Remote Terminal Units - Connections and Settings

Binary output 520BOD01

Application, characteristics and technical data have to be taken from the hardware data sheet:
520BOD01 Data sheet 1KGT 150 864

Operation
The binary output module 520BOD01 can be used for the control of 8 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.

Processing functions
The module 520BOD01 is able to process the following types of signals:
- Single or double commands (SCO or DCO) with 1 or 2 pole output without (1 out of n) check
- Single or double commands (SCO or DCO) with 1.5 or 2 pole output with (1 out of n) check
- Regulation step command (RCO), 1 or 2 pole
- Digital setpoints commands, 8 Bit without strobe (DSO8)
- Bitstring output, 1 or 8 Bit (BSO1 or BSO8)

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. 520ADD01) or the RTU520 communication unit the module is interfaced to the RTU520 I/O bus.

The binary output unit can execute the following processing functions on the individual signal types:
- Control of the command output duration

Command monitoring functions:
- monitoring of the output bit patterns by reading back the output state
- switching voltage monitoring (24 V DC coil voltage) before and during output only together with (1 out of n) control module
- command output duration monitoring

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.

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 BO1... BO8
The 520BOD01 has 8 yellow LED’s on the front plate indicating the state of the outputs.
The LEDs are ON for the time an output is active (pulse or persistent).

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.

Parameter location

<table>
<thead>
<tr>
<th>Parameter name</th>
<th>Default</th>
<th>Parameter location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Command pulse length</td>
<td>1 sec</td>
<td>SCO, DCO, RCO - PDP parameters</td>
</tr>
<tr>
<td>value range: 0.1... 25.5 sec</td>
<td></td>
<td></td>
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</tbody>
</table>
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.

Power supply $U_E$

The electronic circuits on the process side are supplied
by an external 24 V DC voltage input $U_E$. The voltage
input $U_E$ is connected at X3.

For the operation of the module addition 24 V DC
($U_E$) is required (e.g. from 560PSU40/41). This
voltage $U_E$ has to be supplied from external and
wired to the $U_E$ connector.

Process connection

The process will be connected to the screw terminals
X4 (see Fig. 2).

The 1 pole connection is described in Fig. 7.

For a 2 pole connection two relays (e.g. for double
commands R01 and R03, R02 and R04) of the binary
output board 520BOD01 are used (see Fig. 8 and
Fig. 9).

For the (1 out of n) check along with
560CIG10/560CID11 the connection is shown in Fig. 10.

WARNING
EMC disturbances especially mains-borne
disturbances may cause temporary or permanent
failures of the module.

To ensure the RTU500 series EMC capabilities
all process cables must be shielded and shall be
grounded at a large-area when entering the cabinet.

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

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

5 + 6: Mount end stops at the left and right side
Figure 6: 520BOD01 connection diagram
Figure 7: 1 pole process connection, single command

Figure 8: 2 pole process connection, single command
Figure 9: 2 pole process connection, double command

Figure 10: (1 out of n) check, 1.5 pole connection, single command