DIGITAL INTERFACE VALVE WITH PROFIBUS INTERFACE

User Manual - Firmware DIV PQ

(B99225-DV010-BE400; Version 0.2, 10/07)

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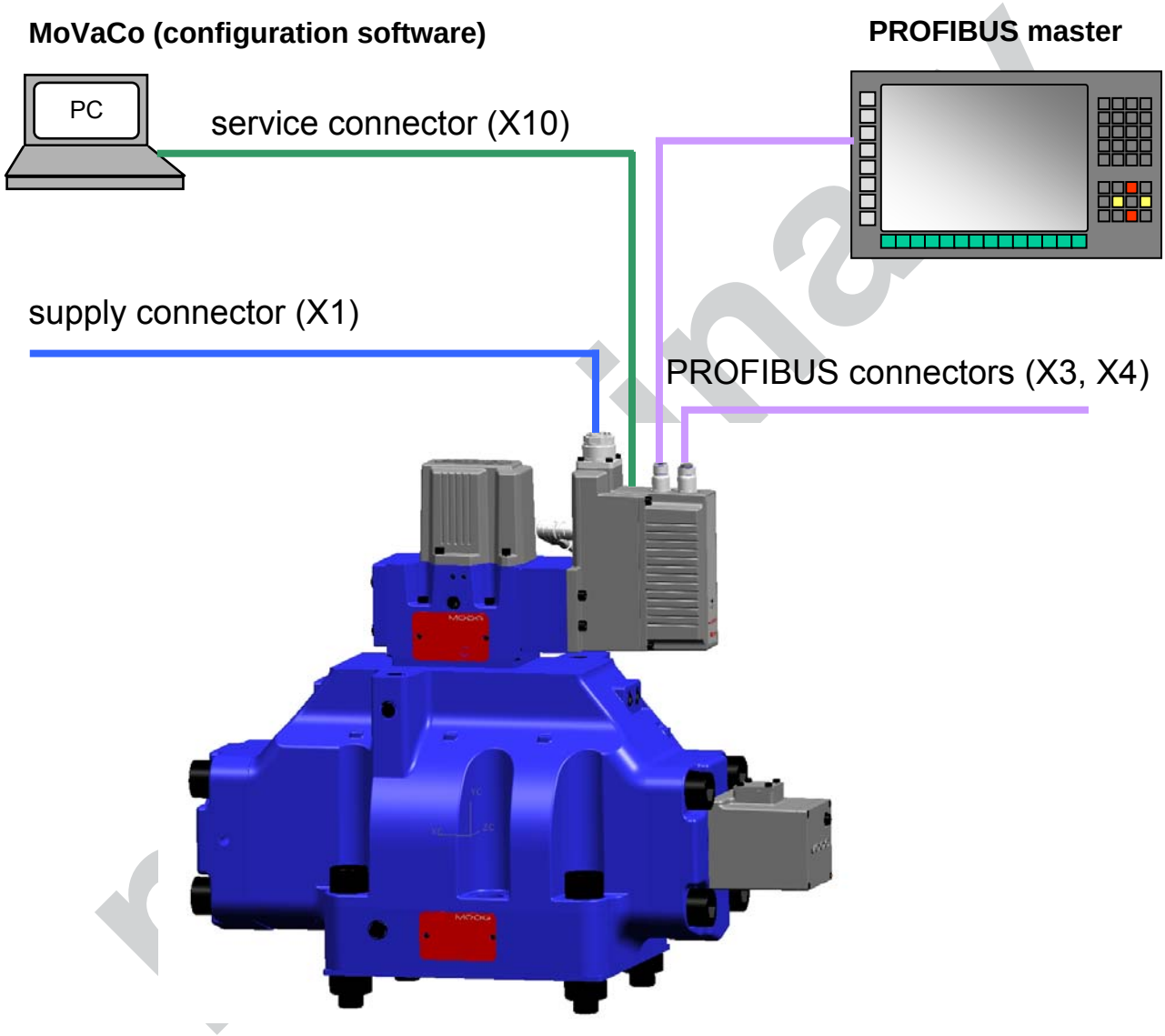
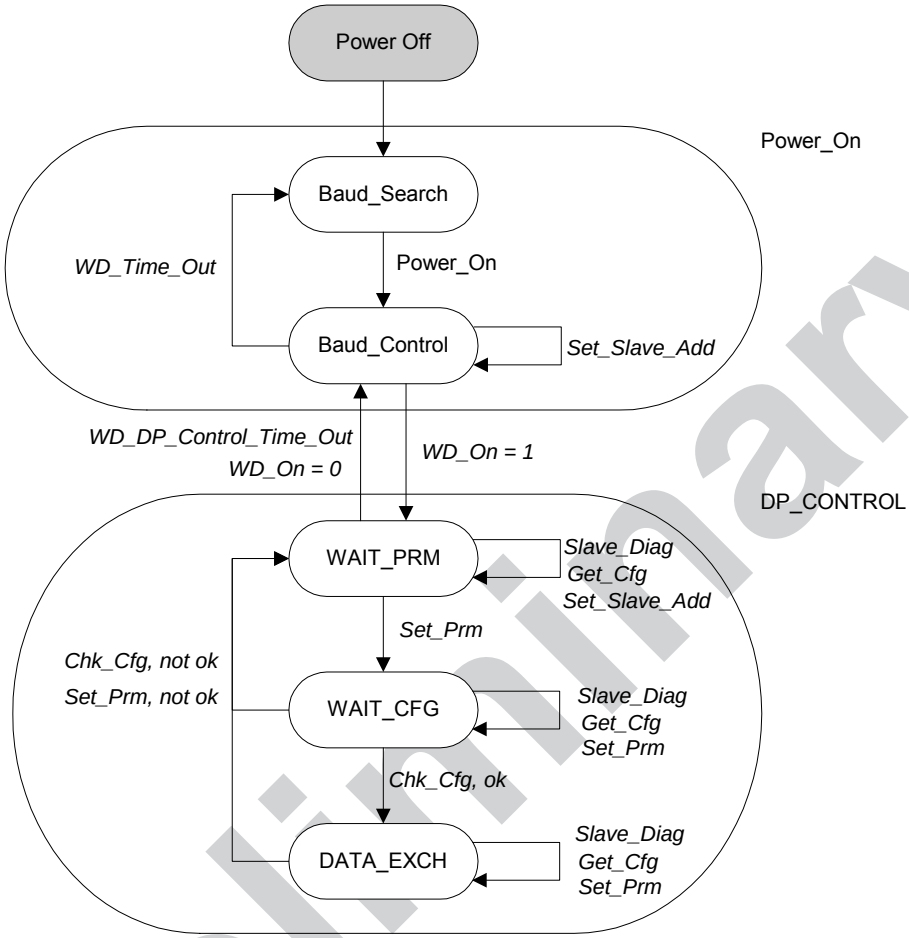
1 General Description

This specification describes the PROFIBUS DPV1 fieldbus interface for the DIV. The physical connectors as well as the profile specific parameters and telegrams necessary to built up a connection between the PLC and the valve.

The described functions and parameters are only a small extract from the existing ones. The complete functional specification is described in the PROFIBUS - DP Profile, Fluid Power Technology. Developed by the PROFIBUS Working Group „Fluid Power Technology“ based on the profiles developed by the VDMA e.V. Working Group „Fluid Power Technology“.



2 PROFIBUS state machine



Power_On

Baud_Search:

The valve is capable of detecting the PROFIBUS baudrate set by the master automatically. When the electronic is in Baud_Search state it can not accept any message. The electronic is searching for the transmission rate of the bus on different baudrates, trying to detect a correct SD1, SD2 or SD3 telegram. After identifying a baudrate the controller switches to Baud_Control state.

Baud_Control:

The detected baudrate is constantly monitored in the Baud_Control state. Each error free detected telegram to its own station address resets the internal watchdog. The watchdog timer can be set by the user via the parameter telegram.

TWD = (1 ms or 1 ms) * WD_FACT_1 * WD_FACT_2

(see byte 7 of the “Set_Prm” telegram)

If the watchdog expires the valve falls back to the Baud_Search state and starts searching the bad-rate again. A watchdog time between 2 ms and 650 s – independent of the baudrate – can be implemented by using the watchdog factors.

Only in Power_On state the slave accepts a Set_Slave_Address telegram.

DP_CONTROL:

WAIT_PRM:
After the startup phase the slave expects a parameter telegram which defines the behaviour of the slave. The parameter telegram contains for example information about the ident number, the sync/freeze capability, master address and watchdog time. In the state WAIT_PRM the slave also accepts and responds to Get_Cfg and Slave_Diag telegrams. All other telegrams are ignored.

WAIT_CFG:
The configuration telegram defines the number of input and output bytes. The master transmits the IO configuration to the valve. After receiving the Chc_Cfg telegram the valve compares the configuration with its own configuration. If the configuration is acknowledged the valve confirms the configuration by setting the corresponding bit in the diagnosis state and enters automatically the DATA_EXCH state and starts the cyclic communication with the master.

DATA_EXCH :
If both Chk_Cfg and Set_Prm are confirmed positive the valve goes into DATA_EXCH state and starts exchanging cyclic data with the master.

Start up routine
The ideal start up sequence for the before described telegrams is:

1. request diagnosis
2. changing station address (if necessary)
3. setting parameterization
4. checking configuration
5. request diagnosis (to check the preceeding commands)
6. data exchange

In parallel diagnosis requests, reparameterizations, reconfigurations and global control telegrams are accepted and processed by the valve.

2.1 Status LEDs

The valve's operating mode and the network status are displayed on multicolor light emitting diodes (status display LEDs) on the electronics housing.

2.1.1 Module Status LED (MS)

The Module Status LED displays operational and error states.

Module status LED (MS)	Condition
Off	No supply voltage
Green	normal operation
Blinking Green	Valve standby mode
Blinking red	Correctable error
red	unrecoverable error
Blinking red-green	Self-test

Table 1: Module Status (MS)

2.1.2 Network Status LED (NS)

The network status LED displays the status of the PROFIBUS network.

Network status LED (NS)	Condition
Off	No supply voltage
Green	state: "DATA_ EXCH" valve is in data exchange state

Blinking Green	state: “WAIT_CFG” valve is waiting for configuration telegram
Orange	state: ”WAIT_PRM” valve is waiting for parameter telegram
orange	State: “Baud_control” valve has detected baudrate
Blinking Orange	state: „Baud_Search“ valve is searching for correct baudrate
red	major error
Blinking red	Bus error
Blinking red-green	self-test

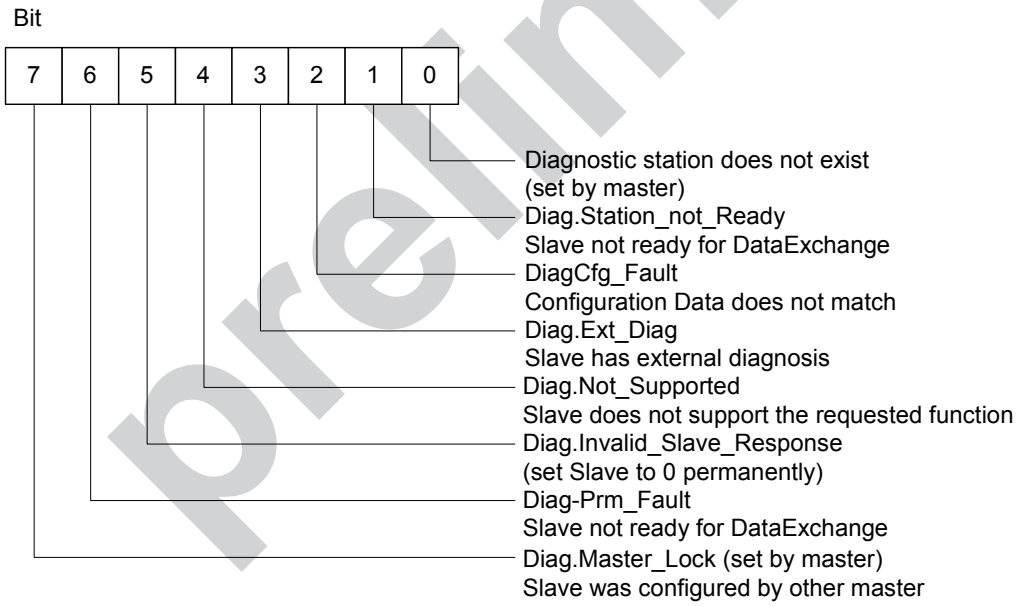
Table 2: Network Status (NS)

3 Master slave communication

3.1 Diagnosis

The diagnosis telegram is a high priority telegram which is send out on the request of the master. The diagnosis data can be read out at any time as soon as a stable connection baudrate is set up. During start up phase the master automatically fetches the diagnosis buffer (see startup routine). If new diagnostic data is available the valve indicates the After that the master requests in the next cycle a diagnosis telegram instead of a cyclic telegram. The diagnosis telegram contains 15 byte of status data. The first 7 bytes of the diagnosis data contain information according to the standard:

Byte 1:



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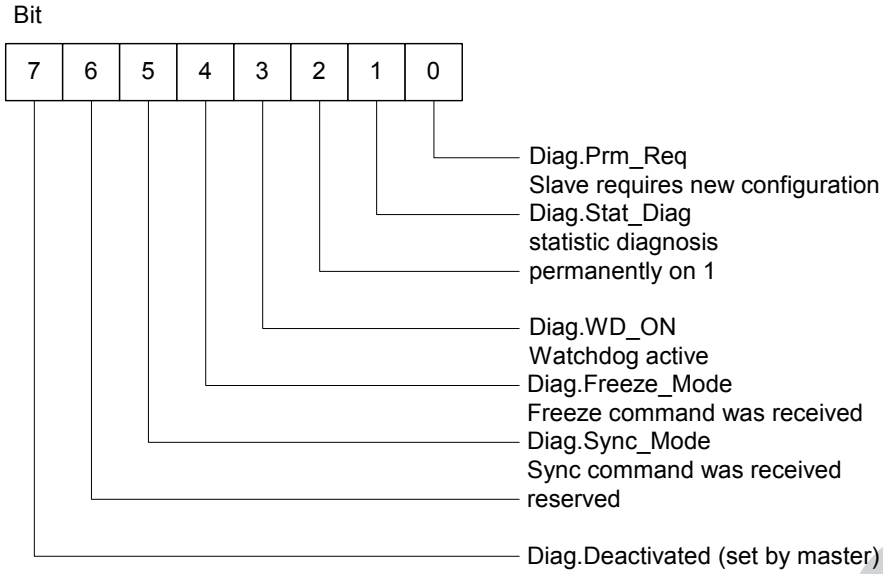

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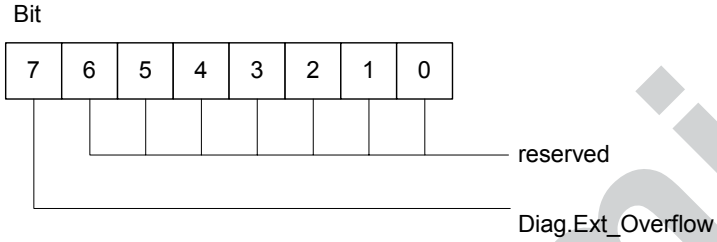

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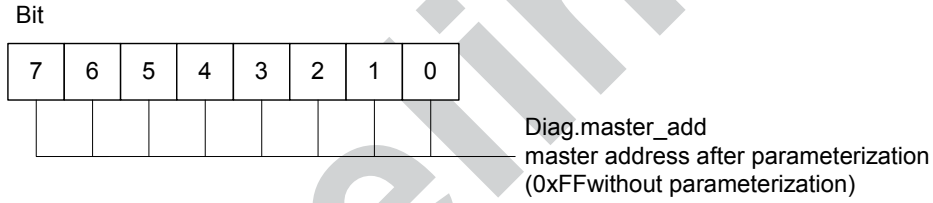

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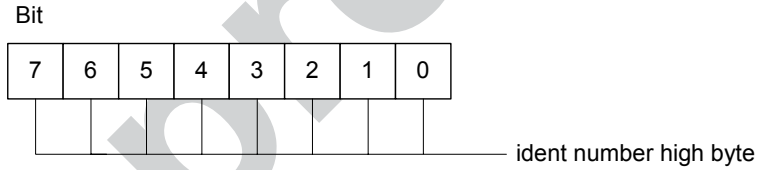

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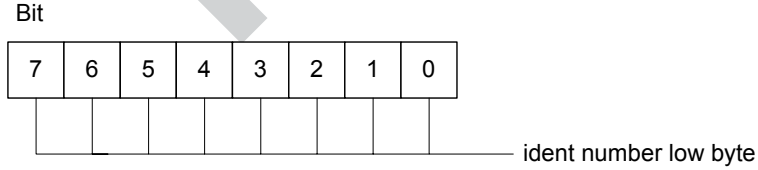
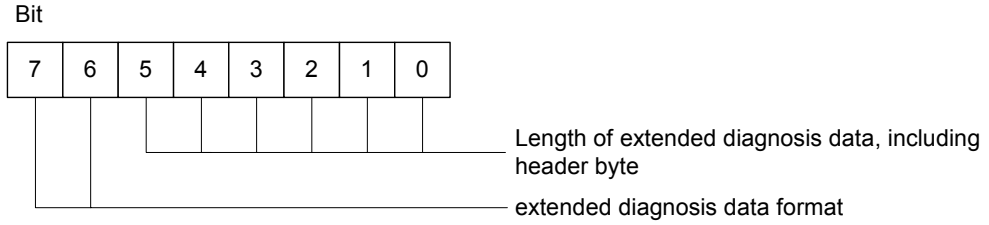
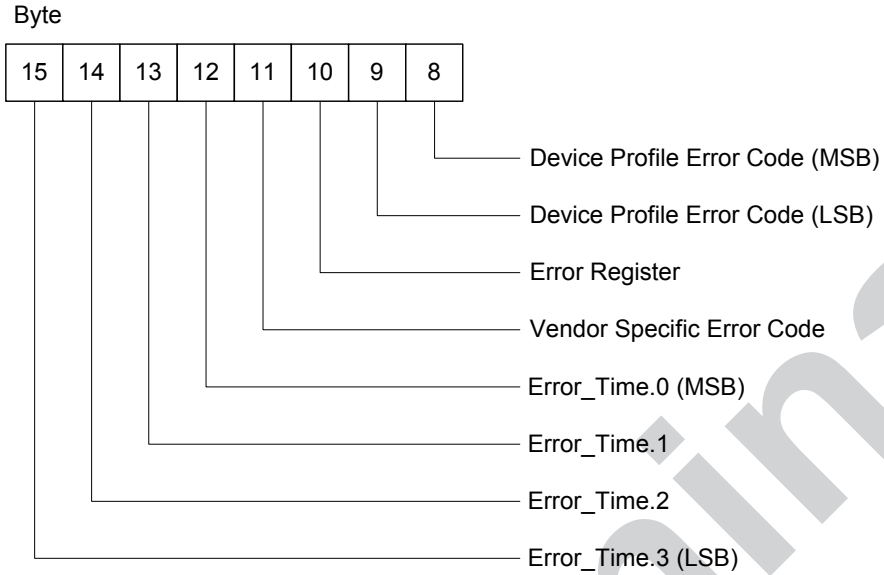


Byte 7:



Byte 8 .. 15:



The meaning of the “Device Profile Error Code” as well as the “Vendor Specific Error Code” are described in the following tables. The “Error Time” refers to the boot up time of the valve. It is measured in minutes. When the error is corrected, the valve acknowledges the new state with a cleared diagnosis telegram.

Table of device profile error Codes:

Profile Error Code	Description			
10xx	Generic Error			
20xx	Current			
21xx		Current, device input side		
2110		Input Current too high		
22xx		Current inside the device		
2211			Internal current #1	
2212			Internal current #2	
23xx		Current, device output side		
30xx	Voltage			
31xx		Mains Voltage		
3110			Input voltage out of range	
32xx		Voltage inside the device		
3210			Internal voltage too high	
3220			Internal voltage too low	
33xx		Output Voltage		
3400		Internal voltage		
3410			Power supply voltage	
3411				Power supply voltage too high
3412				Power supply voltage too low
3420			Control voltage	
3421				Control voltage too high
3422				Control voltage too low

40xx	Temperature			
41xx		Ambient Temperature		
4110			Ambient temperature too high	
4120			Ambient temperature too low	
42xx	Device Temperature			
4210		Temperature of electronic components		
4211			Temperature of electronic components too high	
4212			Temperature of electronic components too low	
4220		Temperature of hydraulic components		
4221			Temperature of hydraulic components too high	
4222			Temperature of hydraulic components too low	
50xx	Device Hardware			
5100		Hardware power supply		
5110			Internal power supply error	
5200		Device control		
5210			Measurement circuits	
5211				Pressure
5212				internal LVDT
5213				X1 Analog In #0
5214				X1 Analog In #1
5215				X5 Analog In #2
5216				X6 Analog In #3
5217				X7 Analog In #4
5218				X8 external LVDT
5220			Microprocessor core	
5230			Sensors	
5231				Pressure
5232				Encoder/SSI/Local CAN
5233				X1 Analog In #0
5234				X1 Analog In #1
5235				X5 Analog In #2
5236				X6 Analog In #3
5237				X7 Analog In #4
5238				X8 external LVDT
5300		Local input device		
5400		Power electronics		
5410			driver	
5500		Data memory		
5510			RAM	
5520			EPROM	
5530			EEPROM	
60xx	Device Software			
6010		Software reset (Watchdog)		
61xx		Internal Software		
6101			Error Handler	
6102			Interrupt Time Exceeded	
6103			Task Time Exceeded	
6104			Out Of Memory	
62xx		User Software		
6201			Event Handler	
63xx		Data Set		
6310			Parameter loss	
6311				Node Identifier Data
6312				User Data
6313				Restore Data
6314				Factory Data
6315				Calibration Data

6316				Diagnosis Data
6320			Parameter error	
70xx	Additional Modules			
7300	Sensor			
7310	Pressure sensor			
80xx	Monitoring			
8100		Communication		
8101			local CAN Communication	
8102			CAN Overrun (Objects lost)	
8103			local CAN Overrun (Objects lost)	
8104			CAN in Error Passive Mode	
8105			local CAN in Error Passive Mode	
8106			Life Guard Error or Heartbeat Error	
8107			CAN recovered from bus off	
8108			local CAN recovered from bus off	
8109			CAN transmit COB-ID collision	
810A			local CAN Transmit COB-ID collision	
820B			Protocol Error	
820C			PDO not processed due to length error	
820D			PDO length exceeded	
8209			local RPDO1 time out	
820A			local RPDO2 time out	
820B			local RPDO3 time out	
820C			local RPDO4 time out	
820D			local TPDO1 time out	
820E			local TPDO2 time out	
820F			local TPDO3 time out	
8210			local TPDO4 time out	
8211			local RPDO1 data	
8212			local RPDO2 data	
8213			local RPDO3 data	
8214			local RPDO4 data	
8215			local TPDO1 data	
8216			local TPDO2 data	
8217			local TPDO3 data	
8218			local TPDO4 data	
825X			PROFIBUS	
8200		Closed loop control monitoring		
8201			Position control monitoring	
8202			Pressure control monitoring	
8203			Position Control	
8204			Velocity Control	
8205			Force Control	
8206			Flow Control	
8207			Current Control	
8208			Trajectory Generation	

Table 3: Profile Error Codes

Table of vendor specific error codes:

Additionally there is a vendor specific error code mapped into the diagnosis telegram of the valve which defines more detailed error conditions which are not covered by the profile codes.

Moog Error Code	Description
0	no_fault
1	error_microprocessor_core
2	error_digital_signal_processor
3	error_dsp_program_download
4	error_dsp_realtime_data_transmission
5	power_supply_voltage_too_low
6	power_supply_voltage_too_high
7	internal_supply_voltage_too_low
8	internal_supply_voltage_too_high
9	internal_reference_voltage_too_low
10	internal_reference_voltage_too_high
11	internal_current_too_low
12	internal_current_too_high
13	electronics_temperature_too_low_(<_-20degC)
14	electronics_temperature_too_high_(>_85degC)
15	electronics_temperature_exceeded_(>_105degC)
16	current_sensor_circuit_failure
17	pilot/single_stage_lvdt_cable_break
18	pilot/single_stage_lvdt_position_out_of_range
19	pilot/single_stage_lvdt_circuit_failure
20	main_stage_lvdt_cable_break
21	main_stage_lvdt_position_out_of_range
22	main_stage_lvdt_circuit_failure
23	internal_pressure_transducer_cable_break
24	internal_pressure_transducer_circuit_failure
25	internal_pressure_transducer_preasure_peak
26	analog_input_0;d_cable_break
27	analog_input_1;d_cable_break
28	analog_input_2;d_cable_break
29	analog_input_3;d_cable_break
30	analog_input_4;d_cable_break
31	analog_input_0;d_current_too_low_(4-20mA)
32	analog_input_1;d_current_too_low_(4-20mA)
33	analog_input_2;d_current_too_low_(4-20mA)
34	analog_input_3;d_current_too_low_(4-20mA)
35	analog_input_4;d_current_too_low_(4-20mA)
36	analog_input_0;d_circuit_failure
37	analog_input_1;d_circuit_failure
38	analog_input_2;d_circuit_failure
39	analog_input_3;d_circuit_failure
40	analog_input_4;d_circuit_failure
41	encoder_channel_a_cable_break
42	encoder_channel_b_cable_break
43	encoder_channel_z_cable_break
44	ssi_error
45	power_driver
46	internal_random_access_memory
47	internal_program_memory
48	internal_nonvolatile_memory
49	out_of_memory_error
50	software_coding
51	software_reset_(watchdog)
52	interrupt_time_exceeded
53	task_time_exceeded
54	parameter_initialisation_error
55	node_identifier_data_memory_corrupted
56	user_data_memory_corrupted
57	restore_data_memory_corrupted
58	factory_data_memory_corrupted
59	calibration_data_memory_corrupted
60	diagnosis_data_memory_corrupted
61	position_control_monitoring
62	velocity_control_monitoring
63	force_control_monitoring

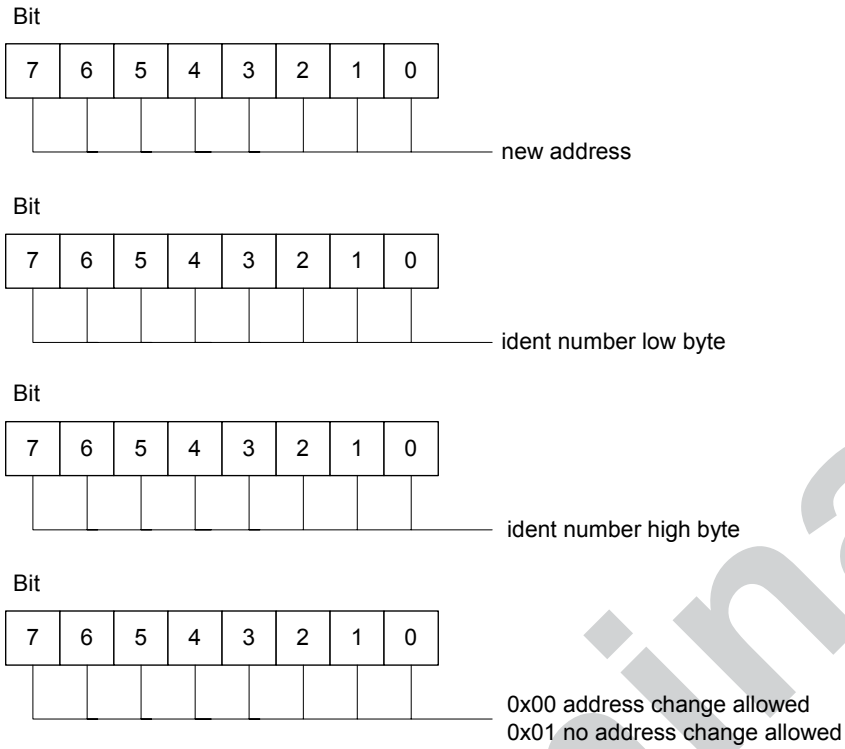
64	flow_control_monitoring
65	pressure_control_monitoring
66	current_control_monitoring
67	spool_position_control_monitoring
68	trajectory_generator_processing_error
69	eventhandler_exception
70	local_CAN_general_fault
71	local_CAN_overrun
72	local_CAN_in_Error_passiv_mode
73	local_CAN_recovered_from_bus-off
74	local_CAN_rpdo_1;d_time_out
75	local_CAN_rpdo_2;d_time_out
76	local_CAN_rpdo_3;d_time_out
77	local_CAN_rpdo_4;d_time_out
78	local_CAN_rpdo_1;d_data
79	local_CAN_rpdo_2;d_data
80	local_CAN_rpdo_3;d_data
81	local_CAN_rpdo_4;d_data
82	local_CAN_tpdo_1;d_time_out
83	local_CAN_tpdo_2;d_time_out
84	local_CAN_tpdo_3;d_time_out
85	local_CAN_tpdo_4;d_time_out
86	local_CAN_tpdo_1;d_data
87	local_CAN_tpdo_2;d_data
88	local_CAN_tpdo_3;d_data
89	local_CAN_tpdo_4;d_data
90	CAN_general_fault
91	CAN_overrun
92	CAN_in_error_passiv_mode
93	CAN_recovered_from_bus-off
94	CAN_rpdo_1;d_time_out
95	CAN_rpdo_2;d_time_out
96	CAN_rpdo_3;d_time_out
97	CAN_rpdo_4;d_time_out
98	CAN_rpdo_1;d_data
99	CAN_rpdo_2;d_data
100	CAN_rpdo_3;d_data
101	CAN_rpdo_4;d_data
102	CAN_tpdo_1;d_time_out
103	CAN_tpdo_2;d_time_out
104	CAN_tpdo_3;d_time_out
105	CAN_tpdo_4;d_time_out
106	CAN_tpdo_1;d_data
107	CAN_tpdo_2;d_data
108	CAN_tpdo_3;d_data
109	CAN_tpdo_4;d_data
110	CAN_life_guard_error_or_heartbeat_error
111	CAN_sync_producer_time_out
112	CAN_sync_consumer_time_out
113	EtherCAT_communication_fault
114	EtherCAT_rpdo_time_out
115	EtherCAT_rpdo_data
116	EtherCAT_tpdo_time_out
117	EtherCAT_tpdo_data
118	PROFIBUS_general_fault

Table 4: Moog Error Codes

3.2 Changing station address

The factory setting for the PROFIBUS station address is by default 126. There are two possibilities to change the station address:

1. By sending the Set_Slave_Add telegram to the slave. The 4 data bytes of the telegram contain the new address, the identifier number and the flag whether the station address can be changed again. The identifier number of our digital interface valves is: 0x07F4. The “no address change” flag is cleared after a new boot up of the valve.



2. By writing on the “PROFIBUS module identifier” parameter.

The difference is that by using the Set_Slave_Add telegram the ID is changed immediately. When changing the value of the module identifier (e.g., over the parameter channel, or via the service interface) the new station address must then be saved through the “store/restore” routines and is used on the next boot up of the valve.

Slot	Index	Name	Data Type	Access	Persistence	Value Range	Default
64	0	PROFIBUS module ID	UINT08	rw	Y	1 .. 126	126

The node ID which can be read out through the service connector or over the PROFIBUS gives back the actual mode ID of the valve. If the module ID id changed over the PROFIBUS telegram the node ID is immediately changed. If the module ID is changed over parameter access the node ID still holds the actual module ID until the next boot up of the slave.

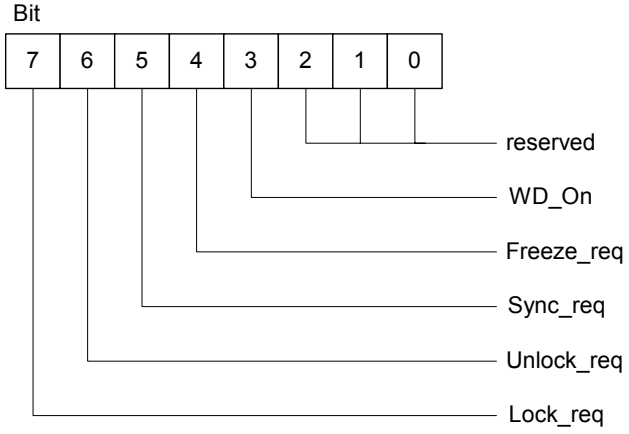
Slot	Index	Name	Data Type	Access	Persistence	Value Range	Default
64	33	PROFIBUS node ID	UINT08	rw	N	1 .. 126	126

Because all slaves have the factory setting station number 126 it is recommended to install the valves one by one and configure the station address or to switch them on in a sequence because then the PLC can establish a peer tp peer connection to the slave to configure the node ID. If more than one new valve is put into the bus with the ID 126 the PLC can not identify that there is more than one unconfigured slave. It is also possible to preconfigure the valves over the service connector before in stalling them in the PROFIBUS.

3.3 Parameter telegram

With the parameter telegram the master identifies itself and defines in which mode the slave will be operated, e.g., which global control commands will be accepted by the slave.

Byte 1:



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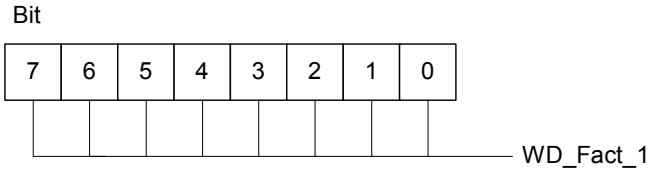
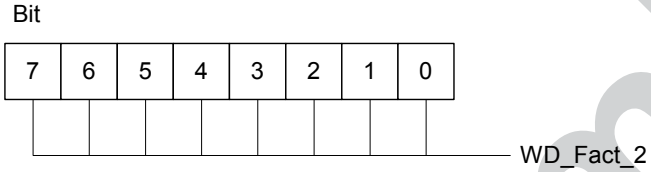


Byte 3:



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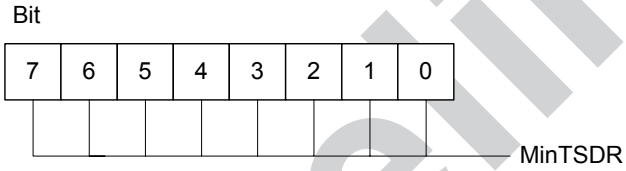
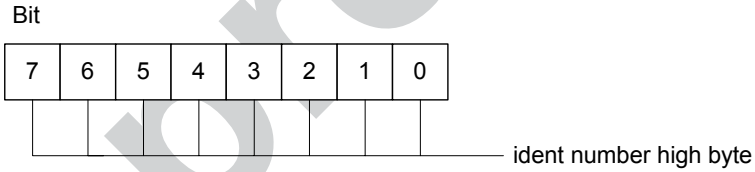
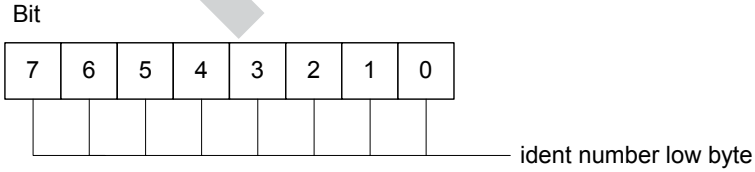


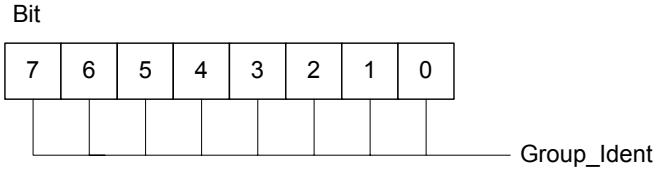
Byte 5:



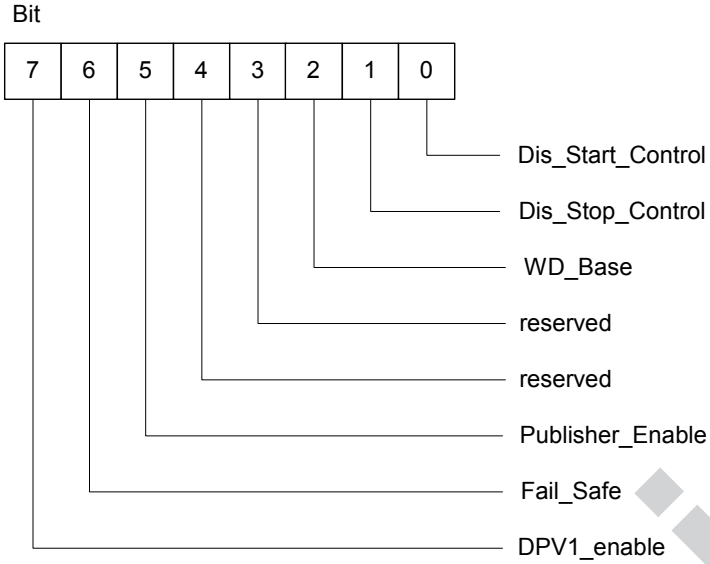
Byte 6:



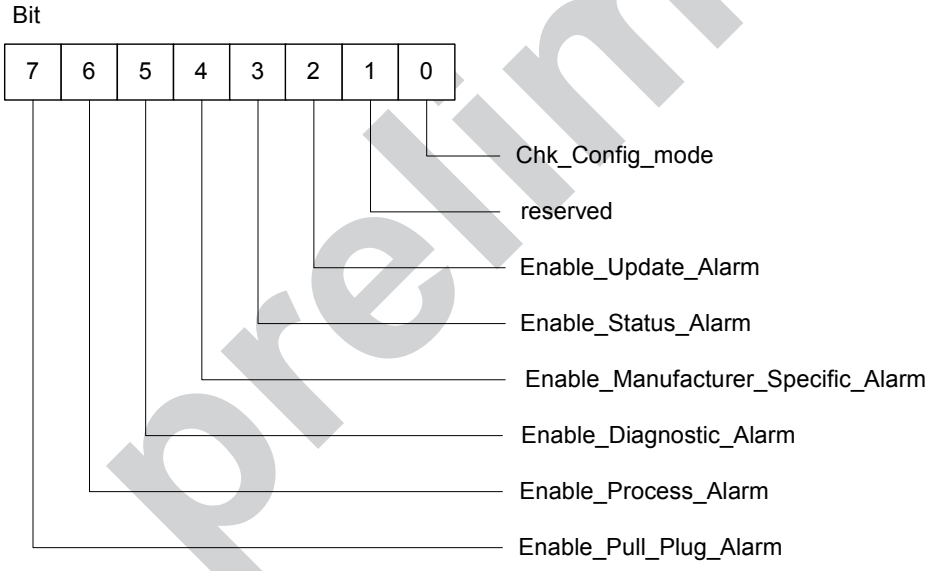
Byte 7:



Byte 8:



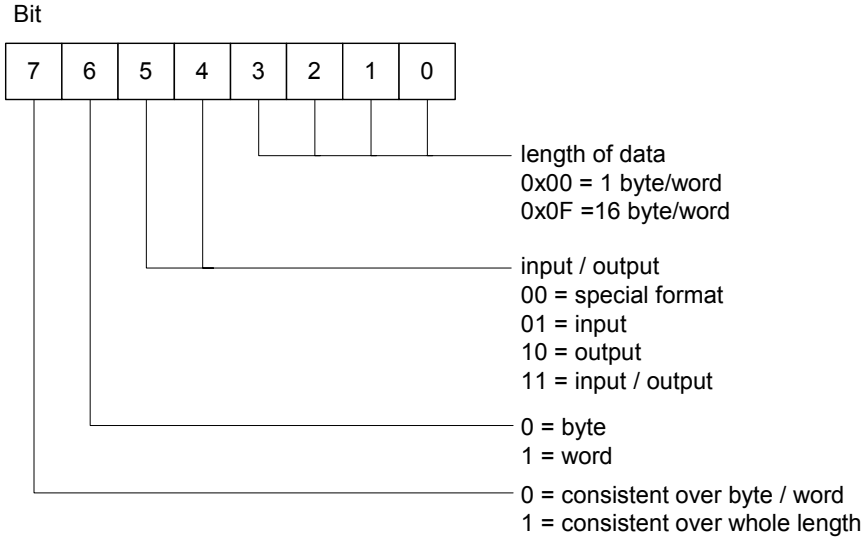
Byte 9:



3.4 Configuration telegram

After the parameterization the master sends a configuration telegram to the slave. The slave checks the configuration of the master with its own and confirms or rejects the telegram. In one byte of the data unit of the telegram up to 16 bytes or words can be described. The signature of configuration which use the parameter channel contains the configuration byte 0xF3 (simultaneous in and out data, 4 words, full length consistency).

All bytes of the configuration telegram have the following coding:



Because there are many possibilities of coding the same input/output configuration it is necessary to use the coding the valve has calculated on the PLC. Otherwise the configuration from the PLC will be rejected.

The valve provides multiple predefined communication telegram configurations. To choose which telegram to use the parameter “TelegramSelection” has to be set to the right value.

Slot	Index	Name	Data Type	Access	Persis-tence	Value Range	Default
0	46	PROFIBUS telegram selector	UINT08	ro	Y	UINT08	3

Table of standardized and predefined telegrams:

Telegram	Description	Parameter Map-ping	Configuration	Meaning
0	User defined telegram	…	…	…
1	drives + par chn	Out : Par Chn Control word Position Setpoint In: Par chn Status word Position Value	0xF3,0xE2,0xD2	4 words input/output 3 words output 3 words input
2	drives	Out : Control word Position Setpoint In: Status word Position Value	0xE2,0xD2	3 words output 3 words input
3*	valves Q + par chn	Out : Par Chn Control word Spool Setpoint In: Par chn Status word Spool Value	0xF3,0xE1,0xD1	4 words input/output 2 words output 2 words input
4	valves Q	Out : Control word Spool Setpoint In: Status word Spool Value	0xE1,0xD1	2 words output 2 words input
5	valves p/Q + par chn	Out : Par Chn Control word	0xF3,0xE2,0xD2	4 words input/output 3 words output 3 words input

		Spool Setpoint Pressure Setpoint In: Par chn Status word Spool Value Pressure Value		
6	valves p/Q	Out : Control Word Spool Setpoint Pressure Setpoint In: Status Word Spool Value Pressure Value	0xE2,0xD2	3 words output 3 words input
100	valves p + par chn	Out : Par Chn Control word Spool Setpoint Pressure Setpoint In: Par chn Status word Spool Value Pressure value	0xF3,0xE1,0xD1	4 words input/output 2 words output 2 words input
101	valves p	Out : Control word Pressure Setpoint In: Status word Pressure Value	0xE1,0xD1	2 words output 2 words input

Table 5: Telegram Description

*Telegram number 3 is the factory default configuration.

When the “user defined telegram” is used the valve automatically calculates the needed PROFIBUS configuration while the telegrams are put together. The number of configuration bytes and the configuration bytes can read out from the valve. After changing the parameter “Telegram Selection” the valve automatically calculates the new configuration which will be active after the next boot up. To find out which configuration has been calculated the number of relevant configuration bytes can be read out from the parameter “PROFIBUS cofiguration length”. The GSD-file which is delivered with the valve already contains the configurations for the standard telegrams.

Slot	Index	Name	Data Type	Access	Persis-tence	Value Range	Default
64	2	PROFIBUS configuration length	UINT08	ro	Y	UINT08	-

After reading out the number of configuration bytes the coding of this bytes can be looked up in the parameters which define the input or output configuration:

Slot	Index	Name	Data Type	Access	Persis-tence	Value Range	Default
64	3 .. 9	PROFIBUS input/output configuration	UINT08	rw	N	UINT08	-

User defined Telegram

If a user defined telegram is used the standard signals described in the profile can be used. If other parameters shall be transmitted cyclically over the PROFIBUS they have to be named in the following parameters

Slot	Index	Name	Data Type	Access	Persis-tence	Value Range	Default
64	17 .. 32	PROFIBUS signal parameter 1 .. 16	INT32	rw	N	INT32	0

By assigning the parameters to the “PROFIBUS signal parameters” 1 ..16 they are automatically assigned to the signal 240 .. 255. These Signals can now be assigned to the profile conform parameters which define the cyclic telegram.

Master to Slave Telegram Project MSB:

This parameter can contain up to four signal numbers which stand for the parameters which are transmitted from the master to the slave.

Slot	Index	Name	Data Type	Access	Persis-tence	Value Range	Default
0	42	Master to Slave Telegram Project MSB	INT32	rw	N	INT32	0

Master to Slave Telegram Project LSB:

This parameter can contain up to four signal numbers which stand for the parameters which are transmitted from the master to the slave.

Slot	Index	Name	Data Type	Access	Persis-tence	Value Range	Default
0	43	Master to Slave Telegram Project LSB	INT32	rw	N	INT32	0

Slave to Master Telegram Project MSB:

This parameter can contain up to four signal numbers which stand for the parameters which are transmitted from the slave to the master.

Slot	Index	Name	Data Type	Access	Persis-tence	Value Range	Default
0	44	Slave to Master Telegram Project MSB	INT32	rw	N	INT32	0

Slave to Master Telegram Project LSB:

This parameter can contain up to four signal numbers which stand for the parameters which are transmitted from the slave to the master.

Slot	Index	Name	Data Type	Access	Persis-tence	Value Range	Default
0	45	Slave to Master Telegram Project LSB	INT32	rw	N	INT32	0

PROFIBUS parameter channel activation:

The parameter is used to define whether the parameter channel shall be activated in the user defined telegram.

Slot	Index	Name	Data Type	Access	Persis-tence	Value Range	Default
64	10	PROFIBUS parameter channel activation (proprmchn)	UINT08	rw	Y	0 .. 1	0

3.5 Global control

The valves have the possibility to read and process global control telegrams. With the functions of this telegrams it is possible to “SYNC” the set command values to the valve while the valve continues operating. The valve uses the last set command to control the system, this gives the PLC the time and possibility to update the set commands of the whole application. With the “UNSYNC” function the PLC frees the new set command to the valve which starts controlling from this time with the set command. This is needed to synchronize groups of valves to the same set command or to get a system image of actual values.

Supported Global Control Commands:

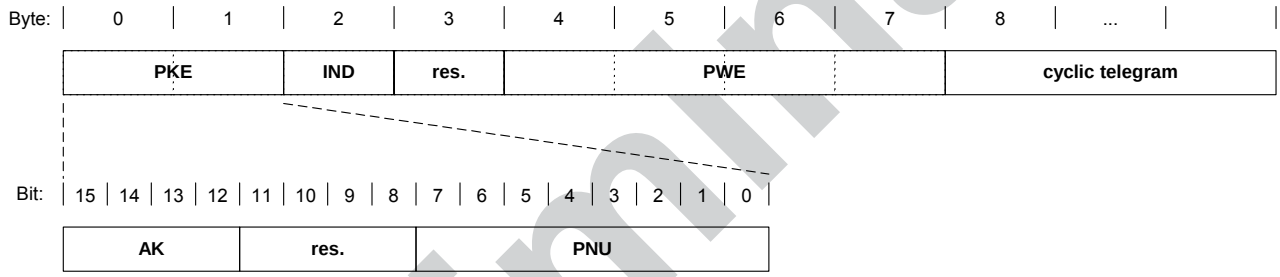
- SYNC
- UNSYNC
- FREEZE
- UNFREEZE

3.6 Parameter channel

There is the possibility to add a mechanism to configure parameters on the valve called the “parameter channel”. This mechanism adds 8 additional bytes of data into the input as well as the output telegram which are reserved for the transfer of parameters from master to slave or vice versa. The first 4 bytes are used to code the request or the response, the next 4 bytes contain the parameter data or in case of an transmission error the error code which is set by the slave.

Through this channel most of the parameters on the valve can be accessed, the only restriction of this mechanism is that the data to be send must consist of maximum four bytes. Thus makes it impossible to transfer arrays or look up tables.

The following schematic shows a cyclic telegram with the 8 additional bytes for the parameter channel communication. The coding for input and output telegram are equal. Only the interpretation of the command and value bytes differs between input and output.



- PKE: Parameter signature value.
- IND: Defines the index within the specified slot.
- res. Reserved bits or bytes (must be zero!).
- PWE: Process value.
- AK: Instruction/response signature (see following coding table).
- PNU: Parameter number (slot number of the parameter).

The complete coding of the parameter channel is conform to the parameter channel which is described in the “Fluid Power Technology” profile and the “ProfiDrive” profile (V2.0)

Commands (AK):

Signature	Function	Positive	Negative
0	No instruction	0	7
1	Parameter value read	1, 2, 11	7
2	Parameter value write (word)	1	7
3	Parameter value write (double word)	2	7
4 .. 9	reserved		
10	Parameter value write (byte)	11	7

Table 6: Parameter Channel Commands

Response commands (AK):

Signature	Function

0	No Response
1	Parameter value transmitted (word)
2	Parameter value transmitted (double word)
3 .. 6	Reserved
7	Instruction not processable (see error code)
8 .. 10	reserved
11	Parameter value transmitted (byte)

Table 7: Parameter Channel Response

If the valve is not capable of processing the request from the PLC or the coding of the parameter channel is not correct the valve respond with an error code in the data section of the parameter channel instead of the requested value or zero value in case of an write command.

Table of error codes (PWE):

Error Code	**Semantic**
0	undefined PNU
1	Parameter not changeable
2	Lower or upper value range limit overflow
3	Subindex error
4	No array
5	Data type error
6	Setting not allowed (only reset-table)
7	Description element not change-able
8	reserved
9	reserved
10	Access group error
11	No operation sovereignty
12	password error
13	Text not readable in cyclic data transfer
14	Name not readable in cyclic data transfer
15	No text array existent
16	reserved
17	Instruction not processable caused by bad operation state
18	other errors
19	Data not readable in cyclic error
20 .. 100	reserved for all PNO profiles
101 .. 200	reserved for future profile extensions
210 .. 255	vendor specific

Table 8: Parameter Channel Error Codes

4 Store/Restore

It is possible to save the changes of configuration inside a non volatile memory area of the electronic.

4.1 Store

To save the configuration changes a write access to the function “StoreParameters” has to be performed.

Slot	**Index**	**Name**	**Data Type**	**Access**	**Persis-tence**	**Value Range**	**Default**

0	51	Store Parameters	INT32	rw	N	INT32	0

Value table:

Value	Function
0x73617665 (‘save’)	“StoreParameters” function is called
...	all other values are rejected

Table 9: Store

4.2 Restore

To reset the configuration of the valve to factory default settings a write access to the function “RestoreDefaultParameters” has to be performed.

Slot	Index	Name	Data Type	Access	Persis-tence	Value Range	Default
0	52	Restore Default Parameters	INT32	rw	N	INT32	0

Value table:

Value	Function
0x6C6F6164 (‘load’)	“RestoreDefaultParameters” function is called
...	all other values are rejected

Table 10: Restore

When the “RestoreDefaultParameters” function is started the configuration of the valve is reset to the factory default values. The new parameters are automatically stored in the internal nonvolatile memory of the valve. Because also the communication configuration of the valve is restored the valve performs a restart of the application program to reinitialize the communication interface. Therefore the “RestoreDefaultParameters” request is not acknowledged by the valve, because the communication configuration is changed immediately. The valve automatically restarts the PROFIBUS state machine and waits for the new parameterization and configuration from the master.

! A “RestoreDefaultParameters” may only be performed in a save machine state because all configuration changes like communication parameters or controller adjustments are set back to factory default.

5 PROFIBUS hardware and cabling

5.1 Complied hardware standards

The PROFIBUS Interface Hardware is successfully tested according testspecification for PROFIBUS slaves Version 2.0 of the PNO, Order No: 2.032.

5.2 Cabling of PROFIBUS Slaves

The use of 2-wire PROFIBUS cables is recommended to prevent parallel connection of the power supplies for the terminating resistors. The IEC 61158 specifies two kind of bus cables. Type B is no more up to date and should not be used any more.

Parameter	Cable (Type A)
Characteristic wave impedanc e (Ω)	135 ... 165 bei 3 ... 20 MHz
Mutual capacitance (pF/m)	< 30
Loop resistance (Ω /km)	< 110
Wire diameter (mm)	> 0,64
Wire cross-section (mm^2)	> 0,34

Table 11: PROFIBUS cable Characteristics

5.3 Advice according Baude rates

At bitrates higher than 1500 kbit/s no stubs should be used. If the stubs are necessary, no termination resistors may be placed in this circuits. Cable stubs up to 1500 kbit/s should be in sum smaller than 6,6 m.

Cable lengths for different bitrates:

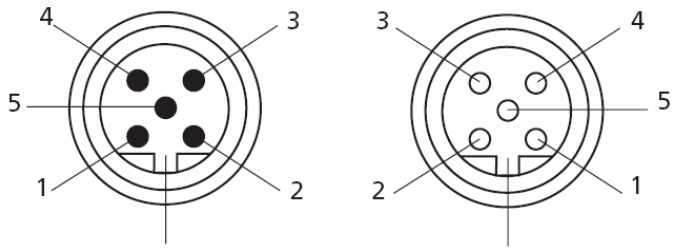
Supported bitrates (kBit/s)	Maximum cable length (m)
9,6	1200
19,2	1200
45,45	1200
93,75	1200
187,5	1200
500	400
1500	200
3000	100
6000	100
12000	100

Table 12: Bitrate/Cable length

5.4 PROFIBUS connectors

The valve is equipped with two M12 (male, female) 5 pole PROFIBUS connectors, B-coded according to the IEC 61076-2-101.

X3 (male) **X4 (female)**



Pin	Signal (X3, X4)	
1	Profi V+	Supply voltage for termination resistors
2	Profi A	Rx/Tx data -
3	Profi GND	supply voltage ground
4	Profi B	Rx/Tx data +
5	Shield	cable shield

Table 13: Pin Assignment

6 Object dictionary

! On request, we provide a GSD file. The GSD file is needed to import the communication specification into the PROFIBUS projecting system. It contains the supported functionalities and the predefined communication telegrams.

Slot	Index	Short Name	Specification	Block Name	Parameter Name	Data Type	Access Level	Persistence	Value Range	Default
0	20	devvennam	DS408	Device	VendorName	STRING	ro	-		MOOG GmbH, Hanns-Klemm-Strasse 28, D-71034 Boeblingen, Germany
0	21	provenide	DIV	Pro	Vendor_ID	UINT16	ro	-	UINT16	2036
0	22	devver	DS408	Device	DeviceVersion	STRING	ro	-		
0	26	manhdwver	DS301	Device	ManufacturerHardwareVersion	STRING	ro	-		
0	28	sernum	DS408	Device	SerialNo	STRING	ro	-		
0	30	devmdldsc	DS408	Device	ModelDescription	STRING	ro	-		
0	32	devcodnum	DS408	Device	CodeNo	UINT16	rw	Y	UINT16	
0	33	devdsc	DS408	Device	Description	STRING	rw	Y		
0	36	deverrcod	DIV	Pro	ErrorCode	UINT16	ro	-	UINT16	
0	37	ctlwrd	DS408	Device	ControlWord	UINT16	rw	N	UINT16	
0	38	stswrd	DS408	Device	StatusWord	UINT16	ro	-	UINT16	
0	39	devmod	DS408	Device	DeviceMode	INT8	rw	N	1...4	DeviceModeDefault
0	40	ctlmod	DS408	Device	ControlMode	INT8	rw	N	-1...9	ControlModeDefault
0	41	locmod	DS408	Device	Local	INT8	rw	Y	-128...1	
0	42	prom2stpm	DIV	Pro	Master2SlaveTelegramProjectMSB	UINT32	rw	Y	UINT32	
0	43	prom2stpl	DIV	Pro	Master2SlaveTelegramProjectLSB	UINT32	rw	Y	UINT32	
0	44	pros2mtpm	DIV	Pro	Slave2MasterTelegramProjectMSB	UINT32	rw	Y	UINT32	
0	45	pros2mtpl	DIV	Pro	Slave2MasterTelegramProjectLSB	UINT32	rw	Y	UINT32	
0	46	protelsel	DIV	Pro	TelegramSelection	UINT8	rw	Y	UINT8	3
0	50	devcap	DS408	Device	Capability	UINT32	ro	-	16777216...105700556 8	1056964608
0	51	stopar	DS301	StoreParameters	SaveAllParameters	UINT32	rw	N	UINT32	1
0	52	rstpar	DS301	RestoreDefaultParameters	RestoreAllDefaultParameters	UINT32	rw	N	UINT32	1
0	202	pwrdly	DIV	System	PowerOnDelay	UINT8	rw	Y	0...10	
0	203	prspar	DIV	ValvePressureControl	SetpointParameter	UINT32	ro	-	UINT32	1669333264
0	204	splpar	DIV	ValvePositionControl	SetpointParameter	UINT32	ro	-	UINT32	1660944656
0	205	ctllocdef	DIV	Device	LocalControlWordDefault	UINT16	rw	Y	UINT16	263
0	206	ctlloc	DIV	Device	LocalControlWord	UINT16	rw	N	UINT16	LocalControlWordDefault
0	207	devmoddef	DIV	Device	DeviceModeDefault	INT8	rw	Y	1...2	1
0	208	ctlmoddef	DIV	Device	ControlModeDefault	INT8	rw	Y	1...9	2
0	209	faisaftyp	DIV	ValveFailSafeWindowMonitoring	Typ	INT8	ro	-	0...1	
0	210	faisafupp	DIV	ValveFailSafeWindow-	UpperLimit	INT16	ro	-	Lower-	16384

				Monitoring					Limit...32767	
0	211	faisaflow	DIV	ValveFailSafeWindow-Monitoring	LowerLimit	INT16	ro	-	-32768...UpperLimit	-16384
2	20	vlvtrditf	DS408	Valve_ActualValueConditioning	InterfaceNo	UINT8	rw	N	1...4	1
2	21	vlvtrdmax	DS408	Valve_ActualValueConditioning	MaxInterfaceNo	UINT8	ro	-	UINT8	4
2	22	vlvtrdtyp	DS408	Valve_ActualValueConditioning	Type	INT8	rw	N	INT8	
2	23	trdprsmin	DS408	Valve_ActualValueConditioning	MinimumPressure	INT16	rw	N	INT16	
2	25	trdprssigmin	DS408	Valve_ActualValueConditioning	MinimumTransducerSignal	INT16	rw	N	INT16	
2	26	trdprsmax	DS408	Valve_ActualValueConditioning	MaximumPressure	INT16	rw	N	INT16	16384
2	28	trdprssigmax	DS408	Valve_ActualValueConditioning	MaximumTransducerSignal	INT16	rw	N	INT16	16384
2	29	trdprsare	DS408	Valve_ActualValueConditioning	Area	INT16	rw	N	INT16	
2	32	trdprsofs	DS408	Valve_ActualValueConditioning	PressureOffset	INT16	rw	N	INT16	
2	83	vlvtrdval	DS408	Valve_ActualValueConditioning	ActualValue	INT16	ro	-	INT16	
2	86	vlvtrdsgn	DS408	Valve_ActualValueConditioning	Sign	INT8	rw	N	-1...1	1
2	87	trditfval	DS408	Valve_ActualValueConditioning	ActualValue1	INT16	ro	-	INT16	
2	88	trditfval	DS408	Valve_ActualValueConditioning	ActualValue2	INT16	ro	-	INT16	
2	89	trditfval	DS408	Valve_ActualValueConditioning	ActualValue3	INT16	ro	-	INT16	
2	90	trditfval	DS408	Valve_ActualValueConditioning	ActualValue3	INT16	ro	-	INT16	
2	201	vlvtrdpar	DIV	Valve_ActualValueConditioning	TransducerPort	UINT32	rw	N	UINT32	
21	1	spldemplt	DIV	ValvePositionControl	DemandValvePilot	INT16	ro	-	INT16	
21	2	splvalplt	DIV	ValvePositionControl	ActualValvePilot	INT16	ro	-	INT16	
21	21	splset	DS408	ValvePositionControl	Setpoint	INT16	rw	N	INT16	
21	22	spluni	DS408	ValvePositionControl	Unit	UINT8	ro	-	UINT8	0
21	23	splprf	DS408	ValvePositionControl	Prefix	INT8	ro	-	INT8	0
21	24	spldem	DS408	ValvePositionCon-trol_DemandValueGenerator	DemandValue	INT16	ro	-	INT16	
21	25	spluni	DS408	ValvePositionControl	Unit	UINT8	ro	-	UINT8	0
21	26	splprf	DS408	ValvePositionControl	Prefix	INT8	ro	-	INT8	0

21	27	splref	DS408	ValvePositionControl_DemandValueGenerator	ReferenceValue	INT16	ro	-	INT16	16384
21	28	spluni	DS408	ValvePositionControl	Unit	UINT8	ro	-	UINT8	0
21	29	splprf	DS408	ValvePositionControl	Prefix	INT8	ro	-	INT8	0
21	30	splsethld	DS408	ValvePositionControl_DemandValueGenerator	HoldSetPoint	INT16	rw	Y	INT16	
21	31	spluni	DS408	ValvePositionControl	Unit	UINT8	ro	-	UINT8	0
21	32	splprf	DS408	ValvePositionControl	Prefix	INT8	ro	-	INT8	0
21	33	spllimupp	DS408	ValvePositionControl_DemandValueGenerator_Limit	UpperLimit	INT16	rw	Y	LowerLimit...32767	16384
21	34	spluni	DS408	ValvePositionControl	Unit	UINT8	ro	-	UINT8	0
21	35	splprf	DS408	ValvePositionControl	Prefix	INT8	ro	-	INT8	0
21	36	spllimlow	DS408	ValvePositionControl_DemandValueGenerator_Limit	LowerLimit	INT16	rw	Y	-32768...UpperLimit	-16384
21	37	spluni	DS408	ValvePositionControl	Unit	UINT8	ro	-	UINT8	0
21	38	splprf	DS408	ValvePositionControl	Prefix	INT8	ro	-	INT8	0
21	39	spldemfct	DS408	ValvePositionControl_DemandValueGenerator_Scaling	Factor	UINT32	rw	Y	UINT32	65537
21	40	spldemofs	DS408	ValvePositionControl_DemandValueGenerator_Scaling	Offset	INT16	rw	Y	INT16	
21	41	spluni	DS408	ValvePositionControl	Unit	UINT8	ro	-	UINT8	0
21	42	splprf	DS408	ValvePositionControl	Prefix	INT8	ro	-	INT8	0
21	43	splrmptyp	DS408	ValvePositionControl_DemandValueGenerator_Ramp	Type	INT8	rw	Y	0...3	
21	44	splrmpacl	DS408	ValvePositionControl_DemandValueGenerator_Ramp	AccelerationTime	UINT16	rw	Y	UINT16	
21	45	timuni	DS408	-	Unit	UINT8	ro	-	UINT8	3
21	46	splrmpaclprf	DS408	ValvePositionControl_DemandValueGenerator_Ramp	AccelerationTime_Prefix	INT8	rw	Y	-4...0	-3
21	47	splrmpaclneg	DS408	ValvePositionControl_DemandValueGenerator_Ramp	AccelerationTimeNegative	UINT16	rw	Y	UINT16	
21	48	timuni	DS408	-	Unit	UINT8	ro	-	UINT8	3
21	49	splrmpaclnegprf	DS408	ValvePositionControl_DemandValueGenerator_Ramp	AccelerationTimeNegative_Prefix	INT8	rw	Y	-4...0	-3
21	50	splrmpaclpos	DS408	ValvePositionControl_DemandValueGene	AccelerationTimePositive	UINT16	rw	Y	UINT16	

21	51	timuni	DS408	rator_Ramp -	Unit	UINT8	ro	-	UINT8	3
21	52	splrmpaclposprf	DS408	ValvePositionCon-trol_DemandValueGene rator_Ramp	AccelerationTimePositive_Prefix	INT8	rw	Y	-4...0	-3
21	53	splrmpdcl	DS408	ValvePositionCon-trol_DemandValueGene rator_Ramp	DecelerationTime	UINT16	rw	Y	UINT16	
21	54	timuni	DS408	-	Unit	UINT8	ro	-	UINT8	3
21	55	splrmpdclprf	DS408	ValvePositionCon-trol_DemandValueGene rator_Ramp	DecelerationTime_Prefix	INT8	rw	Y	-4...0	-3
21	56	splrmpdclneg	DS408	ValvePositionCon-trol_DemandValueGene rator_Ramp	DecelerationTimeNegative	UINT16	rw	Y	UINT16	
21	57	timuni	DS408	-	Unit	UINT8	ro	-	UINT8	3
21	58	splrmpdclnegprf	DS408	ValvePositionCon-trol_DemandValueGene rator_Ramp	DecelerationTimeNegative_Prefix	INT8	rw	Y	-4...0	-3
21	59	splrmpdclpos	DS408	ValvePositionCon-trol_DemandValueGene rator_Ramp	DecelerationTimePositive	UINT16	rw	Y	UINT16	
21	60	timuni	DS408	-	Unit	UINT8	ro	-	UINT8	3
21	61	splrmpdclposprf	DS408	ValvePositionCon-trol_DemandValueGene rator_Ramp	DecelerationTimePositive_Prefix	INT8	rw	Y	-4...0	-3
21	86	spldirtyp	DS408	ValvePositionCon-trol_DemandValueGene ra-tor_DirectionalDepende ntGain	Type	UINT8	rw	Y	0...1	
21	87	spldirfct	DS408	ValvePositionCon-trol_DemandValueGene ra-tor_DirectionalDepende ntGain	Factor	UINT32	rw	Y	UINT32	65537
21	96	splchrtyp	DS408	ValvePositionCon-trol_DemandValueGene ra-tor_CharacteristicComp ensation	Type	INT8	rw	Y	-1...0	
21	106	spldbdtyp	DS408	ValvePositionCon-trol_DemandValueGene ra-tor_DeadbandCompens ation	Type	INT8	rw	Y	0...2	
21	107	spldbdsida	DS408	ValvePositionCon-trol_DemandValueGene	ASide	INT16	rw	Y	0...16384	

				ra-tor_DeadbandCompensation						
21	108	spluni	DS408	ValvePositionControl	Unit	UINT8	ro	-	UINT8	0
21	109	splprf	DS408	ValvePositionControl	Prefix	INT8	ro	-	INT8	0
				ValvePositionCon-trol_DemandValueGene ra-tor_DeadbandCompens						
21	110	spldbdsidb	DS408	ation	BSide	INT16	rw	Y	0...16384	
21	111	spluni	DS408	ValvePositionControl	Unit	UINT8	ro	-	UINT8	0
21	112	splprf	DS408	ValvePositionControl	Prefix	INT8	ro	-	INT8	0
				ValvePositionCon-trol_DemandValueGene ra-tor_DeadbandCompens						
21	113	spldbdtrs	DS408	ation	Threshold	INT16	rw	Y	0...16383	
21	114	spluni	DS408	ValvePositionControl	Unit	UINT8	ro	-	UINT8	0
21	115	splprf	DS408	ValvePositionControl	Prefix	INT8	ro	-	INT8	0
				ValvePositionCon-trol_DemandValueGene						
21	128	splzrocor	DS408	rator_ZeroCorrection	Offset	INT16	rw	Y	INT16	
21	129	spluni	DS408	ValvePositionControl	Unit	UINT8	ro	-	UINT8	0
21	130	splprf	DS408	ValvePositionControl	Prefix	INT8	ro	-	INT8	0
21	144	splval	DS408	ValvePositionControl	ActualValue	INT16	ro	-	INT16	
21	145	spluni	DS408	ValvePositionControl	Unit	UINT8	ro	-	UINT8	0
21	146	splprf	DS408	ValvePositionControl	Prefix	INT8	ro	-	INT8	0
21	147	splctldvn	DS408	ValvePositionControl	ControlDeviation	INT16	ro	-	INT16	
21	148	spluni	DS408	ValvePositionControl	Unit	UINT8	ro	-	UINT8	0
21	149	splprf	DS408	ValvePositionControl	Prefix	INT8	ro	-	INT8	0
				ValvePositionCon-trol_ControlMonitoring						
21	150	splmontyp	DS408	ValvePositionCon-trol_ControlMonitoring	Type	INT8	rw	Y	0...1	
21	151	splmonupp	DS408	ValvePositionControl	UpperThreshold	INT16	rw	Y	INT16	512
21	152	spluni	DS408	ValvePositionControl	Unit	UINT8	ro	-	UINT8	0
21	153	splprf	DS408	ValvePositionControl	Prefix	INT8	ro	-	INT8	0
				ValvePositionCon-trol_ControlMonitoring						
21	154	splmonlow	DS408	ValvePositionControl	LowerThreshold	INT16	rw	Y	INT16	-512
21	155	spluni	DS408	ValvePositionControl	Unit	UINT8	ro	-	UINT8	0
21	156	splprf	DS408	ValvePositionControl	Prefix	INT8	ro	-	INT8	0
				ValvePositionCon-trol_ControlMonitoring						
21	157	splmontim	DS408	ValvePositionControl	DelayTime	UINT16	rw	Y	UINT16	30
21	158	timuni	DS408	-	Unit	UINT8	ro	-	UINT8	3
21	159	timprf	DS408	-	Prefix	INT8	ro	-	INT8	-3
				PositionCon-trol_DemandValueGene						
21	231	splchrtbl	DIV	ra-	LookUpTable	DOMAIN	rw	Y		

				tor_CharacteristicCompensation						
21	232	splchrtbl	DIV	PositionControl_DemandValueGenerator_CharacteristicCompensation	LookUpTable	INT16	rw	Y	INT16	
21	233	splchrtbl	DIV	PositionControl_DemandValueGenerator_CharacteristicCompensation	LookUpTable	INT16	rw	Y	INT16	
21	234	splchrtbl	DIV	PositionControl_DemandValueGenerator_CharacteristicCompensation	LookUpTable	INT16	rw	Y	INT16	
22	21	prsset	DS408	ValvePressureControl	Setpoint	INT16	rw	N	INT16	
22	22	prsuni	DS408	ValvePressureControl	Unit	UINT8	ro	-	UINT8	0
22	23	prsprf	DS408	ValvePressureControl	Prefix	INT8	ro	-	INT8	0
22	24	prsdem	DS408	ValvePressureControl_DemandValueGenerator	Demand	INT16	ro	-	INT16	
22	25	prsuni	DS408	ValvePressureControl	Unit	UINT8	ro	-	UINT8	0
22	26	prsprf	DS408	ValvePressureControl	Prefix	INT8	ro	-	INT8	0
22	27	prsref	DS408	ValvePressureControl_DemandValueGenerator	ReferenceValue	INT16	rw	N	0...32767	400
22	28	prsrefuni	DS408	ValvePressureControl_DemandValueGenerator_Reference	Unit	UINT8	ro	-	UINT8	78
22	29	prsprf	DS408	ValvePressureControl	Prefix	INT8	ro	-	INT8	0
22	30	prssethld	DS408	ValvePressureControl_DemandValueGenerator	HoldSetPoint	INT16	rw	Y	INT16	
22	31	prsuni	DS408	ValvePressureControl	Unit	UINT8	ro	-	UINT8	0
22	32	prsprf	DS408	ValvePressureControl	Prefix	INT8	ro	-	INT8	0
22	33	prslimupp	DS408	ValvePressureControl_DemandValueGenerator_Limit	UpperLimit	INT16	rw	Y	Lower-Limit...32767	16384
22	34	prsuni	DS408	ValvePressureControl	Unit	UINT8	ro	-	UINT8	0
22	35	prsprf	DS408	ValvePressureControl	Prefix	INT8	ro	-	INT8	0
22	36	prslimlow	DS408	ValvePressureControl_DemandValueGenerator_Limit	LowerLimit	INT16	rw	Y	-32768...UpperLimit	-16384
22	37	prsuni	DS408	ValvePressureControl	Unit	UINT8	ro	-	UINT8	0
22	38	prsprf	DS408	ValvePressureControl	Prefix	INT8	ro	-	INT8	0

22	39	prsdemfct	DS408	ValvePressureControl_DemandValueGenerator_Scaling	Factor	UINT32	rw	Y	UINT32	65537
22	40	prsdemofs	DS408	ValvePressureControl_DemandValueGenerator_Scaling	Offset	INT16	rw	Y	INT16	
22	41	prsuni	DS408	ValvePressureControl	Unit	UINT8	ro	-	UINT8	0
22	42	prsprf	DS408	ValvePressureControl	Prefix	INT8	ro	-	INT8	0
22	43	prsrmptyp	DS408	ValvePressureControl_DemandValueGenerator_Ramp	Type	INT8	rw	Y	0...3	
22	44	prsrmpacl	DS408	ValvePressureControl_DemandValueGenerator_Ramp	AccelerationTime	UINT16	rw	Y	UINT16	
22	45	timuni	DS408	-	Unit	UINT8	ro	-	UINT8	3
22	46	prsrmpaclprf	DS408	ValvePressureControl_DemandValueGenerator_Ramp	AccelerationTime_Prefix	INT8	rw	Y	-4...0	-3
22	47	prsrmpaclneg	DS408	ValvePressureControl_DemandValueGenerator_Ramp	AccelerationTimeNegative	UINT16	rw	Y	UINT16	
22	48	timuni	DS408	-	Unit	UINT8	ro	-	UINT8	3
22	49	prsrmpaclnegprf	DS408	ValvePressureControl_DemandValueGenerator_Ramp	AccelerationTimeNegative_Prefix	INT8	rw	Y	-4...0	-3
22	50	prsrmpaclpos	DS408	ValvePressureControl_DemandValueGenerator_Ramp	AccelerationTimePositive	UINT16	rw	Y	UINT16	
22	51	timuni	DS408	-	Unit	UINT8	ro	-	UINT8	3
22	52	prsrmpaclposprf	DS408	ValvePressureControl_DemandValueGenerator_Ramp	AccelerationTimePositive_Prefix	INT8	rw	Y	-4...0	-3
22	53	prsrmpdcl	DS408	ValvePressureControl_DemandValueGenerator_Ramp	DecelerationTime	UINT16	rw	Y	UINT16	
22	54	timuni	DS408	-	Unit	UINT8	ro	-	UINT8	3
22	55	prsrmpdclprf	DS408	ValvePressureControl_DemandValueGenerator_Ramp	DecelerationTime_Prefix	INT8	rw	Y	-4...0	-3
22	56	prsrmpdclneg	DS408	ValvePressureControl_DemandValueGenerator_Ramp	DecelerationTimeNegative	UINT16	rw	Y	UINT16	
22	57	timuni	DS408	-	Unit	UINT8	ro	-	UINT8	3
22	58	prsrmpdclnegprf	DS408	ValvePressureControl_DemandValueGenerator_Ramp	DecelerationTimeNegative_Prefix	INT8	rw	Y	-4...0	-3
22	59	prsrmpdclpos	DS408	ValvePressureCon-	DecelerationTimePositive	UINT16	rw	Y	UINT16	

				trol_DemandValueGenerator_Ramp					
22	60	timuni	DS408	-	Unit	UINT8	ro	-	UINT8	3
22	61	prsrmpdclposprf	DS408	ValvePressureControl_DemandValueGenerator_Ramp	DecelerationTimePositive_Prefix	INT8	rw	Y	-4...0	-3
22	144	prsval	DS408	ValvePressureControl	ActualValue	INT16	ro	-	INT16	
22	145	prsuni	DS408	ValvePressureControl	Unit	UINT8	ro	-	UINT8	0
22	146	prsprf	DS408	ValvePressureControl	Prefix	INT8	ro	-	INT8	0
22	147	prsctldvn	DS408	ValvePressureControl	ControlDeviation	INT16	ro	-	INT16	
22	148	prsuni	DS408	ValvePressureControl	Unit	UINT8	ro	-	UINT8	0
22	149	prsprf	DS408	ValvePressureControl	Prefix	INT8	ro	-	INT8	0
22	150	prsmontyp	DS408	ValvePressureControl_ControlMonitoring	Type	INT8	rw	Y	0...1	
22	151	prsmonupp	DS408	ValvePressureControl_ControlMonitoring	UpperThreshold	INT16	rw	Y	INT16	512
22	152	prsuni	DS408	ValvePressureControl	Unit	UINT8	ro	-	UINT8	0
22	153	prsprf	DS408	ValvePressureControl	Prefix	INT8	ro	-	INT8	0
22	154	prsmonlow	DS408	ValvePressureControl_ControlMonitoring	LowerThreshold	INT16	rw	Y	INT16	-512
22	155	prsuni	DS408	ValvePressureControl	Unit	UINT8	ro	-	UINT8	0
22	156	prsprf	DS408	ValvePressureControl	Prefix	INT8	ro	-	INT8	0
22	157	prsmontim	DS408	ValvePressureControl_ControlMonitoring	DelayTime	UINT16	rw	Y	UINT16	30
22	158	timuni	DS408	-	Unit	UINT8	ro	-	UINT8	3
22	159	timprf	DS408	-	Prefix	INT8	ro	-	INT8	-3
64	0	promodide	DIV	Pro	PROFIBUSModuleIdentifier	UINT8	rw	Y	1...126	126
64	1	probdr	DIV	Pro	PROFIBUSBitrate	UINT32	ro	-	0...1200000 0	
64	2	procfglen	DIV	Pro	Confguration_Telegram_Length	UINT8	ro	-	UINT8	
64	3	procfgio	DIV	Pro	ConfgurationTelegramBytes	UINT8	ro	-	UINT8	
64	9	procfgio	DIV	Pro	ConfgurationTelegramBytes	UINT8	ro	-	UINT8	
64	10	proprmchn	DIV	Pro	ParameterChannelActive	UINT8	rw	Y	0...1	
64	11	vpcsts	DIV	Pro	VPC3+b_Status	UINT16	ro	-	UINT16	
64	12	prodpv1mod	DIV	Pro	DPV1Mode	UINT8	ro	-	0...1	
64	13	ideobj	DIV	IdentityObject	VendorId	UINT32	ro	-	UINT32	2036
64	14	ideobj	DIV	IdentityObject	ProductCode	UINT32	ro	-	UINT32	
64	15	ideobj	DIV	IdentityObject	RevisionNumber	UINT32	ro	-	UINT32	
64	16	ideobj	DIV	IdentityObject	SerialNumber	UINT32	ro	-	UINT32	
64	17	prosigpar	DIV	Pro	SignalParameterSelection	UINT32	rw	Y	UINT32	
64	33	prosigpar	DIV	Pro	SignalParameterSelection	UINT32	rw	Y	UINT32	
64	33	pronodide	DIV	Pro	PROFIBUSActualNodeIdentifier	UINT8	ro	-	1...126	126
64	34	progct	DIV	Pro	PROFIBUSGlobalControlTelegram	UINT8	ro	-	UINT8	
66	1	cmpprstyp	DIV	ValvePressureControl	PressureControllerType	UINT8	rw	Y	UINT8	
66	16	cmpprstyp	DIV	ValvePressureControl	PressureControllerType	UINT8	rw	Y	UINT8	
66	17	cmpprsitf	DIV	ValvePressureControl	PressureControllerActiveTrans-	INT8	rw	Y	1...4	1

66	32	cmpprsitf	DIV	ValvePressureControl	ducerInterface PressureControllerActiveTrans-ducerInterface	INT8	rw	Y	1...4	1
66	33	cmpprsitfb	DIV	ValvePressureControl	PressureControllerTransducerInter-faceAreaB	INT8	rw	Y	0...4	
66	48	cmpprsitfb	DIV	ValvePressureControl	PressureControllerTransducerInter-faceAreaB	INT8	rw	Y	0...4	
66	49	cmpprsprs	DIV	ValvePressureControl	SystemPressure	INT16	rw	Y	INT16	
66	64	cmpprsprs	DIV	ValvePressureControl	SystemPressure	INT16	rw	Y	INT16	
66	65	cmpprspbr	DIV	ValvePressureControl	ReferencePressure	INT16	rw	Y	INT16	
66	80	cmpprspbr	DIV	ValvePressureControl	ReferencePressure	INT16	rw	Y	INT16	
66	81	cmpprschy	DIV	ValvePressureControl	HydraulicCapacity	FLOAT32	rw	Y	FLOAT32	
66	96	cmpprschy	DIV	ValvePressureControl	HydraulicCapacity	FLOAT32	rw	Y	FLOAT32	
66	97	cmpprsrmp	DIV	ValvePressureControl	RampSlope	UINT16	rw	Y	UINT16	
66	112	cmpprsrmp	DIV	ValvePressureControl	RampSlope	UINT16	rw	Y	UINT16	
66	113	cmpprspgn	DIV	ValvePressureControl	ProportionalGain	FLOAT32	rw	Y	Pres-sureNullCo n-stantF32...+ inv	
66	128	cmpprspgn	DIV	ValvePressureControl	ProportionalGain	FLOAT32	rw	Y	Pres-sureNullCo n-stantF32...+ inv	
66	129	cmpprsptm	DIV	ValvePressureControl	ProportionalGainTimeConstant	FLOAT32	rw	Y	Pres-sureNullCo n-stantF32...+ inv	
66	144	cmpprsptm	DIV	ValvePressureControl	ProportionalGainTimeConstant	FLOAT32	rw	Y	Pres-sureNullCo n-stantF32...+ inv	
66	145	cmpprsign	DIV	ValvePressureControl	IntegratorGain	FLOAT32	rw	Y	Pres-sureNullCo n-stantF32...+ inv	
66	160	cmpprsign	DIV	ValvePressureControl	IntegratorGain	FLOAT32	rw	Y	Pres-sureNullCo n-stantF32...+ inv	
66	161	cmpprsigf	DIV	ValvePressureControl	IntegratorFactor	FLOAT32	rw	Y	FLOAT32	
66	176	cmpprsigf	DIV	ValvePressureControl	IntegratorFactor	FLOAT32	rw	Y	FLOAT32	

66	177	cmpprsicr	DIV	ValvePressureControl	IntegratorControlRange	INT16	rw	Y	0...32767	163
66	192	cmpprsicr	DIV	ValvePressureControl	IntegratorControlRange	INT16	rw	Y	0...32767	163
66	193	cmpprsdgn	DIV	ValvePressureControl	DifferentiatorGain	FLOAT32	rw	Y	PressureNullConstantF32...+inv	
66	208	cmpprsdgn	DIV	ValvePressureControl	DifferentiatorGain	FLOAT32	rw	Y	PressureNullConstantF32...+inv	
66	225	cmpprsdtm	DIV	ValvePressureControl	DifferentiatorT1	FLOAT32	rw	Y	PressureNullConstantF32...+inv	
66	240	cmpprsdtm	DIV	ValvePressureControl	DifferentiatorT1	FLOAT32	rw	Y	PressureNullConstantF32...+inv	
66	241	cmpprsint	DIV	ValvePressureControl	IntegratorPart	FLOAT32	ro	-	FLOAT32	
66	242	cmpprspro	DIV	ValvePressureControl	ProportionalPart	FLOAT32	ro	-	FLOAT32	
66	243	cmpprsdt1	DIV	ValvePressureControl	DifferantialPart	FLOAT32	ro	-	FLOAT32	
66	246	prssetnum	DIV	ValvePressureControl	ActiveParameterSetNumber	UINT8	rw	Y	1...16	1
66	247	cmpprsout	DIV	ValvePressureControl	ControllerOutput	INT16	ro	-	INT16	
66	248	cmpfrcpst	DIV	ValvePressureControl	CylinderPistonDiameter	FLOAT32	rw	Y	0.000000...+inv	##########
66	249	cmpfrcroda	DIV	ValvePressureControl	CylinderRodDiameterA	FLOAT32	rw	Y	0.000000...CylinderPistonDiameter	
66	250	cmpfrcrodb	DIV	ValvePressureControl	CylinderRodDiameterB	FLOAT32	rw	Y	0.000000...CylinderPistonDiameter	
67	49	cmpprsupp	DIV	ValvePressureControl	UpperOutputLimit	INT16	rw	Y	LowerOutput-Limit...32767	PressureFullScaleConstantPositive
67	64	cmpprsupp	DIV	ValvePressureControl	UpperOutputLimit	INT16	rw	Y	LowerOutput-Limit...32767	PressureFullScaleConstantPositive
67	65	cmpprslow	DIV	ValvePressureControl	LowerOutputLimit	INT16	rw	Y	-32768...UpperOutput-Limit	PressureFullScaleConstantNegative
67	80	cmpprslow	DIV	ValvePressureControl	LowerOutputLimit	INT16	rw	Y	-	Pressure-

									32768...Up-perOutput-Limit	FullScaleCon-stantNegative
67	97	prsfltbi	DIV	ValvePressureControl	PressureValueFilterBCoeff	FLOAT32	-	-	FLOAT32	
67	98	prsfltbi	DIV	ValvePressureControl	PressureValueFilterBCoeff	FLOAT32	-	-	FLOAT32	
67	99	prsfltbi	DIV	ValvePressureControl	PressureValueFilterBCoeff	FLOAT32	-	-	FLOAT32	
67	100	prsfltbi	DIV	ValvePressureControl	PressureValueFilterBCoeff	FLOAT32	-	-	FLOAT32	
67	101	prsfltai	DIV	ValvePressureControl	PressureValueFilterACoeff	FLOAT32	-	-	FLOAT32	
67	102	prsfltai	DIV	ValvePressureControl	PressureValueFilterACoeff	FLOAT32	-	-	FLOAT32	
67	103	prsfltai	DIV	ValvePressureControl	PressureValueFilterACoeff	FLOAT32	-	-	FLOAT32	
67	104	prsfltai	DIV	ValvePressureControl	PressureValueFilterACoeff	FLOAT32	-	-	FLOAT32	
71	1	dlgctl	DIV	DataLogger	Control	UINT8	wo	N	0...1	
71	2	dlgsts	DIV	DataLogger	Status	UINT8	ro	-	0...3	
71	3	dlgdiv	DIV	DataLogger	Divider	UINT16	rw	N	1...65535	1
71	4	dlgsmp	DIV	DataLogger	NumberOfSamples	INT32	ro	-	-214748364 8...2048	
71	5	dlgena	DIV	DataLogger	EnableChannel	UINT8	rw	N	UINT8	
71	6	dlgena	DIV	DataLogger	EnableChannel	UINT8	rw	N	UINT8	
71	7	dlgena	DIV	DataLogger	EnableChannel	UINT8	rw	N	UINT8	
71	8	dlgena	DIV	DataLogger	EnableChannel	UINT8	rw	N	UINT8	
71	9	dlgpar	DIV	DataLogger	ChannelParameter	UINT32	rw	N	UINT32	1661993232
71	10	dlgpar	DIV	DataLogger	ChannelParameter	UINT32	rw	N	UINT32	1661010192
71	11	dlgpar	DIV	DataLogger	ChannelParameter	UINT32	rw	N	UINT32	1670381840
71	12	dlgpar	DIV	DataLogger	ChannelParameter	UINT32	rw	N	UINT32	1669398800
71	21	dlgofs	DIV	DataLogger	SampleStartOffset	UINT32	ro	-	UINT32	
71	22	trgtyp	DIV	DataLogger	TriggerType	UINT8	rw	N	0...2	1
71	23	trgpar	DIV	DataLogger	TriggerParameter	UINT32	rw	N	UINT32	1661993232
71	24	trgcpl	DIV	DataLogger	TriggerCoupling	UINT8	rw	N	0...2	1
71	25	trgslp	DIV	DataLogger	TriggerSlope	UINT8	rw	N	1...3	1
71	26	trglvl	DIV	DataLogger	TriggerLevelOrBitmask	INT32	rw	N	INT32	
71	27	trgpos	DIV	DataLogger	TriggerPosition	INT32	rw	N	INT32	
71	28	trgtim	DIV	DataLogger	TriggerTimeStamp	UINT32	ro	-	UINT32	
71	30	errflg	DIV	FaultReaction	CustomerDefinedErrorFlag	INT8	rw	N	0...127	
71	31	ev0exp	DIV	Eventhandler	Expression_0	STRING	rw	Y		
71	32	ev1exp	DIV	Eventhandler	Expression_1	STRING	rw	Y		
71	33	ev2exp	DIV	Eventhandler	Expression_2	STRING	rw	Y		
71	34	ev3exp	DIV	Eventhandler	Expression_3	STRING	rw	Y		
71	35	ev4exp	DIV	Eventhandler	Expression_4	STRING	rw	Y		
71	36	ev5exp	DIV	Eventhandler	Expression_5	STRING	rw	Y		
71	37	ev6exp	DIV	Eventhandler	Expression_6	STRING	rw	Y		
71	38	ev7exp	DIV	Eventhandler	Expression_7	STRING	rw	Y		
71	39	evtena	DIV	Eventhandler	Enable	UINT8	rw	Y	UINT8	
71	46	evtena	DIV	Eventhandler	Enable	UINT8	rw	Y	UINT8	
71	48	vars08	DIV	Eventhandler	INTEGER8	INT8	rw	N	INT8	

71	55	vars08	DIV	Eventhandler	INTEGER8	INT8	rw	N	INT8	
71	56	vars16	DIV	Eventhandler	INTEGER16	INT16	rw	N	INT16	
71	63	vars16	DIV	Eventhandler	INTEGER16	INT16	rw	N	INT16	
71	64	vars32	DIV	Eventhandler	INTEGER32	INT32	rw	N	INT32	
71	71	vars32	DIV	Eventhandler	INTEGER32	INT32	rw	N	INT32	
71	72	varu08	DIV	Eventhandler	UNSIGNED8	UINT8	rw	N	UINT8	
71	79	varu08	DIV	Eventhandler	UNSIGNED8	UINT8	rw	N	UINT8	
71	80	varu16	DIV	Eventhandler	UNSIGNED16	UINT16	rw	N	UINT16	
71	87	varu16	DIV	Eventhandler	UNSIGNED16	UINT16	rw	N	UINT16	
71	88	varu32	DIV	Eventhandler	UNSIGNED32	UINT32	rw	N	UINT32	
71	95	varu32	DIV	Eventhandler	UNSIGNED32	UINT32	rw	N	UINT32	
72	1	devmdlurl	DS408	Device	ModelURL	STRING	ro	-		www.moog.com
72	2	devprmcod	DS408	Device	ParameterSetCode	UINT8	rw	Y	0...254	
72	10	cpusup	DIV	Hard-ware_DiagnosticData	CpuSupplyVoltage	UINT16	ro	-	UINT16	
72	11	pwrsup	DIV	Hard-ware_DiagnosticData	PowerSupplyVoltage	UINT16	ro	-	UINT16	
72	12	pcbtmp	DIV	Hard-ware_DiagnosticData	PcbTemperature	INT16	ro	-	INT16	
72	24	oprtim	DIV	Hard-ware_DiagnosticData	OperatingTime	UINT32	ro	-	UINT32	
72	25	oprtim	DIV	Hard-ware_DiagnosticData	OperatingTime	UINT32	ro	-	UINT32	
73	1	locmodide	DIV	Local_Can	ModuleIdentifier	UINT8	rw	Y	1...127	127
73	2	locbdr	DIV	Local_Can	Bitrate	UINT32	rw	Y	0...1000000	500000
73	3	locsrn	DIV	Local_Can	StartRemoteNode	UINT8	rw	N	UINT8	
73	4	locrempar	DIV	LocalCAN	RemoteParameter	UINT32	rw	N	UINT32	
73	5	locremadr	DIV	LocalCAN	RemoteParameterAdress	UINT32	rw	N	UINT32	
73	6	locremnod	DIV	LocalCAN	RemoteNodeId	UINT8	rw	N	1...127	1
73	7	locremtrn	DIV	LocalCAN	RemoteTransmission	INT8	rw	N	-1...2	
73	8	locpdrcob	DIV	LocalCAN	1stReceivePdo_CobIdUsedByPdo	UINT32	rw	Y	1...2147485 695	639
73	9	locpdrcob	DIV	LocalCAN	2ndReceivePdo_CobIdUsedByPdo	UINT32	rw	Y	1...2147485 695	895
73	10	locpdrcob	DIV	LocalCAN	3rdReceivePdo_CobIdUsedByPdo	UINT32	rw	Y	1...2147485 695	1151
73	11	locpdrcob	DIV	LocalCAN	4thReceivePdo_CobIdUsedByPdo	UINT32	rw	Y	1...2147485 695	1407
73	12	locpdrtrn	DIV	LocalCAN	1stReceivePdo_TransmissionType	UINT8	rw	Y	UINT8	255
73	13	locpdrtrn	DIV	LocalCAN	2ndReceivePdo_TransmissionType	UINT8	rw	Y	UINT8	255
73	14	locpdrtrn	DIV	LocalCAN	3rdReceivePdo_TransmissionType	UINT8	rw	Y	UINT8	255
73	15	locpdrtrn	DIV	LocalCAN	4thReceivePdo_TransmissionType	UINT8	rw	Y	UINT8	255
73	16	locpdrtim	DIV	LocalCAN	1stReceivePdo_EventTimer	UINT16	rw	Y	UINT16	
73	17	locpdrtim	DIV	LocalCAN	2ndReceivePdo_EventTimer	UINT16	rw	Y	UINT16	
73	18	locpdrtim	DIV	LocalCAN	3rdReceivePdo_EventTimer	UINT16	rw	Y	UINT16	
73	19	locpdrtim	DIV	LocalCAN	4thReceivePdo_EventTimer	UINT16	rw	Y	UINT16	

73	20	locpdrmap	DIV	LocalCAN	ReceivePdoMappingParameter__PdoMappingForTheNthApplicationObjectToBeMapped	UINT32	rw	Y	UINT32	
73	27	locpdrmap	DIV	LocalCAN	ReceivePdoMappingParameter__PdoMappingForTheNthApplicationObjectToBeMapped	UINT32	rw	Y	UINT32	
73	28	locpdrmap	DIV	LocalCAN	ReceivePdoMappingParameter__PdoMappingForTheNthApplicationObjectToBeMapped	UINT32	rw	Y	UINT32	
73	35	locpdrmap	DIV	LocalCAN	ReceivePdoMappingParameter__PdoMappingForTheNthApplicationObjectToBeMapped	UINT32	rw	Y	UINT32	
73	36	locpdrmap	DIV	LocalCAN	ReceivePdoMappingParameter__PdoMappingForTheNthApplicationObjectToBeMapped	UINT32	rw	Y	UINT32	
73	41	locpdrmap	DIV	LocalCAN	ReceivePdoMappingParameter__PdoMappingForTheNthApplicationObjectToBeMapped	UINT32	rw	Y	UINT32	
73	42	locpdrmap	DIV	LocalCAN	ReceivePdoMappingParameter__PdoMappingForTheNthApplicationObjectToBeMapped	UINT32	rw	Y	UINT32	
73	49	locpdrmap	DIV	LocalCAN	ReceivePdoMappingParameter__PdoMappingForTheNthApplicationObjectToBeMapped	UINT32	rw	Y	UINT32	
73	50	locpdrmapnum	DIV	LocalCAN	1stReceivePdoMapping_NumberOfMappedApplicationObjectsInPdo	UINT8	rw	Y	0...8	
73	51	locpdrmapnum	DIV	LocalCAN	2ndReceivePdoMapping_NumberOfMappedApplicationObjectsInPdo	UINT8	rw	Y	0...8	
73	52	locpdrmapnum	DIV	LocalCAN	3rdReceivePdoMapping_NumberOfMappedApplicationObjectsInPdo	UINT8	rw	Y	0...8	
73	53	locpdrmapnum	DIV	LocalCAN	4thReceivePdoMapping_NumberOfMappedApplicationObjectsInPdo	UINT8	rw	Y	0...8	
73	54	locpdtcob	DIV	LocalCAN	1stTransmitPdo_CobIdUsedByPdo	UINT32	rw	Y	1...2147485695	511
73	55	locpdtcob	DIV	LocalCAN	2ndTransmitPdo_CobIdUsedByPdo	UINT32	rw	Y	1...2147485695	767
73	56	locpdtcob	DIV	LocalCAN	3rdTransmitPdo_CobIdUsedByPdo	UINT32	rw	Y	1...2147485695	1023
73	57	locpdtcob	DIV	LocalCAN	4thTransmitPdo_CobIdUsedByPdo	UINT32	rw	Y	1...2147485695	1279
73	58	locpdttrn	DIV	LocalCAN	1stTransmitPdo_TransmissionType	UINT8	rw	Y	UINT8	255
73	59	locpdttrn	DIV	LocalCAN	2ndTransmitPdo_TransmissionType	UINT8	rw	Y	UINT8	255
73	60	locpdttrn	DIV	LocalCAN	3rdTransmitPdo_TransmissionType	UINT8	rw	Y	UINT8	255
73	61	locpdttrn	DIV	LocalCAN	4thTransmitPdo_TransmissionType	UINT8	rw	Y	UINT8	255
73	62	locpdttrnman	DIV	Local_Can	1stLocalCANTransmitPdoManufacturerTransmissionType	UINT8	rw	Y	UINT8	
73	63	locpdttrnman	DIV	Local_Can	2ndLocalCANTransmitPdoManufact	UINT8	rw	Y	UINT8	

					urerTransmissionType				
73	64	locpdttrnman	DIV	Local_Can	3rdLocalCANTransmitPdoManufacturerTransmissionType	UINT8	rw	Y	UINT8
73	65	locpdttrnman	DIV	Local_Can	4thLocalCANTransmitPdoManufacturerTransmissionType	UINT8	rw	Y	UINT8
73	66	locpdtinh	DIV	LocalCAN	1stTransmitPdo_InhibitTime	UINT16	rw	Y	UINT16
73	67	locpdtinh	DIV	LocalCAN	2ndTransmitPdo_InhibitTime	UINT16	rw	Y	UINT16
73	68	locpdtinh	DIV	LocalCAN	3rdTransmitPdo_InhibitTime	UINT16	rw	Y	UINT16
73	69	locpdtinh	DIV	LocalCAN	4thTransmitPdo_InhibitTime	UINT16	rw	Y	UINT16
73	70	locpdttim	DIV	LocalCAN	1stTransmitPdo_EventTimer	UINT16	rw	Y	UINT16
73	71	locpdttim	DIV	LocalCAN	2ndTransmitPdo_EventTimer	UINT16	rw	Y	UINT16
73	72	locpdttim	DIV	LocalCAN	3rdTransmitPdo_EventTimer	UINT16	rw	Y	UINT16
73	73	locpdttim	DIV	LocalCAN	4thTransmitPdo_EventTimer	UINT16	rw	Y	UINT16
73	74	locpdtmap	DIV	LocalCAN	TransmitPdoMappingParameter_PdoMappingForTheNthApplicationObjectToBeMapped	UINT32	rw	Y	UINT32
73	81	locpdtmap	DIV	LocalCAN	TransmitPdoMappingParameter_PdoMappingForTheNthApplicationObjectToBeMapped	UINT32	rw	Y	UINT32
73	82	locpdtmap	DIV	LocalCAN	TransmitPdoMappingParameter_PdoMappingForTheNthApplicationObjectToBeMapped	UINT32	rw	Y	UINT32
73	89	locpdtmap	DIV	LocalCAN	TransmitPdoMappingParameter_PdoMappingForTheNthApplicationObjectToBeMapped	UINT32	rw	Y	UINT32
73	90	locpdtmap	DIV	LocalCAN	TransmitPdoMappingParameter_PdoMappingForTheNthApplicationObjectToBeMapped	UINT32	rw	Y	UINT32
73	97	locpdtmap	DIV	LocalCAN	TransmitPdoMappingParameter_PdoMappingForTheNthApplicationObjectToBeMapped	UINT32	rw	Y	UINT32
73	98	locpdtmap	DIV	LocalCAN	TransmitPdoMappingParameter_PdoMappingForTheNthApplicationObjectToBeMapped	UINT32	rw	Y	UINT32
73	105	locpdtmap	DIV	LocalCAN	TransmitPdoMappingParameter_PdoMappingForTheNthApplicationObjectToBeMapped	UINT32	rw	Y	UINT32
73	106	locpdtmapnum	DIV	LocalCAN	1stTransmitPdoMapping_NumberOfMappedApplicationObjectsInPdo	UINT8	rw	Y	0...8
73	107	locpdtmapnum	DIV	LocalCAN	2ndTransmitPdoMapping_NumberOfMappedApplicationObjectsInPdo	UINT8	rw	Y	0...8
73	108	locpdtmapnum	DIV	LocalCAN	3rdTransmitPdoMapping_NumberOfMappedApplicationObjectsInPdo	UINT8	rw	Y	0...8
73	109	locpdtmapnum	DIV	LocalCAN	4thTransmitPdoMapping_NumberOfMappedApplicationObjectsInPdo	UINT8	rw	Y	0...8
74	1	an0val	DIV	AnalogueInput0	ActualValue	INT16	ro	-	INT16
74	2	an0typ	DIV	AnalogueInput0	InputType	INT8	rw	Y	INT8

74	3	an1val	DIV	AnalogueInput1	ActualValue	INT16	ro	-	INT16	
74	4	an1typ	DIV	AnalogueInput1	InputType	INT8	rw	Y	INT8	
74	5	da0ref	DIV	AnalogueOutput0	Scaling	INT16	rw	Y	INT16	16384
74	6	da0ref	DIV	AnalogueOutput0	Scaling	INT16	rw	Y	INT16	16384
74	7	da0ref	DIV	AnalogueOutput0	Scaling	INT16	rw	Y	INT16	0
74	8	da1ref	DIV	AnalogueOutput1	Scaling	INT16	rw	Y	INT16	16384
74	9	da1ref	DIV	AnalogueOutput1	Scaling	INT16	rw	Y	INT16	16384
74	10	da1ref	DIV	AnalogueOutput1	Scaling	INT16	rw	Y	INT16	0
74	14	prstrd	DIV	PressureTransducer	Value	INT16	ro	-	INT16	
75	1	an2val	DIV	AnalogueInput2	ActualValue	INT16	ro	-	INT16	
75	2	an2typ	DIV	AnalogueInput2	InputType	INT8	rw	Y	INT8	
75	3	an2mon	DIV	AnalogueInput2	MonitoringCurrent	UINT8	rw	Y	0...1	
75	4	an3val	DIV	AnalogueInput3	ActualValue	INT16	ro	-	INT16	
75	5	an3typ	DIV	AnalogueInput3	InputType	INT8	rw	Y	INT8	
75	6	an3mon	DIV	AnalogueInput3	MonitoringCurrent	UINT8	rw	Y	0...1	
75	7	an4val	DIV	AnalogueInput4	ActualValue	INT16	ro	-	INT16	
75	8	an4typ	DIV	AnalogueInput4	InputType	INT8	rw	Y	INT8	
75	9	an4mon	DIV	AnalogueInput4	MonitoringCurrent	UINT8	rw	Y	0...1	
75	10	extlvdval	DIV	ExternalLVDT	ActualValue	INT16	ro	-	INT16	
75	11	extlvdref	DIV	ExternalLVDT	CustomerScalingFactorNumerator	INT16	rw	N	INT16	16384
75	12	extlvdref	DIV	ExternalLVDT	CustomerScalingFactorDenominator	INT16	rw	N	INT16	16384
75	13	extlvdref	DIV	ExternalLVDT	CustomerScalingOffset	INT16	rw	N	INT16	0

For detailed description of the valve parameters and functions refer to the “PROFIBUS - DP Profile, Fluid Power Technology, v1.5”.

7 Literature

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