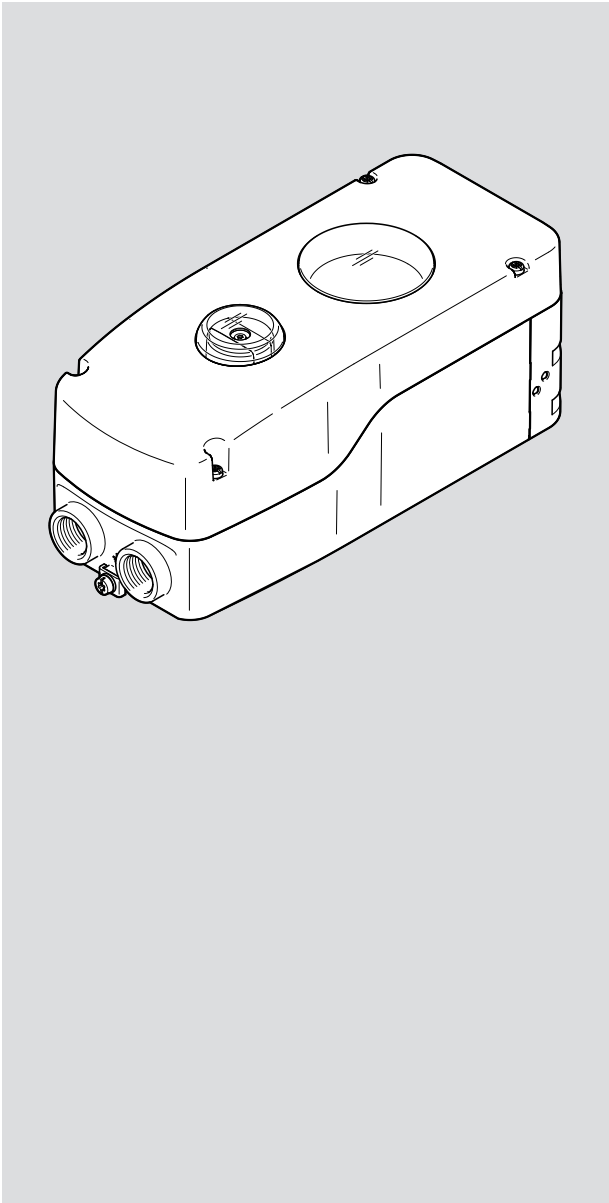
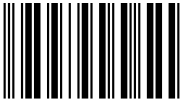


CMSH
Positioner



FESTO

Manual | HART-
Kommunikation



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Translation of the original instructions

HART® is a registered trademark of its respective trademark holder in certain countries.

Table of contents

1	About this document	4
1.1	Purpose of the document.....	4
1.2	Applicable documents.....	4
1.3	HART revisions.....	4
2	HART specification	4
2.1	Dynamic variables (process values).....	4
2.2	Device variables.....	4
2.3	Unit Codes.....	5
2.4	Device status.....	5
2.5	Response codes.....	6
2.6	Command specification.....	6
2.6.1	Universal commands.....	6
2.6.2	Common Practice commands.....	23

1 About this document

1.1 Purpose of the document

This document describes the universal and Common Practice HART commands used in the positioner CMSH. The positioner CMSH also supports device-specific commands. These are not the subject of this document and can only be called up via the EDD (Electronic Device Description) and the DTM (Device Type Manager).

1.2 Applicable documents



All available documents for the product → www.festo.com/sp.

1.3 HART revisions

The positioner CMSH supports the HART revision 7. A change of the HART revision is not possible.

2 HART specification

2.1 Dynamic variables (process values)

The following variables are used in the implementation:

Name	Description	Unit
PV	Setpoint position The value can be inverted depending on the user configuration.	%
SV	Actual position The value can be inverted depending on the user configuration.	%
TV	Deviation: setpoint position minus actual position	%
QV	Device temperature	°C

Tab. 1

2.2 Device variables

The following variables are used in the implementation:

ID	Name	Description	Unit
0	Setpoint value	Setpoint value	mA (%)
1	Setpoint position	Setpoint position	%
2	Actual position	Actual position	%
3	Deviation	Deviation: setpoint position minus actual position	%
4	Supply pressure	Measured pressure: supply pressure	bar (psi, MPa)
5	PressureY2	Measured pressure: working port (2) (p2)	bar (psi, MPa)

ID	Name	Description	Unit
6	PressureY4	Measured pressure: working port (4) (p4)	bar (psi, MPa)
7	Temperature	Device temperature	°C (°F)
244	Setpoint value	Relative value at the analogue input	%
245	Current loop	Analogue input	mA
246	PV	→ 2.1 Dynamic variables (process values)	%
247	SV	→ 2.1 Dynamic variables (process values)	%
248	TV	→ 2.1 Dynamic variables (process values)	%
249	QV	→ 2.1 Dynamic variables (process values)	°C

Tab. 2

2.3 Unit Codes

The following Unit Codes are used in the implementation.

Unit	Unit Code
Pound-force per square inch (psi)	6
Bar (bar)	7
Degrees Celsius (°C)	32
Degrees Fahrenheit (° F)	33
Milliamps (mA)	39
Percent (%)	57
Megapascal (MPa)	237

Tab. 3

2.4 Device status

The following device status bits are used in the implementation.

Bit	Status designation	Description
7	Malfunction of the field device	This Bit is set or deleted by the firmware. This Bit is set when the system monitor detects malfunctions.
6	Configuration changed	This Bit is available internally for each HART-Master. This Bit is reset by the command 38 separately for each HART-Master.
5	Cold start	This Bit is set when a RESET sequence is executed or when the device is switched on for the first time. This Bit is reset by the first HART command.

Bit	Status designation	Description
4	Additional statuses available	This Bit is set when a device-specific status message is present.
3	Analogue input defined	This Bit is set when the loop current is maintained at a fixed value and no longer responds to the process variables.
2	Analogue input saturated	Not available
1	Internal sensor outside the limit values	Not available
0	Variable outside the range	Not available

Tab. 4

2.5 Response codes

The following Response Codes are used in the implementation.

Code	Class	Description
0	Success	—
2	Error	Invalid query address; invalid selection
3	Error	Parameter too large
4	Error	Parameter too small
5	Error	Insufficient data Bytes received
6	Error	Device-specific error
8	Error	Update error
9	Error	Actual and saved configuration counter readings do not match; invalid data code
10	Error	Invalid block code
11	Error	Invalid variable class; cannot be blocked
12	Error	Invalid mode; invalid unit
14	Error	Actual and stored statuses do not match
16	Error	Access restricted
32	Error	Busy
65	Error	Entry not found

Tab. 5

2.6 Command specification

2.6.1 Universal commands

2.6.1.1 Command 0 - Read Unique identifier

Command 0 provides identity information about the field device.

Request Data Bytes

Byte	Format	Description
None	—	—

Tab. 6

Response Data Bytes

Byte	Format	Description
0	Unsigned-8	Response ID (254)
1-2	Enum-16	Extended type of equipment (CMSh: 0xe392)
3	Unsigned-8	Minimum number of preambles required for the request message from HART-Master.
4	Unsigned-8	Main revision number of the HART protocol (7)
5	Unsigned-8	Revision status of the device
6	Unsigned-8	Revision status of the software
7 (5 MSB)	Unsigned-5	Revision status of the hardware
7 (3 LSB)	Enum-3	Physical signalling code (0)
8	Bits	Flags (0)
9-11	Unsigned-24	Device ID (1)
12	Unsigned-8	Minimum number of preambles to be sent with the response message HART-Slave.
13	Unsigned-8	Last device variables Code (7)
14-15	Unsigned-16	Counter of the configuration change
16	Bits	Extended field device status
17-18	Enum-16	Identification code of the manufacturer (Festo: 0x60ce)
19-20	Enum-16	Code of the sales partner (Private Label Distributor) (Festo: 0x60ce)
21	Enum-8	Device profile (1)

Tab. 7

Response Code

Code	Class	Description
0	Success	No command-specific errors

Tab. 8

2.6.1.2 Command 1 - Read Primary Variable

Command 1 returns the value of the primary variables.

Request Data Bytes

Byte	Format	Description
None	—	—

Tab. 9

Response Data Bytes

Byte	Format	Description
0	Enum-8	Unit of the primary variable (%)
1-4	Float	Primary variable (setpoint value)

Tab. 10

Response Code

Code	Class	Description
0	Success	No command-specific errors
6	Error	Device-specific error

Tab. 11

2.6.1.3 Command 2 - Read PV Current And Percent of Range

Command 2 returns the current loop and the related percentage of the range.

Request Data Bytes

Byte	Format	Description
None	—	—

Tab. 12

Response Data Bytes

Byte	Format	Description
0-3	Float	Primary variable: current loop (mA)
4-7	Float	Primary variable: percentage of the range (%)

Tab. 13

Response Code

Code	Class	Description
0	Success	No command-specific errors
6	Error	Device-specific error

Tab. 14

2.6.1.4 Command 3 - Read Dynamic Variables And Loop Current

Command 3 returns the current loop and the predefined dynamic variables.

Request Data Bytes

Byte	Format	Description
None	—	—

Tab. 15

Response Data Bytes

Byte	Format	Description
0-3	Float	Current loop (mA)
4	Enum-8	Primary variable: Unit (%)
5-8	Float	Primary variable (setpoint value)
9	Enum-8	Secondary variable: Unit (%)
10-13	Float	Secondary variable (actual position)
14	Enum-8	Tertiary variable: Unit (%)
15-18	Float	Tertiary variable (position deviation)
19	Enum-8	Quaternary variable: Unit (° C, ° F)
20-23	Float	Quaternary variable (temperature)

Tab. 16

Response Code

Code	Class	Description
0	Success	No command-specific errors
6	Error	Device-specific error

Tab. 17

2.6.1.5 Command 6 - Write Polling Address

Command 6 writes the query address and the current loop mode to the field device.

Request Data Bytes

Byte	Format	Description
0	Unsigned-8	Query address of the device
1	Enum-8	Current loop mode

Tab. 18

Response Data Bytes

Byte	Format	Description
0	Unsigned-8	Query address of the device
1	Enum-8	Current loop mode

Tab. 19

Response Code

Code	Class	Description
0	Success	No command-specific errors
2	Error	Invalid query address
5	Error	Insufficient data Bytes received
6	Error	Device-specific error
12	Error	Invalid mode
16	Error	Access restricted
32	Error	Busy

Tab. 20

2.6.1.6 Command 7 - Read Loop Configuration

Command 7 reads the query address and the current loop mode.

Request Data Bytes

Byte	Format	Description
None	—	—

Tab. 21

Response Data Bytes

Byte	Format	Description
0	Unsigned-8	Query address of the device
1	Enum-8	Current loop mode

Tab. 22

Response Code

Code	Class	Description
0	Success	No command-specific errors
6	Error	Device-specific error

Tab. 23

2.6.1.7 Command 8 - Read Dynamic Variable Classification

Command 8 returns the classification of the dynamic variables.

Request Data Bytes

Byte	Format	Description
None	—	—

Tab. 24

Response Data Bytes

Byte	Format	Description
0	Enum-8	Classification of the primary variable (analytical)
1	Enum-8	Classification of the secondary variable (analytical)
2	Enum-8	Classification of the tertiary variable (analytical)
3	Enum-8	Classification of the quaternary variable (temperature)

Tab. 25

Response Code

Code	Class	Description
0	Success	No command-specific errors
6	Error	Device-specific error

Tab. 26

2.6.1.8 Command 9 - Read Device Variables with Status

Command 9 returns the value and status of up to 8 device variables or dynamic variables.

Request Data Bytes

Byte	Format	Description
0	Unsigned-8	Slot 0: Code of the device variable (0-7, 244-249)
1	Unsigned-8	Slot 1: Code of the device variable (0-7, 244-249)
2	Unsigned-8	Slot 2: Code of the device variable (0-7, 244-249)
3	Unsigned-8	Slot 3: Code of the device variable (0-7, 244-249)
4	Unsigned-8	Slot 4: Code of the device variable (0-7, 244-249)
5	Unsigned-8	Slot 5: Code of the device variable (0-7, 244-249)
6	Unsigned-8	Slot 6: Code of the device variable (0-7, 244-249)
7	Unsigned-8	Slot 7: Code of the device variable (0-7, 244-249)

Tab. 27

Response Data Bytes

Byte	Format	Description
0	Bits	Extended field device status
1	Unsigned-8	Slot 0: Code of the device variable (0-7, 244-249)
2	Enum-8	Slot 0: Classification of the device variable
3	Enum-8	Slot 0: Unit Code of the device variable
4-7	Float	Slot 0: Value of the device variable
8	Bits	Slot 0: Status of the device variable
9	Unsigned-8	Slot 1: Code of the device variable (0-7, 244-249)
10	Enum-8	Slot 1: Classification of the device variable
11	Enum-8	Slot 1: Unit Code of the device variable
12-15	Float	Slot 1: Value of the device variable
16	Bits	Slot 1: Status of the device variable
17	Unsigned-8	Slot 2: Code of the device variable (0-7, 244-249)
18	Enum-8	Slot 2: Classification of the device variable
19	Enum-8	Slot 2: Unit Code of the device variable
20-23	Float	Slot 2: Value of the device variable
24	Bits	Slot 2: Status of the device variable
25	Unsigned-8	Slot 3: Code of the device variable (0-7, 244-249)
26	Enum-8	Slot 3: Classification of the device variable
27	Enum-8	Slot 3: Unit Code of the device variable
28-31	Float	Slot 3: Value of the device variable
32	Bits	Slot 3: Status of the device variable
33	Unsigned-8	Slot 4: Code of the device variable (0-7, 244-249)
34	Enum-8	Slot 4: Classification of the device variable
35	Enum-8	Slot 4: Unit Code of the device variable
36-39	Float	Slot 4: Value of the device variable
40	Bits	Slot 4: Status of the device variable
41	Unsigned-8	Slot 5: Code of the device variable (0-7, 244-249)
42	Enum-8	Slot 5: Classification of the device variable
43	Enum-8	Slot 5: Unit Code of the device variable
44-47	Float	Slot 5: Value of the device variable
48	Bits	Slot 5: Status of the device variable
49	Unsigned-8	Slot 6: Code of the device variable (0-7, 244-249)

Byte	Format	Description
50	Enum-8	Slot 6: Classification of the device variable
51	Enum-8	Slot 6: Unit Code of the device variable
52-55	Float	Slot 6: Value of the device variable
56	Bits	Slot 6: Status of the device variable
57	Unsigned-8	Slot 7: Code of the device variable (0-7, 244-249)
58	Enum-8	Slot 7: Classification of the device variable
59	Enum-8	Slot 7: Unit Code of the device variable
60-63	Float	Slot 7: Value of the device variable
64	Bits	Slot 7: Status of the device variable
65-68	Time	Date-time stamp

Tab. 28

Response Code

Code	Class	Description
0	Success	No command-specific errors
2	Error	Invalid selection
5	Error	Insufficient data Bytes received
6	Error	Device-specific error

Tab. 29

2.6.1.9 Command 11 - Read Unique Identifier Associated with Tag

Command 11 supplies identity information about the field device with associated device identification (TAG).

Request Data Bytes

Byte	Format	Description
0-5	Packed	TAG

Tab. 30

Response Data Bytes

Byte	Format	Description
0	Unsigned-8	Response ID (254)
1-2	Enum-16	Extended type of equipment (CMSh: 0xe392)
3	Unsigned-8	Minimum number of preambles required for the request message from HART-Master.
4	Unsigned-8	Main revision number of the HART protocol (7)

Byte	Format	Description
5	Unsigned-8	Revision status of the device
6	Unsigned-8	Revision status of the software
7 (5 MSB)	Unsigned-5	Revision status of the hardware
7 (3 LSB)	Enum-3	Physical signalling code (0)
8	Bits	Flags (0)
9-11	Unsigned-24	Device ID (1)
12	Unsigned-8	Minimum number of preambles to be sent with the response message HART-Slave.
13	Unsigned-8	Last device variables Code (7)
14-15	Unsigned-16	Counter of the configuration change
16	Bits	Extended field device status
17-18	Enum-16	Identification code of the manufacturer (Festo: 0x60ce)
19-20	Enum-16	Code of the sales partner (Private Label Distributor) (Festo: 0x60ce)
21	Enum-8	Device profile (1)

Tab. 31

Response Code

Code	Class	Description
0	Success	No command-specific errors

Tab. 32

2.6.1.10 Command 12 - Read Message

Command 12 displays the message stored in the device.

Request Data Bytes

Byte	Format	Description
None	—	—

Tab. 33

Response Data Bytes

Byte	Format	Description
0-23	Packed	Message

Tab. 34

Response Code

Code	Class	Description
0	Success	No command-specific errors
6	Error	Device-specific error

Tab. 35

2.6.1.11 Command 13 - Read Tag, Descriptor, Date

Command 13 returns the device identifier (TAG), the description and the date contained in the device.

Request Data Bytes

Byte	Format	Description
None	—	—

Tab. 36

Response Data Bytes

Byte	Format	Description
0-5	Packed	Device identifier (TAG)
6-17	Packed	Description
18-20	Date	Date code

Tab. 37

Response Code

Code	Class	Description
0	Success	No command-specific errors
6	Error	Device-specific error

Tab. 38

2.6.1.12 Command 14 - Read Primary Variable Transducer Information

Command 14 returns the information of the measured-value transducer of the primary variables.

Request Data Bytes

Byte	Format	Description
None	—	—

Tab. 39

Response Data Bytes

Byte	Format	Description
0-2	Unsigned-24	PV: Serial number of the measured-value transducer (0)
3	Enum-8	PV: Unit Code for measured-value transducer limit value and minimum range (mA)
4-7	Float	PV: Upper limit value of the measured-value transducer
8-11	Float	PV: Lower limit value of the measured-value transducer
12-15	Float	PV: Minimum range

Tab. 40

Response Code

Code	Class	Description
0	Success	No command-specific errors
6	Error	Device-specific error

Tab. 41

2.6.1.13 Command 15 - Read Device Information

Command 15 returns additional information about the device.

Request Data Bytes

Byte	Format	Description
None	—	—

Tab. 42

Response Data Bytes

Byte	Format	Description
0	Enum-8	PV: Code of the alarm
1	Enum-8	PV: Code of the transmission function (250)
2	Enum-8	PV: Unit Code for the upper and lower range value (mA)
3-6	Float	PV: Upper range value
7-10	Float	PV: Lower range value
11-14	Float	PV: Cushioning value (0.0)
15	Enum-8	PV: Write protection code (251)
16	Enum	Reserved (250)
17	Bits	PV: Flag of the analogue channel (1)

Tab. 43

Response Code

Code	Class	Description
0	Success	No command-specific errors
6	Error	Device-specific error

Tab. 44

2.6.1.14 Command 16 - Read Final Assembly Number

Command 16 returns the Final Assembly number assigned to the device.

Request Data Bytes

Byte	Format	Description
None	—	—

Tab. 45

Response Data Bytes

Byte	Format	Description
0-2	Unsigned-24	Final Assembly number

Tab. 46

Response Code

Code	Class	Description
0	Success	No command-specific errors
6	Error	Device-specific error

Tab. 47

2.6.1.15 Command 17 - Write Message

Command 17 writes a message to the device.

Request Data Bytes

Byte	Format	Description
0-23	Packed	A message that can be used by HART-Master.

Tab. 48

Response Data Bytes

Byte	Format	Description
0-23	Packed	Message

Tab. 49

Response Code

Code	Class	Description
0	Success	No command-specific errors
5	Error	Insufficient data Bytes received
6	Error	Device-specific error
16	Error	Access restricted
32	Error	Busy

Tab. 50

2.6.1.16 Command 18 - Write Tag, Descriptor, Date

Command 18 writes the device identifier (TAG), the description and the date to the device.

Request Data Bytes

Byte	Format	Description
0-5	Packed	Device identifier (TAG)
6-17	Packed	Description
18-20	Date	Date code

Tab. 51

Response Data Bytes

Byte	Format	Description
0-5	Packed	Device identifier (TAG)
6-17	Packed	Description
18-20	Date	Date code

Tab. 52

Response Code

Code	Class	Description
0	Success	No command-specific errors
5	Error	Insufficient data Bytes received
6	Error	Device-specific error
9	Error	Invalid date code
16	Error	Access restricted
32	Error	Busy

Tab. 53

2.6.1.17 Command 19 - Write Final Assembly Number

Command 19 writes the Final Assembly number to the device.

Request Data Bytes

Byte	Format	Description
0-2	Unsigned-24	Final Assembly number

Tab. 54

Response Data Bytes

Byte	Format	Description
0-2	Unsigned-24	Final Assembly number

Tab. 55

Response Code

Code	Class	Description
0	Success	No command-specific errors
5	Error	Insufficient data Bytes received
6	Error	Device-specific error
16	Error	Access restricted
32	Error	Busy

Tab. 56

2.6.1.18 Command 20 - Read Long Tag

Command 20 returns the device identifier (Long TAG).

Request Data Bytes

Byte	Format	Description
None	—	—

Tab. 57

Response Data Bytes

Byte	Format	Description
0-31	Latin-1	Device identifier (Long TAG)

Tab. 58

Response Code

Code	Class	Description
0	Success	No command-specific errors
6	Error	Device-specific error

Tab. 59

2.6.1.19 Command 21 - Read Unique Identifier Associated with Long Tag

Command 21 returns identity information about the field device with associated device identifier (Long TAG).

Request Data Bytes

Byte	Format	Description
0-31	Latin-1	Device identifier (Long TAG)

Tab. 60

Response Data Bytes

Byte	Format	Description
0	Unsigned-8	Response ID (254)
1-2	Enum-16	Extended type of equipment (CMSh: 0xe392)
3	Unsigned-8	Minimum number of preambles required for the request message from HART-Master.
4	Unsigned-8	Main revision number of the HART protocol (7)
5	Unsigned-8	Revision status of the device
6	Unsigned-8	Revision status of the software
7 (5 MSB)	Unsigned-5	Revision status of the hardware
7 (3 LSB)	Enum-3	Physical signalling code (0)
8	Bits	Flags (0)
9-11	Unsigned-24	Device ID (1)
12	Unsigned-8	Minimum number of preambles to be sent with the response message HART-Slave.
13	Unsigned-8	Last device variables Code (7)
14-15	Unsigned-16	Counter of the configuration change
16	Bits	Extended field device status
17-18	Enum-16	Identification code of the manufacturer (Festo: 0x60ce)

Byte	Format	Description
19-20	Enum-16	Code of the sales partner (Private Label Distributor) (Festo: 0x60ce)
21	Enum-8	Device profile (1)

Tab. 61

Response Code

Code	Class	Description
0	Success	No command-specific errors

Tab. 62

2.6.1.20 Command 22 - Write Long Tag

Command 22 writes the device identifier (Long TAG) to the device.

Request Data Bytes

Byte	Format	Description
0-31	Latin-1	Device identifier (Long TAG)

Tab. 63

Response Data Bytes

Byte	Format	Description
0-31	Latin-1	Device identifier (Long TAG)

Tab. 64

Response Code

Code	Class	Description
0	Success	No command-specific errors
5	Error	Insufficient data Bytes received
6	Error	Device-specific error
16	Error	Access restricted
32	Error	Busy

Tab. 65

2.6.1.21 Command 38 - Reset Configuration Changed Flag

Command 38 resets the Bit of the configuration change.

Request Data Bytes

Byte	Format	Description
0-1	Unsigned-16	Bit of the configuration change

Tab. 66

Response Data Bytes

Byte	Format	Description
0-1	Unsigned-16	Bit of the configuration change

Tab. 67

Response Code

Code	Class	Description
0	Success	No command-specific errors
5	Error	Insufficient data Bytes received
6	Error	Device-specific error
9	Error	Actual and saved configuration counter readings do not match; invalid data code
16	Error	Access restricted

Tab. 68

2.6.1.22 Command 48 - Read Additional Device Status

Command 48 returns device status information that is not contained in the Response Code or Byte of the device status.

Request Data Bytes

Byte	Format	Description
0-5	Bits	Device-specific status
6	Bits	Extended status of the field device
7	Bits	Operating mode of the device
8	Bits	Standardised status 0
9	Bits	Standardised status 1
10	Bits	Analogue channel saturated
11	Bits	Standardised status 2
12	Bits	Standardised status 3

Byte	Format	Description
13	Bits	Constant value at the analogue channel
14-24	Bits	Device-specific status

Tab. 69

Response Data Bytes

Byte	Format	Description
0-5	Bits	Device-specific status
6	Bits	Extended status of the field device
7	Bits	Operating mode of the device
8	Bits	Standardised status 0
9	Bits	Standardised status 1
10	Bits	Analogue channel saturated
11	Bits	Standardised status 2
12	Bits	Standardised status 3
13	Bits	Constant value at the analogue channel
14-24	Bits	Device-specific status

Tab. 70

Response Code

Code	Class	Description
0	Success	No command-specific errors
5	Error	Insufficient data Bytes received
6	Error	Device-specific error
14	Error	Error during status synchronisation

Tab. 71

2.6.2 Common Practice commands

2.6.2.1 Command 33 - Read Device Variables

Command 33 enables a HART-Master to query the value of up to 4 device variables.

Request Data Bytes

Byte	Format	Description
0	Unsigned-8	Slot 0: Code of the device variable
1	Unsigned-8	Slot 1: Code of the device variable

Byte	Format	Description
2	Unsigned-8	Slot 2: Code of the device variable
3	Unsigned-8	Slot 3: Code of the device variable

Tab. 72

Response Data Bytes

Byte	Format	Description
0	Unsigned-8	Slot 0: Code of the device variable
1	Enum	Slot 0: Unit Code of the device variable
2-5	Float	Slot 0: Value of the device variable
6	Unsigned-8	Slot 1: Code of the device variable
7	Enum	Slot 1: Unit Code of the device variable
8-11	Float	Slot 1: Value of the device variable
12	Unsigned-8	Slot 2: Code of the device variable
13	Enum	Slot 2: Unit Code of the device variable
14-17	Float	Slot 2: Value of the device variable
18	Unsigned-8	Slot 3: Code of the device variable
19	Enum	Slot 3: Unit Code of the device variable
20-23	Float	Slot 3: Value of the device variable

Tab. 73

Response Code

Code	Class	Description
0	Success	No command-specific errors
2	Error	Invalid selection
5	Error	Insufficient data Bytes received
6	Error	Device-specific error

Tab. 74

2.6.2.2 Command 53 - Write Device Variable Units

Command 53 specifies the units in which the selected device variable is returned.

Request Data Bytes

Byte	Format	Description
0	Unsigned-8	Code of the device variable
1	Enum	Unit Code of the device variable

Tab. 75

Response Data Bytes

Byte	Format	Description
0	Unsigned-8	Code of the device variable
1	Enum	Unit Code of the device variable

Tab. 76

Response Code

Code	Class	Description
0	Success	No command-specific errors
5	Error	Insufficient data Bytes received
6	Error	Device-specific error
11	Error	Invalid Code the device variable
12	Error	Invalid Unit Code
16	Error	Access restricted
32	Error	Busy

Tab. 77

2.6.2.3 Command 59 - Write Number Preambles

Command 59 specifies the number of asynchronous preambles Bytes sent by a device before the start of a response message.

Request Data Bytes

Byte	Format	Description
0	Unsigned-8	Number of preambles that are sent with the response message from HART-Slave to the HART-Master.

Tab. 78

Response Data Bytes

Byte	Format	Description
0	Unsigned-8	Number of preambles that are sent with the response message from HART-Slave to the HART-Master.

Tab. 79

Response Code

Code	Class	Description
0	Success	No command-specific errors
3	Error	Parameter too large
4	Error	Parameter too small
5	Error	Insufficient data Bytes received
6	Error	Device-specific error
16	Error	Access restricted
32	Error	Busy

Tab. 80

2.6.2.4 Command 71 - Lock Device

Command 71 blocks a device so that no changes can be made from a local operator panel or from another HART-Master.

Request Data Bytes

Byte	Format	Description
0	Enum	Blocking code

Tab. 81

Response Data Bytes

Byte	Format	Description
0	Enum	Blocking code

Tab. 82

Response Code

Code	Class	Description
0	Success	No command-specific errors
5	Error	Insufficient data Bytes received
6	Error	Device-specific error
10	Error	Invalid block code

Code	Class	Description
11	Error	Blocking not possible
16	Error	Access restricted

Tab. 83

2.6.2.5 Command 76 - Read Lock Device State

Command 76 returns the current blocking status of the device.

Request Data Bytes

Byte	Format	Description
None	—	—

Tab. 84

Response Data Bytes

Byte	Format	Description
0	Bits	Blocking status

Tab. 85

Response Code

Code	Class	Description
0	Success	No command-specific errors
6	Error	Device-specific error

Tab. 86

2.6.2.6 Command 520 - Read Process Unit Tag

Command 520 returns the identification of the process unit (Process Unit TAG).

Request Data Bytes

Byte	Format	Description
None	—	—

Tab. 87

Response Data Bytes

Byte	Format	Description
0-31	Latin-1	Identification of the process unit (Process Unit TAG)

Tab. 88

Response Code

Code	Class	Description
0	Success	No command-specific errors
6	Error	Device-specific error

Tab. 89

2.6.2.7 Command 521 - Write Process Unit Tag

Command 521 writes the identification of the process unit (Process Unit TAG) to the device.

Request Data Bytes

Byte	Format	Description
0-31	Latin-1	Identification of the process unit (Process Unit TAG)

Tab. 90

Response Data Bytes

Byte	Format	Description
0-31	Latin-1	Identification of the process unit (Process Unit TAG)

Tab. 91

Response Code

Code	Class	Description
0	Success	No command-specific errors
5	Error	Insufficient data Bytes received
6	Error	Device-specific error
16	Error	Access restricted
32	Error	Busy

Tab. 92

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