

# RTU620 Remote Terminal Unit DataSheet

## Binary Input 620BIU01

### Application

The module 620BIU01 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 1ms. The allocation of an input signal to the processing functions can be done according to the rules of configuration.

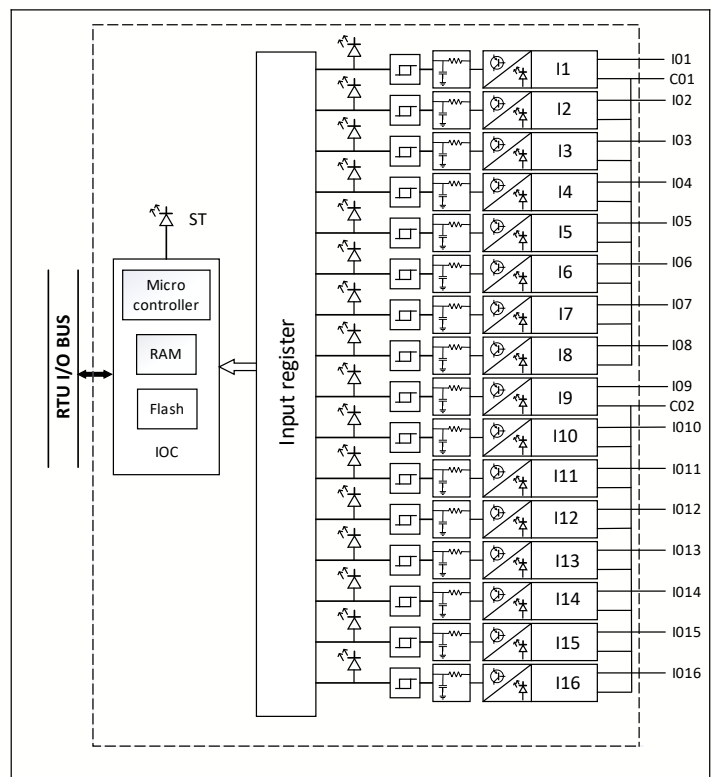
The module 620BIU01 is able to process the following types of signals or a combination of them:

- 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. 25 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 is available in one version:

- 620BIU01 : process voltage 24 to 60 V DC.

LED signaling for each input, common return per 8 inputs.



**Block diagram 620BIU01**

## Characteristic

### Binary inputs

The inputs are galvanic isolated by means of optical couplers. 8 inputs are building a group with a common return.

The binary input channels are protected against reverse voltage installation. If the input signal is installed with wrong polarity the input current will be zero.

The module has 16 LEDs to indicate the signal state at the inputs. The LEDs are switched by the controller .

The maximum permissible frequency for counter pulses is 25 Hz.

### Power supply input

The required power for the module is supplied via the RTU620 I/O bus connector .

## 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.

In connection with an I/O adapter (e. g. 620ADU01) or the RTU620 communication unit the module is interfaced to the RTU620 I/O bus.

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

- Digital filtering to suppress contact bounce
- Validity check and suppression of intermediate input states for double indications
- Consistency 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

## Processing functions

The module provides a data buffer for temporarily 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.

Parameter name	Default	Parameter location
Digital filter	10ms	SPI, DPI, DMI, STI, ITI, BSI – PDP parameters
value range: 2... 255 ms or disabled Digital filter specifies the time during which an input has to be stable before it is accepted as a new signal state		

Parameter name	Default	Parameter location
Supervision time for intermediate position	30sec	DPI –PDP parameters
value range: 1... 255 sec or deactivated Use the supervision time to specify when an intermediate DPI message is transmitted as an event		

Parameter name	Default	Parameter location
Consistency check time	1 sec	DMI, STI, BSI – PDP parameters
value range: 0.1... 25.5 sec or deactivated The digital value is only consistent and valid if all binary channels of the value are valid and stable for at least the consistency check time.		

## Signaling

### LED CH1... CH16

The 620BIU01 has 16 yellow LED's on the front plate indicating the state of the inputs. The LED's are controlled by the micro-controller. So the LED's indicate the state detected by the controller.

### LED ERR

The module monitors and checks the own functionality as well as the dialog via the I/O bus. Detected errors are indicated by the red LED ERR on the front plate and transmitted via the I/O bus to the communication unit (CMU). Additional diagnostic messages are available using the Web-Server on the CMU.

The LED ERR indicates module errors or I/O bus errors:

- module runs initialization procedure
- module is performing a cold or warm start
- module has detected a memory error (RAM or Flash)
- micro-controller is faulty
- no dialog via the I/O bus for at least 2 minutes. The module is not polled by the CMU.

## Connections

### I/O bus connection

The module is connected to the RTU I/O bus via the connectors X1 and X2.

#### ADVICE

To prevent damage on the connected modules de-energize the system before plugging or unplugging the I/O bus connectors.

#### ADVICE

To prevent unintended disconnection of the I/O bus connectors end stops shall be used at both ends of the I/O assembly.

## Connections

### Process connections

The process signals will be connected to the terminals X3 (see Fig. 2 ).

## Safety instructions

### Dangerous process voltages



Hazardous voltage.

Contact with live circuits will cause electric shock or burn.

Verify that all terminals feeding dangerous contact voltages (supply voltage, input or output channels) is in secure OFF state before connecting or withdrawing the terminals.



Environmental conditions with high humidity and condensing water may cause temporary or permanent failures of the module.

For environmental conditions with condensing water a heating unit has to be installed inside the cabinet.

Setting

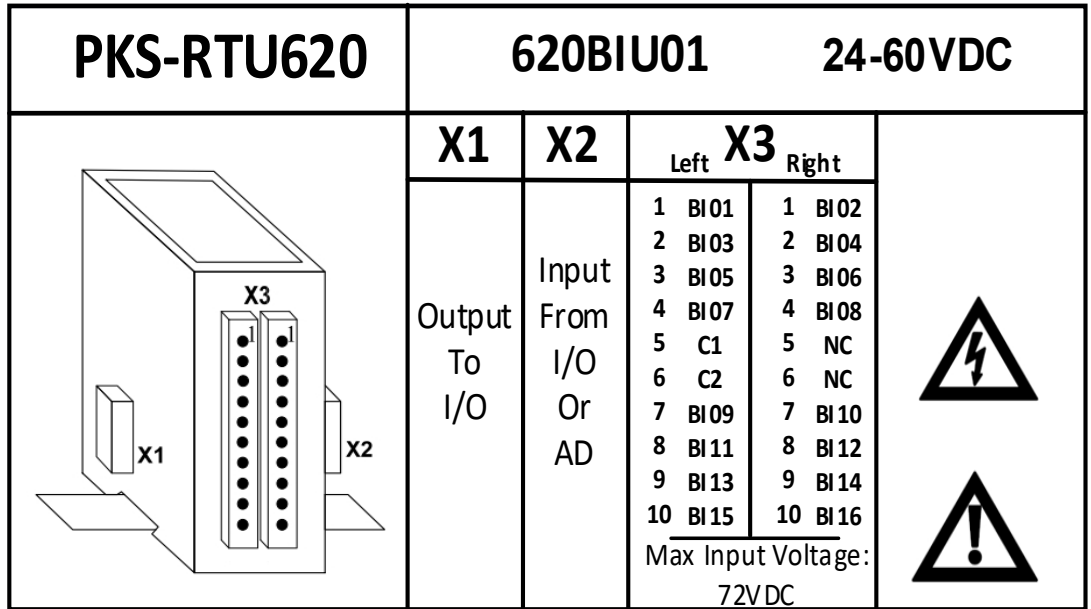
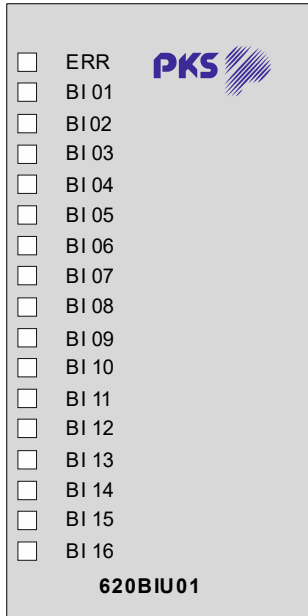


Fig.1: 620BIU01 front plate

Fig.2: 620BIU01 label

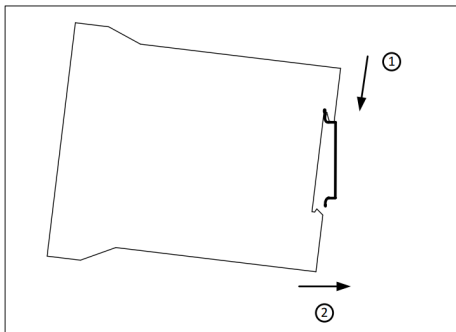


Fig.3: RTU620 DIN rail mounting - step 1

- 1 Insert upper edge into DIN rail and push downwards
- 2 Push lower edge towards DIN rail and snap in the module

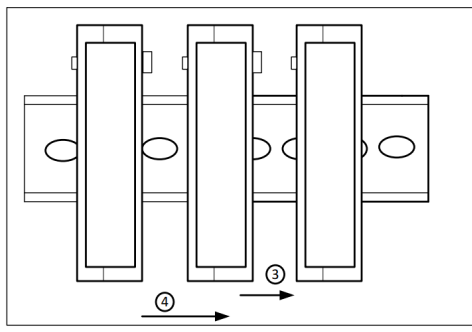


Fig.4: RTU620 DIN rail mounting - step 2

3 + 4 :

Shift one module connector into the other starting from right to left

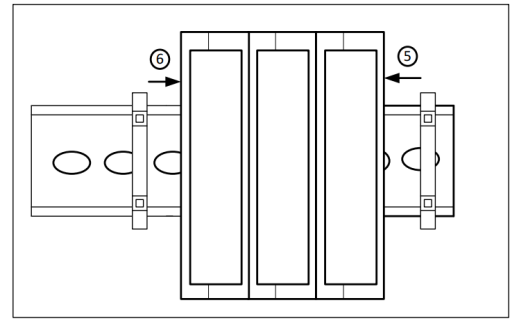


Fig.5: RTU620 DIN rail mounting - step 3

5 + 6 :

Mount end stops at the left and right side

Setting

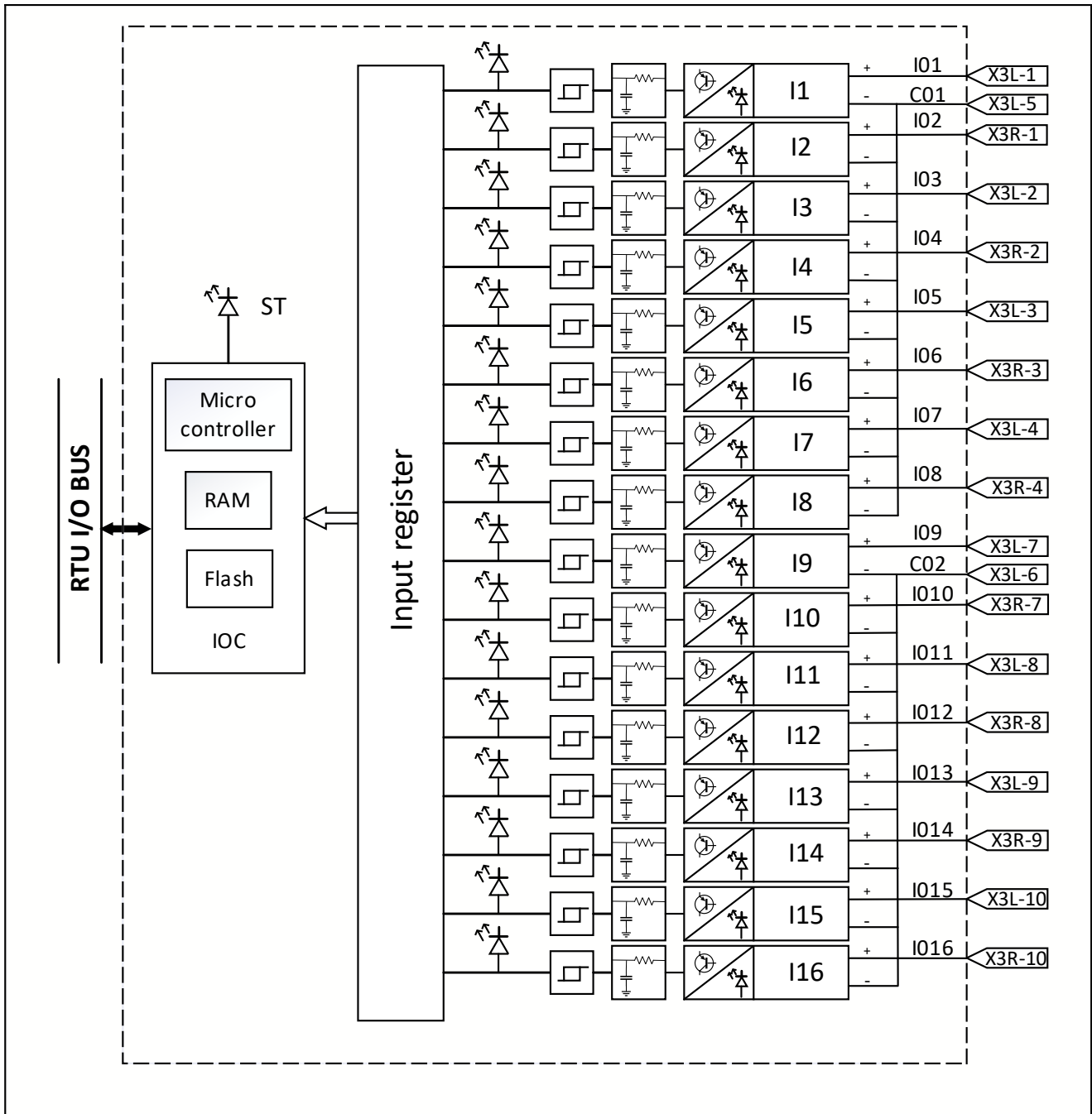


Figure 6: 620BIU01 connection diagram

Setting

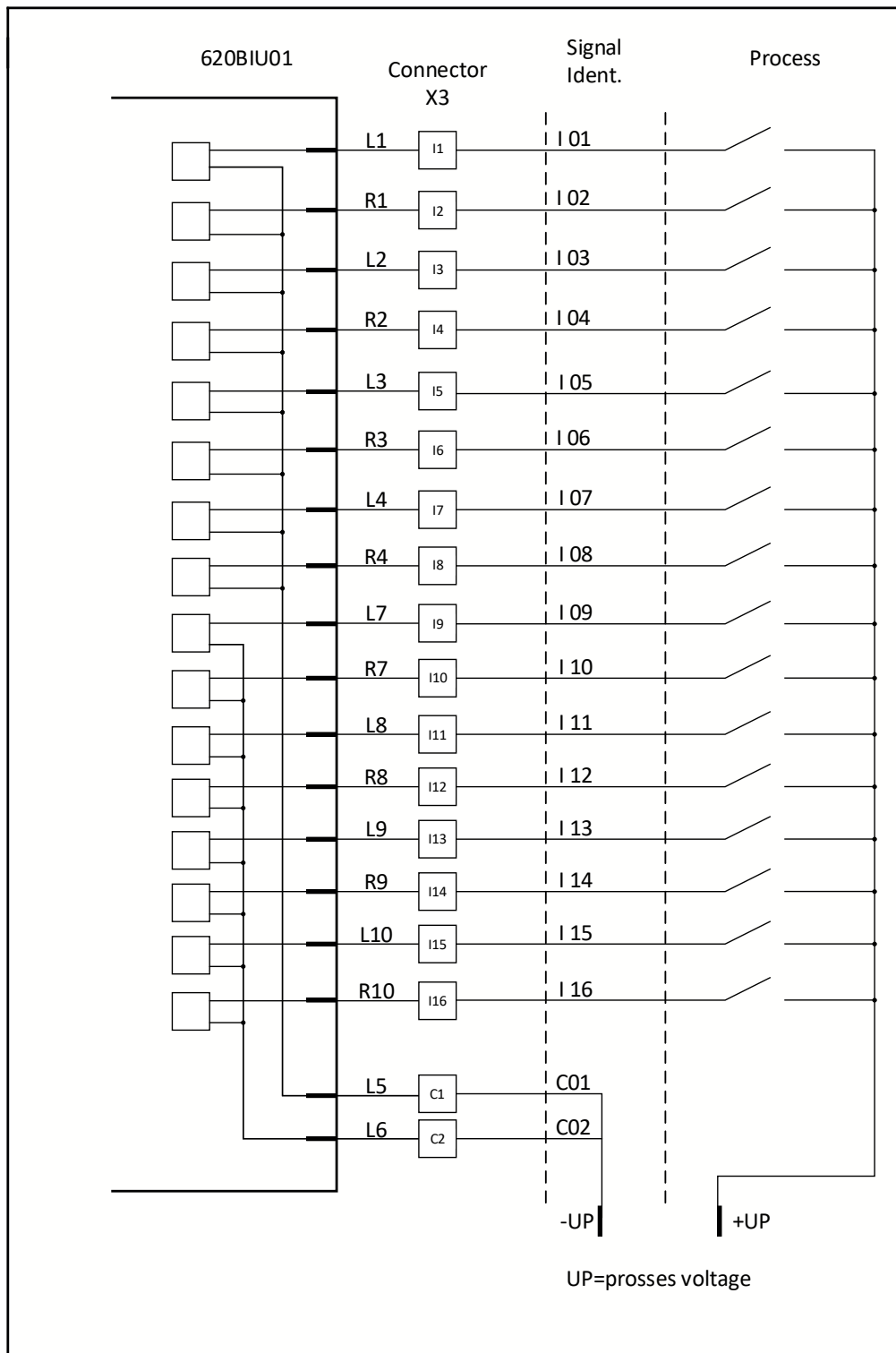


Figure 7: 620BIU01 process connection



## Technical Data

In addition to the PKS RTU620 general technical data, the following applies:

### Binary input channels 620BIU01

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	1.5... 5 mA
Logical '1' definitely detected	≥ 18 V DC
Logical '0' definitely detected	≤ 9 V DC
Reverse voltage protection	Yes
Max. input frequency for integrated totals	25 Hz

### Current consumption for power supplied via WRB bus

5 V DC	50mA
15 V DC	....
18 V DC	....
24 V DC	....

### Signaling by LEDs

ERR (red)	Common fault information for the module
CH1... CH16	LED displays the active inputs

### 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

### Mechanical layout

Dimensions	35 mm x 98 mm x 117 mm (Width x Height x Depth)
Housing type	Plastic housing (V-0), IP20, RAL 7035 light gray
Mounting	DIN rail mounting EN 50022 TS35: 35 mm x 15 mm or 35 mm x 7.5 mm
Weight	0.15 kg

## Technical Data

### Connection type

Power supply input	2 x 10 pole 5.08 mm pluggable screw terminals (included in delivery) 0.2... 2.5 mm <sup>2</sup> / AWG 24 - AWG 12
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### Immunity Test

Electrostatic discharge IEC 61000-4-2 (level3)	8kV / 6 kV Contact Performance criteria A
Radiated Radio- Frequency Electromagnetic Field IEC 61000-4-3 (level 3)	10 V/m Performance criteria A
Electrical Fast Transient / Burst IEC 61000-4-4 (level 3)	4 kV Performance criteria A
Surge IEC 61000-4-5 (level 3)	4 kV Performance criteria A
Conducted Disturbances, induced by Radio- Frequency Fields IEC 61000-4-6 (level 3)	10 V Performance criteria A
Damped oscillatory wave IEC 61000-4-18(level 3)	2.5 / 1kV Performance criteria A

### Environmental conditions

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