Module and Application Description

PROCONTROL P

Binary and Analog Control Signal Processing

Control Module

for Binary Control Functions, 4-fold
for Analog Control Functions, 1- to 4-fold

Publication no.
D KWL 6310 91 E, edition 04/92

83SR04–E/R1010

Application

The module is used for stored–program binary and analog control tasks on the drive, group, and unit control levels. It can be used for the following applications:

– Drive control for unidirectional drives
– Drive control for actuators
– Drive control for solenoid valves
– Binary function group control (sequential and logic control)
– 3–step control
– Signal conditioning

The module is intended for use in connection with the multi–purpose processing station.

The module is designed for three modes of operation:

– Binary control mode
(and analog basic functions)
with variable cycle time
– Analog control mode
(and binary control)
with fixed, selectable cycle time
– Signal conditioning mode
with fixed cycle time and disturbance bit output

The operating mode is selected by means of function block TXT1 which is the first function block required in the structure.

In the binary control mode, up to 4 binary function group controls, or combinations of drive and binary function group controls can be configured for each module (noting the module cycle time).

In the analog control mode, a maximum of 4 analog control loops in the form of 3–step controllers – depending on the actuating time of the actuator – can be configured for each module (see ”Operating modes”).

The module incorporates 4 hardware interfaces for the switchgear and/or the process.

Features

The module address is set automatically by plugging the module into the multi–purpose processing station.

The telegrams received via the station bus are checked by the module for error–free transfer based on their parity bits.

The telegrams sent by the module to the bus are given parity bits to ensure error–free transfer.

The user program is filed in a nonvolatile memory (EEPROM). It can be loaded and changed from the PDDS using the bus.

The module is ready for operation as soon as a valid user list is loaded.

For communicating with the process and the switchgear, the module requires the following voltage:

USA/USB Operating voltage +24 V
branched internally into the following voltages:
US11 Supply of contacts of process interface 1
US21 Supply of contacts of process interface 2
US31 Supply of contacts of process interface 3
US41 Supply of contacts of process interface 4

The voltages US11...US41 are short–circuit–proof and designed to prevent interaction.

Operating voltages and external logic signals are related to reference conductor Z.

The following annunciations are made on the front of the module by light–emitting diodes:

ST Disturbance
SG Module disturbance

Signal lamp ST signals any disturbance inside the module and of data communication with the module.
Signal lamp SG signals module disturbances only.

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Technical data

In addition to the system data, the following values apply:

Power supply

Operating voltage of module		USA/USB = 24 V
Current consumption		IS = 80 mA + output currents
Operating voltage of bus section		UD = 5 V
Current consumption		ID = 250 mA
Power dissipation		PV = 3.5 W
Reference potential of process section		Z = 0 V
Reference potential of bus section		ZD = 0 V

Input values

Direct connections for 4 function units (FE)

Ex1 – Process checkback signal (EA/EZ)	OFF/CLOSED	5 mA at 48 V
Ex2 – Process checkback signal (EE/EO)	ON/OPEN	5 mA at 48 V
Ex3 – Torque monitor	CLOSED/OPEN	5 mA at 48 V
STAx – Disturbance in switchgear		5 mA at 48 V

x from 1 to 4

Output values

CONTACT VOLTAGES

Contact voltages of process section	US11 = 48 V / $\leq$ 30 mA
for inputs Ex1, Ex2, Ex3, and STAx	US21 = 48 V / $\leq$ 30 mA
	US31 = 48 V / $\leq$ 30 mA
	US41 = 48 V / $\leq$ 30 mA

x from 1 of 4

The outputs are short–circuit–proof and non–interacting.

PROCESS INTERFACE

Voltage supply of the 4 function units for command outputs Bx1 and Bx2		24 V
The outputs are short–circuit–proof and non–interacting, and are provided with a protection circuit		
		Loading capacity
Bx1 – Command output for	OFF/CLOSED	IS $\leq$ 80 mA
Bx2 – Command output for	ON/OPEN	IS $\leq$ 80 mA
BVx – Common command output for Bx1/Bx2 (wired return line)		IS $\leq$ 80 mA
Regarding the connected load resistor the following limits apply		360 $\Omega \leq R_{load} \leq$ 15 kΩ
Service life of the relay output stages		$\geq$20 million switching cycles

COUPLING RELAYS AND POWER DRIVERS IN THE SWITCHGEAR

Wiring:

The wiring from the 83SR04 to the switchgear is defined in a cable specification to suit the plant–specific requirements. The max. length of the line (outgoing plus return line) is 600 m for a cross–section of 0.5 mm^2.

The following coupling relays and power drivers may be used:

Coupling relay	R513
Power drivers with semiconductors or coupling relays or power drivers with identical technical data.	LU370