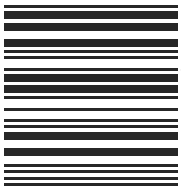
Transmitter Cond 7100 e /2(X)H Transmitter Specific Command Specification



using the HART® Communications Protocol

Revision 1.1

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1. Reference Documents:

Document Title	Revision	Document Number
HART® - FSK Physical Layer Specification	8.0	HCF_SPEC-54
HART® - Data Link Layer Specification	7.1	HCF_SPEC-81
HART® - Command Summary Specification	7.1	HCF_SPEC-99
HART® - Universal Command Specification	5.2	HCF_SPEC-127
HART® - Common Practice Command Specification	7.1	HCF_SPEC-151
HART® - Common Tables	9.0	HCF_SPEC-183
Appendix 1 - Command Specific Response Code Definitions	4.1	HCF_SPEC-307
Application Layer Guideline on HART Status Information	1.0	HCF_LIT-5

2. Expanded Device Type Code:

Manufacturer Identification Code:	Mettler	142
Manufacturer's Device Type Code:	Transmitter Cond 7100e/2(X)H	122

3. Physical Layer Information:

Field Device Category	Transmitter Type A	(Sink direct current and receive operating power from the Network)
Capacitance Number (CN)	2	(approx. 2 x 5000 pF)

4. Conformance and Command Class Summary

CONFORMANCE CLASS #1
- UNIVERSAL

0 Read Unique Identifier
1 Read Primary Variable

CONFORMANCE CLASS #1A
- UNIVERSAL

0 Read Unique Identifier
2 Read P. V. Current and Percent of Range

CONFORMANCE CLASS #2
- UNIVERSAL

11 Read Unique Identifier Associated with Tag
12 Read Message
13 Read Tag, Descriptor, Date
14 Read Primary Variable Sensor Information
15 Read Primary Variable Output Information
16 Read Final Assembly Number

CONFORMANCE CLASS #3
- UNIVERSAL

3 Read Dynamic Variables and P. V. Current
- COMMON-PRACTICE

48 Read Additional Transmitter Status
54 Read Transmitter Variable Information

CONFORMANCE CLASS #4
- COMMON-PRACTICE

35 Write Primary Variable Range Values
36 Set Primary Variable Upper Range Value
37 Set Primary Variable Lower Range Value
38 Reset Configuration Changed Flag
40 Enter/Exit Fixed Primary Variable Current Mode
41 Perform Transmitter Self Test
42 Perform Master Reset

CONFORMANCE CLASS #5
- UNIVERSAL

6 Write Polling Address
17 Write Message
18 Write Tag, Descriptor, Date
19 Write Final Assembly Number
- COMMON-PRACTICE

59 Write Number of Response Preambles
- TRANSMITTER-SPECIFIC

128 Read One Transmitter-Specific Variable
129 Write One Transmitter-Specific Variable

5. Additional Response Code Information

FIRST BYTE

5.1 BUSY
Response Code #32

The Busy Response Code is implemented for Commands #6, #18, #35, #36, #37, #42, #59 and #129. A confirming response is made before execution begins. The Busy Response Code is returned when a command is received during the execution.

SECOND BYTE

5.2 FIELD DEVICE MALFUNCTION
Bit #7

Malfunctions detected by the transmitter:
- CRC-Error in internal Configuration Data of the transmitter.
- After Reset or Power up
  (See HCF_LIT-5: Application Layer Guideline on HART Status Information)

5.3 CONFIGURATION CHANGED
Bit #6

When the Parameter Setting Data changed, this Bit will be set. The Command #38 resets the Flag.

5.4 MORE STATUS AVAILABLE
Bit #4

This Bit is set if more status information can be read with Command #48.

5.5 PRIMARY VARIABLE ANALOG OUTPUT FIXED
Bit #3

This bit is set if output current 1 has been frozen by corresponding operation at the transmitter or if the output has been fixed via HART with the Command #40 or in the case of reset or power failure during startup.

5.6 PRIMARY VARIABLE ANALOG OUTPUT SATURATED
Bit #2

This flag is set whenever the Primary Variable Analog Output saturates below 3.8 milliamperes and above 20.5 milliamperes.

5.7 NON-PRIMARY VARIABLE OUT OF LIMITS
Bit #1

This flag is set whenever the Non-Primary Variable exceeds the transmitter operating limits or Sensocheck Errors occurs. Command #48, Read Additional Transmitter Status, provides additional information.

5.8 PRIMARY VARIABLE OUT OF LIMITS
Bit #0

This flag is set whenever the Primary Variable exceeds the Sensor Limits returned with Command#14, Read Primary Variable Sensor Information.

6. General Transmitter Information

6.1 DAMPING IMPLEMENTATION

The Transmitter Cond 7100e/2(X)H has a fixed damping value.

6.2 NONVOLATILE MEMORY DATA STORAGE

The Flags Byte of Command #0 referenced in the Universal Command Specification document, will have Bit #1 (Command #39, EEPROM Control, Required) set to 0, indicating that all data sent to the transmitter will be saved automatically in the nonvolatile memory upon receipt of the Write or Set Command. Command #39, EEPROM Control, is not implemented.

6.3 MULTIDROP OPERATION

This revision of the Transmitter Cond 7100e/2(X)H supports Multidrop Operation.

6.4 BURST MODE

This revision of the Transmitter Cond 7100e/2(X)H does **not** support Burst Mode.

6.5 UNIT CONVERSIONS

All temperatures are based of degrees Celsius or degrees Fahrenheit. The temperature unit is selected with transmitter-specific variable 10, Byte 1. Command #129, Write One Transmitter-Specific Variable, can write this Byte.

7. Additional Common-Practice Command Specification

The Transmitter Cond 7100e/2(X)H implements a subset of the Common-Practice Commands specified in the Common-Practice Command Specification document. This section contains information pertaining to those commands that require clarification.

7.1 COMMAND #35 WRITE PRIMARY VARIABLE RANGE VALUES

The Primary Variable Range Unit Code accepted by this transmitter is only the current Unit Code for the Primary Variable.

7.2 COMMAND #41 PERFORM TRANSMITTER SELF TEST

The Transmitter Self Test (Device Diagnostics) starts immediately after execution of this command.the transmitter display shows the test progress. No measurement at the execution of Selftest. A Display test, RAM test, EPROM test (internal program) and EEPROM test (parameter memory, transmitter calibration data) are performed. The test takes about 20 seconds.
The result can then be retrieved with Command #48, Read Additional Transmitter Status.

7.3 COMMAND #48 READ ADDITIONAL TRANSMITTER STATUS

This Command returns the Global Device Status, the Function Mode, Alarms and Errors, the results of a Transmitter Self Test and other transmitter information.

Byte **#0** Error Status

Bit 0.0	-	Conductivity or salinity value	Err 01
Bit 0.1	-	Conductance value	Err 02
Bit 0.2	-	Temperature value	Err 03
Bit 0.3	-	Current output < 3.8 mA	Err 11
Bit 0.4	-	Current output > 20.5 mA	Err 12
Bit 0.5	-	Current output span	Err 13
Bit 0.6	-	Configuration data	Err 98
Bit 0.7	-	Transmitter calibration data	Err 99

Byte **#1** *Undefined*

Byte **#2** Smiley Status

Bit 2.0	-	*Undefined*	
Bit 2.1	-	*Undefined*	
Bit 2.2	-	Sensocheck® Polarisation	Err 33
Bit 2.3	-	Sensocheck® Lead	Err 34
Bit 2.4	-	*Undefined*	
Bit 2.5	-	*Undefined*	
Bit 2.6	-	Cellconstant	
Bit 2.7	-	*Undefined*	

Byte **#3 to 5** *Undefined*

Byte **#6** Operating Mode #1 (Refer to Common Table XIV)
Byte **#7** Operating Mode #2 (Refer to Common Table XIV)

Byte **#8** Analog Output Saturated

Bit 8.0	-	Analog Output saturated
Bit 8.1 to 7	-	*Undefined*

Byte **#9** Bit 9.0 to 7 - *Undefined*
Byte **#10** Bit 10.0 to 7 - *Undefined*

Byte **#11** Analog Output Fixed

Bit 11.0	-	Analog Output fixed
Bit 11.1 to 7	-	*Undefined*

Byte **#12** Bit 12.0 to 7 - *Undefined*
Byte **#13** Bit 13.0 to 7 - *Undefined*

Byte **#14 to 23** *Undefined*

Byte **#24** Transmitter Mode

Bit 24.0	-	*Configuraton*
Bit 24.1	-	*Calibration*
Bit 24.2	-	Sample was taken

8.TRANSMITTER-SPECIFIC COMMANDS

8.1 COMMAND #128 READ ONE TRANSMITTER-SPECIFIC VARIABLE

REQUEST DATA BYTES

DATA BYTES	#0
	XMTR VAR CODE

Data Byte #0: Transmitter Variable, 8-bit unsigned integer, Refer to Transmitter Variable Code Table 9.3.

RESPONSE DATA BYTES

DATA BYTES	#0	#1		
	XMTR VAR CODE	UNITS		
	#2	#3	#4	#5
	DATA MSB			DATA LSB

Data Byte #0 : Transmitter Variable, 8-bit unsigned integer, Refer to Transmitter Variable Code Table 9.3.

Data Byte #1 : Units Code, 8-bit unsigned integer, Refer to Table II; Unit Codes

Data Byte #2 - #5 : Data for selected Transmitter Variable, IEEE 754 or selection data in 4 single bytes, Refer to Transmitter Variable Code Table 9.3.

COMMAND-SPECIFIC RESPONSE CODES

0	No Command-Specific Errors
1	Undefined
2	Invalid Selection
3 - 4	Undefined
5	Too Few Data Bytes Received
6 - 15	Undefined
16	Access Restricted
17 - 127	Undefined

8.2 COMMAND #129 WRITE ONE TRANSMITTER-SPECIFIC VARIABLE

REQUEST DATA BYTES

DATA BYTES	#0	#1		
	XMTR VAR CODE	UNITS		
	#2	#3	#4	#5
	DATA MSB			DATA LSB

Data Byte #0 : Transmitter Variable, 8-bit unsigned integer, Refer to Transmitter Variable Code Table 9.3.

Data Byte #1 : Units Code, 8-bit unsigned integer, Refer to Table II; Unit Codes

Data Byte #2 - #5 : Data for selected Transmitter Variable, IEEE 754 or selection data in 4 single bytes, Refer to Transmitter Variable Code Table 9.3.

RESPONSE DATA BYTES

DATA BYTES	#0	#1		
	XMTR VAR CODE	UNITS		
	#2	#3	#4	#5
	DATA MSB			DATA LSB

Data Byte #0 : Transmitter Variable, 8-bit unsigned integer, Refer to Transmitter Variable Code Table 9.3.

Data Byte #1 : Units Code, 8-bit unsigned integer, Refer to Table II; Unit Codes

Data Byte #2 - #5 : Data for selected Transmitter Variable, IEEE 754 or selection data in 4 single bytes, Refer to Transmitter Variable Code Table 9.3.

COMMAND-SPECIFIC RESPONSE CODES

0	No Command-Specific Errors
1	Undefined
2	Invalid Selection
3	Passed Parameter too Large
4	Passed Parameter too Small
5	Too Few Data Bytes Received
6	Undefined
7	In Write Protect Mode
8 - 11	Undefined
12	Invalid Units Code
13 - 15	Undefined
16	Access Restricted
17 - 127	Undefined

9. TRANSMITTER-SPECIFIC TABLES

Refer to the Common Tables Document for all references in this section to 'Subset of Table'.

9.1 USED COMMON UNIT CODES

Subset of Table II, Unit Codes

32	-	°C	
33	-	°F	
37	-	Ohm	
39	-	mA	
56	-	uMho	(uS)
57	-	%	
250	-	not used	
251	-	none	
253	-	special	

9.2 USED TRANSMITTER-SPECIFIC UNIT CODES

243	-	%/K	(TC)
244	-	cm^{-1}	(Cellconstant)
246	-	g/kg	(Salinity)

9.3 TRANSMITTER VARIABLE CODES

Var.No.	Description	Unit	Access	Lower Limit	Upper Limit	Note
0	Conductity value	uS	Read	0	999.9e3	uS = uMho
1	Specific resistance	Ohm	Read	0	999.9e6	
2	Temperature value	°C °F	Read	-20.0°C -4°F	200.0°C 392°F	for Pt100/1000
					150.0°C 302°F	for NTC 30k
				-10.0°C 14°F	130.0°C 266°F	for NTC 8.55
3	Salinity	g/kg	Read	0	45.0	
4	Conductance value	uS	Read	0	999.9e3	
5	Concentration	%	Read	0	9.99	
6 to 7	*Undefined*					
8	mA output current	mA	Read	3.8	22.0	
9	Percent value of output	%	Read	-	-	
10	Inputs 10.0 Prim. variable 10.1 Cell 10.2 Temperature 10.3 Temp.-Sensor	none	R/W			Selections bytewise, see table 9.4
11	TC 11.0 TC selection 11.1 *Undefined* 11.2 *Undefined* 11.3 *Undefined*	none	R/W			Selections bytewise, see table 9.5
12	linear TC value	%/K	R/W	0	19.99	
13	Output current range 13.0 LIN /LOG 13.1 LOG lower range value 13.2 LOG upper range value 13.3 *Undefined*	none	R/W			not used, when PV = salinity! Selections bytewise, see table 9.6
14	Output current, lower range value (4 mA)	uS Ohm g/kg %	R/W	0	999.9e3 999.9e6 45.0 99.99	same Unit as Primary variable
15	Output current, upper range value (20 mA)	uS Ohm g/kg %	R/W	0	999.9e3 999.9e6 45.0 99.99	same Unit as Primary variable
16	Diag 16.0 SensoCheck 16.1 *Undefined* 16.2 *Undefined* 16.3 *Undefined*	none	R/W			Selections bytewise, see table 9.7
17	Cellconstant	cm^{-1}	R/W	0.005	19.999	
18	Output 18.0 22mA on Error 18.1 HOLD Last/Fix 18.2 *Undefined* 18.3 *Undefined*	none	R/W			Selections bytewise, see table 9.8
19	HOLD-Fix value	mA	R/W	3.8	22.0	
20	Conc Solution 20.0 kind of Solution 20.1 *Undefined* 20.2 *Undefined* 20.3 *Undefined*	none	R/W			Selections bytewise see table 9.9
30	Sample calibration (Step 2)	Ohm	R/W	0.0	999.9e6	Laborvalue (Ohm)
		uS				Laborvalue (uS)
31	Time constant output filter	sec	R/W	0.0	120.0	Filtertime
32	Alarm delay	sec	R/W	0.0	600.0	

33	33.0 Alarm LED Mode	none	R/W			Selections bytewise, see table 9.10
20-29 30 - 249	*Undefined*					
250	Not Used					
251-255	*Undefined*					

9.4 INPUT SELECTION CODE

Usage of bytes for input selections in Transmitter-Specific Variable 10

Byte	Description	Selections			Note
10.0	Primary variable and range	0 1 2 3 4 5 6 8 10 11 12 13 14 13-255	- - - - - - - - - - - - -	o.ooo uS oo.oo uS ooo.o uS oooo uS o.ooo mS oo.oo mS ooo.o mS o.oo MOhm ooo.o SAL oo.oo % USP o.ooo S/m oo.oo S/m *Undefined*	unit is valid also for output current upper and lower range values
10.1	Cell	0 1 2-255	- - -	2-EL 4-EL *Undefined*	
10.2	Temperature	0 1 2-255	- - -	°C °F *Undefined*	unit is valid for all read and write commands
10.3	Temperature sensor type	0 1 3 4 4-255	- - - - -	Pt 100 Pt 1000 NTC 30k NTC 8.55k *Undefined*	

9.5 TC SELECTION CODE

Usage of bytes for TC selections in Transmitter-Specific Variable 11

Byte	Description	Selections			Note
11.0	TC	0 1 2 3 4 5 6-255	- - - - - - -	OFF LIN NLF FCT -01- (NaCl) FCT -02- (HCl) FCT -03- (NH_3) *Undefined*	
11.1	*Undefined*				
11.2	*Undefined*				
11.3	*Undefined*				

9.6 OUTPUT CURRENT SELECTION CODE

Usage of bytes for output current configuration in Transmitter-Specific Variable 13

Byte	Description	Selections	Note
13.0	LIN / LOG	0 - lineare 1 - logarithm 2-255 - *Undefined*	
13.1	LOG lower range value	0 -0.1 uS | mS | S/m | MOhm 1 -1.000 uS | mS | S/m | MOhm 2 -10.00 uS | mS | S/m | MOhm 3 -100.0 uS | mS | S/m | MOhm 4 -1000 uS | mS | S/m | MOhm 5-255 -*Undefined*	
13.2	LOG upper range value	0 -0.1 uS | mS | S/m | MOhm 1 -1.000 uS | mS | S/m | MOhm 2 -10.00 uS | mS | S/m | MOhm 3 -100.0 uS | mS | S/m | MOhm 4 -1000 uS | mS | S/m | MOhm 5-255 -*Undefined*	
13.3	*Undefined*		

9.7 DIAGNOSTICS CODE

Usage of bytes for diagnostics in Transmitter-Specific Variable 16

Byte	Description	Selections	Note
16.0	Sensocheck	0 - Off 1 - On 2-255 - *Undefined*	
16.1	*Undefined*		
16.2	*Undefined*		
16.3	*Undefined*		

9.8 OUTPUT SELECTION CODE

Usage of bytes for output selections in Transmitter-Specific Variable 18

Byte	Description	Selections	Note
18.0	22 mA on Error	0 - Off 1 - On 2-255 - *Undefined*	
18.1	HOLD Last / Fix	0 - Last value 1 - Fixed current 2-255 - *Undefined*	
18.2	*Undefined*		
18.3	*Undefined*		

9.9 SOLUTIONS CODE

Usage of bytes for extended selections in Transmitter-Specific Variable 20

Byte	Description	Selections	Note
20.0	Conc Solution	0 - NaCl 1 - HCl 2 - NaOH 3 - H2SO4 4 - HNO3 5..255 - *Undefined*	
20.1	*Undefined*		
20.2	*Undefined*		
20.3	*Undefined*		

9.10 EXTENDED SELECTION CODE

Usage of bytes for extended selections in Transmitter-Specific Variable 33

Byte	Description	Selections	Note
33.0	Alarm LED Mode	0 - Off 1 - On 2-255 - *Undefined*	
33.1	*Undefined*		
33.2	*Undefined*		
33.3	*Undefined*		

10 RELEASE NOTES

10.1 Preliminary Release

10.2 Revision 1.1

- new Byte (#24) in Command #48
- Additional selections in Variable #2 (NTC 8,55 kOhm added)
- Additional selections in Variable #10 (Concentration and USP added)
- new Transmitter Variable #30 see Table 9.3
- new Transmitter Variable #31 see Table 9.3
- new Transmitter Variable #32 see Table 9.3
- new Transmitter Variable #33 see Table 9.3
- new Transmitter Specific Command #131

Universal Commands:

Command #0 - Read Unique Identifier

Request Data Bytes	None		
Response Data Bytes	#0	- 254	
	#1	- Manufacturer Id = 142	*(Mettler)*
	#2	- Manufacturer Device Type = 122	*(Transmitter Cond 7100e/2(X)H)*
	#3	- Number of Preambles	
	#4	- Univ Cmd Rev	
	#5	- Trans Spec Rev	
	#6	- Soft Rev	*(40 for Version 4.0)*
	#7	- Hard Rev (See Universal Command Spec. Cmd #0)	
	#8	- Flags	
	#9 to #11	- Device Id Number (24-bit unsigned int)	
Response Codes	#0	- No Command-Specific Errors	

Command #1 - Read Primary Variable

Request Data Bytes	None		
Response Data Bytes	#0	- PV Units Code (See Common Table II)	(Spec.Var. 10.0)
	#1 to #4	- Primary Variable	(Spec.Var. 0, 1 or 3)
Response Codes	#0	- No Command-Specific Errors	

Command #2 - Read P.V. Current and Percent of Range

Request Data Bytes	None		
Response Data Bytes	#0 to #3	- P.V. Current [mA]	*(Spec.Var. 8)*
	#4 to #7	- P.V. Percent of Range [%]	*(Spec.Var. 9)*
Response Codes	#0	- No Command-Specific Errors	

Command #3 - Read Dynamic Variables and P.V. Current

Request Data Bytes	None		
Response Data Bytes	#0 to #3	- P.V. Current [mA]	
	#4	- P.V. Units Code (See Common Table II)	*(Spec.Var. 10.0)*
	#5 to #8	- Primary Variable	*(Spec.Var. 0, 1 or 3)*
	#9	- S.V. Units Code	
	#10 to #13	- Secondary Variable	*(Spec.Var. 2)*
Response Codes	#0	- No Command-Specific Errors	
Note		- Data String trancates after last variable supported	

Command #6 - Write Polling Address

Request Data Bytes	#0	- Polling Address of Device	
Response Data Bytes	#0	- Polling Address of Device	
Response Codes	#0	- No Command-Specific Errors	
	#2	- Invalid Selection	*(Address > 15)*
	#5	- Too Few Data Bytes Received	
	#32	- Busy	

Command #11 - Read Unique Identifier associated with Tag

Request Data Bytes	#0 to #5	- Tag (6 Byte Packed-ASCII = 8 Char.)	
Response Data Bytes	#0	- 254	
	#1	- Manufacturer Id = 142	*(Mettler)*
	#2	- Manufacturer Device Type = 122	*(Transmitter Cond 7100e/2(X)H)*
	#3	- Number of Preambles	
	#4	- Univ Cmd Rev	
	#5	- Trans Spec Rev	
	#6	- Soft Rev	*(40 for Version 4.0)*
	#7	- Hard Rev (See Universal Command Spec. Cmd #0)	
	#8	- Flags	
	#9 to #11	- Device Id Number (24-bit unsigned int)	
Response Codes	#0	- No Command-Specific Errors	
Note		- Response only if Tag corresponds	
		- Only valid for Broadcast Frames	

Command #12 - Read Message

Request Data Bytes	None		
Response Data Bytes	#0 to #23	- Message (24 Byte Packed-ASCII = 32 Character)	
Response Codes	#0	- No Command-Specific Errors	

Command #13 - Read Tag, Descriptor, Date

Request Data Bytes	None			
Response Data Bytes	#0 to #5 #6 to #17 #18 to #20	- - -	Tag (Packed-ASCII = 8 Char.) Descriptor (Packed-ASCII = 16 Char.) Date [dd.mm.yy]	
Response Codes	#0	-	No Command-Specific Errors	

Command #14 - Read Primary Variable Sensor Information

Request Data Bytes	None			
Response Data Bytes	#0 to #2 #3 #4 to #7 #8 to #11 #12 to #15	- - - - -	P.V. Sensor Serial Number P.V. Sensor Units Code P.V. Upper Sensor Limit P.V. Lower Sensor Limit P.V. Minimum Span	*(000000)*
Response Codes	#0	-	No Command-Specific Errors	

Command #15 - Read Primary Variable Output Information

Request Data Bytes	None			
Response Data Bytes	#0 #1 #2)#3 to #6 #7 to #10 #11 to #14 #15 #16	- - - - - - - -	Alarm Select Code (See Common Table VI) P.V. Transfer Function Code (See Common Table III) P.V. Range Units Code P.V. Upper Range Value P.V. Lower Range Value P.V. Damping Value [s] Write Protect Code (See Common Table VII) Private Label Distributor Code (See Common Table VIII) **Parameters not used:** Units Code = FA_{HEX} (not used), Value = $7FA00000_{HEX}$ (NaN)	*(Spec.Var. 10.0)* *(Spec.Var. 15)* *(Spec.Var. 14)* *(NaN)*
Response Codes	#0	-	No Command-Specific Errors	

Command #16 - Read Final Assembly Number

Request Data Bytes	None		
Response Data Bytes	#0 to #2	-	Final Assembly Number (24-bit unsigned int)
Response Codes	#0	-	- No Command-Specific Errors

Command #17 - Write Message

Request Data Bytes	#0 to #23 - Message (24 Byte Packed-ASCII = 32 Character)		
Response Data Bytes	#0 to #23 - Message		
Response Codes	#0 #5	- -	- No Command-Specific Errors - Too Few Data Bytes Received

Command #18 - Write Tag, Descriptor, Date

Request Data Bytes	#0 to #5 #6 to #17 - Descriptor (Packed-ASCII = 16 Character) #18 to #20	- Tag (Packed-ASCII = 8 Character)	- Date [dd.mm.yy]
Response Data Bytes	#0 to #5 #6 to #17 - Descriptor #18 to #20	- Tag	- Date
Response Codes	#0 #5		- No Command-Specific Errors - Too Few Data Bytes Received

Command #19 - Write Final Assembly Number

Request Data Bytes	#0 to #2	- Final Assembly Number (24-bit unsigned int)	
Response Data Bytes	#0 to #2	- Final Assembly Number	
Response Codes	#0 #5		- No Command-Specific Errors - Too Few Data Bytes Received

Common Practice Commands:

Command #35 - Write Primary Variable Range Values

Request Data Bytes	#0 - P.V. Range Units Code #1 to #4 - P.V. upper range value #5 to #8 - P.V. lower range value	*(Must be Units Code of Spec.Var. 10.0)* *(Spec.Var. 15)* *(Spec.Var. 14)*
Response Data Bytes	#0 - P.V. Range Units Code #1 to #4 - P.V. upper range value #5 to #8 - P.V. lower range value	*(Units Code of Spec.Var. 10.0)* *(Spec.Var. 15)* *(Spec.Var. 14)*
Response Codes	#0 - No Command-Specific Errors #2 - Invalid Selection #5 - Too Few Data Bytes #9 - Lower Range Value too High #10 - Lower Range Value too Low #11 - Upper Range Value too High #12 - Upper Range Value too Low #13 - Upper and Lower Range Values Out of Limits #14 - Span too Small #32 - Busy	 *(wrong Units Code)*

Command #36 - Set Primary Variable Upper Range Value *(actual value => Upper Range Value)*

Request Data Bytes	None
Response Data Bytes	None
Response Codes	#0 - No Command-Specific Errors #32 - Busy

Command #37 - Set Primary Variable Lower Range Value *(actual value => Lower Range Value)*

Request Data Bytes	None
Response Data Bytes	None
Response Codes	#0 - No Command-Specific Errors #32 - Busy

Command #38 - Reset Configuration Changed Flag

Request Data Bytes	None
Response Data Bytes	None
Response Codes	#0 - No Command-Specific Errors

Command #40 - Enter/Exit Fixed Primary Variable Current Mode

Request Data Bytes	#0 to #3 -	Fixed P.V. Current Level [mA] 0.0 = Exits the Fixed P.V. Current Mode
Response Data Bytes	#0 to #3 -	Actual Fixed P.V. Current Level [mA]
Response Codes	#0 - No Command-Specific Errors #3 - Passed Parameter too Large #4 - Passed Parameter too Small #5 - Too Few Data Bytes Received	 *(Current > 22mA)* *(Current < 3.8mA)*

Command #41 - Perform Transmitter Self Test

Request Data Bytes	None
Response Data Bytes	None
Response Codes	#0 - No Command-Specific Errors

Command #42 - Perform Master Reset

Request Data Bytes	None
Response Data Bytes	None
Response Codes	#0 - No Command-Specific Errors #32 - Busy

Command #48 - Read Additional Transmitter Status

Request Data Bytes	None	
Response Data Bytes (See 7.3)	#0 to #5 - Transmitter-Specific Status #6 - Operating Mode #1 #7 - Operating Mode #2 #8 to #10 - Analog Output Saturated #11 to #13 - Analog Output Fixed #14 to #24 - Transmitter-Specific Status	 *(0 = normal)* *(0 = normal)*
Response Codes	#0 - No Command-Specific Errors	

Command #54 - Read Transmitter Variable Information

Request Data Bytes	#0	-	Transmitter Variable (See Chap. 9.3)
Response Data Bytes	#0	-	Transmitter Variable
	#1 to #3	-	Transmitter Variable Sensor Serial Number *(000000)*
	#4	-	Units Code for Limits and Minimum Span
	#5 to #8	-	Upper Limit
	#9 to #12	-	Lower Limit
	#13 to #16	-	Damping Value
	#17 to #20	-	Minimum Span
Response Codes	#0	-	No Command-Specific Errors
	#2	-	Invalid Selection
	#5	-	Too Few Data Bytes Received

Command #59 - Write Number of Response Preambles

Request Data Bytes	#0	-	Number of Preambles to be sent with the Response message from Slave to the Master
Response Data Bytes	#0	-	Number of Preambles
Response Codes	#0	-	No Command-Specific Errors
	#3	-	Passed Parameter too Large *(Preambles > 20)*
	#4	-	Passed Parameter too Small *(Preambles < 2)*
	#5	-	Too Few Data Bytes Received

Transmitter-Specific Commands:

Command #128 - Read One Transmitter-Specific Variable

Request Data Bytes	#0	-	Transmitter Variable, 8-bit unsigned integer. Refer to Transmitter Variable Code Table 9.3 in this document
Response Data Bytes	#0	-	Transmitter Variable
	#1	-	Units Code for Transmitter Variable
	#2 to #5	-	Data for selected Transmitter Variable, IEEE 754 format or bytewise selections
Response Codes	#0	-	No Command-Specific Errors
	#2	-	Invalid Selection
	#5	-	Too Few Data Bytes Received

Command #129 - Write One Transmitter-Specific Variable

Request Data Bytes	#0	-Transmitter variable, 8-bit unsigned integer. Refer to transmitter Variable code table 9.3 in this document
	#1	- Units code for transmitter variable
	#2 to #5	- Data for selected transmitter variable, IEEE 754 format or bytewise selections
Response Data Bytes	#0	- Transmitter variable
	#1	- Units code for transmitter variable
	#2 to #5	- Data for selected transmitter variable, IEEE 754 format or bytewise selections
Response Codes	#0	- No Command-Specific Errors
	#2	- Invalid Selection
	#3	- Passed parameter too large
	#4	- Passed parameter too small
	#5	- Too few data bytes Received
	#7	- In Write Protect Mode
	#12	- Invalid Units Code
	#32	- Busy

Command #131 – start product calibration (Calibration by sampling)

Request Data Bytes	none		
Response Data Bytes	none		
Response Codes	#0		No Command Specific Errors
	#5	-	Too Few Data Bytes Received (< 0)
	#16	-	Access Restricted