

**HART® 7.x Field Device Specification for
STT700 SmartLine Temperature
Transmitters**

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1. Introduction

1.1 Scope

The Honeywell SmartLine Temperature Transmitter, STT700, device complies with HART Protocol Revision 7.x. This document specifies all the device specific features and gives HART Protocol implementation details. The functionality of this Field Device is described sufficiently to allow its proper application in a process and its complete support in HART capable Host Applications.

1.2 Purpose

This specification is designed to complement other documentation by providing a complete, unambiguous description of this Field Device from a HART Communication perspective.

1.3 Who should use this document?

The specification is designed to be a technical reference for HART capable Host Application Developers, System Integrators and knowledgeable End Users. It also provides functional specifications (e.g., commands, enumerations and performance requirements) used during Field Device development, maintenance and testing. This document assumes the reader is familiar with HART Protocol requirements and terminology.

1.4 Abbreviations and definitions

| | |
|---------------|---|
| ADC | Analog to Digital Converter |
| DAC | Digital to Analog Converter |
| EEPROM | Electrically-Erasable Programmable Read-Only Memory |
| ROM | Read-Only Memory |
| PV | Primary Variable |
| SV | Secondary Variable |
| TV | Tertiary Variable |
| MSG | Model Selection Guide |
| Float | An IEEE 754 single precision floating point value (4 bytes) |

| | |
|---------------------------|--|
| Packed | A string consisting of 6-bit alpha-numeric characters that are a subset of the ASCII character set. This allows four characters to be packed into three bytes. |
| Unsigned-<i>nn</i> | An unsigned integer where <i>nn</i> indicates the number of bits in this integer. Multi-byte integers are transmitted MSB-LSB. |
| Enum | It can be assigned any of the enumerators as a value |

Table 1 Abbreviations and Definitions

1.5 References

HART Field Communications Protocol Specification. HCF_SPEC-12, Revision 7.4, dated 29 June 2012.

2. Device Identification

| | | | |
|-----------------------------------|---|--------------------------|-------------|
| Manufacturer Name: | Honeywell | Model Name(s): | STT700 |
| Manufacture ID Code: | 23 (17 Hex) | Device Type Code: | 43 (2B Hex) |
| HART Protocol Revision | 7.x | Device Revision: | 1 |
| Number of Device Variables | 4 | | |
| Physical Layers Supported | FSK | | |
| Physical Device Category | Transmitter, Non-DC-isolated Bus Device | | |

Table 2 Device Identification

The Honeywell STT700 is designed to meet hazardous area approvals. Refer to the STT700 Transmitter User's manual (34-TT-25-17) on the available methods of protections for use in hazardous locations.

3. Product Overview

3.1 Transmitter

The STT700 Temperature Transmitter measures the process temperature and transmits an output signal proportional to the measured variable over a 4 to 20 milli-ampere, two-wire loop. A diagrammatic representation of STT700 is shown in [Figure 1](#).

The STT 700 SmartLine Temperature Transmitter can transmit its output in an analog 4 to 20 milli-ampere format. The process variable (PV) output, the transmitter also provides the Cold junction temperature as a secondary variable, Sensor1 as tertiary variable and Sensor2 as quaternary variable, which are available as read-only parameters through the MC Toolkit when the transmitter is in its analog mode.

It supports multiple various TC, RTD; mV & Ohms sensor types Refer Annex.

A configuration tool (Honeywell MC Toolkit) is connected to the loop wiring of the STT700 transmitter for direct communication with the transmitter. The handheld device communicates with the transmitter via the HART interface.

Note: The multiple mounting configurations are possible and are fully described in the STT700 Installation and User Manuals.

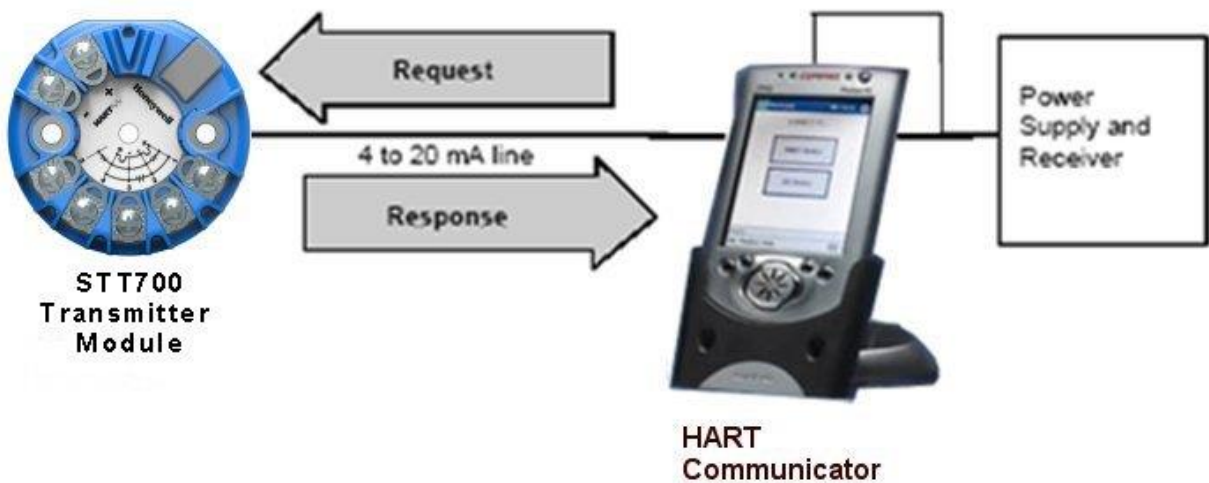


Figure 1 Typical Communication Interface

3.2 Communicator Purpose

The communicator allows the user to adjust transmitter values, or diagnose potential problems from a remote location such as the control room. The communicator can be used to:

- **Configure:** Define and enter the transmitter's operating parameters.
- **Monitor:** Read the input temperature to the transmitter in engineering units and the transmitter's output in mA or percent.
- **Display:** Retrieve and display data from the transmitter or the communicator's memory.
- **Change Mode of Operation:** Select configuration for multi-drop mode (digital) or loop current enabled (analog) operation.
- **Check current output:** Use the transmitter to supply the output current desired for verifying analog loop operation, troubleshooting, or calibrating other components in the analog loop.
- **Troubleshoot:** Check status of transmitter operation and display diagnostic messages to identify transmitter, communication, or operator error problems.
- **Product Interfaces**
- **Process Interface**

4. Product Interfaces

4.1 Process Interface

Sensor Input Channel

The primary variable is the temperature derived based on the sensor inputs and the loop control mode configured. Temperature sensors are wired externally to the transmitter.

STT700 supports 2, 3 & 4 wire RTD sensor inputs

- RTD Pt 100, $\alpha=385$
- RTD Pt 200, $\alpha=385$
- RTD Pt50, $\alpha=391$
- RTD Pt100, $\alpha=391$
- RTD Ni 120,
- RTD Cu50, $\alpha=426$
- RTD Cu50, $\alpha=428$
- RTD Cu100, $\alpha=426$
- RTD Cu100, $\alpha=428$

2- Wire thermocouple input (Types B, E, J, K, N, R, S, T, C and GOST L).

Mill volt (mV 22 and mV 125) and Ohm (OHM 500 and OHM 2K) sensor inputs are also accepted.

Open circuit sensor analysis is carried out in every measurement cycle.

Lead wire compensation is provided for RTDs and internal digital cold junction compensation is provided for thermocouples.

Refer to the Operator Manual (see references) for connection details.

The transmitter is designed to operate in a two-wire power/current loop with loop resistance and power supply voltage within the operating range.

4.2 Host Interface

Analog Output 1: Process Temperature

The transmitter is powered via the 2 wire, 4-20 mA signal connected to the + and - terminals on the output side of the module.

This is the only output from this transmitter, representing the process temperature measurement. The data is linearized and ranged to lower and upper range values held in the non-volatile memory.

HART Communication is supported on this loop. A guaranteed linear over-range is provided. Downscale or upscale current can indicate device malfunction.

Current values are shown in the table below.

| | Direction | | Values (% of range) | Values (mA or V) |
|--------------------------------------|------------------|------|----------------------------|-----------------------------------|
| Linear over-range* | Classic | Down | -1.25 % \pm 0.1 % | 3.8 to 4.0 mA 0.95 to 1.0 V |
| | | Up | 105.0 % \pm 0.1 % | 20.0 to 20.8 mA 5.0 to 5.2 V |
| | NAMUR | Down | -1.25 % to \pm 0.1 % | 3.8 to 4.0 mA 0.95 to 1.0 V |
| | | Up | 103.125 % \pm 0.1 % | 20.0 to 20.5 mA 5.0 to 5.125 V |
| Device malfunction indication | Down: less than | | - 1.25 % | 3.6 mA |
| | Up: greater than | | + 105 % | 21 mA |
| Maximum current | | | +111.25% | 21.8 mA |
| Multi-Drop current draw | | | | 4.0 mA |
| Lift-off voltage ** | | | | 10.8 V |

Table 3 Analog Output Values

* Honeywell will offer the STT700 HART transmitter with NAMUR compliant analog outputs, in addition to the "Classic" levels traditionally featured in the product.

** For the Lightning protection option, add 1 Volt (internal added 50 Ohm impedance).

Device Malfunction

The direction of indication of a detected malfunction by the analog current output is user-selectable by means of hart command 134, 135. STT700 transmitters are shipped with a default failsafe of upscale. This means that the transmitter's output will be driven upscale (maximum output) when the transmitter detects a critical status.

Write Protection

The STT700 transmitters have a transmitter security option, also known as a "write protect option," which is selectable by HART command 175/176. When the device is in write protect mode, the transmitter's configuration and calibration data can only be read / viewed.

5. Device Variables

The Device variables are the same as dynamic variables however the units applicable for PV will apply to TV as well.

6. Dynamic Variables

Three Dynamic Variables are implemented.

Table 4 List of Dynamic Variables

| Process Variable | Meaning | Units |
|-------------------------|---------------------------|---|
| PV | Temperature output | degC, degF, Rankine, Kelvin, Milli volt, Ohm |
| SV | Cold Junction temperature | degC, degF, Rankine, Kelvin |
| TV | Sensor1 Input temperature | degC, degF, Rankine, Kelvin, Milli volt, Ohm The unit selected for PV will be applied to TV and QV as well |
| QV | Sensor2 Input temperature | degC, degF, Rankine, Kelvin, Milli volt, Ohm |

7. Status Information

7.1 Field Device Status

Many of the flags in the device status are further described by critical, non-critical, and informative flags in the additional status bytes described in section 7.3.

| Bit | Name | Use |
|-----|------------------------------------|--|
| 7 | Device Malfunction | This flag is set to "1" when any critical failure is detected. When a "Device Malfunction" is indicated, the "More Status Available" status flag is always asserted and further information is available in the manufacturer specific status bytes. The designation for critical status, and Honeywell's unique status bytes are described in section 7.3. |
| 6 | Configuration Changed | Set when any parameter in the device configuration is changed. The flag will be reset when command 38 is received. |
| 5 | Cold Start | Set when power is first applied. The flag will also be set when the device is reset. |
| 4 | More Status Available | Set whenever any failure is detected. Command #48 gives further detail. (See section 7.3). |
| 3 | Loop Current Fixed | Set when the device is placed in fixed current mode (command 40). |
| 2 | Loop Current Saturated | Set if the primary variable is out of range. The measurement limits differ between the "classic" and "NAMUR" output options. This event does <i>not</i> set bit 7 ("Field Device Malfunction"). |
| 1 | Non-Primary Variable Out of Limits | Set if the temperature calculated from the temperature sensor is too high (greater than 85 degC for most transmitters). When this status is asserted, the "More Status Available" flag is also set, and the specific failure is indicated as "Sensor Over Temp" in the manufacturer specific status (see section 7.3). |
| 0 | Primary Variable Out of Limits | Set if the temperature is greater than the Upper Range Limit (URL) or Lower Range Limit (LRL) of the device. When this status is asserted, the "More Status Available" flag is also set, and the specific failure is indicated as Input1 Out of Range or Input2 Out of Range in the sensors section of manufacturer specific status (see section 7.3). |

Table 5 Field Device Status

7.2 Extended Device Status

The Extended Device Status byte has the following flags:

| Bit | Description | Use in Device |
|-----|-----------------------|---|
| 0 | Maintenance Required | Not Used |
| 1 | Device Variable Alert | Set when a critical or non-critical error (except “In Fixed Output Current Mode”) associated with the PV has been detected (see section 7.3). |
| 2-7 | Undefined | |

Table 6 Extended Device Status

7.3 Command #48 – Additional Field Device Status

Command #48 returns 8 bytes of data. The first 3 bytes contain device specific status as shown below. The Extended Device Status byte (byte 6) will be returned as defined above in section 7.2. All other bytes are unused, and will be returned as 0. The three detailed status bytes are divided by category of status: critical error and non-critical error.

| Status Type | Bit | Command 48 Status |
|--|-----|---|
| Critical status (Byte 1) | 7 | Unused |
| | 6 | Unused |
| | 5 | Unused |
| | 4 | Configuration corrupt (NVM Data corruption) |
| | 3 | Char/Cal table CRC failure |
| | 2 | Sensor Input Failure (Input1/2- open/short, suspect) |
| | 1 | DAC failure |
| | 0 | Diagnostics failure (SIL) (For HART it is run time as well) |
| Non critical status (Byte 2) | 7 | User Correct Active |
| | 6 | Fixed Current Mode |
| | 5 | sensor1 excess urv correct |
| | 4 | sensor1 excess lrv correct |
| | 3 | Cold junction temperature out of range and SV Bad |
| | 2 | PV Out of Range |
| | 1 | No Factory Calibration |
| | 0 | CT (core temperature) Out of Range |
| Non critical status 2 (Byte 3) | 7 | Unused |

| | | |
|--|---|----------------------------|
| | 6 | Analog Output Saturated |
| | 5 | Input2 Fault |
| | 4 | Input1 Fault |
| | 3 | Unused |
| | 2 | Unused |
| | 1 | No DAC Compensation |
| | 0 | Input suspect |
| Non critical status 3 (Byte 4) | 7 | Supply Voltage Fault |
| | 6 | Watchdog reset |
| | 5 | Input2 Out Of Range |
| | 4 | Input1 Out Of Range |
| | 3 | sensor2 excess urv correct |
| | 2 | sensor2 excess lrv correct |
| | 1 | ADC Fault |
| | 0 | Excess Delta Detect |
| Non critical status 4 (Byte 5) | 7 | Unused |
| | 6 | Unused |
| | 5 | Unused |
| | 4 | Unused |
| | 3 | Unused |
| | 2 | Unused |
| | 1 | Unused |
| | 0 | SIL Diagnostics |

Table 7 Additional Field Device Status

All critical faults will be indicated to the user with bits 4 and 7 set in the Field Device Status byte of the response.

Some faults are cleared when the error condition is resolved, while all Critical Status faults require the device be power cycled.

8. Universal Commands

The transmitter supports version 7.x of the HART protocol, thus each universal command is as specified in that standard. The following universal commands are provided by the device:

| Number | Name | Notes |
|--------|--|---|
| 0 | Read Unique Identifier | Returns unique identification for the device |
| 1 | Read Primary Variable | Returns PV value and its unit |
| 2 | Read Loop Current and Percent of Range | Returns AO value and % range |
| 3 | Read Dynamic Variables and Loop Current | Returns PV and SV, TV, QV values and corresponding unit values along with AO value |
| 6 | Write Polling Address | Changes device's polling address and loop current mode. |
| 7 | Read Loop Configuration | Returns polling address and loop current mode status. |
| 8 | Read Dynamic Variable Classifications | Returns dynamic variable classification. |
| 9 | Read Device Variables with Status | Returns dynamic variables PV, SV, TV & QV with status. |
| 11 | Read Unique Identifier Associated With Tag | Same response as command 0 |
| 12 | Read Message | Returns 24 bytes of packed ASCII data |
| 13 | Read Tag, Descriptor, Date | Returns tag, descriptor (packed ASCII format) and date from the device |
| 14 | Read Primary Variable Transducer Information | Returns transducer limits and span |
| 15 | Read Device Information | Returns burnout settings, PV unit value, LRV, URV, damping value and write protect code |
| 16 | Read Final Assembly Number | Returns final assembly number |
| 17 | Write Message | Write 24 bytes of packed ASCII data. |
| 18 | Write Tag, Descriptor, Date | Writes tag, descriptor (packed ASCII format) and date to the device |
| 19 | Write Final Assembly Number | Writes final assembly number to the device |
| 20 | Read Long Tag | Returns 32-byte Long Tag. |
| 21 | Read Unique Identifier | Returns unique identifier associated with Long Tag. |
| 22 | Write Long Tag | Writes Long Tag |
| 38 | Reset Configuration Changed Flag | Resets the configuration change flag |
| 48 | Read Additional Device Status | See section 11.2 for details. |

Table 8 Universal Commands

9. Common-Practice Commands

9.1 Supported Common Practice Commands

The following common-practice commands are implemented:

| Number | Name | Notes |
|--------|-------------------------------|---|
| 33 | Read Device Variables | Will return Device Variable 0 = PV (Temperature), Device Variable 1 = SV (Cold Junction Temperature), Device Variable 2 = TV (Sensor1 input temperature) and device Variable 3 = QV (Sensor2 input temperature) when requested. |
| 34 | Write PV Damping Value | Accepts damping values between 0 and 102 seconds. |
| 35 | Write PV Range Values | Write PV LRV/URV values |
| 36 | Set PV Upper Range Value | Set current PV as URV. Adjusts the span accordingly. |
| 37 | Set PV Lower Range Value | Set current PV as LRV. Adjusts the span accordingly. |
| 40 | Enter/Exit Fixed Current Mode | Sets loop current to a fixed value. |
| 42 | Perform Device Reset | Resets the device |
| 44 | Write Primary Variable Units | Write PV units value If Sensor types are TC or RTD, deg C, deg F, deg R and Kelvin are applicable and if sensor type is mV then Mill volt unit is applicable and if sensor type is RTD then Ohms will be applicable |
| 45 | Trim Loop Current Zero | Trims loop current to 4mA |
| 46 | Trim Loop Current Gain | Trims loop current to 20mA |
| 53 | Write Device Variable Units | Writes Device Variable Units for PV and SV only. For TV and QV, unit selected for PV is only applied, as the PV is computed based on TV and QV |
| 71 | Lock Device | This command locks a device preventing any changes being made from a local panel or from another master. |
| 76 | Read Lock Device status | This command reads the current state of lock device. |

Table 9 Common Practice Commands

9.2 Burst Mode

This Field Device does not support burst mode.

9.3 Catch Device Variable

This Field Device does not support Catch Device Variable.

10. Device-Specific Commands

The following device-specific commands are implemented:

| Number | Name | Notes |
|--------|--|--|
| 128 | Correct Sensor 1 / Sensor 2 Input to URV | It trims the Sensor 1 /Sensor 2 input to URV. |
| 129 | Correct Sensor 1 / Sensor 2 Input to LRV | It trims the Sensor 1 / Sensor 2 input to LRV. |
| 130 | Reset Corrects Sensor 1 / Sensor 2 | It resets all the user correct operations performed for sensor 1 / sensor 2. |
| 131 | Write upper calibration point sensor1/sensor2 | Sensor1/Sensor2 upper calibration point write. |
| 132 | Write lower calibration point sensor1/sensor2 | Sensor1/Sensor2 lower calibration point write. |
| 133 | Read calibration points sensor 1 and sensor2 | Read sensor1 and sensor2 calibration points. |
| 134 | Write Burnout Selection | This command writes burn out selection (High/Low) in device. |
| 135 | Read Burnout Selection | This command reads burn out selection. |
| 136 | Read URL1, LRL1, URL2, LRL2 | Reads the range limits from sensor1 and sensor2 |
| 137 | Read UTL1, LTL1, UTL2, LTL2, CJ-UTL, CJ-LTL | Reads the respective values |
| 138 | Read sensor1 configuration | Reads the configuration specific to sensor1. |
| 139 | Read sensor2 configuration | Reads the configuration specific to sensor2. |
| 140 | Write Sensor1/Sensor2 Bias value | Configures the sensor1/sensor2 bias value. |
| 141 | Write Sensor 1/ Sensor 2 RTD type | Configures the sensor 1 RTD / sensor2 RTD type. |
| 142 | Write sensor1 /sensor 2 RTD lead wire resistance | Configures the sensor 1 / sensor 2 RTD resistance. |
| 143 | Write excess delta detection | Configures the excess delta detection status. |
| 144 | Read delta limit, delta, excess delta detection | Read the delta limit value, delta value and excess delta detection status |

| | | |
|-----|---|--|
| 145 | Write CJ compensation type | Configures the cold junction compensation state |
| 146 | Read sensor extra configuration | Reads the sensor configuration common to both sensors. |
| 147 | Read transmitter specifics | Information about display |
| 148 | Read Sensor 1 and Sensor 2 resistance | Read Sensor 1 and Sensor 2 resistance |
| 149 | Read Sensor 1 and Sensor 2 voltages | Read Sensor 1 and Sensor 2 voltages |
| 150 | Write fixed CJ compensation | Configures the Cold Junction compensation value |
| 151 | Read Device Serial Number | Read Device Serial Number |
| 152 | Write delta limit | Configures the delta limit value |
| 153 | Read power fail counter and its timestamp | The power fail count and Time stamp are read. |
| 154 | Read time in service and service life remaining. | It reads Time in Service and Service life. |
| 155 | Write command for NAMUR enable and disable | This command writes namur enable/disable status. |
| 156 | Read NAMUR status | Reads whether NAMUR is enabled or disabled |
| 157 | Read CT Tracking | |
| 158 | Read last time and date for correct URV, correct LRV sensor 1/ sensor2 | Reads Calibration records sensor 1 / sensor2. |
| 159 | Read previous time and date for correct URV, correct LRV sensor 1/ sensor2. | Reads Calibration records sensor 1 / sensor2. |
| 160 | Read current time and date for correct URV, correct LRV sensor 1/ sensor2. | Reads Calibration records sensor 1 / sensor2. |
| 161 | Read current, last and previous reset correct Time & Date sensor 1 / sensor2. | Reads Calibration records for sensor 1 / sensor 2 Reset corrects. |
| 162 | Write Sensor1 / sensor2 install date | This command write sensor1 / sensor2 install date |
| 163 | Read sensors and transmitter install dates | Reads sensor1, sensor2 and transmitter installed date. |
| 164 | Write transmitter install date. | Writes transmitter install date to sensor. One time writable. |
| 165 | Read model number – Key Number and Table I | Reads 7 byte Key number, and Table I information. For factory use. |

| | | |
|------------|---|---|
| 166 | Read model number – Table II | Reads Table II information. For factory use. |
| 167 | Read model number – Table III | Reads Table III information. For factory use. |
| 168 | Read Model Number –Table IV | Reads Table IV information. For factory use. |
| 169 | Write CVD1/CVD2 4 Coefficients. | Write R0, α , δ , β |
| 170 | Read CVD1/CVD2 4 Coefficients. | Read R0, α , δ , β |
| 171 | Write CVD1 /CVD2 Activation. | Write CVD1/CVD2 Activation value. |
| 172 | Read CVD1/CVD2 Coefficient activation. | Read CVD1/CVD2 Coefficient activation. |
| 173 | Read CVD1 and CVD2 User Cal values. | Read CVD1 and CVD2 User Cal values. |
| 175 | Read/Lock Write Protect Configuration | Soft Write protection |
| 176 | Write/Change/Reset Write Protect Password | Changes the write Protect Password. |
| 177 | Read Error log Part 1 / part 2 | Reads the latest 5 errors for part1/part2 |
| 178 | Reset Error Log | Resets the errors logged |
| 179 | Read Error Logging Status | Reads the error logging status |
| 180 | Write Error Logging Status | Configures the error logging status |
| 181 | Write Break detect | Configures the break detect status |
| 182 | Write MRV | Configures the Mid-range value used in split range mode |
| 183 | Write Latching | Configures latching status |
| 184 | Write match PV's | Configures PV matching status |
| 185 | Write hysteresis value | Configures the hysteresis value |
| 186 | Write Damping for bump-less transfer | Configures the bump less damping value |
| 187 | Read f/w revision | It reads firmware rev. number. |
| 188 | Read the loop control mode, loop controlling sensor, hysteresis value, Damping for bump-less transfer | Reads the respective values |
| 189 | Write the loop control Mode | Configures the loop operation mode |

| | | |
|------------|---|---|
| 191 | Write Sensor 1 & 2 type & Id | Configures the types and Id's of sensor 1 and sensor 2 |
| 195 | Read SV up tracking values | Reads SV up tracking values |
| 198 | Write PV/SV high and low alarm limits | Configures PV/SV high and low alarm limits needed for PV tracking |
| 199 | Read PV Tracking values | Reads the PV tracking values |
| 200 | Reset PV/SV (CJ) tracking values. | Reset PV/SV (CJ) tracking values. |
| 201 | Reset operating voltage and its time stamp | It resets the Operating Voltage records. |
| 202 | Read current, minimum operating voltage and its timestamp | Reads operating voltage and minimum timestamp. |
| 221 | Set Date/Time for calibration | Before Calibration it is compulsory to enter the Time and Date. |
| 222 | Acknowledge Latching | Acknowledge the sensor errors |
| 228 | Read the state of "Available for maintenance" flag | Reads the status of "Available for Maintenance" Flag |
| | | |

Table 10 Device Specific Commands

Each device specific command is detailed below. Only the supported response codes are listed for a command.

10.1 Command #128: Correct sensor 1 / sensor 2 Input to URV

This command performs a calibration trim for the sensor1/sensor2. The calibration temperature applied to the transmitter is received with this command and the transmitter trims the sensor1/sensor2 calibration so that its output equals the applied URV value.

Request Data Bytes

| Byte | Format | Description |
|------|--------|-------------|
| None | | |

Response Data Bytes

| Byte | Format | Description |
|------|--------|-------------|
| None | | |

Command-Specific Response Codes

| Code | Class | Description |
|------|---------|------------------------------------|
| 0 | Success | No Command-Specific Errors |
| 3 | Error | Passed parameter too large |
| 4 | Error | Passed parameter too small |
| 6 | Error | Transmitter specific command error |
| 7 | Error | In Write Protect Mode |
| 9 | Error | Applied Process too High |
| 10 | Error | Applied process too low |
| 16 | Error | Access restricted |
| 20 | Error | Excess span corrects |
| 32 | Error | Busy |

10.2 Command #129: Correct sensor 1 / sensor 2 Input to LRV

This command performs a calibration trim for the sensor1/sensor2. The calibration temperature applied to the transmitter is received with this command and the transmitter trims the sensor1/sensor2 calibration so that its output equals the applied LRV value.

Request Data Bytes

| Byte | Format | Description |
|------|--------------|--|
| 0 | Unsigned – 8 | Request data from user 0: Sensor 1 1: Sensor 2 |

Response Data Bytes

| Byte | Format | Description |
|------|--------|-------------|
| None | | |

Command-Specific Response Codes

| Code | Class | Description |
|------|---------|------------------------------------|
| 0 | Success | No Command-Specific Errors |
| 3 | Error | Passed parameter too large |
| 4 | Error | Passed parameter too small |
| 6 | Error | Transmitter specific command error |
| 7 | Error | In Write Protect Mode |
| 9 | Error | Applied Process too High |
| 10 | Error | Applied process too low |
| 16 | Error | Access restricted |
| 20 | Error | Excess span corrects |
| 32 | Error | Busy |

10.3 Command #130: Reset Corrects sensor 1 / sensor 2

This command removes the calibration of sensor 1 /sensor 2 and returns the performance to factory calibration. This function is useful as a diagnostic tool to get an indication of characterization performance.

Request Data Bytes

| Byte | Format | Description |
|------|--------------|--|
| 0 | Unsigned – 8 | Request data from user 0: Sensor 1 1: Sensor 2 |

Response Data Bytes

| Byte | Format | Description |
|------|--------|-------------|
| None | | |

Command-Specific Response Codes

| Code | Class | Description |
|------|---------|------------------------------------|
| 0 | Success | No Command-Specific Errors |
| 6 | Error | Transmitter specific command error |
| 7 | Error | In Write Protect Mode |
| 16 | Error | Access restricted |
| 32 | Error | Busy |

10.4 Command #131: Write upper calibration point sensor1/ sensor2

This command configures the sensor1/ sensor2 upper calibration value.

Request Data Bytes

| Byte | Format | Description |
|------|--------------|--|
| 0 | Unsigned – 8 | Request data from user 0: Sensor 1 1: Sensor 2 |
| 1-4 | Float | Upper calibration value |

Response Data Bytes

| Byte | Format | Description |
|------|------------|----------------------------|
| 0 | Unsigned-8 | 0: Sensor 1 1: Sensor 2 |
| 1-4 | Float | Upper calibration value |

Command-Specific Response Codes

| Code | Class | Description |
|------|---------|------------------------------------|
| 0 | Success | No Command-Specific Errors |
| 5 | Error | Too few data bytes |
| 6 | Error | Transmitter specific command error |
| 7 | Error | In Write Protect Mode |
| 16 | Error | Access restricted |
| 32 | Error | Busy |

10.5 Command #132: Write lower calibration point sensor1/ sensor2

This command configures the sensor1/ sensor2 lower calibration value.

Request Data Bytes

| Byte | Format | Description |
|------|--------------|--|
| 0 | Unsigned – 8 | Request data from user 0: Sensor 1 1: Sensor 2 |
| 1-4 | Float | Lower calibration value |

Response Data Bytes

| Byte | Format | Description |
|------|------------|----------------------------|
| 0 | Unsigned-8 | 0: Sensor 1 1: Sensor 2 |
| 1-4 | Float | Lower calibration value |

Command-Specific Response Codes

| Code | Class | Description |
|------|---------|------------------------------------|
| 0 | Success | No Command-Specific Errors |
| 5 | Error | Too few data bytes |
| 6 | Error | Transmitter specific command error |
| 7 | Error | In Write Protect Mode |
| 16 | Error | Access restricted |
| 32 | Error | Busy |

10.6 Command #133: Read calibration points sensor1/ sensor2

This command reads the sensor1/sensor2 calibration values.

Request Data Bytes

| Byte | Format | Description |
|------|--------|-------------|
| | | |

Response Data Bytes

| Byte | Format | Description |
|-------|--------|-------------------------------------|
| 0-3 | Float | Upper calibration value for Sensor2 |
| 4-7 | Float | Lower calibration value for Sensor2 |
| 8-11 | Float | Upper calibration value for Sensor1 |
| 12-15 | Float | Lower calibration value for Sensor1 |

Command-Specific Response Codes

| Code | Class | Description |
|------|---------|------------------------------------|
| 0 | Success | No Command-Specific Errors |
| 6 | Error | Transmitter specific command error |

10.7 Command #134: Write high and low Burnout Selection

This command writes the high and low burnout selection.

Request Data Bytes

| Byte | Format | Description |
|------|---------------|---|
| 0-1 | Unsigned – 16 | 0x0000 = Low Burnout Selection 0x0001 = High Burnout Selection |

Response Data Bytes

| Byte | Format | Description |
|------|---------------|---|
| 0-1 | Unsigned – 16 | 0x0000 = Low Burnout Selection 0x0001 = High Burnout Selection |

Command-Specific Response Codes:

| Code | Class | Description |
|------|---------|-----------------------------|
| 0 | Success | No Command-Specific Errors |
| 5 | Error | Too Few Data Bytes Received |
| 7 | Error | In-Write Protect Mode |
| 16 | Error | Access Restricted |

10.8 Command #135: Read Burnout Selection

This command reads burnout selection.

Request Data Bytes

| Byte | Format | Description |
|------|--------|-------------|
| None | | |

Response Data Bytes

| Byte | Format | Description |
|------|---------------|---|
| 0-1 | Unsigned – 16 | 0x0000 = Low Burnout Selection 0x0001 = High Burnout Selection |

Command-Specific Response Codes

| Code | Class | Description |
|------|---------|------------------------------------|
| 0 | Success | No Command-Specific Errors |
| 6 | Error | Transmitter specific command error |

10.9 Command #136: Read URL1, LRL1, URL2, LRL2

The command reads range limits of sensor 1 and sensor 2.

Request Data Bytes

| Byte | Format | Description |
|------|--------|-------------|
| None | | |

Response Data Bytes

| Byte | Format | Description |
|-------|--------|----------------------------|
| 0-3 | Float | Upper Range Limit sensor 1 |
| 4-7 | Float | Lower Range Limit Sensor 1 |
| 8-11 | Float | Upper Range Limit sensor 2 |
| 12-15 | Float | Lower Range Limit Sensor 2 |

Command-Specific Response Codes

| Code | Class | Description |
|------|---------|------------------------------------|
| 0 | Success | No Command-Specific Errors |
| 6 | Error | Transmitter specific command error |

10.10 Command #137: Read UTL1, LTL1, UTL2, LTL2, CJ upper limit, CJ lower Limit

The command reads the upper and lower transducer limits for sensor1/sensor2. This command also reads CJ upper limit, CJ Lower Limit.

Request Data Bytes

| Byte | Format | Description |
|------|--------|-------------|
| None | | |

Response Data Bytes

| Byte | Format | Description |
|-------|--------|---------------------------------|
| 0-3 | Float | Upper Transducer Limit sensor 1 |
| 4-7 | Float | Lower Transducer Limit Sensor 1 |
| 8-11 | Float | Upper Transducer Limit sensor 2 |
| 12-15 | Float | Lower Transducer Limit Sensor 2 |
| 16-19 | Float | Cold Junction Upper Limit |
| 20-23 | Float | Cold Junction Lower Limit |

Command-Specific Response Codes

| Code | Class | Description |
|------|---------|------------------------------------|
| 0 | Success | No Command-Specific Errors |
| 6 | Error | Transmitter specific command error |

10.11 Command #138: Read sensor1 configuration

This command reads Sensor1 Type, Sensor1 Id, RTD1 Type, RTD1 lead wire resistance, Sensor1 bias value.

Request Data Bytes

| Byte | Format | Description |
|------|--------|-------------|
| None | | |

Response Data Bytes

| Byte | Format | Description |
|------|--------|--|
| 0 | Enum | Sensor 1 type (0 = MV, 1 = TC, 2 = RTD, 3 = OHMS) |
| 1-2 | Enum | Sensor 1 Id 0x0000 = mV22, 0x0001 = mV125, 0x0100 = TC Type E, 0x0101 = TC Type J, 0x0102 = TC Type K, 0x0103 = TC Type N, 0x0104 = TC Type T, 0x0105 = TC Type S, 0x0106 = TC Type R, 0x0107 = TC Type B, 0x0108 = TC Type C, 0x0109 = TC Type L GOST 0x0200 = Reserved, 0x0201 = RTD Pt 100, a=385 0x0202 = RTD Pt 200,a=385 0x0203 = Reserved 0x0204 = Reserved, 0x0205 = RTD Pt50, a=391, 0x0206 = RTD Pt100, a=391, 0x0207 = RTD Ni 120, a=672 0x0208 = Reserved 0x0209 = RTD Cu50, a=426, 0x020A = RTD Cu50, a=428, 0x020B = RTD Cu100, a=426, 0x020C = RTD Cu100, a=428, 0x0300 = Ohms 500, 0x0301 = Ohms 2K |

| | | |
|------|-------|--|
| 3 | Enum | RTD1 type (0 = 2wire, 1 = 3wire, 2 = 4wire) |
| 4-7 | Float | RTD1 lead wire resistance is 0 by default |
| 8-11 | Float | Sensor 1 Bias value is 0 by default |

Command-Specific Response Codes

| Code | Class | Description |
|------|---------|----------------------------|
| 0 | Success | No Command-Specific Errors |

10.12 Command #139: Read sensor2 configuration

This command reads Sensor2 Type, Sensor2 Id, RTD2 Type, RTD2 lead wire resistance, Sensor2 bias value.

Request Data Bytes

| Byte | Format | Description |
|------|--------|-------------|
| None | | |

Response Data Bytes

| Byte | Format | Description |
|------|--------|--|
| 0 | Enum | Sensor 2 type (0 = MV, 1 = TC, 2 = RTD, 3 = OHMS) |
| 1-2 | Enum | Sensor 2 Id 0x0000 = mV22, 0x0001 = mV125, 0x0100 = TC Type E, 0x0101 = TC Type J, 0x0102 = TC Type K, 0x0103 = TC Type N, 0x0104 = TC Type T, 0x0105 = TC Type S, 0x0106 = TC Type R, 0x0107 = TC Type B, 0x0108 = TC Type C, 0x0109 = TC Type L GOST 0x0200 = Reserved, 0x0201 = RTD Pt 100, a=385 0x0202 = RTD Pt 200,a=385 0x0203 = Reserved 0x0204 = Reserved, 0x0205 = RTD Pt50, a=391, 0x0206 = RTD Pt100, a=391, 0x0207 = RTD Ni 120, a=672 0x0208 = Reserved 0x0209 = RTD Cu50, a=426, 0x020A = RTD Cu50, a=428, 0x020B = RTD Cu100, a=426, 0x020C = RTD Cu100, a=428, 0x0300 = Ohms 500, 0x0301 = Ohms 2K |

| | | |
|------|-------|--|
| 3 | Enum | RTD2 type (0 = 2wire, 1 = 3wire, 2 = 4wire) |
| 4-7 | Float | RTD2 lead wire resistance |
| 8-11 | Float | Sensor 2 Bias value |

Command-Specific Response Codes

| Code | Class | Description |
|------|---------|----------------------------|
| 0 | Success | No Command-Specific Errors |

10.13 Command #140: Write sensor1/ sensor2 bias value

This command configures the sensor1 /sensor2 bias value.

Request Data Bytes

| Byte | Format | Description |
|------|------------|----------------------------|
| 0 | Unsigned-8 | 0: Sensor 1 1: Sensor 2 |
| 1-4 | Float | Sensor bias value |

Response Data Bytes

| Byte | Format | Description |
|------|------------|----------------------------|
| 0 | Unsigned-8 | 0: Sensor 1 1: Sensor 2 |
| 1-4 | Float | Sensor bias value |

Command-Specific Response Codes

| Code | Class | Description |
|------|---------|------------------------------------|
| 0 | Success | No Command-Specific Errors |
| 2 | Error | Invalid selection |
| 5 | Error | Too few data bytes |
| 6 | Error | Transmitter specific command error |
| 7 | Error | In Write Protect Mode |
| 16 | Error | Access restricted |
| 32 | Error | Busy |

10.14 Command #141: Write RTD1/RTD2 type

This command configures the sensor1 RTD and sensor2 RTD type and by default it will be 3wire.

Request Data Bytes

| Byte | Format | Description |
|------|------------|---|
| 0 | Unsigned-8 | 0: Sensor 1 1: Sensor 2 |
| 1 | Enum | RTD type (0 = 2wire, 1 = 3wire, 2 = 4wire) |

Response Data Bytes

| Byte | Format | Description |
|------|------------|---|
| 0 | Unsigned-8 | 0: Sensor 1 1: Sensor 2 |
| 1 | Enum | RTD type (0 = 2wire, 1 = 3wire, 2 = 4wire) |

Command-Specific Response Codes

| Code | Class | Description |
|------|---------|------------------------------------|
| 0 | Success | No Command-Specific Errors |
| 2 | Error | Invalid selection |
| 5 | Error | Too few data bytes |
| 6 | Error | Transmitter specific command error |
| 7 | Error | In Write Protect Mode |
| 16 | Error | Access restricted |
| 32 | Error | Busy |

10.15 Command #142: Write RTD1 / RTD2 lead wire resistance

This command configures the sensor1 and sensor2 lead wire resistance.

Request Data Bytes

| Byte | Format | Description |
|------|------------|----------------------------|
| 0 | Unsigned-8 | 0: Sensor 1 1: Sensor 2 |
| 1-4 | Float | RTD lead wire resistance |

Response Data Bytes

| Byte | Format | Description |
|------|------------|----------------------------|
| 0 | Unsigned-8 | 0: Sensor 1 1: Sensor 2 |
| 1-4 | Float | RTD lead wire resistance |

Command-Specific Response Codes

| Code | Class | Description |
|------|---------|------------------------------------|
| 0 | Success | No Command-Specific Errors |
| 2 | Error | Invalid selection |
| 5 | Error | Too few data bytes |
| 6 | Error | Transmitter specific command error |
| 7 | Error | In Write Protect Mode |
| 16 | Error | Access restricted |
| 32 | Error | Busy |

10.16 Command #143: Write excess delta detection

This command configures excess delta detection status

Request Data Bytes

| Byte | Format | Description |
|------|--------|--|
| 0 | Enum | Excess delta detection status (0x00: Disable 0x01: Enable) |

Response Data Bytes

| Byte | Format | Description |
|------|--------|--|
| 0 | Enum | Excess delta detection status (0x00: Disabled 0x01: Enabled) |

Command-Specific Response Codes

| Code | Class | Description |
|------|---------|----------------------------|
| 0 | Success | No Command-Specific Errors |
| 2 | Error | Invalid selection |
| 5 | Error | Too few data bytes |
| 7 | Error | In Write Protect Mode |
| 16 | Error | Access restricted |
| 32 | Error | Busy |

10.17 Command #144: Read delta limit, delta, excess delta detection

This command reads delta limit, delta, and excess delta detection.

Request Data Bytes

| Byte | Format | Description |
|------|--------|-------------|
| None | | |

Response Data Bytes

| Byte | Format | Description |
|------|--------|--|
| 0-3 | Float | Delta limit |
| 4-7 | Float | delta |
| 8 | Enum | Excess delta detection status (0x00: Disabled 0x01: Enabled) |

Command-Specific Response Codes

| Code | Class | Description |
|------|---------|----------------------------|
| 0 | Success | No Command-Specific Errors |

10.18 Command #145: Write CJ compensation type

This command configures the Cold Junction compensation type and by default it will be internal.

Request Data Bytes

| Byte | Format | Description |
|------|--------|--|
| 0 | Enum | CJ compensation type 0x00 = Internal, 0x01 = External, 0x02 = Fixed |

Response Data Bytes

| Byte | Format | Description |
|------|--------|--|
| 0 | Enum | CJ compensation type 0x00 = Internal, 0x01 = External, 0x02 = Fixed |

Command-Specific Response Codes

| Code | Class | Description |
|------|---------|------------------------------------|
| 0 | Success | No Command-Specific Errors |
| 2 | Error | Invalid selection |
| 5 | Error | Too few data bytes |
| 6 | Error | Transmitter specific command error |
| 7 | Error | In Write Protect Mode |
| 16 | Error | Access restricted |
| 32 | Error | Busy |

10.19 Command #146: Read sensors extra configuration

The command is used to read configurable sensor parameters common to both sensors. By default sensors will be in mV and the UTL is 120mV and LTL is -20mV and MRV is 70mV.

Break Detect status is Enable by default.

Enable: 01

Disable: 00

Cold Junction Compensation Type:

Internal: 00

External: 01

Fixed: 02

Match PV Status:

ON: 01

OFF: 00

Latching Status:

ON: 01

OFF: 00

Fixed Cold Junction Compensation value is 0 by default

Request Data Bytes

| Byte | Format | Description |
|------|--------|-------------|
| None | | |

Response Data Bytes

| Byte | Format | Description |
|------|--------|--|
| 0-3 | Float | Mid-range Value (MRV) |
| 4 | Enum | Break detect status |
| 5 | Enum | Cold Junction compensation type |
| 6 | Enum | Latching status |
| 7-10 | Float | Fixed cold junction compensation value |

Command-Specific Response Codes

| Code | Class | Description |
|------|---------|----------------------------|
| 0 | Success | No Command-Specific Errors |

10.20 Command #147: Read Transmitter Specifics

The command reads the device type code and display module information.

The Device type code for STT700 SmartLine Temperature Transmitter is 0x2B.

Request Data Bytes

| Byte | Format | Description |
|------|--------|-------------|
| None | | |

Response Data Bytes

| Byte | Format | Description |
|------|------------|--|
| 0 | Unsigned 8 | Transmitter Device type code (STT700 = 0x2B) |
| 1 | Enum | Meter/Display connected flag 00: Not Connected 01: Connected |
| 2 | Enum | Meter/Display type 01: Advanced display 02: Basic display |

Command-Specific Response Codes

| Code | Class | Description |
|------|---------|----------------------------|
| 0 | Success | No Command-Specific Errors |

10.21 Command #148: Read Sensor 1 and Sensor 2 resistance

This command is used to Read Sensor 1 and Sensor 2 resistance

Request Data Bytes

| Byte | Format | Description |
|------|--------|-------------|
| | | |

Response Data Bytes

| Byte | Format | Description |
|------|--------|---------------------|
| 0-3 | Float | Sensor 1 Resistance |
| 4-7 | Float | Sensor 2 Resistance |

Command-Specific Response Codes

| Code | Class | Description |
|------|---------|----------------------------|
| 0 | Success | No Command-Specific Errors |

10.22 Command #149: Read Sensor 1 and Sensor 2 voltages

This command is used to Read Sensor 1 and Sensor 2 voltages

Request Data Bytes

| Byte | Format | Description |
|------|--------|-------------|
| | | |

Response Data Bytes

| Byte | Format | Description |
|------|--------|------------------|
| 0-3 | Float | Sensor 1 voltage |
| 4-7 | Float | Sensor 2 voltage |

Command-Specific Response Codes

| Code | Class | Description |
|------|---------|----------------------------|
| 0 | Success | No Command-Specific Errors |

10.23 Command #150: Write fixed CJ compensation

This command configures the fixed cold junction compensation.

Request Data Bytes

| Byte | Format | Description |
|------|--------|-----------------------|
| 0-3 | Float | Fixed CJ compensation |

Response Data Bytes

| Byte | Format | Description |
|------|--------|-----------------------|
| 0-3 | Float | Fixed CJ compensation |

Command-Specific Response Codes

| Code | Class | Description |
|------|---------|------------------------------------|
| 0 | Success | No Command-Specific Errors |
| 2 | Error | Invalid selection |
| 5 | Error | Too few data bytes |
| 6 | Error | Transmitter specific command error |
| 7 | Error | In Write Protect Mode |
| 16 | Error | Access restricted |
| 32 | Error | Busy |

10.24 Command #151: Read Device Serial Number

This command reads device Serial Number.

Request Data Bytes:

| Byte | Format | Description |
|------|--------|-------------|
| | | |

Response Data Bytes

| Byte | Format | Description |
|------|------------|----------------------|
| 0-13 | Unsigned 8 | Device Serial Number |

Command-Specific Response Codes

| Code | Class | Description |
|------|---------|------------------------------------|
| 0 | Success | No Command-Specific Errors |
| 2 | Error | Invalid selection |
| 5 | Error | Too few data bytes |
| 6 | Error | Transmitter specific command error |
| 7 | Error | In Write Protect Mode |
| 16 | Error | Access restricted |
| 32 | Error | Busy |

10.25 Command #152: Write delta limit

This command configures the delta limit.

Range for delta limit is 0.0 to (URV-LRV).

Request Data Bytes

| Byte | Format | Description |
|------|--------|-------------|
| 0-3 | Float | Delta limit |

Response Data Bytes

| Byte | Format | Description |
|------|--------|-------------|
| 0-3 | Float | Delta limit |

Command-Specific Response Codes

| Code | Class | Description |
|------|---------|-------------------------------------|
| 0 | Success | No Command-Specific Errors |
| 5 | Error | Too few data bytes |
| 7 | Error | In Write Protect Mode |
| 16 | Error | Access restricted |
| 32 | Error | Busy |
| 3 | Error | Passed Parameter Value is too large |
| 4 | Error | Passed Parameter Value is too Small |

10.26 Command #153: Read power fail counter and its timestamp

This command reads Power fail count & it's time stamp. Timestamp is in minutes.

Note: Power Fail Count value is in minutes and provides the time for which device is on before power cycle or reset.

Request Data Bytes

| Byte | Format | Description |
|------|--------|-------------|
| None | | |

Response Data Bytes

| Byte | Format | Description |
|------|-------------|-------------------------------|
| 0-1 | Unsigned 16 | Power fail count |
| 2-5 | Unsigned 32 | Power Fail Stamp (in minutes) |

Command-Specific Response Codes

| Code | Class | Description |
|------|---------|----------------------------|
| 0 | Success | No Command-Specific Errors |

10.27 Command #154: Read time in service, service life remaining

This command reads time in service, service life remaining for the transmitter. Unit for Time In service is minutes and Service Life Remaining is %.

Request Data Bytes

| Byte | Format | Description |
|------|--------|-------------|
| None | | |

Response Data Bytes

| Byte | Format | Description |
|------|-------------|-------------------------------|
| 0-3 | Unsigned 32 | Time in Service(In minutes) |
| 4-7 | Float | Service Life remaining (In %) |

Command-Specific Response Codes

| Code | Class | Description |
|------|---------|----------------------------|
| 0 | Success | No Command-Specific Errors |

10.28 Command #155: Write NAMUR Selection

This command is used to write NAMUR enable or disable.

Request Data Bytes

| Byte | Format | Description |
|------|--------|-----------------------------------|
| 0 | Enum | 0x00 to disable 0x01 to enable |

Response Data Bytes

| Byte | Format | Description |
|------|--------|-----------------------------------|
| 0 | Enum | 0x00 to disable 0x01 to enable |

Command-Specific Response Codes

| Code | Class | Description |
|------|---------|------------------------------------|
| 0 | Success | No Command-Specific Errors |
| 3 | Error | Too many data bytes received |
| 7 | Error | In Write Protect Mode |
| 6 | Error | Transmitter specific command error |
| 7 | Error | In Write Protect Mode |
| 16 | Error | Access restricted |
| 32 | Error | Busy |

10.29 Command #156: Read NAMUR Selection

This command is used to read NAMUR selection.

Request Data Bytes

| Byte | Format | Description |
|------|--------|-------------|
| | | |

Response Data Bytes

| Byte | Format | Description |
|------|--------|--|
| 0 | Enum | NAMUR selection 0x00 – Disabled 0x01 – Enabled |

Command-Specific Response Codes

| Code | Class | Description |
|------|---------|------------------------------------|
| 0 | Success | No Command-Specific Errors |
| 6 | Error | Transmitter specific command error |

10.30 Command #157: Read CT Tracking value

This command reads CT values and its tracking.

Request Data Bytes

| Byte | Format | Description |
|------|--------|-------------|
| None | | |

Response Data Bytes

| Byte | Format | Description |
|-------|--------|----------------------|
| 0-3 | Float | CT Value |
| 4-7 | Float | Highest CT recorded |
| 8-11 | Float | Highest CT Timestamp |
| 12-15 | Float | Lowest CT recorded |
| 16-19 | Float | Lowest CT Timestamp |

Command-Specific Response Codes

| Code | Class | Description |
|------|---------|------------------------------------|
| 0 | Success | No Command-Specific Errors |
| 6 | Error | Transmitter specific command error |

10.31 Command #158: Read last Time & Date for correct URV, correct LRV and reset corrects for Sensor 1 / Sensor 2

This command reads Last Time and Dates for correct URV, correct LRV and reset corrects of sensor 1 / sensor 2

Request Data Bytes

| Byte | Format | Description |
|------|--------------|--|
| 0 | Unsigned – 8 | Request data from user 0: Sensor 1 1: Sensor 2 |

Response Data Bytes

| Byte | Format | Description |
|------|--------------|----------------------------|
| 0 | Unsigned – 8 | 0: Sensor 1 1: Sensor 2 |
| 1 | Unsigned 8 | Last URV Correct Date |
| 2 | Unsigned 8 | Last URV Correct Month |
| 3 | Unsigned 8 | Last URV Correct Year |
| 4 | Unsigned 8 | Last URV Correct Hours |
| 5 | Unsigned 8 | Last URV Correct Minutes |
| 6 | Unsigned 8 | Last LRV Correct Date |
| 7 | Unsigned 8 | Last LRV Correct Month |
| 8 | Unsigned 8 | Last LRV Correct Year |
| 9 | Unsigned 8 | Last LRV Correct Hours |
| 10 | Unsigned 8 | Last LRV Correct Minutes |
| 11 | Unsigned 8 | Last Reset Correct Date |
| 12 | Unsigned 8 | Last Reset Correct Month |
| 13 | Unsigned 8 | Last Reset Correct Year |
| 14 | Unsigned 8 | Last Reset Correct Hours |
| 15 | Unsigned 8 | Last Reset Correct Minutes |

Command-Specific Response Codes

| Code | Class | Description |
|------|---------|------------------------------------|
| 0 | Success | No Command-Specific Errors |
| 6 | Error | Transmitter specific command error |
| 5 | Error | Too few data bytes received |
| 2 | Error | Invalid Selection |

10.32 Command #159: Read Previous Time & Date for correct URV, correct LRV and reset corrects for Sensor 1/ Sensor 2

This command reads Previous Time and Dates for correct URV, correct LRV and reset corrects of sensor 1/ sensor2.

Request Data Bytes

| Byte | Format | Description |
|------|--------------|--|
| 0 | Unsigned – 8 | Request data from user 0: Sensor 1 1: Sensor 2 |

Response Data Bytes

| Byte | Format | Description |
|------|--------------|--------------------------------|
| 0 | Unsigned – 8 | 0: Sensor 1 1: Sensor 2 |
| 1 | Unsigned 8 | Previous URV Correct Date |
| 2 | Unsigned 8 | Previous URV Correct Month |
| 3 | Unsigned 8 | Previous URV Correct Year |
| 4 | Unsigned 8 | Previous URV Correct Hours |
| 5 | Unsigned 8 | Previous URV Correct Minutes |
| 6 | Unsigned 8 | Previous LRV Correct Date |
| 7 | Unsigned 8 | Previous LRV Correct Month |
| 8 | Unsigned 8 | Previous LRV Correct Year |
| 9 | Unsigned 8 | Previous LRV Correct Hours |
| 10 | Unsigned 8 | Previous LRV Correct Minutes |
| 11 | Unsigned 8 | Previous Reset Correct Date |
| 12 | Unsigned 8 | Previous Reset Correct Month |
| 13 | Unsigned 8 | Previous Reset Correct Year |
| 14 | Unsigned 8 | Previous Reset Correct Hours |
| 15 | Unsigned 8 | Previous Reset Correct Minutes |

Command-Specific Response Codes

| Code | Class | Description |
|------|---------|------------------------------------|
| 0 | Success | No Command-Specific Errors |
| 6 | Error | Transmitter specific command error |
| 5 | Error | Too few data bytes received |
| 2 | Error | Invalid Selection |

10.33 Command #160: Read Current Time & Date for correct URV, correct LRV for Sensor 1 sensor 2

This command reads Current Time and Dates for correct URV, correct LRV of sensor 1 and sensor 2

Request Data Bytes

| Byte | Format | Description |
|------|--------------|--|
| 0 | Unsigned – 8 | Request data from user 0: Sensor 1 1: Sensor 2 |

Response Data Bytes

| Byte | Format | Description |
|------|------------|-------------------------------|
| 0 | Unsigned 8 | 0: Sensor 1 1: Sensor 2 |
| 1 | Unsigned 8 | Current URV Correct Date |
| 2 | Unsigned 8 | Current URV Correct Month |
| 3 | Unsigned 8 | Current URV Correct Year |
| 4 | Unsigned 8 | Current URV Correct Hours |
| 5 | Unsigned 8 | Current URV Correct Minutes |
| 6 | Unsigned 8 | Current LRV Correct Date |
| 7 | Unsigned 8 | Current LRV Correct Month |
| 8 | Unsigned 8 | Current LRV Correct Year |
| 9 | Unsigned 8 | Current LRV Correct Hours |
| 10 | Unsigned 8 | Current LRV Correct Minutes |
| 11 | Unsigned 8 | Current Reset Correct Date |
| 12 | Unsigned 8 | Current Reset Correct Month |
| 13 | Unsigned 8 | Current Reset Correct Year |
| 14 | Unsigned 8 | Current Reset Correct Hours |
| 15 | Unsigned 8 | Current Reset Correct Minutes |

Command-Specific Response Codes

| Code | Class | Description |
|------|---------|------------------------------------|
| 0 | Success | No Command-Specific Errors |
| 6 | Error | Transmitter specific command error |
| 5 | Error | Too few data bytes received |
| 2 | Error | Invalid Selection |

10.34 Command #161: Read Current, Last, Previous Time & Date for reset corrects for Sensor 1 / Sensor 2

This command reads Current Time and Dates for correct URV, correct LRV of sensor 1 / sensor 2

Request Data Bytes

| Byte | Format | Description |
|------|--------------|--|
| 0 | Unsigned – 8 | Request data from user 0: Sensor 1 1: Sensor 2 |

Response Data Bytes

| Byte | Format | Description |
|------|--------------|--------------------------------|
| 0 | Unsigned – 8 | 0: Sensor 1 1: Sensor 2 |
| 1 | Unsigned 8 | Current Reset Correct Date |
| 2 | Unsigned 8 | Current Reset Correct Month |
| 3 | Unsigned 8 | Current Reset Correct Year |
| 4 | Unsigned 8 | Current Reset Correct Hours |
| 5 | Unsigned 8 | Current Reset Correct Minutes |
| 6 | Unsigned 8 | Last Reset Correct Date |
| 7 | Unsigned 8 | Last Reset Correct Month |
| 8 | Unsigned 8 | Last Reset Correct Year |
| 9 | Unsigned 8 | Last Reset Correct Hours |
| 10 | Unsigned 8 | Last Reset Correct Minutes |
| 11 | Unsigned 8 | Previous Reset Correct Date |
| 12 | Unsigned 8 | Previous Reset Correct Month |
| 13 | Unsigned 8 | Previous Reset Correct Year |
| 14 | Unsigned 8 | Previous Reset Correct Hours |
| 15 | Unsigned 8 | Previous Reset Correct Minutes |

Command-Specific Response Codes

| Code | Class | Description |
|------|---------|------------------------------------|
| 0 | Success | No Command-Specific Errors |
| 6 | Error | Transmitter specific command error |
| 5 | Error | Too few data bytes received |
| 2 | Error | Invalid Selection |

10.35 Command #162: Write Sensor1 /Sensor2 install date

This command is used to write the sensor1 / sensor2 install date.

Request Data Bytes

| Byte | Format | Description |
|------|--------------|----------------------------|
| 0 | Unsigned – 8 | 0: Sensor 1 1: Sensor 2 |
| 1 | Unsigned-8 | Day |
| 2 | Unsigned-8 | Month |
| 3 | Unsigned-8 | Year |

Response Data Bytes

| Byte | Format | Description |
|------|--------------|----------------------------|
| 0 | Unsigned – 8 | 0: Sensor 1 1: Sensor 2 |
| 1 | Unsigned-8 | Day |
| 2 | Unsigned-8 | Month |
| 3 | Unsigned-8 | Year |
| 4 | Unsigned-8 | Hour |
| 5 | Unsigned-8 | Minute |

Command-Specific Response Codes

| Code | Class | Description |
|------|---------|------------------------------------|
| 0 | Success | No Command-Specific Errors |
| 2 | Error | Invalid selection |
| 5 | Error | Too few data bytes received |
| 6 | Error | Transmitter specific command error |
| 7 | Error | In Write Protect Mode |
| 16 | Error | Access restricted |

10.36 Command #163: Read sensors and transmitter install dates

This command reads the sensor1, sensor2, and transmitter install dates.

Request Data Bytes

| Byte | Format | Description |
|------|--------|-------------|
| None | | |

Response Data Bytes

| Byte | Format | Description |
|------|------------|---------------------|
| 0 | Unsigned 8 | Date, sensor 1 |
| 1 | Unsigned 8 | Month, sensor 1 |
| 2 | Unsigned 8 | Year, sensor 1 |
| 3 | Unsigned 8 | Hour, sensor 1 |
| 4 | Unsigned 8 | Minute, sensor 1 |
| 5 | Unsigned 8 | Date, sensor 2 |
| 6 | Unsigned 8 | Month, sensor 2 |
| 7 | Unsigned 8 | Year, sensor 2 |
| 8 | Unsigned 8 | Hour, sensor 2 |
| 9 | Unsigned 8 | Minute, sensor 2 |
| 10 | Unsigned 8 | Date, Transmitter |
| 11 | Unsigned 8 | Month, Transmitter |
| 12 | Unsigned 8 | Year, Transmitter |
| 13 | Unsigned 8 | Hour, Transmitter |
| 14 | Unsigned 8 | Minute, Transmitter |

Command-Specific Response Codes

| Code | Class | Description |
|------|---------|------------------------------------|
| 0 | Success | No Command-Specific Errors |
| 6 | Error | Transmitter specific command error |

10.37 Command #164: Write transmitter install date to sensor

This command writes transmitter install date to sensor.

Request Data Bytes

| Byte | Format | Description |
|------|------------|--------------------|
| 0 | Unsigned 8 | Date, Transmitter |
| 1 | Unsigned 8 | Month, Transmitter |
| 2 | Unsigned 8 | Year, Transmitter |

Response Data Bytes

| Byte | Format | Description |
|------|------------|--------------------|
| 0 | Unsigned 8 | Date, Transmitter |
| 1 | Unsigned 8 | Month, Transmitter |
| 2 | Unsigned 8 | Year, Transmitter |

Command-Specific Response Codes

| Code | Class | Description |
|------|---------|------------------------------------|
| 0 | Success | No Command-Specific Errors |
| 5 | Error | Too few data bytes received |
| 6 | Error | Transmitter specific command error |
| 7 | Error | In write protect mode |
| 16 | Error | Access Restricted |

10.38 Command #165: Read Model Number – Key Number, Table I

This command reads the 7 byte key number and 20 byte Table 1 information.

Request Data Bytes

| Byte | Format | Description |
|------|--------|-------------|
| None | | |

Response Data Bytes

| Byte | Format | Description |
|------|--------|---------------------|
| 0-6 | Enum | key number |
| 7-26 | Enum | Table 1 information |

Command-Specific Response Codes

| Code | Class | Description |
|------|---------|----------------------------|
| 0 | Success | No Command-Specific Errors |

10.39 Command #166: Read Model Number – Table II

This command reads Model number Table II information.

Request Data Bytes

| Byte | Format | Description |
|------|--------|-------------|
| None | | |

Response Data Bytes

| Byte | Format | Description |
|------|--------|----------------------|
| 0-19 | Enum | Table II information |

Command-Specific Response Codes

| Code | Class | Description |
|------|---------|----------------------------|
| 0 | Success | No Command-Specific Errors |

10.40 Command #167: Read Model Number –Table III

This command reads Model number Table III information.

Request Data Bytes

| Byte | Format | Description |
|------|--------|-------------|
| None | | |

Response Data Bytes

| Byte | Format | Description |
|------|--------|-----------------------|
| 0-19 | Enum | Table III information |

Command-Specific Response Codes

| Code | Class | Description |
|------|---------|----------------------------|
| 0 | Success | No Command-Specific Errors |

10.41 Command #168: Read Model Number –Table IV

This command reads the 20 byte Model Number –Table IV

Request Data Bytes

| Byte | Format | Description |
|------|--------|-------------|
| None | | |

Response Data Bytes

| Byte | Format | Description |
|------|--------|------------------------------------|
| 0-19 | ASCII | Model Number –Table IV Information |

Command-Specific Response Codes

| Code | Class | Description |
|------|---------|----------------------------|
| 0 | Success | No Command-Specific Errors |

10.42 Command #169: Write CVD1/CVD2 4 Coefficients

This command writes the Sensor CVD1/CVD2 coefficients 1 to 4 (R_0 , α , δ , β).

Request Data Bytes

| Byte | Format | Description |
|-------|------------|----------------------------|
| 0 | Unsigned-8 | 0: Sensor 1 1: Sensor 2 |
| 1-4 | Float | CVD R_0 value |
| 5-8 | Float | CVD α value |
| 9-12 | Float | CVD δ value |
| 13-16 | Float | CVD β value |

Response Data Bytes

| Byte | Format | Description |
|-------|------------|----------------------------|
| 0 | Unsigned-8 | 0: Sensor 1 1: Sensor 2 |
| 1-4 | Float | CVD R_0 value |
| 5-8 | Float | CVD α value |
| 9-12 | Float | CVD δ value |
| 13-16 | Float | CVD β value |

Command-Specific Response Codes

| Code | Class | Description |
|------|---------|------------------------------------|
| 0 | Success | No Command-Specific Errors |
| 3 | Error | Too many data bytes received |
| 5 | Error | Too few data bytes received |
| 6 | Error | Transmitter specific command error |
| 7 | Error | In Write Protect Mode |
| 16 | Error | Access restricted |
| 32 | Error | Busy |

10.43 Command #170: Read CVD1/CVD2 co-efficient Values:

This command Reads CVD1/CVD2 co-efficient values.

Request Data Bytes

| Byte | Format | Description |
|------|------------|----------------------|
| 0 | Unsigned-8 | 0 = CVD1 1 = CVD2 |

Response Data Bytes

| Byte | Format | Description |
|-------|------------|----------------------|
| 0 | Unsigned-8 | 0 = CVD1 1 = CVD2 |
| 1-4 | Float | CVD R0 value |
| 5-8 | Float | CVD α value |
| 9-12 | Float | CVD δ value |
| 13-16 | Float | CVD β value |

Command-Specific Response Codes

| Code | Class | Description |
|------|---------|-----------------------------|
| 0 | Success | No Command-Specific Errors |
| 5 | Error | Too few data bytes received |
| 2 | Error | Invalid Selection |

10.44 Command #171: Write CVD1/CVD2 Coefficient activation

This command writes the Sensor CVD Activation of CVD1/CVD2.

Below are the possible values for CVD1/CVD2 Activation.

0x00 = CVD OFF

0x01 = CVD ON

Request Data Bytes

| Byte | Format | Description |
|------|------------|----------------------|
| 0 | Unsigned-8 | 0 = CVD1 1 = CVD2 |
| 1 | Unsigned-8 | CVD Activation |

Response Data Bytes

| Byte | Format | Description |
|------|------------|----------------------|
| 0 | Unsigned-8 | 0 = CVD1 1 = CVD2 |
| 1 | Unsigned-8 | CVD Activation |

Command-Specific Response Codes

| Code | Class | Description |
|------|---------|------------------------------------|
| 0 | Success | No Command-Specific Errors |
| 2 | Error | Invalid selection |
| 3 | Error | Too many data bytes received |
| 5 | Error | Too few data bytes received |
| 6 | Error | Transmitter specific command error |
| 7 | Error | In Write Protect Mode |
| 16 | Error | Access restricted |
| 32 | Error | Busy |

10.45 Command #172: Read CVD1/CVD2 Coefficient activation:

This command Reads CVD1/CVD2 Coefficient activation.

Request Data Bytes

| Byte | Format | Description |
|------|------------|----------------------|
| 0 | Unsigned-8 | 0 = CVD1 1 = CVD2 |

Response Data Bytes

| Byte | Format | Description |
|------|------------|----------------|
| 0 | Unsigned-8 | CVD Activation |

Command-Specific Response Codes

| Code | Class | Description |
|------|---------|-----------------------------|
| 0 | Success | No Command-Specific Errors |
| 2 | Error | Invalid selection |
| 5 | Error | Too few data bytes received |

10.46 Command #173: Read CVD1 and CVD2 User Cal values

This command reads CVD1 and CVD2 user calibration values.

Request Data Bytes

| Byte | Format | Description |
|------|--------|-------------|
| None | | |

Response Data Bytes

| Byte | Format | Description |
|-------|--------|---------------------|
| 0-3 | Float | CVD1 Low Cal Value |
| 4-7 | Float | CVD1 High Cal Value |
| 8-11 | Float | CVD2 Low Cal Value |
| 12-15 | Float | CVD2 High Cal Value |

Command-Specific Response Codes

| Code | Class | Description |
|------|---------|----------------------------|
| 0 | Success | No Command-Specific Errors |

10.47 Command #175: Read/Lock Write Protect Configuration

This command reads or Locks Write Protect Configuration based on selection.

Request Data Bytes

| Byte | Format | Description |
|------|--------|---|
| 0 | Enum | 0x01 – Enable WP 0x02 – Read WP status |

Response Data Bytes

| Byte | Format | Description |
|------|--------|-----------------------------------|
| 0 | Enum | 0x00 – Disabled 0x01 – Enabled |

Command-Specific Response Codes

| Code | Class | Description |
|------|---------|-----------------------------------|
| 0 | Success | No Command-Specific Errors |
| 2 | Error | Invalid Selection |
| 5 | Error | Too Few Data Bytes Received |
| 7 | Error | Transmitter In Write Protect Mode |
| 16 | Error | Access Denied |
| 32 | Error | Busy |

10.48 Command #176: Write/Change Write Protect Password

This command is used to Write/Change/Reset Write Protect Password.

Request Data Bytes

| Byte | Format | Description |
|------|--------|---|
| 0 | Enum | Disable WP(0x00) / Change(0x03) / Reset Password (0x04) |
| 1-4 | ASCII | “Current Password” for Disable WP command (Or) “New Password” for Change command (Or) “ Reset Password Code” for Resetting the Password |
| 5-8 | ASCII | Current password (field valid only for password change command) |

Response Data Bytes

| Byte | Format | Description |
|------|--------|---|
| 0 | Enum | Unlock(0x00) / Change(0x03) / Reset Password (0x04) |

Command-Specific Response Codes

| Code | Class | Description |
|------|---------|------------------------------------|
| 0 | Success | No Command-Specific Errors |
| 2 | Error | Invalid Selection |
| 5 | Error | Too Few Data Bytes Received |
| 6 | Error | Transmitter specific command error |
| 7 | Error | Transmitter In Write Protect Mode |
| 16 | Error | Access Denied |
| 32 | Error | Busy |

10.49 Command #177: Read error log part1/part2

This command reads the error log part 1-> 5 latest errors information and error log part 2-> 5 oldest error information.

Request Data Bytes

| Byte | Format | Description |
|------|------------|---|
| 0 | Unsigned-8 | 0x01 – Error Log Part1 0x02 –Error Log Part2 |

Response Data Bytes

| Byte | Format | Description |
|-------|--------------|-----------------------------|
| 0 | Enum | Error code1 |
| 1 | Enum | Error code2 |
| 2 | Enum | Error code3 |
| 3 | Enum | Error code4 |
| 4 | Enum | Error code5 |
| 5-8 | Unsigned -32 | Error 1 time stamp |
| 9-12 | Unsigned -32 | Error 2 time stamp |
| 13-16 | Unsigned -32 | Error 3 time stamp |
| 17-20 | Unsigned -32 | Error 4 time stamp |
| 21-24 | Unsigned -32 | Error 5 time stamp |
| 25-28 | Unsigned -32 | Transmitter time in service |

Error Log codes:

- a) No error = 0
- b) DAC failure = 1
- c) Calibration corrupt = 2
- d) Configuration corrupt = 3
- e) SIL Diagnostic Failure = 4
- f) Excess Delta Detected = 5
- g) Watch dog reset = 7
- h) Cold start = 8
- i) Non-Critical failure = 9
- j) Input 1 Open = 10
- k) Input 2 open = 11

Command-Specific Response Codes

| Code | Class | Description |
|------|---------|-----------------------------|
| 0 | Success | No Command-Specific Errors |
| 2 | Error | Invalid selection |
| 5 | Error | Too few data bytes received |

10.50 Command #178: Reset error log

This command initializes the error log data to zeros.

Request Data Bytes

| Byte | Format | Description |
|------|--------|-------------|
| None | | |

Response Data Bytes

| Byte | Format | Description |
|------|--------|---|
| 0 | Enum | Command execution status (always 0x00 indicating success) |

Command-Specific Response Codes

| Code | Class | Description |
|------|---------|----------------------------|
| 0 | Success | No Command-Specific Errors |
| 7 | Error | In Write Protect Mode |
| 16 | Error | Access restricted |

10.51 Command #179: Read error logging status

This command reads the error logging status.

Request Data Bytes

| Byte | Format | Description |
|------|--------|-------------|
| None | | |

Response Data Bytes

| Byte | Format | Description |
|------|--------|---|
| 0 | Enum | Error logging status (0x00: Disabled 0x01: Enabled) |

Command-Specific Response Codes

| Code | Class | Description |
|------|---------|----------------------------|
| 0 | Success | No Command-Specific Errors |

10.52 Command #180: Write error logging status

This command configures the error logging status.

Request Data Bytes

| Byte | Format | Description |
|------|--------|---|
| 0 | Enum | Error logging status (0x00: Disable 0x01: Enable) |

Response Data Bytes

| Byte | Format | Description |
|------|--------|---|
| 0 | Enum | Error logging status (0x00: Disabled 0x01: Enabled) |

Command-Specific Response Codes

| Code | Class | Description |
|------|---------|----------------------------|
| 0 | Success | No Command-Specific Errors |
| 2 | Error | Invalid selection |
| 5 | Error | Too few data bytes |
| 7 | Error | In Write Protect Mode |
| 16 | Error | Access restricted |
| 32 | Error | Busy |

10.53 Command #181: Write break detect status

This command configures the break detection status and by default it is enabled.

Request Data Bytes

| Byte | Format | Description |
|------|--------|---|
| 0 | Enum | Break detect status (0x00 = Disable, 0x01 = Enable) |

Response Data Bytes

| Byte | Format | Description |
|------|--------|--|
| 0 | Enum | Break detect status 0x00 = Disable, 0x01 = Enable) |

Command-Specific Response Codes

| Code | Class | Description |
|------|---------|------------------------------------|
| 0 | Success | No Command-Specific Errors |
| 2 | Error | Invalid selection |
| 5 | Error | Too few data bytes |
| 6 | Error | Transmitter specific command error |
| 7 | Error | In Write Protect Mode |
| 16 | Error | Access restricted |
| 32 | Error | Busy |

10.54 Command #182: Write Mid-Range Value(MRV)

This command configures the Mid-range value, this value is used for split range loop control mode.

Request Data Bytes

| Byte | Format | Description |
|------|--------|-------------|
| 0-3 | Float | MRV |

Response Data Bytes

| Byte | Format | Description |
|------|--------|-------------|
| 0-3 | Float | MRV |

Command-Specific Response Codes

| Code | Class | Description |
|------|---------|------------------------------------|
| 0 | Success | No Command-Specific Errors |
| 2 | Error | Invalid selection |
| 5 | Error | Too few data bytes |
| 6 | Error | Transmitter specific command error |
| 7 | Error | In Write Protect Mode |
| 16 | Error | Access restricted |
| 32 | Error | Busy |

10.55 Command #183: Write latching status

This command configures the sensor information bits latching status and by default it is ON.

Request Data Bytes

| Byte | Format | Description |
|------|--------|---|
| 0 | Enum | Latching status (0x00 = OFF, 0x01 = ON) |

Response Data Bytes

| Byte | Format | Description |
|------|--------|---|
| 0 | Enum | Latching status (0x00 = OFF, 0x01 = ON) |

Command-Specific Response Codes

| Code | Class | Description |
|------|---------|------------------------------------|
| 0 | Success | No Command-Specific Errors |
| 2 | Error | Invalid selection |
| 5 | Error | Too few data bytes |
| 6 | Error | Transmitter specific command error |
| 7 | Error | In Write Protect Mode |
| 16 | Error | Access restricted |
| 32 | Error | Busy |

10.56 Command #184: Write match PV status

This command configures the PV matching status.

Request Data Bytes

| Byte | Format | Description |
|------|--------|---|
| 0 | Enum | Match PV status (0x00 = OFF, 0x01 = ON) |

Response Data Bytes

| Byte | Format | Description |
|------|--------|---|
| 0 | Enum | Match PV status (0x00 = OFF, 0x01 = ON) |

Command-Specific Response Codes

| Code | Class | Description |
|------|---------|------------------------------------|
| 0 | Success | No Command-Specific Errors |
| 2 | Error | Invalid selection |
| 5 | Error | Too few data bytes |
| 6 | Error | Transmitter specific command error |
| 7 | Error | In Write Protect Mode |
| 16 | Error | Access restricted |
| 32 | Error | Busy |

10.57 Command #185: Write hysteresis value

This command configures the hysteresis value.

Request Data Bytes

| Byte | Format | Description |
|------|--------|-------------|
| 0-3 | Float | hysteresis |

Response Data Bytes

| Byte | Format | Description |
|------|--------|-------------|
| 0-3 | Float | hysteresis |

Command-Specific Response Codes

| Code | Class | Description |
|------|---------|----------------------------|
| 0 | Success | No Command-Specific Errors |
| 2 | Error | Invalid selection |
| 5 | Error | Too few data bytes |
| 7 | Error | In Write Protect Mode |
| 16 | Error | Access restricted |
| 32 | Error | Busy |

10.58 Command #186: Write damping for bump less transfer

This command configures the damping for bump less transfer value.

Limit/Range for damping for bump less transfer is 0.00 to 99.9 sec

Request Data Bytes

| Byte | Format | Description |
|------|--------|--------------------------------|
| 0-3 | Float | Damping for bump less transfer |

Response Data Bytes

| Byte | Format | Description |
|------|--------|--------------------------------|
| 0-3 | Float | Damping for bump less transfer |

Command-Specific Response Codes

| Code | Class | Description |
|------|---------|-------------------------------------|
| 0 | Success | No Command-Specific Errors |
| 2 | Error | Invalid selection |
| 5 | Error | Too few data bytes |
| 7 | Error | In Write Protect Mode |
| 16 | Error | Access restricted |
| 32 | Error | Busy |
| 3 | Error | Passed Parameter value is too large |
| 4 | Error | Passed Parameter value is too Small |

10.59 Command #187: Read HART-DE board firmware revision

This command reads the HART-DE board firmware revision.

Request Data Bytes

| Byte | Format | Description |
|------|--------|-------------|
| None | | |

Response Data Bytes

| Byte | Format | Description |
|------|--------|------------------|
| 0-7 | ASCII | Firmware version |

Command-Specific Response Codes

| Code | Class | Description |
|------|---------|----------------------------|
| 0 | Success | No Command-Specific Errors |

10.60 Command #188: Read the loop control mode, loop controlling sensor, hysteresis value, Damping for bump-less transfer

This command reads the HART communication board parameters, loop control mode, loop controlling sensor, hysteresis value, Damping for bump-less transfer and device variant.

Request Data Bytes

| Byte | Format | Description |
|------|--------|-------------|
| None | | |

Response Data Bytes

| Byte | Format | Description |
|------|--------|---|
| 0 | Enum | Loop control mode (0x00: Averaging, 0x01: Difference, 0x02: Sensor1, 0x03: Sensor2, 0x04: Redundant, 0x05: Split-Ranging) |
| 1 | Enum | Loop controlling PV: (0x00: Both Sensor 0x01: Primary Sensor 0x02: Secondary Sensor 0x04: Single Input) |
| 2-5 | Float | Hysteresis value |
| 6-9 | Float | Damping for bump less transfer |
| 10 | Enum | Device variant (0x01 = Single input 0x02 = Dual input) |

Command-Specific Response Codes

| Code | Class | Description |
|------|---------|----------------------------|
| 0 | Success | No Command-Specific Errors |

10.61 Command #189: Write Loop control mode

This command configures the loop control mode.

Request Data Bytes

| Byte | Format | Description |
|------|--------|---|
| 0 | Enum | Loop control mode (0x00: Average, 0x01: Difference, 0x02: Sensor1, 0x03: Sensor2, 0x04: Redundant, 0x05: Split-Ranging) |

Response Data Bytes

| Byte | Format | Description |
|------|--------|---|
| 0 | Enum | Loop control mode (0x00: Average, 0x01: Difference, 0x02: Sensor1, 0x03: Sensor2, 0x04: Redundant, 0x05: Split-Ranging) |

Command-Specific Response Codes

| Code | Class | Description |
|------|---------|----------------------------|
| 0 | Success | No Command-Specific Errors |
| 2 | Error | Invalid selection |
| 5 | Error | Too few data bytes |
| 7 | Error | In Write Protect Mode |
| 16 | Error | Access restricted |
| 32 | Error | Busy |

10.62 Command #191: Write sensor type/Id

This command configures the types and Id's of sensor1 and sensor2.

Request Data Bytes

| Byte | Format | Description |
|------|--------|--|
| 0 | Enum | Sensor 1 type (0 = MV, 1 = TC, 2 = RTD, 3 = OHMS) |
| 1 | Enum | Sensor 1 Id (if sensor1 type is MV then 0 = mV-22, 1 = mV-125, if sensor1 type is TC then 0 = TC Type E, 1 = TC Type J, 2 = TC Type K, 3 = TC Type N, 4 = TC Type T, 5 = TC Type S, 6 = TC Type R, 7 = TC Type B, 8 = TC Type C(w5w26), 9 = TC Type L(GOST) if sensor1 type is RTD then 0 = Reserved, 1 = RTD Pt 100, ,a=385 2 = RTD Pt 200, ,a=385 3 = Reserved, 4 = Reserved, 5 = RTD Pt50, a=391 6 = RTD Pt100, a=391 7 = RTD Ni 120, 8 = Reserved, 9 = RTD Cu50, a=426 10 = RTD Cu50, a=428 11 = RTD Cu100, a=426 12 = RTD Cu100, a=428 if sensor1 type is OHMS then 0 = OHM 500, 1 = OHM 2K) |

| | | |
|---|------|---|
| 2 | Enum | <p>Sensor 2 type (0 = MV, 1 = TC, 2 = RTD, 3 = OHMS, 4 = None)</p> |
| 3 | Enum | <p>Sensor 2 Id (if sensor2 type is MV then 0 = mV-22, 1 = mV-125, if sensor2 type is TC then 0 = TC Type E, 1 = TC Type J, 2 = TC Type K, 3 = TC Type N, 4 = TC Type T, 5 = TC Type S, 6 = TC Type R, 7 = TC Type B, 8 = TC Type C(w5w26), 9 = TC Type L(GOST) if sensor2 type is RTD then 0 = Reserved, 1 = RTD Pt 100, ,a=385 2 = RTD Pt 200, ,a=385 3 = Reserved, 4 = Reserved, 5 = RTD Pt50, a=391 6 = RTD Pt100, a=391 7 = RTD Ni 120, 8 = Reserved, 9 = RTD Cu50, a=426 10 = RTD Cu50, a=428 11 = RTD Cu100, a=426 12 = RTD Cu100, a=428 if sensor2 type is OHMS then 0 = OHM 500, 1 = OHM 2K)</p> |

Response Data Bytes

| Byte | Format | Description |
|------|--------|---------------|
| 0 | Enum | Sensor 1 type |
| 1 | Enum | Sensor 1 Id |
| 2 | Enum | Sensor 2 type |
| 3 | Enum | Sensor 2 Id |

Command-Specific Response Codes

| Code | Class | Description |
|------|---------|------------------------------------|
| 0 | Success | No Command-Specific Errors |
| 2 | Error | Invalid selection |
| 5 | Error | Too few data bytes |
| 6 | Error | Transmitter specific command error |
| 7 | Error | In Write Protect Mode |
| 16 | Error | Access restricted |
| 32 | Error | Busy |

10.63 Command #195: Read SV(CJ) tracking values

This command reads Secondary Variable tracking values.

Request Data Bytes

| Byte | Format | Description |
|------|--------|-------------|
| None | | |

Response Data Bytes

| Byte | Format | Description |
|-------|-------------|--|
| 0-3 | Float | Highest SV recorded |
| 4-7 | Unsigned-32 | Highest SV Timestamp(In minutes) |
| 8-11 | Float | Lowest SV recorded |
| 12-15 | Unsigned-32 | Lowest SV Timestamp(In minutes) |
| 16-19 | Float | SV High alarm limit |
| 20-23 | Float | SV Low alarm limit |
| 24-25 | Unsigned-16 | No of times SV recorded above High alarm limit |
| 26-27 | Unsigned-16 | No of times SV recorded below low alarm limit |

Command-Specific Response Codes

| Code | Class | Description |
|------|---------|----------------------------|
| 0 | Success | No Command-Specific Errors |

10.64 Command #198: Write high and low alarm limits for PV and SV

This command writes the high and low alarm limits for PV and SV. These values are used for tracking PV and SV values.

Request Data Bytes

| Byte | Format | Description |
|------|------------|------------------|
| 0 | Unsigned-8 | 0 = PV 1 = SV |
| 1-4 | Float | High alarm limit |
| 5-8 | Float | Low alarm limit |

Response Data Bytes

| Byte | Format | Description |
|------|------------|------------------|
| 0 | Unsigned-8 | 0 = PV 1 = SV |
| 1-4 | Float | High alarm limit |
| 5-8 | Float | Low alarm limit |

Command-Specific Response Codes:

| Code | Class | Description |
|------|---------|-----------------------------|
| 0 | Success | No Command-Specific Errors |
| 2 | Error | Invalid Selection |
| 5 | Error | Too Few Data Bytes Received |
| 7 | Error | In-Write Protect Mode |
| 16 | Error | Access Restricted |

10.65 Command #199: Read PV tracking values

This command reads Primary Variable tracking values.

Request Data Bytes

| Byte | Format | Description |
|------|--------|-------------|
| None | | |

Response Data Bytes

| Byte | Format | Description |
|-------|-------------|--|
| 0-3 | Float | Highest PV recorded |
| 4-7 | Unsigned-32 | Highest PV Timestamp(In minutes) |
| 8-11 | Float | Lowest PV recorded |
| 12-15 | Unsigned-32 | Lowest PV Timestamp(In minutes) |
| 16-19 | Float | PV High alarm limit |
| 20-23 | Float | PV Low alarm limit |
| 24-25 | Unsigned-16 | No of times PV recorded above High alarm limit |
| 26-27 | Unsigned-16 | No of times PV recorded below low alarm limit |

Command-Specific Response Codes

| Code | Class | Description |
|------|---------|----------------------------|
| 0 | Success | No Command-Specific Errors |

10.66 Command #200: Reset PV and SV tracking data

This command resets the tracking data. User has the option to select what tracking data to clear either for PV or SV.

Request Data Bytes

| Byte | Format | Description |
|------|--------------|---|
| 0 | Unsigned – 8 | 0: PV 1: SV |
| 1 | Unsigned – 8 | Monitoring parameter code 1: All 2: Highest value and time stamp 3: Lowest value and time stamp 4: High alarm limit and counter 5: Low alarm limit and counter |

Response Data Bytes

| Byte | Format | Description |
|------|--------------|---------------------------|
| 0 | Unsigned – 8 | 0: PV 1: SV |
| 1 | Unsigned – 8 | Monitoring parameter code |

Command-Specific Response Codes

| Code | Class | Description |
|------|---------|-----------------------------|
| 0 | Success | No Command-Specific Errors |
| 2 | Error | Invalid Selection |
| 5 | Error | Too Few Data Bytes Received |
| 7 | Error | In-Write Protect Mode |
| 16 | Error | Access Restricted |

10.67 Command #201: Reset min terminal voltage and its time stamp

This command Resets min terminal voltage and its time stamp.

Request Data Bytes

| Byte | Format | Description |
|------|--------|-------------|
| None | | |

Response Data Bytes

| Byte | Format | Description |
|------|--------|-------------|
| None | | |

Command-Specific Response Codes

| Code | Class | Description |
|------|---------|----------------------------|
| 0 | Success | No Command-Specific Errors |
| 7 | Error | In-Write Protect Mode |
| 16 | Error | Access Restricted |
| 32 | Error | Busy |

10.68 Command #202: Read current, minimum operating voltage and its timestamp

This command reads Loop Voltage Current value, Loop Voltage min value, Loop Voltage min time stamp,

Request Data Bytes

| Byte | Format | Description |
|------|--------|-------------|
| None | | |

Response Data Bytes

| Byte | Format | Description |
|------|--------------|----------------------|
| 0-3 | Float | VLOOP current value |
| 4-7 | Float | VLOOP min value |
| 8-11 | Unsigned -32 | VLOOP min time stamp |

Command-Specific Response Codes

| Code | Class | Description |
|------|---------|----------------------------|
| 0 | Success | No Command-Specific Errors |

10.69 Command #221: Set Date/Time for calibration

This command is used to Set Date/Time for calibration.

Request Data Bytes

| Byte | Format | Description |
|------|-------------|---------------------------|
| 0-4 | Unsigned 32 | DD 1 MM 1 YY 1 HR 1 MIN 1 |

Response Data Bytes

| Byte | Format | Description |
|------|-------------|---------------------------|
| 0-4 | Unsigned 32 | DD 1 MM 1 YY 1 HR 1 MIN 1 |

Command-Specific Response Codes

| Code | Class | Description |
|------|---------|-----------------------------------|
| 0 | Success | No Command-Specific Errors |
| 5 | Error | Too Few Data Bytes Received |
| 7 | Error | Transmitter In Write Protect Mode |
| 32 | Error | Busy |
| 16 | Error | Access Restricted |

10.70 Command #222: Acknowledge latching

This command is used to acknowledge sensor errors.

Request Data Bytes

| Byte | Format | Description |
|------|--------|-------------|
| | | |

Response Data Bytes

| Byte | Format | Description |
|------|--------|-------------|
| | | |

Command-Specific Response Codes

| Code | Class | Description |
|------|---------|------------------------------------|
| 0 | Success | No Command-Specific Errors |
| 6 | Error | Transmitter specific command error |
| 7 | Error | In Write Protect Mode |
| 16 | Error | Access restricted |
| 32 | Error | Busy |

10.71 Command #228: Read maintenance flag

This command reads the maintenance flag.

Request Data Bytes

| Byte | Format | Description |
|------|--------|-------------|
| None | | |

Response Data Bytes

| Byte | Format | Description |
|------|--------|--|
| 0 | Enum | 0x00 – “Check with operator” 0x01 – “Available for maintenance” |

Command-Specific Response Codes

| Code | Class | Description |
|------|---------|----------------------------|
| 0 | Success | No Command-Specific Errors |

11. Tables

11.1 Unit Codes

| | Unit | HART Code |
|---|--------------------|-----------|
| 0 | Custom | 0 |
| 1 | Degrees Celsius | 32 |
| 2 | Degrees Fahrenheit | 33 |
| 3 | Degrees Rankin | 34 |
| 4 | Kelvin | 35 |
| 5 | Milli Volt | 36 |
| 6 | Ohms | 37 |
| 7 | Percent | 57 |

Table 11 Unit Codes supported

11.2 Unit Conversion

Temperature Units

Internally, the transmitter uses degrees Celsius for the temperature variable. Conversions to the other supported units are made using the following equations:

| "To" unit | Formula |
|------------|------------------------------|
| Fahrenheit | $T_F = (T_C * 1.8) + 32$ |
| Rankine | $T_R = (T_C + 273.15) * 1.8$ |
| Kelvin | $T_K = T_C + 273.15$ |

Table 12 Temperature Units

11.3 Command 220 details

| Type | Bit | Command 220 bit status |
|-------------------------------------|-----|--------------------------|
| DAC Failure (HART) (BYTE1) | 7 | SPI Failure |
| | 6 | Packet Error |
| | 5 | Over Current Status |
| | 4 | Under Current Status |
| | 3 | Temp Above 140C |
| | 2 | Temp Above 100C |
| | 1 | DAC Write Failure |
| | 0 | Unused |
| Communication (HART) (BYTE2) | 7 | Calibration Table Fault |
| | 6 | Char table Fault |
| | 5 | EEPROM Block Corrupt |
| | 4 | Stack Over Flow |
| | 3 | Flow Control Fault |
| | 2 | Flash/ROM Corrupt |
| | 1 | RAM Database Corrupt |
| | 0 | RAM Corrupt |
| (HART) (BYTE3) | 7 | Input 2 Short (RTD) |
| | 6 | Input 2 Open |
| | 5 | Input 1 Short (RTD) |
| | 4 | Input 1 Open |
| | 3 | Input 2 Under Range |
| | 2 | Input 2 Over Range |
| | 1 | Input 1 Under Range |
| | 0 | Input 1 Over Range |
| Other Info (HART) (BYTE4) | 7 | Unused |
| | 6 | Input2UserCorrectActive |
| | 5 | Input1UserCorrectActive |
| | 4 | DAC Loop Voltage Failure |
| | 3 | MCU Supply Fault |
| | 2 | CTCJ Delta Warning |
| | 1 | ADC Reference Fault |
| | 0 | ADC Range Fault |
| Sensor (BYTE5) | 7 | Reserved |
| | 6 | Reserved |
| | 5 | Reserved |
| | 4 | Reserved |
| | 3 | Reserved |
| | 2 | User Correct Active |
| | 1 | Break Detect Status |
| | 0 | Latch Status |

| | | |
|-----------------------------------|-----------------------------------|--------------------------------------|
| Database Integrity (BYTE6) | 7 | Advanced diagnostic database corrupt |
| | 6 | Sensor2 block database corrupt |
| | 5 | Sensor1 block database corrupt |
| | 4 | Sensor Common block database corrupt |
| | 3 | Config Change block database corrupt |
| | 2 | General block database corrupt |
| | 1 | Vital block database corrupt |
| | 0 | Common block database corrupt |
| | Database Integrity (BYTE7) | 7 |
| 6 | | Sensor2 block write fail |
| 5 | | Sensor1 block write fail |
| 4 | | Sensor Common block write fail |
| 3 | | Config Change block write fail |
| 2 | | General block write fail |
| 1 | | Vital block database write fail |
| 0 | | Common block write fail |
| Display Integrity (BYTE8) | 7 | Reserved |
| | 6 | Reserved |
| | 5 | Reserved |
| | 4 | Reserved |
| | 3 | Reserved |
| | 2 | Reserved |
| | 1 | Reserved |
| | 0 | Reserved |
| Display Integrity (BYTE9) | 7 | Reserved |
| | 6 | Reserved |
| | 5 | Reserved |
| | 4 | Reserved |
| | 3 | Reserved |
| | 2 | Reserved |
| | 1 | Reserved |
| | 0 | Reserved |

| | | |
|---|---|--------------------------------------|
| Sensor (BYTE5) | 7 | Reserved |
| | 6 | Reserved |
| | 5 | Reserved |
| | 4 | Reserved |
| | 3 | Reserved |
| | 2 | User Correct Active |
| | 1 | Break Detect Status |
| | 0 | Latch Status |
| Database Integrity (BYTE6) | 7 | Sensor2 block database corrupt |
| | 6 | Sensor1 block database corrupt |
| | 5 | Sensor Common block database corrupt |
| | 4 | Config Change block database corrupt |
| | 3 | General block database corrupt |
| | 2 | Vital block database corrupt |
| | 1 | Common block database corrupt |
| | 0 | Advanced diagnostic database corrupt |
| Database Integrity (BYTE7) | 7 | Advanced diagnostic write fail |
| | 6 | Sensor2 block write fail |
| | 5 | Sensor1 block write fail |
| | 4 | Sensor Common block write fail |
| | 3 | Config Change block write fail |
| | 2 | General block write fail |
| | 1 | Vital block database write fail |
| | 0 | Common block write fail |

Table 13 Command 220 details

11.4 Sensor Type Codes

| | |
|-----------|-----------------------------|
| 0 | MV22 |
| 1 | MV125 |
| 2 | Thermocouple Type E |
| 3 | Thermocouple Type J |
| 4 | Thermocouple Type K |
| 5 | Thermocouple Type N |
| 6 | Thermocouple Type T |
| 7 | Thermocouple Type S |
| 8 | Thermocouple Type R |
| 9 | Thermocouple Type B |
| 10 | Thermocouple Type C(w5w26), |
| 11 | Thermocouple Type L (GOST) |
| 12 | RTD Pt 100, ,a=385 |
| 13 | RTD Pt 200, ,a=385 |
| 14 | RTD Pt50, a=391 |
| 15 | RTD Pt100, a=391 |
| 16 | RTD Ni 120, |
| 17 | RTD Cu50, a=426 |
| 18 | RTD Cu50, a=428 |
| 19 | RTD Cu100, a=426 |
| 20 | RTD Cu100, a=428 |
| 21 | OHM 500 |
| 22 | OHM 2K) |

Table 14 Sensor type codes

12. Performance

12.1 Sampling Rates

Typical sampling rates are shown in the following table.

| | |
|-----------------------------------|---|
| Primary Temperature sensor sample | 6 per second(Dual Input) 3 Per Second (Single Input) |
| Internal sensor sample | 50 per second |
| PV digital value calculation | 3 per second |
| SV digital value calculation | 3 per second |
| TV digital value calculation | 3 per second |
| QV digital value calculation | 3 per second |
| Analog output update | 3 per second |

Table 15 Sampling Rates

12.2 Power-Up

On power up, the transmitter initializes the data in RAM and the HART communication links and starts the task scheduler to sample the input.

The device will not respond to HART commands during the Power Up sequence.

Fixed-current mode is cancelled by power loss or software reset (command 42, for instance).

Typical Startup Time = 2-4 sec

HART communication start time = 18 sec

In very short succession after power is applied to the transmitter, the device will set its output to the user-selected burnout level, then briefly transition to 50% (12 mA nominal), and then begin publishing the primary variable.

12.3 Device Reset

Command 42 ("Perform Device Reset") causes the device to reset its microprocessor. The resulting restart is similar to the normal power up sequence. (See section 12.2). The only difference is if the primary variable is valid at the start of the reset sequence. If so, it will be maintained until initialization is performed, and then a new calculation will be placed on the analog output channel.

12.4 Self Test

The transmitter keeps performing continuous self-tests in the background. The device does support Command 64773 for “Self-Test”.

12.5 Command Response Times

| | |
|---------|-----------|
| Minimum | 18.236ms |
| Typical | 64ms |
| Maximum | 208.643ms |

Table 16 Response Times

12.6 Busy and Delayed-Response

1) BUSY (32) response code implementation:

BUSY Response code is implemented for the commands, where NVM writing is involved. Each time when the NVM write command comes, first it is checked if the device is busy in writing NVM in background, when some configuration is done from display OR long string parameters like tag/date/descriptor, Long tag, Message from previous HART command, in the background task.

- a. If device is busy in writing long string parameters then the device issues RC-32 to the HART command and completes the NVM write activity in hand in the command itself using its response time of 250ms. As device sends RC-32 to the HART command, the host is expected to send the same command again until it gets a success response code or till the limited number of retries as decided by host in case of BUSY RC.
- b. If the NVM write background task is in progress for the parameters configured from display, the device sends BUSY RC to the host, and keeps on sending BUSY RC's to the next coming HART commands until it finishes this background task of NVM write.

For any IPC command if the Comm PWA is unable to respond in 240mSec as it may have not received response from sensor/display, for the first time it sends BUSY response so that host can retry, then if again the Comm PWA is unable to respond in 240mSec then it sends a Device specific error (RC=0x06) to HART host.

2) Delayed-response is not used.

12.7 Long Messages

The largest data field used is in the response to Commands 20 and 22: 32 bytes of long tag and Command 17: 24 bytes containing the packed ASCII message data.

12.8 Non-Volatile Memory

EEPROM is used to hold the device's configuration parameters. New data is written to this memory 20 seconds after the execution of a write command. When data is downloaded to the device, power to the transmitter should not be interrupted until the data is copied to the non volatile memory.

12.9 Modes

Fixed current mode is implemented, using Command 40. This mode is cleared by power loss or reset. When the device is in fixed current mode, the analog output will not track the input.

12.10 Write Protection

Write-protection is provided, selected by software write protect (command 175 and 176) .When there is no write protect, all commands are available.

12.11 Damping

The damping is available from 0 to 102 seconds in HART.

12.12 Damping for bump less transfer

The damping for bump less transfer is available from 0 to 99.9 seconds in HART.

Annex A. Capability Checklist

| | |
|--------------------------------------|-------------------------------------|
| Manufacturer, model and revision | Honeywell Intl (2B)., STT700, rev.1 |
| Device type | 1 (Transmitter) |
| HART revision | 7.x |
| Device Description available? | Yes |
| Number and type of sensors | 2 |
| Number and type of actuators | 0 |
| Number and type of host side signals | 1: 4 – 20mA analog |
| Number of Device Variables | 4 |
| Number of Dynamic Variables | 4 |
| Map able Dynamic Variables? | No |
| Number of common-practice commands | 13 |
| Number of device-specific commands | 73 |
| Bits of additional device status | 45 (8 bytes are used) |
| Alternative operating modes? | No |
| Burst mode? | No |
| Capture Device Variables? | No |
| Write-protection? | Yes |

Table 17 Capability checklist

Annex B. Default Configuration

| Parameter | Default value |
|--------------------------------|-----------------|
| Sensor type | MV |
| Loop control mode | Redundant |
| Lower Range Value | -20 |
| Upper Range Value | 120 |
| Mid Range Value | 70 |
| PV Units | mV |
| SV Units | Degrees Celsius |
| TV Units | mV |
| QV Units | mV |
| Damping time constant | 0.5 seconds |
| Damping for bump less transfer | 0.5 seconds |
| Fault-indication | Up-scale |
| Write-protect | write disabled |
| Number of response preambles | 7 |
| Polling Address | 0 |
| Loop Current | Enable |
| Output mode | Analog |

Table 18 Default Configuration

Sales and Service

For application assistance, current specifications, pricing, or name of the nearest Authorized Distributor, contact one of the offices below.

ASIA PACIFIC

Honeywell Process Solutions,
(TAC) hfs-tac-support@honeywell.com

Australia

Honeywell Limited
Phone: +(61) 7-3846 1255
FAX: +(61) 7-3840 6481
Toll Free 1300-36-39-36
Toll Free Fax:
1300-36-04-70

China – PRC - Shanghai

Honeywell China Inc.
Phone: (86-21) 5257-4568
Fax: (86-21) 6237-2826

Singapore

Honeywell Pte Ltd.
Phone: +(65) 6580 3278
Fax: +(65) 6445-3033

South Korea

Honeywell Korea Co Ltd
Phone: +(822) 799 6114
Fax: +(822) 792 9015

EMEA

Honeywell Process Solutions,
Phone: + 80012026455 or
+44 (0)1344 656000

Email: (Sales)

FP-Sales-Apps@Honeywell.com

or

(TAC)

hfs-tac-support@honeywell.com

AMERICAS

Honeywell Process Solutions,
Phone: (TAC) 1-800-423-9883 or
215/641-3610
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