycles Line 1 | no. | signed long |
| 5Ah | Maintenance operating cycles Line 2 | no. | signed long |
| 21C0h | OR of all user limit thresholds | bits | Unsigned integer |
| 21C1h | User limit threshold 1 | bits | Unsigned integer |
| 21C2h | User limit threshold 2 | bits | Unsigned integer |
| 21C3h | User limit threshold 3 | bits | Unsigned integer |
| 21C4h | User limit threshold 4 | bits | Unsigned integer |
| 1D00h | Counter CNT 1 | UM1 | long |
| 1D02h | Counter CNT 2 | UM2 | long |
| 1D04h | Counter CNT 3 | UM3 | long |
| 1D06h | Counter CNT 4 | UM4 | long |

The 32 bits of the alarms for the address 40h have the following meaning:

| Bit | Code | Alarm |
|---|---|---|
| 0 | A01 | Battery voltage too low |
| 1 | A02 | Battery voltage too high |
| 2 | A03 | Line 1 circuit breaker timeout |
| 3 | A04 | Line 2 circuit breaker timeout |
| 4 | A05 | Line 1 wrong phase sequence |
| 5 | A06 | Line 2 wrong phase sequence |
| 6 | A07 | Load not powered timeout |
| 7 | A08 | External battery charger failure |
| 8 | A09 | Emergency |
| 9 | A10 | Line 1 breaker protection trip |
| 10 | A11 | Line 2 breaker protection trip |
| 11 | A12 | Generator Line 1 not available |
| 12 | A13 | Generator Line 2 not available |
| 13 | A14 | Maintenance Hours 1 |
| 14 | A15 | Maintenance Hours 2 |
| 15 | A16 | Maintenance operations 1 |
| 16 | A17 | Maintenance operations 2 |
| 17 | A18 | Auxiliary voltage failure |
| 18 | UA1 | User alarm 1 |
| 19 | UA2 | User alarm 2 |
| 20 | UA3 | User alarm 3 |
| 21 | UA4 | User alarm 4 |
| 22-31 | -- | Not used |

## 11.6.2 Status bits (use with MODBUS function 03 and 04)

| Address | Words | Function | Format |
|---|---|---|---|
| 2070h | 1 | Status of keys of the user interface ① | Unsigned integer |
| 2100h | 1 | Status of digital inputs (per PIN) ② | Unsigned integer |
| 2140h | 1 | Status of digital outputs (per PIN) ③ | Unsigned integer |
| - | - | - | - |
| 2074h | 1 | Status of voltage Line 1 ④ | Unsigned integer |
| 2075h | 1 | Status of breaker Line 1 ⑤ | Unsigned integer |
| 2176h | 1 | Status of voltage, Line 2 ④ | Unsigned integer |
| 2177h | 1 | Status of breaker Line 2 ⑤ | Unsigned integer |
| 2078h | 2 | Status of function inputs ⑥ | Unsigned integer |
| 207Ah | 1 | Status of function outputs ⑦ | Unsigned integer |
| 207Bh | 1 | Status of message on display ⑧ | Unsigned integer |
| 207Ch | 1 | General status ATC ⑨ | Unsigned integer |
| 207Eh | 1 | Status of front LEDs | Unsigned integer |
| 207Fh | 1 | Status of front LEDs | Unsigned integer |

**① The 16 bits of the status Keys of the User Interface for the address 2070h have the following meaning:**

| Bit | Key |
|---|---|
| 0 | ▲ |
| 1 | OFF/ RESET |
| 2 | MAN |
| 3 | ▼ |
| 4 | AUT / ✓ |
| 5…15 | Not used |

**② The 16 bits of the status Digital Inputs for the address 2100h have the following meaning:**

| Bit | Digital input |
|---|---|
| 0 | Digital input 1 |
| 1 | Digital input 2 |
| 2 | Digital input 3 |
| 3 | Digital input 4 |
| 4 | Digital input 5 |
| 5 | Digital input 6 |
| 6 | Digital input 7 |
| 7 | Digital input 8 |
| 8 | Digital input 9 |
| 9 | Digital input 10 |
| 10 | Digital input 11 |
| 11 | Digital input 12 |
| 12 | Digital input 13 |
| 13 | Digital input 14 |
| 14 - 15 | Not used |

**③ The 16 bits of the status Digital Inputs for the address 2140h have the following meaning:**

| Bit | Digital output |
|---|---|
| 0 | Digital output 1 |
| 1 | Digital output 2 |
| 2 | Digital output 3 |
| 3 | Digital output 4 |
| 4 | Digital output 5 |
| 5 | Digital output 6 |
| 6 | Digital output 7 |
| 7 | Digital output 8 |
| 8 | Digital output 9 |
| 9 | Digital output 10 |
| 10 | Digital output 11 |
| 11 | Digital output 12 |
| 12 | Digital output 13 |
| 13 | Digital output 14 |
| 14 | Digital output 15 |
| 15 | Not used |

**④ The 16 bits of the status Voltage for Line 1 and Line 2 for the address 2074h or 2176h have the following meaning:**

| Bit | Status of the line |
|---|---|
| 0 | Parameter of the line within the limit thresholds |
| 1 | Parameter of the line within the limit thresholds + delay |
| 2 | Voltage within the limit thresholds |
| 3 | Voltage OK |
| 4 | Frequency within the limit thresholds |
| 5 | Frequency OK |
| 6 | Voltage below the lower threshold |
| 7 | Voltage above the upper threshold |
| 8 | Voltage unbalance |
| 9 | Phase failure |
| 10 | Frequency below the lower threshold |
| 11 | Frequency above the upper threshold |
| 12 | Incorrect phase sequence |
| 13 | All parameters of the Line OK |
| 14-15 | Not used |

**⑤ The 16 bits of the status of Breakers for Line 1 and Line 2 for the address 2075h or 2177h have the following meaning:**

| Bit | Status of the breaker |
|---|---|
| 0 | Breaker closed |
| 1 | Trip alarm |
| 2 | Not used |
| 3 | Command status (1= close) |
| 4 | Output command close |
| 5 | Output command open |
| 6-15 | Not used |

**⑥ The 16 bits of the status Function Inputs for the address 2178h have the following meaning:**

| Bit | Status of function inputs |
|---|---|
| 0 | Line 1 breaker closed |
| 1 | Line 1 breaker trip |
| 2 | Not used |
| 3 | Line 2 breaker closed |
| 4 | Line 2 breaker trip |
| 5 | Not used |
| 6 | Transfer to secondary line |
| 7 | Inhibit automatic return to priority line |
| 8 | Emergency |
| 9 | Start generator |
| 10 | Generator Line 1 ready |
| 11 | Generator Line 2 ready |
| 12 | Keypad lock |
| 13 | Parameter setting lock |
| 14 | Not used |
| 15 | Alarms inhibition |

**⑦ The 16 bits of the status Function Outputs for the address 207Ah have the following meaning:**

| Bit | Status function outputs |
|---|---|
| 0 | Open Line 1 contactor/circuit breaker |
| 1 | Close Line 1 contactor/circuit breaker |
| 2 | Open Line 2 contactor/circuit breaker |
| 3 | Close Line 2 contactor/circuit breaker |
| 4 | Global alarm |
| 5 | Start generator 1 |
| 6 | Start generator 2 |
| 7 | ATC ready |
| 8 | Load shed |
| 9 | Not used |
| 10 | Not used |
| 11 | Open Line 1 and Line 2 |
| 12 | Minimum voltage coil Line 1 |
| 13 | Minimum voltage coil Line 2 |
| 14 | Line 1 OK |
| 15 | Line 2 OK |

**⑧ The 16 bits of the status Function Messages on the display for the address 207Bh have the following meaning:**

| Bit | Messages on display |
|---|---|
| 0 | Start generator 1 |
| 1 | Start generator 2 |
| 2 | Cooling generator 1 |
| 3 | Cooling generator 2 |
| 4 | Counter (2 → 1) |
| 5 | Load transfer 1 → 2 |

**⑨ The 16 bits of the status General Status ATC for the address 207Ch have the following meaning:**

| Bit | General Status ATC |
|---|---|
| 0 | OFF / RESET operating mode |
| 1 | MAN operating mode |
| 2 | AUT operating mode |
| 3 | TEST operating mode |
| 4 | Error |
| 5 | AC supply present |
| 6 | DC supply present |
| 7 | Global alarm enabled |
| 8-15 | Not used |

## 11.6.3 Commands (use with MODBUS function 06)

| Address | Words | Function |
|---|---|---|
| 4F00H | 1 | Enable remote variable 1 ① |
| 4F01H | 1 | Enable remote variable 2 ① |
| 4F02H | 1 | Enable remote variable 3 ① |
| 4F03H | 1 | Enable remote variable 4 ① |
| 4F04H | 1 | Enable remote variable 5 ① |
| 4F05H | 1 | Enable remote variable 6 ① |
| 4F06H | 1 | Enable remote variable 7 ① |
| 4F07H | 1 | Enable remote variable 8 ① |
| 2F00H | 1 | Change of operating mode ② |
| 2F0AH | 1 | Simulation of pressing a key on the user interface ③ |
| 2F03H | 1 | Value 01h: Memory in EEPROM |
| | | Value 04h: Reboot |
| | | Value 05h: Save and reboot |
| 2F07H | 1 | Value 00h: Reset ATC6300 |
| | | Value 01h: Reset the ATC6300 and save in FRAM |
| 2FF0H | 1 | Execution of the command menu ④ |
| 28FAH | 1 | Value 01h: Save the setting of the real-time clock |

**① Remote variables:**

If you write AAh in the corresponding address, the remote variable is set to 1. If you enter BBh, the remote variable is set to 0 and disabled accordingly.

**② Changing the operating mode**

The following values must be sent to the address 2F00H in order to set the corresponding operating mode:

| Value | Function |
|---|---|
| 0 | Enable OFF mode |
| 1 | Enable MAN mode |
| 2 | Enable AUT mode |

### ③ Key press simulation

The following values must be sent to the address 2F0AH in order to simulate the corresponding key press:

| Value | Function |
|---|---|
| 0x8001 | Key ↑ |
| 0x8004 | Key → |
| 0x8200 | Key ↓ |
| 0x8400 | Key ✓ |
| 0x8800 | Key ← |
| 0x0002 | MAN mode |
| 0x0020 | OFF mode |
| 0x0040 | AUT mode |

### Execution of the command menu ④

The following values between 0 and 15 must be sent to the address 2F0AH in order to execute the corresponding command:

| Value | Function |
|---|---|
| 0 | Reset maintenance 1 |
| 1 | Reset maintenance 2 |
| 2 | Reset maintenance operations 1 |
| 3 | Reset maintenance operations 2 |
| 4 | Reset general counters CNTx |
| 5 | Reset LIMx limits |
| 6 | Reset hours counter Line 1 / Line 2 |
| 7 | Reset hour counters Breaker 1 / Breaker 2 |
| 8 | Reset breaker operation |
| 9 | Reset event log |
| 10 | Reset default parameters |
| 11 | Save parameters in backup memory |
| 12 | Reload parameters from backup memory |
| 13 | Forced changeover I / O |
| 14 | Reset A03 - A04 alarms |
| 15 | Simulates line failure |

## 11.6.4 Status of the ATC (use with MODBUS function 03 and 04)

| Address | Words | Function | Format |
|---|---|---|---|
| 2210H | 2 | Status of the ATC (bit 0 - bit 31) | unsigned integer |

The meaning of the 32 bits of the address 2210H can be viewed below:

| Bit | Meaning |
|---|---|
| 0 | ATC OFF |
| 1 | ATC in MAN mode |
| 2 | ATC in AUT mode |
| 3 | ATC in Test mode |
| 4 | Voltage Line 1 OK |
| 5 | Voltage Line 2 OK |
| 6 | LED Line 1 enabled |
| 7 | LED Line 2 enabled |
| 8 | LED load on Line 1 enabled |
| 9 | LED load on Line 2 enabled |
| 10 | Mains breaker closed |
| 11 | Generator breaker closed |
| 12 | Global alarm |
| 13 | AC power supply |
| 14 | Start generator 1 |
| 15 | Start generator 2 |
| 16 | Line 1 maximum voltage |
| 17 | Line 1 minimum voltage |
| 18 | Line 1 maximum frequency |
| 19 | Line 1 minimum frequency |
| 20 | Line 1 phase failure |
| 21 | Line 1 phase unbalance |
| 22 | Line 2 maximum voltage |
| 23 | Line 2 minimum voltage |
| 24 | Line 2 maximum frequency |
| 25 | Line 2 minimum frequency |
| 26 | Line 2 phase failure |
| 27 | Line 2 phase unbalance |
| 28 | Not used |
| 29 | Not used |
| 30 | Not used |
| 31 | Not used |

### 11.6.5 Real-time clock (use with MODBUS function 04 and 06)

| Address | Words | Function | Range |
|---|---|---|---|
| 28F0H | 1 | Year | 2000 - 2099 |
| 28F1H | 1 | Month | 1 - 12 |
| 28F2H | 1 | Day | 1 - 31 |
| 28F3H | 1 | Hours | 0 - 23 |
| 28F4H | 1 | Minutes | 0 - 59 |
| 28F5H | 1 | Seconds | 0 - 59 |

## 11.7 Reading the event log

**In order to read the event log, proceed as follows:**

1. Perform the reading of a register of address 5030h using function 04.
   The most significant byte (msb) specifies how many events have been logged (value from 0 – 100).
   The least significant byte (lsb) is incremented each time an event is stored (value from 0 – 100). If 100 events have been stored, the msb remains at 100, while the lsb is reset to 0 and starts counting again.
2. Set the index to the event that you wish to read (less than the total number of stored events).
   To do this, use function 06 at 5030H.
3. Perform the reading of 43 registers (with a single function 4) at address 5032h.
4. The returned value is a string of 86 ASCII characters that show the same message as on the ATC6300 display. The index of the event to be read is automatically reduced after Register 5032h has been read. This increases the speed of the download.
5. If you would like to read out the next event, perform step 4, and if you would like to read a different one, perform step 3.

**Example:**

**Step 1: Read the stored events**

**Master**

| | |
|---|---|
| Function | = 4 (04H) |
| Address | = 5030H (5030H - 0001H = 502FH) |
| Number of registers | = 1 (01H) |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 01 | 04 | 50 | 2F | 00 | 01 | 11 | 03 |

**ATC**

| | |
|---|---|
| Function | = 4 |
| Number of bytes | = 1 (01H) |
| MSB | = 100 (64H) |
| LSB | = 2 (02H) |

| | | | | | | |
|---|---|---|---|---|---|---|
| 01 | 04 | 02 | 64 | 42 | 13 | C1 |

**Step 2: Set an index for the event to be read**

**Master**

| | |
|---|---|
| Function | = 6 (06H) |
| Address | = 5030H (5030H - 0001H = 502FH) |
| Value | = 1 (01H) |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 01 | 06 | 50 | 2F | 00 | 01 | 68 | C3 |

**ATC**

| | |
|---|---|
| Function | = 6 |
| Address | = 5030H (5030H - 0001H = 502FH) |
| Value | = 1 (01H) |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 01 | 06 | 50 | 2F | 00 | 01 | 68 | C3 |

**Step 3: Read the event**

**Master**

| | |
|---|---|
| Function | = 4 (04H) |
| Address | = 5030H (5030H - 0001H = 502FH) |
| Number of registers | = 86 (56H) |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 01 | 04 | 50 | 31 | 00 | 2B | F0 | DA |

**ATC**

| | |
|---|---|
| Function | = 4 (04H) |
| Address | = 5030H (5030H - 0001H = 502FH) |
| Number of bytes | = 86 (56H) |

**String OFF** 2017/10/05; 12:49:50; E0500, REMOTE CONTROL: START COMM.

## 11.8 Reading parameters by means of MODBUS

It is possible to read parameters of the ATC6300 via MODBUS.

For an understanding of the numeric designation of the parameters and the corresponding functions, please refer to chapter Parameterization (Page 115).

**Procedure for reading the parameters**

1. Using function 06, write the value of the menu to be read to the address 5000h .
2. Write the value of the submenu to be read (where present), using function 06, to the address 5001h.
3. Using function 6, write the value of the parameters to be read to the address 5002h.
4. Perform function 4 at the address 5004h, with the number of the register corresponding to the length of the parameter (see table).

| Type of parameter | Numbers of registers |
|---|---|
| Text length 6 characters (e.g. P14.0x.06) | 3 registers (6 byte) |
| Text length 16 characters (e.g. P14.0x.05) | 8 registers (16 byte) |
| Text length 20 characters (e.g. P15.0x.03) | 10 registers (20 byte) |
| Abs (numerical value) < 32768 (e.g. P12.05) | 1 register (2 byte) |
| Abs (numerical value) < 32768 (e.g. P12.01) | 2 registers (4 byte) |
| IP address (e.g. P08.0x.06) | 2 registers (4 byte) |

5. In order to read another parameter in the same menu / submenu repeat step 4, or if you wish to read a new parameter, repeat step 1.

## 11.9 Changing parameters by means of MODBUS

1. Write the value of the menu to be changed to the address 5000h using function 06.
2. Write the value of the submenu to be changed (where present), using function 06, to the address 5001h.
3. Using function 6, write the value of the parameters to be changed to the address 5002h.
4. Perform function 16 at the address 5004h, with the number of the register corresponding to the length of the parameter (see table).
5. In order to change another parameter in the same menu / submenu repeat step 4, or if you wish to read a new parameter, repeat step 1.
6. In order to carry out changes to the parameters successfully, it is necessary to save these in the EEPROM of the device.
   For this purpose, execute the command in accordance with chapter Commands (use with MODBUS function 06) (Page 164). (Using function 6, write the value 5 to the address 2F03).

**Step 1: Select menu 08**

**Master**

Function = 6
Address = 5000H (5000H - 0001H = 4FFFH)
Value = 8 (08H)

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 01 | 06 | 4F | FF | 00 | 08 | AE | E8 |

**ATC**

Function = 6
Address = 5000H (5000H - 0001H = 4FFFH)
Value = 8 (08H)

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 01 | 06 | 4F | FF | 00 | 08 | AE | E8 |

**Step 2: Select submenu 01**

**Master**

Function = 6
Address = 5000H (5000H - 0001H = 4FFFH)
Value = 1 (01H)

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 01 | 06 | 50 | 00 | 00 | 01 | 59 | 0A |

**ATC**

Function = 6
Address = 5001H (5001H - 0001H = 5000H)
Value = 1 (01H)

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 01 | 06 | 50 | 00 | 00 | 01 | 59 | 0A |

**Step 3: Select parameter 03**

**Master**

| | |
|---|---|
| Function | = 6 |
| Address | = 5002H (5002H - 0001H = 5001H) |
| Value | = 1 (01H) |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 01 | 06 | 50 | 01 | 00 | 01 | 08 | CA |

**ATC**

| | |
|---|---|
| Function | = 6 |
| Address | = 5002H (5002H - 0001H = 5001H) |
| Value | = 1 (02H) |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 01 | 06 | 50 | 01 | 00 | 01 | 08 | CA |

**Step 4: Set the value 8**

**Master**

| | |
|---|---|
| Function | = 16 (10H) |
| Address | = 5004H (5004H - 0001H = 5003H) |
| Value | = 1 (01H) |
| Number of registers | = 1 (01H) |
| Number of bytes | = 8 (0008H) |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 10 | 50 | 03 | 00 | 01 | 02 | 00 | 08 | F7 | A0 |

**ATC**

| | |
|---|---|
| Function | = 16 (10H) |
| Address | = 5004H (5004H - 0001H = 5003H) |
| Value | = 2 (02H) |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 01 | 10 | 50 | 03 | 00 | 01 | E0 | C9 |

**Step 5: Save and reboot**

**Master**

| | |
|---|---|
| Function | = 6 (06H) |
| Address | = 2F03H (2F03H - 0001H = 2F02H) |
| Value | = 5 (04H) |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 01 | 06 | 2F | 02 | 00 | 05 | E0 | DD |

**ATC**

No response

# Accessories

# 12

The following chapter contains information on:

- Expansion modules
- Cover frames
- USB front interface

## 12.1 Expansion modules

As already shown in the chapter Expandability by modules (Page 41), the ATC6300 can be extended by means of various modules:

| Module type | MLFB | Function |
|---|---|---|
| Communication | 3KC9000-8TL74 | RS485 (MODBUS RTU) |
| | 3KC9000-8TL75 | Ethernet (MODBUS TCP) |
| Digital inputs and outputs | 3KC9000-8TL60 | 4 digital inputs |
| | 3KC9000-8TL61 | 4 digital outputs, SSR (4 NO contacts) |
| | 3KC9000-8TL62 | 2 digital inputs and 2 digital outputs, SSR (2 NO contacts) |
| | 3KC9000-8TL63 | 2 digital relay outputs (2 changeover contacts) |
| | 3KC9000-8TL64 | 2 digital inputs and 2 relay outputs (2 NO contacts) |

For information on the installation of the expansion modules, see chapter Inserting an expansion module (Page 43).

## 12.1.1 Expansion module 4DI - 3KC9000-8TL60

### Description

The expansion module 4DI (article number 3KC9000-8TL60) contains four opto-isolated digital inputs.

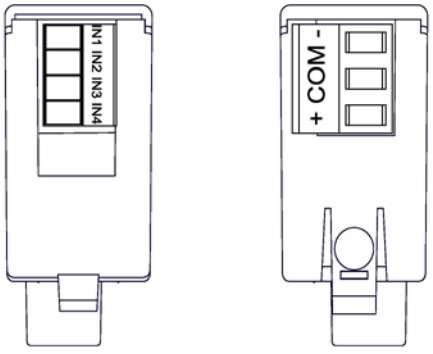
In addition, a DC source (24 V / 1 W) is attached, in order to supply voltage to various types of input.

These include:

- NPN, PNP, PUSH, PULL
- Active sensors with digital outputs

### Connection drawings

Design of the terminals




### Maximum current for supplying sensors

If the DC source of the expansion module is used for supplying sensors, the maximum current for supplying sensors can be calculated as follows:

**Isens = 42 mA - n * 7 mA**

Isens: Sensor current

42 mA = Maximum current of the DC source

n = Number of inputs used (including sensors)

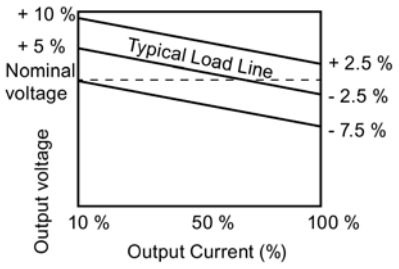
7 mA = Consumption of one input

Example:

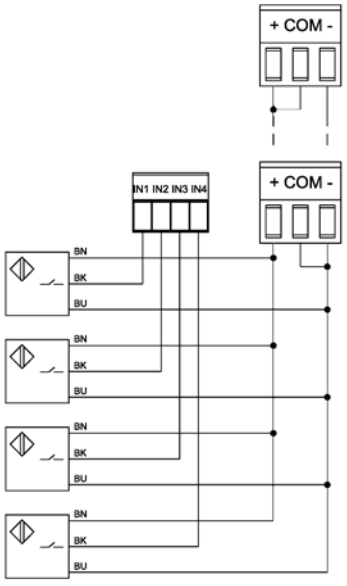
Use of 2 inputs with SSRs and one sensor

**Isens = 42 mA - 3 * 7 mA = 21 mA**

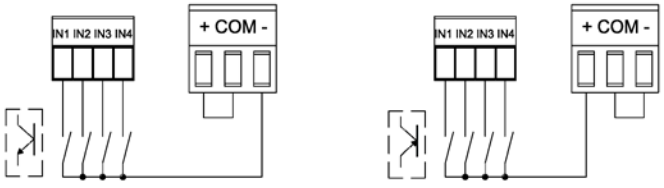
### Tolerance graph




### Connection of sensors




### Connection of floating contacts



### 12.1.1.1 Technical specifications

| | |
|---|---|
| **Power supply** | |
| Supply voltage | 5 V DC (supplied through the ATC6300) |
| Current consumption (max.) | 290 mA |
| Power loss (max.) | 1.5 W |
| **Digital inputs** | |
| Number of digital inputs | 4 |
| Input type | Positive or negative (depending on the connection of the control terminal COM)<br>**Note**: All inputs must have the same polarity |
| Input current | 7 mA |
| Input signal - logical state "0" | ≤ 2 V (if COM is connected to -)<br>≥ 22 V (if COM is connected to +) |
| Input signal - logical state "1" | ≥ 7.6 V (if COM is connected to -)<br>≤ 12.4 V (if COM is connected to +) |
| Maximum frequency | 2000 Hz (if the input is configured as a counter)<br>50 Hz (if input is configured as status) |
| Input signal delay | ≥ 50 ms |
| Connecting terminals | Removable / plug-in |
| Cable cross-section (min-max) | 0.2 … 1.5 $mm^2$ (AWG 28 ... 14) |
| Tightening torque | 0.18 Nm (1.7 lbf-in) |
| **Control terminal COM and auxiliary supply terminals + and -** | |
| Auxiliary power supply at + and - | 24 V DC (see tolerance graph in chapter Expansion module 4DI (Page 176)) |
| Maximum current at + and - | 42 mA (protected against overload and short-circuit)<br>**Note**: If the maximum current is exceeded, the protection is enabled and the voltage drops |
| Connecting terminals | Removable / plug-in |
| Number of terminals | 3 |
| Cable cross-section (min-max) | 0.2 … 2.5 $mm^2$ (AWG 24 ... 12) |
| Cable cross-section (min-max) acc. to UL 508 | 0.75 … 2.5 $mm^2$ (AWG 18 ... 12) |
| Tightening torque | 0.5 Nm (4.5 lbf-in) |
| **Insulation** | |
| Impulse withstand voltage $U_{imp}$ | 4 kV |
| Operating frequency impulse withstand voltage | 2 kV |
| **Ambient conditions** | |
| Operating temperature | -20 … +60 °C |
| Storage temperature | -30 … +80 °C |
| Relative humidity | < 80 % (IEC / EN 60068-2-70) |
| Maximum degree of pollution | 2 |

| | |
|---|---|
| Overvoltage category | 3 |
| Altitude of environment (max.) | ≤ 2000 m |
| **Enclosure** | |
| Enclosure material | Polyamide RAL7035 |
| Degree of protection | IP20 |
| Weight | 60 g |
| **Certifications and approvals** | |
| The following standards are complied with: | cULus |
| Complies with standards | IEC / EN 61010-1<br>IEC / EN 61000-6-2<br>IEC / EN 61000-6-3<br>UL 508<br>CSA C22.2-N°14 |
| UL marking | Four signal input 24 V DC, 42 mA |

## 12.1.2 Expansion module 4DO - 3KC9000-8TL61

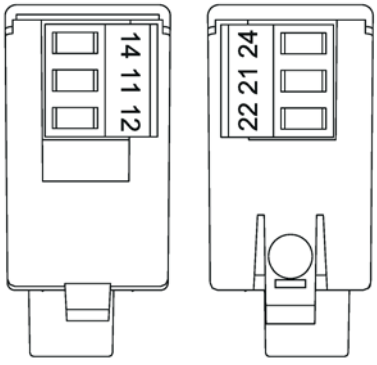
### Description

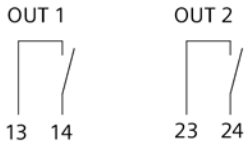
The expansion module 4DO (article number 3KC9000-8TL61) contains 4 solid-state relay (SSR) outputs.

The outputs are independent of one another.

### Connection drawings

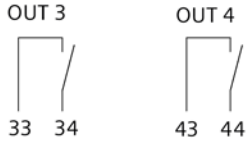
Design of the terminals









### 12.1.2.1 Technical specifications

| | |
|---|---|
| **Power supply** | |
| Supply voltage | 5 V DC (supplied through the ATC6300) |
| Current consumption (max.) | 20 mA |
| Power loss (max.) | 0.1 W |
| **SSR output** | |
| Output type | Solid state relays (Opto-Mosfet) |
| Solid state output rating (at 60°C) | Max. 55 mA at 40 V DC / 30 V AC |
| Contact type | 4 NO contacts |
| Connecting terminals | Removable / plug-in |
| Cable cross-section (min-max) | 0.2 … 1.5 $mm^2$ (AWG 28 ... 14) |
| Tightening torque | 0.18 Nm (1.7 lbf-in) |
| **Insulation** | |
| Impulse withstand voltage $U_{imp}$ | 7.3 kV |
| Operating frequency impulse withstand voltage | 4 kV |
| **Ambient conditions** | |
| Operating temperature | -20 … +60 °C |
| Storage temperature | -30 … +80 °C |
| Relative humidity | < 80 % (IEC / EN 60068-2-70) |
| Maximum degree of pollution | 2 |
| Overvoltage category | 3 |
| Altitude of environment (max.) | ≤ 2000 m |
| **Enclosure** | |
| Enclosure material | Polyamide RAL7035 |
| Degree of protection | IP20 |
| Weight | 54 g |
| **Certifications and approvals** | |
| The following standards are complied with: | cULus |
| Complies with standards | IEC / EN 61010-1<br>IEC / EN 61000-6-2<br>IEC / EN 61000-6-3<br>UL 508<br>CSA C22.2-N°14 |
| UL marking | Four solid state outputs:<br>• 30 V AC, 55 mA general use<br>• 40 V AC, 55 mA general use<br>Use 60° C / 75 °C copper (CU) conductor only<br>AWG Range: 28 - 14 AWG stranded or solid<br>Field wiring terminals tightening torque:<br>1.7 lbf-in |

## 12.1.3 Expansion module 2DI 2DO - 3KC9000-8TL62

### Description

The expansion module 2DI 2DO (article number 3KC9000-8TL62) contains 2 opto-isolated digital inputs and 2 solid-state relay (SSR) outputs.

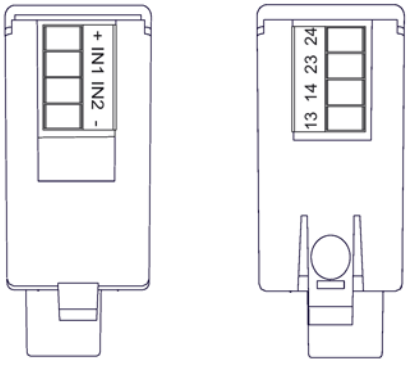
In addition, a DC source (24 V / 1 W) is attached, in order to supply power to various types of input.

These include:

- NPN, PNP, PUSH PULL
- Active sensors with digital outputs

### Connection drawings

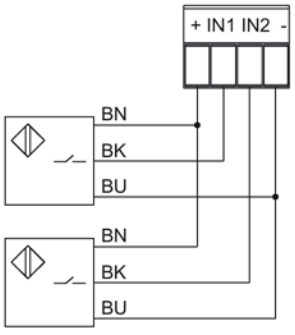
Design of the terminals



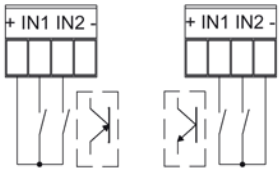

### Maximum current for supplying sensors and tolerance graph

You can find more information in chapter Expansion module 4DI - 3KC9000-8TL60 (Page 176)

### Connection of sensors



**Connection of floating contacts**



### 12.1.3.1 Technical specifications

| | |
|---|---|
| **Power supply** | |
| Supply voltage | 5 V DC (supplied through the ATC6300) |
| Current consumption (max.) | 250 mA |
| Power loss (max.) | 1.25 W |
| **Digital inputs** | |
| Number of digital inputs | 2 |
| Input type | Positive or negative |
| Input current | 7 mA |
| Input signal - logical state "0" | Must be an open collector signal |
| Input signal - logical state "1" | ≥ 17.6 V (for PNP type)<br>≤ 6.4 V (for NPN type) |
| Maximum frequency | 2000 Hz (if the input is configured as a counter)<br>50 Hz (if input is configured as status) |
| Input signal delay | ≥ 50 ms |
| **Auxiliary supply terminals + and - terminal** | |
| Auxiliary power supply at + and - | 24 V DC (see tolerance graph in chapter Expansion module 2DI 2DO (Page 182)) |
| Maximum current at + and - | 42 mA (protected against overload and short-circuit)<br>**Note**: If the maximum current is exceeded, the protection is enabled and the voltage drops |
| Number of terminals | 2 |
| **SSR output** | |
| Output type | Solid state relays (Opto-Mosfet) |
| Solid state output rating (at 60 °C) | Max. 55 mA at 40 V DC / 30 V AC |
| **Connection** | |
| Connecting terminals | Removable / plug-in |
| Cable cross-section (min-max) | 0.2 … 1.5 $mm^2$ (AWG 28 ... 14) |
| Tightening torque | 0.18 Nm (1.7 lbf-in) |
| **Insulation** | |
| Impulse withstand voltage Uimp | 4 kV |
| Operating frequency impulse withstand voltage | 2 kV |
| **Ambient conditions** | |
| Operating temperature | -20 … +60 °C |
| Storage temperature | -30 … +80 °C |
| Relative humidity | < 80 % (IEC / EN 60068-2-70) |
| Maximum degree of pollution | 2 |
| Overvoltage category | 3 |
| Altitude of environment (max.) | ≤ 2000 m |

| **Enclosure** | |
|---|---|
| Enclosure material | Polyamide RAL7035 |
| Degree of protection | IP20 |
| Weight | 58 g |
| **Certifications and approvals** | |
| The following standards are complied with: | cULus |
| Complies with standards | IEC / EN 61010-1<br>IEC / EN 61000-6-2<br>IEC / EN 61000-6-3<br>UL 508<br>CSA C22.2-N°14 |
| UL marking | AWG range: 28 - 14 AWG stranded or solid<br>Field wiring terminals tightening torque: 1.7 lbf-in |

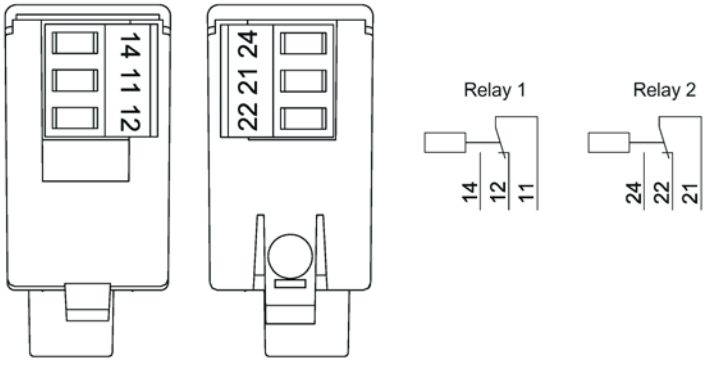
## 12.1.4 Expansion module 2DO - 3KC9000-8TL63

### Description

The expansion module 2DO (article number 3KC9000-8TL63) contains 2 relay outputs as changeover contacts with 5 A 250 V AC at AC1.

### Connection drawings

Design of the terminals



### 12.1.4.1 Technical specifications

| | |
|---|---|
| **Power supply** | |
| Supply voltage | 5 V DC (supplied through the ATC6300) |
| Current consumption (max.) | 100 mA |
| Power loss (max.) | 0.5 W |
| **Relay outputs** | |
| Contact type | 2x 1 CO contacts |
| Rated contact current (IEC 60947-5-1) | AC1 5 A 250 V<br><br>DC1 5 A 28 V<br>AC15 1.5 A 250 V |
| UL Rating (UL 508) | B300, R300, 28 V DC 5A resistive, 250 V AC 5 A resistive |
| Operational voltage (maximum) | 250 V AC |
| Mechanical/electrical endurance (cycle) | 3x10^6 / 1x10^5 |
| Connecting terminals | Removable / plug-in |
| Cable cross-section (min-max) | 0.2 … 2.5 $mm^2$ (AWG 28 ... 12) |
| Tightening torque | 0.5 Nm (4.5 lbf-in) |
| Conductor temperature (min.) | 75 °C |
| **Insulation** | |
| Insulation voltage Ui | 250 V AC |
| Impulse withstand voltage Uimp | |
| - between the ATC and the outputs: | 7.3 kV |
| - between 2 relay outputs: | 2.5 kV |
| Operating frequency impulse withstand voltage | |
| - between the ATC and the outputs: | 4 kV |
| - between 2 relay outputs: | 1.5 kV |
| **Ambient conditions** | |
| Operating temperature | -20 … +60 °C |
| Storage temperature | -30 … +80 °C |
| Relative humidity | < 80 % (IEC / EN 60068-2-70) |
| Maximum degree of pollution | 2 |
| Overvoltage category | 3 |
| Altitude of environment (max.) | ≤ 2000 m |
| **Enclosure** | |
| Enclosure material | Polyamide RAL7035 |
| Degree of protection | IP20 |
| Weight | 50 g |
| **Certifications and approvals** | |
| The following standards are complied with: | cULus |

| | |
|---|---|
| Complies with standards | IEC / EN 61010-1<br>IEC / EN 61000-6-2<br>IEC / EN 61000-6-3<br>UL 508<br>CSA C22.2-N°14 |
| UL marking | Relay output:<br>NO+NC<br>28 V DC, 5 A resistive<br>250 V AC, 5 A resistive<br>B300, R300 pilot duty<br>Use 60 °C / 75 °C copper (CU) conductor only<br>AWG Range: 28 - 12 AWG stranded or solid<br>Field wiring terminals tightening torque: 4.5 lbf-in |

## 12.1.5 Expansion module 2DI 2DO - 3KC9000-8TL64

### 12.1.5.1 Expansion module 2DI 2DO - 3KC9000-8TL64

#### Description

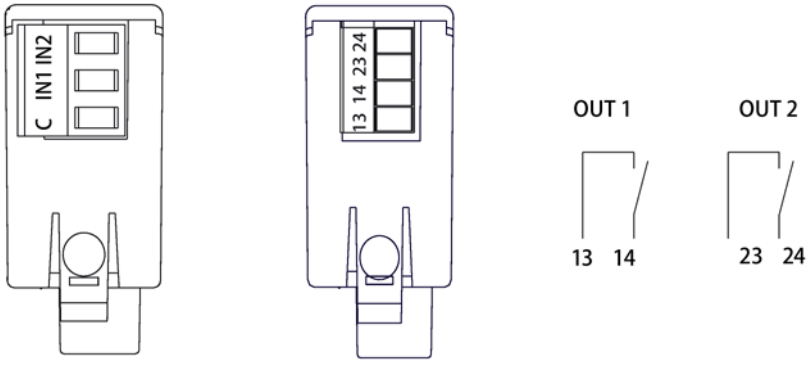
The expansion module 2DI 2DO (article number 3KC9000-8TL64) contains 2 opto-isolated digital inputs and 2 relay outputs with 2 NO contacts.

The following inputs can be used:

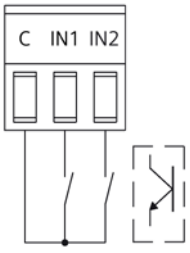
- NPN open collector

#### Connection drawings

Design of the terminals




#### Connection of NPN open collector



### 12.1.5.2 Technical specifications

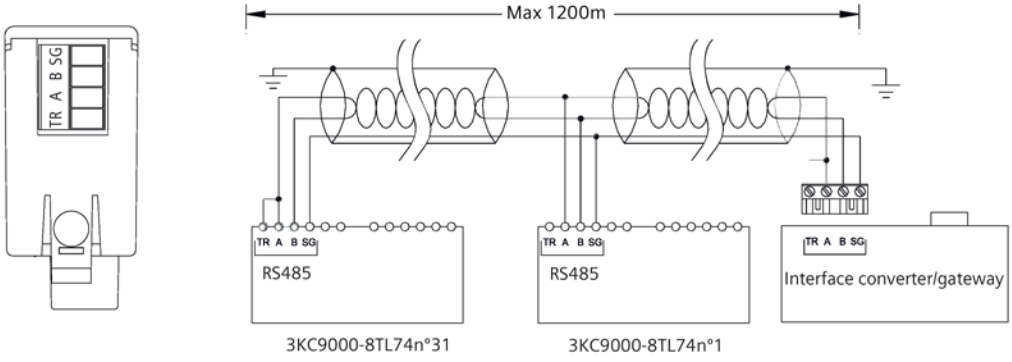
| | |
|---|---|
| **Power supply** | |
| Supply voltage | 5 V DC (supplied through the ATC6300) |
| Current consumption (max.) | 200 mA |
| Power loss (max.) | 1.0 W |
| **Digital inputs** | |
| Number of digital inputs | 2 |
| Input type | Negative |
| Input current | 7 mA |
| Maximum frequency | 2000 Hz (if the input is configured as a counter)<br><br>50 Hz (if input is configured as status) |
| Input signal delay | ≥ 50 ms |
| Impulse withstand voltage $U_{imp}$ | 4 kV |
| Operating frequency impulse withstand voltage | 2 kV |
| **Control terminal COM** | |
| Auxiliary power supply at control terminal COM | 5 V DC |
| **Relay outputs** | |
| Contact type | 2x 1 NO contacts |
| Rated contact current (IEC 60947-5-1) | AC1 5 A 250 V<br>DC1 2 A 30 V<br>AC15 0.75 A 250 V |
| UL Rating | C300, 2 A 30 V DC, 5 A 250 V AC pilot duty |
| Operational voltage (maximum) | 250 V AC |
| Mechanical/electrical endurance (cycle) | 3x10^6 / 1x10^5 |
| Impulse withstand voltage $U_{imp}$ | 4 kV |
| Insulation voltage $U_i$ | 250 V AC |
| Operating frequency impulse withstand voltage | 2 kV |
| **Connection** | |
| Connecting terminals | Removable / plug-in |
| Cable cross-section (min-max) | 0.2 … 2.5 $mm^2$ (AWG 24 ... 12) |
| Cable cross-section (min-max) acc. to UL 508 | 0.75 … 2.5 $mm^2$ (AWG 18 ... 12) |
| Tightening torque | 0.5 Nm (4.5 lbf-in) |
| **Ambient conditions** | |
| Operating temperature | -20 … +60 °C |
| Storage temperature | -30 … +80 °C |
| Relative humidity | < 80 % (IEC / EN 60068-2-70) |
| Maximum degree of pollution | 2 |

| | |
|---|---|
| Overvoltage category | 3 |
| Altitude of environment (max.) | ≤ 2000 m |
| **Enclosure** | |
| Enclosure material | Polyamide RAL7035 |
| Degree of protection | IP20 |
| Weight | 80 g |
| **Certifications and approvals** | |
| The following standards are complied with: | cULus |
| Complies with standards | IEC / EN 61010-1<br>IEC / EN 61000-6-2<br>IEC / EN 61000-6-3<br>UL 508<br>CSA C22.2-N°14 |
| UL marking | AWG range: 18 - 12 AWG stranded or solid<br>Field wiring terminals tightening torque: 4.5 lbf-in |

## 12.1.6 Expansion module RS485 - 3KC9000-8TL74

Using the expansion module RS485 (article number 3KC9000-8TL74) it is possible to communicate via the serial interface using Modbus.

### Connection drawing

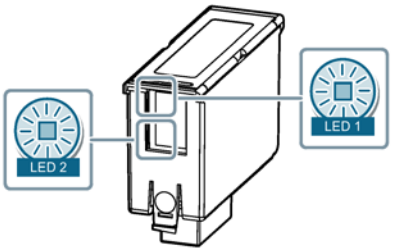


### 12.1.6.1 Technical specifications

| | |
|---|---|
| **Power supply** | |
| Supply voltage | 5 V DC (supplied through the ATC6300) |
| Current consumption (max.) | 50 mA |
| Power loss (max.) | 0.25 W |
| **RS485 port connection** | |
| Connecting terminals | Removable / plug-in |
| Number of terminals | 4 |
| Cable cross-section (min-max) | 0.2 … 1.5 $mm^2$ (AWG 28 ... 14) |
| Tightening torque | 0.18 Nm (1.7 lbf-in) |
| **Insulation** | |
| Impulse withstand voltage $U_{imp}$ | 7.3 kV |
| Operating frequency impulse withstand voltage | 4 kV |
| **Ambient conditions** | |
| Operating temperature | -20 … +60 °C |
| Storage temperature | -30 … +80 °C |
| Relative humidity | < 80 % (IEC / EN 60068-2-70) |
| Maximum degree of pollution | 2 |
| Overvoltage category | 3 |
| Altitude of environment (max.) | ≤ 2000 m |
| **Enclosure** | |
| Enclosure material | Polyamide RAL7035 |
| Degree of protection | IP20 |
| Weight | 50 g |
| **Certifications and approvals** | |
| The following standards are complied with: | cULus |
| Complies with standards | RS485 output<br>Use 60 °C / 75 °C copper conductors only<br>AWG range: 28 - 14 AWG stranded or solid<br>Field wiring terminals tightening torque: 1.7 lbf-in |
| UL marking | IEC / EN 61010-1<br>IEC / EN 61000-6-2<br>IEC / EN 61000-6-3<br>UL 508<br>SA C22.2-N°14 |

## 12.1.7 Expansion module Ethernet - 3KC9000-8TL75

Using the Ethernet expansion module it is possible to communicate via a MODBUS TCP interface.




The LEDs on the expansion module have the following meaning:

| |   |   |   |
|---|---|---|---|
|   | No connection | 100 Mbps | 10 Mbps |
|   | No activity | Full duplex | Half duplex |

### 12.1.7.1 Technical specifications

| | |
|---|---|
| **Power supply** | |
| Supply voltage | 5 V DC (supplied through the ATC6300) |
| Current consumption (max.) | 250 mA |
| Power loss (max.) | 1.25 W |
| **Ethernet interface** | |
| Network interface | RJ45 Ethernet 10BASE-T or 100BASE-TX |
| Compatibility | Version 2.0 / IEEE802,3 |
| Type of connection | RJ45 |
| **Insulation** | |
| Impulse withstand voltage $U_{imp}$ | 4 kV |
| Operating frequency impulse withstand voltage | 2 kV |
| **Ambient conditions** | |
| Operating temperature | -20 … +60 °C |
| Storage temperature | -30 … +80 °C |
| Relative humidity | < 80 % (IEC / EN 60068-2-70) |

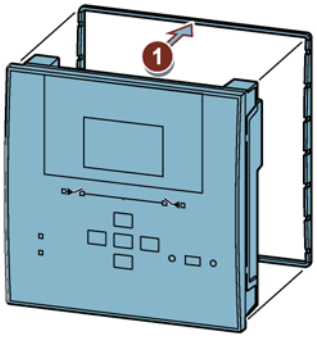
| | |
|---|---|
| Maximum degree of pollution | 2 |
| Overvoltage category | 3 |
| Altitude of environment (max.) | ≤ 2000 m |
| **Enclosure** | |
| Enclosure material | Polyamide RAL7035 |
| Degree of protection | IP20 |
| Weight | 60 g |
| **Certifications and approvals** | |
| The following standards are complied with: | cULus, EAC |
| Complies with standards | IEC / EN 61010-1<br>IEC / EN 61000-6-2<br>IEC / EN 61000-6-3<br>UL 508<br>CSA C22.2-N°14 |

## 12.2 Cover frame - 3KC9000-8TL67

The cover frame 3KC9000-8TL67 provides front-panel IP65 protection for the ATC6300.

It is mounted between the door cutout and the ATC6300.

### Attachment of the cover frame



## 12.3 USB front interface - 3KC9000-8TL73

By means of the USB front interface 3KC9000-8TL73, the ATC6300 can be parameterized from the front interface.

This means that the cabinet door does not need to be opened for parameterization using software. Communication with the ATC6300 is by means of an infrared connection.

The device can subsequently be parameterized using the Siemens powerconfig software. The connection is set up via the USB. The USB connecting cable is included in the scope of supply and measures 1.5 m long.

You can find more information on connecting the front interface in the chapter Parameterization (Page 115).

**Note**

In order to parameterize the ATC6300, you require the powerconfig software, version 3.10, or higher.

# Technical specifications

# 13

| | |
|---|---|
| **Auxiliary power supply: Terminal 13,14** | |
| Supply voltage $U_s$ | 100 ... 240 V AC<br>110 ... 250 V DC |
| Operating range | 90 ... 264 V AC<br>93.5 ... 300 V DC |
| Operating frequency | 45 ... 66 Hz |
| Power loss (max.) | 3.8 W |
| Power consumption (max.) | 9.5 VA |
| Interference strength against voltage dips | |
| - without expansion modules | ≤ 50 ms (at 110 V AC)<br>≤ 250 ms (at 220 V AC) |
| - with 2 expansion modules | ≤ 25 ms (at 110 V AC)<br>≤ 120 ms (at 220 V AC) |
| Recommended fusible link | F1A (quick-response) |
| Insulation voltage $U_i$ | 250 V AC |
| Impulse withstand voltage $U_{imp}$ | 7.3 kV |
| Operating frequency impulse withstand voltage | 3 kV |
| **DC power supply: Terminal 31, 32** | |
| Battery power supply | 12 or 24 V DC |
| Operating range of battery power supply | 7.5 ... 33 V DC |
| Current consumption (max.) | 230 mA at 12 V DC<br>120 mA at 24 V DC |
| Power loss (max.) | 3.2 W |
| **Voltage measuring inputs: Terminals 1-4 and 5-8** | |
| Nominal voltage $U_e$ (maximum) | 480 V AC L-L (277 V AC L-N) |
| Measuring range | 50 ... 576 V AC L-L (333 V AC L-N) |
| Frequency range | 45 ... 65 Hz |
| Measuring method | True RMS |
| Impedance of measuring input | > 0.5 MΩ L-N<br>> 1.0 MΩ L-L |
| Connection method | Single-phase, two-phase, or three-phase system |
| Measuring accuracy | ± 0.25 %, value range ± 1 digit |
| Insulation voltage $U_i$ | 480 V AC |
| Impulse withstand voltage $U_{imp}$ | 7.3 kV |
| Operating frequency impulse withstand voltage | 3 kV |

| | |
|---|---|
| **Real-time clock** | |
| Energy storage | Stored-energy capacitors |
| Operating period without power supply | 5 minutes |
| **Digital inputs: Terminals 15-20** | |
| Input type | Negative |
| Input current | ≤ 8 mA |
| Input signal - logical state "0" | ≤ 2 |
| Input signal - logical state "1" | ≥ 3.4 |
| Input signal delay | ≥ 50 msec |
| **Relay outputs OUT1 and OUT2: Terminals 9, 10 and 11, 12** | |
| Contact type | 2x 1 NO contacts |
| Rated contact current | AC1 8 A 250 V<br>DC1 8 A 30 V<br>AC15 1.5 A 250 V |
| UL Rating | B300<br>30 V DC 1A pilot duty |
| Output voltage (maximum) | 250 V AC |
| Mechanical / electrical endurance (cycle) | 1x10^7 / 1x10^5 |
| Design of insulation | Single between OUT1 and OUT2<br>Double for the remaining groups |
| Insulation voltage $U_i$ | 250 V AC |
| | Single / double |
| Impulse withstand voltage $U_{imp}$ | 4.8 kV / 7.3 kV |
| Operating frequency impulse withstand voltage | 1.5 kV / 3 kV |
| **Relay output OUT3: Terminals 22, 23, 24** | |
| Contact type | 1 CO contact |
| Rated contact current | AC1 8 A 250 V<br>DC1 8 A 30 V<br>AC15 1.5 A 250 V |
| UL Rating | B300<br>30 V DC 1A pilot duty |
| Output voltage (maximum) | 250 V AC |
| Mechanical / electrical endurance (cycle) | 1x10^7 / 1x10^5 |
| Insulation voltage $U_i$ | 250 V AC |
| Impulse withstand voltage $U_{imp}$ | 7.3 kV |
| Operating frequency impulse withstand voltage | 3 kV |

| **Relay outputs OUT4 and OUT5, as well as OUT6 and OUT7: Terminals 25, 26, 27 and terminals 28, 29, 30** | |
|---|---|
| Contact type | 4x1 NO contacts (OUT4 and OUT5 as well as OUT6-7 with common control terminal) |
| Rated contact current | AC1 8 A 250 V<br>DC1 8A 30 V<br>AC15 1.5 A 250 V |
| UL Rating | B300<br>30 V DC 1A pilot duty |
| Output voltage (maximum) | 250 V AC |
| Mechanical / electrical endurance | 1x10^7 / 1x10^5 |
| Insulation voltage $U_i$ | 250 V AC |
| Design of insulation | Single between OUT4-5 and between OUT6-7<br>Double for the remaining groups |
| | Single / double |
| Impulse withstand voltage $U_{imp}$ | 4.8 kV / 7.3 kV |
| Operating frequency impulse withstand voltage | 1.5 / 3 kV |
| **Ambient conditions** | |
| Operating temperature | -30 … +70 °C |
| Storage temperature | -30 … +80 °C |
| Relative humidity | < 80 % (IEC / EN 60068-2-70) |
| Maximum degree of pollution | 2 |
| Overvoltage category | 3 |
| Measuring category | CAT III |
| **Connections** | |
| Connecting terminals | Removable / plug-in |
| Cable cross-section (min-max) | 0.2 … 2.5 $mm^2$ (AWG 24 ... 12) |
| Cable cross-section (min-max) acc. to UL 508 | 0.75 … 2.5 $mm^2$ (AWG 18 ... 12) |
| Tightening torque | 0.56 Nm (5 lbf-in) |
| **Enclosure** | |
| Enclosure material | Polyamide |
| Version | Door installation |
| Degree of protection | IP40 at front (can be increased to IP65 by using cover frame), IP20 at rear |
| Weight | 600 g |

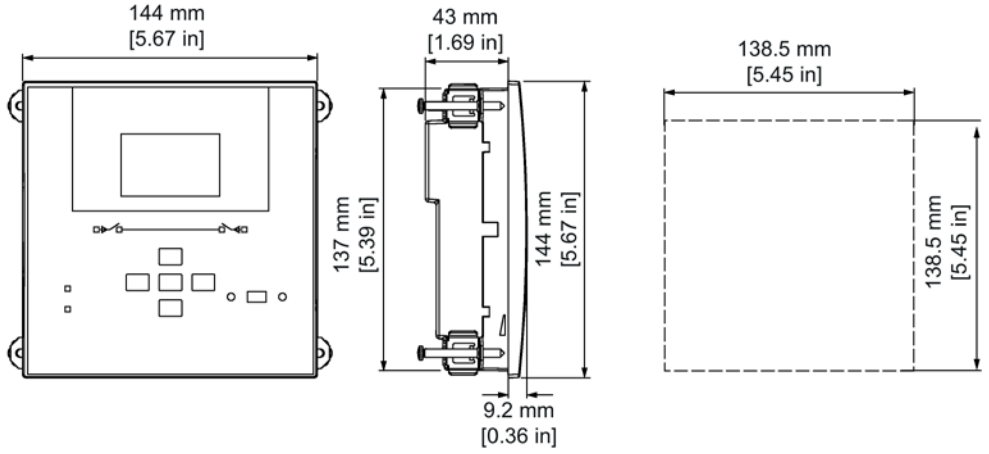
| Certifications and approvals | |
|---|---|
| The following standards are complied with: | EAC, cULus |
| Complies with standards | IEC / EN 61010-1<br>IEC / EN 61010-2-030<br>IEC / EN 61000-6-2<br>IEC / EN 61000-6-4<br>IEC / EN 60947-1*<br>IEC / EN 60947-6-1*<br>UL 508<br>CSA C22.2-N°14 |
| UL marking | Use 60 °C / 75 °C copper (CU) conductor only<br>AWG range: 18 - 12 AWG stranded or solid<br>Field wiring terminals tightening torque: 4.5 lb.in<br>Flat panel mounting on a Type 1 enclosure |

* this product is designed for environment A in compliance with EMC requirements. Its use in a Class B environment can lead to unwanted electromagnetic problems. Consideration should be given to possible measures for mitigating the electromagnetic radiation.

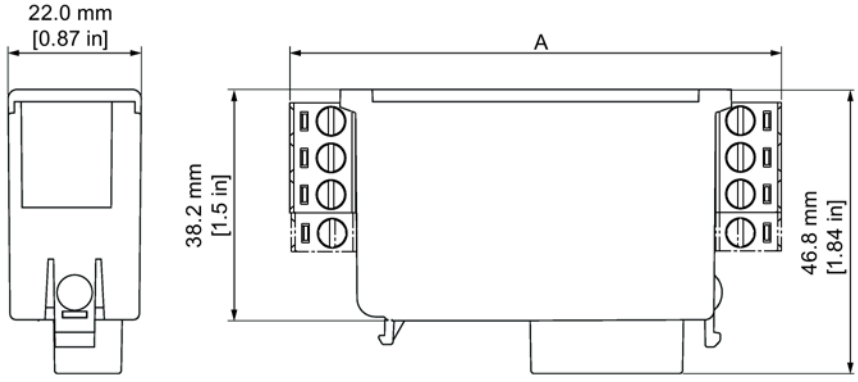
# Dimension drawings

# 14

## 3KC ATC6300 transfer control device

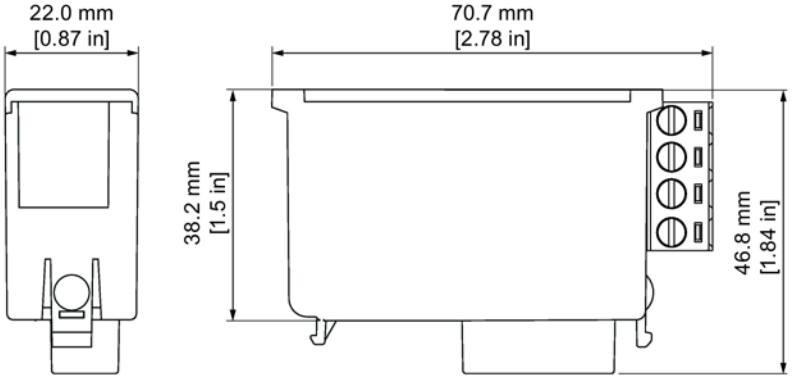



## DI DO expansion modules

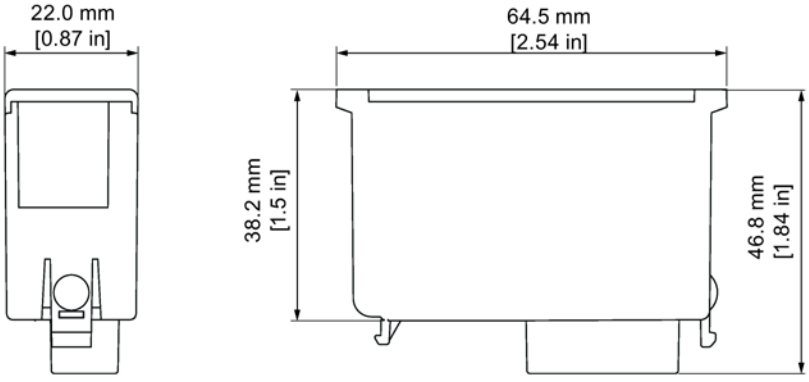



| | 3KC9000-8TL60 | 3KC9000-8TL61 | 3KC9000-8TL62 | 3KC9000-8TL63 | 3KC9000-8TL64 |
|---|---|---|---|---|---|
| A | 77.5 mm [3.05 in] | | | 78.0 mm [3.07 in] | |

## RS 485 expansion module




## Ethernet expansion module



# List of abbreviations

# A

## A.1 List of abbreviations

### Meaning of abbreviations used in this document

| Abbreviation | Meaning |
|---|---|
| CR LF | Carrige Return / Line Feed |
| EEPROM | Electrically erasable programable read-only memory |
| EJP | Effacement Jour de Pointe (French technical term) - Changeover due to external signal |
| EJP-T | See EJP - with timer function |
| LIM | User limit threshold |
| LSB | Least Significant Byte |
| MSB | Most Significant Byte |
| NOC | No Change |
| OAP | Open After Presence |
| OBP | Open Before Presence |
| SCR | Source |
| SEO | Stored Energy Operator |
| UPS | Uninterruptible power supply |

# Index

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## Further Information

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