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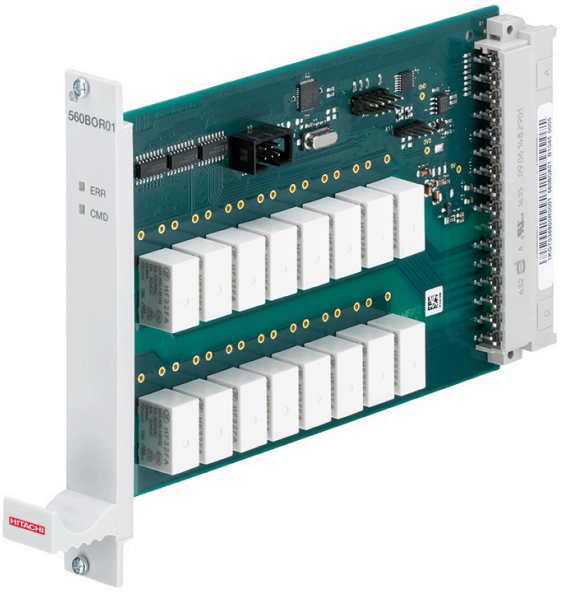
Remote Terminal Units - Data sheet

Binary output 560BOR01

RTU560 product line



Binary output, 16 channels

- 16 output contacts configured as
  - 1-pole command
  - 2-pole command
  - 1.5-pole command in configuration with 23BA23
- Operating voltage 24...125 V DC, 60 W
- Imax: 2 A <= 30 V DC (resistive load)

Application

The module 560BOR01 of the RTU560 product line can be used for the control of 16 binary process signals using relay contacts. The allocation of an output signal to the processing functions can be done according to the rules of configuration.

The module 560BOR01 is capable of processing the following types of signals:

- Single or double commands (SCO or DCO) with 1 or 2 pole output
- Single or double commands (SCO or DCO) with 1.5 or 2 pole output with (1 out of n) check

The module allows switching voltages up to 150 V DC or max. 2 A continuous current.

The module is available in two versions (rubrics):

- 560BOR01 R0002
- 560BOR01 R0102 pin and function compatible with R0002, only an alternative IO controller is used.

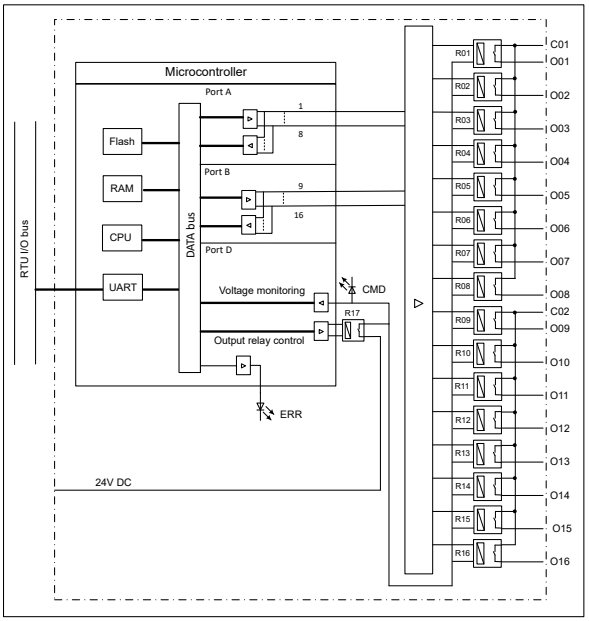


Figure 1: Block diagram 560BOR01

Characteristics

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Binary outputs

Relay contacts are used for the binary outputs.

The 16 outputs are combined into two groups. Each 8 outputs have a common return. The groups are isolated from one another as well as from the internal electronic.

The supply voltage for the coils of the relays (24 V DC) is switched by an internal switching transistor and is monitored internally before and during the command output.

The command output to the process equipment can be effected either directly or in conjunction with a command output supervision module. The command output supervision module covers the (1 out of n) check of the output circuits. Further details can be found in the data sheet of the command output monitoring module.

Following modules with command output supervision function are supported:

- 23BA23 (max. 60 V DC)

The 1.5 pole command output is only available in combination with a command output supervision module. With the 1.5 pole command output, one output relay of the 560BOR01 switches the command to the interposing relay. The process voltage for the interposing relay is switched by the command output supervision module.

Two output relays are required for each command in case of 2 pole commands.

Another possibility for direct switching of process relays on electrical equipment (disconnectors, circuit-breakers) with high switching capacity is given by using an additional booster relay connected to the command output monitoring module 23BA23 (refer to 23BA23 Data sheet).

Before and during command output the module 560BOR01 executes several command monitoring functions. These tests ensure correct output. With a command output monitoring module these tests can be further improved.

If the command monitoring detects a fault the command will be canceled. The switching of the output relays by the release relay R17 is only possible after a successful test. A erroneous driver or a fault in the release relay R17 leads to a total deactivation of the command output module.

Power supply input

The required power for the module is supplied via the RTU560 backplane.

I/O controller (IOC)

The micro-controller (MPU) on the module processes all time critical I/O tasks of the parameterized processing functions. Moreover it carries out the interactive communication with theI/O bus. All configuration data and processing parameters are loaded by the communication unit via the RTU560 I/O bus.

The module is equipped with a serial interface to the RTU560 I/O bus on the backplane.

The binary output unit can execute the following processing functions on the individual signal types:

- Control of the command output duration

Command monitoring functions:

- (m out of 16) check of the output relays on the module
- monitoring of the output bit patterns by reading back the output state
- switching voltage monitoring (24 V DC coil voltage) before and during output
- command output duration monitoring

During initialization and operation the module executes a number of tests. If a fault occurs it is reported to the communication unit. All fault conditions impairing the function of the module are displayed as a common fault signal by a red LED. A failure of the connected module(s) is detected and signalized by the communication unit.

Technical data

In addition to the RTU500 series general technical data, the following applies:

Binary output channels 560BOR01	
Outputs	16 Relay contacts, single pole, normal open, 2 groups of 8 outputs with common return
Coil voltage	24 V
Max. switching voltage	150 V DC
Continuous current	2 A total current for one group with the same common return
Max breaking current (resistive load)	2 A ≤ 30 V DC 1 A @ 60 V DC 0.3 A @ 110 V DC 0.15 A @ 150 V DC
Max. breaking capacity (inductive load)	13 VA (L/R= 20 ms)
AC dielectric voltage test, IEC 60255-27, IEC 61000-4-16, IEC 60870-2-1 (class VW3)	2.5 kV, 50 Hz, 1 min
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 mode disturbances in the frequency range 0 Hz to 150 kHz, IEC 61000-4-16	30 V continuous disturbance/ 300 V 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 V DC	120 mA
24 V DC	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 x 100 mm, 3HE euro card format 4R (20 mm) front panel

Mechanical layout	
Housing type	Printed circuit board
Mounting	for mounting in RTU560 racks
Weight	0.3 kg

Connection type	
RTU560 backplane connector	48 pole type F DIN 41612

Insulation tests	
Insulation classification according to	IEC 60664-1 • Pollution degree 2 • Over voltage category II • Altitude: ≤ 3,000 m Pollution degree 2 Over voltage category II Altitude: ≤ 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 µs)
Insulation resistance, IEC 60255-27	> 100 MΩ at 500 V DC
Insulation resistance to earth at 500 V DC, IEC 60255-27	500 V DC 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 IEC61000-4-9	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

Environmental conditions - climatic	
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	1KGT036800R0002
560BOR01 R0102	1KGT036800R0102

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