Automatic Transfer Switch-Controller
NZM-XATS-C96

Powering Business Worldwide

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Original Operating Instructions
The German-language edition of this document is the original operating manual.

Translation of the original operating manual
All editions of this document other than those in German language are translations of the original German manual.

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Translation: globaldocs GmbH

Danger!
Dangerous electrical voltage!

Before commencing the installation

- Disconnect the power supply of the device.
- Ensure that devices cannot be accidentally retriggered
- Verify isolation from the supply
- Earth and short-circuit.
- Cover or enclose neighbouring units that are live.
- Only suitably qualified personnel in accordance with EN 50 110-1/-2 (VDE 0105 Part 100) may work on this device/system.
- Before installation and before touching the device ensure that you are free of electrostatic charge.
- The functional earth (FE) must be connected to the protective earth (PE) or to the potential equalizing. The system installer is responsible for implementing this connection.
- Connecting cables and signal lines should be installed so that inductive or capacitive interference do not impair the automation functions.
- Install automation devices and related operating elements in such a way that they are well protected against unintentional operation.
- Suitable safety hardware and software measures should be implemented for the I/O interface so that a line or wire breakage on the signal side does not result in undefined states in the automation devices.
- The building's electrical installation must feature a switch or line switch, which must be positioned in the immediate vicinity of the device and be easily accessible for the operator. It must be marked as isolating device for the device: IEC/EN 61010 Sect. 6.12.2.1.
- Ensure a reliable electrical isolation of the low voltage for the 24 V supply. Only use power supply units complying with IEC 60 364-4-41 (VDE 0100 Part 410) or HD 384.4.41 S2.
- Deviations of the mains voltage from the rated value must not exceed the tolerance limits given in the specifications, otherwise this may cause malfunction and dangerous operation.
- Emergency switching off devices complying with IEC/EN 60 204-1 must be effective in all operating modes of the automation devices. Unlatching the emergency switching off devices must not cause restart.
- Built-in devices for enclosures or cabinets must only be run and operated in an installed state, desk-top devices or portable devices only when the housing is closed.
- Measures should be taken to ensure the proper restart of programs interrupted after a voltage dip or failure. This should not cause dangerous operating states even for a short time. If necessary, emergency switching off devices should be implemented.
- Wherever faults in the automation system may cause damage to persons or property, external measures must be implemented to ensure a safe operating state in the event of a fault or malfunction (for example, by means of separate limit switches, mechanical interlocks, etc.).

Content

0 About This Manual

This manual describes the installation, programming and commissioning of Automatic Transfer Switch-Controller NZM-XATS-C96.

The current edition of this manual in other languages can be obtained from the Internet: www.eaton.com/moeller/support.

0.1 Target group

Automatic Transfer Switch-Controllers NZM-XATS-C96 must be fitted and connected only by qualified electricians or persons familiar with electrical installation.

0.2 Exclusion of liability

In the event of improper use the manufacturer accepts no liability for the device's electrical safety.

The products described in this document are subject to change. The descriptions and data in the catalog are therefore not binding.

0.3 Writing conventions

The symbols used in this manual have the following meanings:

▶ indicates actions to be taken.

NOTICE

Warns about the possibility of material damage.

CAUTION

Warns of the possibility of hazardous situations that may possibly cause injury.

WARNING

Warns of the possibility of hazardous situations that could result in serious injury or even death.

DANGER

Warns of hazardous situations that result in serious injury or death.

→ Draws your attention to interesting tips and supplementary information.

For greater clarity, the name of the current chapter is shown in the first headline and the name of the current section in the second headline.

0.4 List of revisions

Edition date	Page	Key word	New	Modification	Deleted
01/14	14	Key symbols corrected		✓	
	37	GC.2		✓	
03/12	31	→ Figure 8		✓	

1 General

1.1 Description

The NZM-XATS-C96 controls various switching devices, such as circuit-breakers with motor operator, transfer switches with motor operator or contactors for system transfer.

- Microprocessor-controlled automatic Automatic Transfer Switch-Controller
- Two measurement inputs for three-phase and neutral voltage measurement
- DC supply 12-24-48 V⎓
- Four-digit 14-segment LED display
- 15 status and measurement LED displays
- Membrane keyboard with 6 pushbuttons
- Serial RS232 interface for setup, remote control and monitoring.
- 6 programmable digital inputs
- 6 programmable relay and outputs (5 N/O + 1 N/C / N/O).

1.2 Applications

- Transfer mains/mains or mains/generator
- Actuation of switches with motor operator, motorized switches or contactors
- Monitoring of three-, two-, and single-phase power supply lines
- Monitoring of phase-to-phase voltage (L–L) and/or phase-to-earth voltage (L–N)
- Monitoring with independent enable and delay of
  - Minimum voltage
  - Maximum voltage
  - Phase failure
  - Load unbalance
  - Minimum frequency
  - Maximum frequency
- Voltage thresholds with programmable hysteresis

1.3 Installation

When mounting the device, observe the circuit-diagrams on the last pages of these instructions, → Section 5, “Circuit diagrams”, Page 30.

Use the circuit diagram suitable for your application.

Set the parameter values according to the used circuit diagram, paying special attention to the configuration of the programmable inputs and outputs.

1.3.1 Dimensions and panel cutout

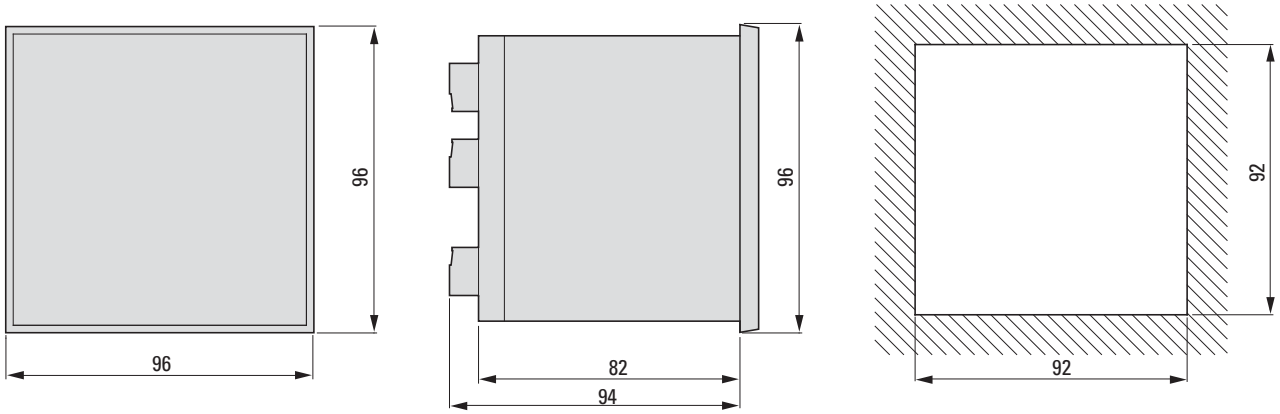

Figure 1: Dimensions and panel cutout

1.3.2 Flush mounting

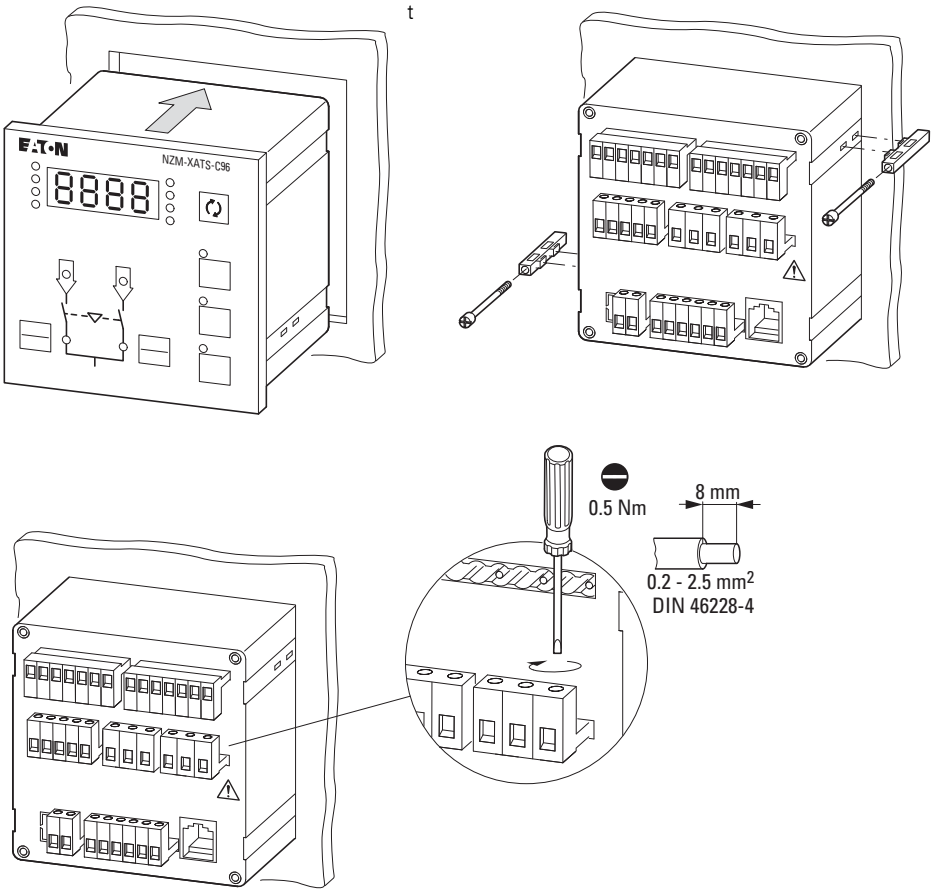

Figure 2: Flush mounting

2 Functions

2.1 Keypad

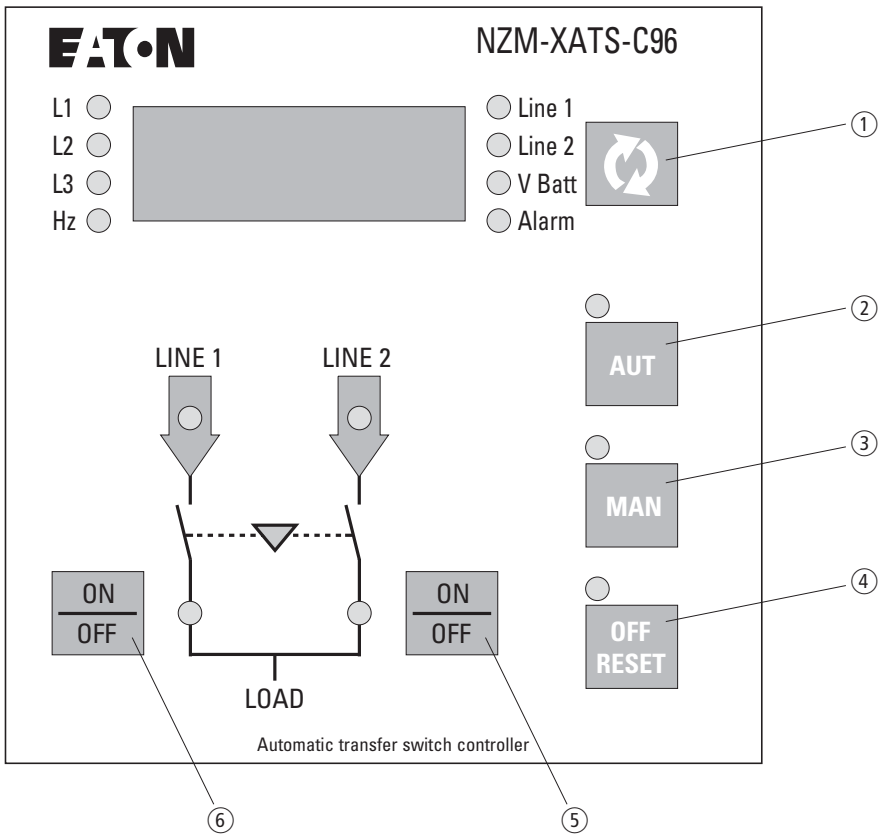

Figure 3: Keypad, pushbuttons

The device's keypad contains one LED display that shows the measured values of the two supply lines (LINE 1 and LINE 2) as well as a keys for switching between reading ①.

With the three keys TEST, AUT, MAN, OFF/RESET (② – ③ – ④) you can select the operating mode, which is indicated by the associated LEDs.

In the middle of the keypad there is a block diagram, which indicates whether the power sources are present and the status of the switching devices to the consumer.

The switchgear can be manually operated with two keys (⑤ and ⑥).

2.2 Measurement selection

▶ To view the measurements for each line in succession, repeatedly press the key to the right of each display (①).

For each line the phase-to-phase voltages (L-L), the phase-to-earth voltages (L-N) and the frequency can be displayed.

The corresponding V Batt LED indicates that battery power is present.

The red LEDs indicate which reading is being displayed. The readings depend on whether the device is configured for three-, two- or single-phase measurement.

If you do not press a key for one minute, the default reading is shown again. Depending on the voltage measurement setting this is either the first phase-to-phase voltage or the phase-to-earth voltage.

In the event of alarm signals or messages the display shows a running text. To temporarily hide the alarm signal and view the reading, press selection key ①.

When the load is transferred from line 1 to line 2, the selected measurement on the display also changes automatically.

2.3 Status LED

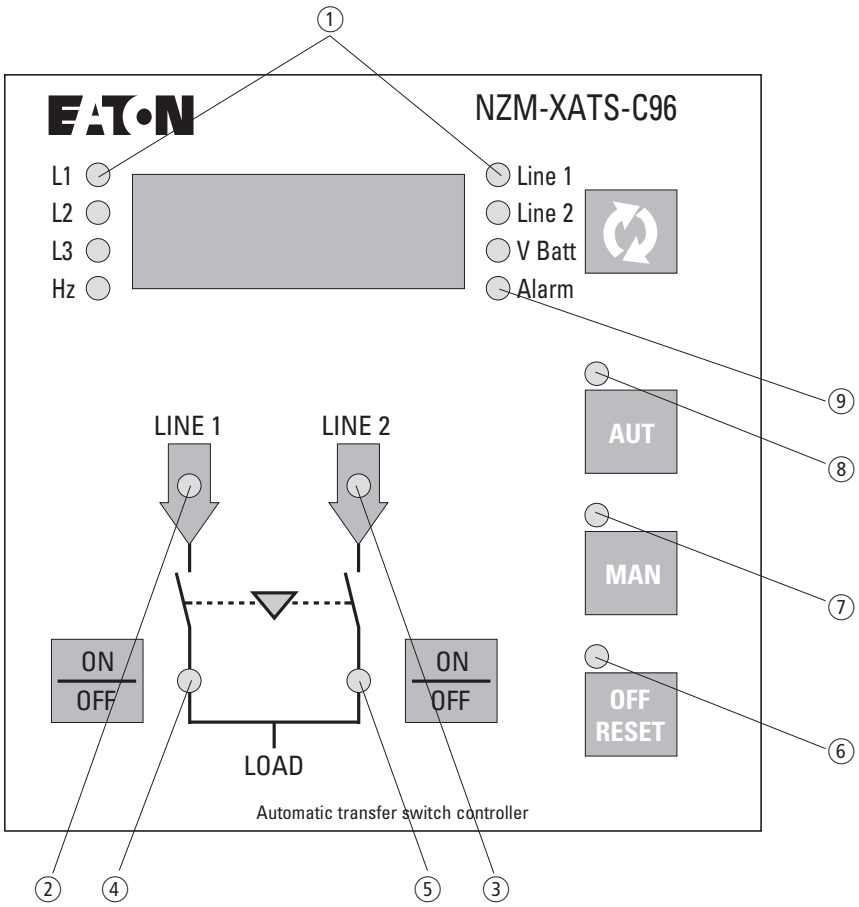

Figure 4: Keypad, LED

The keypad contains LEDs that indicate the status of NZM-XATS-C96 and/or the controlled switchgear.

The table below lists the meaning of each LED.

LED	Color	On	Off	Flashing
①	Red	Measurement selection		
②, ③ (line ok)	Green	Voltage and frequency within the set limit values	Voltage or frequency outside the set limit values	Delay time or error
④, ⑤	Yellow	Switching device closed	Switching device open	Switching device is being actuated
		If the auxiliary (feedback) signals have been correctly connected to the programmable inputs, the LEDs indicate the status of the switching devices. Otherwise they show the status of the control outputs.		
⑥	Red	OFF reset mode		OFF/RESET Remote control active
⑦	Red	MAN mode		MAN Remote control active
⑧	Red	AUT mode		AUT Remote control active
⑨ (Alarm)	Red			Alarm active

2.4 Selecting the operating mode

With the three keys OFF/RESET MAN AUT you can select the required operating mode, which is then indicated by the associated red LEDs.

The NZM-XATS-C96 remains in its selected operating mode when it is switched off and on again.

A flashing operating mode LED indicates that the NZM-XATS-C96 is communicating through the serial interface and performing any commands issued remotely, including a change of operating mode.

2.4.1 OFF-RESET mode

In this mode the NZM-XATS-C96 is disabled and dies not perform any actions.

All displays and the status LED remain active.

If the transfer devices are pulse-controlled in OFF/RESET mode, both controllers remain disabled. If continuous signal actuation is used, the behavior can be selected with parameter P2.19 (→ Page 22).

Programming menus can be called up only in OFF/RESET mode.

Once the cause of an alarm has been rectified, active alarm signals can be cleared with the OFF/RESET key.

2.4.2 MAN mode

In MAN mode you can control the switching devices manually by pressing keys (⑤ and ⑥, → Figure 3, page 7) for at least 300 ms.

Each keystroke changes the switching device's status. The command is not taken unless a time of at least one second has passed since the last switching operation.

When the manual command for closing a switching device is given at the NZM-XATS-C96 while the other is closed, the other switching device is opened before the actuated switching device is closed after the programmed delay time.

If the standby supply is provided by a generator, the generator can be switched on or off by pressing the MAN key for at least 5 seconds.

2.4.3 AUT mode

In automatic mode the NZM-XATS-C96 opens and closes the switching devices and switches the generator (if present) on and off without user interaction.

If the main supply values lie outside the limit values (green LED LINE 1/ LINE 2 off, → Figure 4, page 8 ① and ③), the NZM-XATS-C96 isolates the consumer from the main supply and switches in the standby supply after the set timed delay. The Automatic Transfer Switch-Controller controls both switching and lead time of the generator (if present) and the timed delay.

The NZM-XATS-C96 can be programmed to isolate the switching device from the main supply either before or after standby power is available.

When the main supply voltage returns to within its limit value again, the NZM-XATS-C96 switches the consumer back to main supply and, if applicable, controls generator cooling (run-on time).

The transfer times depend on the type of connection (mains/mains, mains/ generator) and on the switchgear used (circuit-breakers with motor operator, motorized switch, or contactor).

2.4.4 Simulation of main supply failure

In AUT mode you can simulate a main incoming supply power failure with a duration of one minute.

The NZM-XATS-C96 responds in the same way and with the delay times programmed for automatic mode. This lets you check for a correctly functioning transfer process.

In AUT mode press keys AUT and ON/OFF for line 2 together for ten seconds.

Throughout the procedure the display reads "F.SI" (fault simulation).

To terminate the simulation prematurely, press and hold both the AUT key and the ON/OFF key for line 2 for ten seconds or switch to the OFF/RESET mode.

2.5 Voltage measurements

All conditions that define whether or not a power source is suitable are user-definable in menu P1 (→ Section 4.2.1, "Menu P1 – Rating data", Page 20) and in menus P3 and P4 (→ Section 4.2.3, "Menu P3 – Voltage monitor, line 1", Page 22 and → Section 4.2.4, "Menu P4 – Voltage monitor, line 2", Page 23).

In menu P1 you can set the system's ratings, such as rated operating voltage and frequency. These are used as reference values for setting the percentage thresholds.

You can set a voltage ratio (TV) when a lower voltage than the system's actual voltage is applied at the voltage inputs of the NZM-XATS-C96. In this case, too, the set and indicated threshold values refer to the system's actual values.

The NZM-XATS-C96 can be set for voltage measurements in three-phase systems with or without neutral conductor, in two-phase systems or in single-phase systems (P1.03, → Page 20).

For two- and three-phase systems you can select whether the phase-to-phase voltage, the phase-to-earth voltage or both will be monitored (P1.04, → Page 20). The rated operating voltage set with P1.01 must always equal the phase-to-phase voltage.

The table below lists the measurements taken in each of the lines. The OFF column indicates that the corresponding measurement can be disabled.

Metering	Description	OFF
Minimum voltage	One or more phases too low.	
Maximum voltage	One or more phases too high.	●
Phase failure	Threshold value below which the device responds faster than at normal undershoot.	●
Voltage unbalance	Voltage phases between the min./max. limit values but not symmetrical to each other.	●
Minimum frequency	Frequency too low.	●
Maximum frequency	Frequency too high.	●
Phase sequence	Phase direction reversed.	●

A specific timed delay is associated with each deviation. A supply fault is said to occur when the deviation is longer than the set delay.

When all line parameters are within the specified limit values again, the mains is considered usable again only after the delay time. This period is defined with two independent parameters. One of these defines the delay

for the case that the standby supply is present (P3.16 or P4.16, → Page 23), and the other the (usually) shorter delay for the case that no standby supply exists (P3.15 or P4.15, → Page 23).

All measurements except for minimum voltage can be disabled independently of each other by setting the corresponding parameter to OFF.

The limit values for minimum and maximum voltage are defined with two threshold values. One of these defines the point from which the voltage is no longer regarded as acceptable (for example P3.01, drop-out value), and the other – which lies closer to the rated operating voltage – defines the point from which it is acceptable again (for example P3.02, pick-up value). The difference between these two threshold values is the hysteresis. You can specify, for example, that the voltage below 80 % rated operating voltage can no longer be used and that, to make it usable again, it must rise above 85 %, giving a hysteresis (or dead-band) of 5 %. The same principle applies to the maximum voltage.

For the frequency thresholds the hysteresis is fixed at 1 % rated frequency.

At phase failure the threshold value is the same as for minimum voltage.

2.6 Alarms

When an alarm occurs, the NZM-XATS-C96 displays either a code (→ Table 1) on the display or the alarm LED lights up.

Non-retentive alarms are displayed only as long as the alarm conditions apply. Retentive alarms must be acknowledged with a manual reset with the OFF/RESET key on the keypad. This also switches the NZM-XATS-C96 to OFF mode.

In the event of an alarm the programmable outputs configured as Alarm output (ALA) and as Ready (RDY) are deactivated (→ Section 4.2.6, "Menu P6 – Programmable outputs", Page 27).

To disable an alarm, set the alarm parameter to OFF (A01.1, A02.1, ..., → Section 4.2.8, "Alarm menu A", Page 28) or the associated threshold value to OFF. Example: To disable alarm A01, set parameter P2.15 to OFF.

The table below lists the possible alarms and their meaning. Column MOD indicates the operating mode (**O**FF, **M**AN, **A**UT) in which the alarm can occur.

Table 1: Alarm codes

Code	Description	Explanation	MOD
A01	Battery voltage too low	Battery voltage outside thresholds for more than the set delay time (P2.15, P2.16 and P2.17, → Page 22).	O M A
A02	Battery voltage too high		O M A
A03	Timeout, switching device in line 1	The switching device has not executed the pickup/drop out command within the set time. When the alarm has triggered, the pick up/drop out command is cleared. The alarms are generated only when at least one of the two threshold values for the supply is present, i.e. lies above the programmed minimum threshold value (→ Section 4.2.3, "Menu P3 – Voltage monitor, line 1", Page 22 and → Section 4.2.4, "Menu P4 – Voltage monitor, line 2", Page 23).	A
A04	Timeout, switching device in line 2		A
A05	Incorrect phase sequence, line 1	The phase sequence readings for phases 1 and 2 do not correspond with the set phase sequence.	O M A
A06	Incorrect phase sequence, line 2		O M A
A07	Timeout, consumer without power	The consumer remains without power for longer than the time set with P2.11 (→ Page 21) because the supply cables were not available or because both switching devices remain open.	A
A08	Generator not ready	Can be triggered by opening programmable input "Generator not ready" (GR.2) or when the required rated mains voltage is not present within the time specified with P2.11 (→ Page 21) after the generator has been switched on. If the alarm is generated by the external input, it is non-retentive. Otherwise it is retentive and must be reset with the RESET/OFF key.	O M A
A09	Emergency	Alarm is triggered by opening the external emergency signal at programmable input configured as EME (→ Section 4.2.5, "Menu P5 – Programmable inputs", Page 25). Both switching devices open.	O M A
A10	Protective device response Circuit-breaker, line 1 (trip)	Triggered by closing of the programmable input configured as Trip (functions TR.1 and TR.2, → Section 4.2.5, "Menu P5 – Programmable inputs", Page 25). The commands for opening and closing the affected circuit-breakers are then disabled.	A
A11	Protective device response Circuit-breaker, line 2 (trip)		A

2.7 Diagnostic alarms

The display of the NZM-XATS-C96 displays messages with information about performing a function or about an unusual situation.

When you press the key ① of the measurement selection, the diagnostic display is briefly suppressed to display the reading.

Messages
START GENERATOR
GENERATOR COOLING
MAINS FAILURE SIMULATION
---- (Interlock time running)
KEYPAD BLOCKED
KEYPAD UNLOCKED

2.8 Keypad lock

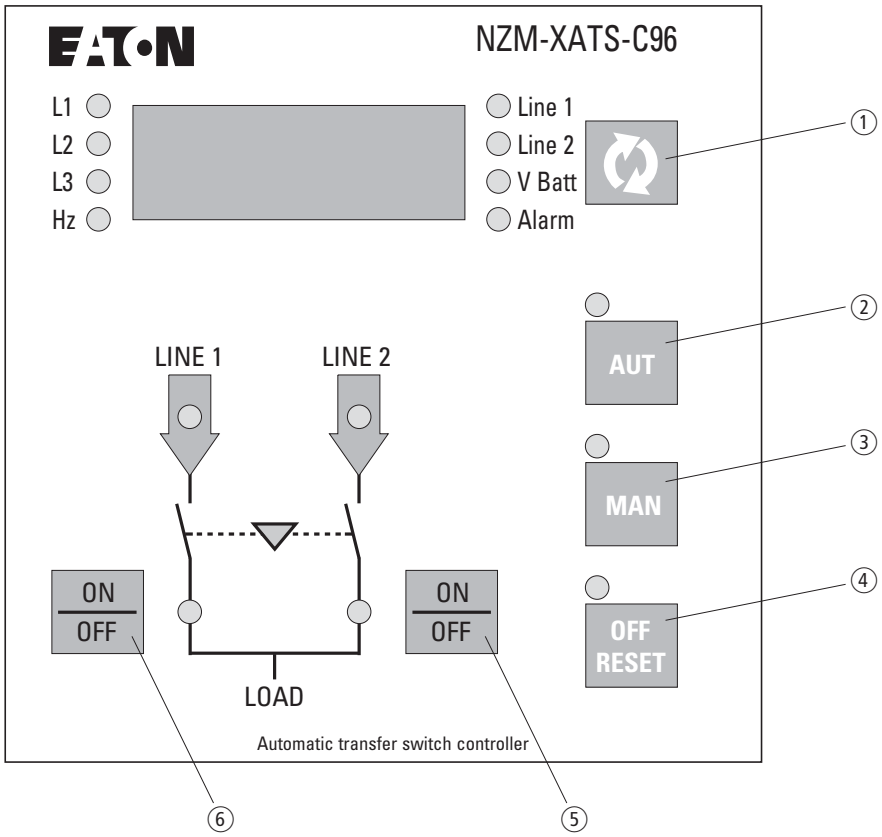

Figure 5: Control panel, keypad

The keys of the NZM-XATS-C96 can be locked through a programmable input, function LOC (→ Page 26) or with a specific key combination.

With the key lock active, only readings can be viewed. You can not change operating mode or manually operate the switching devices. Only key ① for measurement selection remains active.

When you press a locked key, the display shows "KEYPAD LOCKED".

- ▶ To lock or unlock the keypad, press and hold key ② and press key ① three times without releasing it at the end.
- ▶ Then release key ② and press it five times before releasing both keys.

When the keypad is locked, the display shows "KEYPAD LOCKED". When you unlock the keypad, the display shows "KEYPAD UNLOCKED".

2.9 Remote control

Through its serial interface the NZM-XATS-C96 can be connected with a PC to program and control the device remotely using the software NZM-XATS-CSOFT or a SCADA software that supports the Modbus protocol.

The NZM-XATS-C96 can be connected directly point-to-point through its serial RS232 interface and cable No. 51C2.

2.10 Commands menu

In this menu you can access the following commands:

- Resetting parameters to their default settings
- Saving user setting backups
- Restoring backed up settings

▶ To access the Commands menu, press and hold key ④, press ① twice, press ② three times and press ③ four times.

The Commands menu appears. Wait a few seconds or press key ④ to access the menus.

The display shows the code of the first menu, C01 together with its description.

▶ To select the command, press key ①.
▶ To execute the selected command, press key ⑥.
▶ To exit the Commands menu, press key ④.

If you do not press a key for more than two minutes, the device automatically exits the menu.

Commands menu	
C01	STANDARD DEFAULT SETTINGS
C02	BACKUP PARAMETER SETUP
C03	RESTORE PARAMETER SETUP

3 Applications

3.1 Application line/generator

In the line/generator application (U–G, default setting), the consumer is normally connected to the mains supply (LINE 1).

After a voltage or frequency deviation a start signal is sent to the generator (LINE 2) after the delay specified with P2.13 (→ Page 21).

When the generator voltage lies within the programmed limit values, the consumer is switched to the generator.

When the mains supplies the required quality again, the consumer is switched back to mains supply and the generator continues to run for the duration specified with P2.14 (→ Page 21) to cool down.

The NZM-XATS-C96 sends a Start/Stop command to the generator through a programmable output and can receive digital signals from the generator through programmable inputs for indication of generator status (generator ready, ready to connect consumer, etc.).

→ Section 5, "Circuit diagrams", Page 30

3.2 Application line/line

In the line/line application (U–U, utility–utility) the consumer is normally connected to the main supply and is switched to the standby power source when a deviation occurs in the main source or an external transfer signal is issued.

→ Section 5, "Circuit diagrams", Page 30

3.3 The EJP (Effacement Jours Pointe) function

This function allows the consumer to be switched from the main supply to standby power (usually a generator) for the duration of a tariff period with higher prices. For applications that require the EJP function two programmable inputs can be used to define functions S.GE (start generator) and E.TR (external transfer) (→ Section 4.2.5, "Menu P5 – Programmable inputs", Page 25).

A generator start delay can be specified with parameter P2.20 (→ Page 22).

At the end of this tariff period the consumer is switched back to the main supply by opening the two input signals.

3.4 Actuation

3.4.1 Actuation of switching devices

The NZM-XATS-C96 can control various switching devices, such as circuit-breakers with motor operator, transfer switches with motor operator or contactors for system transfer.

Depending on the switchgear used in combination with the NZM-XATS-C96 the appropriate circuit diagram and the required configuration for the programmable inputs and outputs must be used.

By default the programmable outputs are configured for the use of circuit-breakers with motor operator (→ Section 5.2, "Actuation of circuit-breakers with motor operator", Page 31).

The switchgear status feedback signals must be wired to the programmable inputs to ensure reliable system operation.

It is possible, however, to not implement this function and use the programmable inputs for other purposes. In this case the NZM-XATS-C96 responds as if the switching device executes the transmitted command immediately.

NOTICE

If feedback signals are not used, the NZM-XATS-C96 issues an Open command when it is switched on to bring the switching devices into a defined position.

If feedback signals are used, the NZM-XATS-C96 does not issue any commands to the switchgear when it is switched on as long as the status of the corresponding line (1 or 2) lies within the specified values.

The built-in control relays are not electrically or mechanically interlocked. An electrical interlock must be implemented by wiring the programmable inputs to functions FB.1 and FB.2 (→ Section 4.2.5, "Menu P5 – Programmable inputs", Page 25).

CAUTION

For increased safety, implement a mechanical interlock of the circuit-breakers or contactors, observing also national regulations.

3.4.2 Actuation of circuit-breakers with motor operator

To actuate circuit-breakers with motor operator four programmable outputs (commands Open and Close for line 1 and for line 2) and two programmable inputs for status feedback from the circuit-breakers are required. Further optional programmable inputs for alarm signals, actuating protective devices (withdrawn and TRIP) may be required.

The Open and Close commands can be issued as continuous or pulse signals. The signaling mode can be selected with parameter P2.07 (→ Page 21). Signaling times are set with the two parameters P2.09 and P2.10 (→ Section 4.2.2, "Menu P2 – General data", Page 21).

When a circuit-breaker does not respond to a close command, the NZM-XATS-C96 sends an Open signal followed by a further Close signal before issuing a timeout alarm if the circuit-breaker still fails to close.

When an Open command is sent to the circuit-breaker the programmable inputs configured as TRIP are ignored for a time window of 15 seconds. This prevents erroneous alarms when a circuit-breaker temporarily transmits a TRIP signal as the tripping coil opens.

3.4.3 Actuation of motorized switchgear

The application with motorized switching devices is similar to the actuation of circuit-breakers with motor operators. Here, however, only three outputs (commands for closing lines 1 and 2 and opening both lines) and two inputs for switching device status are required.

Required are functions CL.1, CL.2 and OP.A for the programmable outputs (→ Section 4.2.6, "Menu P6 – Programmable outputs", Page 27) and functions FB.1 and FB.2 for the programmable inputs (→ Section 4.2.5, "Menu P5 – Programmable inputs", Page 25).

Pulsed and continuous signal command mode can be selected. The signaling mode can be selected with parameter P2.07 (→ Page 21). Signaling times are set with the two parameters P2.09 and P2.10 (→ Section 4.2.2, "Menu P2 – General data", Page 21).

3.4.4 Actuation of contactors

If two contactors are used, two programmable outputs (CL.1 and CL.2, → Section 4.2.6, "Menu P6 – Programmable outputs", Page 27) and two programmable inputs (→ Section 4.2.5, "Menu P5 – Programmable inputs", Page 25) are required for status feedback.

In this case parameter P2.07 must have the value for contactors (P2.07 = CNT, → Page 21).

4 Parameter setup

4.1 Setting the parameters (Setup)

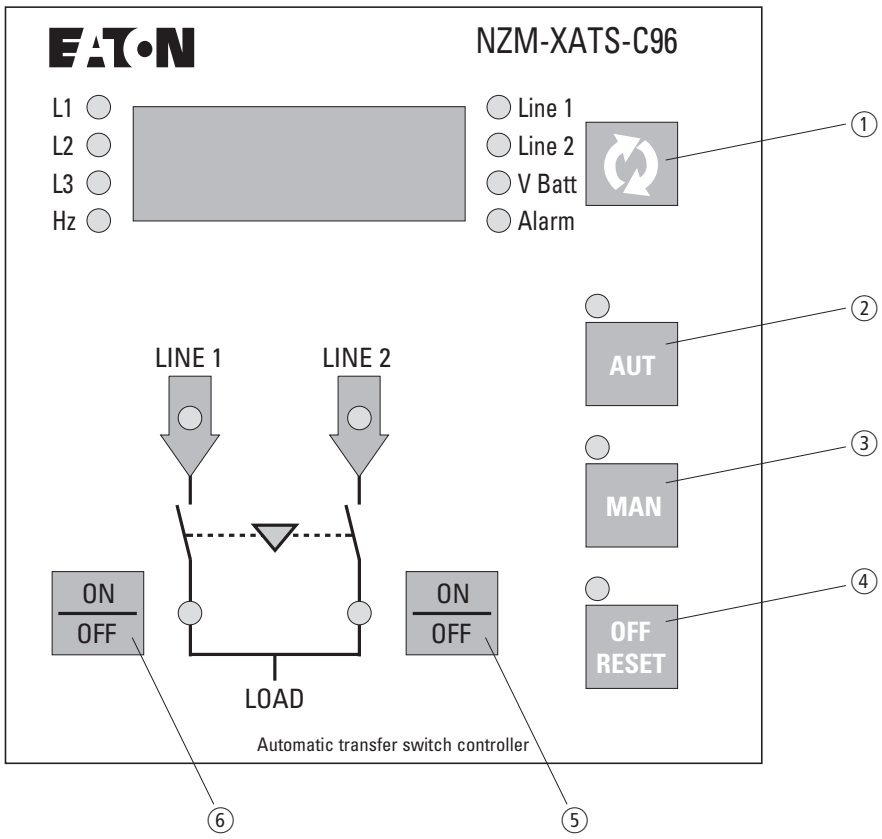

Figure 6: Keypad, pushbuttons

When the NZM-XATS-C96 is in OFF/RESET mode, press and hold keys ① and ④ at the same time for five seconds. The Setup menu appears. Wait a few seconds or press key ④ to call up the menus.

The display shows the code of the first parameter P1.01, i.e. menu P1, parameter 01.

To move between the parameters within a menu, use keys ① and ②.

To select the previous or next menu, use keys ⑤ and ⑥.

To switch from the parameter name display to the parameter's value, press key ③.

To change the value of the selected parameter, use keys ① and ②.

To exit the parameter setup menu, press key ④.

To return to the default setting, press keys ⑤ and ⑥ at the same time.

If you do not press a key for more than two minutes, the device automatically exits the setup menu without saving your changes.

4.2 Menu table

MENU	Description
P1	System rating data
P2	General data
P3	Voltage measurement, line 1
P4	Voltage measurement, line 2
P5	Programmable inputs
P6	Programmable outputs
P7	Communication ports
A	Alarms

4.2.1 Menu P1 – Rating data

PAR	Function	Range	Explanation	Default
P1.01	Rated operating voltage system U_e (L-L)	100 - 690 V~	To calculate the thresholds for rated operating voltage U_e, expressed in percent of U_e. For two- and three-phase systems set the phase-to-phase voltage (L-L).	400
P1.02	Voltage ratio TV	1.00 - 9.99	Translation ratio of set voltage to applied voltage	1.00
P1.03	Connection type	3.nE – three phases + neutral 3Ph – three phases 2Ph – two phases 1Ph – one phase	Specified the monitored network type. The setting "three phases" or "three phases + neutral" only has an effect on the display.	3.nE
P1.04	Type of voltage measurement	L-L – Phase-to-phase voltage L-n – Phase-to-neutral voltage LLn – Phase-to-phase voltage + phase-to-neutral voltage	Indicates whether the voltage measurement applies for phase-to-phase voltages, phase-to-earth voltage or both.	L-L
P1.05	Rated frequency	50 Hz 60 Hz	Rated frequency used as reference for frequency threshold values.	50 Hz
P1.06	Rated operational battery voltage	AUTO 12 – 12 V 24 – 24 V 48 – 48 V	Used for battery voltage alarms. If set to Auto, the battery's rated operating voltage is selected automatically.	AUTO
P1.07	Language	ENG English ITA Italian FRA French ESP Spanish POR Portuguese DEU German	Language in which alarms and other status messages are displayed.	ENG

4.2.2 Menu P2 – General data

PAR	Function	Range	Explanation	Default
P2.01	Type of application	U-G = mains/generator U-U = mains/mains	Specifies the application type, i.e. with or without generator, an allows management of the associated I/O signals.	U-G
P2.02	Phase sequence measurement	OFF – Switched off 123 – Direct 321 – Inverted	Checks the connected against the set phase sequence.	OFF
P2.03	Selection of main supply source	-1- line 1 -2- line 2	Specifies the main power supply source, i.e. the mains that supplies the consumer when both sources are available.	-1-
P2.04	Interlock time line 1 → line 2	0.1 - 90.0 s	Time between opening of switching device 1 and closing of switching device 2.	6.0 s
P2.05	Interlock time line 1 ← Nline 2	0.1 - 90.0 s	Time between opening of switching device 2 and closing of switching device 1.	6.0 s
P2.06	Transfer behavior	OBP – Open before presence OAP – Open after presence	OBP (Open Before Presence) means that in automatic mode the Open command is issued to a switching device when the affected line lies outside the limit values, irrespective of the status of the standby line. OAP (Open After Presence) means that the command for opening a switching device in operating mode AUT is sent only when the standby supply lies within the limit values.	OBP
P2.07	Type of switching device actuation	PUL – Pulse CON – Continuous CNT – Contactors	Specifies whether the programmable outputs are continuously active (application with switchgear without feedback function) or must be in pulse mode, i.e. active until the switching device is in the required position. When pulse mode is selected, the command is extended by a set time (→ P2.09 and P2.10) even after the position has been reached.	PUL
P2.08	Maximum time for switching device actuation (A03-A04 alarm delay)	1 - 900 s	If a switching device is not in the correct position after an Open or Close command after this time, alarm A03 or A04 is triggered. Works only when the switching device's auxiliary contacts are wired to the corresponding programmable inputs (FB.1 and FB.2, → Section 4.2.5, "Menu P5 – Programmable inputs", Page 25).	5 s
P2.09	Open command duration	0.0 - 60.0 s	Minimum duration of an Open command. Where switching devices with motor operator are used, this time must be long enough to allow full tensioning of the springs. This setting is also used when the NZM-XATS-C96 is in continuous signal mode. For NZM and IZM at least 3 s.	10.0 s
P2.10	Close command duration	1.0 - 60.0 s	Duration of the Close command pulse signal.	1.0 s
P2.11	Max. time for which the consumer is without power (Response delay alarm A07)	OFF/1 - 3600 s	If both supply lines are unavailable for more than the time specified with P2.11 in automatic mode, alarm A07 is issued.	60 s
P2.12	Inhibit of automatic transfer to main supply	OFF – Switched off ON – Inhibit activated	When this parameter is set to ON, the Automatic Transfer Switch-Controller does not automatically transfer the consumer back to main supply once it has ben transferred to standby power.	OFF
P2.13	Generator start delay	0 - 900 s	Time between the occurrence of a fault in line 1 and transmission of the Start signal to the standby line generator. This time is not affected by the switching device's opening time.	1 s
P2.14	Generator cooling time	1 - 3600 s	Time for which the generator remains operational for cooling after being isolated from the consumer.	120 s

PAR	Function	Range	Explanation	Default
P2.15	Battery minimum voltage threshold	OFF/70 - 100 %	Specifies the minimum threshold value relative to the value of P1.06.	75 %
P2.16	Battery maximum voltage threshold	OFF/100 - 140 %	Specifies the maximum threshold value relative to the value of P1.06.	130 %
P2.17	Delay time alarm battery	0 - 60 s	Response delay for the battery alarm, relative to P2.15 and P2.16. This also delays the global alarm output and the alarm LED.	10 s
P2.18	Activate voltage measurement in MAN mode	OFF/ON	Activates or disables voltage measurement in MAN mode. When measurement is active, no transfer between the two lines takes place. When measurement for the selected line (1 or 2) exceeds the set limit values, the NZM-XATS-C96 opens the switching device automatically. When the line returns to within its limit values, the NZM-XATS-C96 closes the switching device.	OFF
P2.19	Continuous command signal in RESET/OFF mode	OFF – opens the command outputs NOC – Leaves the outputs unchanged	Specifies the behavior of the Open/Close command outputs in continuous signal mode when the NZM-XATS-C96 is in RESET/OFF mode. Used for applications with contactors.	NOC
P2.20	EJB start delay	OFF/1 - 3600 s	Delay between the EJP start signal and the actual start signal to the generator.	OFF

4.2.3 Menu P3 – Voltage monitor, line 1

PAR	Function	Range	Explanation	Default
P3.01	Trip, minimum voltage threshold	70 - 98 %	The first two parameters specify the minimum voltage threshold value and the associated hysteresis on recovery. P3.02 can have a lower value than P3.01. P3.03 specifies the release delay (→ Section 2.5, "Voltage measurements", Page 11).	85 %
P3.02	Recovery, minimum voltage threshold	75 - 100 %		90 %
P3.03	Delay, minimum voltage threshold	0.1 - 900 s		1.0 s
P3.04	Trip, maximum voltage threshold	102 - 120 %/OFF	These two parameters specify the maximum voltage threshold value and the associated hysteresis on recovery. P3.05 can have a higher value than P3.04. When P3.04 is OFF, maximum voltage measurement is disabled → Section 2.5, "Voltage measurements", Page 11.	115 %
P3.05	Recovery, maximum voltage threshold	100 - 115 %		110 %
P3.06	Delay, maximum voltage threshold	0.1 - 900 s	Specifies the delay at maximum voltage.	1.0 s
P3.07	Phase failure threshold	60 - 85 %/OFF	Voltage threshold below which a phase failure causes a response, usually faster than the drop. The delay on phase failure is specified with P3.08.	70 %
P3.08	Delay, phase failure threshold	0.1 - 30.0 s		0.1 s
P3.09	Voltage asymmetry threshold	1 - 20 %/OFF	Specifies the maximum threshold value for asymmetry between the phases relative to rated operating voltage.	15 %
P3.10	Delay, voltage asymmetry threshold	0.1 - 900 s	Specifies the associated response delay. This measurement can be disabled by setting P3.09 to OFF.	5.0 s
P3.11	Minimum frequency threshold	OFF/80 - 100 % Fe	Threshold value (can be disabled) and response delay for minimum frequency.	95 %
P3.12	Delay, minimum frequency threshold	0.1 - 900 s		5.0 s

PAR	Function	Range	Explanation	Default
P3.13	Maximum frequency threshold	101 - 120 % Fe/OFF	Threshold value (can be disabled) and response delay for maximum frequency.	105 %
P3.14	Delay, maximum frequency threshold	0.1 - 900 s		3.0 s
P3.15	Restore line 1 if within limit value delay (if line 2 not available)	1 - 3600 s	Delay when line 1 lies within the limit values again and line 2 is not available. Normally shorter than P3.16 since when the consumer is without power, power must be urgently supplied.	10 s
P3.16	Restore line 1 if within limit value delay (if line 2 is available)	1 - 3600 s	Delay when line 1 lies within the limit values again and the consumer can be connected to line 2. Normally longer than P3.15 since when the consumer has power it is safe to wait longer before the restored supply is considered stable.	60 s

4.2.4 Menu P4 – Voltage monitor, line 2

PAR	Function	Range	Explanation	Default
P4.01	Trip, minimum voltage threshold	70 - 98 %	The first two parameters specify the minimum voltage threshold value and the associated hysteresis on recovery. P4.02 can have a lower value than P4.01. P4.03 specifies the release delay → Section 2.5, "Voltage measurements", Page 11.	85 %
P4.02	Recovery, minimum voltage threshold	75 - 100 %		90 %
P4.03	Delay, minimum voltage threshold	0.1 - 900 s		1.0 s
P4.04	Trip, maximum voltage threshold	102 - 120 %/OFF	These two parameters specify the maximum voltage threshold value and the associated hysteresis on recovery. P4.05 can have a higher value than P4.04. When P4.04 is OFF, maximum voltage measurement is disabled (→ Section 2.5, "Voltage measurements", Page 11).	115 %
P4.05	Recovery, maximum voltage threshold	100 - 115 %		110 %
P4.06	Delay, maximum voltage threshold	0.1 - 900 s	Specifies the delay at maximum voltage.	1.0 s
P4.07	Phase failure threshold	60 - 85 %/OFF	Voltage threshold below which a phase failure causes a response, usually faster than the drop. The delay on phase failure is specified with P4.08.	70 %
P4.08	Delay, phase failure threshold	0.1 - 30.0 s		0.1 s
P4.09	Voltage asymmetry threshold	1 - 20%/OFF	Specifies the maximum threshold value for asymmetry between the phases relative to rated operating voltage.	15 %
P4.10	Delay, voltage asymmetry threshold	0.1 - 900 s	Specifies the associated response delay. This measurement can be disabled by setting P4.09 to OFF.	5.0 s
P4.11	Minimum frequency threshold	OFF/80 - 100 % Fe	Threshold value (can be disabled) and response delay for minimum frequency.	95 %
P4.12	Delay, minimum frequency threshold	0.1 - 900 s		5.0 s

PAR	Function	Range	Explanation	Default
P4.13	Maximum frequency threshold	101 - 120 % Fe/OFF	Threshold value (can be disabled) and response delay for maximum frequency.	105 %
P4.14	Delay, maximum frequency threshold	0.1 - 900 s		3.0 s
P4.15	Restore line 2 if within limit values (if line 1 is not available)	1 - 3600 s	Delay when line 1 lies within the limit values again and line 2 is not available. Normally shorter than P4.16 since when the consumer is without power, power must be urgently supplied.	10 s
P4.16	Restore line 2 if within limit values (if line 1 is available)	1 - 3600 s	Delay when line 1 lies within the limit values again and the consumer can be connected to line 2. Normally longer than P4.15 since when the consumer has power it is safe to wait longer before the restored supply is considered stable.	60 s

4.2.5 Menu P5 – Programmable inputs

PAR	Function	Terminal	Range	Default
P5.1.1	Function of programmable input 1	2.1	→ Table 2	FB.1
P5.1.2	Input 1 normal/inverted		NOR/INV	NOR
P5.1.3	Activation delay		0.0 - 25.0 s	0.0 s
P5.1.4	Deactivation delay		0.0 - 25.0 s	0.0 s
P5.2.1	Function of programmable input 2	2.2	→ Table 2	FB.2
P5.2.2	Input 2 normal/inverted		NOR/INV	NOR
P5.2.3	Activation delay		0.0 - 25.0 s	0.0 s
P5.2.4	Deactivation delay		0.0 - 25.0 s	0.0 s
P5.3.1	Function of programmable input 3	2.3	→ Table 2	TR.1
P5.3.2	Input 3 normal/inverted		NOR/INV	NOR
P5.3.3	Activation delay		0.0 - 25.0 s	0.0 s
P5.3.4	Deactivation delay		0.0 - 25.0 s	0.0 s
P5.4.1	Function of programmable input 4	2.4	→ Table 2	TR.2
P5.4.2	Input 4 normal/inverted		NOR/INV	NOR
P5.4.3	Activation delay		0.0 - 25.0 s	0.0 s
P5.4.4	Deactivation delay		0.0 - 25.0 s	0.0 s
P5.5.1	Function of programmable input 5	2.5	→ Table 2	E.TR
P5.5.2	Input 5 normal/inverted		NOR/INV	NOR
P5.5.3	Activation delay		0.0 - 25.0 s	0.0 s
P5.5.4	Deactivation delay		0.0 - 25.0 s	0.0 s
P5.6.1	Function of programmable input 6	2.6	→ Table 2	IN.R
P5.6.2	Input 6 normal/inverted		NOR/INV	NOR
P5.6.3	Activation delay		0.0 - 25.0 s	0.0 s
P5.6.4	Deactivation delay		0.0 - 25.0 s	0.0 s

Table 2: Functions of programmable inputs

COD	Function
OFF	Input not used
FB.1	Switching device on line 1 closed (feedback 1) Auxiliary contact that indicates to the NZM-XATS-C96 whether the switching device for line 1 is open or closed. If this signal is not connected, the NZM-XATS-C96 specifies the status of the switching device from the status of the control outputs.
FB.2	Switching device on line 2 closed (feedback 2) As FB.1 but for line 2
TR.1	Circuit-breaker, line 1 tripped (trip 1) When this contact is closed, an alarm “Tripped circuit-breaker, line 1” is generated.
TR.2	Circuit-breaker, line 2 tripped (trip 2) As TR.1 but for line 2

COD	Function
E.TR	Transfer to standby line When the contact is closed, a transfer to the standby line takes place even if the main supply voltage lies within the limit values. Can be used for changing the priorities between line 1 and line 2. The switching device for the standby supply remains active as long as the values for this line lie within the limit values. Can be used for the EJP function.
IN.R	Automatic transfer to main supply inhibited When this contact is closed, it prevents a transfer back to the main supply in AUT mode when the main supply lies within the limit values again. Used to prevent the back transfer at an unforeseeable time causing a further power interruption. When circuit-breakers IZM are used their Operational signalling switch can be used to ensure that the IZM of the main supply is operational. On motor operators NZM the Operational signal at terminal 75 can be used.
S.GE	Start generator When this contact is closed in AUT mode, the generator starts after the time set with P2.20. Can be used for the EJP function.
EME	Emergency When this N/C contact is open, both switching devices open and alarm A09 is triggered.
Size 2	Generator ready 2 This contact closes to indicate that the generator for line 2 is ready for operation. If this signal is missing, alarm A08 is issued.
E.L1	Enable load 1 Issues the enable for connection of the consumer to line 1 in addition to the internal control.
E.L2	Enable load 2 As E.L1 but for line 2
LOC	Keypad (lock) When this contact is closed all key functions on the keypad except for measurement indication are locked.
L.PA	Lock parameters When this contact is closed access to the setup menus is blocked.

4.2.6 Menu P6 – Programmable outputs

PAR	Function	Terminal	Range	Default
P6.1.1	Function of programmable output 1	4.1	→ Table 3	OP.1
P6.1.2	Output 1 normal/inverted		NOR/INV	NOR
P6.2.1	Function of programmable output 2	4.3	→ Table 3	CL.1
P6.2.2	Output 2 normal/inverted		NOR/INV	NOR
P6.3.1	Function of programmable output 3	5.1	→ Table 3	OP.2
P6.3.2	3 normal/inverted		NOR/INV	NOR
P6.4.1	Function of programmable output 4	5.3	→ Table 3	CL.2
P6.4.2	Output 4 normal/inverted		NOR/INV	NOR
P6.5.1	Function of programmable output 5	3.1	→ Table 3	RDY
P6.5.2	Output 5 normal/inverted		NOR/INV	NOR
P6.6.1	Function of programmable output 6	3.3-3.4	→ Table 3	GC.2
P6.6.2	Output 6 normal/inverted		NOR/INV	NOR
P6.x.2 – Sets the respective programmable output as N/O (NOR) or as N/C (INV) contact.				

Table 3: Function of programmable outputs

COD	Function
OFF	Output not used
OP.1	Open line 1 circuit-breaker (Open 1) This contact closes to open the circuit-breaker for line 1. Can remain activated after actuation or be released, depending on the value of P2.07 (→ Page 21). (Do not use for contactors or motorized changeover switches.)
CL.1	Close line 1 switching device (Close 1) This contact closes to close the switching device for line 1. Can remain activated after actuation or be released, depending on the value of P2.07 (→ Page 21).
OP.2	Open line 2 circuit-breaker (Open 2) As OP.1 but for line 2.
CL.2	Close line 2 switching device (Close 2) As CL.1 but for line 2.
OP.A	Open both lines (Open All) Used to switch motorized changeover switches to their neutral position; both lines open
GC.2	Generator control 2 Start/Stop control for the generator in line 2. When this contact is closed, it issues the the Generator Off command. Used in mains/generator applications.
RDY	NZM-XATS-C96 ready Indicates that the device is in automatic mode, that no alarms are active and that it is ready for operation.
ALA	Global alarm Output active under standard conditions and deactivated when any alarm present.
L1.S	Line 1 status This output is active when all conditions for connecting the consumer to line 1 are fulfilled.
L2.S	Line 2 status This output is active when all conditions for connecting the consumer to line 2 are fulfilled.

4.2.7 Menu P7 – Communication port

PAR	Function	Range	Explanation	Default
P7.01	Address RS232	1 - 245	Define the transmission format and the protocol for the RS232 port.	1
P7.02	Baud rate RS232	2400 4800 9600 19200 38400		9600 baud
P7.03	Protocol RS232	RTU – Modbus RTU ASC – Modbus ASCII		RTU
P7.04	Parity RS232	NONE ODD EVEN		NONE

4.2.8 Alarm menu A

PAR	Switch Functions	Range	Default
A01.1[1)]	Enable A01	OFF/ON	ON
A01.2[2)]	Retentive	OFF/ON	ON
A01.3[3)]	Circuit-breaker 1 lock	OFF/ON	OFF
A01.4[3)]	Circuit-breaker 2 lock	OFF/ON	OFF
A01.5[4)]	Global alarm relay	OFF/ON	ON
A02.1[1)]	Enable A02	OFF/ON	ON
A02.2[2)]	Retentive	OFF/ON	ON
A02.3[3)]	Circuit-breaker 1 lock	OFF/ON	OFF
A02.4[3)]	Circuit-breaker 2 lock	OFF/ON	OFF
A02.5[4)]	Global alarm relay	OFF/ON	ON
A03.1[1)]	Enable A03	OFF/ON	ON
A03.2[2)]	Retentive	OFF/ON	ON
A03.3[3)]	Circuit-breaker 1 lock	OFF/ON	ON
A03.4[3)]	Circuit-breaker 2 guard	OFF/ON	OFF
A03.5[4)]	Global alarm relay	OFF/ON	ON
A04.1[1)]	Enable A04	OFF/ON	ON
A04.2[2)]	Retentive	OFF/ON	ON
A04.3[3)]	Circuit-breaker 1 lock	OFF/ON	OFF
A04.4[3)]	Circuit-breaker 2 lock	OFF/ON	ON
A04.5[4)]	Global alarm relay	OFF/ON	ON
A05.1[1)]	Enable A05	OFF/ON	ON

1) Axx.1 – General alarm activation. When alarm activation is set OFF, the alarm is never generated.
2) Axx.2 – Non-retentive alarms are displayed only as long as the alarm conditions apply. Following retentive alarms the NZM-XATS-C96 must be reset manually from the keypad by pressing the OFF/RESET key (which selects OFF mode).
3) Axx.3 and Axx.4 – The commands for opening and closing the affected circuit-breakers are then disabled.
4) Axx.5 – If set On this alarm activates the programmable output configured as ALA.

PAR	Switch Functions	Range	Default
A05.2[2]	Retentive	OFF/ON	ON
A05.3[3]	Circuit-breaker 1 lock	OFF/ON	OFF
A05.4[3]	Circuit-breaker 2 lock	OFF/ON	OFF
A05.5[4]	Global alarm relay	OFF/ON	ON
A06.1[1]	Enable A06	OFF/ON	ON
A06.2[2]	Retentive	OFF/ON	ON
A06.3[3]	Circuit-breaker 1 lock	OFF/ON	OFF
A06.4[3]	Circuit-breaker 2 lock	OFF/ON	OFF
A06.5[4]	Global alarm relay	OFF/ON	ON
A07.1[1]	Enable A07	OFF/ON	ON
A07.2[2]	Retentive	OFF/ON	OFF
A07.3[3]	Circuit-breaker 1 lock	OFF/ON	OFF
A07.4[3]	Circuit-breaker 2 lock	OFF/ON	OFF
A07.5[4]	Global alarm relay	OFF/ON	ON
A08.1[1]	Enable A08	OFF/ON	ON
A08.2[2]	Retentive	OFF/ON	OFF
A08.3[3]	Circuit-breaker 1 lock	OFF/ON	OFF
A08.4[3]	Circuit-breaker 2 lock	OFF/ON	OFF
A08.5[4]	Global alarm relay	OFF/ON	ON
A09.1[1]	Enable A09	OFF/ON	ON
A09.2[2]	Retentive	OFF/ON	ON
A09.3[3]	Circuit-breaker 1 lock	OFF/ON	OFF
A09.4[3]	Circuit-breaker 2 lock	OFF/ON	OFF
A09.5[4]	Global alarm relay	OFF/ON	ON
A10.1[1]	Enable A10	OFF/ON	ON
A10.2[2]	Retentive	OFF/ON	ON
A10.3[3]	Circuit-breaker 1 lock	OFF/ON	ON
A10.4[3]	Circuit-breaker 2 lock	OFF/ON	ON
A10.5[4]	Global alarm relay	OFF/ON	ON
A11.1[1]	Enable A11	OFF/ON	ON
A11.2[2]	Retentive	OFF/ON	ON
A11.3[3]	Circuit-breaker 1 lock	OFF/ON	ON
A11.4[3]	Circuit-breaker 2 lock	OFF/ON	ON
A11.5[4]	Global alarm relay	OFF/ON	ON

1) Axx.1 – General alarm activation. When alarm activation is set OFF, the alarm is never generated.
2) Axx.2 – Non-retentive alarms are displayed only as long as the alarm conditions apply. Following retentive alarms the NZM-XATS-C96 must be reset manually from the keypad by pressing the OFF/RESET key (which selects OFF mode).
3) Axx.3 and Axx.4 – The commands for opening and closing the affected circuit-breakers are then disabled.
4) Axx.5 – If set On this alarm activates the programmable output configured as ALA.

5 Circuit diagrams

5.1 Connections on rear side

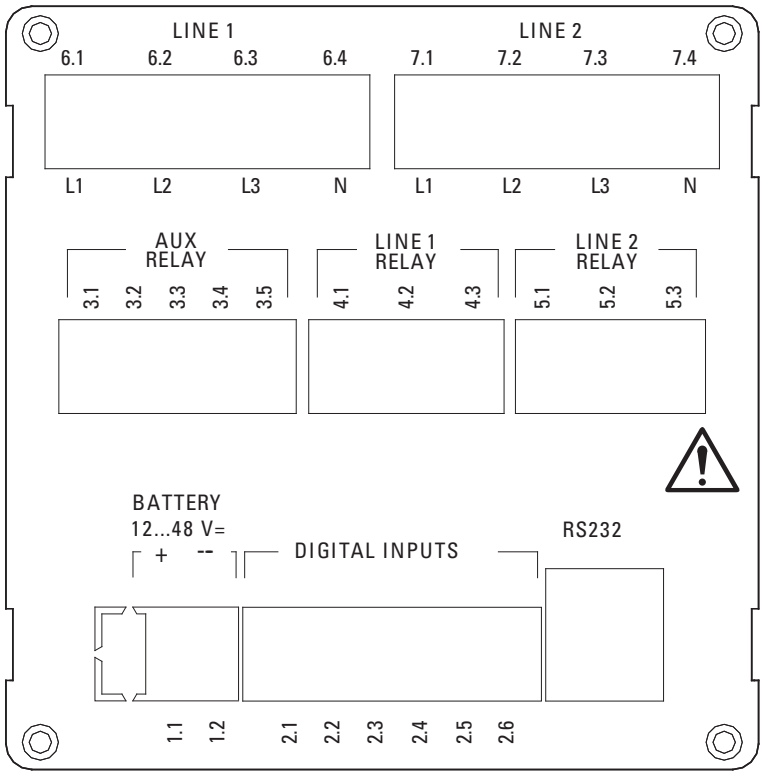

Figure 7: Connections on rear side

LINE 1, terminals 6.1 to 6.4: measuring inputs, line 1
LINE 2, terminals 7.1 to 6.4: measuring inputs, line 2
1.1 and 1.2: power supply
2.1 to 2.6: Programmable inputs
3.1 to 3.5: Programmable outputs
4.1 to 4.3: Programmable outputs (by default assigned for switching line 1)
5.1 to 5.3: Programmable outputs (by default assigned for switching line 2)
RS 232C: Serial interface

5.2 Actuation of circuit-breakers with motor operator

5.2.1 Actuation of circuit-breakers NZM with motor operator NZM…-XR...

NZM-XATS-C96 supplied from battery.

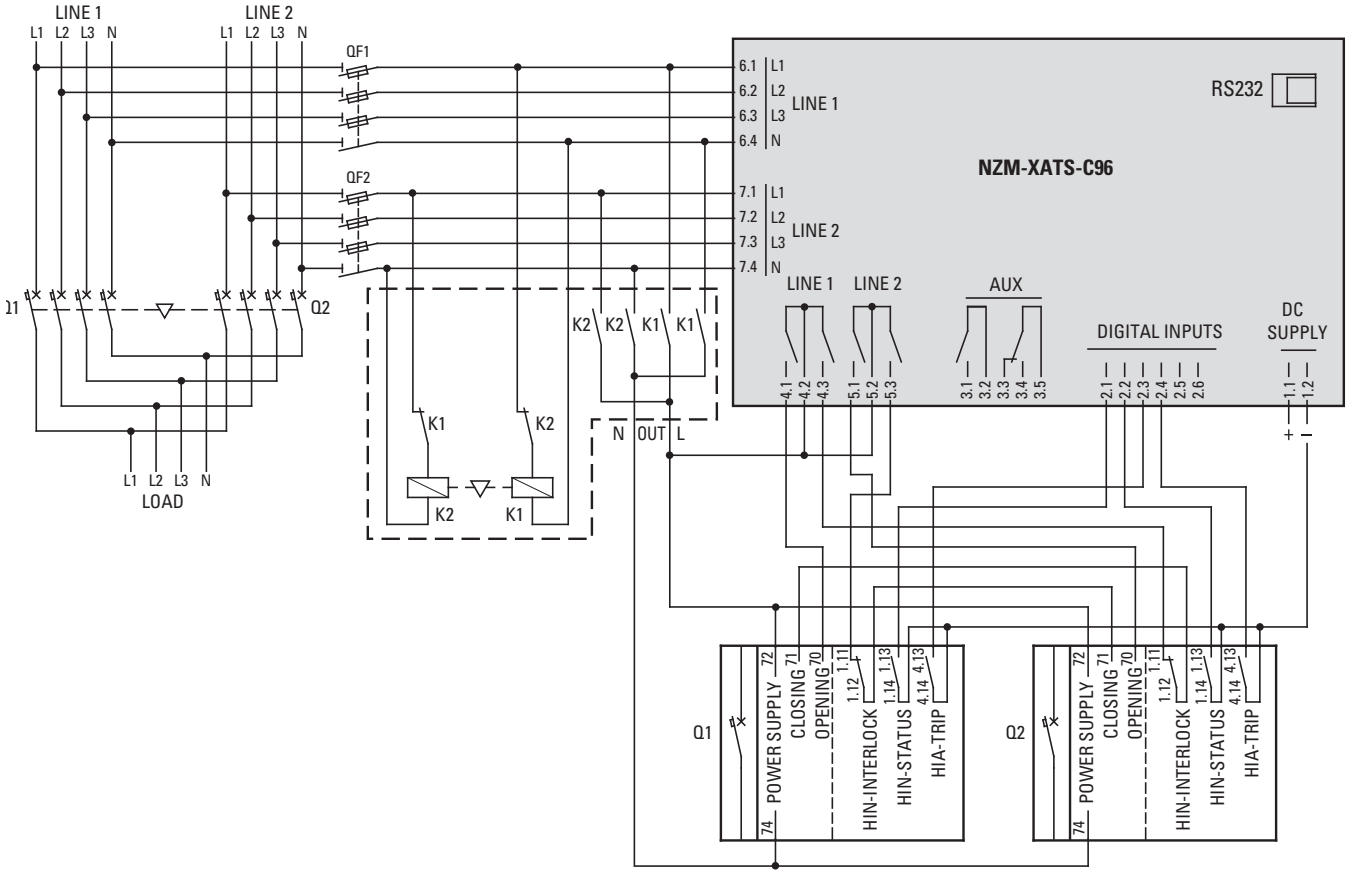

Figure 8: Actuation of circuit-breakers NZM with motor operator NZM-XATS-C96, battery-supplied

Q1: Circuit-breaker, main supply: NZM2, NZM3 or NZM4 + motor operator NZM…-XR…

Q2: Circuit-breaker, standby supply: NZM2, NZM3 or NZM4 + motor operator NZM…-XR…

QF1, QF2: Line protection

K1, K2: Contactors switch supply between main and standby supply: DILA-22(…)

Table 4: Values of parameters for circuit diagram shown

Terminal	Parameters	Value
4.1	P6.1.1	OP.1
4.3	P6.2.1	CL.1
5.1	P6.3.1	OP.2
5.3	P6.4.1	CL.2
2.1	P5.1.1	Fb.1
2.2	P5.2.1	Fb.2
2.3	P5.3.1	TR.1
2.4	P5.4.1	TR.2

5.2.2 Actuation of circuit-breakers IZMX16 with motor operator

NZM-XATS-C96 supplied from battery.

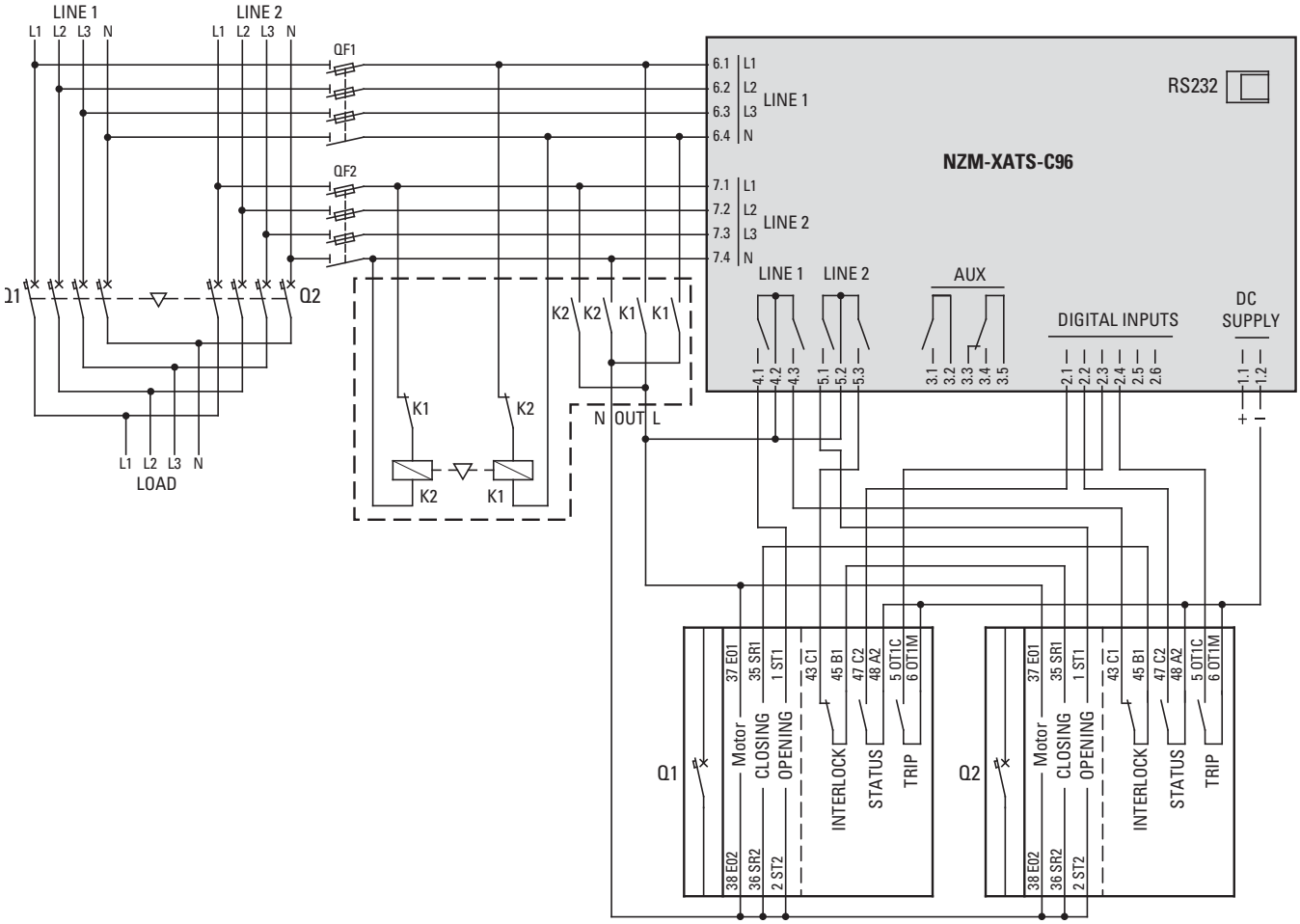

Figure 9: Actuation of circuit-breakers IZMX16 with motor operator – NZM-XATS-C96, battery-supplied

Q1: Circuit-breaker IZMX16, main supply

Q2: Circuit-breaker IZMX16, standby supply

QF1, QF2: Line protection

K1, K2: Contactors switch supply between main and standby supply

Table 5: Values of parameters for circuit diagram shown

Terminal	Parameters	Value
4.1	P6.1.1	OP.1
4.3	P6.2.1	CL.1
5.1	P6.3.1	OP.2
5.3	P6.4.1	CL.2
2.1	P5.1.1	Fb.1
2.2	P5.2.1	Fb.2
2.3	P5.3.1	TR.1
2.4	P5.4.1	TR.2

5.2.3 Actuation of circuit-breakers IZMX40 with motor operator

NZM-XATS-C96 supplied from battery.

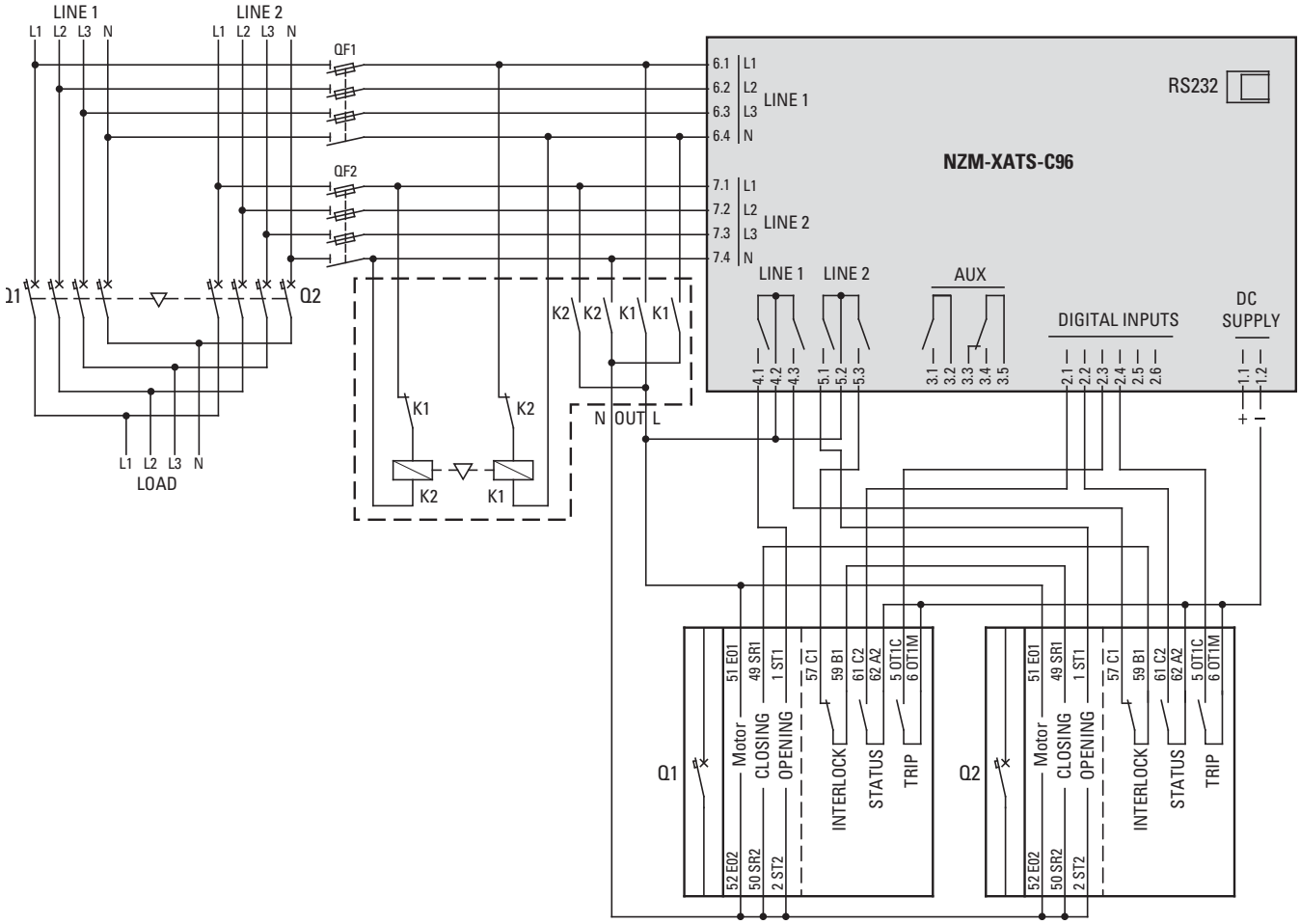

Figure 10:Actuation of circuit-breakers IZMX40 with motor operator – NZM-XATS-C96, battery-supplied

Q1: Circuit-breaker IZMX40 main supply network

Q2: Circuit-breaker IZMX40, standby supply

QF1, QF2: Line protection

K1, K2: Contactors switch supply between main and standby supply

Table 6: Values of parameters for circuit diagram shown

Terminal	Parameters	Value
4.1	P6.1.1	OP.1
4.3	P6.2.1	CL.1
5.1	P6.3.1	OP.2
5.3	P6.4.1	CL.2
2.1	P5.1.1	Fb.1
2.2	P5.2.1	Fb.2
2.3	P5.3.1	TR.1
2.4	P5.4.1	TR.2

5.2.4 Actuation of circuit-breakers with motor operator, general

NZM-XATS-C96 supplied from battery.

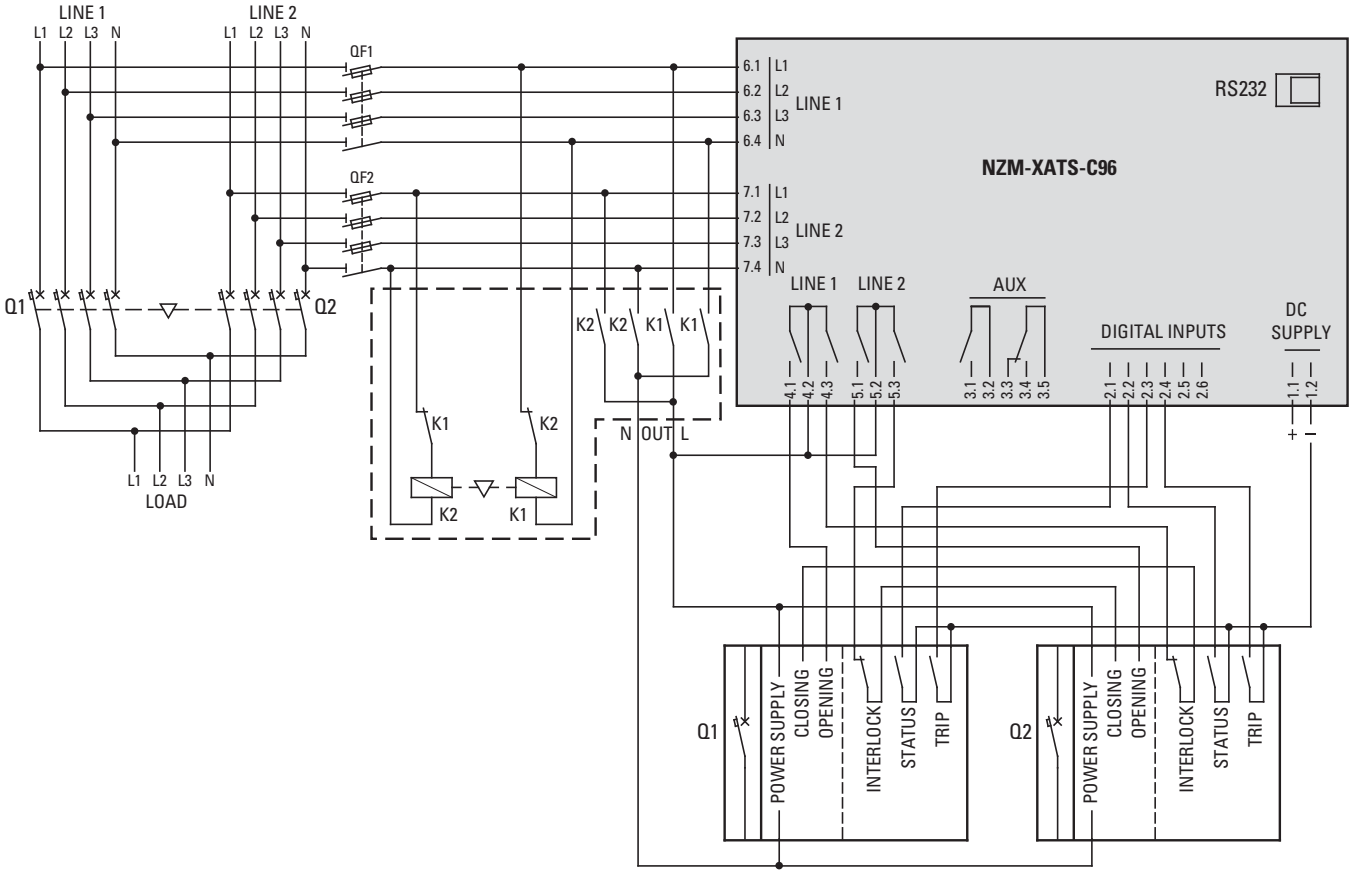

Figure 11:Actuation of circuit-breakers with motor operator – NZM-XATS-C96, battery-supplied

Q1: Circuit-breaker, main supply

Q2: Circuit-breaker, standby supply

QF1, QF2: Line protection

K1, K2: Contactors switch supply between main and standby supply

Table 7: Values of parameters for circuit diagram shown

Terminal	Parameters	Value
4.1	P6.1.1	OP.1
4.3	P6.2.1	CL.1
5.1	P6.3.1	OP.2
5.3	P6.4.1	CL.2
2.1	P5.1.1	Fb.1
2.2	P5.2.1	Fb.2
2.3	P5.3.1	TR.1
2.4	P5.4.1	TR.2

5.3 Actuation of motorized changeover switches

NZM-XATS-C96 supplied from battery.

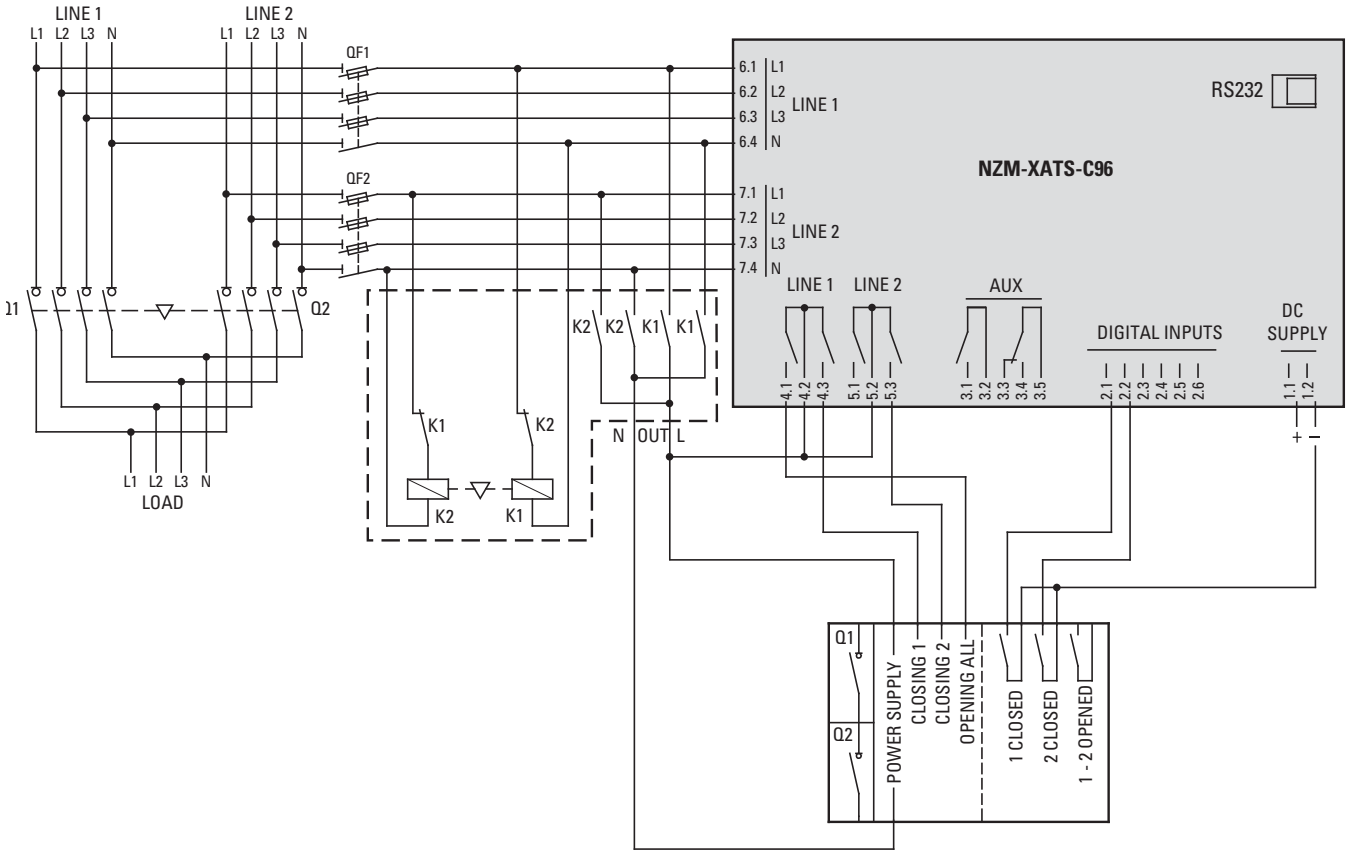

Figure 12:Actuation of motorized changeover switches – NZM-XATS-C96 supplied from battery

Q1, Q2: Changeover switch

QF1, QF2: Line protection

K1, K2: Contactors switch supply between main and standby supply

Table 8: Values of parameters for circuit diagram shown

Terminal	Parameters	Value
4.1	P6.1.1	OP.A
4.3	P6.2.1	CL.1
5.3	P6.4.1	CL.2
2.1	P5.1.1	Fb.1
2.2	P5.2.1	Fb.2

5.4 Actuation of contactors

NZM-XATS-C96 supplied from battery.

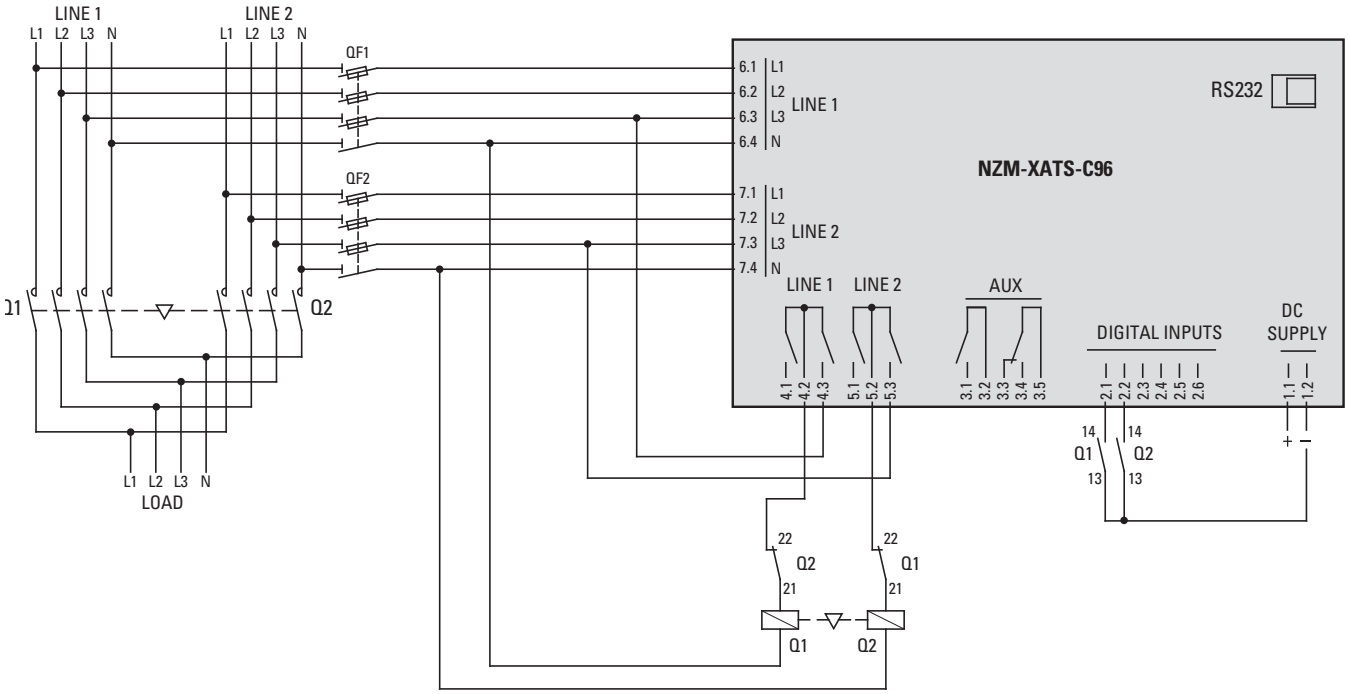

Figure 13:Actuation of contactors – NZM-XATS-C96 supplied by battery

Q1, Q2: Contactors

QF1, QF2: Line protection

K1, K2: Contactors switch supply between main and standby supply

Table 9: Values of parameters for circuit diagram shown

Terminal	Parameters	Value
4.3	P6.2.1	CL.1
5.3	P6.4.1	CL.2
2.1	P5.1.1	Fb.1
2.2	P5.2.1	Fb.2
-	P2.07	CNT

5.5 Line/generator control without battery power supply

Line 2 of generator.

Power supply control with the NZM-XATS-C96 and optional DC power supply unit when a battery supply is not available.

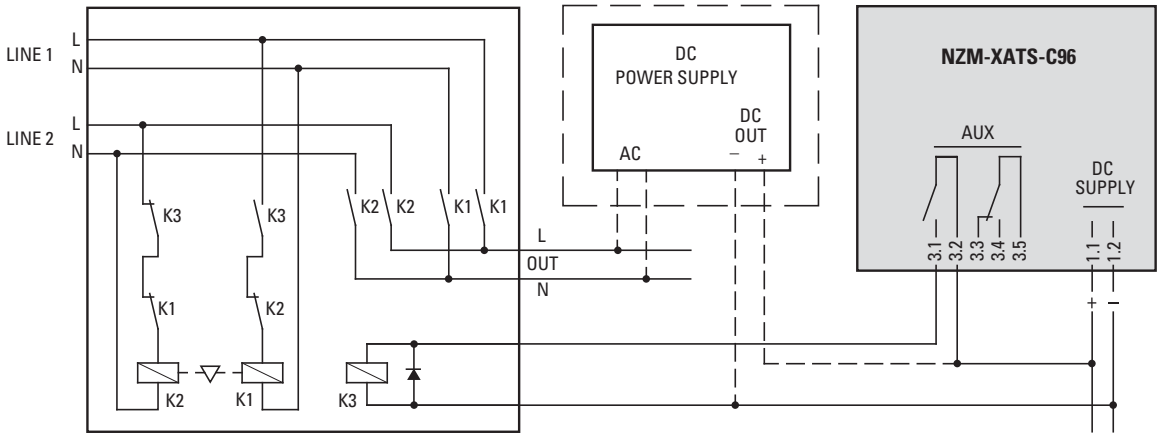

Figure 14:Line/generator control without battery power supply

The programmable output at terminals 3.1–3.2 (parameter P6.5.1, → Section 4.2.6, "Menu P6 – Programmable outputs", Page 27) must be programmed with function L1.S.

Set one programmable output with GC.2 such that the generator starts when the NZM-XATS-C96 is without power → Section 4.2.6, "Menu P6 – Programmable outputs", Page 27.

5.6 Line/Line control without battery power supply

Auxiliary power supply control with NZM-XATS-C96 and optional DC PSU when a battery supply is not available.

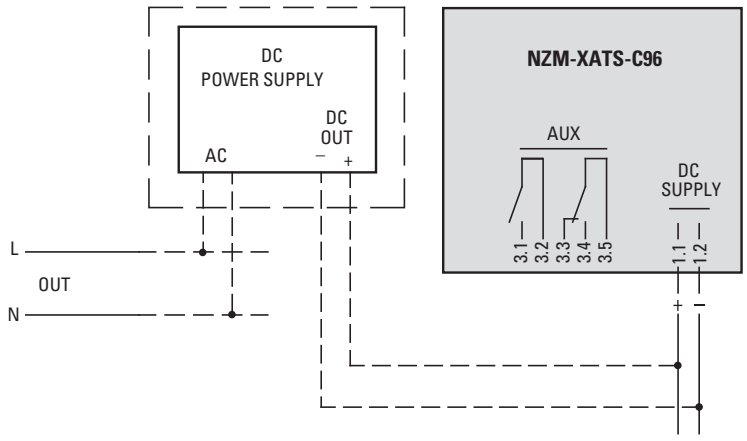

Figure 15:Line/Line control without battery power supply

5.7 Controller supply through additional undervoltage relay

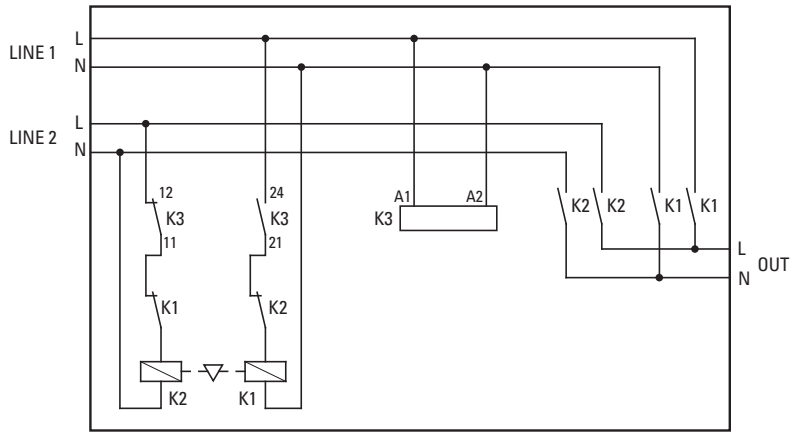

Figure 16:Controller supply through additional undervoltage relay

K1, K2: Contactors switch supply between main and standby supply

K3: Undervoltage relay

6 Appendix

6.1 Technical data

Standby supply, terminals 1.1 and 1.2	
Rated operational battery voltage	12 or 24 or 48 V⎓
Max. current consumption	250 mA @ 12 V⎓; 130 mA @ 24 V⎓; 70 mA @48 V⎓
Max. power consumption	3.3 W
Operating Voltage	9 - 60 V⎓
Digital inputs, terminals 2.1 to 2.6	
Contact type	decrease
Input current	8 mA
Input signal state “0”	≤ 1.5 V (normally 2.9 V)
Input signal state “1”	≥ 5.3 V (normally 4.3 V)
Input signal delay	≥ 50 ms
AC input voltage mains 1 (terminals 6.1 to 6.4) and mains 2 (terminals 7.1 to 7.4)	
Field of application	100 - 480 V~ L-L (277 V~ L-N)
Measuring range	50 - 576 V~ L-L (330 V~ L-N)
Frequency range	45 - 66 Hz
Measuring procedure	True RMS value monitoring
Measurement input impedance	>1.1 MΩ between L-L and >570 kΩ between L-N
Connection procedure	1, 2 or 3 phases with or without neutral conductor
Relay outputs for actuating line 1 switching devices (no voltage, terminals 4.1 to 4.3)	
Number of relays	2
Contact type	1 N/O (together)
Mode of application	B300 - 8 A 250 V~ AC1 30 V⎓ 8 A – 30 V⎓ 1 A standby operation
Maximum current at terminals 4.2	12 A
Relay outputs for actuating line 2 switching devices (no voltage, terminals 5.1 to 5.3)	
Number of relays	2
Contact type	1 N/O (together)
Mode of application	B300 - 8 A 250 V~ AC1 30 V⎓ 8 A – 30 V⎓ 1 A standby operation
max. current at terminal 5.2	12 A
Auxiliary relay outputs (no voltage, terminals 3.1 to 3.5)	
Number of relays	2
Contact type	1 N/C + 1 N/O
Mode of application	30 V⎓ 8 A - 30 V⎓ 1 A standby operation
Serial interface	
Interface type	RS232
Baud rate	Programmable 1200 - 38400 bit/s
Connection type	RJ6/6

Measurement accuracy	
Test conditions	
Temperature	+23 °C ± 1 °C
Relative humidity	45 ± 15 %
Voltage	±0.5 % full scale ±1 digit (0.1 - 1.2 U_e)
Frequency	±0.1 % ±1 digit
Environmental Conditions	
Operating Temperature	-20 - +60 °C
Storage temperature	-30 - +80 °C
Relative humidity	< 90 % non-condensing (IEC/EN 60068-2-78)
Installation altitude	≤ 2000 m
Overvoltage category	3
Measurement category	CAT III
Pollution degree	3
Climate sequence	Z/ABDM (IEC/EN 60068-2-61)
Mechanical shock resistance	10 g (IEC/EN 60068-2-27)
Vibration resistance	0.7 g (IEC/EN 60068-2-6)
Insulation voltage	
Rated insulation voltage U_i	480 V~
Rated impulse withstand voltage	4.0 kV U_{imp}
Low-voltage circuits (digital inputs, RS232 and auxiliary relays)	Double insulation
Connections	
Terminal type:	bolt on
Conductor cross-section (min/max)	0.2 - 2.5 mm^2 (24 - 12 AWG)
Tightening torque	0.5 Nm (4.5 LBin)
Housing	
Type	Installation enclosure 96 x 96 mm
Material characteristic	Noryl UL94 V-0 black, self-extinguishing
Protection type	IP54 front - IP20 rear
Weight	470 g
Conformity	
Fulfills standards	IEC/EN 60947-6-1, IEC/EN 61010-1, IEC/EN 61000-6-2, IEC/ EN 61000-6-3