ABB MEASUREMENT & ANALYTICS | INTERFACE DESCRIPTION

PositionMaster EDP300

Digital Positioner

HART Protocol 7.0
Valid for software levels from 01.00.00

Introduction

The PositionMaster EDP300 is an electronically configurable positioner with communication capabilities designed for mounting to linear or rotary actuators.
Advanced performance 4 to 20 mA with HART.

For more information

Additional documentation on PositionMaster EDP300 is available to download free of charge at www.abb.com/positioners.
Alternatively simply scan this code:

Table of contents

1 HART commands overview

This overview lists all HART commands which can be used by customers. It includes universal and common practice commands, as well as special ones such as slot commands, among others.

Universal commands

Command 0 – Read Transmitter Unique Identifier

Command 0	Mnemonic	Offset	Size	Datatype
Request Data Bytes	None	-	-	-
Response Data Bytes	Device Type Code for Expansion = 254	#0	1	USIGN8
	Manufacturer Identification Code = 26	#1	1	USIGN8
	Manufacturer Device Type = 141	#2	1	USIGN8
	Number of Request Preambles = 5	#3	1	USIGN8
	Revision Level of Universal Command = 7	#4	1	USIGN8
	Device Revision Level = X	#5	1	USIGN8
	Software Revision Level = XX	#6	1	USIGN8
	Hardware Revision Level = XX	#7	1	USIGN8
	Flags, none defined at this time = 0	#8	1	USIGN8
	Device Identification Number	#9	1	USIGN8
	Device Identification Number	#10	1	USIGN8
	Device Identification Number	#11	1	USIGN8
Response Code	0 ‘No Command Specific Error’			
	5 ‘Incorrect Byte Count’			

Command 1 – Read Primary Variable

Command 1	Mnemonic	Offset	Size	Datatype
Request Data Bytes	None	-	-	-
Response Data Bytes	Primary Variable Unit Code	#0	1	USIGN8
	Primary Variable	#1 to 4	4	FLOAT
Response Code	0 ‘No Command Specific Error’			
	5 ‘Incorrect Byte Count’			

Command 2 – Read Current and Percent of Range

Command 2	Mnemonic	Offset	Size	Datatype
Request Data Bytes	None	-	-	-
Response Data Bytes	Analog Output Current mA	#0 to 3	4	FLOAT
	Analog Output Percent	#4 to 7	4	FLOAT
Response Code	0 ‘No Command Specific Error’			
	5 ‘Incorrect Byte Count’			

… 1 HART commands overview

… Universal commands

Command 3 – Read all dynamic Variables and Current

Command 3	Mnemonic	Offset	Size	Datatype
Request Data Bytes	None	-	-	-
Response Data Bytes	Analog Output Current	#0 to 3	4	FLOAT
	Primary Variable Unit Code	#4	5	USIGN8
	Primary Variable [Setpoint]	#5 to 8		FLOAT
	Secondary Variable Unit Code	#9	5	USIGN8
	Secondary Variable [Calculated Setpoint]	#10 to 13		FLOAT
	Tertiary Variable Unit Code	#14	5	USIGN8
	Tertiary Variable [Calculated Setpoint]	#15 to 18		FLOAT
	4th Variable Unit Code	#19	5	USIGN8
	4th Variable [Position]	#20 to 23		USIGN8
Response Code	0 ‘No Command Specific Error’			
	5 ‘Incorrect Byte Count’			

Command 6 – Write Polling Address

Command 6	Mnemonic	Offset	Size	Datatype
Request Data Bytes	Polling Address of Device	#0	1	USIGN8
Response Data Bytes	Polling Address of Device	#0	1	USIGN8
Response Code	0 ‘No Command Specific Error’			
	2 ‘Invalid Selection’			
	5 ‘Incorrect Byte Count’			

Command 11 – Read Unique Identifier Associated With Tag

Command 11	Mnemonic	Offset	Size	Datatype
Request Data Bytes	Tag	#0	6	PACKED ASCII
Response Data Bytes	Device Type Code for Expansion = 254	#0	1	USIGN8
	Manufacturer Identification Code = 26	#1	1	USIGN8
	Manufacturer Device Type = 141	#2	1	USIGN8
	Number of Request Preambles = 8	#3	1	USIGN8
	Revision Level of Universal Command = 7	#4	1	USIGN8
	Revision Level of Transmitter Document = X	#5	1	USIGN8
	Software Revision Level = XX	#6	1	USIGN8
	Hardware Revision Level = XX	#7	1	USIGN8
	Flags, none defined at this time = 0	#8	1	USIGN8
	Device Identification Number	#9	1	USIGN8
	Device Identification Number	#10	1	USIGN8
	Device Identification Number	#11	1	USIGN8
Response Code	0 ‘No Command Specific Error’			
	5 ‘Incorrect Byte Count’			

Command 12 – Read Message

Command 12	Mnemonic	Offset	Size	Datatype
Request Data Bytes	None	-	-	-
Response Data Bytes	HART Message	#0 to 23	24	PACKED ASCII
Response Code	0 'No Command Specific Error'			
	5 'Incorrect Byte Count'			

Command 13 – Read Tag, Descriptor, Date

Command 13	Mnemonic	Offset	Size	Datatype
Request Data Bytes	None			
Response Data Bytes	HART Tag	#0 to 5	6	PACKED ASCII
	HART Descriptor	#6 to 17	12	PACKED ASCII
	HART Day	#18	1	USIGN8
	HART Month	#19	1	USIGN8
	HART Year	#20	1	USIGN8
Response Code	0 'No Command Specific Error'			
	5 'Incorrect Byte Count'			

Command 14 – Read Primary Variable Sensor Information

Command 14	Mnemonic	Offset	Size	Datatype
Request Data Bytes	None			
Response Data Bytes	Sensor Serial Number = 0	#0 to 2	3	USIGN16
	Sensor Limits / Min Span Units = Unit	#1	1	USIGN8
	Upper Sensor Limit	#3 to 7	5	FLOAT
	Lower Sensor Limit	#8 to 11	4	FLOAT
	Minimum Span	#12 to 15	4	FLOAT
Response Code	0 'No Command Specific Error'			
	5 'Incorrect Byte Count'			

… 1 HART commands overview

… Universal commands

Command 15 – Read Primary Variable Output Information

Command 15	Mnemonic	Offset	Size	Datatype
Request Data Bytes	None			
Response Data Bytes	Alarm Select Code ≥ Low = 0, High = 1	#0	1	USIGN8
	Primary Variable Transfer Function = HART Pv Transfer Function = 0	#1	1	USIGN8
	Primary Variable Range Values Units	#2	1	USIGN8
	Primary Variable Upper Range Value	#3 to 6	4	FLOAT
	Primary Variable Lower Range Value HART Pv Lower Range Value = 0	#7 to 10	4	FLOAT
	Primary Variable Damping Value = Damping	#11 to 14	4	FLOAT
	Write Protect Code = HART Write Protect = 251	#15	1	USIGN8
	Private Label Distributor Code = HART Private Label Distributor = 26	#16	1	USIGN8
Response Code	0 ‘No Command Specific Error’			
	5 ‘Incorrect Byte Count’			

Command 16 – Read Final Assembly Number

Command 16	Mnemonic	Offset	Size	Datatype
Request Data Bytes	None			
Response Data Bytes	HART Final Assembly Number	#0 to 2	3	STRINGV
Response Code	0 ‘No Command Specific Error’			
	5 ‘Incorrect Byte Count’			

Command 17 – Write Message

Command 17	Mnemonic	Offset	Size	Datatype
Request Data Bytes	HART Message	#0 to 23	24	PC ASCII
Response Data Bytes	HART Message	#0 to 23	24	PC ASCII
Response Code	0 ‘No Command Specific Error’			
	5 ‘Incorrect Byte Count’			

Command 18 – Write Tag, Descriptor, Date

Command 18	Mnemonic	Offset	Size	Datatype
Request Data Bytes	Tag = HART Tag	#0 to 5	6	PC ASCII
	Descriptor = HART Descriptor	#6 to 17	12	PC ASCII
	Day = HART Date Day	#18	1	USIGN8
	Month = HART Date Month	#19	1	USIGN8
	Year = HART Date Year	#20	1	USIGN8
Response Data Bytes	Tag = HART Tag	#8 to 5	6	PC ASCII
	Descriptor = HART Descriptor	#6 to 17	12	PC ASCII
	Day = HART Date Day	#18	1	USIGN8
	Month = HART Date Month	#19	1	USIGN8
	Year = HART Date Year	#20	1	USIGN8
Response Code	0 ‘No Command Specific Error’			
	5 ‘Incorrect Byte Count’			

Command 19 – Write Final Assembly Number

Command 19	Mnemonic	Offset	Size	Datatype
Request Data Bytes	Final Assembly Number	#0 to 2	3	STRINGV
Response Data Bytes	Final Assembly Number	#0 to 2	3	STRINGV

Command 20 – Write Final Assembly Number

Command 20	Mnemonic	Offset	Size	Datatype
Request Data Bytes	None	#0	3	STRINGV
Response Data Bytes	Long tag	#0 to 31	3	STRINGV

Command 22 – Write Final Assembly Number

Command 22	Mnemonic	Offset	Size	Datatype
Request Data Bytes	Long tag	#0 to 31	3	STRINGV
Response Data Bytes	Long tag	#0 to 31	3	STRINGV

… 1 HART commands overview

Common Practice Commands

Command 33 – Read Transmitter Variables

With this command, it is possible to initiate a request using one, two, three or four of the four available slot numbers. The request can be initiated using the same slot number four times or using different slot numbers.
If a requested device variable is not supported in the field device, then the corresponding value must be set to '0x7F, 0xA0, 0x00, 0x00' and the unit code must be set to '250' (= not set).

Command 33	Slot	Mnemonic	Offset	Size	Datatype
Request Data Bytes	0	Transmitter Variable	–	1	–
	0, 1	Transmitter Variable	–	2	
	0, 1, 2	Transmitter Variable	–	3	
	0, 1, 2, 3	Transmitter Variable	–	4	
Response Data Bytes	0	Slot Number = 0		1	USIGN8
		Unit Code = Percentage		1	USIGN8
		Slot #0 Variable = Setpoint		4	FLOAT
	1	Slot Number = 1		1	USIGN8
		Unit Code = Percentage		1	USIGN8
		Slot #0 Variable = Calculated Setpoint		4	FLOAT
	2	Slot Number = 2		1	USIGN8
		Unit Code		1	USIGN8
		Slot #0 Variable = Calculated Setpoint		4	FLOAT
	3	Slot Number = 3		1	USIGN8
		Unit Code = Percentage		4	USIGN8
		Slot #0 Variable = Position		1	FLOAT
	4	Slot Number = 4		1	USIGN8
		Unit Code = Percentage		1	USIGN8
		Slot #0 Variable = Calculated Position		4	FLOAT
	5	Slot Number = 5		1	USIGN8
		Unit Code = Bar		1	USIGN8
		Slot #0 Variable = Pressure Y1		4	FLOAT
	6	Slot Number = 6		1	USIGN8
		Unit Code = Bar		1	USIGN8
		Slot #0 Variable = Pressure Y2		4	FLOAT
	7	Slot Number = 7		1	USIGN8
		Unit Code = Bar		1	USIGN8
		Slot #0 Variable = Pressure DP		4	FLOAT
	244	Slot Number = 244		1	USIGN8
		Unit Code = Percentage		1	USIGN8
		Slot #0 Variable = Setpoint		4	FLOAT

Command 33	Slot	Mnemonic	Offset	Size	Datatype
Response Data Bytes	245	Slot Number = 245			
		Unit Code = mA			
		Slot #0 Variable = Setpoint			
	246	Slot Number = 246			
		Unit Code = Percentage			
		Slot #0 Variable = Setpoint			
	247	Slot Number = 247			
		Unit Code = Percentage			
		Slot #0 Variable = Calculated Setpoint			
	248	Slot Number = 248			
		Unit Code			
		Slot #0 Variable = Calculated Setpoint			
Response Code		0 ‘No Command Specific Error’			
		5 ‘Incorrect Byte Count’			

Command 38 – Reset Configuration Changed Flag

Command 38	Mnemonic	Offset	Size	Datatype
Request Data Bytes	None			VOID
Response Data Bytes	None			VOID
Response Code	0 ‘No Command Specific Error’			
	5 ‘Incorrect Byte Count’			

… 1 HART commands overview

… Common Practice Commands

Command 48 – Read Additional Transmitter Status

Command 48	Slot	Mnemonic	Offset	Size	Datatype
Request Data Bytes	None				-
Byte 0	0x01	Position measurement failure	#0	1	USIGN8
	0x02	Valve blocked			
	0x04	Positioning time out			
	0x08	Positioning unstable			
	0x10	Positioning out of travel range			
	0x20	Zero point displacement			
	0x40	Kp up exceeded			
	0x80	Kp down exceeded			
Byte 1	0x01	Setpoint failure electronics	#1	1	USIGN8
	0x02	Setpoint out of range			
	0x04	Device not calibrated			
	0x08	Controller inactive			
	0x10	Stroke counter limit exceeded			
	0x20	Travel counter limit exceeded			
	0x40	Electronic temperature measurment failure			
	0x80	Electronic temperature out of limits			
Byte 2	0x01	Configuration data failure	#2	1	USIGN8
	0x02	Electronics- NV chip defect			
	0x04	Non volatile date defect			
	0x08	Leakage during operation			
	0x10	Leakage chamber 1			
	0x20	Leakage chamber 2			
	0x40	Leakage in actuator			
	0x80	Pressure NV data defect			
Byte 3	0x01	Pressure NV chip defect	#3	1	USIGN8
	0x02	Overpressure from supply			
	0x04	Supply pressure limit low exceeded			
	0x08	Supply pressure limit high exceeded			
	0x10	Pressure hammer from supply			
	0x20	Tv up exceeded			
	0x40	Tv down exceeded			
	0x80	Y-Offset up exceeded			

Command 48	Slot	Mnemonic	Offset	Size	Datatype
Byte 4	0x01	Y-Offset down exceeded	#4	1	USIGN8
	0x02	Friction limit exceeded			
	0x04	Stiction limit exceeded			
	0x08	Universal input out of range			
	0x10	Partial stroke failed			
	0x20	Option module defect			
	0x40	Universal input limit exceeded			
	0x80	Analog output simulation active			
Byte 5	0x01	Binary output simulation active	#4	1	USIGN8
	0x02	Fail safe active – via device error			
	0x04	Fail safe active – via user			
	0x08	Binary input active			
	0x10	Switchpoint 1 exceeded			
	0x20	Switchpoint 2 exceeded			
	0x40	Analog output supply fault			
	0x80	Pressure measurment defect			
Byte 6	reserved				
Byte 7	reserved				
Byte 8	reserved				
Byte 9	reserved				
Byte 10	reserved		#10	1	USIGN8
Byte 11	reserved		#11	1	USIGN8
Byte 12	reserved		#12	1	USIGN8
Byte 13	reserved		#13	1	USIGN8
Byte 14	reserved		#14	1	USIGN8
Byte 15	reserved		#15	1	USIGN8
Byte 16	reserved		#16	1	USIGN8
Byte 17	reserved		#17	1	USIGN8
Byte 18	reserved		#18	1	USIGN8
Byte 19	reserved		#19	1	USIGN8
Byte 20	reserved		#20	1	USIGN8
Byte 21	reserved		#21	1	USIGN8
Byte 22	reserved		#22	1	USIGN8
Byte 23	reserved		#23	1	USIGN8
Response Code	0 to 50 ‘Device Status’				

ABB Limited
Measurement & Analytics
Howard Road, St. Neots
Cambridgeshire, PE19 8EU
UK
Tel: +44 (0)870 600 6122
Fax: +44 (0)1480 213 339
Mail: enquiries.mp.uk@gb.abb.com

ABB Inc.
Measurement & Analytics
125 E. County Line Road
Warminster, PA 18974
USA
Tel: +1 215 674 6000
Fax: +1 215 674 7183

ABB Automation Products GmbH
Measurement & Analytics
Schillerstr. 72
32425 Minden
Germany
Tel: +49 571 830-0
Fax: +49 571 830-1806

abb.com/positioners

3KXE341010R4001

COM/EDP300/HART-EN Rev. A 01.2018