SIEMENS

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Monitoring devices

3KC ATC3100 Transfer control device

Manual

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Monitoring Devices 3KC ATC3100 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.

If more than one degree of danger is present, the warning notice representing the highest degree of danger will be used. A notice warning of injury to persons with a safety alert symbol may also include a warning relating to property damage.

Qualified Personnel

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.

Proper use of Siemens products

Note the following:

⚠ WARNING

Siemens products may only be used for the applications described in the catalog and in the relevant technical documentation. If products and components from other manufacturers are used, these must be recommended or approved by Siemens. Proper transport, storage, installation, assembly, commissioning, operation and maintenance are required to ensure that the products operate safely and without any problems. The permissible ambient conditions must be complied with. The information in the relevant documentation must be observed.

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Disclaimer of Liability

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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Introduction

1

Purpose of this manual

This manual is intended for reference purposes. The information in this manual enables you to install, operate and apply this "3KC ATC3100 Transfer Control Device" product.

It contains information about:

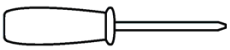
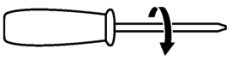
- Installation
- Operation
- Application

Required knowledge

A general knowledge of low-voltage controls and distribution is required to understand this manual.

Symbols used

The following table explains the meaning of the various symbols used in this document:

Symbol	Meaning
	Solid cables without end sleeve
	Necessary tools
	Permissible tightening torque
	Allen key
	"Phillips PH" cross-tip screwdriver
	Slotted screwdriver

General information

2

Safety notes

⚠ WARNING

This equipment must be installed by trained personnel, complying with current standards to avoid damage or safety hazards. Products illustrated herein are subject to alterations and changes without prior notice.

- Check whether the product appearance is in good condition after unpacking to guarantee the product has not been damaged in any way during the transportation before installation and commissioning.
- Read installation and operation instructions carefully before product commissioning and operation.
- Check that the load is not connected during equipment installation and commissioning; only after the commissioning is successfully completed can the load be connected.
- Do not attempt to open or repair the equipment: doing so will void the product warranty and can result in damage to the product.
- Contact the manufacturer if the equipment needs repairing.
- Rated operational voltage is 230 / 400 V AC at 50 / 60 Hz, auxiliary input voltage is 24 V DC, fire alarm signal input voltage is 24 V DC.
- 3KC ATC3100 must be wired as shown in the wiring diagram provided. Incorrect wiring may cause personal injury or damage to property.

Degree of protection

- The rear and sides of the 3KC ATC3100 have degree of protection IP20.
- The front of the 3KC ATC3100, with or without the lockable protective cover, has degree of protection IP41.

Standards

Combined with Siemens changeover devices, the 3KC ATC3100 transfer control device complies with the following standards:

- IEC 60947-6-1
- GB 14048.11

Version

3KC ATC3100 – housing 131.2 x 171.2 mm (W x H) without communication.

Description

3

Product overview

3KC ATC3100 is a transfer control device. This device serves as an automatic transfer switch equipment (ATSE) between two power supply systems in low-voltage power distribution networks when in combination with circuit breakers or disconnect switches; where motor operators are required for constellations with circuit breakers and disconnect switches - IEEE C37.2 Definition 83.

3KC ATC3100 controls transfer between the main and secondary power supplies fully automatically, taking the set limit values and delay times into consideration. It detects fluctuations in the main power supply quickly and switches to the secondary power supply. The control device only switches to the secondary power supply after it has ensured that the secondary supply is providing the required power quality. The exact conditions and timing required in either the main and secondary power supplies can be defined in the 3KC ATC3100.

3KC ATC3100 can be connected to air circuit breakers (ACBs), molded case circuit breakers (MCCBs), or switch disconnectors.

Features

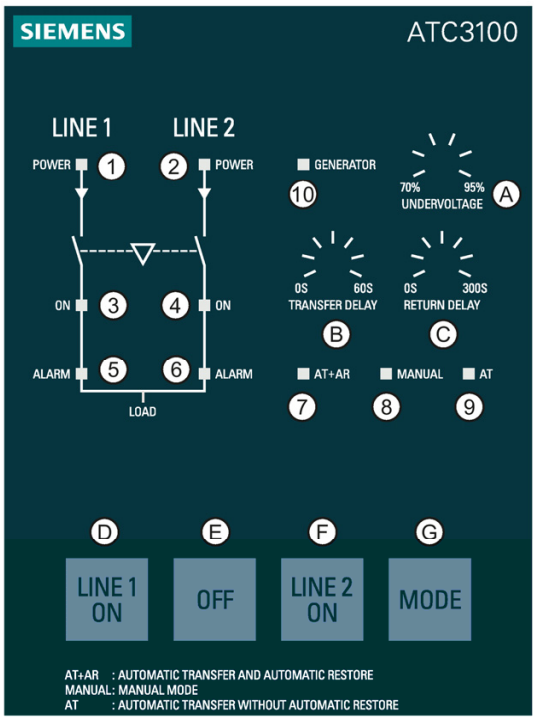
- Microprocessor-based transfer control device
- Two measurements inputs for three-phase + neutral voltage
- 230 / 400 V AC at 50 / 60 Hz power supply
- 24 V DC auxiliary power supply, only necessary if 3KC ATC3100 is working in GENERATOR mode.
- Adjustable undervoltage range, transfer and return delay time
- 10-LED status indicators
- 4-key membrane keypad
- 3 mounting methods: panel-door mounting, plate mounting and DIN rail mounting
- Control of motorized circuit breakers or motorized switches
- Generator control with output signal to start and stop generator
- Overvoltage protection, undervoltage protection, phase failure protection
- Monitoring of the fire alarm signal
- Integrated double power supply (DPS) functionality for switch motor operators

Functions

4

4.1 Functional information

Front panel



- The front panel is equipped with 10 LEDs, which show the status of the system.
- Four keys **D-E-F-G** (LINE 1 ON - OFF - LINE 2 ON - MODE), key **G** is pressed to select the operating mode, and keys **D**, **E** and **F** are used to manually operate circuit breakers in MANUAL mode.
- Three rotary switches **A-B-C** (UNDERVOLTAGE - TRANSFER DELAY - RETURN DELAY). Rotary switch **A** is used to adjust the undervoltage threshold; rotary switch **B** and **C** are used to adjust the time delay for transfer and return transfer, respectively.
- A mimic diagram is located on the left of the front panel; it shows the status of the power supply sources and the status of circuit breakers for load connection.

Status LEDs

- The following table shows the meaning of the different LEDs.
- The color of the 2 ALARM LEDs is orange and the color of the other 8 LEDs is green.

No.	LED	LED ON	LED OFF	LED FLASHING	
1	**POWER**	Line 1 power supply voltage is within the specified boundaries	Line 1 power supply no power	Failure in Line 1 power supply, undervoltage, overvoltage, or phase failure.	
2	**POWER**	Line 2 power supply voltage is within the specified boundaries	Line 2 power supply no power	Failure in Line 2 power supply, undervoltage, overvoltage, or phase failure.	
3	**ON**	Closed circuit breaker in Line 1	Open circuit breaker in Line 1	—	
4	**ON**	Closed circuit breaker in Line 2	Open circuit breaker in Line 2	—	
5	**ALARM**	Trip of circuit breaker in Line 1	No trip of circuit breaker in Line 1	—	
6	**ALARM**	Trip of circuit breaker in Line 2	No trip of circuit breaker in Line 2	—	
7	**AT + AR**	AT + AR operating mode enabled	AT + AR operating mode disabled	If LED7, LED8, and LED9 flash together, there is a fire alarm signal at the relevant input.	If these 4 LEDs flash together, a system failure has occurred.
8	**MANUAL**	MANUAL operating mode enabled	MANUAL operating mode disabled		
9	**AT**	AT operating mode enabled	AT operating mode disabled		
10	**GENERATOR**	GENERATOR operating mode enabled	GENERATOR operating mode disabled	—	

4.2 Operating mode selection

The key **G** (MODE) allows you to select the different operation modes. Press the key repeatedly until the required operating mode is selected. The operating mode currently set is indicated by an LED.

AT + AR Mode

- In AT + AR (Automatic Transfer and Automatic Restore) mode, when a failure (undervoltage, overvoltage, or phase failure) occurs in the Line 1 power supply, 3KC ATC3100 will automatically initiate transfer (see chapter "Utility-to-utility application" (Page 19)) to the Line 2 power supply. If the Line 1 power supply then returns within the specified boundaries of normal operation, 3KC ATC3100 will automatically initiate return transfer (see chapter "Utility-to-utility application" (Page 19)) to the Line 1 power supply.

MANUAL Mode

- In MANUAL mode, it is possible to control circuit breakers manually by pressing the relevant keys **D** (LINE 1 ON), **E** (OFF), and **F** (LINE 2 ON).
- If key **D** (LINE 1 ON) is pressed, the circuit breaker in Line 2 opens first, and a fixed 500 ms delay is allowed to elapse before the circuit breaker in Line 1 then closes.
- If key **E** (OFF) is pressed, both circuit breakers in Line 1 and Line 2 open immediately.
- If key **F** (LINE 2 ON) is pressed, the circuit breaker in Line 1 opens first, and a fixed 500 ms delay is allowed to elapse before the circuit breaker in Line 2 then closes.

AT Mode

- In AT (Automatic Transfer without Automatic Restore) mode, when a failure (undervoltage, overvoltage, or phase failure) occurs in the Line 1 power supply, 3KC ATC3100 will automatically initiate transfer (see chapter "Utility-to-utility application" (Page 19)) to the Line 2 power supply.
- Only if a failure (undervoltage, overvoltage, or phase failure) occurs in the Line 2 power supply, will 3KC ATC3100 automatically initiate return transfer (see chapter "Utility-to-utility application" (Page 19)) to the Line 1 power supply.

GENERATOR Mode

- To switch to GENERATOR mode, first switch to MANUAL mode, and then hold the key **G** (MODE) down for more than 3 seconds. LED10 (GENERATOR) will then indicate that the mode has been entered successfully.
- When used with a generator set, the generator can only be connected to Line 2.
- The generator startup command will be automatically issued if a failure (undervoltage, overvoltage, or phase failure) occurs in the Line 1 power supply, and the generator shutdown command will likewise be automatically issued when the Line 1 power supply returns within the specified boundaries of normal operation and the circuit breaker in Line 1 is closed.

4.3 Voltage controls

- The system rated voltage is 230 / 400 V AC, and the rated frequency is 50 Hz or 60 Hz.
- In the case of a 3-phase 3-wire power system utility, an external N Line must be connected to 3KC ATC3100 (see chapter "Control of changeover devices" (Page 22)). Due to this requirement, the 3KC ATC3100 is not suitable for IT-networks and other network arrangements without a neutral line.
- The following table lists the controls made on each line.

Control	Description
Undervoltage	Value of supply voltage is under the defined settings
Overvoltage	Value of supply voltage is over the defined settings
Phase failure	Disruption in one or more of the supply voltage phases

- The transfer delay and return delay time can be set independently, and can be adjusted using rotary switches on the front panel, rotary switches **B** and **C** respectively.
- The range can be adjusted using the rotary switches on the front panel. The transfer delay time can be adjusted between 0 and 60 seconds using rotary switch **B**. The return delay time can be adjusted between 0 and 300 seconds using rotary switch **C**.

4.4 Alarms

- If an alarm situation occurs, the relevant LEDs will begin to flash. Please see the table below for alarm descriptions.
- The indication disappears automatically when the alarm conditions cease to apply.

LED *	Description
LED 1 (POWER) flashes	Failure in Line 1 power supply
LED 2 (POWER) flashes	Failure in Line 2 power supply
LED 5 (ALARM) on	Trip of circuit breaker in Line 1
LED 6 (ALARM) on	Trip of circuit breaker in Line 2
LED 7 (AT + AR), LED 8 (MANUAL), and LED 9 (AT) flash together	Fire alarm signal inputs
LED 7 (AT + AR), LED 8 (MANUAL), LED 9 (AT) and LED 10 (GENERATOR) flash together	System failure

* LED no. (see chapter "Functional information")

- If the Line 1 power supply suffers an undervoltage, overvoltage, or phase failure condition, LED 1 (POWER) will flash. If these failures occur in Line 2 power supply, LED 2 (POWER) will flash.
- If a system failure occurs, the 4 LEDs: LED 7 (AT + AR), LED 8 (MANUAL), LED 9 (AT), and LED 10 (GENERATOR) will flash at the same time.

- Of one of the circuit breakers trips, a system failure will be generated and the 4 LEDs: LED 7 (AT + AR), LED 8 (MANUAL), LED 9 (AT), and LED 10 (GENERATOR) will flash at the same time.
- If there is fire alarm signal input, the 3 LEDs: LED 7 (AT + AR), LED 8 (MANUAL), and LED 9 (AT) will flash at the same time. After fire alarm signal input is cleared, the 3 LEDs will stop flashing.
- If opening / closing of a circuit breaker is unsuccessful, i.e. the circuit breaker status from the auxiliary switch does not match the signal output from the 3KC ATC3100, a "System Failure" will be signaled.
- If the 3KC ATC3100 is used in conjunction with a dual motorized operating mechanism, and one or two of the mechanisms are set to manual mode, the 3KC ATC3100 will signal a "System Failure." To alleviate this problem, one can switch 3KC ATC3100 to MANUAL mode by holding Key **E** (OFF) and Key **G** (MODE) down for more than 3 seconds.

Fire alarm

- 3KC ATC3100 can monitor a fire alarm signal, in which case, terminals No. 28 and No. 29 (see chapter "Assignment of the terminals" (Page 25)) are used for the 24 V DC fire alarm signal input.
- If there is a fire alarm signal input, the 3 LEDs: LED 7 (AT + AR), LED 8 (MANUAL), and LED 9 (AT) will flash at the same time.
- If there is a fire alarm signal input, 3KC ATC3100 will automatically open both the Line 1 and Line 2 circuit breakers, then automatically switch to MANUAL mode.
- After the fire alarm signal input disappears, the 3 LEDs will stop flashing, but 3KC ATC3100 will remain in MANUAL mode with both breakers remaining open.

System failure

- When there is a system failure, such as a circuit breaker trips, a feedback signal missing, etc., the 4 LEDs: LED 7 (AT + AR), LED 8 (MANUAL), LED 9 (AT), and LED 10 (GENERATOR) will flash at the same time, and 3KC ATC3100 will automatically switch to MANUAL mode.
- To clear the system failure on 3KC ATC3100 and stop the 4 LEDs flashing, one can hold Key **E** (OFF) and Key **G** (MODE) for more than 3 seconds, then the flashing will stop, and 3KC ATC3100 will switch to MANUAL mode.

Applications

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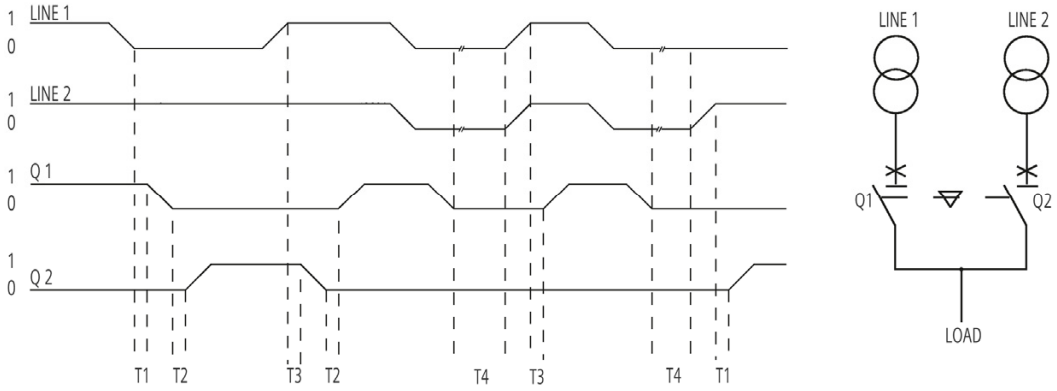
5.1 Utility-to-utility application

- In the utility-to-utility (U-U) application, the load is usually connected to the main utility (Line 1) and transfer to the secondary utility (Line 2) is performed if an anomaly occurs in the main line (Line 1) or the transfer signal is given externally, or vice versa.

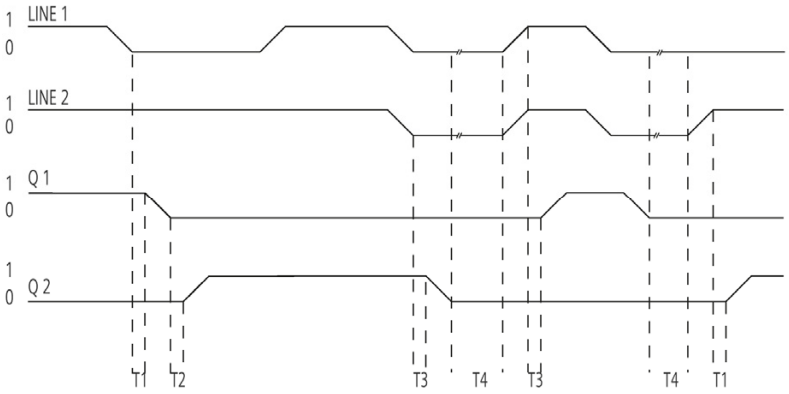
Transfer and return transfer in AT + AR mode



Status	Q1 / Q2	Line 1 / Line 2
0	Circuit breaker open	Failure (undervoltage, overvoltage, or phase failure) occurs in Line 1 or Line 2 power supply
1	Circuit breaker closed	Line 1 or Line 2 power supply is within the specified boundaries of normal operation

T1	Transfer delay time, can be adjusted using rotary switch **B** (see chapter 4.3)
T2	Fixed time interval, approx. 500 ms
T3	Return delay time, can be adjusted using rotary switch **C** (see chapter 4.3)
T4	If both Line 1 and Line 2 fail, longer than 500 ms (T4 > 500 ms)

Transfer and return transfer in AT mode



Status	Q1 / Q2	Line 1 / Line 2
0	Circuit breaker open	Failure (undervoltage, overvoltage, or phase failure) occurs in Line 1 or Line 2 power supply
1	Circuit breaker closed	Line 1 or Line 2 power supply is within the specified boundaries of normal operation

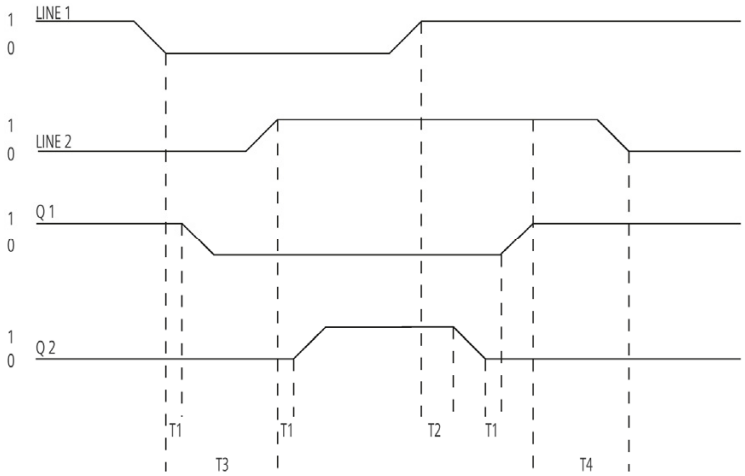
T1	Transfer delay time, can be adjusted using rotary switch **B** (see chapter 4.3)
T2	Fixed time interval, approx. 500 ms
T3	Return delay time, can be adjusted using rotary switch **C** (see chapter 4.3)
T4	If both Line 1 and Line 2 fail, longer than 500 ms (T4 > 500 ms)

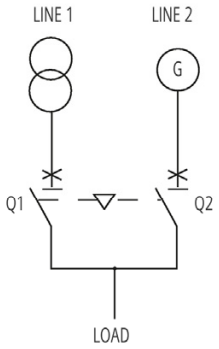
5.2 Utility-to-generator application

- In the utility-to-generator (U-G) application, the load is connected to the main utility (Line 1), if the main line (Line 1) has an anomaly, circuit breaker in Line 1 opens, then 3KC ATC3100 sends a start signal to the generator to start the generator. Once it has been detected that the voltages on generator side (Line 2) are within the specified limits, circuit breaker in Line 2 is closed.
- Once the main line (Line 1) voltages return within the specified limits, the load will be transferred back to the main line (Line 1) after a fixed 5-minute delay.

  Note: While operating in the Utility-to-generator mode, rotary switch **C** (Return Delay) is deactivated.
- 3KC ATC3100 sends a start / stop command to the generator through a relay output.
- The generator can only be connected to Line 2 of 3KC ATC3100.

Transfer and return transfer in GENERATOR mode





Status	Q1 / Q2	Line 1 / Line 2
0	Circuit breaker open	Failure (undervoltage, overvoltage, or phase failure) occurs in Line 1 or Line 2 power supply
1	Circuit breaker closed	Line 1 or Line 2 power supply is within the specified boundaries of normal operation

T1	Fixed time interval, approx. 500 ms rotary switch **C** disabled (see chapter 4.3)
T2	Fixed 5-minute delay
T3	Generator start time interval, 3KC ATC3100 sends a start command to the generator at the beginning of T3
T4	Generator stop time interval, 3KC ATC3100 sends a stop command to the generator at the beginning of T4

5.3 Control of changeover devices

- For the line changeover, 3KC ATC3100 can control different types of devices, such as motorized circuit breakers and motorized changeover devices.
- The appropriate wiring diagram must be used for the type of changeover device used with 3KC ATC3100 (see chapter "General connection" (Page 32)).

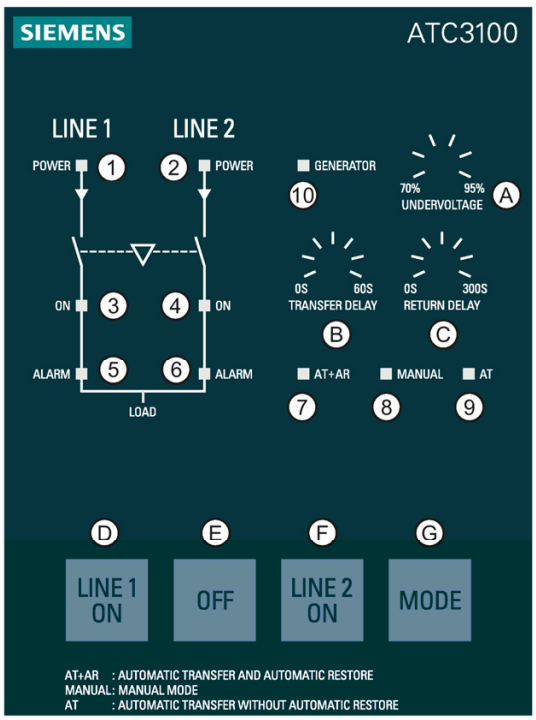
5.4 Control of motorized circuit breakers

- For the control of motorized circuit breakers, 4 outputs are needed (open and close commands for Line 1 and Line 2) and 4 inputs for the status feedback and alarm signal (TRIP) of each circuit breaker.
- The DPS output for motor operator power (J8) is only active during a transfer operation. Otherwise, the DPS does not supply the motor operators which power.
- Open and close commands are held for 10 seconds to ensure the circuit breaker has reached the required switching position.
- A 0.5 second interval is interposed between the opening and closing commands of each circuit breaker.
- Technical specifications for 3KC ATC3100 inputs and outputs can be found in chapter "Assignment of the terminals (Page 25)".

Parameter settings

6

Front panel



Undervoltage threshold setting

1. The undervoltage threshold can be set using rotary switch **A**, in the range 70% U_e to 95% U_e.
2. To adjust, turn rotary switch **A** until the arrow points to the desired undervoltage threshold. Once set, for example, to 70% U_e, 3KC ATC3100 will begin the transfer delay countdown as soon as the U (L-N) <= 70% U_e.

Transfer delay time setting

1. The transfer delay time can be set using rotary switch **B**, in the range 0 second to 60 seconds.
2. To adjust, turn rotary switch **B** until the arrow points to the desired transfer delay time. Once set, for example, to 60 seconds, 3KC ATC3100 will begin the transfer delay countdown 60 seconds after a failure (undervoltage, overvoltage, or phase failure) has occurred in the Line 1 power supply. If the failure persists, the circuit breaker in Line 1 will be open, then the circuit breaker in Line 2 will close (if the Line 2 power supply is within the specified boundaries of normal operation).

Return delay time setting

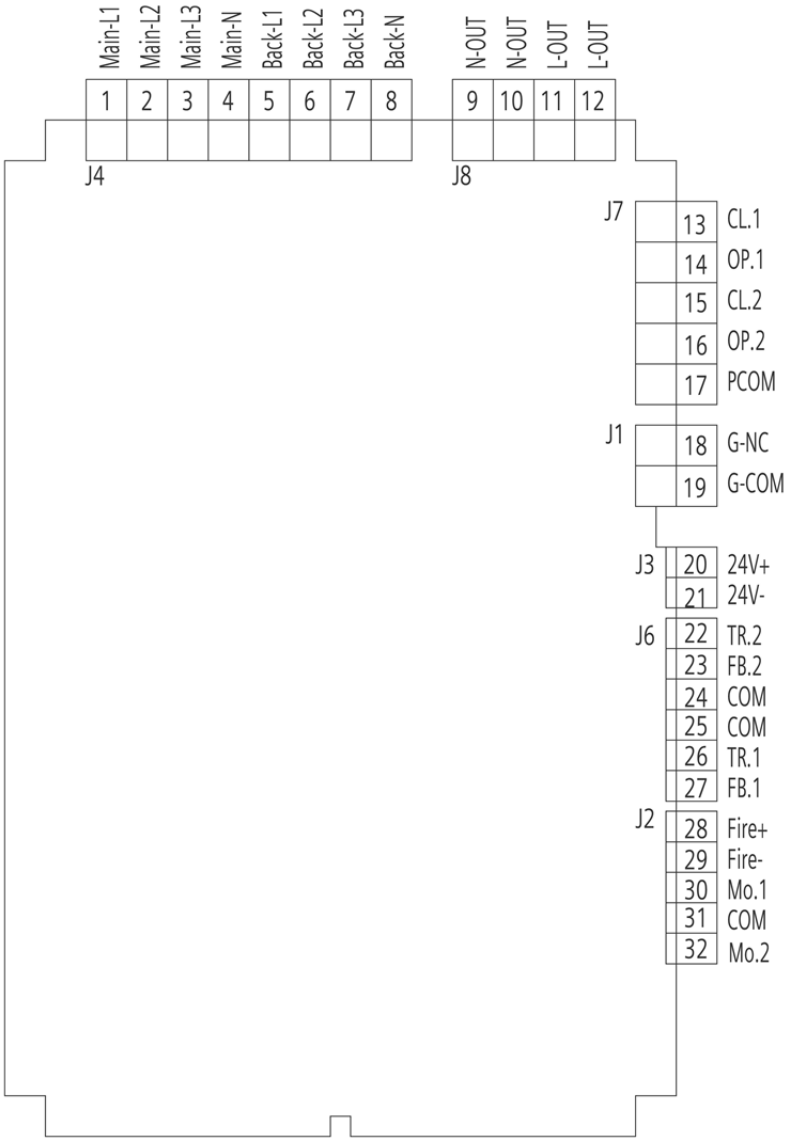
1. The return delay time can be set using rotary switch **C**, in the range 0 seconds to 300 seconds.
2. To adjust, turn rotary switch **C** until the arrow points to the desired return delay time. Once set, for example, to 300 seconds, 3KC ATC3100 will begin the return delay countdown 300 seconds after a failure (undervoltage, overvoltage, or phase failure) has occurred in the Line 2 power supply. If the failure persists, the circuit breaker in Line 2 will be open, then the circuit breaker in Line 1 will be closed (if the Line 1 power supply is within the specified boundaries of normal operation).

Wiring diagrams

7

7.1 Assignment of the terminals

Terminal diagram



Terminal	Code	Description	Remarks
1	Main-L1	Line 1: L1	Input main power supply, 230 / 400 V AC (rated voltage)
2	Main-L2	Line 1: L2	
3	Main-L3	Line 1: L3	
4	Main-N	Line 1: N	
5	Back-L1	Line 2: L1	Input secondary power supply, 230 / 400 V AC (rated voltage)
6	Back-L2	Line 2: L2	
7	Back-L3	Line 2: L3	
8	Back-N	Line 2: N	
9	N-OUT	Single-phase power output: N	Output power for motor operator 230 V AC (rated voltage)
10	N-OUT	Single-phase power output: N	
11	L-OUT	Single-phase power output: L	
12	L-OUT	Single-phase power output: L	
13	CL.1	Output signal: close Line 1 circuit breaker	Output 8 A @ 230 V AC (rated voltage)
14	OP.1	Output signal: open Line 1 circuit breaker	Output 8 A @ 230 V AC (rated voltage)
15	CL.2	Output signal: close Line 2 circuit breaker	Output 8 A @ 230 V AC (rated voltage)
16	OP.2	Output signal: open Line 2 circuit breaker	Output 8 A @ 230 V AC (rated voltage)
17	PCOM	Common terminal (COM)	—
18	G-NC	Output signal: generator 1	Dry contact output
19	G-COM	Output signal: generator 2	
20	24V+	Input signal: 24 V DC	Input 24 V DC auxiliary power supply, only necessary if 3KC ATC3100 is working in GENERATOR mode
21	24V-	Input signal: GND	
22	TR.2	Input signal: Line 2 circuit breaker trip signal	—
23	FB.2	Input signal: Line 2 circuit breaker feedback signal	Auxiliary contact informing 3KC ATC3100 of the open / closed status of Line 2 circuit breaker.
24	COM	Output signal: 12 V DC	—
25	COM	Output signal: 12 V DC	—
26	TR.1	Input signal: Line 1 circuit breaker trip signal	—
27	FB.1	Input signal: Line 1 circuit breaker feedback signal	Auxiliary contact informing 3KC ATC3100 of the open / closed status of Line 1 circuit breaker.
28	Fire+	Input signal: fire alarm signal 24 V DC	The limit value of fire alarm input signal is 24 V DC.
29	Fire-	Input signal: fire alarm signal GND	
30	Mo.1	Selection signal*	—
31	COM	COM output: 12 V DC	Output 12 V DC
32	Mo.2	Selection signal	—

* Terminals 30 (Mo.1) and 31 (COM) - If 3KC ATC3100 is used in conjunction with a dual motorized operating mechanism, the terminals 30 (Mo.1) and 31 (COM) need to be connected externally.

* Terminals 30 (Mo.1), 31 (COM), and 32 (Mo.2) - If 3KC ATC3100 is used in conjunction with a single AC motor operating mechanism, none of the terminals 30 (Mo.1), 31 (COM), or 32 (Mo.2) should be connected.

7.2 3KC ATC3100 in combination with SIEMENS products

SIEMENS Product	MLFB
MCCB	3VA1 series
	3VA2 series
	3VT1 series
	3VT2 series
	3VT3 series
	3VT4 series
	3VT5 series
	3VL1 series
	3VL2 series
	3VL3 series
	3VL4 series
	3VL5 series
	3VL6 series
	3VL7 series
	3VL8 series
ACB	3WT series
	3WL series

Note

The internal DPS functionality of the ATC3100 does not support all control voltages from the above listed Siemens products.
Please refer to chapter "7.1 Assignment of Terminals" (Page 25) to verify that the desired control voltage is supported.

Approved Mechanical Interlocking Combinations

The IEC 60947-6-1 specifies the requirement for an electrical and/or mechanical interlock for ATSE, to prevent the chance of short-circuits due to the coupling of unsynchronized networks. The following wiring diagrams describe the electrical interlock needed to fulfill the IEC 60947-6-1 requirements. Customers that wish to use a mechanical interlock, in place of, or additionally to the electrical interlock, can refer to the below tables as a guide for which Siemens switches can be combined. For detailed information, please refer to the respective operating manual for the product.

Mechanical interlocking combinations for 3VA

Mechanical Interlocking Combinations			IEC																				
			3VA11			3VA12			3VA20			3VA21			3VA22			3VA23			3VA24		
			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	3VA11	Rear Int. - Fixed	✓	–	–	✓	–	–	✓	–	–	✓	–	–	✓	–	–	✓	–	–	✓	–	–
		Rear Int. - Withdraw	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
		Bowden	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	3VA12	Rear Int. - Fixed	✓	–	–	✓	–	–	✓	–	–	✓	–	–	✓	–	–	✓	–	–	✓	–	–
		Rear Int. - Withdraw	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
		Bowden	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	3VA20	Rear Int. - Fixed	✓	–	–	✓	–	–	✓	–	–	✓	–	–	✓	–	–	✓	–	–	✓	–	–
		Rear Int. - Withdraw	–	–	–	–	✓	–	–	✓	–	–	✓	–	–	✓	–	–	✓	–	–	✓	–
		Bowden	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	3VA21	Rear Int. - Fixed	✓	–	–	✓	–	–	✓	–	–	✓	–	–	✓	–	–	✓	–	–	✓	–	–
		Rear Int. - Withdraw	–	–	–	–	✓	–	–	✓	–	–	✓	–	–	✓	–	–	✓	–	–	✓	–
		Bowden	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	3VA22	Rear Int. - Fixed	✓	–	–	✓	–	–	✓	–	–	✓	–	–	✓	–	–	✓	–	–	✓	–	–
		Rear Int. - Withdraw	–	–	–	–	✓	–	–	✓	–	–	✓	–	–	✓	–	–	✓	–	–	✓	–
		Bowden	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	3VA23	Rear Int. - Fixed	✓	–	–	✓	–	–	✓	–	–	✓	–	–	✓	–	–	✓	–	–	✓	–	–
		Rear Int. - Withdraw	–	–	–	–	✓	–	–	✓	–	–	✓	–	–	✓	–	–	✓	–	–	✓	–
		Bowden	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	3VA24	Rear Int. - Fixed	✓	–	–	✓	–	–	✓	–	–	✓	–	–	✓	–	–	✓	–	–	✓	–	–
		Rear Int. - Withdraw	–	–	–	–	✓	–	–	✓	–	–	✓	–	–	✓	–	–	✓	–	–	✓	–
		Bowden	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–

✓ supported
- not supported

Mechanical interlocking combinations for 3VL

Mechanical Interlocking Combinations			IEC																								
			3VL1			3VL2			3VL3			3VL4			3VL5			3VL6			3VL7			3VL8		
			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	3VL1	Rear Int. - Fixed	✓	–	–	✓	–	–	✓	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
		Rear Int. - Withdraw	–	✓	–	–	✓	–	–	✓	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
		Bowden	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	3VL2	Rear Int. - Fixed	✓	–	–	✓	–	–	✓	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
		Rear Int. - Withdraw	–	✓	–	–	✓	–	–	✓	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
		Bowden	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	3VL3	Rear Int. - Fixed	✓	–	–	✓	–	–	✓	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
		Rear Int. - Withdraw	–	✓	–	–	✓	–	–	✓	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
		Bowden	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	3VL4	Rear Int. - Fixed	–	–	–	–	–	–	–	–	–	✓	–	–	–	–	–	–	–	–	–	–	–	–	–	–
		Rear Int. - Withdraw	–	–	–	–	–	–	–	–	–	–	✓	–	–	–	–	–	–	–	–	–	–	–	–	–
		Bowden	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	3VL5	Rear Int. - Fixed	–	–	–	–	–	–	–	–	–	–	–	–	✓	–	–	✓	–	–	–	–	–	–	–	–
		Rear Int. - Withdraw	–	–	–	–	–	–	–	–	–	–	–	–	–	✓	–	–	✓	–	–	–	–	–	–	–
		Bowden	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	3VL6	Rear Int. - Fixed	–	–	–	–	–	–	–	–	–	–	–	–	✓	–	–	✓	–	–	–	–	–	–	–	–
		Rear Int. - Withdraw	–	–	–	–	–	–	–	–	–	–	–	–	–	✓	–	–	✓	–	–	–	–	–	–	–
		Bowden	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	3VL7	Rear Int. - Fixed	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	✓	–	–	✓	–	–
		Rear Int. - Withdraw	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	✓	–	–	✓	–
		Bowden	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	3VL8	Rear Int. - Fixed	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	✓	–	–	✓	–	–
		Rear Int. - Withdraw	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	✓	–	–	✓	–
		Bowden	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–

✓ supported
- not supported

Mechanical interlocking combinations for 3VT

3VT only supports bowden cable mechanical interlocking and therefore is not compatible with a motorized ATSE solution.

Mechanical interlocking combinations for 3WL

Mechanical Interlocking Combinations	3WL FS 1	3WL FS 2	3WL FS 3
3WL FS 1	✓	✓	✓
3WL FS 2	✓	✓	✓
3WL FS 3	✓	✓	✓

✓ supported
FS frame size

For the 3WL line, mechanical interlocking can be achieved between all ACBs by virtue 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
FS frame size

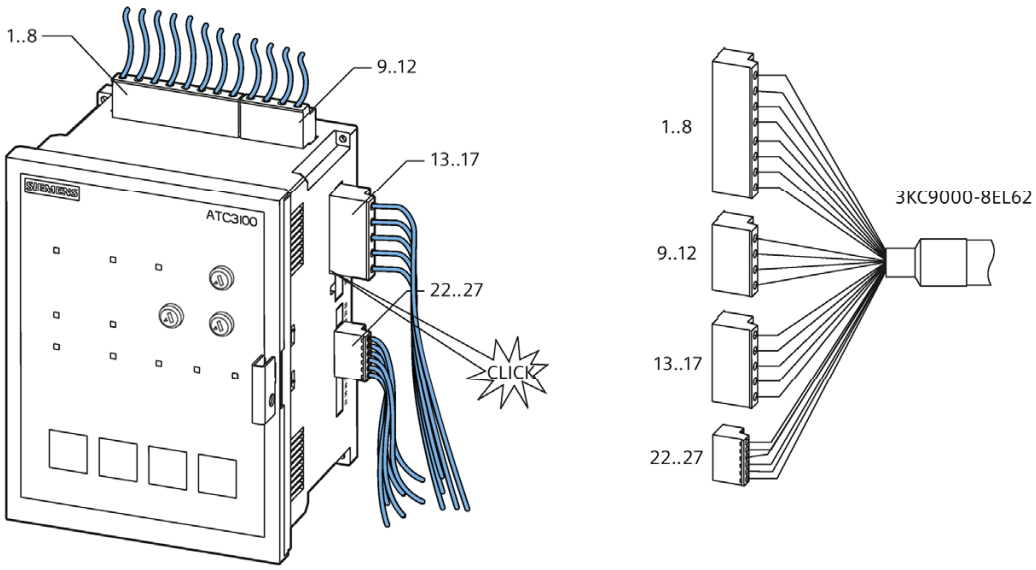
For the 3WT line, mechanical interlocking can be achieved between all frame sizes by virtue of the bowden-cable system.

Circuit breakers accessories

Each of the circuit breakers listed below must be fitted with the following accessories:

Circuit Breakers	Required Accessories
3VA / 3VL / 3VT	Auxiliary Switch (Interlock)
	Auxiliary Switch (Status)
	Alarm Auxiliary Switch (Trip)
	Motorized Operating Mechanism
3WL / 3WT	Auxiliary Switch (Interlock)
	Auxiliary Switch (Status)
	Alarm Auxiliary Switch (Trip)
	Auxiliary Release F1
	Closing Solenoid Y1
	Charging Motor

SIEMENS offers an optional connection cable for connecting 3KC ATC3100 to the configured switches.

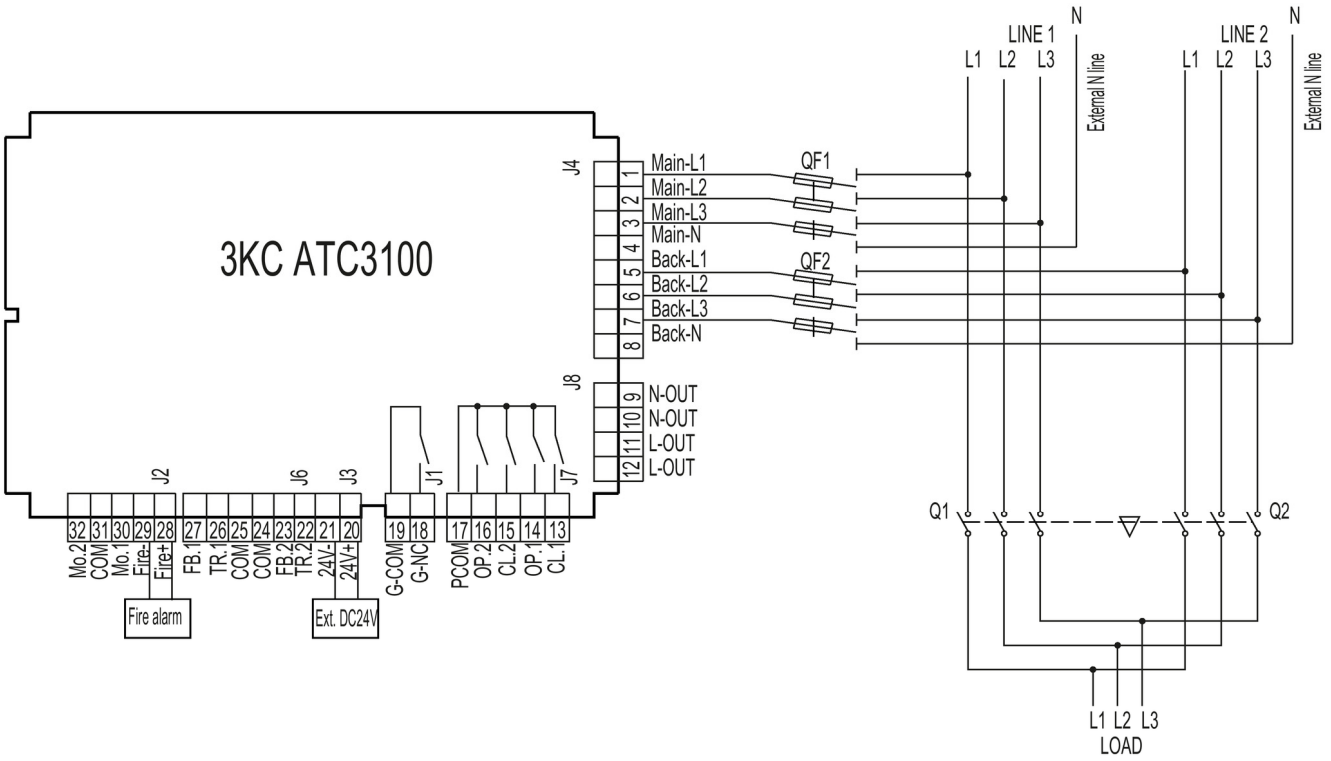


SIEMENS offers an optional connection cable for connecting 3KC ATC3100 to the configured switches.

MLFB	Name
3KC9000-8EL62	Connection cable 3KC ATC3x00 to MCCB/ACB

7.3 General connection

3-phase 3-wire system



Code	Description
Main-L1	Ground and short-circuit proof cable
Q1	Circuit Breaker (Line 1)
Q2	Circuit Breaker (Line 2)
QF1 / QF2	Fuses

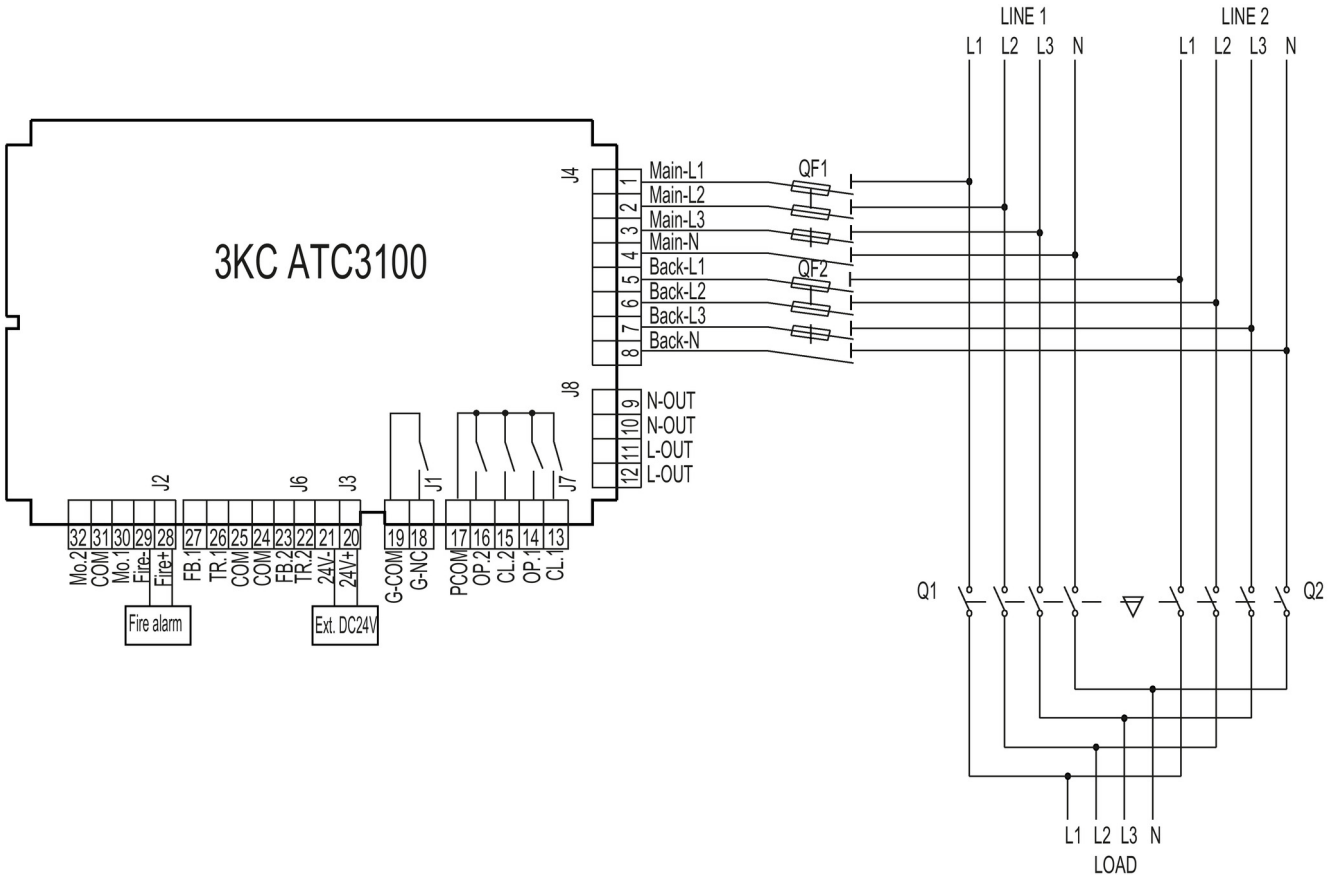
Note

Line 1 and Line 2 require an external N line.

Note

IEC Regulations stipulate that the fuse element be connected with a Short circuit and Ground Fault safe cable, as specified in the IEC 61439-1. Please refer to your national standards for installation requirements.

3-phase 4-wire system

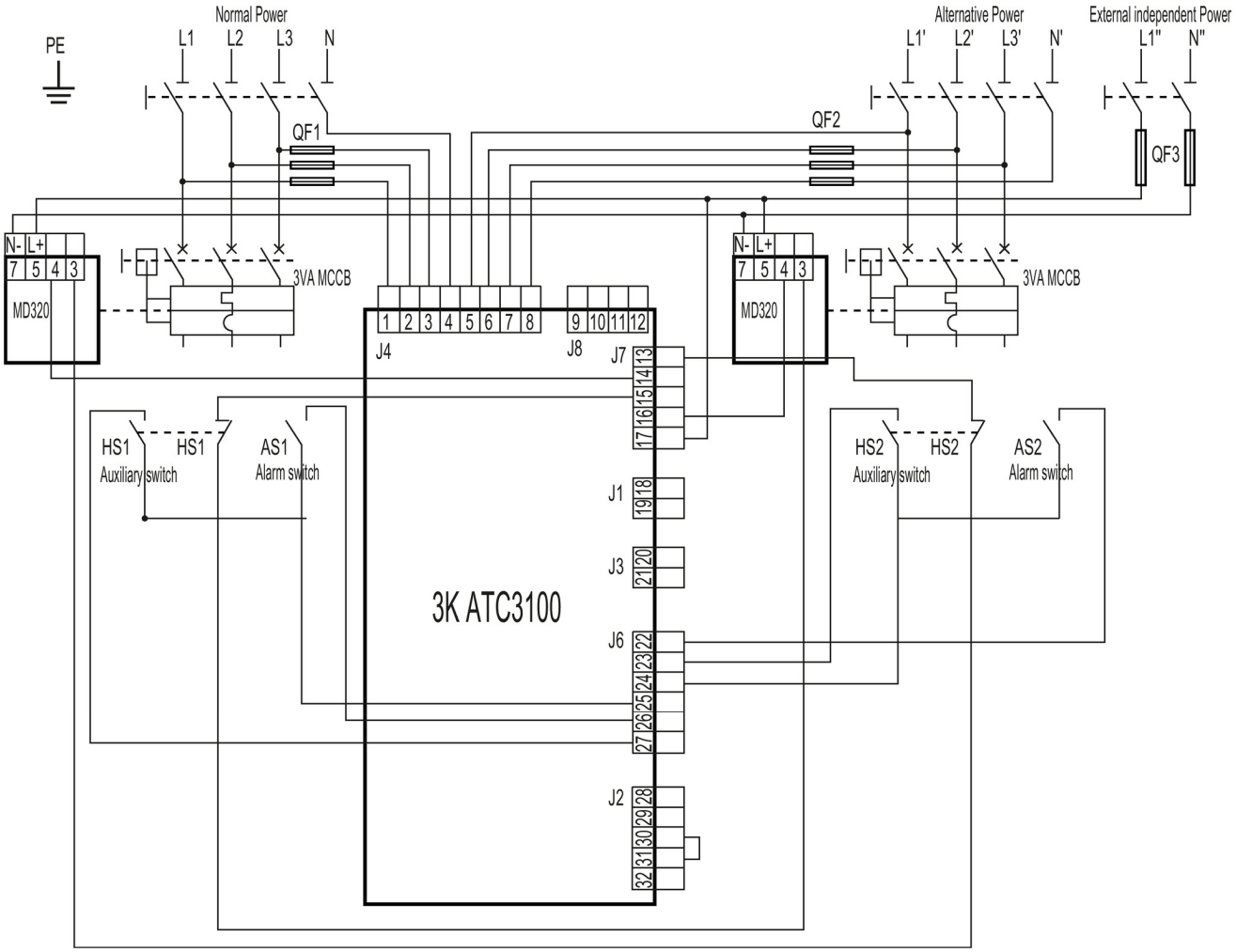


Code	Description
Main-L1	Ground and short-circuit proof cable
Q1	Circuit Breaker (Line 1)
Q2	Circuit Breaker (Line 2)
QF1 / QF2	Fuses

Note

IEC Regulations stipulate that the fuse element be connected with a Short circuit and Ground Fault safe cable, as specified in the IEC 61439-1. Please refer to your national standards for installation requirements.

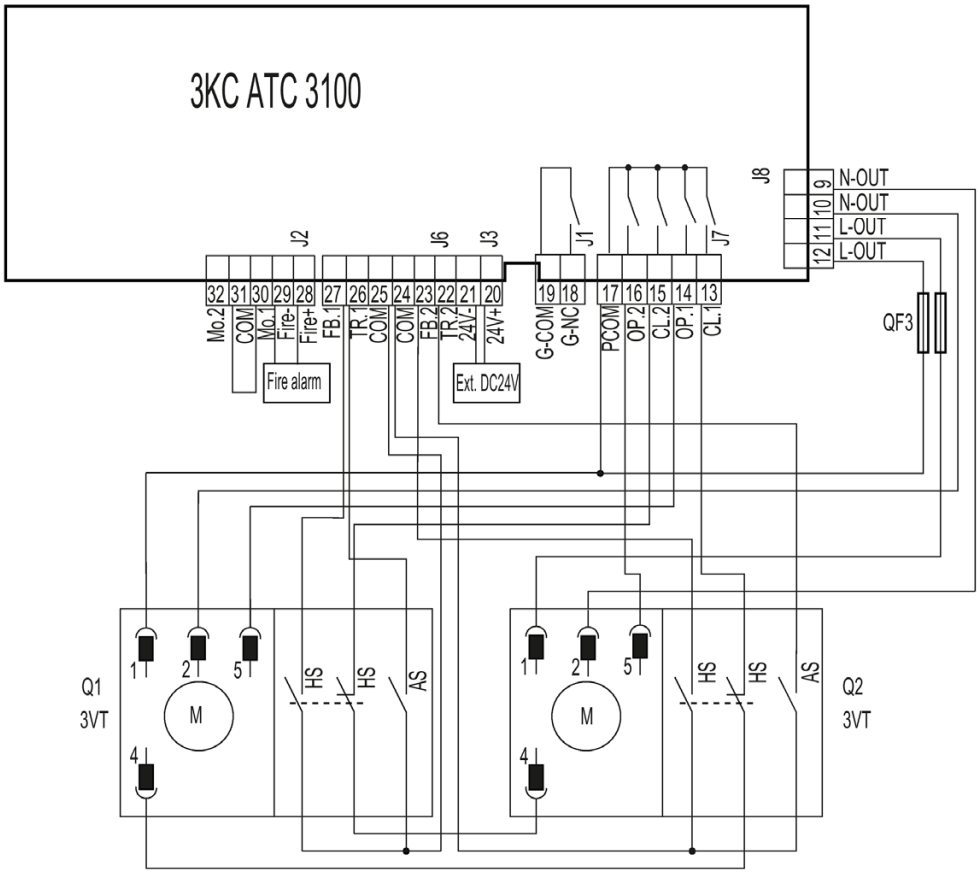
MCCB 3VA - dual motorized operating mechanism (MO)



Code	MLFB	Description
HS	3VA9988-0AA12	Auxiliary Switch (Interlock)
HS	3VA9988-0AA12	Auxiliary Switch (Status)
AS	3VA9988-0AB12	Alarm Auxiliary Switch (Trip)
QF1/QF2		Fuses
QF3		Fuse for Motor Operator protection

The above specified auxiliary switches must be used.
3VA Motor operator must be supplied externally (not via ATC3100).
Recommended Transfer Delay (B) and Return Delay (C) > 5 s.
Please see 3VA operator manual (https://support.industry.siemens.com/cs/ww/de/view/90318775/en) for more info regarding fuse dimensioning.

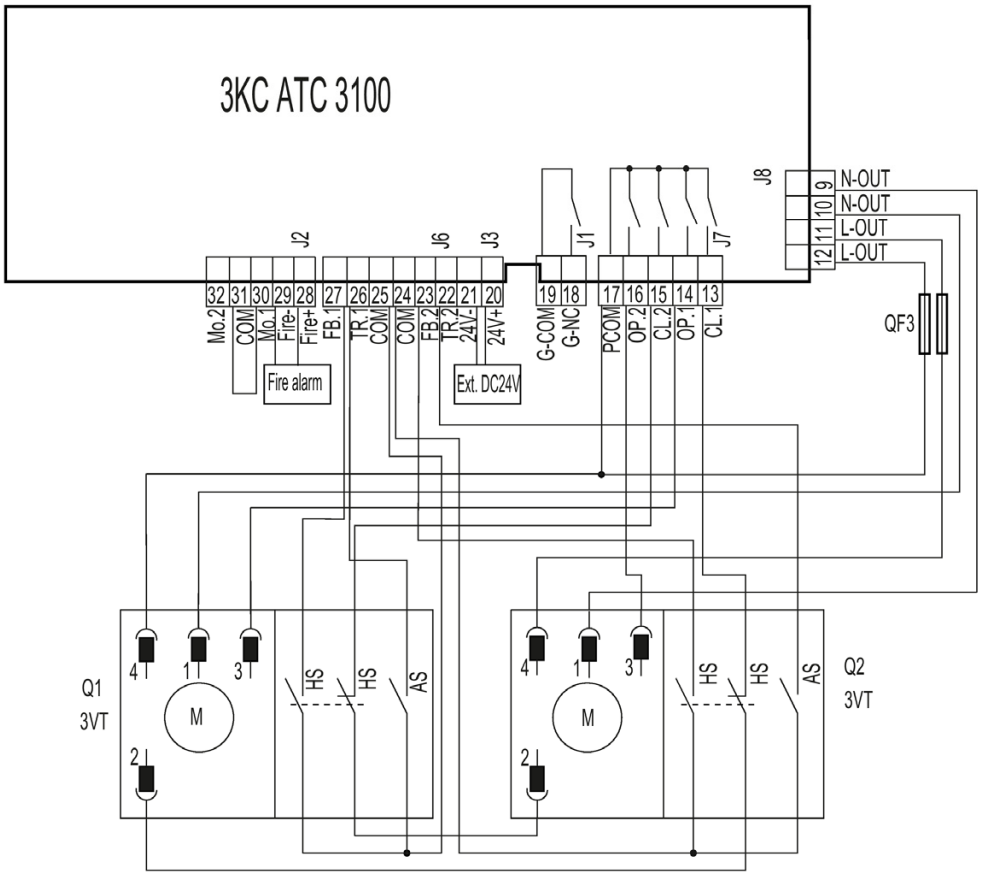
MCCB 3VL - dual motorized operating mechanism (MO)



Code	Description
HS	Auxiliary Switch (Interlock)
HS	Auxiliary Switch (Status)
AS	Alarm Auxiliary Switch (Trip)
QF3	Fuse for Motor Operator protection

Please see 3VL operating manual for fuse / protection requirements.

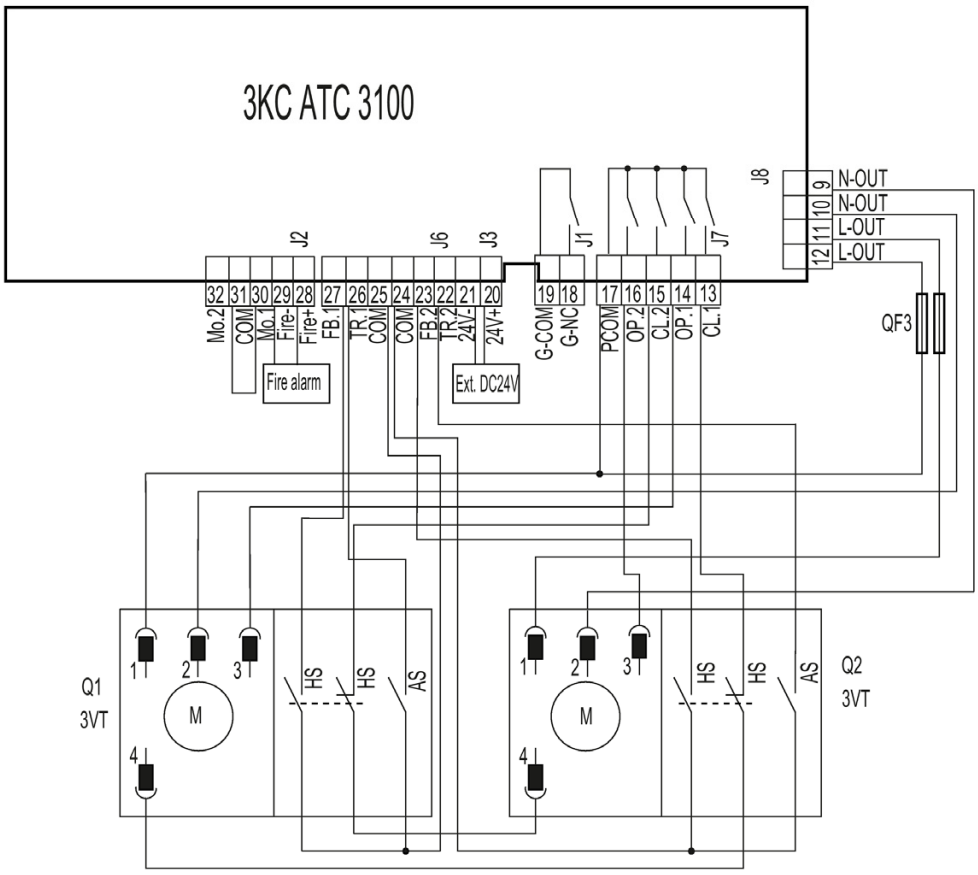
MCCB 3VL - dual motorized operating mechanism (SEO)



Code	Description
HS	Auxiliary Switch (Interlock)
HS	Auxiliary Switch (Status)
AS	Alarm Auxiliary Switch (Trip)
QF3	Fuse for Motor Operator protection

Please see 3VL operator manual for more info regarding fuse dimensioning.

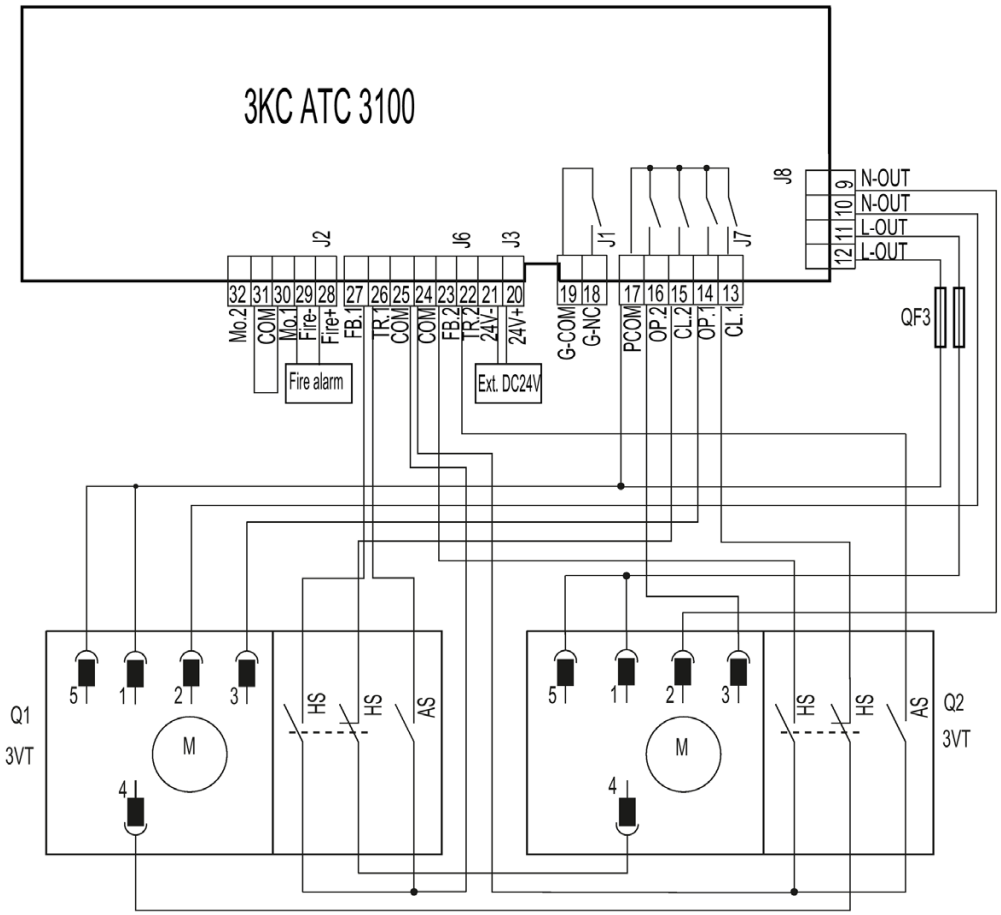
MCCB 3VT1 / 3VT4 / 3VT5 - dual motorized operating mechanism



Code	Description
HS	Auxiliary Switch (Interlock)
HS	Auxiliary Switch (Status)
AS	Alarm Auxiliary Switch (Trip)
QF3	Fuse for Motor Operator protection

Please see 3VT operator manual for more info regarding fuse dimensioning.

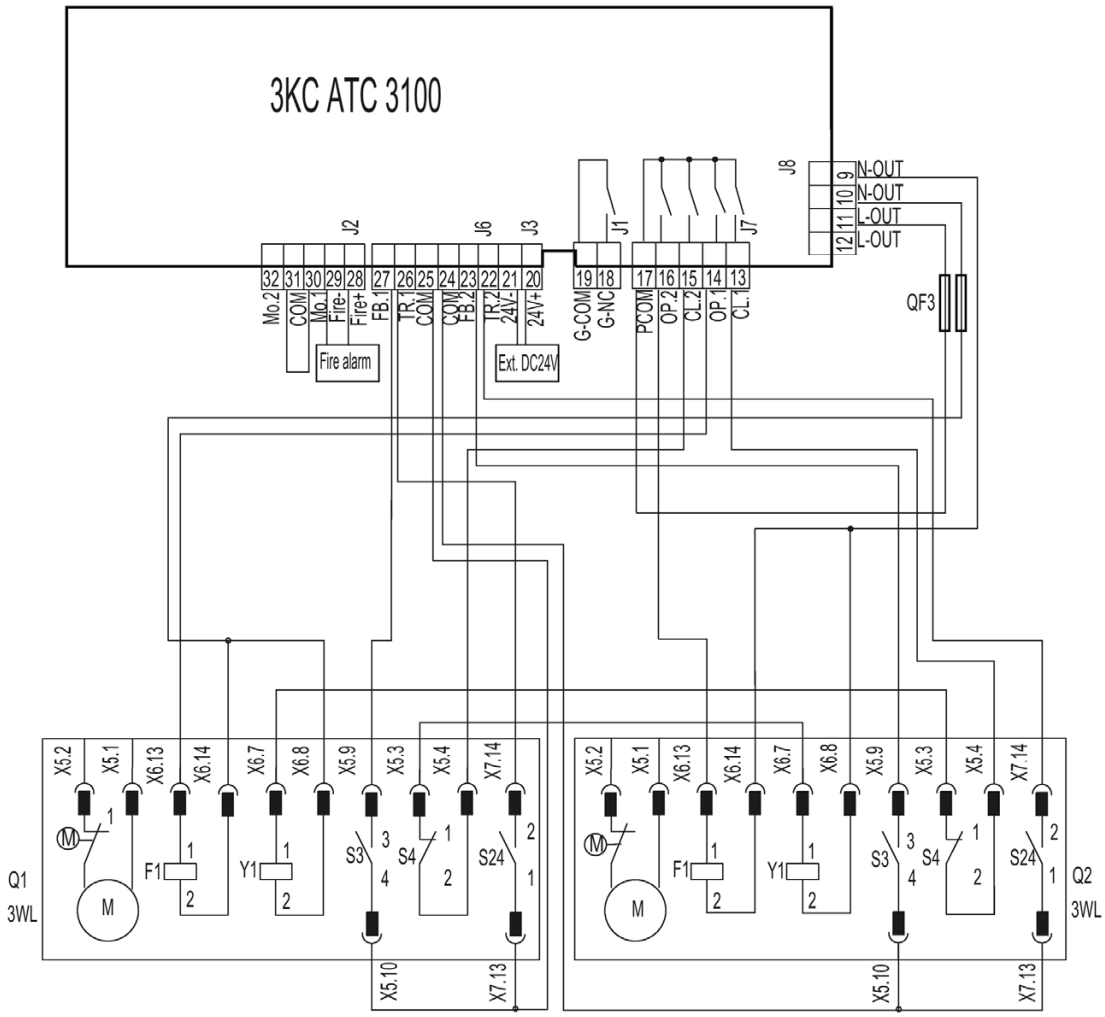
MCCB 3VT2 / 3VT3 - dual motorized operating mechanism



Code	Description
HS	Auxiliary Switch (Interlock)
HS	Auxiliary Switch (Status)
AS	Alarm Auxiliary Switch (Trip)
QF3	Fuse for Motor Operator protection

Please see 3VT operator manual for more info regarding fuse dimensioning.

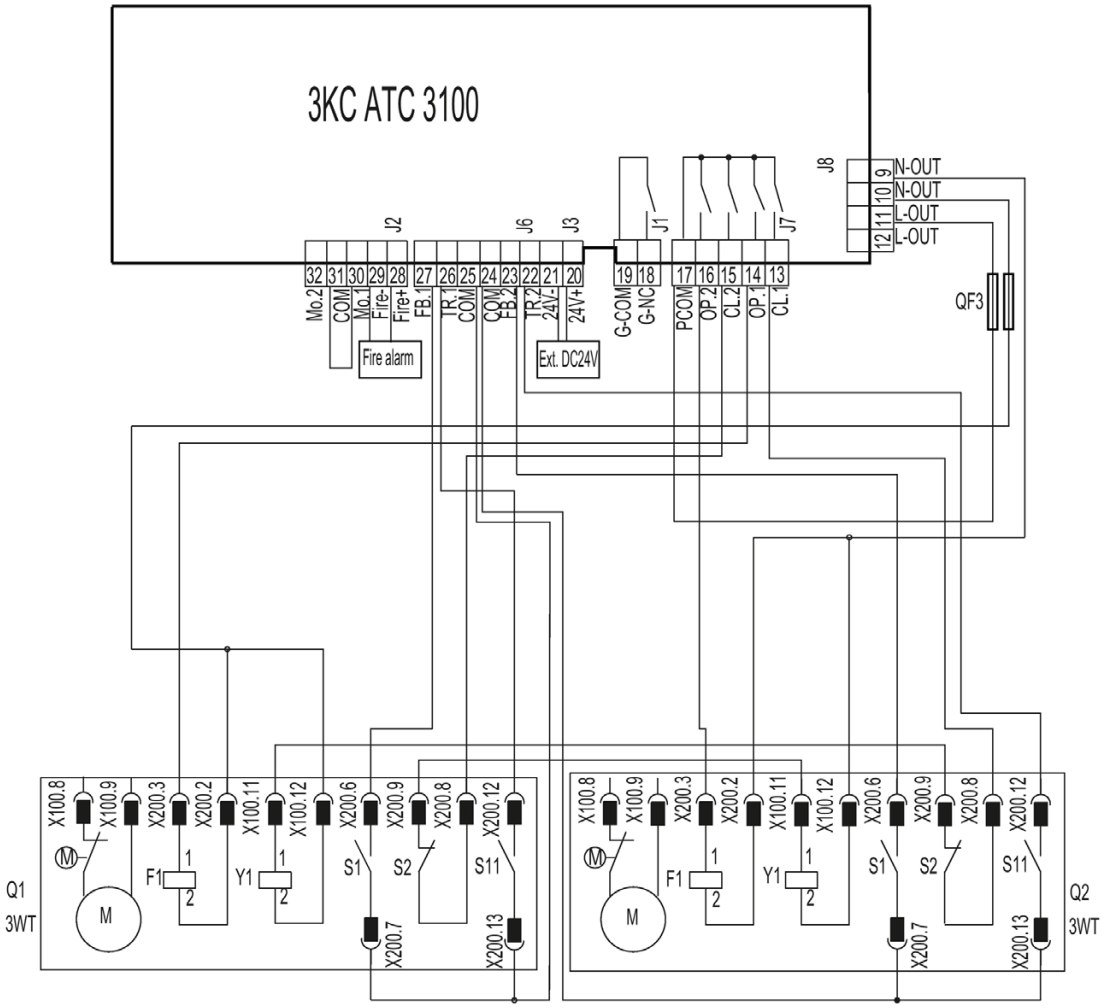
ACB 3WL



Code	Description
S3 (NO)	Auxiliary Switch (Status)
S4 (NC)	Auxiliary Switch (Interlock)
S24	Alarm Auxiliary Switch (Trip)
F1	Auxiliary Release F1
Y1	Closing Solenoid Y1
QF3	Fuse for Motor Operator protection

Please see 3WL operator manual for more info regarding fuse dimensioning.

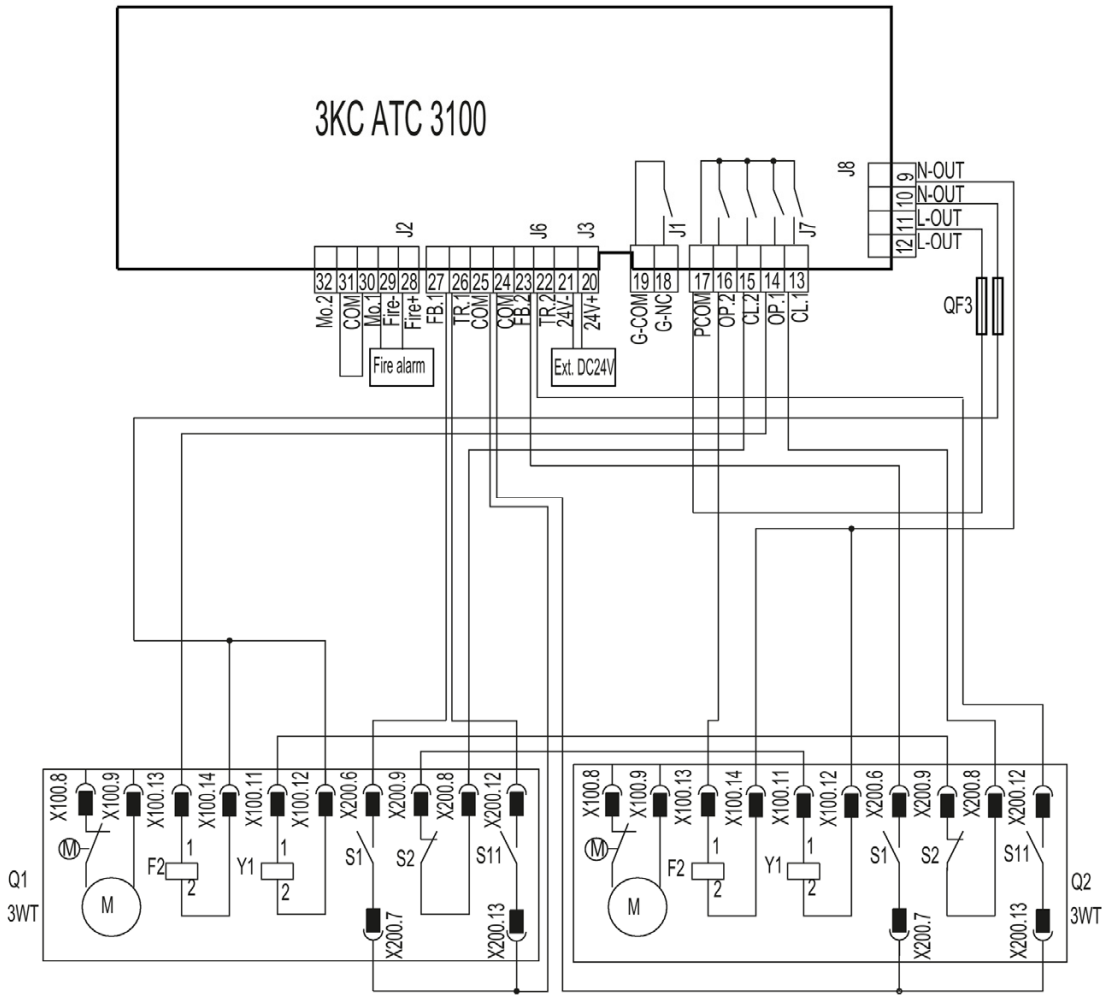
ACB 3WT (when 3WT is used without an undervoltage release)



Code	Description
S1	Auxiliary Switch (Status)
S2	Auxiliary Switch (Interlock)
S11	Alarm Auxiliary Switch (Trip)
F1	Auxiliary Release F1
Y1	Closing Solenoid Y1
QF3	Fuse for Motor Operator protection

Please see 3WT operator manual for more info regarding fuse dimensioning.

ACB 3WT (when 3WT is used with an undervoltage release)



Code	Description
S1	Auxiliary Switch (Status)
S2	Auxiliary Switch (Interlock)
S11	Alarm Auxiliary Switch (Trip)
F2	Auxiliary Release F2
Y1	Closing Solenoid Y1
QF3	Fuse for Motor Operator protection

Please see 3WT operator manual for more info regarding fuse dimensioning.

Installing/mounting

8

8.1 Installation method

There are three methods of mounting the 3KC ATC3100 transfer control device: panel-door mounting, plate mounting and DIN rail mounting.

Panel-Door Mounting

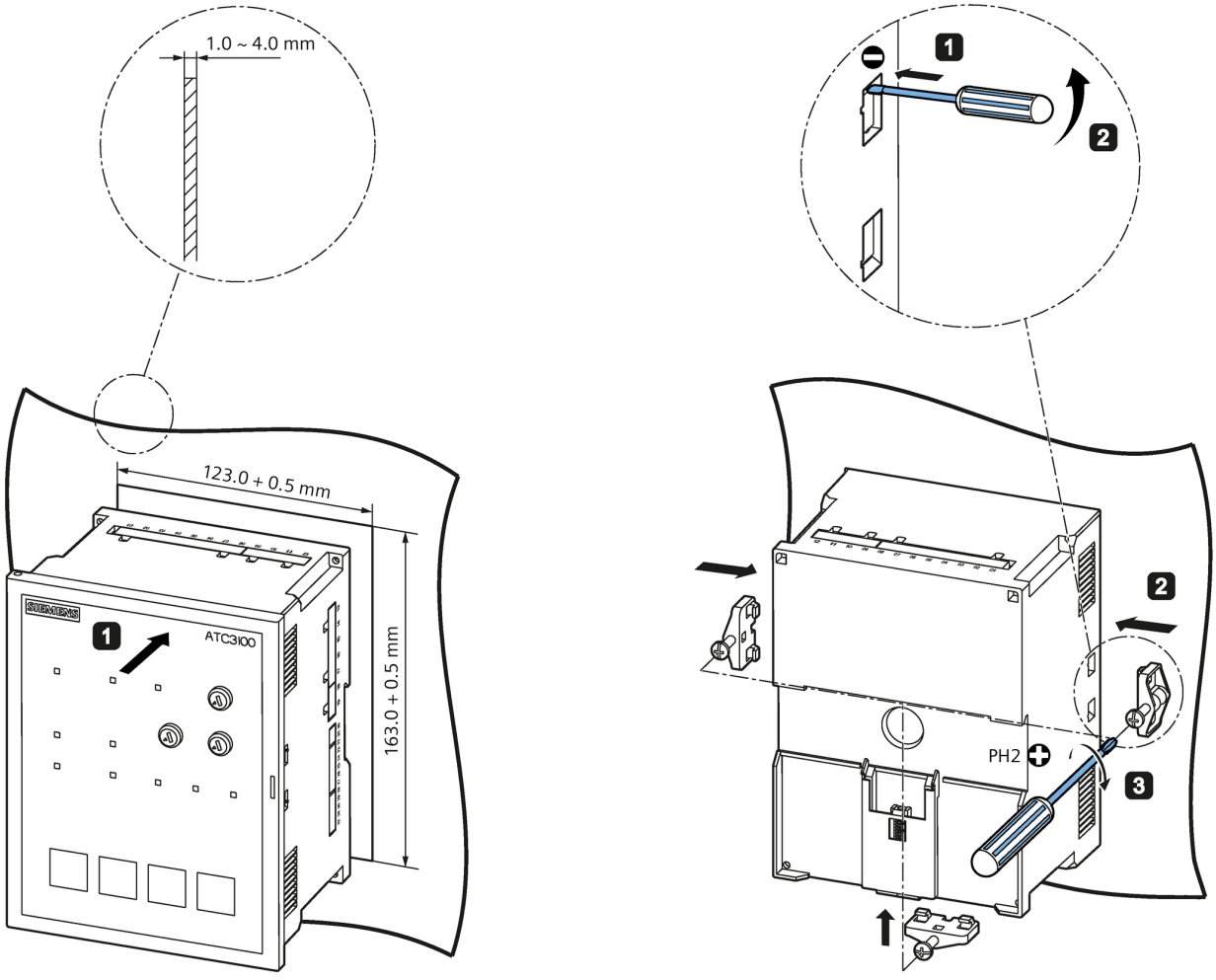
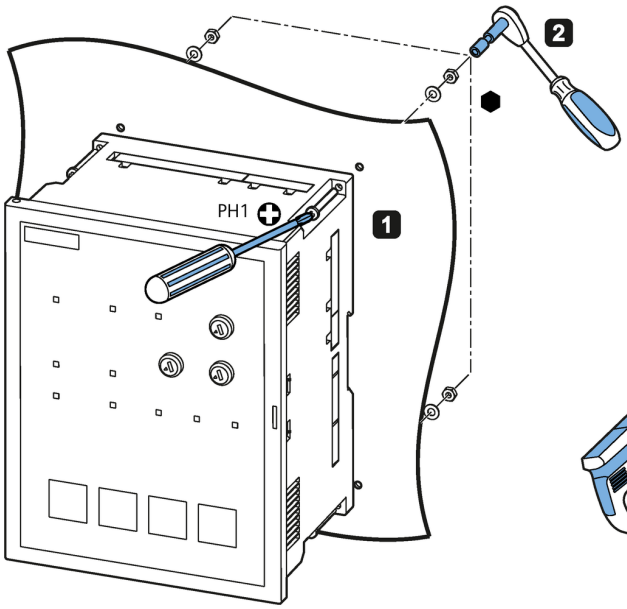
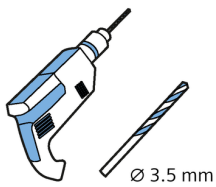
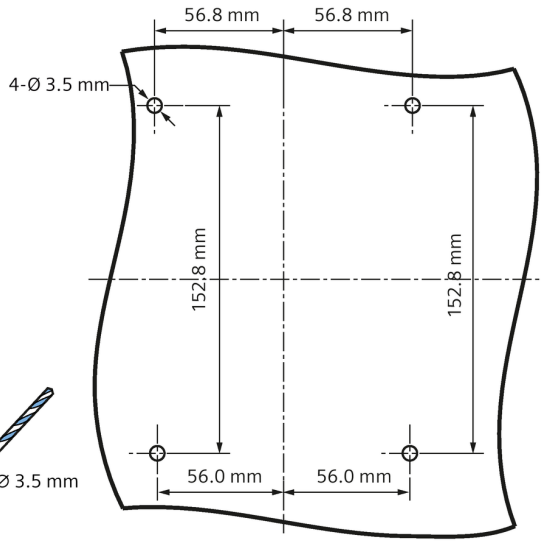


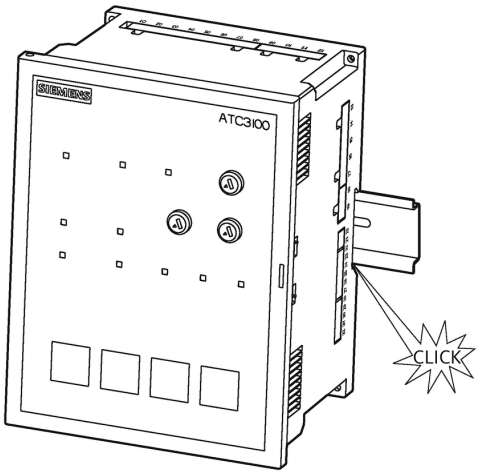
Plate mounting

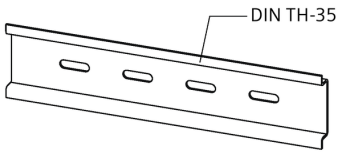






DIN rail mounting





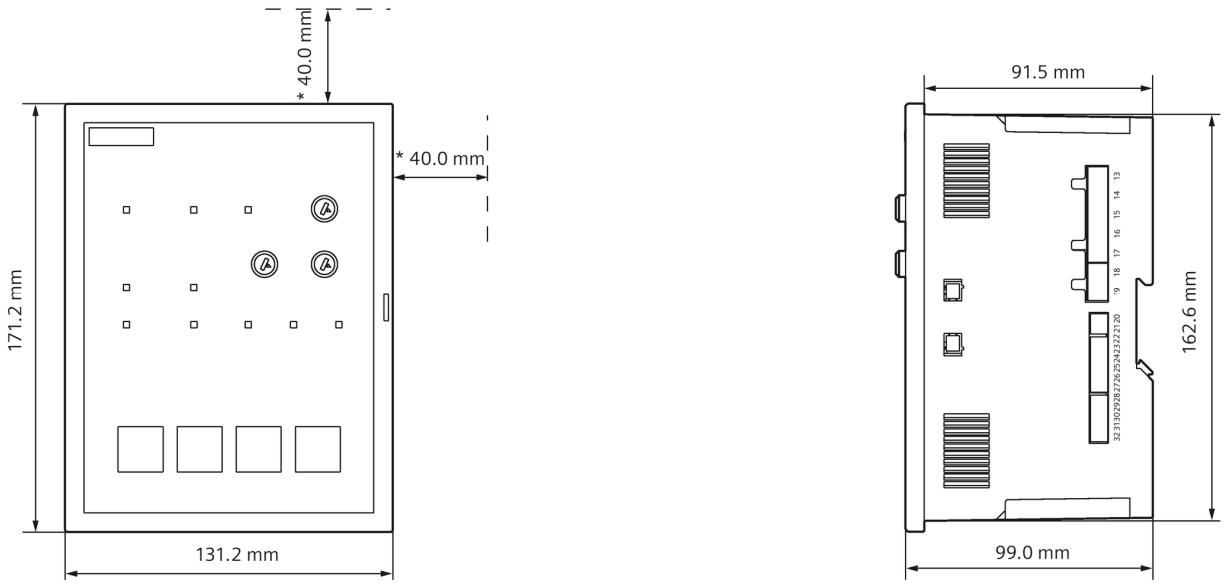
Technical data

9

Technical data for the 3KC ATC3100 transfer control device:

Voltages	Rated voltage U_e	230 / 400 V AC
	Frequency	50 / 60 HZ
	Method of measuring	True RMS value
	Method of connection	3-phase 4-wire system, 3-phase 3-wire system
	Auxiliary supply	24 V DC
	Rated impulse withstand voltage	6 kV (power supply side)
	Max. power	4 W at 230 V AC
Ambient operating conditions	Operating temperature	-25 ~ +70 °C
	Storage temperature	-40 ~ +80 °C
	Pollution degree	3
	Relative humidity	95%
Connections	Terminal block type	Removable / plug-in
	Conductor cross section (min-max)	0.5 to 2.5 mm² (20 to 12 AWG)
Protection range	Undervoltage protection range	70 % ~ 95 % U_e
	Overvoltage protection range	>= 115 % U_e
	Phase failure detection	L1, L2, L3, N
	IP	• IP41 (front panel) • IP20 (others)
	Weight	1095 g
Housing	Housing materials	Thermoplast Bayblend FR3010
Certifications and compliance	Compliant with standards	ATS / ATSE Standard: IEC 60947-6-1 or GB14048.11 is fulfilled in combination with 3VL, 3VA, 3VT, 3WL and 3WT.
		EMC Standard: according to IEC 60947-6-1

Dimension drawings



Note

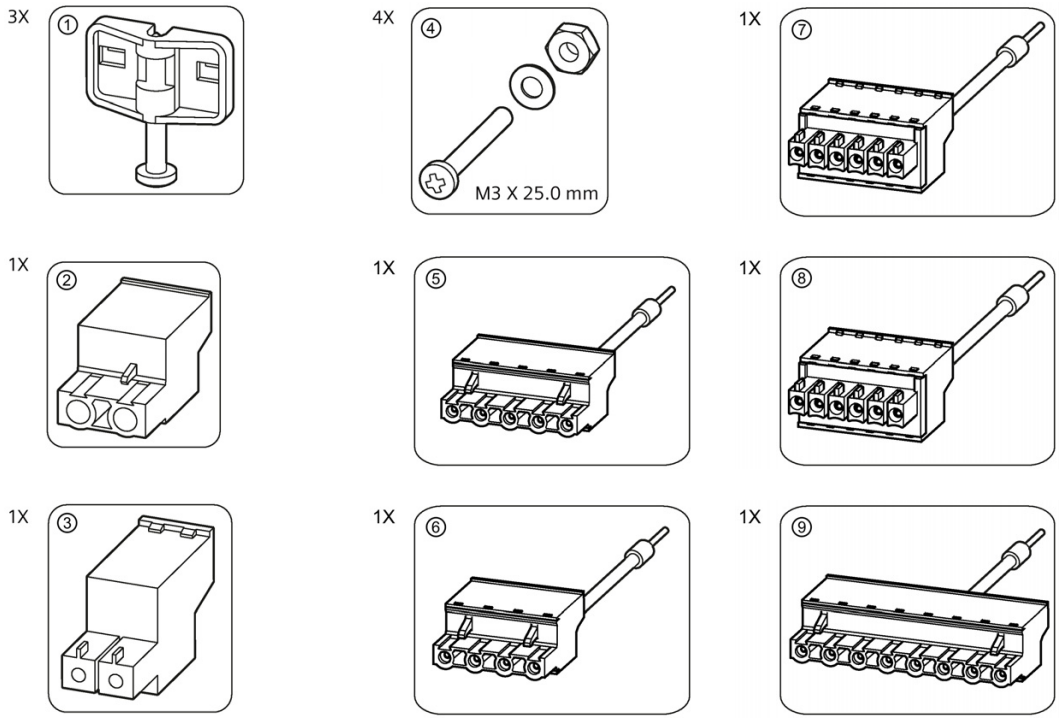
* Space requirement for wiring connection around 3KC ATC3100 is 40 mm.

Accessories / spare parts

11

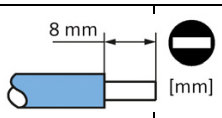
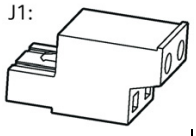
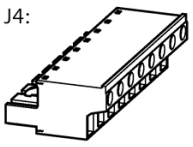
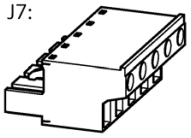
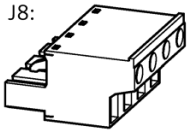
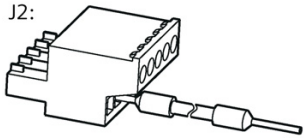
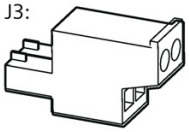
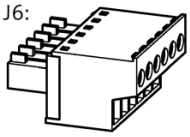
Accessories

The following parts are included with 3KC ATC3100:



- 3 clip sets ①, used for panel-door mounting (see chapter "Installation method" (Page 43)).
- 1x 2-pin connector, pitch 7.62 mm ②, can be plugged into the terminals 18 (G-NC) and 19 (G-COM) of 3KC ATC3100 (see chapter "Assignment of the terminals" (Page 25)), and is used for output signal connection to generator.
- 1x 2-pin connector, pitch 3.5 mm ③, can be plugged into the terminals 20 (24V+) and 21 (24V-) of 3KC ATC3100 (see chapter "Assignment of the terminals" (Page 25)), and is used for connection to 24 V DC auxiliary power supply.
- 4 sets of screws and nuts ④, used for plate mounting (see chapter "Installation method" (Page 43)).
- 1x 5-pin connector ⑤, can be plugged into the terminals 28 (Fire+) to 32 (Mo.2) of 3KC ATC3100 (see chapter "Installation method" (Page 43)), and is used for connection to fire alarm signals and selection signals.

- 1x 4-pin connector, pitch 7.62 mm ⑥, can be plugged into the terminals 9 to 12 (N-OUT/L-OUT) of 3KC ATC3100 (see chapter "Installation method" (Page 43)), and is used for connection of output power for motor operator.
- 1x 5-pin connector, pitch 7.62 mm ⑦, can be plugged into the terminals 13 to 17 of 3KC ATC3100 (see chapter "Installation method" (Page 43)), and is used for connection of open and close commands.
- 1x 6-pin connector, pitch 3.5 mm ⑧, can be plugged into the terminals 22 to 27 of 3KC ATC3100 (see chapter "Installation method" (Page 43)), and is used for connection of feedback from switching devices.
- 1x 8-pin connector, pitch 7.62 mm ⑨, can be plugged into the terminals 1 to 8 of 3KC ATC3100 (see chapter "Installation method" (Page 43)), and is used for connection of main and secondary power supply.

Connectors						
J1: 	J4: 	J7: 	J8: 	0.5 mm² … 2.5 mm² (20 … 12 AWG)	3.0	0.4 Nm (3.5 lb. in.)
J2: 		J3: 	J6: 	0.5 mm² … 1.5 mm² (20 … 16 AWG)	2.0	0.2 Nm (1.7 lb. in.)

The maximum cable length should not exceed 10 m.

List of abbreviations

A

A.1 List of abbreviations

List of abbreviations

Abbreviations	Term
AC	Alternating Current
ACB	Air Circuit Breaker
AS	Alarm Auxiliary Switch (Trip)
AT	Automatic Transfer
AT + AR	Automatic Transfer and Automatic Restore
ATSE	Automatic Transfer Switching Equipment
AWG	American Wire Gauge
DC	Direct Current
DIN	German Industry Standard
DPS	Double Power Supply
EMC	Electromagnetic Compatibility
EN	European standard
ESD	Electrostatic Sensitive Device
FS	Switch Frame Size
HS	Auxiliary Switches
I / O	Input and Output
IEC	International Electrotechnical Commission
LED	Light Emitting Diode
LV	Low-voltage
M	Motor
MCCB	Molded Case Circuit Breaker
MO	Motor Operator
N	Neutral conductor
NC	Normally Closed contact
NO	Normally Open contact
SEO	Stored Energy Operator
UL	Underwriters Laboratories Inc.
UVR	Undervoltage Release (instantaneous)

Glossary

Auxiliary trip unit

Undervoltage releases and shunt releases are compatible.

GND (ground)

Chassis ground

Motorized operating mechanism

A geared motor automatically charges the stored-energy spring mechanism as soon as a voltage is applied to the auxiliary supply connections. After each closing operation, the stored-energy spring mechanism is automatically charged for the next closing operation.

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