

Masoneilan

CES-421

SVI FF NVM Factory Configuration Specification

Revision History

The table below describes the revision history of this document.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Rev. | Date | Revised By | Checked By | Approved  By | Brief Description |
| 0.1 | 07/24/2013 |  |  |  | Initial. |
| 0.2 | 08/12/2013 |  |  |  | Updated with the APP settings and FF settings |
| 0.3 | 10/04/2013 |  |  |  | Integrated review comments for Settings in Flextronics |
| 0.4 | 10/07/2013 |  |  |  | Review Comments from Mark |
| 0.5 | 10/08/2013 | AP |  |  | Added Pneumatic parameters defaults and Calib. Defaults. |
| 0.6 | 10/30/213 | MH |  |  | Updated with the comments from Mark |
| 0.7 | 11/20/2013 | HH |  |  | Updated with comments from Helen |
| 0.8 | 03/25/2014 | VK |  |  | Added initial values for the AO block to be able to switch in AUTO Mode |
| 0.9 | 04/04/2014 | VK |  |  | Added initial values for DO, AI and PID blocks |
| 0.91 | 04/07/2014 | VK |  |  | Additional numeric values added |
| C | 03/12/2015 | VK |  |  | Chapter 1 Target Firmware |
| D | 02/18/2016 | VK |  |  | Chapter 1 Target Firmware  ShedTime and InitTime value reduction |
| E |  | AK |  |  | Update for Rev.3 |

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# Target Firmware

**Note:** the information if the grey area is preliminary; it will change in the future. Once the information is updated the new document will be released.

|  |  |
| --- | --- |
| **Firmware Part Number** | **720046330-779-0000 (? TBD)** |
| **Firmware File** | **ALLFF\_Rel\_C<TBD>\_F010403\_<TBD>A010403\_<TBD>.ffd**  **ALLFF\_Rel\_C<TBD>\_F010403\_<TBD>A010403\_<TBD>.Upgade.ffd** |
| **Firmware Build Chaneset** | **C<TBD>** |

Notes:

1. For upgrade of existing R2 units over FF, use the file with the same basename and extension .Upgrade.ffd. This accounts for the change of Manufacturer’s Id.

# Purpose

This document specifies all the NVM (Non-Volatile Memory) data values at different manufacturing stages to ensure the validity and consistency of data and the quality of manufacturing process. The data in NVM are those the firmware operates with as well as useful information stored persistently. This document provides what is expected of NVM content, therefore the behavior of the device, out of shipment from the electronic manufacturer as well as from the final manufacturer.

All the data specified here are categorized based on whether it should be Common or device Specific at the factory shipment as well as the nature of the uniqueness (Firmware, Electronic, Feature, Setup or Runtime) and the persistency (Fixed, Static or Dynamic). The categorization helps to clarify what has to be set or reset at what stage and what to verify, including whether it is a standalone unit or a mounted unit.

This document serves as the guideline to develop the manufacturing tool to enforce the NVM data policy but does not specify the software tool itself.

# How to use this document for manufacturing

The document contains information on non-volatile memory settings in both microcontrollers.

In case of any ambiguity or incorrect content, the document must be updated.

The following companion documents are part of the release package and are included by reference:

* Paramdoc.html
* <TBD>.html
* FFAPmncb\_FAULT\_matrix.xls

In addition to verifying NVM content, certain operations (commands) must be completed as specified in the following table. It doesn’t cover all manufacturing procedures, only those that are easy to miss because they are hard to map to the raw NVM content.

NOTE: HART commands can be sent via HART over ISP or, after TB.ADVANCED is written, via HART over FF.

| **Operation** | **Meaning** | **Success Criteria** | **Manuf. Step** | **Prerequisites** | **Comments** |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 130.132 | Initialize APP NVMEM | After a reset, no NVMEM fault in APP | Electronics | Factory mode |  |  |  |
| [130.131](#devid_hart) | Write device id | Can connect via ISP.  FF device id matches  FF device tag and block tags are set to expected defaults. | Electronics | Factory mode |  |  |  |
| RB.RESTART=Resource | Remove “Static memory lost” alert | No “Static memory lost” in RB.BLOCK\_ERR.  RB can reach AUTO mode | Electronics |  | New for R3 |  |  |
| RB.RESTART=30 | Test external watchdog in FFP | Device restarts, temporarily disappearing from the link | Electronics |  |  |  |  |
| RB.RESTART=31 | Test internal watchdog in FFP | Device restarts, temporarily disappearing from the link.  FFP has a new trap -8 (watchdog) | Electronics |  | New for R3 |  |  |
| [ACTIVATE](#activate_fw) APP firmware | Ensure the unit is not bootlegged | APP can switch to Normal mode and stay there | ? |  |  |  |  |
| [171.167](#pneumatics_hart) | Write Pneumatic Parameters | Pressures are measured correctly. | Positioner assembly |  | Check the [link](#pneumatics_hart) for instructions |  |  |
| Write [TB.ADVANCED](#ADAVNCED) | Allow access to TB parameters | Pressures, all diagnostics, Analog input, PST are accessible | Electronics, Final test |  | Electronics writes (Advanced)  Final test writes (Advanced) or (Standard) per order |  |  |
| 130.137, “external” | Test external watchdog in APP | New RESET fault in APP | Electronics | Faults must be [cleared](#faults_hart)  Factory mode |  |  |  |
| 130.137, “internal” | Test internal watchdog in APP | New WATCHDOG fault in APP  New trap -8 in APP | Electronics | Faults must be [cleared](#faults_hart)  Factory mode |  |  |  |
| <Board calibration and test> |  |  | Electronics |  |  |  |  |
| 130.139, FIND\_STOPS\_FAILED | Invalidate stops by injecting the fault | New FIND\_STOPS\_FAILED fault in APP | Electronics  Final test |  | In Final test, standalone units only |  |  |
| TB.FIND\_STOPS or 180 | Establish travel stops | No FIND\_STOPS\_FAILED fault in APP | Positioner test (standalone)  Assembly on the valve |  |  |  |  |
| TB.TRAVEL\_CALIBRATION | Documentation |  | Assembly on the valve | FIND\_STOPS must have succeeded | Mounted units only |  |  |
| [TB.ACTIVATE\_CONTROL\_SET](#activate_ctlset) or [171.216](#ctl_slot_hart) | Tuning | TB.ACTIVE\_CONTROL\_SET is matching |  |  | Per order |  |  |
| TB.AUTOTUNE or 189 | Tuning |  |  |  | Mounted units only.  Only if control slot is 0 |  |  |
| TB.MODE.Target = OOS | Pre-requisite to next | TB.MODE.Actual = OOS | Final test |  |  |  |  |
| RB.RESTART=42 | Capture TB factory settings | RB.RESTART=5 increments TB\_ST\_REV by 3 | Final test | TB must be in OOS |  |  |  |

# Data Category

Data are divided into Common group (CFwFxd, CStUpSt, CRnTmDyn) and Specific group (SUntFxd, SFtrFxd, SFtrSttc, SManStUpSttc, SAutoStUpSttc, SRnTmDyn).

### CFwFxd: Common Firmware Fixed

Those values apply to all units and should be fixed at all times since the initial default.

Examples of CFwFxd data include NVM version, Device Manufacturer and Device Type and those fixed settings in BiasExt for Bias handling, etc.

Manufacturing should verify that CFwFxd data contains the value specified.

### CStUpSt: Common Setup Static

Those values as part of application setup apply to all units at the factory. Change may occur during manufacturing since the initial default, but the unit should be reset to the factory defaults if different to ensure that only factory settings are shipped. They are subject to change at the field by the user.

Examples of CStUpSt data include Device Mode and Measurement Calibration, etc.

Manufacturing should verify and reset if different to make sure that CStUpSt data contains the value specified.

### CRnTmDyn: Common Runtime Dynamic

Those values change dynamically but need to be reset on all units before the final shipment to be ready to capture runtime information in user environment. They are subject to change by device itself during run time.

Examples of CRnTmDyn data include circuit extreme temperature logging, Runtime Continuous Diagnostics, etc.

Final manufacturing should reset CRnTmDyn data to make sure it restarts with the value specified.

### SUntFxd: Specific Electronic Unit Fixed

Those values, unique to individual unit, are set as part of the electronic identification and calibration during manufacturing. They are initially set by default and later finalized by manufacturing process and remain fixed thereafter at all times.

Examples of SUntFxd data include Device ID and Temperature Coefficients, etc.

Manufacturing should verify that the device SUntFxd data contain the valid value specified.

### SFtrFxd: Specific Feature Fixed

Those values, unique to individual unit, are part of the feature options assembled at the factory. They are initially set by default and later finalized by manufacturing process and remain fixed thereafter at all times.

Examples of SFtrFxd data include available pressure sensor(s) activated, Single acting vs. Double acting, activated features, etc.

Final manufacturing should compare the values of SFtrFxd data against what’s specified for the specific model of the device to verify that the data value reflects the intended feature options correctly.

**Note:** This category of NVRAM data is obsolete for SVI2FF and is referenced here for information and backward compatibility.

### SFtrSttc: Specific Feature Static

Those values, unique to individual unit, are part of the field upgradeable feature option assembled either at the factory or at the field. They are initially set by default and later may be changed per user requirement by manufacturing process before the shipment and remain unchanged until upgraded at the field.

Example of SFtrSttc data includes the selection of remote position sensor vs. built-in position sensor, Air to Open/Close configuration, etc.

Final manufacturing should compare the values of SFtrSttc data against what’s specified for shipping order to verify that the data value reflects the intended feature options correctly.

### SManStUpSttc: Specific Manual Setup Static

Those values, unique to individual unit, are part of application setup that can be determined only by Device Maintenance Engineer either at factory or at user site. They are initially set by default and later may be changed per user or application requirement by manufacturing process before the shipment. They are subject to change at the field by the user.

Examples of SManStUpSttc data include Position Limits, Tight Open/Tight Close values, etc.

Final manufacturing should compare the values of SManStUpSttc data against the user or application requirement to make sure the device settings meet user application requirement. If the device is shipped as standalone unit and there is no user requirement then SManStUpSttc data value need to be reset if it differs from what’s specified for standalone unit by the model number.

### SAutoStUpSttc: Specific Auto Setup Static

Those are values, unique to individual unit that can be obtained through automatic routine in the firmware used as part of application setup. They are initially set by default and later may be changed by process such as Auto Tuning or Find Stop when the device mounted on a targeted control valve. Some data in this category may also be set manually. They are subject to change at the field.

Final manufacturing should make sure that if the device is shipped as standalone unit then SAutoStUpSttc data value need to be reset if it differs from what’s specified for standalone unit.

### SRnTmDyn: Specific Runtime Dynamic

Those are values, unique to individual unit, obtained through measurement routine in the firmware used for variety of purposes. They can be measured valve signature, runtime determined control parameter, or runtime statistics. They are initially set by default and later may be changed by process such as diagnostics routine or control routine when the device is mounted on a targeted control value. They are subject to change during the device run time.

This category excludes those data specified in CRnTmDyn category such as runtime continuous diagnostic specified to clear before the shipment.

Examples of SRnTmDyn data include Signature, BiasData, etc.

Final manufacturing should make sure the signature data of procedural test is copied from the current log into factory log if the device is mounted on a targeted control valve. Otherwise, if the device is shipped as standalone unit, then SRnTmDyn data value needs to be reset if it differs from what’s specified for standalone unit.

# NVM Data Setting and Access

This section describes NVM access methods for manufacturing. It is not intended to be used as a reference of the actual NVM content or its layout.

Each of APP and FFP processors has a NVM attached to it, and non-volatile storage of configuration, calibration, and statistics parameters is divided up between the two. For example, function block application is stored in FFP NVM, and temperature calibration, in APP NVM.

The Positioner Transducer Block (TB) is a wrapper of the positioner proper (APP) for the FF protocol, with some additions. As such, it exposes many APP data as TB parameters, and that’s the only way the end user can access them.

For manufacturing, however, APP natively supports HART-like messaging over ISP (using the ISP adapter) or over FF bus.

It is up to the manufacturing setup to use HART over ISP or HART over FF to access APP data, or, for data exposed as TB parameters, to use “HART” or FF.

NOTE: APP data exposed as TB parameters are cross-linked.

## Data Access for the APP Processor

The following table lists all data NVM with specification of data value at different stages.

Parameters that manufacturing doesn’t change are just for reference and are in *italics*.

| **Object** | **Write command/Name** | **Read command** | **Data**  **Cat.** | **Initial Default**  **By**  **Firmware** | **Value at** **Electronic Shipment** | **Value At Final Shipment as a Standalone Unit** | **Final value**  **Shipment As a Mounted Unit** | Remarks |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| APP Mode  See [APP MODE](#APP_MODE) | 135 | 249 | CRnTmDyn | 0 (Not observable) | 3 | 3 | 3 | HFailsafe = 2, (mapped to TB OOS)  HManual = 1, (mapped to TB LO; hidden from FF)  HNormal = 3, (under FF control)  HSetup = 0 (mapped to TB LO)  Failsafe can only be set by the device. |
| *DigitalSpConf* | *171.220* | *170.220* |  |  |  |  |  | *Digital Setpoint Conf. This parameter should NOT be changed during manufacturing* |
|  | *TBFixedSetpoint* |  | *CFwFxd* | *-20.0* | *-20.0* | *-20.0* | *-20.0* | *Not Changeable by the user* |
|  | *TBShedTime* |  | *CFwFxd* | *3.0* | *3.0* | *3.0* | *3.0* | *Not Changeable by the user* |
|  | *TBInitTime* |  | *CFwFxd* | *25.0* | *25.0* | *25.0* | *25.0* | *Not Changeable by the user* |
|  | *TBTargetToManual* |  | *CFwFxd* | *TB Target to Manual*  *(true, 1)* | *TB Target to Manual* | *TB Target to Manual* | *TB Target to Manual* | *What happens if we lose SP. Go to Manual Mode if true, go to OOS if false. Not Changeable by the user* |
|  | *TBSetPointOptions* |  | *CFwFxd* | *Current position (0)* | *Current position* | *Current position* | *Current position* | *Options for startup: Current position (0), Fixed Set Point (1), Last SetPoint (2)*  *Not Changeable by the user* |
| BoardTemperature | 130.134 (clear) | 141  See also [tempr\_lifetime](#tempr_lifetime) |  |  |  |  |  | Clear temperatures with 130.124 just before shipment |
|  | nHighestTemperature |  | CFwFxd | -5000 | <actual value> | -5000  To be set just before shipment | -5000  To be set just before shipment | To be cleared before shipment |
| nLowestTemperature |  | CFwFxd | 10000 | <actual value> | 10000 | 10000 | To be cleared before shipment |
| nBoardTemperature |  | CRnTmDyn | 0 | 0 | 0 | 0 | 0 |
|  |  |  |  |  |  |  |  |  |
| *Pressure Cal Data* | *230.232 (clear)*  *185 (calibrate)* | *229.232* |  |  |  |  |  | *Set by FW defaults.*  *Zero trim calibration not exposed to the user.* |
|  | *nLowPressure[0]* |  | *CStUpSt* | *0* | *0* | *0* | *0* |  |
| *nLowPressure[1]* |  | *CstUpSt* | *0* | *0* | *0* | *0* |  |
| *nLowPressure[2]* |  | *CstUpSt* | *0* | *0* | *0* | *0* |  |
| *nLowPressure[3]* |  | *CstUpSt* | *0* | *0* | *0* | *0* |  |
|  |  |  |  |  |  |  |  |  |
| Stops  See also [travel\_cal](#travel_cal) | 171.141 | 141 |  |  |  |  |  | Part of PositionConf. Use find stops method for mounted units |
|  | LowPositionStop |  | SAutoStUpSttc | 0 | 0 | 0 | [0, 65535] | NOTE: order of stops is reversed in Read and Write commands |
| HighPositionStop |  | SAutoStUpSttc | 10000 | 10000 | 10000 | [0, 65535] |  |
| OpenStopAdjustment  See also [OpenStopAdj](#OpenStopAdj) | 167.0 | 169.0 | SManStUpSttc | 100.0 | 100.0 | 100.0 | [60.0, 100.0] | Part of PositionConf |
| *filtercoef* | *130.100* | *129.100* | *SManStUpSttc* | *3* | *3* | *3* | *3* | *Part of PositionConf* |
| AirAction  See also [AirAction](#AirAction) | 171.210 | 170.210 | SManStUpSttc | 1 | 1 | 1 | Per valve configuration  0, 1 | 1 – ATO; 0 – ATC  Part of PositionConf  Set over FF as [TB parameter](#AirAction) |
|  |  |  |  |  |  |  |  |  |
| OptionConfig | 248 | 200 |  |  |  |  |  | Purchase options – Kept for compatibility |
| m\_OptionConfig[0] |  | CFwFxd | 0x6F | 0x6F | 0x6F | 0x6F |  |
| m\_OptionConfig[1] |  | CStUpSt | 0x3C | 0x2C | 0x2C | 0x2C |  |
| m\_OptionConfig[2] |  | CFwFxd | 0x00 | 0x00 | 0x00 | 0x00 |  |
| m\_OptionConfig[3] |  | CFwFxd | 0x00 | 0x00 | 0x00 | 0x00 |  |
| m\_OptionConfig[4] |  | CFwFxd | 0x00 | 0x00 | 0x00 | 0x00 | (reserved) |
| m\_OptionConfig[5] |  | CFwFxd | 0x00 | 0x00 | 0x00 | 0x00 | (reserved) |
| m\_OptionConfig[6] |  | CFwFxd | 0x00 | 0x00 | 0x00 | 0x00 | (reserved) |
| m\_OptionConfig[7] |  | CFwFxd | 0x00 | 0x00 | 0x00 | 0x00 | (reserved) |
| m\_OptionConfig[8] |  | CFwFxd | 0x00 | 0x00 | 0x00 | 0x00 | (reserved) |
| m\_OptionConfig[9] |  | CFwFxd | 0x00 | 0x00 | 0x00 | 0x00 | (reserved) |
| m\_OptionConfig[10] |  | CFwFxd | 0x00 | 0x00 | 0x00 | 0x00 | (reserved) |
| m\_OptionConfig[11] |  | CFwFxd | 0x00 | 0x00 | 0x00 | 0x00 | (reserved) |
| m\_OptionConfig[12] |  | CFwFxd | 0x00 | 0x00 | 0x00 | 0x00 | (reserved) |
| m\_OptionConfig[13] |  | CFwFxd | 0x00 | 0x00 | 0x00 | 0x00 | (reserved) |
| m\_OptionConfig[14] |  | CFwFxd | 0x00 | 0x00 | 0x00 | 0x00 | (reserved) |
| m\_OptionConfig[15] |  | CFwFxd | 0x00 | 0x00 | 0x00 | 0x00 | (reserved) |
|  |  |  |  |  |  |  |  |  |
| CtlLimits  See also [cutoff](#cutoff), [poslimits](#poslimits) | 171.166 | 170.166 |  |  |  |  |  | Indexed variables are [0]-low (closed end), [1]-high (open end) |
|  | Protected |  | SManStUpSttc | 0 | 0 | 0 | 0 | 0 – Unprotected, 1 – Protected |
| TightShutoffEnable |  | SManStUpSttc | 0 | 0 | 0 | 0 | 0 - Disabled, 1 – Enabled |
| TightCutoffEnable |  | SManStUpSttc | 0 | 0 | 0 | 0 | Cutoff high  0 - Disabled, 1 – Enabled |
| Tight Shut Off |  | SManStUpSttc | 2.0 | 2.0 | 2.0 | 2.0 | Cutoff low |
| TightCut Off |  | SManStUpSttc | 98.0 | 98.0 | 98.0 | 98.0 |  |
| EnableSetpointLimit[0] |  | SManStUpSttc | 0 | 0 | 0 | 0 | 0 - Disabled, 1 – Enabled |
| EnableSetpointLimit[1] |  | SManStUpSttc | 0 | 0 | 0 | 0 | 0 - Disabled, 1 – Enabled |
| PositionLimit[0] |  | SManStUpSttc | 0.0 | 0.0 | 0.0 | 0.0 |  |
| PositionLimit[1] |  | SManStUpSttc | 100.0 | 100.0 | 100.0 | 100.0 |  |
| EnableSetpointRateLimit[0] |  | SManStUpSttc | 0 | 0 | 0 | 0 | 0 - Disabled, 1 – Enabled |
| EnableSetpointRateLimit[1] |  | SManStUpSttc | 0 | 0 | 0 | 0 | 0 - Disabled, 1 – Enabled |
|  | SetpointRateLimits |  | SManStUpSttc | 100.1 | 100.1 | 100.1 | 100.1 | Only one limit for both directions |
|  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
| *ErrorLimits* | *171.175* | *170.175* |  |  |  |  |  | *Not exposed to the user. Not to be changed, kept for compatibility* |
|  | *NearPosition* |  | *SManStUpSttc* | *1.0* | *1.0* | *1.0* | *1.0* |  |
| *PositionErrorBand* |  | *SManStUpSttc* | *5.0* | *5.0* | *5.0* | *5.0* |  |
| *PositionTime1* |  | *SManStUpSttc* | *10.0* | *10.0* | *10.0* | *10.0* |  |
|  |  |  |  |  |  |  |  |
| *PosErr1Enable* |  | *SManStUpSttc* | *0* | *0* | *0* | *0* | *0 – Disabled, 1 – Enabled* |
|  |  |  |  |  |  |  |  |
| *Log file system* | *130.198 (reset), APP*  *255,198 (reset), FFP, HART over FF only* | *198*  *See also [offline\_diag](#offline_diag), [diag\_data](#diag_data)* |  | *FF/FE same as set by command* | *Updated automatically* | *Updated automatically* | *Updated automatically* | *Dynamic data saved when a log file is written. Currently, signature is saved in NVMEM, or TB factory defaults are written. Not Exposed to the user.* |
| *ContinuousDiagnostics* | *140* | *139* |  |  |  |  |  | *Not exposed to the user.* |
|  | *TotalTravelCntr* |  | *CRnTmDyn* | *0* | *0* | *0* | *0* |  |
| *TimeClosedCntr* |  | *CRnTmDyn* | *0* | *0* | *0* | *0* |  |
| *TimeOpenCntr* |  | *CRnTmDyn* | *0* | *0* | *0* | *0* |  |
| *TimeNearCntr* |  | *CRnTmDyn* | *0* | *0* | *0* | *0* |  |
| *CyclesCntr* |  | *CRnTmDyn* | *0* | *0* | *0* | *0* |  |
|  |  |  |  |  |  |  |  |  |
| *ConfigurationChanged* | *38* |  |  |  |  |  | *na* | *Not exposed. For reference only.* |
|  | *ConfigurationChangedFlag[2]* |  | *CRnTmDyn* | *0* | *0* | *0* | *na* | *Primary copy (0 – not changed, 1 – changed)* |
|  | *ConfigurationChangedCounter* |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
| Pneumatics Params | 171.167 | 170.167 |  |  |  |  |  | Must be before attempting to get APP out of Failsafe |
|  | BoostCoef.Boost[0] |  | CStUpSt | 0 | See last column | See Last Column | See Last Column | Values must be per pneumatic parameters file (SA, DA, …)  For single acting AP-SingleActing\_defaultX.dp1 is used.  For double acting AP-DoubleActing6to1\_default.dp1 or AP-DoubleActing12to1default.dp1 is used. |
| BoostCoef.Boost[1] |  | CStUpSt | 0 |
| BoostOffset |  | CStUpSt | 0 |
| PresLimitsPilot.presLimit[0] |  | CStUpSt | 0 |
| PresLimitsPilot.presLimit[1] |  | CStUpSt | 0 |
| SupplyLossThreshold\_Pilot |  | CStUpSt | 0 |
| SupplyLossThreshold\_Supply |  | CStUpSt | 0 |
| SingleActing |  | CStUpSt | 1 |
| SensorMap[0] |  | CStUpSt | 0xFF |
| SensorMap[1] |  | CStUpSt | 0xFF |
| SensorMap[2] |  | CStUpSt | 0xFF |
| SensorMap[3] |  | CStUpSt | 0xFF |
| SensorMap[4] |  | CStUpSt | 0xFF |
|  |  |  |  |  |  |  |  |  |
| TuneData  See also [Autotune](#Autotune) | 171.189 | 170.189 |  |  |  |  |  | Read command also provides completion code (not in NVM) |
|  | iSupplyPres |  | SAutoStUpSttc | 30.0 | 30.0 | 30.0 | Set when the device is tuned. | Fallback supply pressure, psi (rescale as needed) |
| n1TunePara1 |  | SAutoStUpSttc | 0 | 0 | 0 | 0 | Not in use |
| n1Level |  | SAutoStUpSttc | 0 | 0 | 0 | [-9, 9] | User entered aggressiveness |
|  |  |  |  |  |  |  |  |  |
| *BiasExt* | *174* | *217* |  |  |  |  |  |  |
|  | *uiBiasShift* |  | *CFwFxd* | *300* | *300* | *300* | *300* |  |
| *nBiasAdd* |  | *CFwFxd* | *-500* | *-500* | *-500* | *-500* |  |
| *nBiasTempCoef* |  | *CFwFxd* | *2* | *2* | *2* | *2* |  |
| *nBiasAddAirLoss* |  | *CFwFxd* | *-500* | *-500* | *-500* | *-500* |  |
| *uiMaxHysteresis* |  | *CFwFxd* | *1000* | *1000* | *1000* | *1000* |  |
|  |  |  |  |  |  |  |  |  |
| *BiasSaved* |  |  | *SRnTmDyn* | *15000* | *Set automatically* | *Set automatically* | *Set automatically* | *Default Bias. Dynamic value – does not need to be set in the factory* |
|  |  |  |  |  |  |  |  |  |
| CharacterizationSelection  See also [charsel](#charsel) | 171.179 | 170.179 |  | Linear | Linear | Linear | Per valve/user configuration | Should be set through the FF command when mounted on the valve. |
|  |  |  |  |  |  |  |  |  |
| PosCharact  See also [curr\_char\_points](#curr_char_points), [custom\_char\_points](#custom_char_points) | 171.178 | 170.178 | SManStUpSttc |  |  |  |  |  |
|  | NumberOfPoints |  |  | 0 | 0 | 0 | Per Valve/user configuration | Corresponds to Linear selection  Should be set through the FF command when mounted on the valve. |
|  | Charact\_Custom\_Table.XY  19 pairs |  |  | 16384 16384 0 0 0… | Unchanged | Unchanged | Per Valve/user configuration | Should be set through the FF command when mounted on the valve. |
|  |  |  |  |  |  |  |  |  |
| SwitchConfiguration  See also [DO1](#DO1), [DO2](#DO2) | 134 | 137 |  |  |  |  |  |  |
| Switch1Direction |  | SManStUpSttc | 1 | 1 | 1 | 1 | 1 – Normally Open  0 – Normally Closed |
| Switch1Type |  | SManStUpSttc | 0 | 0 | 0 | 0  Per Valve or user configuration | Should be set through the FF command when mounted on the valve.  SWITCH\_DISABLE  0  SWITCH\_FAIL  1  SWITCH\_RESET  2  SWITCH\_POS\_ERROR  3  SWITCH\_TIGHT  4  SWITCH\_POS\_LOW  5  SWITCH\_POS\_HIGH  6  SWITCH\_MANUAL  7  SWITCH\_PASSTHROUGH  8  SWITCH\_ALWAYSON  9  SWITCH\_ALWAYSOFF  10  SWITCH\_CUTOFF\_HI  1SWITCH\_CUTOFF\_LO  12 |
| Switch2Direction |  | SManStUpSttc | 1 | 1 | 1 | 1 | 1 – Normally Open  0 – Normally Closed |
| Switch2Type |  | SManStUpSttc | 0 | 0 | 0 | 0  Per Valve or user configuration | Should be set through the FF command when mounted on the valve.  See values above. |
|  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
| inpv\_TCalRow | 233.1 |  | 236.1 |  |  |  |  | To be set during calibration |
|  | TemperatureCalData [0].offset |  | CStUpSt | 0 | (Cal Result) | (Cal Result) | (Cal Result) | 16-bit vars |
| TemperatureCalData [0].span |  | CStUpSt | 16384 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| TemperatureCalData [1].offset |  | CStUpSt | 0 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| TemperatureCalData [1].span |  | CStUpSt | 16384 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| TemperatureCalData [2] .offset |  | CStUpSt | 0 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| TemperatureCalData [2] .span |  | CStUpSt | 16384 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| TemperatureCalData [3] .offset |  | CStUpSt | 0 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| TemperatureCalData [3] .span |  | CStUpSt | 16384 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| TemperatureCalData [4] .offset |  | CStUpSt | 0 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| TemperatureCalData [4] .span |  | CStUpSt | 16384 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| TemperatureCalData [5] .offset |  | CStUpSt | 0 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| TemperatureCalData [5] .span |  | CStUpSt | 16384 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| TemperatureCalData [6] .offset |  | CStUpSt | 0 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| TemperatureCalData [6] .span |  | CStUpSt | 16384 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| TemperatureCalData [7] .offset |  | CStUpSt | 0 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| TemperatureCalData [7].span |  | CStUpSt | 16384 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| ChannelShift |  | CStUpSt | 14 | (Cal Result) | (Cal Result) | (Cal Result) |  |
|  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
| pres1\_TCalRow | 233.6 |  | 236.6 |  |  |  |  | To be set during calibration |
|  | TemperatureCalData [0].offset |  | CStUpSt | 0 | (Cal Result) | (Cal Result) | (Cal Result) | 16-bit vars |
| TemperatureCalData [0].span |  | CStUpSt | 16384 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| TemperatureCalData [1].offset |  | CStUpSt | 0 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| TemperatureCalData [1].span |  | CStUpSt | 16384 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| TemperatureCalData [2] .offset |  | CStUpSt | 0 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| TemperatureCalData [2] .span |  | CStUpSt | 16384 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| TemperatureCalData [3] .offset |  | CStUpSt | 0 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| TemperatureCalData [3] .span |  | CStUpSt | 16384 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| TemperatureCalData [4] .offset |  | CStUpSt | 0 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| TemperatureCalData [4] .span |  | CStUpSt | 16384 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| TemperatureCalData [5] .offset |  | CStUpSt | 0 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| TemperatureCalData [5] .span |  | CStUpSt | 16384 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| TemperatureCalData [6] .offset |  | CStUpSt | 0 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| TemperatureCalData [6] .span |  | CStUpSt | 16384 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| TemperatureCalData [7] .offset |  | CStUpSt | 0 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| TemperatureCalData [7].span |  | CStUpSt | 16384 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| ChannelShift |  | CStUpSt | 14 | (Cal Result) | (Cal Result) | (Cal Result) |  |
|  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
| *Temperature Filter coef* | *130.102* |  | *129.102* | *3* | *3* | *3* | *3* | *Not changed* |
|  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
| tempr\_TCalRow | 233.3 |  | 236.3 |  |  |  |  | To be set during calibration |
|  | TemperatureCalData [0].offset |  | CStUpSt | 0 | (Cal Result) | (Cal Result) | (Cal Result) | 16-bit vars |
| TemperatureCalData [0].span |  | CStUpSt | 16384 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| TemperatureCalData [1].offset |  | CStUpSt | 0 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| TemperatureCalData [1].span |  | CStUpSt | 16384 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| TemperatureCalData [2] .offset |  | CStUpSt | 0 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| TemperatureCalData [2] .span |  | CStUpSt | 16384 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| TemperatureCalData [3] .offset |  | CStUpSt | 0 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| TemperatureCalData [3] .span |  | CStUpSt | 16384 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| TemperatureCalData [4] .offset |  | CStUpSt | 0 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| TemperatureCalData [4] .span |  | CStUpSt | 16384 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| TemperatureCalData [5] .offset |  | CStUpSt | 0 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| TemperatureCalData [5] .span |  | CStUpSt | 16384 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| TemperatureCalData [6] .offset |  | CStUpSt | 0 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| TemperatureCalData [6] .span |  | CStUpSt | 16384 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| TemperatureCalData [7] .offset |  | CStUpSt | 0 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| TemperatureCalData [7].span |  | CStUpSt | 16384 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| ChannelShift |  | CStUpSt | 14 | (Cal Result) | (Cal Result) | (Cal Result) |  |
|  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
| SensorType  See also [sensortype](#sensortype) | 171.248 |  | 170.248 |  |  |  |  |  |
|  | Is remote position sensor |  |  | False | False | False | Per Valve or user configuration | Should be set through the FF command when mounted on the valve. |
|  |  |  |  |  |  |  |  |  |
| posext\_TCalRow | 233.10 |  | 236.10 |  |  |  |  | To be set during calibration |
|  | TemperatureCalData [0].offset |  | CStUpSt | 0 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| TemperatureCalData [0].span |  | CStUpSt | 16384 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| TemperatureCalData [1].offset |  | CStUpSt | 0 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| TemperatureCalData [1].span |  | CStUpSt | 16384 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| TemperatureCalData [2] .offset |  | CStUpSt | 0 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| TemperatureCalData [2] .span |  | CStUpSt | 16384 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| TemperatureCalData [3] .offset |  | CStUpSt | 0 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| TemperatureCalData [3] .span |  | CStUpSt | 16384 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| TemperatureCalData [4] .offset |  | CStUpSt | 0 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| TemperatureCalData [4] .span |  | CStUpSt | 16384 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| TemperatureCalData [5] .offset |  | CStUpSt | 0 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| TemperatureCalData [5] .span |  | CStUpSt | 16384 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| TemperatureCalData [6] .offset |  | CStUpSt | 0 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| TemperatureCalData [6] .span |  | CStUpSt | 16384 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| TemperatureCalData [7] .offset |  | CStUpSt | 0 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| TemperatureCalData [7].span |  | CStUpSt | 16384 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| ChannelShift |  | CStUpSt | 14 | (Cal Result) | (Cal Result) | (Cal Result) |  |
|  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
| posint\_TCalRow | 233.9 |  | 236.9 |  |  |  |  | To be set during calibration |
|  | TemperatureCalData [0].offset |  | CStUpSt | 0 | (Cal Result) | (Cal Result) | (Cal Result) | 16-bit vars |
| TemperatureCalData [0].span |  | CStUpSt | 16384 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| TemperatureCalData [1].offset |  | CStUpSt | 0 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| TemperatureCalData [1].span |  | CStUpSt | 16384 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| TemperatureCalData [2] .offset |  | CStUpSt | 0 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| TemperatureCalData [2] .span |  | CStUpSt | 16384 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| TemperatureCalData [3] .offset |  | CStUpSt | 0 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| TemperatureCalData [3] .span |  | CStUpSt | 16384 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| TemperatureCalData [4] .offset |  | CStUpSt | 0 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| TemperatureCalData [4] .span |  | CStUpSt | 16384 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| TemperatureCalData [5] .offset |  | CStUpSt | 0 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| TemperatureCalData [5] .span |  | CStUpSt | 16384 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| TemperatureCalData [6] .offset |  | CStUpSt | 0 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| TemperatureCalData [6] .span |  | CStUpSt | 16384 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| TemperatureCalData [7] .offset |  | CStUpSt | 0 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| TemperatureCalData [7].span |  | CStUpSt | 16384 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| ChannelShift |  | CStUpSt | 14 | (Cal Result) | (Cal Result) | (Cal Result) |  |
|  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
| presatm\_TCalRow | 233.4 |  | 236.4 |  |  |  |  | To be set during calibration |
|  | TemperatureCalData [0].offset |  | CStUpSt | 0 | (Cal Result) | (Cal Result) | (Cal Result) | 16-bit vars |
| TemperatureCalData [0].span |  | CStUpSt | 16384 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| TemperatureCalData [1].offset |  | CStUpSt | 0 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| TemperatureCalData [1].span |  | CStUpSt | 16384 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| TemperatureCalData [2] .offset |  | CStUpSt | 0 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| TemperatureCalData [2] .span |  | CStUpSt | 16384 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| TemperatureCalData [3] .offset |  | CStUpSt | 0 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| TemperatureCalData [3] .span |  | CStUpSt | 16384 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| TemperatureCalData [4] .offset |  | CStUpSt | 0 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| TemperatureCalData [4] .span |  | CStUpSt | 16384 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| TemperatureCalData [5] .offset |  | CStUpSt | 0 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| TemperatureCalData [5] .span |  | CStUpSt | 16384 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| TemperatureCalData [6] .offset |  | CStUpSt | 0 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| TemperatureCalData [6] .span |  | CStUpSt | 16384 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| TemperatureCalData [7] .offset |  | CStUpSt | 0 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| TemperatureCalData [7].span |  | CStUpSt | 16384 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| ChannelShift |  | CStUpSt | 14 | (Cal Result) | (Cal Result) | (Cal Result) |  |
|  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
| pres3\_TCalRow | 233.8 |  | 236.8 |  |  |  |  | To be set during calibration |
|  | TemperatureCalData [0].offset |  | CStUpSt | 0 | (Cal Result) | (Cal Result) | (Cal Result) | 16-bit vars |
| TemperatureCalData [0].span |  | CStUpSt | 16384 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| TemperatureCalData [1].offset |  | CStUpSt | 0 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| TemperatureCalData [1].span |  | CStUpSt | 16384 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| TemperatureCalData [2] .offset |  | CStUpSt | 0 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| TemperatureCalData [2] .span |  | CStUpSt | 16384 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| TemperatureCalData [3] .offset |  | CStUpSt | 0 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| TemperatureCalData [3] .span |  | CStUpSt | 16384 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| TemperatureCalData [4] .offset |  | CStUpSt | 0 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| TemperatureCalData [4] .span |  | CStUpSt | 16384 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| TemperatureCalData [5] .offset |  | CStUpSt | 0 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| TemperatureCalData [5] .span |  | CStUpSt | 16384 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| TemperatureCalData [6] .offset |  | CStUpSt | 0 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| TemperatureCalData [6] .span |  | CStUpSt | 16384 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| TemperatureCalData [7] .offset |  | CStUpSt | 0 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| TemperatureCalData [7].span |  | CStUpSt | 16384 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| ChannelShift |  | CStUpSt | 14 | (Cal Result) | (Cal Result) | (Cal Result) |  |
|  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
| pres2\_TCalRow | 233.7 |  | 236.7 |  |  |  |  | To be set during calibration |
|  | TemperatureCalData [0].offset |  | CStUpSt | 0 | (Cal Result) | (Cal Result) | (Cal Result) | 16-bit vars |
| TemperatureCalData [0].span |  | CStUpSt | 16384 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| TemperatureCalData [1].offset |  | CStUpSt | 0 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| TemperatureCalData [1].span |  | CStUpSt | 16384 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| TemperatureCalData [2] .offset |  | CStUpSt | 0 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| TemperatureCalData [2] .span |  | CStUpSt | 16384 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| TemperatureCalData [3] .offset |  | CStUpSt | 0 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| TemperatureCalData [3] .span |  | CStUpSt | 16384 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| TemperatureCalData [4] .offset |  | CStUpSt | 0 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| TemperatureCalData [4] .span |  | CStUpSt | 16384 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| TemperatureCalData [5] .offset |  | CStUpSt | 0 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| TemperatureCalData [5] .span |  | CStUpSt | 16384 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| TemperatureCalData [6] .offset |  | CStUpSt | 0 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| TemperatureCalData [6] .span |  | CStUpSt | 16384 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| TemperatureCalData [7] .offset |  | CStUpSt | 0 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| TemperatureCalData [7].span |  | CStUpSt | 16384 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| ChannelShift |  | CStUpSt | 14 | (Cal Result) | (Cal Result) | (Cal Result) |  |
|  |  |  |  |  |  |  |  |  |
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|  |  |  |  |  |  |  |  |  |
| prespilot\_TCalRow | 233.5 |  | 236.5 |  |  |  |  | To be set during calibration |
|  | TemperatureCalData [0].offset |  | CStUpSt | 0 | (Cal Result) | (Cal Result) | (Cal Result) | 16-bit vars |
| TemperatureCalData [0].span |  | CStUpSt | 16384 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| TemperatureCalData [1].offset |  | CStUpSt | 0 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| TemperatureCalData [1].span |  | CStUpSt | 16384 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| TemperatureCalData [2] .offset |  | CStUpSt | 0 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| TemperatureCalData [2] .span |  | CStUpSt | 16384 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| TemperatureCalData [3] .offset |  | CStUpSt | 0 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| TemperatureCalData [3] .span |  | CStUpSt | 16384 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| TemperatureCalData [4] .offset |  | CStUpSt | 0 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| TemperatureCalData [4] .span |  | CStUpSt | 16384 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| TemperatureCalData [5] .offset |  | CStUpSt | 0 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| TemperatureCalData [5] .span |  | CStUpSt | 16384 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| TemperatureCalData [6] .offset |  | CStUpSt | 0 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| TemperatureCalData [6] .span |  | CStUpSt | 16384 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| TemperatureCalData [7] .offset |  | CStUpSt | 0 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| TemperatureCalData [7].span |  | CStUpSt | 16384 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| ChannelShift |  | CStUpSt | 14 | (Cal Result) | (Cal Result) | (Cal Result) |  |
|  |  |  |  |  |  |  |  |  |
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|  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
| ipcurr\_TCalRow | 233.11 |  | 236.11 |  |  |  |  | To be set during calibration |
|  | TemperatureCalData [0].offset |  | CStUpSt | 0 | (Cal Result) | (Cal Result) | (Cal Result) | 16-bit vars |
| TemperatureCalData [0].span |  | CStUpSt | 16384 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| TemperatureCalData [1].offset |  | CStUpSt | 0 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| TemperatureCalData [1].span |  | CStUpSt | 16384 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| TemperatureCalData [2] .offset |  | CStUpSt | 0 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| TemperatureCalData [2] .span |  | CStUpSt | 16384 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| TemperatureCalData [3] .offset |  | CStUpSt | 0 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| TemperatureCalData [3] .span |  | CStUpSt | 16384 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| TemperatureCalData [4] .offset |  | CStUpSt | 0 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| TemperatureCalData [4] .span |  | CStUpSt | 16384 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| TemperatureCalData [5] .offset |  | CStUpSt | 0 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| TemperatureCalData [5] .span |  | CStUpSt | 16384 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| TemperatureCalData [6] .offset |  | CStUpSt | 0 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| TemperatureCalData [6] .span |  | CStUpSt | 16384 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| TemperatureCalData [7] .offset |  | CStUpSt | 0 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| TemperatureCalData [7].span |  | CStUpSt | 16384 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| ChannelShift |  | CStUpSt | 14 | (Cal Result) | (Cal Result) | (Cal Result) |  |
|  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
| pwmcomp\_TCalRow | 233.13 |  | 236.13 |  |  |  |  | To be set during calibration |
|  | TemperatureCalData [0].offset |  | CStUpSt | 0 | (Cal Result) | (Cal Result) | (Cal Result) | 16-bit vars |
| TemperatureCalData [0].span |  | CStUpSt | 16384 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| TemperatureCalData [1].offset |  | CStUpSt | 0 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| TemperatureCalData [1].span |  | CStUpSt | 16384 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| TemperatureCalData [2] .offset |  | CStUpSt | 0 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| TemperatureCalData [2] .span |  | CStUpSt | 16384 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| TemperatureCalData [3] .offset |  | CStUpSt | 0 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| TemperatureCalData [3] .span |  | CStUpSt | 16384 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| TemperatureCalData [4] .offset |  | CStUpSt | 0 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| TemperatureCalData [4] .span |  | CStUpSt | 16384 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| TemperatureCalData [5] .offset |  | CStUpSt | 0 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| TemperatureCalData [5] .span |  | CStUpSt | 16384 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| TemperatureCalData [6] .offset |  | CStUpSt | 0 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| TemperatureCalData [6] .span |  | CStUpSt | 16384 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| TemperatureCalData [7] .offset |  | CStUpSt | 0 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| TemperatureCalData [7].span |  | CStUpSt | 16384 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| ChannelShift |  | CStUpSt | 14 | (Cal Result) | (Cal Result) | (Cal Result) |  |
|  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
| TemperatureCalibrationPoints | 234 |  | 237 | --- | --- | --- | --- | Main Board, Temperature Sensor 0 |
| TemperatureAD [0] |  | SUntFxd | 4236 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| TemperatureAD [1] |  | SUntFxd | 65535 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| TemperatureAD [2] |  | SUntFxd | 65535 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| TemperatureAD [3] |  | SUntFxd | 65535 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| TemperatureAD [4] |  | SUntFxd | 65535 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| TemperatureAD [5] |  | SUntFxd | 65535 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| TemperatureAD [6] |  | SUntFxd | 65535 | (Cal Result) | (Cal Result) | (Cal Result) |  |
| TemperatureAD [7] |  | SUntFxd | 65535 | (Cal Result) | (Cal Result) | (Cal Result) |  |
|  |  |  |  |  |  |  |  |
| ActualNumberTempPoints |  | SUntFxd | 8 | (Cal Result) | (Cal Result) | (Cal Result) | Not to exceed 8 (MAX) |
|  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
| HartData |  |  | 0 |  |  |  |  |  |
| HartVersion |  | CFwFxd | 5 | 5 | 5 | 5 |  |
| device\_id | 130.131 | SUntFxd | 0 | Set in manufacturing Hart Command 130.131 | Not Changed | Not changed | 24-bit; Scheme per S/N specification |
|  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
| transmit\_address | 6 | CFwFxd | 0 | 0 | 0 | 0 | Do not change |
| nbr\_resp\_pream |  | CFwFxd | 5 | 5 | 5 | 5 | Do not change |
|  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
| FaultCodeData  See also [complete\_status](#complete_status), [clear\_status](#clear_status) | 138, 130.139 | 136 |  | --- | --- | --- | --- | 24 bytes |
| fcode [0] |  | CRnTmDyn | 0 | 0 | 0 | 0 |  |
| fcode [1] |  | CRnTmDyn | 0 | 2  Clear all faults.  Use Command 130.139 to invoke calibration fault #10 | 2  Clear all faults.  Use Command 130.139 to invoke calibration fault #10 | 0  Clear all faults. The fault (2) will be cleared when the Find Stops procedure is executed. | Use Find Stops from FF to calibrate the positioner when mounted on the final valve |
| fcode [2] |  | CRnTmDyn | 0 | 0 | 0 | 0 |  |
| fcode [3] |  | CRnTmDyn | 0 | 0 | 0 | 0 |  |
| fcode [4] |  | CRnTmDyn | 0 | 0 | 0 | 0 |  |
| fcode [5] |  | CRnTmDyn | 0 | 0 | 0 | 0 |  |
| fcode [6] |  | CRnTmDyn | 0 | 0 | 0 | 0 |  |
| fcode [7] |  | CRnTmDyn | 0 | 0 | 0 | 0 |  |
| fcode [8] |  | CRnTmDyn | 0 | 0 | 0 | 0 |  |
| fcode [9] |  | CRnTmDyn | 0 | 0 | 0 | 0 |  |
| fcode [10] |  | CRnTmDyn | 0 | 0 | 0 | 0 |  |
| fcode [11] |  | CRnTmDyn | 0 | 0 | 0 | 0 |  |
| fcodeHistory [0] |  | CRnTmDyn | 0 | 0 | 0 | 0 |  |
| fcodeHistory [1] |  | CRnTmDyn | 0 | 0 | 0 | 0 |  |
| fcodeHistory [2] |  | CRnTmDyn | 0 | 0 | 0 | 0 |  |
| fcodeHistory [3] |  | CRnTmDyn | 0 | 0 | 0 | 0 |  |
| fcodeHistory [4] |  | CRnTmDyn | 0 | 0 | 0 | 0 |  |
| fcodeHistory [5] |  | CRnTmDyn | 0 | 0 | 0 | 0 |  |
| fcodeHistory [6] |  | CRnTmDyn | 0 | 0 | 0 | 0 |  |
| fcodeHistory [7] |  | CRnTmDyn | 0 | 0 | 0 | 0 |  |
| fcodeHistory [8] |  | CRnTmDyn | 0 | 0 | 0 | 0 |  |
| fcodeHistory [9] |  | CRnTmDyn | 0 | 0 | 0 | 0 |  |
| fcodeHistory [10] |  | CRnTmDyn | 0 | 0 | 0 | 0 |  |
| fcodeHistory [11] |  | CRnTmDyn | 0 | 0 | 0 | 0 |  |
|  |  |  |  |  |  |  |  |  |
| PID Data  See also [active\_ctlset](#active_ctlset), [activate\_ctlset](#activate_ctlset), [custom\_ctlset](#custom_ctlset) | 173 | 170.217 |  |  |  |  |  | **8 Sets of PID parameters** |
| [0] |  |  |  |  |  |  |  |  |
| P |  | SRnTmDyn | 100 | 100 | 100 | [0, 5000] | **Set 0** – AutoTunable set  Set for the positioner mounted on the valve if/when Autotune is executed.  Should be reset to right value when the valve is shipped stand alone. |
| I |  | SRnTmDyn | 160 | 160 | 160 | [0, 1000] |
| D |  | SRnTmDyn | 20 | 20 | 20 | [0, 200] |
| PAdjust |  | SRnTmDyn | 30 | 30 | 30 | [-3000, 3000] |
| Beta |  | SRnTmDyn | -2 | -2 | -2 | [-9, 9] |
| PosComp |  | SRnTmDyn | 13 | 13 | 13 | [2, 20] |
| DeadZone |  | SRnTmDyn | 0 | 0 | 0 | [0, 820] |
| Band |  | SRnTmDyn | 4 | 4 | 4 | [0, 20] |
| [1] | P |  | SFtrSttc | 100 | 250 | 250 | 250 | **Set 1 – Camflex #4.5, Spring Range** |
| I |  | SFtrSttc | 160 | 110 | 110 | 110 | **(Span 8)** |
| D |  | SFtrSttc | 20 | 18 | 18 | 18 | Single Acting |
| PAdjust |  | SFtrSttc | 30 | 0 | 0 | 0 |  |
| Beta |  | SFtrSttc | -2 | -2 | -2 | -2 |  |
| PosComp |  | SFtrSttc | 13 | 10 | 10 | 10 |  |
| DeadZone |  | SFtrSttc | 0 | 0 | 0 | 0 |  |
| Band |  | SFtrSttc | 4 | 4 | 4 | 4 |  |
| [2] | P |  | SFtrSttc | 100 | 400 | 400 | 400 | **Set 2 – 12psi Spring Range #6 or #10** |
| I |  | SFtrSttc | 160 | 110 | 110 | 110 | **(Span 12)** |
| D |  | SFtrSttc | 20 | 18 | 18 | 18 | Single Acting |
| PAdjust |  | SFtrSttc | 30 | 0 | 0 | 0 |  |
| Beta |  | SFtrSttc | -2 | -2 | -2 | -2 |  |
| PosComp |  | SFtrSttc | 13 | 10 | 10 | 10 |  |
| DeadZone |  | SFtrSttc | 0 | 0 | 0 | 0 |  |
| Band |  | SFtrSttc | 4 | 4 | 4 | 4 |  |
| [3] | P |  | SFtrSttc | 100 | 400 | 400 | 400 | **Set 3 – 24 psi Spring Range #6 or #10** |
| I |  | SFtrSttc | 160 | 110 | 110 | 110 | **(Span 24)** |
| D |  | SFtrSttc | 20 | 18 | 18 | 18 | Single Acting |
| PAdjust |  | SFtrSttc | 30 | 0 | 0 | 0 |  |
| Beta |  | SFtrSttc | -2 | -2 | -2 | -2 |  |
| PosComp |  | SFtrSttc | 13 | 8 | 8 | 8 |  |
| DeadZone |  | SFtrSttc | 0 | 0 | 0 | 0 |  |
| Band |  | SFtrSttc | 4 | 4 | 4 | 4 |  |
| [4] | P |  | SFtrSttc | 100 | 525 | 525 | 525 | **Set 4 – 12psi Spring Range #16, #23,** |
| I |  | SFtrSttc | 160 | 110 | 110 | 110 | **(Span 12)** |
| D |  | SFtrSttc | 20 | 18 | 18 | 18 | Single Acting |
| PAdjust |  | SFtrSttc | 30 | 0 | 0 | 0 |  |
| Beta |  | SFtrSttc | -2 | -2 | -2 | -2 |  |
| PosCOmp |  | SFtrSttc | 13 | 9 | 9 | 9 |  |
| DeadZOne |  | SFtrSttc | 0 | 0 | 0 | 0 |  |
| Band |  | SFtrSttc | 4 | 4 | 4 | 4 |  |
| [5] | P |  | SFtrSttc | 100 | 650 | 650 | 650 | **Set 5 – 24psi Spring Range #16, #23,** |
| I |  | SFtrSttc | 160 | 110 | 110 | 110 | **(Span 24)** |
| D |  | SFtrSttc | 20 | 18 | 18 | 18 | Single Acting |
| PAdjust |  | SFtrSttc | 30 | 0 | 0 | 0 |  |
| Beta |  | SFtrSttc | -2 | -2 | -2 | -2 |  |
| PosComp |  | SFtrSttc | 13 | 8 | 8 | 8 |  |
| DeadZone |  | SFtrSttc | 0 | 0 | 0 | 0 |  |
| Band |  | SFtrSttc | 4 | 4 | 4 | 4 |  |
| [6] | P |  | SFtrSttc | 100 | 500 | 500 | 500 | **Set 6 – max Volume < 7 liters** |
| I |  | SFtrSttc | 160 | 150 | 150 | 150 |  |
| D |  | SFtrSttc | 20 | 25 | 25 | 25 | Dual Acting |
| PAdjust |  | SFtrSttc | 30 | 0 | 0 | 0 |  |
| Beta |  | SFtrSttc | -2 | -2 | -2 | -2 |  |
| PosComp |  | SFtrSttc | 13 | 16 | 16 | 16 |  |
| DeadZone |  | SFtrSttc | 0 | 0 | 0 | 0 |  |
| Band |  | SFtrSttc | 4 | 4 | 4 | 4 |  |
| [7] | P |  | SFtrSttc | 100 | 800 | 800 | 800 | **Set 7 – max Volume > 7 liters** |
| I |  | SFtrSttc | 160 | 150 | 150 | 150 |  |
| D |  | SFtrSttc | 20 | 25 | 25 | 25 | Dual Acting |
| PAdjust |  | SFtrSttc | 30 | 0 | 0 | 0 |  |
| Beta |  | SFtrSttc | -2 | -2 | -2 | -2 |  |
| PosComp |  | SFtrSttc | 13 | 16 | 16 | 16 |  |
| DeadZone |  | SFtrSttc | 0 | 0 | 0 | 0 |  |
| Band |  | SFtrSttc | 4 | 4 | 4 | 4 |  |
| Ctl Set Slot  See also [active\_ctlset](#active_ctlset), [activate\_ctlset](#activate_ctlset) | 171.216 | 170.216 |  |  |  |  |  |  |
|  | Slot |  | SRnTmDyn | 0 | 0 | 0 | 0 | 0 – Auto-tunable slot ID. |
| Reserved |  | SUntFxd | 0 | 0 | 0 | 0 | Do not change |
| *Low Power Data* | *130.140* | *129.140* |  |  |  |  |  | *Unused. Kept for compatibility* |
|  | *uiHysteresis* |  | *CFwFxd* | *130* | *130* | *130* | *130* | *5uA* |
|  | *uiLo* |  | *CFwFxd* | *10119* | *10119* | *10119* | *10119* | *3.9mA* |
|  | *uiMarginal* |  | *CFwFxd* | *9730* | *9730* | *9730* | *9730* | *3.75mA* |
|  | *uiLoLo* |  | *CFwFxd* | *8303* | *8303* | *8303* | *8303* | *3.2mA* |
|  | *nPowerCoef* |  | *CFwFxd* | *639* | *639* | *639* | *639* | *Pre-calculated, based on H/W* |
|  | *NltPressureCoef* |  | *CFwFxd* | *308* | *308* | *308* | *308* | *Pre-calculated, based on H/W* |
| Activate Verify Data | 171.159 | 170.159 |  |  |  |  |  |  |
|  | Activation Data/Signature 1 |  | SUntFxd | 0 | (Activation result) | (Activation result) | (Activation result) | To be set in before the end of Electronic Shipment phase. |
| Activation Data/Signature 2 |  | SUntFxd | 0 | (Activation result) | (Activation result) | (Activation result) |
| Activation Code 1 |  | SUntFxd | 1 | (Activation result) | (Activation result) | (Activation result) |
| Activation Code 2 |  | SUntFxd | 1 | (Activation result) | (Activation result) | (Activation result) |
| UI Access Control  See also [UI\_access](#UI_access) | 171.2 | 170.2 |  |  |  |  |  |  |
|  | Password |  | SFtrSttc | 0 | 0 | 0 | 0 | Password |
| PasswordEnabled |  | SFtrSttc | 0 | 0 | 0 | 0 | Password Disabled |
| Lock Level |  | SFtrSttc | 0 | 0 | 0 | 0 | UI Unlocked. Everything is enabled |
| UI Language ID  See also [UI\_lang](#UI_lang) | 171.1 | 170.1 | CStUpSt | 0 | 0 | 0 | 0 | 0 – English  May be changed per user request. |
| Pressure units  See also [pres\_units](#pres_units) | 171.176 | 170.176 | CStUpSt | 6 | 12 | 12 | 12 | Actual unit for Pressure.  Default should be kPa.  Can be changed per user request at the end of electronic Shipment phase or when mounted on a valve. 12 – kPa  6 - PSI  7 - Bar |
| RefVoltage | 130.110 | 129.110 |  |  |  |  |  | Reference voltage – 1 Volt. Depends on Hardware. |
|  | Low |  | CFUpSt | 31130 | 24904 | 24904 | 24904 | As specified by HW team |
|  | High |  | CFUpSt | 34406 | 27525 | 27525 | 27525 | As specified by HW team |
|  |  |  |  |  |  |  |  |  |
| Simulation Enabled Jumper Emulation | 171.21 | 170.21 |  | 0 | 0 | 0 | 0 | Need to verify it is 0 at shipment |
| *PST Configuration*  *See also [PST\_conf](#PST_conf)* | *171.195* | *170.195* |  |  |  |  |  |  |
|  | *Setpoint Change Threshold* |  | *SManSrUpSttc* | *5.0* | *5.0* | *5.0* | *5.0* |  |
|  | *PSTtravel* |  | *SManSrUpSttc* | *5.0* | *5.0* | *5.0* | *5.0* |  |
|  | *PSTMaxTime* |  | *SManSrUpSttc* | *5000* | *5000* | *5000* | *5000* | *ms* |
|  | *PSTSetpointRate* |  | *SManSrUpSttc* | *199.9* | *199.9* | *199.9* | *199.9* | *%/s* |
|  | *PSTLeadTime* |  | *SManSrUpSttc* | *60* | *60* | *60* | *60* | *ms* |
|  | *PSTPilotPressureThreshold* |  | *SManSrUpSttc* | *120.0* | *120.0* | *120.0* | *120.0* | *psi* |
|  | *PSTActuatorPressureThreshold* |  | *SManSrUpSttc* | *120.0* | *120.0* | *120.0* | *120.0* | *psi* |
|  | *PSTDwellTime* |  | *SManSrUpSttc* | *4* | *4* | *4* | *4* | *s* |
|  | *PSTStrokeTimeout* |  | *SManSrUpSttc* | *-* | *-* | *-* | *-* | *If 0 is written, calculated automatically* |
|  | *PSTdatamap* |  | *SManSrUpSttc* | *127* | *127* | *127* | *127* |  |
|  | *PSTSkipCount* |  | *SManSrUpSttc* | *0* | *0* | *0* | *0* |  |
|  | *PSTFreezeOptions* |  | *SManSrUpSttc* | *0x3c* | *0x3c* | *0x3c* | *0x3c* |  |
|  | *PSTpattern* |  | *SManSrUpSttc* | *2* | *2* | *2* | *2* |  |
| *PST Start Config*  *See also [PST\_trigger](#PST_trigger)* | *171.196* |  | *170.196* |  |  |  |  |  |
|  | *Trigger by UI* |  | *SManSrUpSttc* | *0* | *0* | *0* | *0* | *Do not change* |
|  | *Trigger By HART* |  | *SManSrUpSttc* | *1* | *1* | *1* | *1* |  |
|  | *Trigger By DI Switch* |  | *SManSrUpSttc* | *0* | *0* | *0* | *0* |  |
|  | *Trigger By AI Input* |  | *SManSrUpSttc* | *0* | *0* | *0* | *0* |  |
|  | *AI Input Threshold* |  | *SManSrUpSttc* | *12.0* | *12.0* | *12.0* | *12.0* |  |
| *Data Collection Config*  *See also [Data\_Collection](#Data_Collection)* | *171.22* | *170.22* |  |  |  |  |  |  |
|  | *Collection Context* |  | *SManSrUpSttc* | *TASKID\_CYCLE* | *TASKID\_CYCLE* | *TASKID\_CYCLE* | *TASKID\_CYCLE* | *TASKID\_CYCLE=2* |
|  | *Collection Skip Count* |  | *SManSrUpSttc* | *0* | *0* | *0* | *0* |  |
|  | *Collection Bitmap* |  | *SManSrUpSttc* | *1* | *1* | *1* | *1* | *Only working position* |
|  | *Collection Max Samples* |  | *SManSrUpSttc* | *0* | *0* | *0* | *0* |  |
|  | *Collection Max PreSamples* |  | *SManSrUpSttc* | *0* | *0* | *0* | *0* |  |
| *Data Collection Trigger Config*  *See also [Data\_CollectionTrigger](#Data_CollectionTrigger)* | *171.23* | *170.23* |  |  |  |  |  |  |
|  | *Binary Options* |  | *SManSrUpSttc* | *1* | *1* | *1* | *1* | *Only on demand* |
|  | *AIInputThreshold[0]* |  | *SManSrUpSttc* | *12.0* | *12.0* | *12.0* | *12.0* |  |
|  | *AIInputThreshold[1]* |  | *SManSrUpSttc* | *12.0* | *12.0* | *12.0* | *12.0* |  |
|  | *PositionDeviationThreshold* |  | *SManSrUpSttc* | *2.0* | *2.0* | *2.0* | *2.0* |  |
|  | *SetpointDeviationThreshold* |  | *SManSrUpSttc* | *2.0* | *2.0* | *2.0* | *2.0* |  |
|  | *PressureDeviationThreshold* |  | *SManSrUpSttc* | *10.0* | *10.0* | *10.0* | *10.0* | *In psi; convert according to the units* |
|  | *FilterCoef* |  | *SManSrUpSttc* | *6* | *6* | *6* | *6* |  |

## FF Processor parameters and values

### Device Specific parameters

The following device specific parameters must be set in manufacturing

#### DEVICE PARAMETERS

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Parameter** | **Value at Electronic Shipment** | **Value At Final Shipment as a Standalone Unit** | **Final value**  **Shipment As a Mounted Unit** | **Comment** |
| **Device Tag** | **4456440008\_\_\_\_\_\_\_\_\_\_\_\_\_\_[DeviceID]** | **4456440008\_\_\_\_\_\_\_\_\_\_\_\_\_\_[DeviceID]** | **4456440008\_\_\_\_\_\_\_\_\_\_\_\_\_\_[DeviceID]** | **Example:**  **4456440008\_\_\_\_\_\_\_\_\_\_\_\_\_\_03323001**  **set automatically on device initialization** |
| **Device Address** | **Between 18 and 32** | **Between 18 and 32** | **Between 18 and 32** | **Per order, when available** |
| **MIB:BOOT\_OPERAT\_FUNCTIONAL\_CLASS** | **1** |  |  | Basic device,  NOT link Master.  Need to reset the device to take effect |
|  |  |  |  |  |
| **Block Tags:** | **[BlockNmbr][BlockType]\_[Manufacturer[[1]](#footnote-1)**  **ID][DeviceType]\_[ApplicationDeviceID]** |  |  | **Examples:**  **01RB\_4456440008\_03323001**  **02TB\_4456440008\_03323001**  **For SVI FF:**  **Manufacturer ID is: 445644**  **DeviceType ID: 0008**  **set automatically on device initialization** |

#### TRANSDUCER BLOCK PARAMETERS

| **Parameter** | | **Value at Electronic Shipment** | **Value At Final Shipment as a Standalone Unit** | **Final value**  **Shipment As a Mounted Unit** | | **Comment** |
| --- | --- | --- | --- | --- | --- | --- |
| **APP\_MODE** | | **Setup** | **Normal** | **Normal** |  | |
| **ALERT\_COUNTERS** | |  |  |  | **set automatically on device initialization but may change** | |
| **Deviation Alert** | | **0** | **0** | **0** |  | |
| **Position HiHi Alert** | | **0** | **0** | **0** |  | |
| **Position Hi Alert** | | **0** | **0** | **0** |  | |
| **Position Lo Alert** | | **0** | **0** | **0** |  | |
| **Position LoLo Alert** | | **0** | **0** | **0** |  | |
| **Set Point Timeout Alert** | | **0** | **0** | **0** |  | |
| **Near Close Alert** | | **0** | **0** | **0** |  | |
| **Travel Accumulation A Alert** | | **0** | **0** | **0** |  | |
| **Travel Accumulation B Alert** | | **0** | **0** | **0** |  | |
| **Cycle Counter A Alert** | | **0** | **0** | **0** |  | |
| **Cycle Counter B Alert** | | **0** | **0** | **0** |  | |
| **Working Time Alert** | | **0** | **0** | **0** |  | |
| **Supply Pressure Hi Alert** | | **0** | **0** | **0** |  | |
| **Supply Pressure Lo Alert** | | **0** | **0** | **0** |  | |
| **Supply Pressure LoLo Alert** | | **0** | **0** | **0** |  | |
| **Temperature Hi Alert** | | **0** | **0** | **0** |  | |
| **Temperature Lo Alert** | | **0** | **0** | **0** |  | |
| **IP Drive Current Alert HI** | | **0** | **0** | **0** |  | |
| **IP Drive Current Alert LO** | | **0** | **0** | **0** |  | |
| **Sensor Failure Alert** | | **0** | **0** | **0** |  | |
| **Processor Alert** | | **0** | **0** | **0** |  | |
| **Valve Control Alert** | | **0** | **0** | **0** |  | |
| **Commissioning Alert** | | **0** | **0** | **0** |  | |
| **Air Supply Alert** | | **0** | **0** | **0** |  | |
| **Supporting Hardware Alert** | | **0** | **0** | **0** |  | |
| **ADVANCED (See** [**ADAVNCED**](#ADAVNCED)**)** | | (Advanced) | (Advanced) or (Standard) | (Advanced) or (Standard) | Per order | |
|  | |  |  |  |  | |
|  | |  |  |  |  | |
| **PRESSURE\_RANGE** | |  |  |  |  | |
| **UNITS\_INDEX** | | **1133 (kPa)** |  |  |  | |
|  | |  |  |  |  | |
| **POSITION\_ERROR\_HISTOGRAM** | |  |  |  |  | |
| 5%-CLOSED | | 0 | 0 | 0 |  | |
| 10% | | 0 | 0 | 0 |  | |
| 20% | | 0 | 0 | 0 |  | |
| 30% | | 0 | 0 | 0 |  | |
| 40% | | 0 | 0 | 0 |  | |
| 50% | | 0 | 0 | 0 |  | |
| 60% | | 0 | 0 | 0 |  | |
| 70% | | 0 | 0 | 0 |  | |
| 80% | | 0 | 0 | 0 |  | |
| 90% | | 0 | 0 | 0 |  | |
| 95% | | 0 | 0 | 0 |  | |
| 95%-OPEN | | 0 | 0 | 0 |  | |
| **POSITION\_EXTREMES** | |  |  |  |  | |
| FINAL\_VALUE\_MAX | | -50 | -50 | -50 |  | |
| FINAL\_VALUE\_MIN | | 199 | 199 | 199 |  | |
| FINAL\_POS\_VALUE\_MAX | | -50 | -50 | -50 |  | |
| FINAL\_POS\_VALUE\_MIN | | 199 | 199 | 199 |  | |
| WORKING\_SP\_MAX | | -50 | -50 | -50 |  | |
| WORKING\_SP\_MIN | | 199 | 199 | 199 |  | |
| WORKING\_POS\_MAX | | -50 | -50 | -50 |  | |
| WORKING\_POS\_MIN | | 199 | 199 | 199 |  | |
| **PRESSURE\_EXTREMES** | |  |  |  | In KPa; rescale as needed | |
| SUPPLY\_PRESSURE\_MAX | | -25 | -25 | -25 |  | |
| SUPPLY\_PRESSURE\_MIN | | 1050 | 1050 | 1050 |  | |
| ACTUATOR\_A\_MAX | | -25 | -25 | -25 |  | |
| ACTUATOR\_A\_MIN | | 1050 | 1050 | 1050 |  | |
| ACTUATOR\_B\_MAX | | -25 | -25 | -25 |  | |
| ACTUATOR\_B\_MIN | | 1050 | 1050 | 1050 |  | |
| PILOT\_MAX | | -25 | -25 | -25 |  | |
| PILOT\_MIN | | 1050 | 1050 | 1050 |  | |
| **TEMPERATURE\_EXTREMES** | |  |  |  |  | |
| TEMPERATURE\_MAX | | -40 | -40 | -40 |  | |
| TEMPERATURE\_MIN | | 85 | 85 | 85 |  | |
| **IP\_CURRENT\_EXTREMES** | |  |  |  |  | |
| IP\_CURRENT\_MAX | | -25 | -25 | -25 |  | |
| IP\_CURRENT\_MIN | | 150 | 150 | 150 |  | |
| **MODE\_BLK** | |  |  |  | | |
| **TARGET** | | **MANUAL** | **MANUAL** | **MANUAL** | | |
| **ACCESSORY** | |  | |  |  |  | |
| **REMOTE\_SENSOR** | | As needed | | Per order | Per order |  | |
| **ACTUATOR\_1**  **ACT\_MAN\_ID**  **ACT\_MODEL\_NUM**  **ACT\_SN** | | | Leave default | Leave default | Fill out per order | |  |
| **ACTUATOR\_2**  **ACT\_TYPE**  **ACT\_SIZE**  **ACT\_ROTARY\_MOMENT\_ARM**  **ACT\_EFFECTIVE\_AREA** | | | Leave default | Leave default | Fill out per order | |  |
| **ACTUATOR\_3**  **Shutoff\_DP**  **Hand\_Wheel**  **STYLE**  [**ACT\_FAIL\_ACTION**](#AirAction) **(see also** [**AirAction\_hart**](#AirAction_hart)**)**  **SENSOR\_INCREASE**  **RELAY\_TYPE**  **SUPPLY\_PRS\_MAX**  **PRS\_CONTROL\_HI**  **PRS\_CONTROL\_LO** | | | Leave default except perhaps for calibration or testing | Leave default | Fill out per order | | **ACT\_FAIL\_ACTION can also** [**be set via HART**](#AirAction_hart) |
| **ACTUATOR\_INFO**  **DESCRIPTOR**  **MESSAGE**  **DATE**  **SPEC\_SHEET** | | | Leave default | Leave default | Fill out per order | |  |
| **VALVE\_IDENTIFICATION**  **VALVE\_MAN\_ID**  **VALVE\_MODEL\_NUM**  **VALVE\_SN** | | | Leave default | Leave default | Fill out per order | |  |
| **VALVE\_SERVICE**  **SERVICE**  **PID\_No** | | | Leave default | Leave default | Fill out per order | |  |
| **VALVE\_BODY\_1**  **VALVE\_TYPE**  **BODY SIZE**  **PACKING**  **PLUG\_TYPE**  **SEAT\_RING\_TYPE** | | | Leave default | Leave default | Fill out per order | |  |
| **VALVE\_BODY\_2**  **CHARACTERISTIC**  **LEAKAGE\_CLASS** | | | Leave default | Leave default | Fill out per order | |  |
| **VALVE\_BODY\_3**  **FLOW\_ACTION**  **RATED\_ADJ\_CV** | | | Leave default | Leave default | Fill out per order | |  |
| **VALVE\_INFO**  **SAME\_AS\_ACTUATOR**  **DESCRIPTOR**  **MESSAGE**  **DATE**  **SPEC\_SHEET** | | | Leave default | Leave default | Fill out per order | |  |
| **BOOSTER**  **Manufacturer**  **Model**  **Qty** | | | Leave default | Leave default | Fill out per order | |  |

#### RESOURCE BLOCK PARAMETERS

|  |  |  |
| --- | --- | --- |
| **RESOURCE\_BLOCK.MODE\_BLK** |  |  |
| **PERMITED** | **(0x88)AUTO, OOS** |  |
| **TARGET** | **(0x08)AUTO** |  |
| **NORMAL** | **(0x08)AUTO** |  |

#### FUNCTION BLOCK PARAMETERS

These parameters are either the defaults or can be set in a single operation writing RB.RESTART=6 (Quick Defaults). Note that this operation would require RB in OOS.

##### ANALOG OUTPUT BLOCK PARAMETERS

| **Parameter** | **Value** | **Comment** |
| --- | --- | --- |
| **AO.MODE\_BLK** |  |  |
| **PERMITED** | **(0x9E)RCAS,CAS, AUTO, MAN, OOS** |  |
| **TARGET** | **(0x0C)CAS, AUTO** |  |
| **NORMAL** | **(0x0C)CAS, AUTO** |  |
| **AO.CHANNEL** | **(0x01)POSITION** |  |
| **SHED\_OPT** | **(0x01)NormalShed\_NormalReturn** |  |
| **PV\_SCALE** |  |  |
| **UNITS** | **%** |  |
| **XD\_SCALE** |  |  |
| **UNITS** | **%** |  |
| **IO\_OPTS** | **0x0040** |  |

##### DISCRETE OUTPUT 1 BLOCK PARAMETERS

|  |  |  |
| --- | --- | --- |
| **Parameter** | **Value** | **Comment** |
| **DO1.MODE\_BLK** |  |  |
| **PERMITED** | **(0x9E)RCAS,CAS, AUTO, MAN, OOS** |  |
| **TARGET** | **(0x0C)CAS, AUTO** |  |
| **NORMAL** | **(0x0C)CAS, AUTO** |  |
| **DO1.CHANNEL** | **(0x4)Discrete Switch 1** | **Note that DO1.Channel and DO2.Channel must be different** |
| **SHED\_OPT** | **(0x01)NormalShed\_NormalReturn** |  |

##### DISCRETE OUTPUT 2 BLOCK PARAMETERS

| **Parameter** | **Value** | **Comment** | | |
| --- | --- | --- | --- | --- |
| **DO2.MODE\_BLK** |  | |  | |
| **PERMITED** | **(0x9E)RCAS,CAS, AUTO, MAN, OOS** | |  | |
| **TARGET** | **(0x0C)CAS, AUTO** | |  | |
| **NORMAL** | **(0x0C)CAS, AUTO** | | |  |
| **DO2.CHANNEL** | **(0x05)Discrete Switch 2** | | **Note that DO1.Channel and DO2.Channel must be different** | |
| **SHED\_OPT** | **NormalShed\_NormalReturn** | |  | |

##### Multiple Analog Input Block Parameters

| **Parameter** | **Value** | **Comment** | |
| --- | --- | --- | --- |
| **CHANNEL** | **20** | |  |

##### ANALOG INPUT 1 BLOCK PARAMETERS

| **Parameter** | **Value** | **Comment** | | |
| --- | --- | --- | --- | --- |
| **AI1.MODE\_BLK** |  | |  | |
| **PERMITED** | **(0x98)AUTO, MAN, OOS** | |  | |
| **TARGET** | **(0x08)AUTO** | |  | |
| **NORMAL** | **(0x08)AUTO** | | |  |
| **AI1.CHANNEL** | **(0x07)Supply Pressure** | |  | |
| **AI1.PV\_SCALE** |  | |  | |
| **UNITS** | **1141 (0x475)Psi** | |  | |
| **AI1.XD\_SCALE** |  | |  | |
| **UNITS** | **1141 (0x475)Psi** | |  | |
| **AI1.L\_TYPE** | **Direct** | |  | |

##### ANALOG INPUT 2 BLOCK PARAMETERS

| **Parameter** | **Value** | **Comment** | | |
| --- | --- | --- | --- | --- |
| **AI2.MODE\_BLK** |  | |  | |
| **PERMITED** | **(0x98)AUTO, MAN, OOS** | |  | |
| **TARGET** | **(0x08)AUTO** | |  | |
| **NORMAL** | **(0x08)AUTO** | | |  |
| **AI2.CHANNEL** | **(0x08)Actuator Pressure 1** | |  | |
| **AI2.PV\_SCALE** |  | |  | |
| **UNITS** | **1141 (0x475)Psi** | |  | |
| **AI2.XD\_SCALE** |  | |  | |
| **UNITS** | **1141 (0x475)Psi** | |  | |
| **AI2.L\_TYPE** | **(0x01)Direct** | |  | |

##### ANALOG INPUT 3 BLOCK PARAMETERS

| **Parameter** | **Value** | **Comment** | | |
| --- | --- | --- | --- | --- |
| **AI3.MODE\_BLK** |  | |  | |
| **PERMITED** | **(0x98)AUTO, MAN, OOS** | |  | |
| **TARGET** | **(0x08)AUTO** | |  | |
| **NORMAL** | **(0x08)AUTO** | | |  |
| **AI3.CHANNEL** | **(12-0x0C)Temperature** | |  | |
| **AI3.PV\_SCALE** |  | |  | |
| **UNITS** | **1001 (0x3e9)oC** | |  | |
| **EU\_0** | **-40** | |  | |
| **EU\_100** | **85** | |  | |
| **AI3.XD\_SCALE** |  | |  | |
| **UNITS** | **1001 (0x3e9)oC** | |  | |
| **EU\_0** | **-40** | |  | |
| **EU\_100** | **85** | |  | |
| **AI3.L\_TYPE** | **Direct** | |  | |

##### PID 1 BLOCK PARAMETERS

| **Parameter** | **Value** | **Comment** |
| --- | --- | --- |
| **PID1.MODE\_BLK** |  |  |
| **PERMITED** | **(0x9F)ROUT, RCAS, CAS, AUTO, MAN, OOS** |  |
| **TARGET** | **(0x08)AUTO** |  |
| **NORMAL** | **(0x08)AUTO** |  |
| **BYPASS** | **(0x01)Off** |  |
| **GAIN** | **1** |  |
| **SHED\_OPT** | **(0x01) NormalShed\_NormalReturn** |  |

##### PID 2 BLOCK PARAMETERS

| **Parameter** | **Value** | **Comment** |
| --- | --- | --- |
| **PID2.MODE\_BLK** |  |  |
| **PERMITED** | **(0x9F)ROUT, RCAS, CAS, AUTO, MAN, OOS** |  |
| **TARGET** | **(0x08)AUTO** |  |
| **NORMAL** | **(0x08)AUTO** |  |
| **BYPASS** | **(0x01) Off** |  |
| **GAIN** | **1** |  |
| **SHED\_OPT** | **(0x01) NormalShed\_NormalReturn** |  |

##### Arithmetic Block Parameters

| **Parameter** | **Value** | **Comment** |
| --- | --- | --- |
| **ARITH\_TYPE** | **6** |  |

##### Input Selector Block Parameters

| **Parameter** | **Value** | **Comment** |
| --- | --- | --- |
| **SEL\_TYPE** | **1** |  |

##### Output Splitter Block Parameters

| **Parameter** | **Value** | **Comment** |
| --- | --- | --- |
| **LOCKVAL** | **1** |  |
| **IN\_ARRAY** | **{0.0F, 50.0F, 50.0F, 100.0F}** |  |
| **OUT\_ARRAY** | **{0.0F, 50.0F, 50.0F, 100.0F}** |  |

##### Control Selector Block Parameters

|  |  |  |
| --- | --- | --- |
| **SEL\_TYPE** | **3** |  |

## Reference: TB parameters and default values

The following table contains the FF processor parameters and their values for transducer block.

Parameters that manufacturing doesn’t change are just for reference and are in *italics*.

| **Index** | **Name** | | **Parm. Type** | | **Var.  Size** | | **Range** | | **Fac. Value** | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 0 | **BLOCK HEADER** | | Rec |  | 62 |  |  |  |  | |
|  | 1 | Block Tag |  | VStr | 32 | r/w |  | spaces | 02TB\_4456440008\_[SN-11characters] | |
|  | *2* | *DD Member ID* |  | *UInt32* | *4* | *r* |  | *DD* |  | |
|  | *3* | *DD Item ID* |  | *UInt32* | *4* | *r* |  | *DD* |  | |
|  | *4* | *DD Revision* |  | *UInt16* | *2* | *r* |  | *0x0001* |  | |
|  | *5* | *Profile* |  | *UInt16* | *2* | *r* |  | *0x813D* |  | |
|  | *6* | *Profile Revision* |  | *UInt16* | *2* | *r* |  | *0x0101* |  | |
|  | *7* | *Execution Time* |  | *UInt32* | *4* | *r* |  | *0* |  | |
|  | *8* | *Period of execution* |  | *UInt32* | *4* | *r/w* |  | *0* |  | |
|  | *9* | *Number of Parameters* |  | *UInt16* | *2* | *r* |  | *0* |  | |
|  | *10* | *Next Block To Execute* |  | *UInt16* | *2* | *r/w* |  | *0* |  | |
|  | *11* | *Starting OD Index for Views* |  | *UInt16* | *2* | *r* |  | *DD* |  | |
|  | *12* | *Number of View\_3* |  | *UInt8* | *1* | *r* |  | *1* |  | |
|  | *13* | *Number of View\_4* |  | *UInt8* | *1* | *r* |  | *1* |  | |
| 1 | **ST\_REV** | | Var | UInt16 | 2 | r | 1-0xFFFF | 0 | NA | |
| 2 | **TAG\_DESC** | | Var | Oct.Str. | 32 | r/w |  | spaces | spaces | |
| 3 | **STRATEGY** | | Var | UInt16 | 2 | r/w |  | 0 |  | |
| 4 | **ALERT\_KEY** | | Var | UInt8 | 1 | r/w | [1, 255] | 0 |  | |
| 5 | **MODE\_BLK** | | Rec |  | | |  |  |  | |
|  | 1 | TARGET |  | BitStr | 1 | r/w | See Description | Auto | Auto | |
|  | 2 | ACTUAL |  | BitStr | 1 | r |  |  |  | |
|  | 3 | PERMITTED |  | BitStr | 1 | r/w |  | Auto, OOS | Auto, OOS | |
|  | 4 | NORMAL |  | BitStr | 1 | r/w |  | Auto | Auto | |
| 6 | **BLOCK\_ERR** | | Var | BitStr | 2 | r |  |  |  | |
| *7* | ***UPDATE\_EVT*** | | *Rec* |  |  |  |  |  |  | |
|  | *1* | *UNACKNOWLEDGED* |  | *enu* | *1* | *r/w* |  |  |  | |
|  | *2* | *UPDATE\_STATE* |  | *enu* | *1* | *r* |  |  |  | |
|  | *3* | *TIME\_STAMP* |  | *TmVar* | *8* | *r* |  |  |  | |
|  | *4* | *STATIC\_REVISION* |  | *UInt16* | *2* | *r* |  |  |  | |
|  | *5* | *RELATIVE\_INDEX* |  | *UInt16* | *2* | *r* |  |  |  | |
| 8 | **BLOCK\_ALM** | | Rec |  |  |  |  |  |  | |
|  | 1 | UNACKNOWLEDGED |  | enu | 1 | r/w | 0-2 | 0 | 0 | |
|  | 2 | ALARM\_STATE |  | enu | 1 | r | 0 to 4 | 0 | 0 | |
|  | 3 | TIME\_STAMP |  | time\_value | 8 | r | 0 | 0 | 0 | |
|  | 4 | SUB\_CODE |  | enu | 2 | r | 0 | 0 | 0 | |
|  | 5 | VALUE |  | UInt8 | 1 | r | 0 | 0 | 0 | |
| *9* | ***TRANSDUCER\_DIRECTORY*** | | *Array* | *UInt16* |  |  |  |  |  | |
|  | *1* | ***NUMBER\_OF\_XDS*** |  |  | *2* | *r* | *6* | *6* | *6* | |
|  | *2* | ***POSITIONER\_INDEX*** |  |  | *2* | *r* | *10* | *10* | *10* | |
|  | *3* | ***PRESSURES\_INDEX*** |  |  | *4* | *r* | *48* | *48* | *48* | |
|  | *4* | ***TEMPERATURE\_INDEX*** |  |  | *6* | *r* | *59* | *59* | *59* | |
| *10* | ***POSITION\_TRANSDUCER\_TYPE*** | | *Var* | *UInt16* | *2* | *r* | *106* | *106* | *106* | |
| *11* | ***XD\_ERROR\_POS*** | | *Var* | *UInt8* | *1* | *r* | *0* | *0* | *0* | |
| *12* | ***FINAL\_VALUE*** | | *Rec* |  | | |  |  |  | |
|  | *1* | ***STATUS*** |  | *UInt8* | *1* | *r/w* |  |  |  | |
|  | *2* | ***VALUE*** |  | *Float* | *4* | *r/w* |  |  |  | |
| *13* | ***FINAL\_VALUE\_RANGE*** | | *Rec* |  | | |  |  |  | |
|  | *1* | ***EU\_100*** |  | *float* | *4* | *r* | *100* | *100* | *100* | |
|  | *2* | ***EU\_0*** |  | *float* | *4* | *r* | *0* | *0* | *0* | |
|  | *3* | ***UNITS\_INDEX*** |  | *enu* | *2* | *r* | *%(1342)* | *%(1342)* | *%(1342)* | |
|  | *4* | ***DECIMAL*** |  | *integer* | *1* | *r* | *4* | *4* | *4* | |
| 14 | **POSITION\_LIMITS**  **See also** [**CtlLim\_hart**](#CtlLim_hart) | | Rec |  | 17 |  |  |  |  | |
|  | 1 | **LIMITS\_PROTECTED** |  | UInt8 | 1 | r/w | T/F | F | F | |
|  | 2 | **ENABLE\_HI** |  | UInt8 | 1 | r/w | T/F | F | F | |
|  | 3 | **ENABLE\_LO** |  | UInt8 | 1 | r/w | T/F | F | F | |
|  | 4 | **LIMIT\_HI** |  | float | 4 | r/w | -25to+125 | 125 | 125 | |
|  | 5 | **LIMIT\_LO** |  | float | 4 | r/w | -25to+125 | 125 | 125 | |
|  | 6 | **ENABLE\_RATE\_HI** |  | UInt8 | 1 | r/w | T/F | F | F | |
|  | 7 | **ENABLE\_RATE\_LO** |  | UInt8 | 1 | r/w | T/F | F | F | |
|  | 8 | **LIMIT\_RATE** |  | float | 4 | r/w | 0.2 to 199.98 | 101 | 101 | |
| 15 | **FINAL\_VALUE\_CUTOFF\_HI**  **See also** [**CtlLim\_hart**](#CtlLim_hart) | | Rec |  |  |  |  |  |  | |
|  | 1 | **ENABLE** |  | UInt8 | 1 | r/w | T/F | F | F | |
|  | 2 | **CUTOFF\_POINT\_HI** |  | Float | 4 | r/w | See Description | 98 | 98 | |
| 16 | **FINAL\_VALUE\_CUTOFF\_LO**  **See also** [**CtlLim\_hart**](#CtlLim_hart) | | Var |  |  |  |  |  |  | |
|  | 1 | **ENABLE** |  | UInt8 | 1 | r/w | T/F | F | F | |
|  | 2 | **CUTOFF\_POINT\_LO** |  | Float | 4 | r/w | See Description | 2 | 3 | |
| *17* | ***FINAL\_POSITION\_VALUE*** | | *Rec* |  | | |  |  |  | |
|  | *1* | ***STATUS*** |  | *UInt8* | *1* | *r* |  |  |  | |
|  | *2* | ***VALUE*** |  | *Float* | *4* | *r* |  |  |  | |
| 18 | **ACTIVATE\_CONTROL\_SET**  **See also** [**PID\_Data\_hart**](#PID_Data_hart)**,** [**ctl\_slot\_hart**](#ctl_slot_hart) | | Var | UInt8 | 1 | r/w | 0,1,2,3,4,5,6,7,10,11, 255 | 0 | 0 | |
| 19 | **ACTIVE\_CONTROL\_SET**  **See also** [**PID\_Data\_hart**](#PID_Data_hart)**,** [**ctl\_slot\_hart**](#ctl_slot_hart) | | Rec |  |  |  |  |  |  | |
|  | 1 | Selector |  | Int16 | 1 | r |  |  |  | |
|  | 2 | P |  | Int16 | 2 | r |  |  |  | |
|  | 3 | I |  | Int16 | 2 | r |  |  |  | |
|  | 4 | D |  | Int16 | 2 | r |  |  |  | |
|  | 5 | Padj |  | Int16 | 2 | r |  |  |  | |
|  | 6 | Beta |  | Int16 | 2 | r |  |  |  | |
|  | 7 | PosComp |  | Int16 | 2 | r |  |  |  | |
|  | 8 | DeadZone |  | Int16 | 2 | r |  |  |  | |
|  | 9 | NonLin |  | Int16 | 2 | r |  |  |  | |
| 20 | **CUSTOM\_CONTROL\_SET**  **See also** [**PID\_Data\_hart**](#PID_Data_hart) | | Rec |  |  |  |  |  |  | |
|  | 1 | P |  | Int16 | 2 | r/w | max. 5000 |  |  | |
|  | 2 | I |  | Int16 | 2 | r/w | max. 1000 |  |  | |
|  | 3 | D |  | Int16 | 2 | r/w | max. 200 |  |  | |
|  | 4 | Padj |  | Int16 | 2 | r/w | [-3000,3000] |  |  | |
|  | 5 | Beta |  | Int16 | 2 | r/w | [-9, 9] |  |  | |
|  | 6 | PosComp |  | Int16 | 2 | r/w | [2, 20] |  |  | |
|  | 7 | DeadZone |  | Int16 | 2 | r/w | max. 821 |  |  | |
|  | 8 | NonLin |  | Int16 | 2 | r/w |  |  |  | |
| *21* | ***BACKUP\_CONTROL\_SET*** | | *Rec* |  |  |  |  |  |  | |
|  | *1* | *Selector* |  | *Int16* | *1* | *r* |  |  |  | |
|  | *2* | *P* |  | *Int16* | *2* | *r* |  |  |  | |
|  | *3* | *I* |  | *Int16* | *2* | *r* |  |  |  | |
|  | *4* | *D* |  | *Int16* | *2* | *r* |  |  |  | |
|  | *5* | *Padj* |  | *Int16* | *2* | *r* |  |  |  | |
|  | *6* | *Beta* |  | *Int16* | *2* | *r* |  |  |  | |
|  | *7* | *PosComp* |  | *Int16* | *2* | *r* |  |  |  | |
|  | *8* | *DeadZone* |  | *Int16* | *2* | *r* |  |  |  | |
|  | *9* | *NonLin* |  | *Int16* | *2* | *r* |  |  |  | |
| 22 | TRAVEL CALIBRATION | | Rec |  | 81 |  |  |  |  | |
|  | 1 | CAL\_LOCATION |  | VStr | 32 | r/w |  |  |  | |
|  | 2 | CAL\_DATE |  | Date | 7 | r/w |  |  |  | |
|  | 3 | CAL\_WHO |  | VStr | 32 | r/w |  |  |  | |
|  | 4 | STOP\_HI\_POS  See also [stops\_hart](#stops_hart) |  | Int32 | 4 | r | 0-FFFFFFFF | 0 | 0 | |
|  | 5 | STOP\_LO\_POS  See also [stops\_hart](#stops_hart) |  | Int32 | 4 | r | 0-FFFFFFFF | 0 | 0 | |
|  | 6 | CAL\_TYPE |  | UInt8 | 1 | r/w |  |  |  | |
|  | 7 | LAST\_RESULT |  | UInt8 | 1 | r |  |  |  | |
| *23* | *TRAVEL* | |  |  |  |  |  |  |  | |
|  | *1* | ***RANGE*** |  | *Float* | *4* | *r/w* | *0.1-10000* | *100* | *100* | |
|  | *2* | ***UNITS\_INDEX*** |  |  |  | *r/w* |  | *%* |  | |
| *24* | ***WORKING\_SP*** | | *Rec* |  | | |  |  |  | |
|  | *1* | ***STATUS*** |  | *UInt8* | *1* | *r/w* |  |  |  | |
|  | *2* | ***VALUE*** |  | *Float* | *4* | *r/w* |  |  |  | |
| 25 | ***WORKING\_POS*** | | *Rec* |  | | |  |  |  | |
|  | *1* | ***STATUS*** |  | *UInt8* | *1* | *r/w* |  |  |  | |
|  | *2* | ***VALUE*** |  | *Float* | *4* | *r/w* |  |  |  | |
| 26 | **DEVIATION\_ALERT** | | Rec |  | | |  |  |  | |
|  | 1 | **DEVIATION\_VALUE** |  | Float | 4 | r |  |  |  | |
|  | 2 | **ALERT\_POINT** |  | Float | 4 | r/w | 0.1-250 | 20 | 20 | |
|  | 3 | **DEADBAND** |  | Float | 4 | r/w | 0.01 - 10 | 1 | 1 | |
|  | 4 | **TIME** |  | UInt32 | 4 | r/w | from 0 - 0xFFFFFFFF | 20 | 20 | |
|  | 5 | **ALERT** |  | Bool | 1 | r/w | 0 | 0 | 0 | |
|  | 6 | **HISTORIC ALERT** |  | Bool | 1 | r/w | 0 | 0 | 0 | |
|  | 7 | **ENABLE** |  | Bool | 1 | r/w | 0 | TRUE | TRUE | |
| 27 | **POSITION\_HIHI\_ALERT** | | Rec |  | | |  |  |  | |
|  | 1 | **POSITION** |  | Float | 4 | r |  |  |  | |
|  | 2 | **ALERT\_POINT** |  | Float | 4 | r/w | 0.1-200 | 110 | 110 | |
|  | 3 | **DEADBAND** |  | Float | 4 | r/w | 0.01-10 | 1 | 1 | |
|  | 4 | **ALERT** |  | Bool | 1 | r/w | 0 | 0 | 0 | |
|  | 5 | **HISTORIC ALERT** |  | Bool | 1 | r/w | 0 | 0 | 0 | |
|  | 6 | **ENABLE** |  | Bool | 1 | r/w | 0 | TRUE | TRUE | |
| 28 | **POSITION\_HI\_ALERT** | | Rec |  | | |  |  |  | |
|  | 1 | **POSITION** |  | Float | 4 | r |  |  |  | |
|  | 2 | **ALERT\_POINT** |  | Float | 4 | r/w | 0.1-200 | 105 | 105 | |
|  | 3 | **DEADBAND** |  | Float | 4 | r/w | 0.01-10 | 1 | 1 | |
|  | 4 | **ALERT** |  | Bool | 1 | r/w | 0 | 0 | 0 | |
|  | 5 | **HISTORIC ALERT** |  | Bool | 1 | r/w | 0 | 0 | 0 | |
|  | 6 | **ENABLE** |  | Bool | 1 | r/w | 0 | TRUE | TRUE | |
| 29 | **POSITION\_LO\_ALERT** | | Rec |  | | |  |  |  | |
|  | 1 | **POSITION** |  | Float | 4 | r |  |  |  | |
|  | 2 | **ALERT\_POINT** |  | Float | 4 | r/w | -51 to 199 | -5 | -5 | |
|  | 3 | **DEADBAND** |  | Float | 4 | r/w | 0.01-10 | 1 | 1 | |
|  | 4 | **ALERT** |  | Bool | 1 | r/w | 0 | 0 | 0 | |
|  | 5 | **HISTORIC ALERT** |  | Bool | 1 | r/w | 0 | 0 | 0 | |
|  | 6 | **ENABLE** |  | Bool | 1 | r/w | 0 | TRUE | TRUE | |
| 30 | **POSITION\_LOLO\_ALERT** | | Rec |  | | |  |  |  | |
|  | 1 | **POSITION** |  | Float | 4 | r |  |  |  | |
|  | 2 | **ALERT\_POINT** |  | Float | 4 | r/w | -51 to 199 | -10 | -10 | |
|  | 3 | **DEADBAND** |  | Float | 4 | r/w | 0.01-10 | 1 | 1 | |
|  | 4 | **ALERT** |  | Bool | 1 | r/w | 0 | 0 | 0 | |
|  | 5 | **HISTORIC ALERT** |  | Bool | 1 | r/w | 0 | 0 | 0 | |
|  | 6 | **ENABLE** |  | Bool | 1 | r/w | 0 | TRUE | TRUE | |
| 31 | **TRAVEL\_ACCUMULATION\_A\_ALERT** | | Rec |  | | |  |  |  | |
|  | 1 | **TRAVEL\_ACCUMULATION** |  | UInt32 | 4 | r/w |  | 0 | 0 | |
|  | 2 | **ALERT\_POINT** |  | UInt32 | 4 | r/w | 0-0xFFFFFFFF | 100Milion | 100Milion | |
|  | 3 | **DEADBAND\_AB** |  | Float | 4 | r/w | 0.05-10 | 1 | 1 | |
|  | 4 | **ALERT** |  | Bool | 1 | r/w | 0 | 0 | 0 | |
|  | 5 | **HISTORIC ALERT** |  | Bool | 1 | r/w | 0 | 0 | 0 | |
|  | 6 | **ENABLE** |  | Bool | 1 | r/w | 0 | TRUE | TRUE | |
| 32 | **TRAVEL\_ACCUMULATION\_B\_ALERT** | | Rec |  | | |  |  |  | |
|  | 1 | **TRAVEL\_ACCUMULATION** |  | UInt32 | 4 | r/w |  | 100Milion | 100Milion | |
|  | 2 | **ALERT\_POINT** |  | UInt32 | 4 | r/w | 0-0xFFFFFFFF | 1 | 1 | |
|  | 3 | **DEADBAND\_AB** |  | Float | 4 | r/w | 0.05-10 | 0.5 | 1 | |
|  | 4 | **ALERT** |  | Bool | 1 | r/w | 0 | 0 | 0 | |
|  | 5 | **HISTORIC ALERT** |  | Bool | 1 | r/w | 0 | 0 | 0 | |
|  | 6 | **ENABLE** |  | Bool | 1 | r/w | 0 | TRUE | TRUE | |
| 33 | **TRAVEL\_ACCUMULATION\_TREND** | | Rec |  | 68 |  |  |  |  | |
|  | 1 | **CURRENTLY COLLECTED** |  | UInt32 | 4 | r |  | 0 | 0 | |
|  | 2 | **TODAY(FULL DAY)** |  | UInt32 | 4 | r |  | 0 | 0 | |
|  | 3 | **LAST\_DAY** |  | UInt32 | 4 | r |  | 0 | 0 | |
|  | 4 | **PREVIOUS\_DAY** |  | UInt32 | 4 | r |  | 0 | 0 | |
|  | 5 | **THREE\_DAYS\_AGO** |  | UInt32 | 4 | r |  | 0 | 0 | |
|  | 6 | **CURRENT\_WEEK** |  | UInt32 | 4 | r |  | 0 | 0 | |
|  | 7 | **LAST\_WEEK** |  | UInt32 | 4 | r |  | 0 | 0 | |
|  | 8 | **PREVIOUS\_WEEK** |  | UInt32 | 4 | r |  | 0 | 0 | |
|  | 9 | **THREE\_WEEKS\_AGO** |  | UInt32 | 4 | r |  | 0 | 0 | |
|  | 10 | **CURRENT\_MONTH** |  | UInt32 | 4 | r |  | 0 | 0 | |
|  | 11 | **LAST\_MONTH** |  | UInt32 | 4 | r |  | 0 | 0 | |
|  | 12 | **PREVIOUS\_MONTH** |  | UInt32 | 4 | r |  | 0 | 0 | |
|  | 13 | **THREE\_MONTHS\_AGO** |  | UInt32 | 4 | r |  | 0 | 0 | |
|  | 14 | **CURRENT\_12\_MONTHS** |  | UInt32 | 4 | r |  | 0 | 0 | |
|  | 15 | **LAST\_12\_MONTHS** |  | UInt32 | 4 | r |  | 0 | 0 | |
|  | 16 | **PREVIOUS\_12\_MONTHS** |  | UInt32 | 4 | r |  | 0 | 0 | |
|  | 17 | **THREE\_YEARS\_AGO** |  | UInt32 | 4 | r |  | 0 | 0 | |
| 34 | **CYCLE\_COUNTER\_A\_ALERT** | | Rec |  | | |  |  |  | |
|  | 1 | **CYCLE\_COUNTER** |  | UInt32 | 4 | r/w |  | 0 | 0 | |
|  | 2 | **ALERT\_POINT** |  | UInt32 | 4 | r/w |  | 10000 | 10000 | |
|  | 3 | **DEADBAND\_AB** |  | Float | 4 | r/w | 0.05 | 1 | 1 | |
|  | 4 | **ALERT** |  | Bool | 1 | r/w | 0 | 0 | 0 | |
|  | 5 | **HISTORIC ALERT** |  | Bool | 1 | r/w | 0 | 0 | 0 | |
|  | 6 | **ENABLE** |  | Bool | 1 | r/w | 0 | 0 | 0 | |
| 35 | **CYCLE\_COUNTER\_B\_ALERT** | | Rec |  | | |  |  |  | |
|  | 1 | **CYCLE\_COUNTER** |  | UInt32 | 4 | r/w |  | 0 | 0 | |
|  | 2 | **ALERT\_POINT** |  | UInt32 | 4 | r/w |  | 10000 | 10000 | |
|  | 3 | **DEADBAND\_AB** |  | Float | 4 | r/w | 0.05 | 1 | 1 | |
|  | 4 | **ALERT** |  | Bool | 1 | r/w | 0 | 0 | 0 | |
|  | 5 | **HISTORIC ALERT** |  | Bool | 1 | r/w | 0 | 0 | 0 | |
|  | 6 | **ENABLE** |  | Bool | 1 | r/w | 0 | 0 | 0 | |
| 36 | **CYCLE\_COUNTER\_TREND** | | Rec |  | 68 |  |  |  |  | |
|  | 1 | **CURRENTLY COLLECTED** |  | UInt32 | 4 | r |  | 0 | 0 | |
|  | 2 | **TODAY(FULL DAY)** |  | UInt32 | 4 | r |  | 0 | 0 | |
|  | 3 | **LAST\_DAY** |  | UInt32 | 4 | r |  | 0 | 0 | |
|  | 4 | **PREVIOUS\_DAY** |  | UInt32 | 4 | r |  | 0 | 0 | |
|  | 5 | **THREE\_DAYS\_AGO** |  | UInt32 | 4 | r |  | 0 | 0 | |
|  | 6 | **CURRENT\_WEEK** |  | UInt32 | 4 | r |  | 0 | 0 | |
|  | 7 | **LAST\_WEEK** |  | UInt32 | 4 | r |  | 0 | 0 | |
|  | 8 | **PREVIOUS\_WEEK** |  | UInt32 | 4 | r |  | 0 | 0 | |
|  | 9 | **THREE\_WEEKS\_AGO** |  | UInt32 | 4 | r |  | 0 | 0 | |
|  | 10 | **CURRENT\_MONTH** |  | UInt32 | 4 | r |  | 0 | 0 | |
|  | 11 | **LAST\_MONTH** |  | UInt32 | 4 | r |  | 0 | 0 | |
|  | 12 | **PREVIOUS\_MONTH** |  | UInt32 | 4 | r |  | 0 | 0 | |
|  | 13 | **THREE\_MONTHS\_AGO** |  | UInt32 | 4 | r |  | 0 | 0 | |
|  | 14 | **CURRENT\_12\_MONTHS** |  | UInt32 | 4 | r |  | 0 | 0 | |
|  | 15 | **LAST\_12\_MONTHS** |  | UInt32 | 4 | r |  | 0 | 0 | |
|  | 16 | **PREVIOUS\_12\_MONTHS** |  | UInt32 | 4 | r |  | 0 | 0 | |
|  | 17 | **THREE\_YEARS\_AGO** |  | UInt32 | 4 | r |  | 0 | 0 | |
| 37 | **POSITION\_ERROR\_TREND** | | Rec |  | 68 |  |  |  |  | |
|  | 1 | **CURRENTLY COLLECTED** |  | Float | 4 | r |  | 0 | 0 | |
|  | 2 | **TODAY(FULL DAY)** |  | Float | 4 | r |  | 0 | 0 | |
|  | 3 | **LAST\_DAY** |  | Float | 4 | r |  | 0 | 0 | |
|  | 4 | **PREVIOUS\_DAY** |  | Float | 4 | r |  | 0 | 0 | |
|  | 5 | **THREE\_DAYS\_AGO** |  | Float | 4 | r |  | 0 | 0 | |
|  | 6 | **CURRENT\_WEEK** |  | Float | 4 | r |  | 0 | 0 | |
|  | 7 | **LAST\_WEEK** |  | Float | 4 | r |  | 0 | 0 | |
|  | 8 | **PREVIOUS\_WEEK** |  | Float | 4 | r |  | 0 | 0 | |
|  | 9 | **THREE\_WEEKS\_AGO** |  | Float | 4 | r |  | 0 | 0 | |
|  | 10 | **CURRENT\_MONTH** |  | Float | 4 | r |  | 0 | 0 | |
|  | 11 | **LAST\_MONTH** |  | Float | 4 | r |  | 0 | 0 | |
|  | 12 | **PREVIOUS\_MONTH** |  | Float | 4 | r |  | 0 | 0 | |
|  | 13 | **THREE\_MONTHS\_AGO** |  | Float | 4 | r |  | 0 | 0 | |
|  | 14 | **CURRENT\_12\_MONTHS** |  | Float | 4 | r |  | 0 | 0 | |
|  | 15 | **LAST\_12\_MONTHS** |  | Float | 4 | r |  | 0 | 0 | |
|  | 16 | **PREVIOUS\_12\_MONTHS** |  | Float | 4 | r |  | 0 | 0 | |
|  | 17 | **THREE\_YEARS\_AGO** |  | Float | 4 | r |  | 0 | 0 | |
| 38 | **POSITION\_HISTOGRAM** | | Rec |  | 48 |  |  |  |  | |
|  | 1 | **TOTAL\_TIME** |  | UInt32 | 4 | r/w |  | 0 | 0 | |
|  | 2 | **5%-CLOSED** |  | Float | 4 | r |  | 0 | 0 | |
|  | 3 | **10%** |  | Float | 4 | r |  | 0 | 0 | |
|  | 4 | **20%** |  | Float | 4 | r |  | 0 | 0 | |
|  | 5 | **30%** |  | Float | 4 | r |  | 0 | 0 | |
|  | 6 | **40%** |  | Float | 4 | r |  | 0 | 0 | |
|  | 7 | **50%** |  | Float | 4 | r |  | 0 | 0 | |
|  | 8 | **60%** |  | Float | 4 | r |  | 0 | 0 | |
|  | 9 | **70%** |  | Float | 4 | r |  | 0 | 0 | |
|  | 10 | **80%** |  | Float | 4 | r |  | 0 | 0 | |
|  | 11 | **90%** |  | Float | 4 | r |  | 0 | 0 | |
|  | 12 | **95%** |  | Float | 4 | r |  | 0 | 0 | |
|  | 13 | **95%-OPEN** |  | Float | 4 | r |  | 0 | 0 | |
| 39 | **NEAR\_CLOSED\_ALERT** | | Rec |  | | |  |  |  | |
|  | 1 | **POINT\_CLOSED** |  | Float | 4 | r/w | - 49 to 100 | 5 | 0 | |
|  | 2 | **NEAR\_CLOSED** |  | UInt32 | 4 | r/w |  | 0 | 0 | |
|  | 3 | **ALERT\_POINT** |  | UInt32 | 4 | r/w | 2000 | 2000 | 2000 | |
|  | 4 | **ALERT** |  | Bool | 1 | r/w | 0 | 0 | 0 | |
|  | 5 | **HISTORIC ALERT** |  | Bool | 1 | r/w | 0 | 0 | 0 | |
|  | 6 | **ENABLE** |  | Bool | 1 | r/w | 0 | TRUE | TRUE | |
| 40 | **POSITION\_ERROR\_HISTOGRAM** | | Rec |  | 48 |  |  |  |  | |
|  | 1 | **5%-CLOSED** |  | Float | 4 | r/w |  | 0 | 0 | |
|  | 2 | **10%** |  | Float | 4 | r/w |  | 0 | 0 | |
|  | 3 | **20%** |  | Float | 4 | r/w |  | 0 | 0 | |
|  | 2 | **30%** |  | Float | 4 | r/w |  | 0 | 0 | |
|  | 3 | **40%** |  | Float | 4 | r/w |  | 0 | 0 | |
|  | 4 | **50%** |  | Float | 4 | r/w |  | 0 | 0 | |
|  | 5 | **60%** |  | Float | 4 | r/w |  | 0 | 0 | |
|  | 6 | **70%** |  | Float | 4 | r/w |  | 0 | 0 | |
|  | 7 | **80%** |  | Float | 4 | r/w |  | 0 | 0 | |
|  | 8 | **90%** |  | Float | 4 | r/w |  | 0 | 0 | |
|  | 9 | **95%** |  | Float | 4 | r/w |  | 0 | 0 | |
|  | 11 | **95%-OPEN** |  | Float | 4 | r/w |  | 0 | 0 | |
| 41 | **SETPOINT\_TIMEOUT\_ALERT** | | Rec |  | | |  |  |  | |
|  | 1 | **TIME\_SINCE\_UPDATE** |  | Float | 4 | r/w | >0 | 0 | 0 | |
|  | 2 | **ALERT\_POINT** |  | Float | 4 | r/w | >0.5 | 20 | 20 | |
|  | 3 | **MAX\_TIME** |  | Float | 4 | r/w | >=0 | 0 | 0 | |
|  | 4 | **ALERT** |  | Bool | 1 | r/w | 0 | 0 | 0 | |
|  | 5 | **HISTORIC ALERT** |  | Bool | 1 | r/w | 0 | 0 | 0 | |
|  | 6 | **ENABLE** |  | Bool | 1 | r/w | 0 | TRUE | TRUE | |
| *42* | ***XD\_FSTATE*** | |  |  |  |  |  |  |  | |
|  | *1* | ***CONFIGURATION*** |  | *UInt8* | *1* | *r/w* | *1,2* | *1* | *1* | |
|  | *2* | ***XD\_FSTATE\_OPT*** | *Var* | *UInt8* | *1* | *r/w* | *0 to 3* | *0* | *0* | |
|  | *3* | ***FSTATE\_VALUE*** | *Var* | *Float* | *4* | *r/w* | *-50 to 160* | *0* | *0* | |
|  | *4* | ***FSTATE\_TIME*** | *Var* | *Float* | *4* | *r/w* | *0,5 to 100000* | *5* | *5* | |
| 43 | **CHAR\_SELECTION**  **See also** [**charsel\_hart**](#charsel_hart) | | Rec |  |  |  |  |  |  | |
|  |  | **TYPE** | Var | UInt8 | 1 | r/w | see Description | 0 | 5 | |
|  |  | **NUMBER\_OF\_POINTS** | Var | UInt8 | 1 | r | 0-19 | actual | actual | |
| 44 | **CURRENT\_CHAR\_POINTS**  **See also** [**charact\_hart**](#charact_hart) | | Array | Int16 | 76 | r | each | see Descr. | see Descr. | |
| 45 | **CUSTOM\_CHAR** | | Rec |  | 78 |  |  |  |  | |
|  | 1 | **ACTION** | Var | UInt8 | 1 | r/w | see Description | 255 | 255 | |
|  | 2 | **NUMBER\_OF\_POINTS** | Var | UInt8 | 1 | r/w | 0-19 | 19 | 19 | |
| 46 | **CUSTOM\_CHAR\_POINTS**  **See also** [**charact\_hart**](#charact_hart) | | Array | Int16 | 76 | r/w | each |  |  | |
| 47 | **READBACK\_SELECT** | | Var | UInt8 | 1 | r/w |  | 0 | 0 | |
| *48* | ***TRANSDUCER\_TYPE*** | | *Var* | *UInt16* | *2* | *r* | *100* | *100* | *100* | |
| *49* | ***XD\_ERROR\_PRESSURE*** | | *Var* | *UInt16* | *2* | *r* | *0* | *0* | *0* | |
| *50* | ***SUPPLY\_PRESSURE*** | | *Rec* |  | | |  |  |  | |
|  | *1* | ***STATUS*** |  | *UInt8* | *1* | *r* |  |  |  | |
|  | *2* | ***VALUE*** |  | *Float* | *4* | *r* |  |  |  | |
| 51 | **PRESSURE\_RANGE** | | Rec |  | | |  |  |  | |
|  | *1* | ***EU\_100*** |  | *float* | *4* | *r* | *0-1034.2* | *1034.2* | *1034.2* | |
|  | *2* | ***EU\_0*** |  | *float* | *4* | *r* | *0-1034.2* | *0* | *0* | |
|  | 3 | **UNITS\_INDEX**  **See also** [**pres\_units\_hart**](#pres_units_hart) |  | enu | 2 | r/w | see Description | kPa (1133) | kPa (1133) | |
|  | 4 | **DECIMAL** |  | integer | 1 | r/w | 3 | 3 | 3 | |
| 52 | **SUPPLY\_PRESSURE\_HI\_ALERT** | | Rec |  | | |  |  |  | |
|  | 1 | **PRESSURE** |  | Float | 4 | r |  |  |  | |
|  | 2 | **ALERT\_POINT** |  | Float | 4 | r/w | 0-1034.2 | 1034.2 | 1034.2 | |
|  | 3 | **DEADBAND** |  | Float | 4 | r/w | 0 - 20 | 0.5 | 0.5 | |
|  | 4 | **ALERT** |  | Bool | 1 | r/w |  | FALSE | FALSE | |
|  | 5 | **HISTORIC ALERT** |  | Bool | 1 | r/w | True - False | FALSE | FALSE | |
|  | 6 | **ENABLE** |  | Bool | 1 | r/w | True - False | TRUE | TRUE | |
| 53 | **SUPPLY\_PRESSURE\_LO\_ALERT** | | Rec |  | | |  |  |  | |
|  | 1 | **PRESSURE** |  | Float | 4 | r |  |  |  | |
|  | 2 | **ALERT\_POINT** |  | Float | 4 | r/w | 0-1034.2 | 20 | 20 | |
|  | 3 | **DEADBAND** |  | Float | 4 | r/w | 0 - 20 | 0.5 | 0.5 | |
|  | 4 | **ALERT** |  | Bool | 1 | r/w | FALSE | FALSE | FALSE | |
|  | 5 | **HISTORIC ALERT** |  | Bool | 1 | r/w | True - False | FALSE | FALSE | |
|  | 6 | **ENABLE** |  | Bool | 1 | r/w | True - False | TRUE | TRUE | |
| 54 | **SUPPLY\_PRESSURE\_LOLO\_ALERT** | | Rec |  | | |  |  |  | |
|  | 1 | **PRESSURE** |  | Float | 4 | r |  |  |  | |
|  | 2 | **ALERT\_POINT** |  | Float | 4 | r/w | 0-1034.2 | 20 | 20 | |
|  | 3 | **DEADBAND** |  | Float | 4 | r/w | 0 - 20 | 0.5 | 0.5 | |
|  | 4 | **ALERT** |  | Bool | 1 | r/w | FALSE | FALSE | FALSE | |
|  | 5 | **HISTORIC ALERT** |  | Bool | 1 | r/w | True - False | FALSE | FALSE | |
|  | 6 | **ENABLE** |  | Bool | 1 | r/w | True - False | TRUE | TRUE | |
| *55* | ***ACTUATOR\_A\_PRESSURE*** | | *Rec* |  | | |  |  |  | |
|  | *1* | ***STATUS*** |  | *UInt8* | *1* | *r* |  |  |  | |
|  | *2* | ***VALUE*** |  | *Float* | *4* | *r* |  |  |  | |
| *56* | ***ACTUATOR\_B\_PRESSURE*** | | *Rec* |  | | |  |  |  | |
|  | *1* | ***STATUS*** |  | *UInt8* | *1* | *r* |  |  |  | |
|  | *2* | ***VALUE*** |  | *Float* | *4* | *r* |  |  |  | |
| 57 | ***ATMOSPHERIC\_PRESSURE*** | | *Rec* |  | | |  |  |  | |
|  | *1* | ***STATUS*** |  | *UInt8* | *1* | *r* |  |  |  | |
|  | *2* | ***VALUE*** |  | *Float* | *4* | *r* |  |  |  | |
| 58 | ***PILOT\_PRESSURE*** | | *Rec* |  | | |  |  |  | |
|  | *1* | ***STATUS*** |  | *UInt8* | *1* | *r* |  |  |  | |
|  | *2* | ***VALUE*** |  | *Float* | *4* | *r* |  |  |  | |
| 59 | ***TEMP\_TRANSDUCER\_TYPE*** | | *Var* | *UInt16* | *2* | *r* | *101* | *101* | *101* | |
| 60 | ***XD\_ERROR\_TEMPERATURE*** | | *Var* | *UInt16* | *2* | *r* | *0* | *0* | *0* | |
| 61 | ***TEMPERATURE*** | | *Rec* |  | | |  |  |  | |
|  | *1* | ***STATUS*** |  | *UInt8* | *1* | *r* |  |  |  | |
|  | *2* | ***VALUE*** |  | *Float* | *4* | *r* |  |  |  | |
| 62 | **TEMPERATURE\_HI\_ALERT** | | Rec |  | | |  |  |  | |
|  | 1 | **TEMPERATURE** |  | Float | 4 | r |  |  |  | |
|  | 2 | **ALERT\_POINT** |  | Float | 4 | r/w | -45 to 85 | 85 | 85 | |
|  | 3 | **DEADBAND** |  | Float | 4 | r/w | 0 - 2 | 2 | 2 | |
|  | 4 | **ALERT** |  | Bool | 1 | r/w |  | FALSE | FALSE | |
|  | 5 | **HISTORIC ALERT** |  | Bool | 1 | r/w | True - False | FALSE | FALSE | |
|  | 6 | **ENABLE** |  | Bool | 1 | r/w | True - False | TRUE | TRUE | |
| 63 | **TEMPERATURE\_LO\_ALERT** | | Rec |  | | |  |  |  | |
|  | 1 | **TEMPERATURE** |  | Float | 4 | r |  |  |  | |
|  | 2 | **ALERT\_POINT** |  | Float | 4 | r/w | -45 to 85 | -40 | -40 | |
|  | 3 | **DEADBAND** |  | Float | 4 | r/w | 0 - 2 | 2 | 2 | |
|  | 4 | **ALERT** |  | Bool | 1 | r/w | FALSE | FALSE | FALSE | |
|  | 5 | **HISTORIC ALERT** |  | Bool | 1 | r/w | True - False | FALSE | FALSE | |
|  | 6 | **ENABLE** |  | Bool | 1 | r/w | True - False | TRUE | TRUE | |
| *64* | ***IP\_DRIVE\_CURRENT*** | | *Rec* |  | | |  |  |  | |
|  | *1* | ***STATUS*** |  | *UInt8* | *1* | *r* |  |  |  | |
|  | *2* | ***VALUE*** |  | *Float* | *4* | *r* |  |  |  | |
| 65 | **IP\_DRIVE\_CURRENT\_HI\_ALERT** | | Rec |  | | |  |  |  | |
|  | 1 | **CURRENT** |  | Float | 4 | r |  |  |  | |
|  | 2 | **ALERT\_POINT** |  | Float | 4 | r/w | -20 to 120 | 100 | 100 | |
|  | 3 | **DEADBAND** |  | Float | 4 | r/w | 5 | 5 | 5 | |
|  | 4 | **TIME** |  | Float | 4 | r/w | 1 to 30 | 60 | 60 | |
|  | 5 | **ALERT** |  | Bool | 1 | r/w | FALSE | FALSE | FALSE | |
|  | 6 | **HISTORIC ALERT** |  | Bool | 1 | r/w | True - False | FALSE | FALSE | |
|  | 7 | **ENABLE** |  | Bool | 1 | r/w | True - False | TRUE | TRUE | |
| 66 | **IP\_DRIVE\_CURRENT\_LO\_ALERT** | | Rec |  | | |  |  |  | |
|  | 1 | **CURRENT** |  | Float | 4 | r |  |  |  | |
|  | 2 | **ALERT\_POINT** |  | Float | 4 | r/w | -20 to 120 | 0 | 0 | |
|  | 3 | **DEADBAND** |  | Float | 4 | r/w | 5 | 5 | 5 | |
|  | 4 | **TIME** |  | Float | 4 | r/w | 1 to 30 | 60 | 60 | |
|  | 5 | **ALERT** |  | Bool | 1 | r/w | FALSE | FALSE | FALSE | |
|  | 6 | **HISTORIC ALERT** |  | Bool | 1 | r/w | True - False | FALSE | FALSE | |
|  | 7 | **ENABLE** |  | Bool | 1 | r/w | True - False | TRUE | TRUE | |
| 67 | **FIND\_STOPS** | | Var | Int32 | 4 | r/w |  | 0 | 0 | |
| *68* | ***OFFLINE\_DIAGNOSTIC***  ***See also*** [***logfile\_hart***](#logfile_hart) | |  | *Uint8* | *2* | *r/w* | *See Description* | *0* | *0* | |
| *69* | ***DIAGNOSTIC\_CONFIGURATION*** | | *Rec* |  | *16* |  |  |  |  | |
|  | *1* | *START\_POSITION* |  | *Float* | *4* | *r/w* |  | *40* |  | |
|  | *2* | *END\_POSITION* |  | *Float* | *4* | *r/w* |  | *60* |  | |
|  | *3* | *SET\_POINT\_RATE* |  | *Float* | *4* | *r/w* |  | *5* |  | |
|  | *4* | *SAMPLING\_TIME* |  | *UInt16* | *2* | *r/w* |  | *10* |  | |
|  | *5* | *DIRECTION* |  | *UInt8* | *1* | *r/w* |  | *0* |  | |
|  | *6* | *OPTION* |  | *UInt8* | *1* | *r/w* |  | *0* |  | |
| *70* | ***DIAGNOSTIC\_DATA***  ***See also*** [***logfile\_hart***](#logfile_hart) | | *Array* | *UInt16* | *27* | *r/w* | *See Description* | *0* | *0* | |
| *71* | ***AUTOTUNE***  ***See also*** [***TuneData\_hart***](#TuneData_hart) | | *Rec* |  |  |  |  |  |  | |
|  |  | *Supply Press* |  | *Float* | *4* | *r/w* |  |  |  | |
|  |  | *Aggressiveness* |  | *Int8* | *1* | *r/w* | *-9 to 9* |  |  | |
|  |  | *Tune Flags* |  | *UInt8* | *1* | *r/w* | *1* |  |  | |
|  |  | *Completion* |  | *Int16* | *2* | *r/w* | *0* |  |  | |
| *72* | ***CHECK\_PROCESS*** | | *Rec* |  | | |  |  |  | |
|  | *1* | ***PROCESS\_ID*** |  | *UInt8* | *1* | *r/w* |  |  |  | |
|  | *2* | ***PERCENT\_COMPLETE*** |  | *UInt8* | *4* | *r/w* |  |  |  | |
| 73 | **UI\_CUSTOM\_CONFIGURATION** | | Rec |  |  |  |  |  |  | |
|  | 1 | **CUSTOM\_1\_CONFIGURATION** |  | UInt8 | 1 | r/w | from 1-9 | 1 | 1 | |
|  | 2 | **CUSTOM\_2\_CONFIGURATION** |  | UInt8 | 1 | r/w | from 1-9 | 2 | 2 | |
| 74 | **FAILED\_STATE** | | Rec |  |  |  |  |  |  | |
|  | 1 | **FF** |  | UInt8 | 1 | r | NA | NA | NA | |
|  | 2 | **APP** |  | UInt8 | 1 | r |  |  |  | |
|  | 3 | **PROPAGATE\_APFS\_TO\_RB** |  | UInt8 | 1 | r/w | 0, 1 | **1** | **1** | |
| *75* | ***FINAL\_VALUE\_D*** | | *Rec* |  |  |  |  |  |  | |
|  | *1* | ***STATUS*** |  | *UInt8* | *1* | *r/w* |  | *BAD* | *BAD* | |
|  | *2* | ***VALUE*** |  | *UInt8* | *1* | *r/w* | *0, 1* |  |  | |
| *76* | ***FINAL\_POSITION\_VALUE\_D*** | | *Rec* |  |  |  |  |  |  | |
|  | *1* | ***STATUS*** |  | *UInt8* | *1* | *r/w* |  | *BAD* | *BAD* | |
|  | *2* | ***VALUE*** |  | *UInt8* | *1* | *r/w* | *0, 1, 2,4,. . .100* |  |  | |
| *77* | ***FINAL\_VALUE\_DINT*** | | *Rec* |  |  |  |  |  |  | |
|  | *1* | ***STATUS*** |  | *UInt8* | *1* | *r/w* |  | *BAD* | *BAD* | |
|  | *2* | ***VALUE*** |  | *UInt8* | *1* | *r/w* | *0, 1, 2,4,. . .100* |  |  | |
| *78* | ***FINAL\_POSITION\_VALUE\_DINT*** | | *Rec* |  |  |  |  |  |  | |
|  | *1* | ***STATUS*** |  | *UInt8* | *1* | *r/w* |  | *BAD* | *BAD* | |
|  | *2* | ***VALUE*** |  | *UInt8* | *1* | *r/w* | *0, 1, 2,4,. . .100* |  |  | |
|  |  | |  |  |  |  |  |  |  | |
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|  |  |  |  |  |  |  |  |  |  | |
| *79* | ***DISCRETE\_OUTPUT\_1 STATE*** | | *Rec* |  |  |  |  |  |  | |
|  | *1* | ***STATUS*** |  | *UInt8* | *1* | *r* |  | *BAD* | *BAD* | |
|  | *2* | ***VALUE*** |  | *UInt8* | *1* | *r* | *0,1* |  |  | |
| *80* | ***DISCRETE\_OUTPUT\_2 STATE*** | | *Rec* |  |  |  |  |  |  | |
|  | *1* | ***STATUS*** |  | *UInt8* | *1* | *r* |  | *BAD* | *BAD* | |
|  | *2* | ***VALUE*** |  | *UInt8* | *1* | *r* | *0,1* |  |  | |
| *81* | ***DISCRETE\_INPUT*** | | *Rec* |  |  |  |  |  |  | |
|  | *1* | ***STATUS*** |  | *UInt8* | *1* | *r* |  | *GOOD* | *GOOD* | |
|  | *2* | ***VALUE*** |  | *UInt8* | *1* | *r* | *0,1* |  |  | |
| 82 | **DISCRETE\_SWITCH\_1\_CONF**  **See also** [**DO\_hart**](#DO_hart) | |  |  |  |  |  |  |  | |
|  | 1 | **DIRECTION** |  | UInt8 | 1 | r/w |  | 0x01 | 0x01 | |
|  | 2 | **FUNCTION** |  | UInt8 | 1 | r/w | 0-13 | 0 | 0 | |
| 83 | **DISCRETE\_SWITCH\_2\_CONF**  **See also** [**DO\_hart**](#DO_hart) | |  |  |  |  |  |  |  | |
|  | 1 | **DIRECTION** |  | UInt8 | 1 | r/w |  | 0x01 | 0x01 | |
|  | 2 | **FUNCTION** |  | UInt8 | 1 | r/w | 0-13 | 0 | 0 | |
| 84 | **UI\_ACCESS\_CONTROL**  **See also** [**UI\_access\_hart**](#UI_access_hart) | | Rec |  |  |  |  |  |  | |
|  | 1 | **LOCK\_LEVEL** |  | UInt8 | 1 | r/w |  | 0 | 0 | |
|  | 2 | **PASSWORD\_ENABLED** |  | UInt8 | 1 | r/w | T/F | F | F | |
|  | 3 | **PASSWORD** |  | Int16 | 2 | r/w |  | 0 | 0 | |
| 85 | **UI\_LANGUAGE**  **See also** [**UI\_lang\_hart**](#UI_lang_hart) | | Var | UInt8 | 1 | r/w | 0 to 6 | 0 | 0 | |
| 86 | **APP\_MODE**  **See** [**app\_mode\_hart**](#app_mode_hart) | | Var | UInt8 | 1 | r/w | Normal, Setup, FailSafe | Normal | Normal | |
| 87 | **COMPLETE\_STATUS**  **See also** [**faults\_hart**](#faults_hart) | | Array | UInt8 | 24 | r | NA | NA | NA | |
| 88 | **CLEAR\_STATUS**  **See also** [**faults\_hart**](#faults_hart) | | Array | UInt8 | 16 | r/w | NA | NA | NA | |
| 89 | **OPEN\_STOP\_ADJUSTMENT**  **See also** [**OpenStopAdj\_hart**](#OpenStopAdj_hart) | | Var | Float | 4 | r/w | 60.00 to 100.00 |  |  | |
| 90 | **SETPOINT\_SOURCE** | | Var | UInt8 | 1 | r/w | 1 or 2 | 1 | 1 | |
| *91* | ***SETPOINT*** | | *Rec* |  |  |  |  |  |  | |
|  | *1* | ***STATUS*** |  | *UInt8* | *1* | *r* |  | *GOOD* | *GOOD* | |
|  | *2* | ***VALUE*** |  | *Float* | *4* | *r* | *-50, 199* |  |  | |
| *92* | ***ACTUAL\_POSITION*** | | *Rec* |  |  |  |  |  |  | |
|  | *1* | ***STATUS*** |  | *UInt8* | *1* | *r* |  | *GOOD* | *GOOD* | |
|  | *2* | ***VALUE*** |  | *Float* | *4* | *r* | *-50, 199* |  |  | |
| *93* | ***RAW\_POSITION*** | | *Var* | *Int32* | *4* | *r* |  | *0* | *0* | |
| 94 | **ALERT\_ACTION** | |  |  | 20 |  |  |  |  | |
|  | 1 | BLOCK\_ERR\_MAP |  | UInt8 | 1 | r/w |  | 3 | 3 | |
|  | 2 | Deviation Alert |  | UInt8 | 1 | r/w | 0 - 3 | 2 | 2 | |
|  | 3 | Position HiHi Alert |  | UInt8 | 1 | r/w | 0 - 3 | 2 | 2 | |
|  | 4 | Position Hi Alert |  | UInt8 | 1 | r/w | 0 - 3 | 1 | 1 | |
|  | 5 | Position Lo Alert |  | UInt8 | 1 | r/w | 0 - 3 | 1 | 1 | |
|  | 6 | Position LoLo Alert |  | UInt8 | 1 | r/w | 0 - 3 | 2 | 2 | |
|  | 7 | Set Point Timeout Alert |  | UInt8 | 1 | r/w | 0 - 3 | 2 | 2 | |
|  | 8 | Near Close Alert |  | UInt8 | 1 | r/w | 0 - 3 | 1 | 1 | |
|  | 9 | Travel Accumulation A Alert |  | UInt8 | 1 | r/w | 0 - 3 | 1 | 1 | |
|  | 10 | Travel Accumulation B Alert |  | UInt8 | 1 | r/w | 0 - 3 | 1 | 1 | |
|  | 11 | Cycle Counter A Alert |  | UInt8 | 1 | r/w | 0 - 3 | 2 | 2 | |
|  | 12 | Cycle Counter B Alert |  | UInt8 | 1 | r/w | 0 - 3 | 2 | 2 | |
|  | 13 | Working Time Alert |  | UInt8 | 1 | r/w | 0 - 3 | 1 | 1 | |
|  | 14 | Supply Pressure Hi Alert |  | UInt8 | 1 | r/w | 0 - 3 | 2 | 2 | |
|  | 15 | Supply Pressure Lo Alert |  | UInt8 | 1 | r/w | 0 - 3 | 1 | 1 | |
|  | 16 | Supply Pressure LoLo Alert |  | UInt8 | 1 | r/w | 0 - 3 | 2 | 2 | |
|  | 17 | Temperature Hi Alert |  | UInt8 | 1 | r/w | 0 - 3 | 1 | 1 | |
|  | 18 | Temperature Lo Alert |  | UInt8 | 1 | r/w | 0 - 3 | 1 | 1 | |
|  | 19 | IP Drive Current Alert HI |  | UInt8 | 1 | r/w | 0 - 3 | 2 | 2 | |
|  | 20 | IP Drive Current Alert LO |  | UInt8 | 1 | r/w | 0 - 3 | 2 | 2 | |
|  | 21 | Sensor Failure Alert |  | UInt8 | 1 | rw | 0 - 3 | 3 | 3 | |
|  | 22 | Processor Alert |  | UInt8 | 1 | rw | 0 - 3 | 3 | 3 | |
|  | 23 | Valve Control Alert |  | UInt8 | 1 | rw | 0 - 3 | 3 | 3 | |
|  | 24 | Commissioning Alert |  | UInt8 | 1 | rw | 0 - 3 | 1 | 1 | |
|  | 25 | Air Supply Alert |  | UInt8 | 1 | rw | 0 - 3 | 1 | 1 | |
|  | 26 | Supporting Hardware Alert |  | UInt8 | 1 | rw | 0 - 3 | 1 | 1 | |
| *95* | ***ALERT\_STATE*** | |  |  | *25* |  |  |  |  | |
|  | *1* | *Deviation Alert* |  | *UInt8* | *1* | *r* | *T/F* | *F* | *F* | |
|  | *2* | *Position HiHi Alert* |  | *UInt8* | *1* | *r* | *T/F* | *F* | *F* | |
|  | *3* | *Position Hi Alert* |  | *UInt8* | *1* | *r* | *T/F* | *F* | *F* | |
|  | *4* | *Position Lo Alert* |  | *UInt8* | *1* | *r* | *T/F* | *F* | *F* | |
|  | *5* | *Position LoLo Alert* |  | *UInt8* | *1* | *r* | *T/F* | *F* | *F* | |
|  | *6* | *Set Point Timeout Alert* |  | *UInt8* | *1* | *r* | *T/F* | *F* | *F* | |
|  | *7* | *Near Close Alert* |  | *UInt8* | *1* | *r* | *T/F* | *F* | *F* | |
|  | *8* | *Travel Accumulation A Alert* |  | *UInt8* | *1* | *r* | *T/F* | *F* | *F* | |
|  | *9* | *Travel Accumulation B Alert* |  | *UInt8* | *1* | *r* | *T/F* | *F* | *F* | |
|  | *10* | *Cycle Counter A Alert* |  | *UInt8* | *1* | *r* | *T/F* | *F* | *F* | |
|  | *11* | *Cycle Counter B Alert* |  | *UInt8* | *1* | *r* | *T/F* | *F* | *F* | |
|  | *12* | *Working Time Alert* |  | *UInt8* | *1* | *r* | *T/F* | *F* | *F* | |
|  | *13* | *Supply Pressure Hi Alert* |  | *UInt8* | *1* | *r* | *T/F* | *F* | *F* | |
|  | *14* | *Supply Pressure Lo Alert* |  | *UInt8* | *1* | *r* | *T/F* | *F* | *F* | |
|  | *15* | *Supply Pressure LoLo Alert* |  | *UInt8* | *1* | *r* | *T/F* | *F* | *F* | |
|  | *16* | *Temperature Hi Alert* |  | *UInt8* | *1* | *r* | *T/F* | *F* | *F* | |
|  | *17* | *Temperature Lo Alert* |  | *UInt8* | *1* | *r* | *T/F* | *F* | *F* | |
|  | *18* | *IP Drive Current Alert HI* |  | *UInt8* | *1* | *r* | *T/F* | *F* | *F* | |
|  | *19* | *IP Drive Current Alert LO* |  | *UInt8* | *1* | *r* | *T/F* | *F* | *F* | |
|  | *20* | *Sensor Failure Alert* |  | *UInt8* | *1* | *r* | *T/F* | *F* | *F* | |
|  | *21* | *Processor Alert* |  | *UInt8* | *1* | *r* | *T/F* | *F* | *F* | |
|  | *22* | *Valve Control Alert* |  | *UInt8* | *1* | *r* | *T/F* | *F* | *F* | |
|  | *23* | *Commissioning Alert* |  | *UInt8* | *1* | *r* | *T/F* | *F* | *F* | |
|  | *24* | *Air Supply Alert* |  | *UInt8* | *1* | *r* | *T/F* | *F* | *F* | |
|  | *25* | *Supporting Hardware Alert* |  | *UInt8* | *1* | *r* | *T/F* | *F* | *F* | |
| 96 | **ALERT\_COUNTERS** | | Rec | UInt32 | 50 | r/w |  |  |  | |
|  | 1 | Deviation Alert |  | UInt16 | 2 | r/w | 0 - 0xFFFF | 0 | 0 | |
|  | 2 | Position HiHi Alert |  | UInt16 | 2 | r/w | 0 - 0xFFFF | 0 | 0 | |
|  | 3 | Position Hi Alert |  | UInt16 | 2 | r/w | 0 - 0xFFFF | 0 | 0 | |
|  | 4 | Position Lo Alert |  | UInt16 | 2 | r/w | 0 - 0xFFFF | 0 | 0 | |
|  | 5 | Position LoLo Alert |  | UInt16 | 2 | r/w | 0 - 0xFFFF | 0 | 0 | |
|  | 6 | Set Point Timeout Alert |  | UInt16 | 2 | r/w | 0 - 0xFFFF | 0 | 0 | |
|  | 7 | Near Close Alert |  | UInt16 | 2 | r/w | 0 - 0xFFFF | 0 | 0 | |
|  | 8 | Travel Accumulation A Alert |  | UInt16 | 2 | r/w | 0 - 0xFFFF | 0 | 0 | |
|  | 9 | Travel Accumulation B Alert |  | UInt16 | 2 | r/w | 0 - 0xFFFF | 0 | 0 | |
|  | 10 | Cycle Counter A Alert |  | UInt16 | 2 | r/w | 0 - 0xFFFF | 0 | 0 | |
|  | 11 | Cycle Counter B Alert |  | UInt16 | 2 | r/w | 0 - 0xFFFF | 0 | 0 | |
|  | 12 | Working Time Alert |  | UInt16 | 2 | r/w | 0 - 0xFFFF | 0 | 0 | |
|  | 13 | Supply Pressure Hi Alert |  | UInt16 | 2 | r/w | 0 - 0xFFFF | 0 | 0 | |
|  | 14 | Supply Pressure Lo Alert |  | UInt16 | 2 | r/w | 0 - 0xFFFF | 0 | 0 | |
|  | 15 | Supply Pressure LoLo Alert |  | UInt16 | 2 | r/w | 0 - 0xFFFF | 0 | 0 | |
|  | 16 | Temperature Hi Alert |  | UInt16 | 2 | r/w | 0 - 0xFFFF | 0 | 0 | |
|  | 17 | Temperature Lo Alert |  | UInt16 | 2 | r/w | 0 - 0xFFFF | 0 | 0 | |
|  | 18 | IP Drive Current Alert HI |  | UInt16 | 2 | r/w | 0 - 0xFFFF | 0 | 0 | |
|  | 19 | IP Drive Current Alert LO |  | UInt16 | 2 | r/w | 0 - 0xFFFF | 0 | 0 | |
|  | 20 | Sensor Failure Alert |  | UInt16 | 2 | r/w | 0 - 0xFFFF | 0 | 0 | |
|  | 21 | Processor Alert |  | UInt16 | 2 | r/w | 0 - 0xFFFF | 0 | 0 | |
|  | 22 | Valve Control Alert |  | UInt16 | 2 | r/w | 0 - 0xFFFF | 0 | 0 | |
|  | 23 | Commissioning Alert |  | UInt16 | 2 | r/w | 0 - 0xFFFF | 0 | 0 | |
|  | 24 | Air Supply Alert |  | UInt16 | 2 | r/w | 0 - 0xFFFF | 0 | 0 | |
|  | 25 | Supporting Hardware Alert |  | UInt16 | 2 | r/w | 0 - 0xFFFF | 0 | 0 | |
| *97* | ***ALERT\_LOG*** | |  |  | *12* |  |  |  |  | |
|  | *1* | *COMMAND* |  | *UInt8* | *1* | *r/w* |  |  |  | |
|  | *2* | *ALERT\_TIME* |  | *TIME\_VALUE* | *7* | *r* |  |  |  | |
|  | *3* | *ALERT\_DATA* |  | *UInt32* | *4* | *r* |  |  |  | |
| 98 | **WORKING TIMES** | |  |  |  |  |  |  |  | |
|  | 1 | SINCE\_POWERUP |  | UInt32 |  | r/w |  |  |  | |
|  | 2 | SINCE\_RESET |  | UInt32 |  | r/w |  |  |  | |
|  | 3 | TOTAL\_TIME |  | UInt32 |  | r |  |  |  | |
| 99 | **WORKING\_TIME\_ALERT** | | Rec |  | | |  |  |  | |
|  | 1 | **TOTAL\_TIME** |  | UInt32 | 4 | r |  |  |  | |
|  | 2 | **ALERT\_POINT** |  | UInt32 | 4 | r/w | <0xFFFFFFFF | 8760 | 8760 | |
|  | 3 | **ALERT** |  | Bool | 1 | r/w | FALSE | FALSE | FALSE | |
|  | 4 | **HISTORIC ALERT** |  | Bool | 1 | r/w | True - False | FALSE | FALSE | |
|  | 5 | **ENABLE** |  | Bool | 1 | r/w | True - False | 1 | 1 | |
| *100* | ***FACTORY\_USE\_1*** | | *Array* | *UInt8* | *100* | *r/w* |  |  |  | |
| *101* | ***FACTORY\_USE\_2*** | | *Array* | *UInt8* | *100* | *r/w* |  |  |  | |
| 102 | **ACTUATOR\_1** | | Rec |  | 96 |  |  |  |  | |
|  | 1 | ACT\_MAN\_ID |  | VStr | 32 | r/w |  |  |  | |
|  | 2 | ACT\_MODEL\_NUM |  | VStr | 32 | r/w |  |  |  | |
|  | 3 | ACT\_SN |  | VStr | 32 | r/w |  |  |  | |
|  |  |  |  |  |  |  |  |  |  | |
| 103 | **ACTUATOR\_2** | | Rec |  | 98 |  |  |  |  | |
|  | 1 | ACT\_TYPE |  | VStr | 32 | r/w |  |  |  | |
|  |  | ACT\_SIZE |  | VStr | 32 | r/w |  |  |  | |
|  |  | ACT\_ROTARY\_MOMENT\_ARM |  | VStr | 32 | r/w |  |  |  | |
|  |  | ACT\_EFFECTIVE\_AREA |  | UInt16 | 2 | r/w |  |  |  | |
| 104 | **ACTUATOR\_3** | | Rec |  | 19 |  |  |  |  | |
|  | 1 | Shutoff\_DP |  | UInt16 | 2 |  |  |  |  | |
|  | 2 | Hand\_Wheel |  | UInt8 | 1 |  |  |  |  | |
|  | 3 | ACT\_STYLE |  | UInt8 | 1 | r |  | 1 | 1 | |
|  | 4 | ACT\_FAIL\_ACTION  See also [AirAction\_hart](#AirAction_hart) |  | UInt8 | 1 | r/w | See Description | 1 | 1 | |
|  | 5 | RELAY\_TYPE  See also [sensortype\_hart](#sensortype_hart) |  | enu | 1 | r/w |  | 1 | 1 | |
|  | 6 | SUPPLY\_PRS\_MAX |  | Float | 4 | r/w |  | 241.3 | 241.3 | |
|  | 7 | PRS\_CONTROL\_HI |  | Float | 4 | r/w |  | 103.4 | 103.4 | |
|  | 8 | PRS\_CONTROL\_LO |  | Float | 4 | r/w |  | 20.6 | 20.6 | |
| 105 | **ACTUATOR\_INFO** | | Rec |  | 104 |  |  |  |  | |
|  | 1 | DESCRIPTOR |  | VStr | 32 | r/w |  |  |  | |
|  | 2 | MESSAGE |  | VStr | 32 | r/w |  |  |  | |
|  | 3 | DATE |  | VStr | 8 | r/w |  |  |  | |
|  | 4 | SPEC\_SHEET |  | VStr | 32 | r/w |  |  |  | |
| 106 | **VALVE\_IDENTIFICATION** | | Rec |  | 96 |  |  |  |  | |
|  |  | VALVE\_MAN\_ID |  | VStr | 32 | r/w |  |  |  | |
|  |  | VALVE\_MODEL\_NUM |  | VStr | 32 | r/w |  |  |  | |
|  |  | VALVE\_SN |  | VStr | 32 | r/w |  |  |  | |
| 107 | **VALVE\_SERVICE** | | Rec |  | 33 |  |  |  |  | |
|  |  | SERVICE |  | VStr | 32 | r/w |  | Water |  | |
|  |  | PID\_No |  | UInt8 | 1 | r/w |  |  |  | |
| 108 | **VALVE\_BODY\_1** | | Rec |  | 99 |  |  |  |  | |
|  |  | VALVE\_TYPE |  | UInt8 | 1 | r/w |  | 1 | 1 | |
|  |  | BODY SIZE |  | UInt16 | 2 | r/w |  | 0 |  | |
|  |  | PACKING |  | VStr | 32 | r/w |  |  |  | |
|  |  | PLUG\_TYPE |  | VStr | 32 | r/w |  |  |  | |
|  |  | SEAT\_RING\_TYPE |  | VStr | 32 | r/w |  |  |  | |
| 109 | **VALVE\_BODY\_2** | | Rec |  | 64 |  |  |  |  | |
|  |  | CHARACTERISTIC |  | VStr | 32 | r/w |  |  |  | |
|  |  | LEAKAGE\_CLASS |  | VStr | 32 | r/w |  |  |  | |
| 110 | **VALVE\_BODY\_3** | | Rec |  | 64 |  |  |  |  | |
|  |  | FLOW\_ACTION |  | VStr | 32 | r/w |  |  |  | |
|  |  | RATED\_ADJ\_CV |  | VStr | 32 | r/w |  |  |  | |
|  |  |  |  |  |  |  |  |  |  | |
| 111 | **VALVE\_INFO** | | Rec |  | 105 |  |  |  |  | |
|  | 1 | SAME\_AS\_ACTUATOR |  | UInt8 | 1 | r/w | T/F | T | T | |
|  | 1 | DESCRIPTOR |  | VStr | 32 | r/w |  |  |  | |
|  | 2 | MESSAGE |  | VStr | 32 | r/w |  |  |  | |
|  | 3 | DATE |  | VStr | 8 | r/w |  |  |  | |
|  | 4 | SPEC\_SHEET |  | VStr | 32 | r/w |  |  |  | |
| 112 | **BOOSTER** | |  |  | 96 |  |  |  |  | |
|  |  | Manufacturer |  | VStr | 32 | r/w |  |  |  | |
|  |  | Model |  | VStr | 32 | r/w |  |  |  | |
|  |  | Qty |  | VStr | 32 | r/w |  |  |  | |
| 113 | **ACCESSORY** | |  |  | 32 |  |  |  |  | |
|  |  | SOLENOID |  | VStr | 32 | r/w |  |  |  | |
|  |  | REMOTE\_SENSOR  See also [sensortype\_hart](#sensortype_hart) |  | UInt8 | 1 | r/w | 0-1 read 2-3 write | 0 | 0 | |
| 114 | **POSITION\_EXTREMES** | | Rec |  | 32 |  |  |  |  | |
|  | 1 | FINAL\_VALUE\_MAX |  | Float | 4 | r/w | -50 to 199 | -50 |  | |
|  | 2 | FINAL\_VALUE\_MIN |  | Float | 4 | r/w | -50 to 199 | 199 |  | |
|  | 3 | FINAL\_POS\_VALUE\_MAX |  | Float | 4 | r/w | -50 to 199 | -50 |  | |
|  | 4 | FINAL\_POS\_VALUE\_MIN |  | Float | 4 | r/w | -50 to 199 | 199 |  | |
|  | 5 | WORKING\_SP\_MAX |  | Float | 4 | r/w | -50 to 199 | -50 |  | |
|  | 6 | WORKING\_SP\_MIN |  | Float | 4 | r/w | -50 to 199 | 199 |  | |
|  | 7 | WORKING\_POS\_MAX |  | Float | 4 | r/w | -50 to 199 | -50 |  | |
|  | 8 | WORKING\_POS\_MIN |  | Float | 4 | r/w | -50 to 199 | 199 |  | |
| 115 | **PRESSURE\_EXTREMES** | | Rec |  | 32 |  |  |  |  | |
|  | 1 | SUPPLY\_PRESSURE\_MAX |  | Float | 4 | r/w | -25 to 1050 | -25 |  | |
|  | 2 | SUPPLY\_PRESSURE\_MIN |  | Float | 4 | r/w | -25 to 1050 | 1050 |  | |
|  | 3 | ACTUATOR\_A\_MAX |  | Float | 4 | r/w | -25 to 1050 | -25 |  | |
|  | 4 | ACTUATOR\_A\_MIN |  | Float | 4 | r/w | -25 to 1050 | 1050 |  | |
|  | 5 | ACTUATOR\_B\_MAX |  | Float | 4 | r/w | -25 to 1050 | -25 |  | |
|  | 6 | ACTUATOR\_B\_MIN |  | Float | 4 | r/w | -25 to 1050 | 1050 |  | |
|  | 7 | PILOT\_MAX |  | Float | 4 | r/w | -25 to 1050 | -25 |  | |
|  | 8 | PILOT\_MIN |  | Float | 4 | r/w | -25 to 1050 | 1050 |  | |
| 116 | **TEMPERATURE\_EXTREMES** | | Rec |  | 8 |  |  |  |  | |
|  | 1 | TEMPERATURE\_MAX |  | Float | 4 | r/w | -40 to 85 | -40 |  | |
|  | 2 | TEMPERATURE\_MIN |  | Float | 4 | r/w | -40 to 85 | 85 |  | |
|  | 3 | TEMPERATURE\_MAX\_LIFETIME  See also [tempr\_hart](#tempr_hart) |  | Float | 4 | r | Actual | Actual |  | |
|  | 4 | TEMPERATURE\_MIN\_LIFETIME  See also [tempr\_hart](#tempr_hart) |  | Float | 4 | r | Actual | Actual |  | |
| 117 | **IP\_CURRENT\_EXTREMES** | | Rec |  | 8 |  |  |  |  | |
|  | 1 | IP\_CURRENT\_MAX |  | Float | 4 | r/w | -25 to 150 | -25 |  | |
|  | 2 | IP\_CURRENT\_MIN |  | Float | 4 | r/w | -25 to 150 | 150 |  | |
| 118 | **ADVANCED** | | Array | UInt32 | 10 | r/w |  |  | Special | |
|  |  | |  |  |  |  |  |  | (Advanced) | (Standard) |
|  |  | |  |  |  |  |  |  | **0xFFFFFFFF** | 0x7FFFFFFF |
|  |  | |  |  |  |  |  |  | **0xFFFFFFFF** | 0x180BFE00 |
|  |  | |  |  |  |  |  |  | **0xFFFFFFFF** | 0xFFFFFFF8 |
|  |  | |  |  |  |  |  |  | **0x7FFFFFFF** | 0x20FFFFFF |
|  |  | |  |  |  |  |  |  | **0x0** | 0x0 |
|  |  | |  |  |  |  |  |  | **0xFFFFFFFF** | 0x7FFFFFFF |
|  |  | |  |  |  |  |  |  | **0xFFFFFFFF** | 0x180BFE00 |
|  |  | |  |  |  |  |  |  | **0xFFFFFFFF** | 0x180BFE00 |
|  |  | |  |  |  |  |  |  | **0x7FFFFFFF** | 0x20FFFFFF |
|  |  | |  |  |  |  |  |  | **0x0** | 0x0 |
|  |  | |  |  |  |  |  |  | **0x7FFF** | 0x5FFE |
|  |  | |  |  |  |  |  |  | **0x0** | 0x0 |
|  |  | |  |  |  |  |  |  | Generated key | Generated key |
|  |  | |  |  |  |  |  |  | 0x0 | 0x0 |
| *119* | ***BLOCK\_ERR\_DESC\_1*** | | *Var* | *BitStr* | *4* | *r* |  |  |  | |
| *120* | ***PST\_TRIGGER***  ***See also [PST\_trigger\_hart](#PST_trigger_hart)*** | | *Rec* |  |  |  |  |  |  | |
|  | *1* | *PST\_Trigger\_On\_Demand* |  | *enu* | *1* | *r/w* | *0,1* | *1* |  | |
|  | *2* | *PST\_Trigger\_by\_UI* |  | *BitStr* | *1* | *rw* | *N/A* | *0* | *Reserved* | |
|  | *3* | *PST\_Trigger\_By\_DI\_Switch* |  | *enu* | *1* | *rw* | *0,1,2* | *0* |  | |
|  | *4* | *PST\_Trigger\_By\_AI\_Input* |  | *enu* | *1* | *rw* | *0,1,2* | *0* |  | |
|  | *5* | *PST\_AI\_Trigger\_Input\_Threshold* |  | *Float* | *4* | *rw* |  | *12.0* |  | |
| *121* | ***PST\_CONFIG***  ***See also [PST\_conf\_hart](#PST_conf_hart)*** | | *Rec* |  |  |  |  |  |  | |
|  | *1* | *setpoint\_change\_threshold* |  | *Float* | *4* | *r/w* |  | *5.0* |  | |
|  | *2* | *pst\_travel* |  | *Float* | *4* | *r/w* |  | *5.0* |  | |
|  | *3* | *pst\_setpoint\_rate* |  | *Float* | *4* | *r/w* |  | *199.9* |  | |
|  | *4* | *pilot\_threshold* |  | *Float* | *4* | *r/w* |  | *12.0* |  | |
|  | *5* | *actuator\_threshold* |  | *Float* | *4* | *r/w* |  | *12.0* |  | |
|  | *6* | *stroke\_timeout\_override* |  | *UInt32* | *4* | *rw* | *0-…* | *0* | *Calculated automatically if 0 is written* | |
|  | *7* | *pst\_pause* |  | *UInt16* | *2* | *rw* | *0-* | *300* |  | |
|  | *8* | *pst\_leadtime* |  | *UInt16* | *2* | *rw* | *0-* | *3* |  | |
|  | *9* | *pst\_maxtime* |  | *UInt16* | *2* | *rw* | *0-* | *60* |  | |
|  | *10* | *pst\_datamap* |  | *BitStr* | *2* | *rw* | *1-* | *0x7F* |  | |
|  | *11* | *pst\_skip\_count* |  | *Uint16* | *2* | *rw* |  | *0* |  | |
|  | *12* | *pst\_freeze\_options* |  | *BitStr* | *2* | *rw* |  | *0x3c* |  | |
|  | *13* | *pst\_pattern* |  | *enu* | *1* | *rw* | *0-5* | *0* |  | |
| *122* | ***DATA\_CONFIG\_PERM***  ***See also [Data\_Collection\_hart](#Data_Collection_hart)*** | | *Rec* |  |  |  |  |  |  | |
|  | *1* | *DataCollectBase* |  | *enu* | *1* | *r/w* | *0,1* | *1* |  | |
|  | *2* | *DataCollectSkipCount* |  | *Uint16* | *2* | *rw* |  | *0* |  | |
|  | *3* | *DataCollectBitmap* |  | *BitStr* | *2* | *rw* |  | *1* |  | |
|  | *4* | *DataCollectMaxSamples* |  | *UInt16* | *2* | *rw* |  | *0* | *0 means up to the buffer size* | |
|  | *5* | *DataCollectMaxPreSamples* |  | *UInt16* | *2* | *rw* |  | *0* |  | |
| *123* | ***DATA\_COLLECTION\_TRIGGER***  ***See also [Data\_CollectionTrigger\_hart](#Data_CollectionTrigger_hart)*** | | *Rec* |  |  |  |  |  |  | |
|  | *1* | *TriggerEnabled* |  | *BitStr* | *4* | *r/w* |  | *0* |  | |
|  | *2* | *AI\_Trigger\_ThresholdLow* |  | *Float* | *4* | *rw* |  | *12.0* |  | |
|  | *3* | *AI\_Trigger\_ThresholdHigh* |  | *Float* | *4* | *rw* |  | *12.0* |  | |
|  | *4* | *Position\_Threshold* |  | *Float* | *4* | *rw* |  | *0.5* |  | |
|  | *5* | *Pressure\_Threshold* |  | *Float* | *4* | *rw* |  | *5.0* |  | |
|  | 6 | Setpont\_Threshold |  | Float | 4 | rw |  | 0.5 |  | |
|  | 7 | FilterCoef |  | UInt8 | 1 | rw |  | 6 |  | |
| *124* | ***ANALOG\_INPUT*** | | *Rec* |  |  |  |  |  |  | |
|  | *1* | *Status* |  | *BitStr* | *1* | *r* |  | *0x1c* | *Replaced with actual read* | |
|  | *2* | *Value* |  | *Float* | *4* | *r* |  | *0* | *Replaced with actual read* | |
| *125* | ***TB\_FSTATE\_STATUS*** | | *Rec* |  |  |  |  |  |  | |
|  | *1* | *DO\_usr\_req* |  | *enu* | *1* | *r/w* |  | *0* |  | |
|  | *2* | *final\_value\_req* |  | *enu* | *1* | *rw* |  | *0* |  | |
|  | *3* | *time\_to\_fstate* |  | *Float* | *4* | *rw* |  | *0.0* |  | |
| *126* | ***DATA\_CONFIG\_TEMP*** | | *Rec* |  |  |  |  |  |  | |
|  | *1* | *DataCollectBase* |  | *enu* | *1* | *r/w* | *0,1* | *1* |  | |
|  | *2* | *DataCollectSkipCount* |  | *Uint16* | *2* | *rw* |  | *0* |  | |
|  | *3* | *DataCollectBitmap* |  | *BitStr* | *2* | *rw* |  | *1* |  | |
|  | *4* | *DataCollectMaxSamples* |  | *UInt16* | *2* | *rw* |  | *0* | *0 means up to the buffer size* | |

1. [↑](#footnote-ref-1)