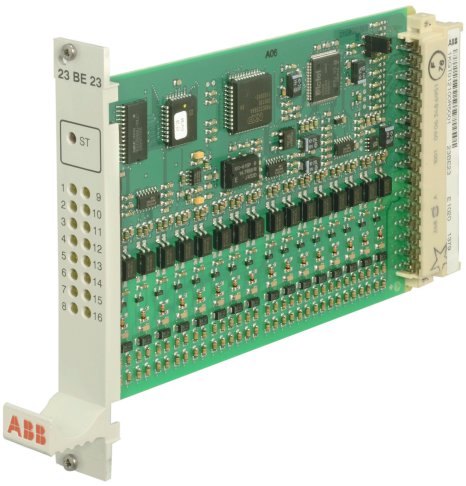
RTU560 product line

Binary input 23BE23
Data sheet



Application

The binary input module 23BE23 provides 16 galvanic isolated inputs for up to 16 binary process signals. Scanning and processing of the inputs are executed with the high time resolution of 1 ms. The allocation of an input signal to the processing functions can be done according to the rules of configuration.

The module 23BE23 is able to process the following types of signals or a combination of them:
- 16 single point information with time stamp (SPI)
- 8 double point information with time stamp (DPI)
- 2 digital measured values each with 8 bit (DMI8)
- 1 digital measured value with 16 bit (DMI16)
- 16 integrated totals (max. 120 Hz) (ITI)
- 2 step position information each with 8 bit (STI)
- 2 bitstring input each with 8 bit (BSI8)
- 1 bitstring input with 16 bit (BSI16)
- or combinations of this signal types

The module allows process voltages from 24 to 60 V DC. LED signaling is available for all inputs. The module has a common return per 8 inputs.

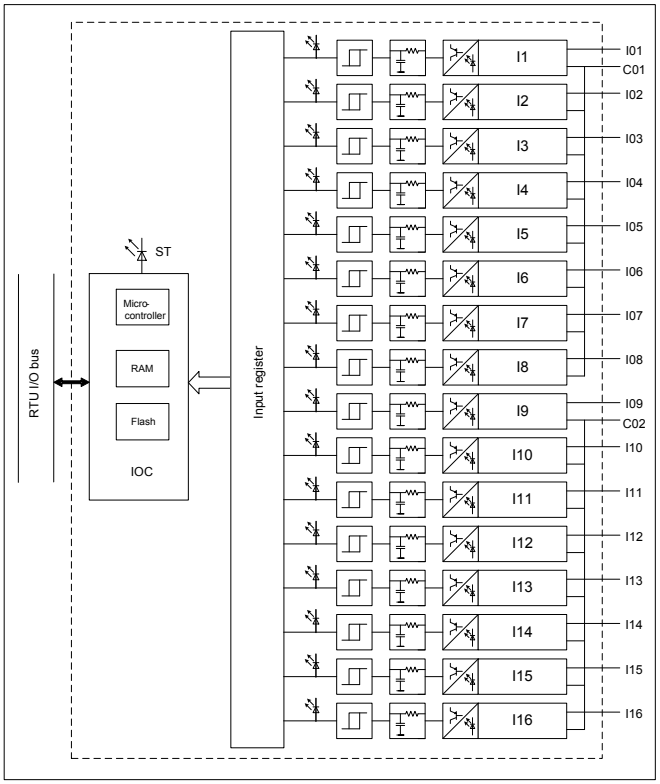


Figure 1: Block diagram 23BE23

Characteristics

Binary inputs

The inputs are galvanic isolated by means of optical couplers. 8 inputs are building a group with a common return. The input circuit is designed to keep the input current constant by using current regulative diodes.

The module has 16 LEDs to indicate the signal state at the inputs. The LEDs follow direct the input signal.

The maximum permissible frequency for counter pulses is 120 Hz.

Power supply input

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

I/O controller (IOC)

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

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

The binary input unit can execute the following processing functions for the different types of signals:

- Digital filtering to suppress contact bounce
- Suppression of oscillating signals caused by the process
- Validity check and suppression of intermediate input states for double indications
- Consistancy check for all channels allocated to digital measured values or step position information
- Summation of increment pulses to form integrated totals in registers of 31 bit resolution
- Copying of integrated totals values into freezing registers for data conservation

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 carries out 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 common fault signal by a red LED. A failure of the module is detected by the communication unit.

Technical data

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

Input channels 23BE23 R5001	
Inputs	16 channels, common return for 2 groups of 8 channels, isolated by opto-couplers
Nominal input voltage	24... 60 V DC (+/- 20%)
Max. input voltage	72 V DC
Input current	2 mA constant
Logical '1' definitely detected	≥ 18 V DC
Logical '0' definitely detected	≤ 9 V DC

Current consumption for power supplied via RTU560 backplane	
5 V DC	140 mA
24 V DC	--

Signaling by LEDs	
ST (red)	Common fault information for the module
1… 16	LED displays the active inputs

Mechanical layout	
Dimensions	160 mm x 100 mm, 3HE euro card format 4R (20 mm) front panel
Housing type	Printed circuit board
Mounting	for mounting in RTU560 racks
Weight	0.2 kg

Connection type	
RTU560 backplane connector	48 pole type F DIN 41612

Insulation tests	
AC test voltage IEC 61000-4-16 IEC 60870-2-1 (class VW3)	2.5 kV, 50 Hz Test duration: 1 min
Impulse voltage withstand test IEC 60255-5 IEC 60870-2-1 (class VW 3)	5 kV (1.2 / 50 µs)
Insulation resistance IEC 60255-5	> 100 MΩ at 500 V DC

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	10 V/m (level 3) 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
Conducted Disturbances, induced by Radio-Frequency Fields IEC 61000-4-6	10 V (level 3) Performance criteria A

Environmental conditions	
Nominal operating temperature range: Start up: EN 60068-2-1, -2-2, -2-14	-25°C... 70°C -40 °C
Relative humidity EN 60068-2-30	5 ... 95 % (non condensing)

Ordering information	
23BE23 R5001	1KGT012100R5001

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