Application, characteristics and technical data have to be taken from the hardware data sheet:

520BID01 Data sheet 1KGT 150 862

Operation

The binary input module 520BID01 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 is available in two versions (rubrics):
- 520BID01 R0001: process voltage 24 to 60 V DC.
  LED signaling for each input, common return per 8 inputs.
- 520BID01 R0002: process voltage 110 to 125 V DC.
  LED signaling for each input, common return per 8 inputs.

Processing functions

Binary Inputs

The module 520BID01 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 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 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

<table>
<thead>
<tr>
<th>Parameter name</th>
<th>Default</th>
<th>Parameter location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Digital filter</td>
<td>10 ms</td>
<td>SPI, DPI, DMI, STI, ITI, BSI – PDP parameters</td>
</tr>
<tr>
<td>value range: 2... 255 ms or disabled</td>
<td></td>
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</tbody>
</table>

Digital filter specifies the time during which an input has to be stable before it is accepted as a new signal state.

RTU500 Series function description part 5: Digital filter for indications

<table>
<thead>
<tr>
<th>Parameter name</th>
<th>Default</th>
<th>Parameter location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supervision time for intermediate position</td>
<td>30 sec</td>
<td>DPI – PDP parameters</td>
</tr>
<tr>
<td>value range: 1... 255 sec or deactivated</td>
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</table>

Use the supervision time to specify when an intermediate DPI message is transmitted as an event.

RTU500 Series function description part 5: Intermediate position for indications

<table>
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<tr>
<th>Parameter name</th>
<th>Default</th>
<th>Parameter location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Consistency check time</td>
<td>1 sec</td>
<td>DMI, STI, BSI – PDP parameters</td>
</tr>
<tr>
<td>value range: 0.1... 25.5 sec or deactivated</td>
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</tbody>
</table>

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.

RTU500 Series function description part 5: Consistency check for DMI, STI and BSI

For additional information on these configuration parameters in RTUtil500 refer to RTU500 series function description - part 5: SCADA functions (1KGT 150 797).
Settings

The device has no switches or jumpers.

Signaling

LED CH1... CH16

The 520BID01 has 16 yellow LED’s on the front plate indicating the state of the inputs.

The LED’s are controlled by the microcontroller. 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)
- microcontroller 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 (e.g. BAM3 1SNK900001R0000) shall be used at both ends of the I/O assembly.

Process connections

The process signals will be connected to the terminals X3 (see Fig. 2 and Fig. 4).

Safety instructions

Dangerous process voltages

DANGER

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

WARNING

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.
**ABB AG**

**520BID01**

**24 - 60VDC**

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<tr>
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<th>X2</th>
<th>X3 Left</th>
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| Max Input Voltage: 72VDC |

**ABB AG**

**520BID01**

**110/125VDC**

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| Max Input Voltage: 150VDC |

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**Figure 1:** 520BID01 R0001 Front plate

**Figure 2:** 520BID01 R0001 Label

**Figure 3:** 520BID01 R0002 Front plate

**Figure 4:** 520BID01 R0002 Label

**Figure 5:** RTU520 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

**Figure 6:** RTU520 DIN rail mounting - step 2

3 + 4: Shift one module connector into the other starting from right to left

**Figure 7:** RTU520 DIN rail mounting - step 3

5 + 6: Mount end stops at the left and right side
Figure 8: 520BID01 connection diagram
Figure 9: 520BID01 process connection
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