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Bulletin MSG30-2903-INST

Installation and Start-Up Manual

Plugin Module for PCM (Pump control module)

Effective: September 1st 2019

Supersedes: -

Firmware PCM: PCM_TC41_07_00_00_01_504 and higher

Plugin Module Version: 01_17_504

Contents

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Chemnitz, Germany

1 Plugin Modules - Introduction

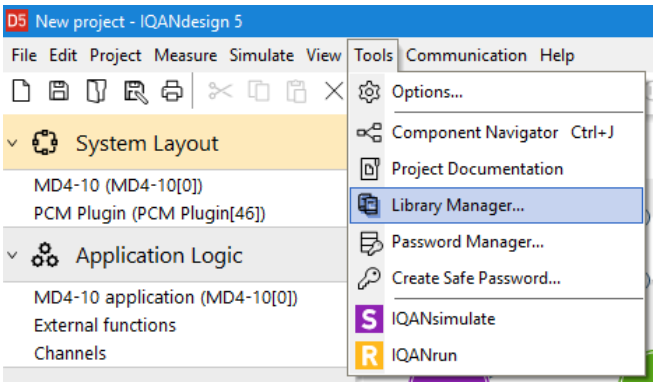
Plugin modules are prescaled J1939 interfaces which can be added into IQAN applications. Plugin modules are distributed by Parker and are made available online.

- Iqan.se/store
- parker.com/ep2

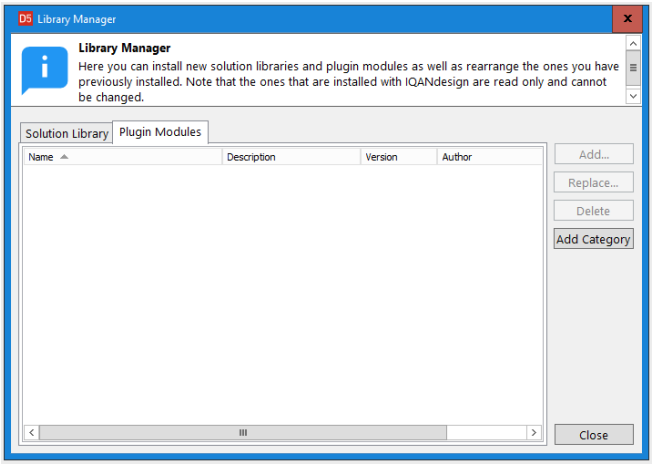
They are provided as plugin module files (.idmx) which are installed using the library manager. When a plugin module has been installed it will be available in the add menu of the system layout view. Once it has been added to a project it can be connected to a J1939 bus. A plugin module has the same properties as J1939 modules plus a number of custom properties. It also has a property that defines which master module controls the plugin module (it can only be used by one master module). A plugin module has inputs and outputs just like a physical module. To use them they have to be added using the Add button in the block diagram under System Layout. When doing so a new channel is added to the application of the master module. This channel is either a Module Input Channel (MIC) or a Module Output Channel (MOC). If a plugin module is updated with a new version in IQANdesign it will be updated also in existing projects when they are opened (after a user confirmation). A project containing a plugin module can be used in IQANdesign even if the plugin module is not installed. This is accomplished by saving a copy of the plugin module within the project file.

2 Plugin Installation

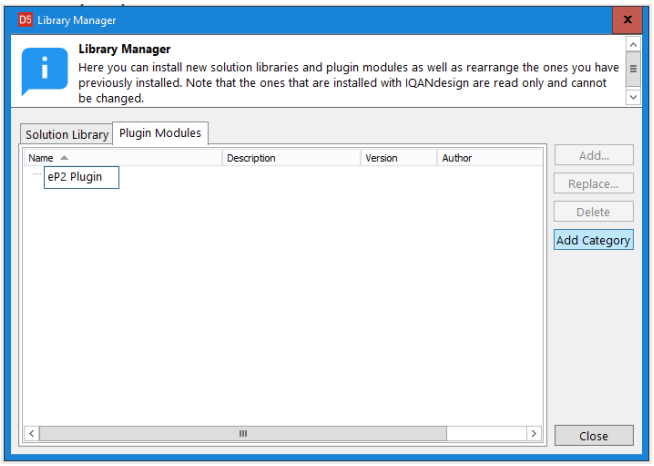
Download the latest PCM Plugin version from the internet. Open the Library Manager in IQAN Design under Tools.



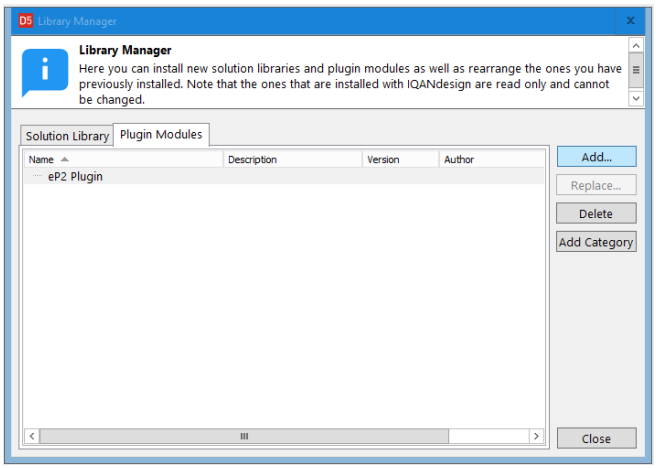
Toggle to tab Plugin Modules.



Add Category and name it as per your choice.



Tie in the just downloaded Plugin Module with “Add”.



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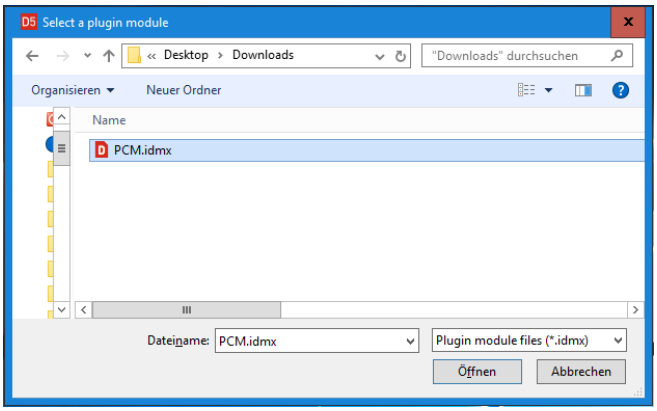
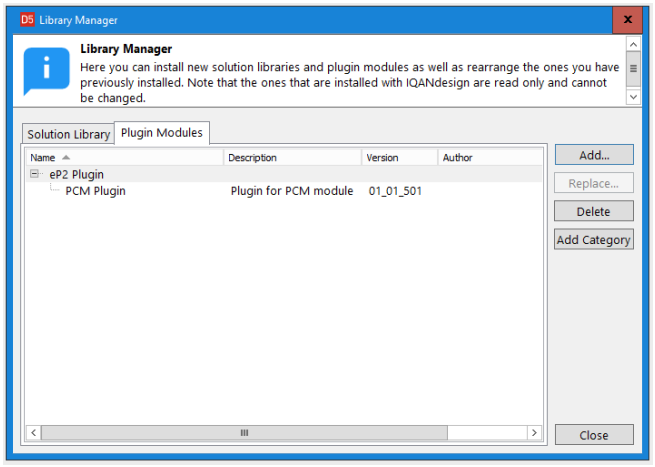
Select the just downloaded Plugin Module file on your directory.

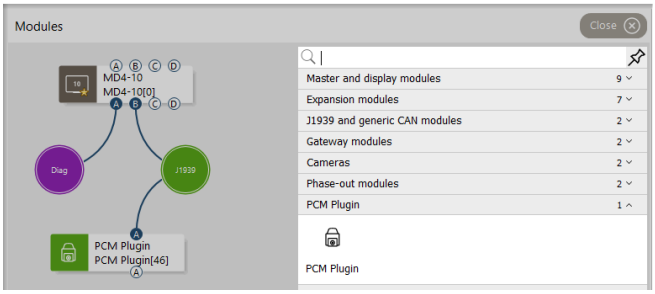




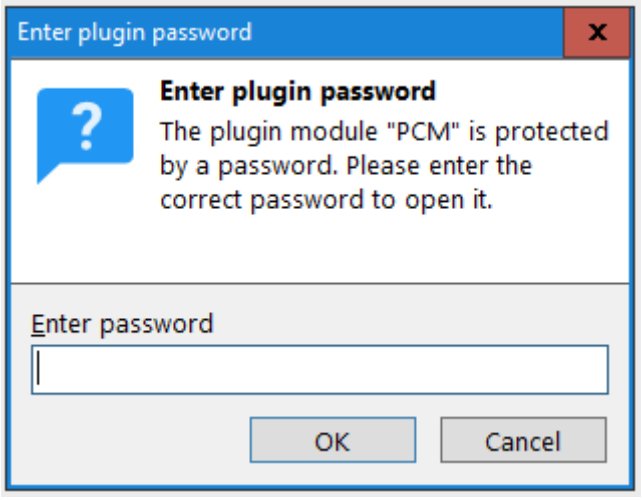
NOTICE

Please mind the Plugin Module version shown either in the library manager or the system layout.

The Plugin appears in the Add button dialog for usage in the IQAN system layout.



Install as much as needed plugin modules by drag and drop and name them as per your choice. Connect them with the commanding IQAN Master module.

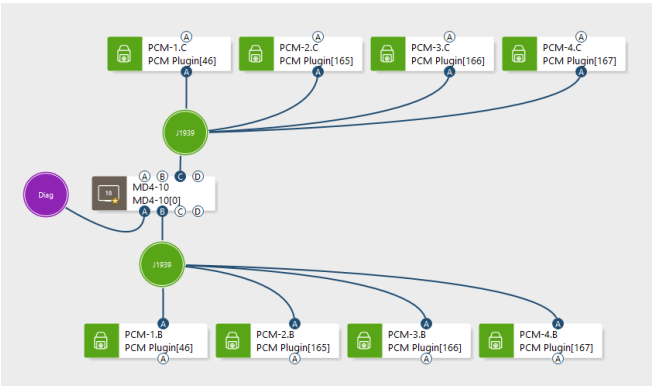


NOTICE

The Password to implement the Plugin module is “**PCM”** (case sensitive!).

NOTICE

4 Plugin modules / 4 PCMs are the maximum amount per BUS.



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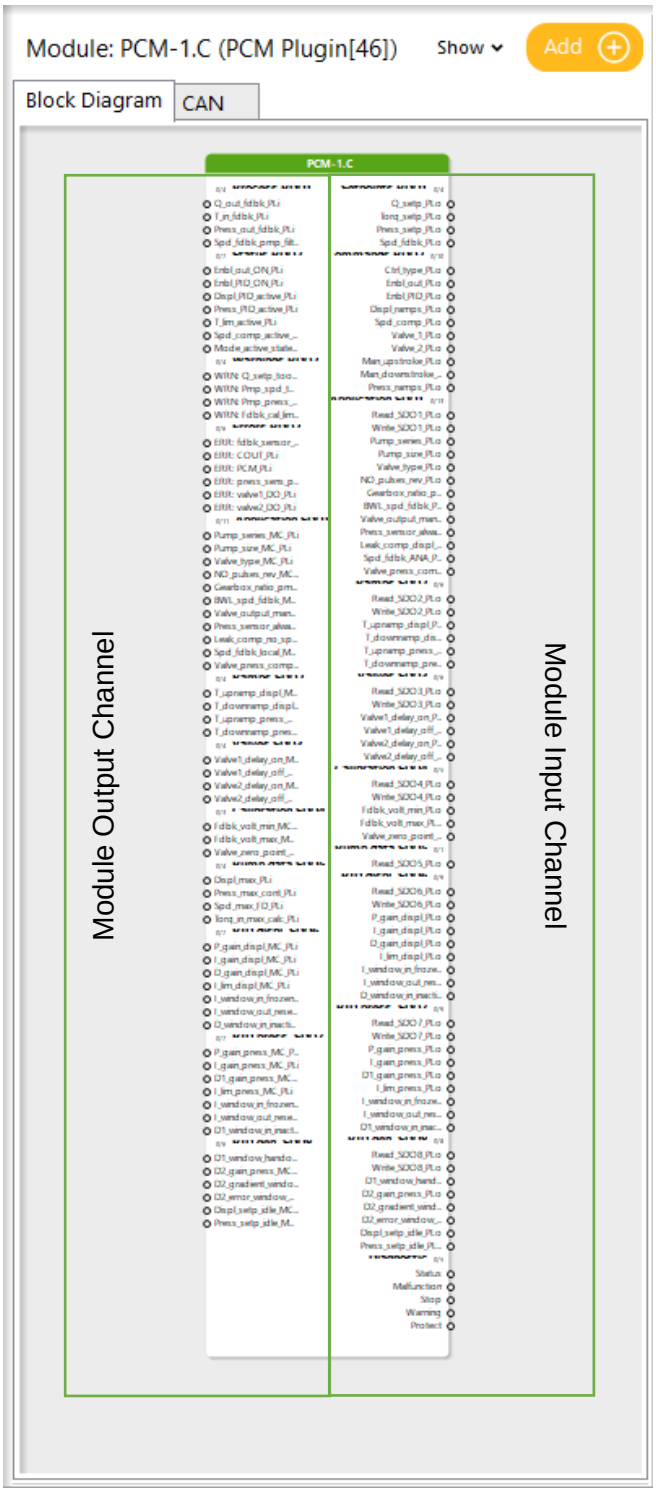
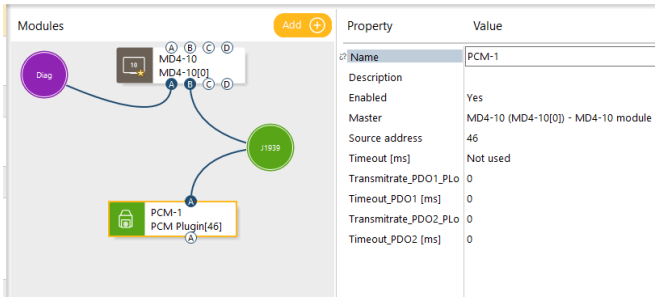
3 Plugin Configuration

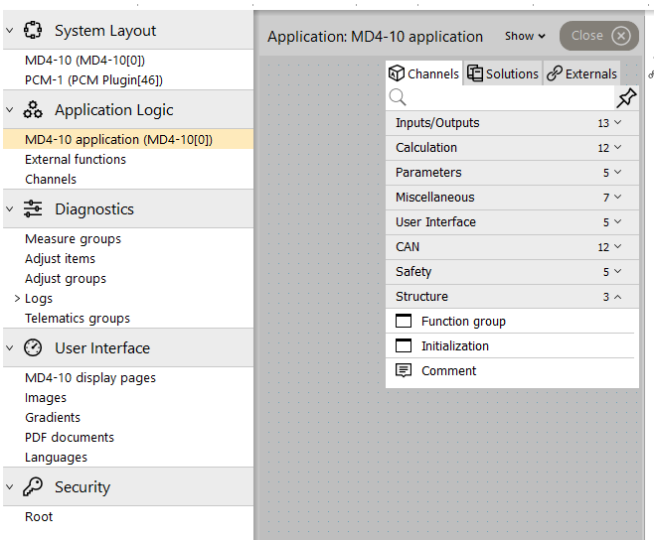
The Plugin appears empty in the system layout. The corresponding masters module input channels (MIC) and module output channel (MOC) need to be connected by using the Add button or by using the right mouse dialog at the corresponding pin. All pins at the left side are inputs to the master (and outputs from the PCM). The pins at the right side are outputs from the master (inputs to the PCM).



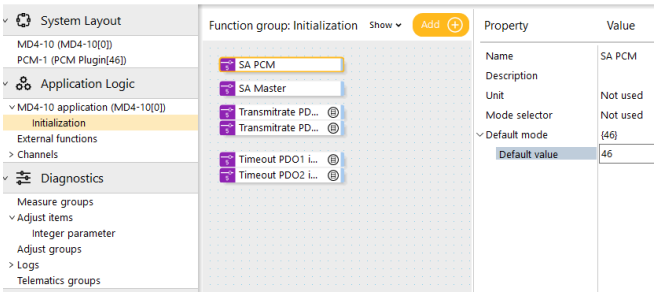
Check the connection to the corresponding master module.



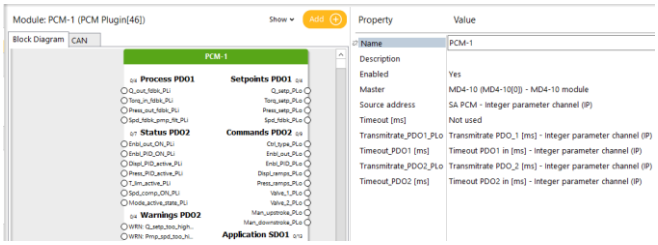
Add a Initialization function group.



Add a Initialization function group.



Create integer parameters for source adress, transmit rates and timeouts. Optionally set defaults and further connect them to the adjust items of the Plugin Module. Connect the just created integer parameter to the corresponding properties of the plugin module.



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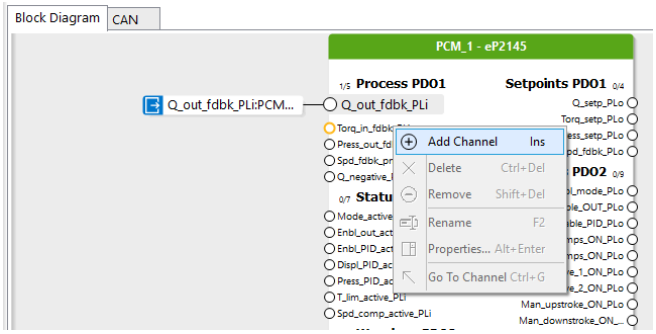
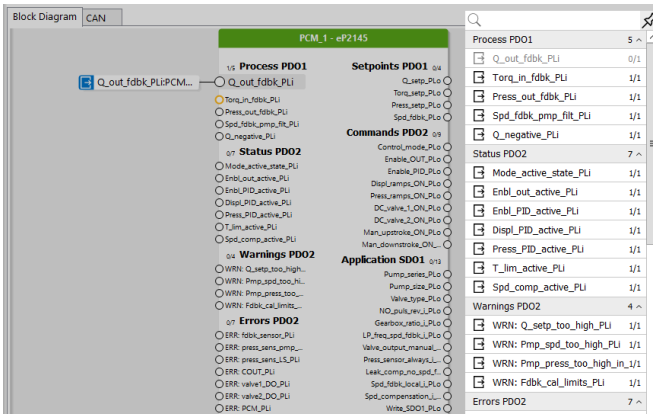
NOTICE

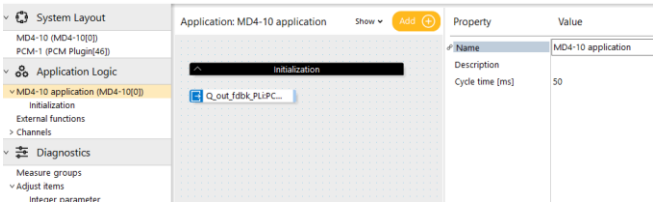
Source adress is unique to a controller at a J1939 Bus. Please consider when using mulitple PCMs. Optional source adresses are 165, 166, 167.

Add the necessary channels to the plugin module pins with the right mouse click dialog or the add button.





All channels are generated in the top level function group of the corresponding master application.

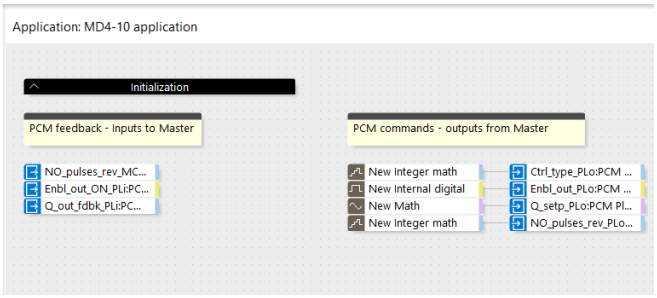


Unconnected output pins (right side) will internally use default values to the PCM (CAN Message).

Channel	Default
Pump_series_PLo	0 (P2)
Pump_size_PLo	1 (P2075)
Valve_type_PLo	0 (Code EC)

NO_pulses_rev_PLo	36 pulses/rev.
Gearbox_ratio_pmp_in_PLo	1.00
BWL_spd_fdbk_PLo	50
Valve_output_manual_PLo	25 %
Press_sensor_always_PLo	False
Leak_comp_displ_PLo	False
Spd_fdbk_ANA_PLo	False
Valve_press_comp_inactive_PLo	False
T_upramp_displ_PLo	0 ms
T_downramp_displ_PLo	0 ms
T_upramp_press_PLo	0 ms
T_downramp_press_PLo	0 ms
Valve1_delay_on_PLo	0 ms
Valve1_delay_off_PLo	0 ms
Valve2_delay_on_PLo	0 ms
Valve2_delay_off_PLo	0 ms
Fdbk_volt_min_PLo	2500 mV
Fdbk_volt_max_PLo	4300 mV
Valve_zero_point_PLo	0 %
P_gain_displ_PLo	150
I_gain_displ_PLo	200
D_gain_displ_PLo	50
I_lim_displ_PLo	20
I_window_in_frozen_displ_PLo	0,5
I_window_out_reset_displ_PLo	15

D_window_in_inactive_displ_PLo	0
P_gain_press_PLo	40
I_gain_press_PLo	150
D1_gain_press_PLo	200
I_lim_press_PLo	20
I_window_in_frozen_press_PLo	2
I_window_out_reset_press_PLo	50
D1_window_in_inactive_press_PLo	0
D1_window_handover_press_PLo	1000
D2_gain_press_PLo	200
D2_gradient_window_PLo	1000
D2_error_window_PLo	50
Displ_setp_idle_PLo	0
Press_setp_idle_PLo	15

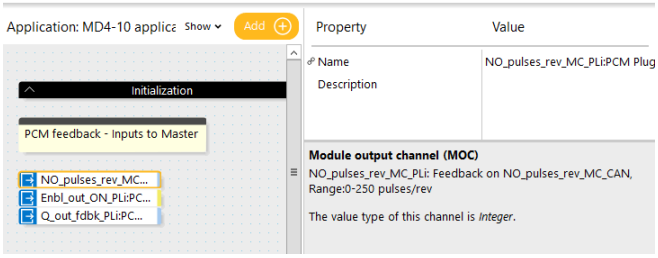


The channels appear in the application root for further usage. Only matching channel formats and ranges can be connected to the just created plugin channels.

NOTICE

All channels of type real and integer are internally limited both for minimum and maximum. Inputs outside the specified range will be disregarded.

For reference of the matching type please see the CAN protocol in the PCM installation manual (HY30-2902-INST) or the help dialog in the bottom right corner.



3.1 Transmit Rate – Master

The transmit rates Transmitrate_PDO1_PLo and Transmitrate_PDO2_PLo needs to be set between 10 an 100ms in an even number.

RECOMMENDATION

Recommendation: Fill in a multiplier of the sending Master cycle time.

NOTICE

An input above 100ms will be interpreted as 100ms. An input below 10 ms will be interpreted as 10ms.

3.2 Timeout – Master

The Timeouts Timeout_PDO1_PLi and Timeout_PDO2_PLi need to be set at least twice the adjusted PCM transmitrate (Transmitrate PDO1_out,Transmitrate PDO2_out) .

	PDO1	PDO2
Min. timeout - Master [ms]*	20	40
Max. timeout - Master [ms]*	150 (default)	200 (default)

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3.3 Plugin Module start-up

PDO2 should be sent continuously (selecting control type, mode selection, Enables, etc.).

PDO1 should be sent in operational mode (Ctrl_type_PLo > 2) only.

SDO1-SDO8 can only be sent in setting mode only.

When starting up a PCM the **SDO1** needs to be sent at least once with correct application values to set the internal scaling and other internal parameters according to the connected pump.

This is only possible when the pump is in setting mode. (Enbl_out_PLo=false, Enbl_PID_PLo=true → PDO2)

NOTICE

The wired digital ins (Enable inputs) need to be set accordingly or need to be true.

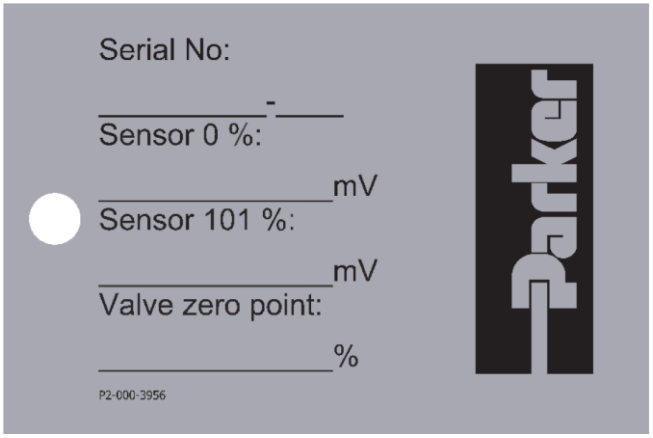
NOTICE

Internal scaling values are stored internally in the nonvolatile memory so that they are preserved during power off.

Furthermore **SDO4** needs to be sent for the correct scaling of the displacement sensor.

NOTICE

Input for the parameter Fdbk_volt_min_PLo, Fdbk_volt_max_PLo and Valve_zero_adjust_PLo needs to be taken from each pump individually using the below shown pump tag attached to each pump.



Example: Pump tag

SDO2, SDO3, SDO6, SDO7, SDO8 needs to be sent only when applicable in the application.

NOTICE

All SDO are sent with the write SDO[*1]_write_PLo command.

[*1] = 1…4

3.4 Plugin Module Operational

After all configuration parameter are set (SDO1-SDO8), PDO2 is used to switch to operational mode (Ctrl_type_PLo = 1 or 2) and the set points can be sent with PDO1.

Position notification regarding Machinery Directive 2006/42/EC:

Products made by the Pump & Motor Division Europe (PMDE) of Parker Hannifin are excluded from the scope of the machinery directive following the “Cetop” Position Paper on the implementation of the Machinery Directive 2006/42/EC in the Fluid Power Industry.

All PMDE products are designed and manufactured considering the basic as well as the proven safety principles according to:

- ISO 13849-1:2015
- SS-EN ISO 4413:2010

so that the machines in which the products are incorporated meet the essential health and safety requirements.

Confirmations for components to be proven component, e. g. for validation of hydraulic systems, can only be provided after an analysis of the specific application, as the fact to be a proven component mainly depends on the specific application.

Dr. Hans Haas
General Manger
Pump & Motor Division Europe

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