

Mounting
I/O voltage ≤ 60 VDC:
for mounting in all RTU560 racks
I/O voltage ≥ 110 VDC:
for mounting only in 560MPR03 and 560SFR02 racks

Weight	0.2 kg
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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
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	Altitude: $\leq 3,000$ m
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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
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Impulse voltage withstand test of insulation, IEC 60255-27, IEC 60870-2-1(class VW3)	5 kV (1.2 / 50 μ s)
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Insulation resistance, IEC60255-27	> 100 M Ω at 500 VDC
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Insulation resistance to earth at 500 V DC, IEC 60255-27	500 VDC isolated for 1 min
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Insulation tests

Inverted polarity and voltage ramp delay, IEC 60255-27	1 V/ min
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Immunity test

Electrostatic discharge IEC 61000-4-2	8 kV air / 6 kV contact (level3)
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Radiated radio-frequency Electromagnetic field IEC 61000-4-3	20 V/m (level x)
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Performance criteria A	
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Electrical fast transient / Burst IEC 61000-4-4	4 kV (level 4)
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Performance criteria A	
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Surge4 IEC 61000-4-5	kV (level 4)
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Performance criteria A	
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Impulse magnetic field IEC61000-4-9	100 A/m (level 3)
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Performance criteria A	
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Damped oscillatory wave IEC 61000-4-18	2.5 / 1 kV (level 3)
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Performance criteria A	
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Environmental conditions - climatic

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

560BIR01 R0001



Khorasan Science Technology Park



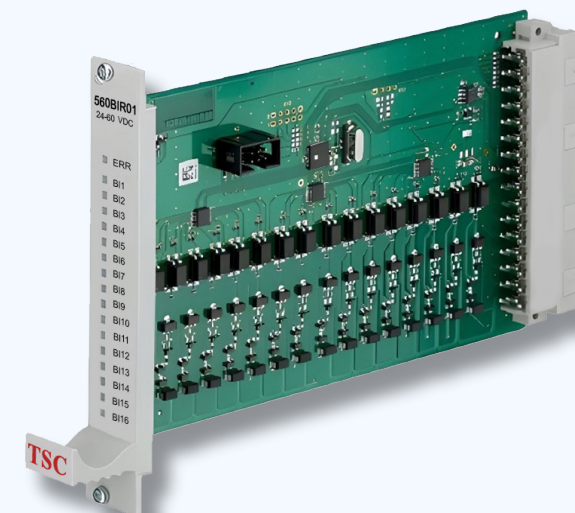
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051-37677068-9



Digital Input Catalog RTU560

Application

The 560BIR01 module , part of the RTU560 product line, provides 16 galvanically isolated input channels for acquiring up to 16 binary process signals. Input scanning and processing are performed with a high time resolution of 1 ms. The assignment of input signals to processing functions is configurable according to system configuration rules.

The 560BIR01 module is capable of handling the following signal types, either individually or in combination:

- 16 Single Point Information (SPI) with time stamp
- 8 Double Point Information (DPI) with time stamp
- 2 Digital Measured Values (DMI8), each 8-bit
- 1 Digital Measured Value (DMI16), 16-bit
- 16 Integrated Totals (ITI), up to 120 Hz
- 2 Step Position Information (STI), each 8-bit
- 2 Bitstring Inputs (BSI8), each 8-bit
- 1 Bitstring Input (BSI16), 16-bit

The module operates with a process voltage of 24 to 60 V DC and is equipped with status LED indicators.

Characteristics

Power supply input

The module receives its operating power through the RTU560 backplane.

Binary inputs

The input channels are galvanically isolated using optical couplers. The 16 inputs are organized into groups of 8, each group sharing a common return. The input circuitry is designed with current-regulating diodes to maintain a constant input current.

Each binary input channel is protected against reverse polarity. In case of incorrect polarity, the input current drops to zero, ensuring safe operation.

The module is equipped with 16 LEDs, each directly reflecting the state of the corresponding input signal. The maximum supported input frequency for counter pulses is 120 Hz.

I/O controller (IOC)

The module’s microcontroller (MPU) handles all time-critical I/O operations associated with the parameterized processing functions. Additionally, it manages interactive communication with the I/O bus. All configuration data and processing parameters are provided by the communication unit via the RTU560 I/O bus. The module includes a serial interface to the RTU560 I/O bus located on the backplane.

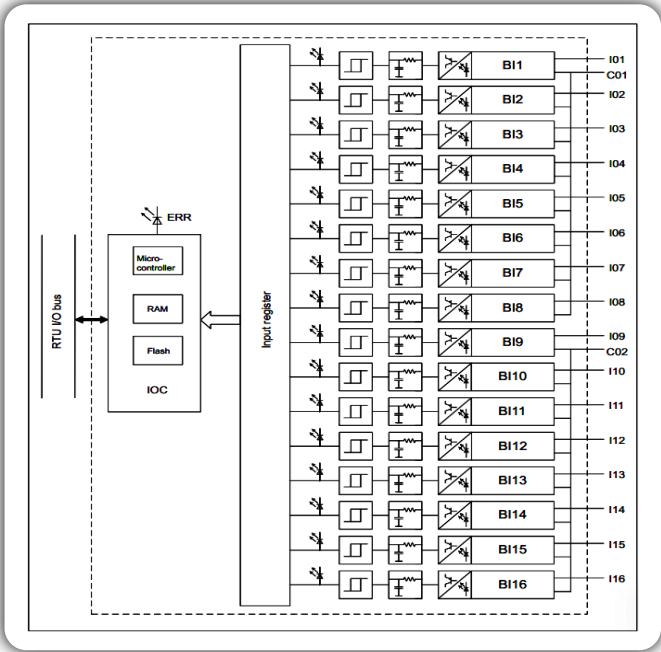


Figure 1: Block diagram 560BIR01

The binary input unit can perform the following processing functions for different signal types:

- Digital filtering to suppress contact bounce.
- Suppression of oscillating signals generated by the process.
- Validity checks and suppression of intermediate input states for double-point indications.
- Consistency checks for all channels assigned to digital measured values or step position information.
- Summation of increment pulses to generate integrated totals in 31-bit resolution registers.
- Copying of integrated totals into freezing registers to preserve data integrity.

The module provides a data buffer for temporally storing of up to 50 event messages including time stamps. The events are stored in chronological order designated for transmission to the communication unit (CMU).

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 signaled by the communication unit.

Technical data

In addition to the general technical specifications of the RTU500 series, the following requirements and characteristics apply:

Binary input channels 560BIR01 R0001

Inputs	16 channels, 2 groups of 8 channels, isolated by opto-couplers
Nominal input voltage	24 - 60 VDC (±20%)
Max. input voltage	72 VDC
Input current	1.8 - 2.2 mA constant
Logical '1' definitely detected	≥ 18 VDC
Logical '0' definitely detected	≤ 9 VDC
Reverse voltage protection	yes
Max. input frequency for integrated totals	120 Hz

Binary inputs - immunity and insulation tests

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)
Conducted disturbances, induced by radio-frequency fields, IEC 61000-4-6	10 V (level 3), criterion A
Ring wave, IEC 61000-4-12	2.5 kV line to earth, 1 kV line to line (level 3)
Conducted, common mode disturbances in the frequency range 0 Hz to 150 kHz, IEC 61000-4-16	30V 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
AC dielectric voltage test, IEC 60255-27, IEC61000-4-16, IEC 60870-2-1(class VW3)	2.5 kV, 50 Hz, 1 min

Binary inputs - immunity and insulation tests

Impulse voltage withstand test of insulation, IEC 60255-27, IEC 60870-2-1(class VW3)	5 kV (1.2 / 50 µs)
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Current consumption for power supplied via RTU560 backplane

5 VDC	100 mA
24 VDC	---

Signaling by LEDs

ERR (red)	Common fault information for the module
1 - 16 LED	LED displays the active inputs

Mechanical layout

Dimensions	160 mm × 100 mm, 3HE euro card format 4R (20 mm) front panel
Housing type	Printed circuit board