

Details for implementation of PROFIBUS- PA (DPV1) interface with

Prowirl 77

Scope

This file contains additional information to the operating manuals of Prowirl 77 with a PROFIBUS- PA communication interface.

In case the integration of a device is performed according to the profiles, the compatibility is achieved through the standardization within the profiles. The device have been tested against the profile specification and support all defined services for a flow devices. In this case please refer to the PROFIBUS- PA profile specifications.

Cyclic Service of Prowirl 77 PROFIBUS- PA

The telegram of the cyclic service of Prowirl 77 has the following format:

byte	data item	access	data format	unit
0, 1, 2, 3	flow (volume)	r	32-bit floating point number (IEEE-754)	l/s
4	status flow	r	80h ¹ = O.K. (ERROR-Details see list)	-
5, 6, 7, 8	totalizer	r	32-bit floating point number (IEEE-754)	default: l
9	status totalizer	r	80h = O.K.	-
0	total volume reset	w	With a transition from 00h of this byte to any number a single defined control can be performed with the cyclic service. A transition from any bit pattern to 00h or a static setting of any number has no effect. 0 --> 1: reset totalizer 0 --> 2 .. 255: reserved	-

The status is encoded in accordance with the „PROFIBUS- PA Profile for Process Control Devices“, see last page. The status „O.K.“ is encoded as 80h (bit 7 =1; bit 0 .. bit 6 = 0).

¹ 80h means 80hex
Read_me77_PA

The cyclic telegram can be tailored to meet the requirements of a specific process. The above table reflects the maximum contents of a cyclic diagram.

In case not all outputs of Prowirl 77 are required, any combination of blocks can be eliminated from the cyclic telegram. This can be achieved by setting a “Free Place” in the configuration tool. By eliminating blocks from the telegram, the throughput of a PROFIBUS- PA system can be improved.

To achieve the correct assignment of the data items in the cyclic telegram, the PROFIBUS master has to send a FREE_PLACE (0) for the inactive blocks. Example:

byte	data item	status	configuration data ²
0 ..4	flow (volume) + status	active	Free Place
5.. 9	totalizer + status	active	42h, 84h, 8h, 5h
0	total volume reset	active	20h

The cyclic telegram of this example contains 11 bytes of device data. The configuration data string (CHK_CFG) is:

Free Place, 42h, 84h, 8h, 5h, 20h

Miscellaneous

The implementation of the physical layer IEC 1158-2 ensures, that a reverse polarity on the signal lines has no effect on the functionality of the device.

² Depending on the PROFIBUS Master
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Coding of status according to „PROFIBUS- PA Profile for Process Control Devices - General Requirements“ V 2.0:

STATUS-CODE	MEANING	DEVICE-CONDITION
0Fh	device failure	BAD
1Ch	device out of service	BAD
1Fh	device out of service	BAD
40h	non-specific	UNCERTAIN
42h	non-specific	UNCERTAIN
43h	non-specific	UNCERTAIN
80h	ok	GOOD
81h	active block alarm	GOOD
82h	active advisory alarm	GOOD
83h	active critical alarm	GOOD