Application

This module can be used in PROCONTROL redundancy applications for input and processing modules. This description is intended to supplement the applicable module description for module 81EU01 – E/R1210 with information on the redundancy-relevant properties of the module.

Features

Processing is performed on the active and on the non-active module in parallel. In the case of a redundancy changeover, the non-active module takes up processing in a bumpless takeover. Bumpless condition is ensured by dual acquisition and processing of the input signals.

Active and non-active modules are self-monitoring and signal module disturbances to the respective 88TR01 redundancy control module over the SSG line.

All process connections (connector X21) of the redundant partner modules are connected in parallel through the station wiring.

The input resistors (loads) are switched on for the active module and off for the non-active module. The contact and transducer supplies are on for both modules.

For diagnosis purposes, non-active modules send a live-sign telegram to the bus.

Addressing

Live-sign telegram

Active modules send all the telegrams structured in the address list. Non-active modules only send live-sign telegrams for diagnosis. For this purpose, always register 0 is used. If register 0 is structured in the address list the process telegram with the corresponding data type is sent. In case register 0 is not structured in the list, a substitute telegram with data type 0 will be sent. Then, the live-sign telegram is sent cyclically.

Diagnosis

The hardware and software functions of the module are monitored. Figure 1 shows the diagnosis messages and the announcement and monitoring concept.

All messages are annunciated over the SST line or the ST lamp on the module front respectively.

When a module’s SSG line is activated, this is interpreted as a module disturbance by the redundancy control module 88TR01 and indicated by the SG lamp on the module’s front panel.

Operating states of the module

Structure, address and limit-value list

For redundant operation all lists of the module (structure, address and limit-value list) must be identical on both redundant modules. This can be ensured by the user with the help of the PDDS.

Simulation

For redundant operation, the signals of the redundant modules have to be simulated identically. This is also done from the PDDS.

Checksum

For all active lists (structure, address and limit-value list) in the EEPROM or RAM as well as for the module firmware, the modules generate a checksum. This checksum is used for monitoring the lists on active and non-active module for conformity. The checksums can be displayed on the PDDS.
Module configuration

**Redundant operation**

The redundant operating mode does not require special configuration. However, both modules always need to be structured the same way. This can be ensured with the help of the PDDS.

**Jumpers**

The user has to make sure that all the jumpers (X100 and X101) belonging to the active and the non-active module are set the same way.
Figure 1: Diagnosis messages of 81EU01

*) The control diagnosis system (CDS) provides a description for every message number. This description comprises:
- Information about cause and effect of the disturbance
- Recommendations for elimination
Thus, fast disturbance elimination is ensured.
Function diagram

Terminal designations: The module consists of a printed-circuit board (cf. "Mechanical design"). The printed-circuit board has two connectors, X21 and X11. Connector X21 contains the process inputs. Connector X11 contains the standard interface with the station bus and the operating voltages for the module.
Basic connection diagram, of specific redundancy wiring
Connection diagram showing redundancy—relevant inputs

- **Module in standby mode**
  - Process interface (analog, binary)
  - From the process
  - Module in on-line mode
  - Process interface (analog, binary)

**Signal input and monitoring**

- Function unit 1
- Function unit 2
- Function unit 15
- Function unit 16

**From the process**

- S01
- X101
- X100
- E01

**Module in on-line mode**

- S01
- X101
- X100
- E01

**Function unit**

- Function unit 1
- Function unit 2
- Function unit 15
- Function unit 16

**81EU01—E/R1210**
Technical data

**Power dissipation**

Active mode $P_v = 3.4 \ldots 11$ W
Non-active mode $P_v = 3.2 \ldots 7.8$ W
depending on operating voltage and configuration

**Redundancy changeover**

Switch-on time for input resistors $\leq 10$ ms
Switch-off time for input resistors $\leq 10$ ms

Technical data are subject to change without notice!
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