

TZIDC

Digital Positioner



HART Protocol 7.0

Valid for software levels from 05.00

Introduction

The TZIDC represents the digital, intelligent positioner for communication via HART within the positioner family.

For more information

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



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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 = 22	#1	1	USIGN8
	Manufacturer Device Type = 65	#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
	Number of Response preamble = 5	#12	1	USIGN8
	Maximum number of device variables	#13	1	USIGN8
	Configuration change counter	#14 to 15	2	USIGN16
	Extended field device status	#16	1	USIGN8
	Manufacturer identification code	#17 to 18	2	USIGN16
	Private label distributor code	#19 to 20	2	USIGN16
	Device profile	#21	1	USIGN8

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'			

... 1 HART commands overview

... Universal commands

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'			

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 [Position]	#5 to 8		FLOAT
	Secondary Variable Unit Code	#9	5	USIGN8
	Secondary Variable [Setpoint]	#10 to 13		FLOAT
	Tertiary Variable Unit Code	#14	5	USIGN8
	Tertiary Variable [Electr. Temperature]	#15 to 18		FLOAT
	4th Variable Unit Code	#19	5	USIGN8
Response Code	4th Variable [Control Deviation]	#20 to 23		USIGN8
	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 = 22	#1	1	USIGN8
	Manufacturer Device Type = 65	#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'			

... 1 HART commands overview

... Universal commands

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'			

Command 15 – Read Primary Variable Output Information

Command 15	Mnemonic	Offset	Size	Datatype
Request Data Bytes	None			
Response Data Bytes	Alarm Select Code \geq 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 = Position		4	FLOAT
	1	Slot Number = 1		1	USIGN8
		Unit Code = mA		1	USIGN8
		Slot #0 Variable = Current IN		4	FLOAT
	2	Slot Number = 2		1	USIGN8
		Unit Code		1	USIGN8
		Slot #0 Variable = Electr. Temperature		4	FLOAT
	3	Slot Number = 3		1	USIGN8
		Unit Code = Percentage		4	USIGN8
		Slot #0 Variable = Control Deviation		1	FLOAT
	4	Slot Number = 4		1	USIGN8
		Unit Code = mA		1	USIGN8
		Slot #0 Variable = Analog Out (With option)		4	FLOAT
	5	Slot Number = 5		1	USIGN8
Unit Code = Percent			1	USIGN8	
Slot #0 Variable = Analog Out (With option)			4	FLOAT	
244	Slot Number = 244		1	USIGN8	
	Unit Code = mA		1	USIGN8	
	Slot #0 Variable = Current in		4	FLOAT	
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'		

Command 48 – Read Additional Transmitter Status

Command 48	Slot	Mnemonic	Offset	Size	Datatype
Request Data Bytes	None				-
Byte 5	0x01	Leakage detected	#5	1	USIGN8
	0x02	Setpoint out of range			
	0x04	Position out of range			
	0x08	Not following current			
	0x10	Positioning time out			
	0x20	Movement counter limit exceeded			
	0x40	Travel counter limit exceeded			
	0x80	Device error			
Byte 6	Reserved 0		#6	1	USIGN8
Byte 7	Reserved 1		#7	1	USIGN8
Byte 8	Reserved 2		#8	1	USIGN8
Byte 9	Reserved 3		#9	1	USIGN8
Byte 10	reserved 4		#10	1	USIGN8
Byte 11	reserved 5		#11	1	USIGN8
Byte 12	reserved 6		#12	1	USIGN8
Byte 13	reserved 7		#13	1	USIGN8
Byte 14	reserved 7		#14	1	USIGN8
Byte 15	reserved 7		#15	1	USIGN8
Byte 16	reserved 7		#16	1	USIGN8
Byte 17	reserved 7		#17	1	USIGN8
Byte 18	reserved 7		#18	1	USIGN8
Byte 19	reserved 7		#19	1	USIGN8
Byte 20	reserved 7		#20	1	USIGN8
Byte 21	reserved 7		#21	1	USIGN8
Byte 22	reserved 7		#22	1	USIGN8
Byte 23	reserved 7		#23	1	USIGN8
Byte 24	0x01	Switch point 1 exceeded	#24	1	USIGN8
	0x02	Switch point 2 exceeded			
	0x04	Set Point out of range			
	0x08	Not following current			
	0x10	Configuration failure			
	0x20	Digital IN is active			
	0x40	Simulation active			
	0x80	Fail safe active			
Response Code	0 'No Command Specific Error'				
	5 'Incorrect Byte Count'				

Notes

Notes



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