

Connection type

RTU560 backplane Connector	48 pole type F DIN 41612
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Insulation tests

Insulation classification according to	IEC 60664-1 • Pollution degree 2 • Over voltage category II • Altitude: $\leq 3,000$ m
AC dielectric voltage test, IEC 60255-27, IEC 61000-4-16 IEC 60870-2-1 (class VW3)	2.5 kV, 50 Hz Test duration: 1 min
Impulse voltage withstand test of insulation, IEC 60255-27, IEC 60870-2-1 (class VW3)	5 kV (1.2 / 50 μ s)
Insulation resistance, IEC 60255-27	> 100 M Ω at 500 VDC
Insulation resistance to earth at 500 V DC, IEC 60255-27	500 VDC isolated for 1 min
Inverted polarity and voltage ramp delay, IEC 60255-27	1 V/min

Immunity test

Electrostatic discharge IEC 61000-4-2	8 kV air / 6 kV contact (level 3) Performance criteria A
Radiated radio-frequency Electromagnetic field IEC 61000-4-3	20 V/m (level x) Performance criteria A
Electrical fast transient / Burst IEC 61000-4-4	2 kV (level 3) Performance criteria A
Surge IEC 61000-4-5	2 kV (level 3) Performance criteria A
Impulse magnetic field IEC 61000-4-9	100 A/m (level 3) Performance criteria A

Environmental conditions - climatic

Operating temperature EN 60068-2-14	-25 °C - 70 °C
Start up EN 60068-2-1	-40 °C
Max. operating temperature, max. 96h EN 60068-2-2	+85 °C
Relative humidity EN 60068-2-30	5 - 95 % (non condensing)

Ordering information

560BOR01 R0002



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051-37677068-9



Digital Output

Catalog RTU560

Application

The 560BOR01 module, part of the RTU560 product series, is designed for controlling up to 16 binary process signals through relay contacts. Output signals can be assigned to processing functions in accordance with the configuration rules.

The 560BOR01 module supports the following signal types:

- Single or double commands (SCO or DCO) with 1 or 2 pole outputs
- Single or double commands (SCO or DCO) with 1.5 or 2 pole outputs, including a “1 out of n” verification feature
- The module is capable of switching voltages up to 150 V DC or handling a continuous current of up to 2 A

Characteristics

Binary outputs

The relay contacts serve as binary outputs and are organized into two separate groups of eight outputs each. These groups are electrically isolated from each other as well as from the internal electronics. The relay coil supply voltage (24 VDC) is regulated by an internal switching transistor and continuously monitored both before and during command execution.

Commands can be issued either directly or via a command output supervision module, which monitors and verifies the output circuits (for example, the 23BA23 module, supporting up to 60 VDC). The 1.5 pole command output, available only when using a supervision module, employs a single output relay from the 560BOR01 to drive an interposing relay, while the process voltage is controlled by the supervision module. Two relays are required for 2 pole commands.

For direct switching of high-capacity process devices such as disconnectors or circuit breakers, a booster relay can be used in conjunction with the 23BA23 command output monitoring module. The 560BOR01 module performs multiple command supervision functions both before and during output to ensure proper operation. In case of a detected fault, the command is aborted, and relay switching is only permitted after successful verification. Failures in the release relay R17 or its driver result in complete deactivation of the command output module.

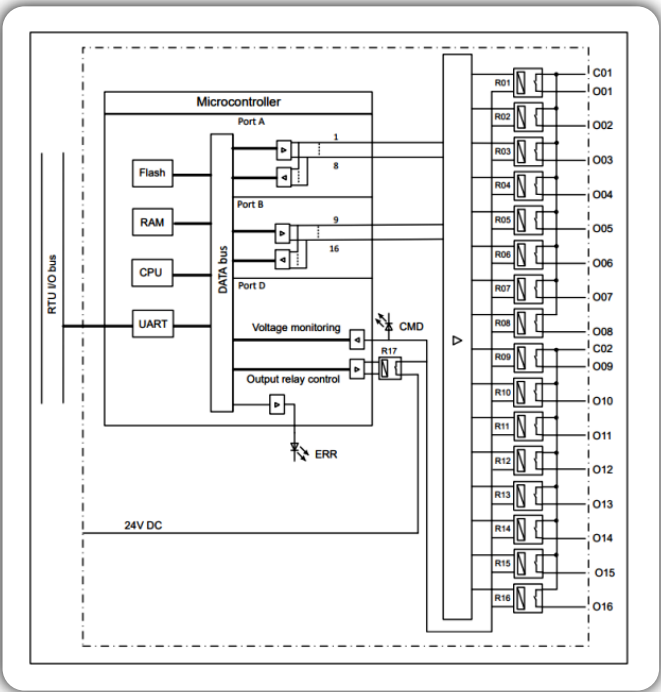


Figure 1: Block diagram 560BOR01

I/O controller (IOC)

The module's microcontroller (MPU) handles all time-critical I/O tasks associated with the parameterized processing functions and manages interactive communication with the I/O bus. Configuration data and processing parameters are loaded through the communication unit via the RTU560 I/O bus. The module features a serial interface to the RTU560 I/O bus on the backplane.

The binary output unit can execute a variety of processing functions for individual signal types, including control of command output duration.

Command Monitoring Functions:

- “m out of 16” verification of the module's output relays
- Monitoring output bit patterns by reading back the output state
- Switching voltage monitoring (24 VDC coil voltage) before and during output
- Command output duration monitoring

During both initialization and operation, the module performs several diagnostic tests. Any detected faults are reported to the communication unit. All fault conditions affecting module functionality are indicated by a common fault signal via a red LED. Failures in connected modules are detected and signaled by the communication unit.

Technical data

In addition to the general technical specifications of the RTU500 series, the following details apply:

Binary output channels 560BOR01

Outputs	16 Relay contacts, single pole, normal open, 2 groups of 8 outputs with common return
Coil voltage	24 VDC
Max. switching voltage	150 VDC
Continuous current	2 A total current for one group with the same common return
Max breaking current (resistive load)	2 A ≤ 30 VDC 1 A @ 60 VDC 0.3 A @ 110 VDC 0.15 A @ 150 VDC
Max. breaking capacity (inductive load)	13 VA (L/R= 20 ms)
AC dielectric voltage test	2.5 kV, 50 Hz, 1 min
IEC 60255-27, IEC 61000-4-16 IEC 60870-2-1 (class VW3)	
Impulse voltage withstand test of insulation IEC 60255-27 IEC 60870-2-1 (class VW3)	5 kV (1.2 / 50 µs)
Electrical fast transient / Burst, IEC 61000-4-4	4 kV (level 4), criterion A
Surge 1.2/50 µs, IEC 61000-4-5	4 kV (level 4), criterion A
Conducted disturbances, induced by radio-frequency fields, IEC 61000-4-6	10 V (level 3), criterion A
Conducted, common disturbance mode disturbances in the frequency range 0 Hz to 150 kHz, IEC 61000-4-16	30 V continuous / 300V short duration disturbance (level 4), criterion A
Damped oscillatory wave, IEC 61000-4-18	2.5 kV line to earth, 1 kV line to line (level 3), criterion A

Current consumption for power supplied via RTU560 backplane

5 VDC	120 mA
24 VDC	10 mA per active relay

Signaling by LEDs

ERR (red)	Common fault information for the module
CMD	Command output, displayed during active output time of any output relay

Mechanical layout

Dimensions	160 mm × 100 mm, 3HE euro card format 4R (20 mm) front panel
Housing type	Printed circuit board
Mounting	for mounting in RTU560 racks
Weight	0.3 kg