Instruction and Operating Manual

PROFIBUS-PA Communication

Fuction Block and Parameter Descriptions

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Contents

1. PROFIBUS-PA communication

The PROFIBUS-PA is a version for process automation based on the widely used PROFIBUS-DP. The transmission technique conforms with the IEC 61158-2 Standard and therefore fulfills the requirements for the type of protection, intrinsic safety. PROFIBUS-DP defines two types of masters

- Class 1 master : exchanges the data with the configured slaves.
- Class 2 master : is used for acyclic data exchange for commissioning and diagnostics purposes.

1.1 Profile

Basic device functions have been described in profiles by PNO (PROFIBUS user organization) to supplement the EN 50170 standard.

The scope of functions of our production is consistent with Profile 3.02, all the production of our company support extension "Condensed status and diagnostic messages".

1.2 Cyclic data exchange

The following parameters that are transmitted in cyclic data exchange. These parameters are mentioned in section 2.

Cyclically transmitted parameters

If a PROFIBUS-PA positioner in DATA_EXCHANGE status, following parameters will be exchanged.

- **POS_D**

  Current position of the valve (discrete)

  0 : Not initialized

  1 : Closed

  2 : Open

  3 : Intermediate position

- **RCAS_IN**

  Target set point in units of PV_SCALE and status provided by a supervisory host to the analog control or output block in mode RCas.

- **RCAS_OUT**

  Function Block set point in units of PV_SCALE and status. Provided to a supervisory Host for monitoring / back calculation and to allow action to be taken under limited conditions or mode change.

- **READBACK**

  The actual position of the final control element within the travel span (between OPEN and CLOSE position) in units of PV_SCALE.

- **SP**

  The setpoint SP is transmitted to the positioner. Defines the position of the valve between open and closed.

  Range of values defined in PV_SCALE

- **AI_OUT**

  Output of the AI Function Block(Ambient temprature).

- **DI_OUT**

  Output of the DI Function Block.

Status of device and measured value

- **Checkback**

  Each bit can be masked individually for cyclic communication per class 2 master. This allows a targeted selection to be made from the existing alarms.

- **Status**

  Consistent with the PROFIBUS-PA Profile, a status is assigned to every process value

  Status of reference variable (hex):

  0-3F: Bad

  40-7F: Uncertain

  80-BF: Good

1.2.1 GSD file

The General Station Description file (GSD file) is included in the scope of delivery for every PROFIBUS positioner and supplies all information required for the cyclic exchange of process data (setpoint, status, etc.) with the host system and for configuring the PROFIBUS network.

Each positioner and its GSD file have a unique ID number assigned to it. This allows the host to check the compatibility between the configuration in the system and the device used.

The ID number of the GSD file must be the same as the ID number of the device to ensure successful integration.

The host performs a compatibility test by checking the configured GSD file/ID number before starting cyclic data exchange. If the positioner is in the compatibility (adaptation), it will goes into cyclic data exchange.

For communication with the automation system, just the features of the active positioner (active ID number) are supported.

1.2.2 Data exchange

The relationship between output and input is based on the control system / master class 1.

- **Version 0 : Module = Not in cyclic data transfer**

  Config Data : 0x00

- **Version 1 : Module = SP (Short)**

  Config Data : 0x4A

  Output

Byte 0	1	2	3	4
SP Value(Floating Point IEEE)				Status

- **Version 2 : Module = SP(Long)**

  Config Data : 0x82, 0x84, 0x08, 0x05

  Output

Byte 0	1	2	3	4
SP Value(Floating Point IEEE)				Status

•• **Version 3 : Module = SP+READBACK+POS_D**

Config Data : 0xC6, 0x84, 0x86, 0x08, 0x05, 0x08, 0x05, 0x05, 0x05

Output

Byte 0	1	2	3	4
SP Value(Floating Point IEEE)				Status

Input

Byte 0	1	2	3	4	5	6
Readback Value(Floating Point IEEE)				Status	POS_D Value	POS_D Status

•• **Version 4 : Module = SP+CHECKBACK**

Config Data : 0xC3, 0x84, 0x82, 0x08, 0x05, 0x0A

Output

Byte 0	1	2	3	4
SP Value(Floating Point IEEE)				Status

Input

Byte 0	1	2
CHECKBACK[0]	CHECKBACK[1]	CHECKBACK[2]

•• **Version 5 : Module = SP+READBACK+POS_D+CHECKBACK**

Config Data : 0xC7, 0x84, 0x89, 0x08, 0x05, 0x08, 0x05, 0x05, 0x05 ,0x0A

Output

Byte 0	1	2	3	4
SP Value(Floating Point IEEE)				Status

Input

Byte 0	1	2	3	4	5	6	7	8	9
Readback Value (Floating Point IEEE)				Status	POS_D Value	POS_D Status	CHECK_ BACK[0]	CHECK_ BACK[1]	CHECK_ BACK[2]

•• **Version 6 : Module = RC_IN+RC_OUT**

Config Data : 0xC4, 0x84, 0x84, 0x08, 0x05, 0x08, 0x05

Output

Byte 0	1	2	3	4
RCAS_IN Value (Floating Point IEEE)				Status

Input

Byte 0	1	2	3	4
RCAS_OUT Value (Floating Point IEEE)				Status

•• **Version 7 : Module = RC_IN+RC_OUT+CHECKBACK**

Config Data : 0xC5, 0x84, 0x87, 0x08, 0x05, 0x08, 0x05, 0x0A

Output

Byte 0	1	2	3	4
RCAS_IN Value (Floating Point IEEE)				Status

Input

Byte 0	1	2	3	4	5	6	7
RCAS_OUT Value (Floating Point IEEE)				Status	CHECK_ BACK[0]	CHECK_ BACK[1]	CHECK_ BACK[2]

•• **Version 8 : Module = SP+RC_IN+RB+RC_OUT+POS_D+CB**

Config Data : 0xCB, 0x89, 0x8E, 0x08, 0x05, 0x08, 0x05, 0x08, 0x05, 0x08, 0x05, 0x05, 0x05, 0x0A

Output

Byte 0	1	2	3	4	5	6	7	8	9
SP Value (Floating Point IEEE)				Status	RCAS_IN Value (Floating Point IEEE)				Status

Input

Byte 0	1	2	3	4	5	6	7	8	9
Readback Value (Floating Point IEEE)				Status	RCAS_OUT Value (Floating Point IEEE)				Status
Byte 10	11	12	13	14					
POS_D Value	POS_D Status	CHECK BACK[0]	CHECK BACK[1]	CHECK BACK[2]					

•• **Version 9 : Module = AI**

Config Data : 0x94 or 0x42,0x84,0x08,0x05

Byte 0	1	2	3	4
AI Value(Floating Point IEEE)				Status

•• **Version 11 : Module = OUT_D**

Config Data : 0x91

Input

Byte 0	1
DI Value	DI status

Available version of each slot

Slot number	Available version
Slot 1	0,1,2,3,4,5,6,7,8
Slot 2	0,9,10
Slot 3	0,11
Slot 4	0,11

1.2.3 Acyclic data exchange

He acyclic data exchange complying to DP-V1 with a master class 2 (MS2) is mainly used for commissioning, parameter configuration and for diagnostic purposes. The Device Description can be sent to customers with productions to configure parameters in positioner over Siemens PDM (Process Device Manager). Some parameters make it necessary to use the new DD revision 2 for firmware version.

1.3 Standard Block

PA Positioner including PA profile standard blocks, such as physical block, transducer block and function block. Shown as following

Name	Description
Physical Block	hardware specific characteristics of a field device, which are associated with a resource, are made visible through the Physical Block
Function Block	named block consisting of one or more input, output and contained parameters computing one of a group of actions performed by an entity in accomplishing its purposes
Transducer Block	control access to I/O devices through a device independent interface defined for use by Function Blocks and also perform functions, such as calibration and linearization, on I/O data to convert it to a device independent representation and the interface to Function Blocks is defined as one or more implementation independent I/O channels

1.3.1 Physical Block

Physical block can be named PB for short. All the standard parameters of Physical Block are as following. All the parameters function will be described in section 2.

Relative Index	Parameter Name	VIEW_ 1
0	BLOCK_OBJECT	
1	ST_REV	2
2	TAG_DESC	
3	STRATEGY	
4	ALERT_KEY	
5	TARGET_MODE	
6	MODE_BLK	3
7	ALARM_SUM	8
8	SOFTWARE_REVISION	

Relative Index	Parameter Name	VIEW_ 1
9	HARDWARE_REVISION	
10	DEVICE_MAN_ID	
11	DEVICE_ID	
12	DEVICE_SER_NUM	
13	DIAGNOSIS	4
14	DIAGNOSIS_EXTENSION 0	
15	DIAGNOSIS_MASK	
16	DIAGNOSIS_MASK_EXTENSION	
17	DEVICE_CERTIFICATION	
18	WRITE_LOCKING 3	
19	FACTORY_RESET	
20	DESCRIPTOR	
21	DEVICE_MESSAGE	
22	DEVICE_INSTAL_DATE	
23	LOCAL_OP_ENA	
24	IDENT_NUMBER_SELECTOR	
25	HW_WRITE_PROTECTION	
26	FEATURE	
27	COND_STATUS_DIAG	
28	DIAG_EVENT_SWITCH	
	Totals	4+13

1.3.2 Analog Output Function Block

Analog Output function block can be named as AO block. All the standard parameters of AO block are as following. Following table also indicate the VIEW service. Parameters function will be described in section 2.

Relative Index	Parameter Name	VIEW_ 1
0	BLOCK_OBJECT	
1	ST_REV	2
2	TAG_DESC	
3	STRATEGY	
4	ALERT_KEY	
5	TARGET_MODE	
6	MODE_BLK	3
7	ALARM_SUM	8
8	BATCH	

Relative Index	Parameter Name	VIEW_ 1
9	SP	
11	PV_SCALE	
12	READBACK	5
14	RCAS_IN	
21	IN_CHANNEL	
22	OUT_CHANNEL	
23	FSAFE_TIME	
24	FSAFE_TYPE	
25	FSAFE_VALUE	
27	RCAS_OUT	
31	POS_D	2
32	SETP_DEVIATION	
33	CHECK_BACK	3
34	CHECK_BACK_MASK	
35	SIMULATE	
36	INCREASE_CLOSE	
37	OUT	
38	OUT_SCALE	
39...48	Reserved by PI	
	Totals	10+13

1.3.3 Analog Input Function Block

Analog input function block can be named as AI block. All its parameters are as following. Following table also indicates the VIEW service. Parameters' function will be described in section 2.

Relative Index	Parameter Name	VIEW_ 1
10	OUT	5
11	PV_SCALE	
12	OUT_SCALE	
13	LIN_TYPE	
14	CHANNEL	
16	PV_FTIME	
17	FSAFE_TYPE	
18	FSAFE_VALUE	
19	ALARM_HYS	
21	HI_HI_LIM	
23	HI_LIM	

Relative Index	Parameter Name	VIEW_ 1
25	LO_LIM	
27	LO_LO_LIM	
30	HI_HI_ALM	
31	HI_ALM	
32	LO_ALM	
33	LO_LO_ALM	
34	SIMULATE	
35	OUT_UNIT_TEXT	
	Totals	5 + 13

1.3.4 Digital Input Function Block

Digital Input function block can be named as DI block. All the standard parameters of AO block are as following. Following table also indicate the VIEW service. Parameters' function will be described in section 2.

Relative Index	Parameter Name	VIEW_ 1
0	BLOCK_OBJECT	
1	ST_REV	2
2	TAG_DESC	
3	STRATEGY	
4	ALERT_KEY	
5	TARGET_MODE	
6	MODE_BLK	3
7	ALARM_SUM	8
8	BATCH	
10	OUT_D	2
14	CHANNEL	
15	INVERT	
20	FSAFE_TYPE	
21	FSAFE_VAL_D	
24	SIMULATE_D	
25...34	Reserved by PI	
	Totals	2+13

1.3.5 Transducer Block

Transducer block's function is to exchange specific parameters' values between function block and sensors. Its standard parameters' name and VIEW service are as following. Parameters' function will be described in section 2.

Relative Index	Parameter Name	VIEW_ 1
0	BLOCK_OBJECT	
1	ST_REV	2
2	TAG_DESC	
3	STRATEGY	
4	ALERT_KEY	
5	TARGET_MODE	
6	MODE_BLK	3
7	ALARM_SUM	8
8	COMMAND_SP	5
9	FEEDBACK	5
10	TEMPERATURE	5
11	INPUT_RANGE	
13	VALVE_CHARACTERISTIC	
14	USER_SET	
15	SPAN	
16	ZERO	
17	P_GAIN	
18	I_GAIN	
19	D_GAIN	
20	GROUP	
21	SPEED	
22	SLOW_START	
23	CONTROL_LIMIT	
24	GAP_CONTROL_LIMIT	
25	DEAD	
26	FDGN	
27	C/MD	
28	SHUT	
29	FOPN	
30	OUT	
31	SPLT	
32	ALARM	

Relative Index	Parameter Name	VIEW_ 1
33	PST(ON-OFF)	
34	PST_TIME_INTERVAL	
35	PST_COMMAND_SET	
36	PST_RAMP_RATE	
37	PST_RESPONSE_TIME	
38	AUTO	
39	COMMAND_SP_SCALE	
40	FEEDBACK_SCALE	
41	PV_DI1	
42	PV_DI2	
	Totals	15+13

1.3.6 Parameter Attribute Definitions

In this section, parameters attribute of each standard function block will be described. But, their functions won't be mentioned. You can find their function description in section 2.

1.3.7 Physical Block Parameter Attribute Definitions

Relative Index	Parameter Name	Object Type	Data Type	Store	Size	Access	Parameter Usage / Kind of Transport	Reset Class	Default Value
0	BLOCK_OBJECT	Record	DS-32	Cst	20	r	C/a	-	-
1	ST_REV	Simple	Unsigned16	N	2	r	C/a	-	0
2	TAG_DESC	Simple	OctetString	S	32	r,w	C/a	I	''
3	STRATEGY	Simple	Unsigned16	S	2	r,w	C/a	I	0
4	ALERT_KEY	Simple	Unsigned8	S	1	r,w	C/a	I	0
5	TARGET_MODE	Simple	Unsigned8	S	1	r,w	C/a	F	-
6	MODE_BLK	Record	DS-37	D	3	r	C/a	-	Block spec.
7	ALARM_SUM	Record	DS-42	D	8	r	C/a	-	0,0,0,0
8	SOFTWARE_REVISION	Simple	VisibleString	Cst	16	r	C/a	-	-
9	HARDWARE_REVISION	Simple	VisibleString	Cst	16	r	C/a	-	-
10	DEVICE_MAN_ID	Simple	Unsigned16	Cst	2	r	C/a	-	-
11	DEVICE_ID	Simple	VisibleString	Cst	16	r	C/a	-	-
12	DEVICE_SER_NUM	Simple	VisibleString	Cst	16	r	C/a	-	-
13	DIAGNOSIS	Simple	OctetString	D	4	r	C/a	-	-
14	DIAGNOSIS_ EXTENSION	Simple	OctetString	D	6	r	C/a	-	-
15	DIAGNOSIS_MASK	Simple	OctetString	Cst	4	r	C/a	-	-
16	DIAGNOSIS_MASK_ EXTENSION	Simple	OctetString	Cst	6	r	C/a	-	-
17	DEVICE_ CERTIFICATION	Simple	VisibleString	Cst	32	r	C/a	-	-

18	WRITE_LOCKING	Simple	Unsigned16	N	2	r,w	C/a	F	-
19	FACTORY_RESET	Simple	Unsigned16	S	2	r,w	C/a	F	-
20	DESCRIPTOR	Simple	OctetString	S	32	r,w	C/a	I	-
21	DEVICE_MESSAGE	Simple	OctetString	S	32	r,w	C/a	I	-
22	DEVICE_INSTAL_DATE	Simple	OctetString	S	16	r,w	C/a	I	-
23	LOCAL_OP_ENA	Simple	Unsigned8	N	1	r,w	C/a	F	1
24	IDENT_NUMBER_ SELECTOR	Simple	Unsigned8	S	1	r,w	C/a	-	127
25	HW_WRITE_ PROTECTION	Simple	Unsigned8	D	1	r	C/a	-	-
26	FEATURE	Record	DS-68	N	8	r	C/a	-	-
27	COND_STATUS_DIAG	Simple	Unsigned8	S	1	r,w	C/a	F	1
28	DIAG_EVENT_SWITCH	Record	Diag_Event_ Switch	S	50	r,w	C/a	F	-
29...32	Reserved by PI								

1.3.8 AO FB Parameter Attribute Definitions

Relative Index	Parameter Name	Object Type	Data Type	Store	Size	Access	Parameter Usage / Kind of Transport	Reset Class	Default Value
0	BLOCK_OBJECT	Record	DS-32	Cst	20	r	C/a	-	-
1	ST_REV	Simple	Unsigned16	N	2	r	C/a	-	0
2	TAG_DESC	Simple	OctetString	S	32	r,w	C/a	I	''
3	STRATEGY	Simple	Unsigned16	S	2	r,w	C/a	I	0
4	ALERT_KEY	Simple	Unsigned8	S	1	r,w	C/a	I	0
5	TARGET_MODE	Simple	Unsigned8	S	1	r,w	C/a	F	-
6	MODE_BLK	Record	DS-37	D	3	r	C/a	-	Block spec.
7	ALARM_SUM	Record	DS-42	D	8	r	C/a	-	0,0,0,0
8	BATCH	Record	DS-67	S	10	r,w	C/a	I	0,0,0,0
9	SP	Record	101	D	5	r,w	I/cyc	-	-
11	PV_SCALE	Record	DS-36	S	11	r,w	C/a	F	100,0,%,2
12	READBACK	Record	101	D	5	r	O/cyc	-	-
14	RCAS_IN	Record	101	D	5	r,w	I/cyc	-	-
21	IN_CHANNEL	Simple	Unsigned16	S	2	r,w	C/a	F	-
22	OUT_CHANNEL	Simple	Unsigned16	S	2	r,w	C/a	F	-
23	FSAFE_TIME	Simple	Float	S	4	r,w	C/a	F	0
24	FSAFE_TYPE	Simple	Unsigned8	S	1	r,w	C/a	F	2
25	FSAFE_VALUE	Simple	Float	S	4	r,w	C/a	F	0
27	RCAS_OUT	Record	101	D	5	r	O/cyc	-	-
31	POS_D	Record	102	D	2	r	O/cyc	-	-
32	SETP_DEVIATION	Simple	Float	D	4	r	C/a	-	-
33	CHECK_BACK	Simple	OctetString	D	3	r	O/cyc	-	-
34	CHECK_BACK_MASK	Simple	OctetString	Cst	3	r	C/a	-	-
35	SIMULATE	Record	DS-50	S	6	r,w	C/a	F	disabled
36	INCREASE_CLOSE	Simple	Unsigned8	S	1	r,w	C/a	F	
37	OUT	Record	101	D	5	r,w	C/a	-	
38	OUT_SCALE	Record	DS-36	S	11	r,w	C/a	F	
39...48	Reserved by PI								

1.3.9 AI FB Parameter Attribute Definitions

Relative Index	Parameter Name	Object Type	Data Type	Store	Size	Access	Parameter Usage/Kind of Transport	Reset Class	Default Value
Standard Parameters see General Requirements									
Additional Analog Input Function Block Parameters									
10	OUT	Record	101	D	5	r,w(*)	O/cyc	-	-
11	PV_SCALE	Array(**)	Float	S	8	r,w	C/a	F	-(***)
12	OUT_SCALE	Record	DS-36	S	11	r,w	C/a	F	-(***)
13	LIN_TYPE	Simple	Unsigned8	S	1	r,w	C/a	F	0
14	CHANNEL	Simple	Unsigned16	S	2	r,w	C/a	F	-
16	PV_FTIME	Simple	Float	S	4	r,w	C/a	F	0
17	FSAFE_ TYPE (*****)	Simple	Unsigned8	S	1	r,w	C/a	F	1
18	FSAFE_VALUE	Simple	Float	S	4	r,w	C/a	F	-
19	ALARM_HYS	Simple	Float	S	4	r,w	C/a	F	0.5% of range
21	HI_HI_LIM	Simple	Float	S	4	r,w	C/a	F	max value
23	HI_LIM	Simple	Float	S	4	r,w	C/a	F	max value
25	LO_LIM	Simple	Float	S	4	r,w	C/a	F	max value
27	LO_LO_LIM	Simple	Float	S	4	r,w	C/a	F	max value
30	HI_HI_ALM	Record	DS-39	D	16	r	C/a	-	0
31	HI_ALM	Record	DS-39	D	16	r	C/a	-	0
32	LO_ALM	Record	DS-39	D	16	r	C/a	-	0
33	LO_LO_ALM	Record	DS-39	D	16	r	C/a	-	0
34	SIMULATE	Record	DS-50	S	6	r,w	C/a	F	disable
35	OUT_UNIT_TEXT	Simple	OctetString	S	16	r,w	C/a		-

(*) The OUT parameter can be written if the AI FB Actual MODE = Man

(**) First Float value: value at EU of 100% (PV_SCALE.EU_at_100%),
Second Float value: value at EU of 0% (PV_SCALE.EU_at_0%)

(***) The values of OUT_SCALE and PV_SCALE shall be equal i.e. PV_SCALE.
EU_at_100% = OUT_SCALE.EU_at_100% and PV_SCALE. EU_at_0% = OUT_SCALE. EU_at_0%

(****) If available

(*****) If this parameter is not implemented the AI FB behaves like FSAFE_TYPE = 1

1.3.10 DI FB Parameter Attribute Definitions

Relative Index	Parameter Name	Object Type	Data Type	Store	Size	Access	Parameter Usage / Kind of Transport	Reset Class	Default Value
0	BLOCK_OBJECT	Record	DS-32	Cst	20	r	C/a	-	-
1	ST_REV	Simple	Unsigned16	N	2	r	C/a	-	0
2	TAG_DESC	Simple	OctetString	S	32	r, w	C/a	I	''
3	STRATEGY	Simple	Unsigned16	S	2	r, w	C/a	I	0
4	ALERT_KEY	Simple	Unsigned8	S	1	r, w	C/a	I	0
5	TARGET_MODE	Simple	Unsigned8	S	1	r, w	C/a	F	-
6	MODE_BLK	Record	DS-37	D	3	r	C/a	-	Block spec.
7	ALARM_SUM	Record	DS-42	D	8	r	C/a	-	0,0,0,0
8	BATCH	Record	DS-67	S	10	r, w	C/a	I	0,0,0,0
10	OUT_D	Record	102	D	2	r (w in man)	O/cyc	-	-
14	CHANNEL	Simple	Unsigned16	S	2	r, w	C/a	F	-
15	INVERT	Simple	Unsigned8	S	1	r, w	C/a	F	0
20	FSAFE_TYPE	Simple	Unsigned8	S	1	r, w	C/a	F	-
21	FSAFE_VAL_D	Simple	Unsigned8	S	1	r, w	C/a	F	0
24	SIMULATE_D	Record	DS-51	S	3	r, w	C/a	F	disabled
25...34	Reserved by PI								

1.3.11 Transducer Parameter Attribute Definitions

Relative Index	Parameter Name	Object Type	Data Type	Store	Size	Access	Parameter Usage / Kind of Transport	Reset Class	Default Value
0	BLOCK_OBJECT	Record	DS-32	Cst	20	r	C/a	-	-
1	ST_REV	Simple	Unsigned16	N	2	r	C/a	-	0
2	TAG_DESC	Simple	OctetString	S	32	r, w	C/a	I	''
3	STRATEGY	Simple	Unsigned16	S	2	r, w	C/a	I	0
4	ALERT_KEY	Simple	Unsigned8	S	1	r, w	C/a	I	0
5	TARGET_MODE	Simple	Unsigned8	S	1	r, w	C/a	F	-
6	MODE_BLK	Record	DS-37	D	3	r	C/a	-	Block spec.
7	ALARM_SUM	Record	DS-42	D	8	r	C/a	-	0,0,0,0
8	COMMAND_SP	Record	101	D	5	r (w in man)	I/cyc	-	-
9	FEEDBACK	Record	101	D	5	r	O/cyc	-	-
10	TEMPERATURE	Record	101	D	5	r	C/a	-	-
11	INPUT_RANGE	Simple	Unsigned8	S	1	r, w	C/a	F	0
13	VALVE_CHARACTERISTIC	Simple	Unsigned8	S	1	r, w	C/a	F	0
14	USER_SET	Array	Unsigned16	S	2	r, w	C/a	F	0,60,120, 190,250, 310,370, 440,550, 560,620, 690,750, 810,870, 940,1000
15	SPAN	Simple	Float	S	4	r, w	C/a	F	1000
16	ZERO	Simple	Unsigned16	S	2	r, w	C/a	F	0
17	P_GAIN	Simple	Unsigned16	S	2	r, w	C/a	F	50

18	I_GAIN	Simple	Unsigned16	S	2	r, w	C/a	F	80
19	D_GAIN	Simple	Unsigned16	S	2	r, w	C/a	F	15
20	GROUP	Simple	Unsigned8	S	1	r, w	C/a	F	1
21	SPEED	Simple	Unsigned16	S	2	r, w	C/a	F	1000
22	SLOW_START	Simple	Unsigned8	S	1	r, w	C/a	F	0
23	CONTROL_LIMIT	Simple	Unsigned8	S	1	r, w	C/a	F	10
24	GAP_CONTROL_LIMIT	Simple	Unsigned8	S	1	r, w	C/a	F	10
25	DEAD	Simple	Unsigned16	S	2	r, w	C/a	F	50
26	FDGN	Simple	Unsigned8	S	1	r, w	C/a	F	0
27	C/MD	Simple	Unsigned8	S	1	r, w	C/a	F	0
28	SHUT	Simple	Unsigned16	S	2	r, w	C/a	F	3
29	FOPN	Simple	Unsigned16	S	2	r, w	C/a	F	3
30	OUT	Simple	Unsigned16	S	2	r, w	C/a	F	0
31	SPLT	Simple	Unsigned8	S	1	r, w	C/a	F	0
32	ALARM	Array	Unsigned16	S	2	r, w	C/a	F	0,10, 90,105
33	PST	Simple	Unsigned8	S	1	r, w	C/a	F	0
34	PST_TIME_INTERVAL	Simple	Unsigned16	S	2	r, w	C/a	F	24
35	PST_COMMAND_SET	Simple	Unsigned16	S	2	r, w	C/a	F	10
36	PST_RAMP_RATE	Simple	Unsigned8	S	1	r, w	C/a	F	4
37	PST_RESPONSE_TIME	Simple	Unsigned8	S	1	r, w	C/a	F	1
38	AUTO	Simple	Unsigned8	S	1	r, w	C/a	-	0
39	COMMAND_SP_SCALE	Record	DS-36	S	11	r, w	C/a	F	100,0,%,2
40	FEEDBACK_SCALE	Record	DS-36	S	11	r, w	C/a	F	100,0,%,2
41	PV_D_1	Record	102	D	2	r	C/a	-	-
42	PV_D_2	Record	102	D	2	r	C/a	-	-

2. Parameter Descriptions

2.1 Physical Block Parameter Descriptions

PB Parameter	Description
BLOCK_OBJECT	The BLOCK_OBJECT parameter is the first parameter of every block. It contains the characteristics of the block e.g. block type and profile number.
ST_REV	A block has static block parameters that are not changed by the process. Values are assigned to these parameters during the configuration or optimization. ST_REV shall be incremented at least by one if at least one static parameter in the corresponding block has been modified. This provides a check of the parameter revision. ST_REV shall be reset to zero or incremented at least by one to indicate the change of static parameters in case of a cold start (i.e. if FACTORY_RESET=1 is set). Additionally the ST_REV shall be increased if a change of a table is accepted. The value of the static revision parameter may be used by a configuration device to determine if a block parameter(s) stored in static memory (as defined as 'S' in the parameter attribute table) has changed its value. In case of an overflow ST_REV should be set to 1.
TAG_DESC	The tag description is a user-supplied description of the block. Every block can be assigned such a textual tag description.
STRATEGY	The STRATEGY parameter has a user-specified value. This assigned value can be used in configuration or diagnostics as a key in sorting block information.
ALERT_KEY	The ALERT_KEY parameter has a user assigned value which may be used in sorting alarms or events generated by a block. It can contain the identification number of the plant unit. It helps to identify the location (plant unit) of an event.
TARGET_MODE	The TARGET_MODE parameter contains desired mode normally set by a control application or an operator. The modes are valid alternatively only, i.e. only one mode can be set at one time. A write access to this parameter with more then one mode is out of the range of the parameter and have to be refused.
MODE_BLK	This parameter contains the current mode, the permitted and normal mode of the block.
ALARM_SUM	The parameter ALARM_SUM summarizes the status of up to 16 block alarms. For each alarm, the current states, unacknowledged states, unreported states and disabled states are maintained. NOTE This feature is not fully supported by the actual profile. For this profile the current state part of the alarm is used only.
DEVICE_CERTIFICATION	Certifications of the field device, e.g. EX certification.
DESCRIPTOR	User-definable text (a string) to describe the device within the application.
DEVICE_INSTAL_DATE	Date of installation of the device.
DEVICE_MESSAGE	User-definable MESSAGE (a string) to describe the device within the application or in the plant.
DEVICE_ID	Manufacturer specific identification of the device.
DEVICE_MAN_ID	Identification code of the manufacturer of the field device.
DEVICE_SER_NUM	Serial number of the field device.
DIAGNOSIS	Detailed information of the device, bitwize coded. More than one message possible at once. If MSB of byte 4 is set to 1 than more diagnose information is available in the DIAGNOSIS_EXTENSION parameter.
DIAGNOSIS_EXTENSION	Additional manufacturer-specific information of the device, bitwize coded. More than one message possible at once.

PB Parameter	Description
DIAGNOSIS_MASK	Definition of supported DIAGNOSIS information-bits. 0 : Not supported 1 : Supported
DIAGNOSIS_MASK_ EXTENSION	Definition of supported DIAGNOSIS_EXTENSION information-bits. 0 : Not supported 1 : Supported
FACTORY_RESET	Coding : (mandatory) is the command for resetting a device to default values. The setting of the bus address is not affected. (optional) is the command for resetting informational device parameters to default values. Parameters with Reset Class characteristic "informational" are defined within the parameter attribute table of each block. The setting of the bus address is not affected. (optional) is the command for resetting device parameters with Reset Class characteristic "functional" to default values. The setting of the bus address is not affected. 4 ... 2505 Reserved 2506 (Optional) Is the command for a restart of the device. All non-volatile parameters remain unchanged, all dynamic parameters are reset to their defaults. 2507 ... 2711 reserved 2712 (optional) The bus address is set to its default address; other parameterization remains unchanged. The bus address is changed immediately regardless if the device is in cyclic data transfer state. The reset is not suspended up to a subsequent power cycle / warm start. The No_Add_Chg_Flag corresponding to the Set_Slave_Add service is cleared. 2713 ... 32767 Reserved 32768 ... 65535 Manufacturer specific Manufacturing specific commands for other reset results are possible. The IDENT_NUMBER_SELECTOR parameter is not affected by FACTORY_ RESET. NOTE Address manipulation by local display is not in the scope of this profile.
HARDWARE_REVISION	Revision-number of the hardware of the field device.

PB Parameter	Description
IDENT_NUMBER_ SELECTOR	Each PROFIBUS DP device according to IEC 61784-1 CP 3/1 shall have an Ident_Number provided by PI. The Ident_Number specifies the cyclic behaviour of a device which is described in the corresponding GSD file. A PROFIBUS PA according to IEC 61784-1 CP 3/2 device shall support at least one profile specific Ident_Number. Profile specific Ident_Numbers are defined in 6.4.1 of this profile. If a device is set to a profile specific Ident_Number it shall interact with the profile features of the corresponding profile GSD file. In addition a PROFIBUS PA device may support manufacturer specific Ident_Numbers. Profile specific GSD files are provided by PI. Manufacturer specific GSD files are provided by the device manufacturer. The user is able to select the active Ident_Number by setting the parameter IDENT_NUMBER_SELECTOR. If the Ident_Number is changed the cyclic behaviour of the device (e.g. diagnosis contents/length, current/accepted configuration data, ...) will be changed, too. Coding: 0 Profile specific Ident_Number (PA profile V3.x) (mandatory) 1 Manufacturer specific Ident_Number (PA profile V3.x) (optional) 2 Manufacturer specific Ident_Number (PA profile V2.0) (optional) 3 Profile specific Ident_Number of Multi-Variable Device (PA profile V3.x)(optional) 4...126 Reserved for profile use (not allowed) 127 Adaptation mode (mandatory) 128...255 Manufacturer specific (optional)
LOCAL_OP_ENA	Local operation enable 0 Disabled (Local operation not allowed, i.e. change of FB MODE from host device only) 1 Enabled (Local operation is allowed) The operation of the host has higher priority then the local terminal one. If communication fails for a time greater 30 sec, local operation will be enabled automatically. Communication failure is defined here as absence of cyclic communication for the specified time period. If the LOCAL_OP_ENA parameter is equal 0 (disabled) and the communication is working again, then the device switch back to remote operation.
SOFTWARE_REVISION	Revision-number of the software of the field device.
WRITE_LOCKING	Software write protection. 0 Acyclic write services to all parameter are refused, except WRITE_LOCKING itself, i.e. access is denied. 1 ... 2456 Reserved 2457 Is the default value and means all writeable parameters of a device are writeable. 2458 ... 32767 Reserved 32768 ... 65535 Manufacturer specific The following parameters are never write protected by any blocking mechanism: TAB_ENTRY (linearization tables) ACTUAL_POST_READ_NUMBER (logbook function block). Additionally a Call-REQ-PDU without Execution_Argument shall be accepted by the device regardless of the write protection state e.g. to read I&M data.

PB Parameter	Description
HW_WRITE_ PROTECTION	Indicates the position of a write blocking mechanism which can not be modified by remote access (e.g. hardware jumper or local user interface) which protects parameter modification of a device. 0 Unprotected (mandatory) 1 Protected, manual operation permitted (optional) Acyclic write access to all parameters is refused (write access is denied) except the TAB_ENTRY parameter of the linearization table and parameters TARGET_MODE and OUT/OUT_D (only valid for AO and DO). 2 Protected, no manual operation (optional) Acyclic write access to all parameter is refused (write access is denied) except the TAB_ENTRY parameter of the linearization table. 3 ... 127 Reserved 128...255 Manufacturer specific A device may support code 1 and/or 2. The following parameters are never write protected by any blocking mechanism: TAB_ENTRY (linearization tables) ACTUAL_POST_READ_NUMBER (logbook function block). Additionally a Call-REQ-PDU without Execution_Argument shall be accepted by the device regardless of the write protection state e.g. to read I&M data.
FEATURE	Indicates optional features implemented in the device and the status of these features which indicates if the feature is supported or not supported.
COND_STATUS_DIAG	Indicates the mode of a device that can be configured for status and diagnostic behavior. 0 Status and Diagnosis is provided. 1 Condensed Status and Diagnosis information is provided . 2 ... 255 Reserved by PI
DIAG_EVENT_SWITCH	Indicates / controls the reaction of the device on device specific diagnostic events if FEATURE. Enabled. Condensed_Status = 1. The reference of the entries to the diagnosis events is manufacturer / device specific.

2.2 AO Block Parameter Descriptions

AO Parameter	Description
BLOCK_OBJECT	The BLOCK_OBJECT parameter is the first parameter of every block. It contains the characteristics of the block e.g. block type and profile number.
ST_REV	A block has static block parameters that are not changed by the process. Values are assigned to these parameters during the configuration or optimization. ST_REV shall be incremented at least by one if at least one static parameter in the corresponding block has been modified. This provides a check of the parameter revision. ST_REV shall be reset to zero or incremented at least by one to indicate the change of static parameters in case of a cold start (i.e. if FACTORY_RESET=1 is set). Additionally the ST_REV shall be increased if a change of a table is accepted. The value of the static revision parameter may be used by a configuration device to determine if a block parameter(s) stored in static memory (as defined as 'S' in the parameter attribute table) has changed its value. In case of an overflow ST_REV should be set to 1.
TAG_DESC	The tag description is a user-supplied description of the block. Every block can be assigned such a textual tag description.
STRATEGY	The STRATEGY parameter has a user-specified value. This assigned value can be used in configuration or diagnostics as a key in sorting block information.
ALERT_KEY	The ALERT_KEY parameter has a user assigned value which may be used in sorting alarms or events generated by a block. It can contain the identification number of the plant unit. It helps to identify the location (plant unit) of an event.
TARGET_MODE	The TARGET_MODE parameter contains desired mode normally set by a control application or an operator. The modes are valid alternatively only, i.e. only one mode can be set at one time. A write access to this parameter with more then one mode is out of the range of the parameter and have to be refused.
MODE_BLK	This parameter contains the current mode, the permitted and normal mode of the block.
ALARM_SUM	The parameter ALARM_SUM summarizes the status of up to 16 block alarms. For each alarm, the current states, unacknowledged states, unreported states and disabled states are maintained. NOTE This feature is not fully supported by the actual profile. For this profile the current state part of the alarm is used only.
BATCH	This parameter is intended to be used in Batch applications according to IEC 61512-1. Only Function Blocks carry this parameter. There is no algorithm necessary within a Function Block. The Batch parameter is necessary in a distributed fieldbus system to identify used and available channels, in addition to identify the current batch in case of alerts.
CHECK_BACK	Detailed information of the device, bitwise coded. More than one message possible at once.
CHECK_BACK_MASK	Definition of supported CHECK_BACK information bits. Coding: 0 Not supported 1 Supported

AO Parameter	Description
FSAFE_TIME	Time in seconds from detection of failure of the actual used set point (SP = BAD or RCAS_IN <> GOOD) to the action of the block if the condition still exists. NOTE A communication time out changes the status of the transmitted set point to BAD.
FSAFE_TYPE	Defines reaction of the device, if a failure of the actual used set point is still detected after FSAFE_TIME or if the status of actual used set point is Initiate Fail Safe. The calculated ACTUAL MODE is AUTO or RCAS respectively. 0 Value FSAFE_VALUE is used as set point status of OUT = UNCERTAIN - Substitute Value 1 Use last valid set point status of OUT = UNCERTAIN - Last usable Value or BAD - No communication, no LUV 2 Actuator goes to fail-safe position defined by ACTUATOR_ ACTION (only useful for actuators with spring return) status of OUT = BAD - non specific
FSAFE_VALUE	Set point used if FSAFE_TYPE = 1 and FSAFE is activated.
INCREASE_CLOSE	Defines actuator movement relative to the set point in mode RCAS and AUTO. Coding: 0 Rising (increasing of set point results in OPENING of the valve) 1 Falling (increasing of set point results in CLOSING of the valve) The following parameters are influenced by the setting of INCREASE_ CLOSE: READBACK, POS_D, OUT and CHECKBACK
IN_CHANNEL	Reference to the active Transducer Block and its parameter that provides the actual position of the final control element.
OUT	This parameter is the process variable of the analog output block in engineering units in AUTO and RCas mode and is the value specified by the operator/engineer in MAN and LO mode.
OUT_CHANNEL	Reference to the active Transducer Block and its parameter that provides the position value for the final control element.
OUT_SCALE	Conversion of the OUT of the Function Block in percent to OUT in engineering units as the output value of the Function Block. The high and low scale values, engineering unit code, and the number of digits to the right of the decimal point. The following units should be supported in minimum: mm, 0 (Degrees), % (depending on VALVE_TYPE)
POS_D	The current position of the valve (discrete). Coding: 0 Not initialized 1 Closed 2 Opened 3 Intermediate
PV_SCALE	Conversion of the PV in engineering units to PV in percent as the input value of the Function Block. It consists of the high and low scale values, engineering unit code, and number of digits to the right of the decimal point.
RCAS_IN	Target set point in units of PV_SCALE and status provided by a supervisory host to the analog control or output block in mode RCas.

AO Parameter	Description
RCAS_OUT	Function Block set point in units of PV_SCALE and status. Provided to a supervisory Host for monitoring / back calculation and to allow action to be taken under limited conditions or mode change.
READBACK	The actual position of the final control element within the travel span (between OPEN and CLOSE position) in units of PV_SCALE.
SETP_DEVIATION	Difference between OUT signal and feedback position in % travel span (between OPEN and CLOSE position).
SIMULATE	For commissioning and maintenance reasons, it is possible to simulate the READBACK by defining the value and the status. That means that the signal path from the Transducer Block to the AO FB will be disconnected.
SP	Set point. Defines the position of the final control element within the travel span (between OPEN and CLOSE position) in units of PV_SCALE in mode AUTO.

2.3 AI Block Parameter Descriptions

AI Parameter	Description
OUT	The Function Block parameter OUT contains the current measurement value in a vendor specific or configuration adjusted engineering unit and the belonging status in AUTO MODE. The Function Block parameter OUT contains the value and status set by an operator in MAN MODE.
PV_SCALE	Conversion of the Process Variable into percent using the high and low scale values. The engineering unit of PV_SCALE high and low scale values are directly related to the PV_UNIT of the configured Transducer Block (configured via Channel parameter). The PV_SCALE high and low scale values follow the changes of the PV_UNIT of the related Transducer Block automatically, i.e. a change of the Transducer Block PV_Unit causes no bump at OUT from AI. There are exceptions possible where the bump is required such as cleaning of analyzers.
OUT_SCALE	Scale of the Process Variable. The Function Block parameter OUT_SCALE contains the values of the lower limit and upper limit effective range, the code number of the engineering unit of Process Variable and the useful number of digits on the right hand side of the decimal point.
LIN_TYPE	Type of linearization.
CHANNEL	Reference to the active Transducer Block which provides the measurement value to the Function Block. For more details, please see the General Requirement definitions
PV_FTIME	Filter time of the Process Variable. The Function Block parameter PV_FTIME contains the time constant for the rise time of the FB output up to a value of 63.21 % resulted from a jump on the input (PT1 filter). The engineering unit of the parameter is second.
FSAFE_TYPE	Defines the reaction of the device, if a fault is detected. The calculated ACTUAL MODE remains in AUTO. 0 Value FSAFE_VALUE is used as OUT Status = UNCERTAIN - Substitute Value, (**) 1 Use last stored valid OUT value Status = UNCERTAIN-last usable value (if no valid value is available UNCERTAIN-initial value shall be used; OUT value is initial value in this case) (**) 2 OUT has the wrong calculated value and status Status - BAD_(*) (**) (*) as calculated (**) if classic status definition is in use; for condensed status see Table 83
FSAFE_VALUE	Default value for the OUT parameter, if a sensor or sensor electronic fault is detected. The unit of this parameter is the same like the OUT one.
ALARM_HYS	Hysteresis. Within the scope of the PROFIBUS PA specification for transmitters there are functions for the monitoring of limit violation (off-limit conditions) of adjustable limits. Maybe the value of one process variable is just the same as the value of a limit and the variable fluctuates around the limit it will occur a lot of limit violations. That triggers a lot of messages; so it shall be possible to trigger messages only after crossing an adjustable hysteresis. The sensitivity of triggering of the alarm messages is adjustable. The value of the hysteresis is fixed in ALARM_HYS and is the same for the parameters HI_HI_LIM, HI_LIM, LO_LIM and LO_LO_LIM. The hysteresis is expressed as value below high limit and above low limit in the engineering unit of xx_LIM.
HI_HI_LIM	Value for upper limit of alarms. If the measured variable is equal to or higher than the HI_HI_LIM value the Limit Bit "high limited" in the Status Byte of OUT and the HI_HI_Alarm Bit in the FB parameter ALARM_SUM have to change to 1. The unit of this parameter is the same like the OUT one.

HI_LIM	Value for upper limit of warnings. If the measured variable is equal to or higher than the HI_LIM value, the Limit Bit "high limited" in the Status Byte of OUT and the HI_Alarm Bit in the FB parameter ALARM_SUM have to change to 1. The unit of this parameter is the same like the OUT one.
LO_LIM	Value for lower limit of warnings. If the measured variable is equal to or lower than the LO_LIM value, the Limit Bit "low limited" in the Status Byte of OUT and the LO_Alarm Bit in the FB parameter ALARM_SUM have to change to 1. The unit of this parameter is the same like the OUT one.
LO_LO_LIM	Value for the lower limit of alarms. If the measured variable is equal to or lower than the LO_LO_LIM value, the Limit Bit "low limited" in the Status Byte of OUT and the LO_LO_Alarm Bit in the FB parameter ALARM_SUM have to change to 1. The unit of this parameter is the same like the OUT one.
HI_HI_ALM	State of the upper limit of alarms. This parameter contains the state of the upper limit of an alarm and the related time stamp. The time stamp expresses the time the measured variable has been equal to or higher than the upper limit of the alarm.
HI_ALM	State of the upper limit of warnings. This parameter contains the state of the upper limit of a warning and the related time stamp. The time stamp expresses the time the measured variable has been equal to or higher than the upper limit of the warning.
LO_ALM	State of the lower limit of warnings. This parameter contains the state of the lower limit of a warning and the related time stamp. The time stamp expresses the time the measured variable has been equal to or lower than the lower limit of the warning.
LO_LO_ALM	State of the lower limit of alarms. This parameter contains the state of the lower limit of an alarm and the related time stamp. The time stamp expresses the time the measured variable has been equal to or lower than the lower limit of the alarm.
SIMULATE	For commissioning and test purposes the input value from the Transducer Block into the Analog Input Function Block AI-FB can be modified. That means that the Transducer and AI-FB will be disconnected.
OUT_UNIT_TEXT	If a specific unit of OUT parameter is not in the code list (see General Requirement) the user has the possibility to write the specific text into this parameter. The unit code is then equal to "textual unit definition".

2.4 DI Block Parameter Descriptions

Parameter	Description
BLOCK_OBJECT	The BLOCK_OBJECT parameter is the first parameter of every block. It contains the characteristics of the block e.g. block type and profile number.
ST_REV	A block has static block parameters that are not changed by the process. Values are assigned to these parameters during the configuration or optimization. ST_REV shall be incremented at least by one if at least one static parameter in the corresponding block has been modified. This provides a check of the parameter revision. ST_REV shall be reset to zero or incremented at least by one to indicate the change of static parameters in case of a cold start (i.e. if FACTORY_RESET=1 is set). Additionally the ST_REV shall be increased if a change of a table is accepted. The value of the static revision parameter may be used by a configuration device to determine if a block parameter(s) stored in static memory (as defined as 'S' in the parameter attribute table) has changed its value. In case of an overflow ST_REV should be set to 1.
TAG_DESC	The tag description is a user-supplied description of the block. Every block can be assigned such a textual tag description.
STRATEGY	The STRATEGY parameter has a user-specified value. This assigned value can be used in configuration or diagnostics as a key in sorting block information.
ALERT_KEY	The ALERT_KEY parameter has a user assigned value which may be used in sorting alarms or events generated by a block. It can contain the identification number of the plant unit. It helps to identify the location (plant unit) of an event.
TARGET_MODE	The TARGET_MODE parameter contains desired mode normally set by a control application or an operator. The modes are valid alternatively only, i.e. only one mode can be set at one time. A write access to this parameter with more then one mode is out of the range of the parameter and have to be refused.
MODE_BLK	This parameter contains the current mode, the permitted and normal mode of the block.
ALARM_SUM	The parameter ALARM_SUM summarizes the status of up to 16 block alarms. For each alarm, the current states, unacknowledged states, unreported states and disabled states are maintained. NOTE This feature is not fully supported by the actual profile. For this profile the current state part of the alarm is used only.
CHANNEL	Reference to the active Transducer Block which provides the measurement value to the Function Block. For more details, please see the General Requirement definitions.
INVERT	Indicates whether the input value of the PV_D should be logically inverted before it is stored in the OUT_D. Coding 0 Not inverted 1 Inverted
FSAFE_TYPE	Defines reaction of the device, if a fault is detected. Coding 0 Value FSAFE_VAL_D is used as OUT_D Status = UNCERTAIN-substitute value 1 Use of last stored valid OUT_D value Status = UNCERTAIN-last usable value (if no valid value is available UNCERTAIN-Initial Value shall be used) 2 OUT_D has the wrong calculated value and status Status = BAD-(*) 0 (*) as calculated
FSAFE_VAL_D	Default value for the OUT_D parameter, if a sensor or sensor electronic fault is detected.
OUT_D	OUT_D is the output of the Function Block. The value is specified by the operator in MODE Man.
SIMULATE_D	For commissioning and test purposes the input value from the Transducer Block in the Discrete Input Function Block DI-FB can be modified. That means that the Transducer and DI-FB will be disconnected.

3.5 Transducer Parameter Descriptions

TB Parameter	Description
BLOCK_OBJECT	The BLOCK_OBJECT parameter is the first parameter of every block. It contains the characteristics of the block e.g. block type and profile number.
ST_REV	A block has static block parameters that are not changed by the process. Values are assigned to these parameters during the configuration or optimization. ST_REV shall be incremented at least by one if at least one static parameter in the corresponding block has been modified. This provides a check of the parameter revision. ST_REV shall be reset to zero or incremented at least by one to indicate the change of static parameters in case of a cold start (i.e. if FACTORY_RESET=1 is set). Additionally the ST_REV shall be increased if a change of a table is accepted. The value of the static revision parameter may be used by a configuration device to determine if a block parameter(s) stored in static memory (as defined as 'S' in the parameter attribute table) has changed its value. In case of an overflow ST_REV should be set to 1.
TAG_DESC	The tag description is a user-supplied description of the block. Every block can be assigned such a textual tag description.
STRATEGY	The STRATEGY parameter has a user-specified value. This assigned value can be used in configuration or diagnostics as a key in sorting block information.
ALERT_KEY	The ALERT_KEY parameter has a user assigned value which may be used in sorting alarms or events generated by a block. It can contain the identification number of the plant unit. It helps to identify the location (plant unit) of an event.
TARGET_MODE	The TARGET_MODE parameter contains desired mode normally set by a control application or an operator. The modes are valid alternatively only, i.e. only one mode can be set at one time. A write access to this parameter with more then one mode is out of the range of the parameter and have to be refused.
MODE_BLK	This parameter contains the current mode, the permitted and normal mode of the block.
ALARM_SUM	The parameter ALARM_SUM summarizes the status of up to 16 block alarms. For each alarm, the current states, unacknowledged states, unreported states and disabled states are maintained. NOTE This feature is not fully supported by the actual profile. For this profile the current state part of the alarm is used only.
COMMAND_SP	Loop Current Command
FEEDBACK	Loop Current Feedback
TEMPERATURE	Temperature
INPUT_RANGE	Defines the positioner response to 4-20mA input signal or 20-4mA input signal. 0 Response to 4-20mA input signal 1 Response to 20-4mA input signal
VALVE_CHARACTERISTIC	Defines the characterics of the valve movements. 0 Linear characteristic 1 Equal percentage EQ 25% 2 Equal percentage EQ 50% 3 Quick opening 4 User set (with 17 points)
USER_SET	Defines that the user can make the desired characteristic by setting the valves at each input siganl (with 17 points)
SPAN	Defines adjustment of the valve opening (For example, 900 means that the valve is open 90%)
ZERO	Defines adjustment of the valve closing (For example, 10 means that the valve is open 1%)
P_GAIN	Defines the parameters for PID control (set automatically)

I_GAIN	Defines the parameters for PID control (set automatically)
D_GAIN	Defines the parameters for PID control (set automatically)
GROUP	Defines modification of PID control values set automatically. 0 Low : to set lower than the PID values 1 Middle : PID values automatically set 2 High : to set higher than the PID values
SPEED	Defines adjustment of the valve response speed.
SLOW_START	Defines a more smooth valve movement. 0 Off 1 On
CONTROL_LIMIT	Defines a setting of the maximum value to control a coil (set automatically).
GAP_CONTROL_LIMIT	Defines a setting of the control value for a coil when reaching a target position of ±2% (Gap limit = Control limit / 2)
DEAD	Defines that the input signals within Deadband range are ignored. The default of the Deadband is 0.5% (def = 50)
FDGN	Defines a valve control mode in case of a hard friction.
C/MD	Defines a valve control mode. 0 Norm : For stanard valve 1 Small : For small and low fiction valve 2 Hard : For big and strong fiction valve
SHUT	Defines that the valve is kept closed by ignoring some input signals.
FOPN	Defines that the valve is kept open by ignoring some input signals.
OUT	Defines the ourput signals (feedback signals). 0 4~20mA output signal 1 20~4mA output signal
SPLT	Defines a spilt range control with 4-12mA input signal or 12-20mA input signal. 0 With 4~20mA input signal 1 With 12~20mA input signal 2 With 4~12mA input signal
ALARM	Defines a setting of two alarm limits. ALARM 1L~1H : 0~10% ALARM 2L~2H : 90~105%
PST	Defines a setting of a scheduled valve movement 0 Off 1 On
PST_TIME_INTERVAL	Defines a setting of PST time interval.
PST_COMMAND_SET	Defines a moving stroke during PST 10 = 10%
PST_RAMP_RATE	Defines a measurement of the signal change per 1 second. 0 0.06%/S 1 0.12%/S 2 0.25%/S 3 0.5%/S 4 1%/S

PST_RESPONSE_TIME	Defines a response waiting tiem of PST. 0 5s 1 10s 2 15s 3 20s 4 30s
AUTO	Auto Calibration 0 1 Tunning Start 2 Tunning Stop 3 Reset 4 Cold
COMMAND_SP_SCALE	COMMAND SP SCALE
FEEDBACK_SCALE	FEEDBACK SCALE
PV_D_1	This parameter contains the measured value and status available to the Function Block.
PV_D_2	This parameter contains the measured value and status available to the Function Block.

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