XFOX761 Driver Manual

Foxboro 761CNA/761CSA Single Station Micro Controllers Driver

CPKSoft Engineering

Process Monitoring and Industrial Automation Software

Index

1. Introduction

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This driver is included with all unlimited licenses of TAS-HMITalk. It is not sold separately. It requires the TAS-HMITalk ActiveX to work, therefore it cannot be used as a stand-alone driver.

If you use this driver in your applications, you need to include the xfox761.tlk in the set of files that you distribute. This file must be located in the same folder where the hmitalk.ocx file is registered in order to be found by the activex when the applications are executed.

The source-code for the xfox761.tlk driver is available in plain-C language for additional USD 699 if you own a license of TAS-HMITalk 8.04 or higher.

Refer to the following link to visit the xfox761 driver page at CPKSoft Engineering website: http://www.cpksoft.com/tabid/55/ProductID/37/PageIndex/1/Default.aspx.

Visit this link if you want to see a complete list of drivers that are currently available for TAS-HMITak: http://www.cpksoft.com/Drivers/tabid/55/Default.aspx.

Also, refer to this link if you are interested in purchasing a license of the most recent version of TAS-HMITalk: http://www.cpksoft.com/Products/tabid/54/Default.aspx.

We welcome your comments about this document. You can reach us by e-mail at contact @ cpksoft.com.

2. Driver details

2.1. Driver overview

XFOX761 driver allows you to communicate with the FOXBORO 761CNA and 761CSA SINGLE STATION MICRO Controllers. This driver has been developed according to the Foxboro Instruction Book 2975.

Cable Wiring:
Use pins 24 and 25 in the back of the controller to connect to the RS485 serial port of the controller. Check this with your controller's manual to see if this pins have not changed from previous versions of the controller. Use an RS-232/485 converter to connect the controller to your PC. Set the CommHoldRTSWhileTransmitting and CommHoldRTSWhileReceiving properties to On. Make sure that the controller station address, baudrate, parity, databits and stop bits are correctly configured in the driver.

2.2. Supported devices

This driver can communicate with these devices, but is not necessarily limited to this list:

FOXBORO 761CNA Single Station Micro Controllers
FOXBORO 761CSA Single Station Micro Controllers

3. Command list

3.1. Read Current Set Point, Measurement, Output, Status and Alarm Values

Description of this command:

Reads the current values for the set point, measurement, and output, plus additional controller status and alarm information.

Type of data handled by this command:

Analog Input

Number of points accepted by this command:

1-19

Meaning of the DriverP0 parameter:

Controller Address (0-99).

Meaning of the DriverP1 parameter:

11

Values that are returned:

Value in PointValue (0) = Primary controller set point.
Value in PointValue (1) = Primary controller measured value.
Value in PointValue (2) = Primary controller output.
Value in PointValue (3) = FLAG BYTE/Bit 0: User interface entered indicator:
0 = not entered
1 = entered subsequent to last host acknowledgment
Value in PointValue (4) = FLAG BYTE/Bit 1: Primary A/M setting
0 = MANUAL
1 = AUTO
Value in PointValue (5) = FLAG BYTE/Bit 2: W/P setting
0 = PANEL
1 = WORKSTATION
Value in PointValue (6) = FLAG BYTE/Bit 3: Primary R/L setting
0 = LOCAL
1 = REMOTE
Value in PointValue (7) = FLAG BYTE/Bit 4: Reserved
Value in PointValue (8) = FLAG BYTE/Bit 5: Reserved
Value in PointValue (9) = FLAG BYTE/Bit 6: Reserved
Value in PointValue (10) = FLAG BYTE/Bit 7: Alarm indicator
0 = No alarms
1 = Alarm present (See ALARM BYTE)
Value in PointValue (11) = ALARM BYTE/Bit 0: (Only valid if BIT 1 = 1)

0 = ALARM 4 is LEVEL 2 alarm
1 = ALARM 4 is LEVEL 1 alarm
Value in PointValue (12) = ALARM BYTE/Bit 1:
0 = No ALARM 4 exists
1 = ALARM 4 exists
Value in PointValue (13) = ALARM BYTE/Bit 2: (Only valid if BIT 3 = 1)
0 = ALARM 3 is LEVEL 2 alarm
1 = ALARM 3 is LEVEL 1 alarm
Value in PointValue (14) = ALARM BYTE/Bit 3:
0 = No ALARM 3 exists
1 = ALARM 3 exists
Value in PointValue (15) = ALARM BYTE/Bit 4: (Only valid if BIT 5 = 1)
0 = ALARM 2 is LEVEL 2 alarm
1 = ALARM 2 is LEVEL 1 alarm
Value in PointValue (16) = ALARM BYTE/Bit 5:
0 = No ALARM 2 exists
1 = ALARM 2 exists
Value in PointValue (17) = ALARM BYTE/Bit 6: (Only valid if BIT 7 = 1)
0 = ALARM 1 is LEVEL 2 alarm
1 = ALARM 1 is LEVEL 1 alarm
Value in PointValue (18) = ALARM BYTE/Bit 7:
0 = No ALARM 1 exists
1 = ALARM 1 exists

3.2. Read Controller Inputs #1 to #4

Description of this command:

Reads analog inputs #1 to #4 current values.

Type of data handled by this command:

Analog Input

Number of points accepted by this command:

1-4

Meaning of the DriverP0 parameter:

Controller Address (0-99).

Meaning of the DriverP1 parameter:

32

Meaning of the DriverP2 parameter:

1053

Meaning of the DriverP3 parameter:

-40

3.3. Write Current Set Point, Measurement, Output, Status or Alarm Values

Description of this command:

Writes the setpoint value or the primary controller output, as well as to change the status of some flags like A/M, R/L and to acknowledge alarms in the controller.

Type of data handled by this command:

Analog Output

Number of points accepted by this command:

1

Meaning of the DriverP0 parameter:

Controller Address (0-99).

Meaning of the DriverP1 parameter:

12

Meaning of the DriverP2 parameter:

Defines the STATUS BYTE (here it acts like a sub-command). This command is used to change the setpoint value or the primary controller output, as well as to change the status of some flags like A/M, R/L and to acknowledge alarms in the controller. There is no command which allows you to change the setpoint or output only, without in turn having to indicate some other related data. Thus, it is necessary to specify in all cases the STATUS BYTE through HMITalk1.DriverP2. According to the value provided in HMITalk1.DriverP2, the current Analog Output value may or may not be used. The Analog Output value is only used and sent to the controller in those cases where the STATUS BYTE BIT0 is 1. At that point, BIT5 decides if what is to be changed is the setpoint or the output. The Analog Output value must be taken to internal controller format like in the case of the WRITE COMMAND. If BIT0 is 0, the Analog Output value is not sent and the command is used to change some operation flag or to be notified of the alarm status.
STATUS BYTE:

- Bit 0: Change Indicator
0 = No new output or setpoint
1 = New output or setpoint is being specified via bits 4, 5 & 6 if incremental, or value if absolute.
- Bit 1: A/M Setting:
0 = MANUAL
1 = AUTO
- Bit 2: User interface acknowledgement:
0 = No acknowledgement.
1 = Acknowledgement.
- Bit 3: R/L Setting: (R/L is ignored if the controller is configured for LOCAL only).
0 = LOCAL
1 = REMOTE
- Bit 4: Size of step change:
0 = SMALL STEP

1 = LARGE STEP
- Bit 5: Output Vs setpoint or W/P:
0 = Select panel if Bit 0 = 0
1 = Select workstation if Bit 0 = 0
0 = Change output if Bit 0 = 1
1 = Change setpoint if Bit 0 = 1
- Bit 6: Direction of change:
0 = Increment the setting.
1 = Decrement the setting.
- Bit 7: Alarm acknowledge:
0 = No acknowledge.
1 = acknowledge all current alarms.

Examples:

Meaning of the DriverP2 parameter:

01h ==> Set MANUAL, LOCAL, WORKSTATION modes and without alarm acknowledgement,sending the Analog Output value as the new controller output. (Appropriate scaling is 0, 1, 0, 40)

Meaning of the DriverP2 parameter:

20h ==> Set MANUAL, LOCAL, WORKSTATION modes and without alarm acknowledgement.

Meaning of the DriverP2 parameter:

21h ==> Set MANUAL, LOCAL, WORKSTATION modes and without alarm acknowledgement,sending the Analog Output value as the new setpoint. (Appropriate scaling is 0, 1, 0, 40)

Meaning of the DriverP2 parameter:

22h ==> Set AUTOMATIC, LOCAL, WORKSTATION modes and without alarm acknowledgement.

Meaning of the DriverP2 parameter:

23h ==> Set AUTOMATIC, LOCAL, WORKSTATION modes and without alarm acknowledgement, but sending the Analog Output value as the new setpoint. (Appropriate scaling is 0, 1, 0, 40)

Meaning of the DriverP2 parameter:

A2h ==> Set AUTOMATIC, LOCAL, WORKSTATION mode and with alarm acknowledgement. (Note that in the previous commands, 80h is added to any previous command for alarm acknowledgement).

Important note:R/L is ignored if the controller is configured for LOCAL only.

3.4. Write Setpoint Value

Description of this command:

Writes the setpoint value in the controller.

Type of data handled by this command:

Analog Output

Number of points accepted by this command:

1

Meaning of the DriverP0 parameter:

Controller Address (0-99).

Meaning of the DriverP1 parameter:

12

Meaning of the DriverP2 parameter:

35

3.5. Write Output Current Value

Description of this command:

Writes the output current value in the controller.

Type of data handled by this command:

Analog Output

Number of points accepted by this command:

1

Meaning of the DriverP0 parameter:

Controller Address (0-99).

Meaning of the DriverP1 parameter:

12

Meaning of the DriverP2 parameter:

1

3.6. Set Controller Mode

Description of this command:

Sets the controller in manual or auto mode.

Type of data handled by this command:

Digital Output

Number of points accepted by this command:

1

Meaning of the DriverP0 parameter:

Controller Address (0-99).

Meaning of the DriverP1 parameter:

12

Values that are sent:

Value in PointValue (0) = 0 sets manual mode
Value in PointValue (0) = 1 sets auto mode

3.7. Set Controller in Manual Mode

Description of this command:

Sets the controller in manual mode.

Type of data handled by this command:

Analog Output

Number of points accepted by this command:

1

Meaning of the DriverP0 parameter:

Controller Address (0-99).

Meaning of the DriverP1 parameter:

12

Meaning of the DriverP2 parameter:

32

3.8. Set Controller in Auto Mode

Description of this command:

Sets the controller in auto mode.

Type of data handled by this command:

Analog Output

Number of points accepted by this command:

1

Meaning of the DriverP0 parameter:

Controller Address (0-99).

Meaning of the DriverP1 parameter:

12

Meaning of the DriverP2 parameter:

34

3.9. Alarm Acknowledge

Description of this command:

Writes the setpoint value in the controller.

Type of data handled by this command:

Analog Output

Number of points accepted by this command:

1

Meaning of the DriverP0 parameter:

Controller Address (0-99).

Meaning of the DriverP1 parameter:

12

Meaning of the DriverP2 parameter:

35

3.10. Read Controller Memory As Bytes

Description of this command:

This command allows you to read bytes from the controller memory. The controller's memory map information is included in Appendix B of the Controller Manual.

Type of data handled by this command:

Analog Input

Number of points accepted by this command:

1-250

Meaning of the DriverP0 parameter:

Controller Address (0-99).

Meaning of the DriverP1 parameter:

14

Meaning of the DriverP2 parameter:

Initial memory address pointed. (See Memory Map Table)

Meaning of the DriverP3 parameter:

Conversion Factor. (See Memory Map Table)

3.11. Read Controller Memory As Bits

Description of this command:

This command allows you to read bytes of the controller memory as bits. The controller's memory map information is included in Appendix B of the Controller Manual.

Type of data handled by this command:

Digital Input

Number of points accepted by this command:

1-250

Meaning of the DriverP0 parameter:

Controller Address (0-99).

Meaning of the DriverP1 parameter:

14

Meaning of the DriverP2 parameter:

Initial memory address pointed. (See Memory Map Table)

3.12. Read Controller Memory As Words

Description of this command:

Reads consecutive words from the controller memory. It is a non-standard function which is very useful to read parameters whose values are formed by 2 bytes. In the case of packages, be careful to note that all the data required are word-type, otherwise wrong results will be obtained. The controller's memory map information is included in Appendix B of the Controller Manual.

Type of data handled by this command:

Analog Input

Number of points accepted by this command:

1-125

Meaning of the DriverP0 parameter:

Controller Address (0-99).

Meaning of the DriverP1 parameter:

32

Meaning of the DriverP2 parameter:

Initial memory address pointed. (See Memory Map Table)

Meaning of the DriverP3 parameter:

Conversion Factor. (See Memory Map Table)

3.13. Write Controller Memory As Bytes

Description of this command:

This command allows you to write bytes of the controller memory. The controller's memory map information is included in Appendix B of the Controller Manual.

Type of data handled by this command:

Analog Output

Number of points accepted by this command:

1-125

Meaning of the DriverP0 parameter:

Controller Address (0-99).

Meaning of the DriverP1 parameter:

13

Meaning of the DriverP2 parameter:

Initial memory address pointed. (See Memory Map Table)

Meaning of the DriverP3 parameter:

Conversion Factor. (See Memory Map Table)

3.14. Write Controller Memory As Bits

Description of this command:

Writes the controller memory byte as bits. The controller's memory map information is included in Appendix B of the Controller Manual.

Type of data handled by this command:

Digital Output

Number of points accepted by this command:

1-8

Meaning of the DriverP0 parameter:

Controller Address (0-99).

Meaning of the DriverP1 parameter:

13

Meaning of the DriverP2 parameter:

Memory address pointed. (See Memory Map Table)

3.15. Write Controller Memory As Words

Description of this command:

Writes consecutive words to the controller memory. It is a non-standard function which is very useful to write parameters whose values are formed by 2 bytes. In the case of packages, be careful to note that all destination parameters are word-type, otherwise wrong results will be obtained. The controller's memory map information is included in Appendix B of the Controller Manual.

Type of data handled by this command:

Analog Output

Number of points accepted by this command:

1-125

Meaning of the DriverP0 parameter:

Controller Address (0-99).

Meaning of the DriverP1 parameter:

33

Meaning of the DriverP2 parameter:

Initial memory address pointed. (See Memory Map Table)

Meaning of the DriverP3 parameter:

Conversion Factor. (See Memory Map Table)

3.16. Read Any Parameter As Bytes

Description of this command:

This command allows you to read a consecutive parameters as bytes.

Type of data handled by this command:

Analog Input

Number of points accepted by this command:

1-125

Meaning of the DriverP0 parameter:

Controller Address (0-99).

Meaning of the DriverP1 parameter:

15

Meaning of the DriverP2 parameter:

Parameter number to be read (See Parameter Table).

Meaning of the DriverP3 parameter:

Conversion Factor. (See Parameter Table)

3.17. Read Any Parameter As Bits

Description of this command:

This command allows you to read a consecutive parameters as bits.

Type of data handled by this command:

Digital Input

Number of points accepted by this command:

1-250

Meaning of the DriverP0 parameter:

Controller Address (0-99).

Meaning of the DriverP1 parameter:

15

Meaning of the DriverP2 parameter:

Parameter number to be read (See Parameter Table).

3.18. Write Any Parameter As Bytes

Description of this command:

This command allows you to write a consecutive parameters as bytes.

Type of data handled by this command:

Analog Output

Number of points accepted by this command:

1-83

Meaning of the DriverP0 parameter:

Controller Address (0-99).

Meaning of the DriverP1 parameter:

16

Meaning of the DriverP2 parameter:

Parameter number to be written (See Parameter Table).

Meaning of the DriverP3 parameter:

Conversion Factor. (See Parameter Table)

3.19. Write Any Parameter As Bits

Description of this command:

Writes the parameter as bits.

Type of data handled by this command:

Digital Output

Number of points accepted by this command:

1-16

Meaning of the DriverP0 parameter:

Controller Address (0-99).

Meaning of the DriverP1 parameter:

16

Meaning of the DriverP2 parameter:

Parameter number to be written (See Parameter Table).

3.20. Read Current Computer Variables, Controller Outputs and Inputs and Outputs Setting

Description of this command:

It allows you to read the value of the computed variables A, B, C, D, E and F, the OUT1 and OUT2 controller outputs, setting of CI1 and CI2 input, and setting of CO1 and CO2 output.

Type of data handled by this command:

Analog Input

Number of points accepted by this command:

1-12

Meaning of the DriverP0 parameter:

Controller Address (0-99).

Meaning of the DriverP1 parameter:

17

Values that are returned:

Value in PointValue (0) = Value of the computed variable A
Value in PointValue (1) = Value of the computed variable B
Value in PointValue (2) = Value of the computed variable C
Value in PointValue (3) = Value of the computed variable D
Value in PointValue (4) = Value of the computed variable E
Value in PointValue (5) = Value of the computed variable F
Value in PointValue (6) = Value of the OUT1 output

Value in PointValue (7) = Valor of the OUT2 output
Value in PointValue (8) = Status of CI1 (0=OPEN, 1=CLOSED)
Value in PointValue (9) = Status of CI2 (0=OPEN, 1=CLOSED)
Value in PointValue (10) = Status of CO1 (0=OPEN, 1=CLOSED)
Value in PointValue (11) = Status of CO2 (0=OPEN, 1=CLOSED)

3.21. Read Current Set Point, Measurement, Output, Status or Alarm Values From The Secondary Controller

Description of this command:

Reads the current values for the set point, measurement, and output, plus additional controller status and alarm information from the secondary controller. Since the secondary controller works as REMOTE-ONLY, the R/L flag status will always indicate REMOTE. Besides, except for the M/A status of the secondary controller, all other data transmitted in the FLAG BYTE and in ALARM BYTE will match those transmitted by the primary controller poll command.

Type of data handled by this command:

Analog Input

Number of points accepted by this command:

1-19

Meaning of the DriverP0 parameter:

Controller Address (0-99).

Meaning of the DriverP1 parameter:

18

Values that are returned:

Value in PointValue (0) = Secondary controller setpoint
Value in PointValue (1) = Secondary controller measured value
Value in PointValue (2) = Secondary controller output
Value in PointValue (3) = FLAG BYTE/Bit 0: User interface entered indicator:
0 = not entered
1 = entered subsequent to last host acknowledgment
Value in PointValue (4) = FLAG BYTE/Bit 1: Primary A/M setting
0 = MANUAL
1 = AUTO
Value in PointValue (5) = FLAG BYTE/Bit 2: W/P setting
0 = PANEL
1 = WORKSTATION
Value in PointValue (6) = FLAG BYTE/Bit 3: Primary R/L setting
0 = LOCAL
1 = REMOTE
Value in PointValue (7) = FLAG BYTE/Bit 4: Reserved

Value in PointValue (8) = FLAG BYTE/Bit 5: Reserved
Value in PointValue (9) = FLAG BYTE/Bit 6: Reserved
Value in PointValue (10) = FLAG BYTE/Bit 7: Alarm indicator
0 = No alarms
1 = Alarm present (See ALARM BYTE)
Value in PointValue (11) = ALARM BYTE/Bit 0: (Only valid if BIT 1 = 1)
0 = ALARM 4 is LEVEL 2 alarm
1 = ALARM 4 is LEVEL 1 alarm
Value in PointValue (12) = ALARM BYTE/Bit 1:
0 = No ALARM 4 exists
1 = ALARM 4 exists
Value in PointValue (13) = ALARM BYTE/Bit 2: (Only valid if BIT 3 = 1)
0 = ALARM 3 is LEVEL 2 alarm
1 = ALARM 3 is LEVEL 1 alarm
Value in PointValue (14) = ALARM BYTE/Bit 3:
0 = No ALARM 3 exists
1 = ALARM 3 exists
Value in PointValue (15) = ALARM BYTE/Bit 4: (Only valid if BIT 5 = 1)
0 = ALARM 2 is LEVEL 2 alarm
1 = ALARM 2 is LEVEL 1 alarm
Value in PointValue (16) = ALARM BYTE/Bit 5:
0 = No ALARM 2 exists
1 = ALARM 2 exists
Value in PointValue (17) = ALARM BYTE/Bit 6: (Only valid if BIT 7 = 1)
0 = ALARM 1 is LEVEL 2 alarm
1 = ALARM 1 is LEVEL 1 alarm
Value in PointValue (18) = ALARM BYTE/Bit 7:
0 = No ALARM 1 exists
1 = ALARM 1 exists

3.22. Write Current Set Point or Secondary Controller Output

Description of this command:

This command is used to change the value of the setpoint or secondary controller output. It is similar to the command used for the primary controller although it has some restrictions (for example, it cannot modify the LOCAL/REMOTE status since the secondary controller is always in REMOTE mode).

Type of data handled by this command:

Analog Output

Number of points accepted by this command:

1

Meaning of the DriverP0 parameter:

Controller Address (0-99).

Meaning of the DriverP1 parameter:

19

Meaning of the DriverP2 parameter:

Defines the STATUS BYTE (here it acts like a sub-command). This command is used to change the setpoint value or the primary controller output, as well as to change the status of some flags like A/M, R/L and to acknowledge alarms in the controller. There is no command which allows you to change the setpoint or output only, without in turn having to indicate some other related data. Thus, it is necessary to specify in all cases the STATUS BYTE through HMITalk1.DriverP2. According to the value provided in HMITalk1.DriverP2, the current Analog Output value may or may not be used. The Analog Output value is only used and sent to the controller in those cases where the STATUS BYTE BIT0 is 1. At that point, BIT5 decides if what is to be changed is the setpoint or the output. The Analog Output value must be taken to internal controller format like in the case of the WRITE COMMAND. If BIT0 is 0, the Analog Output value is not sent and the command is used to change some operation flag or to be notified of the alarm status.
STATUS BYTE:

- Bit 0: Change Indicator
0 = No new output or setpoint
1 = New output or setpoint is being specified via bits 4, 5 & 6 if incremental, or value if absolute.
- Bit 1: A/M Setting:
0 = MANUAL
1 = AUTO
- Bit 2: User interface acknowledgement:
0 = No acknowledgement.
1 = Acknowledgement.
- Bit 3: Reserved.
- Bit 4: Size of step change:
0 = SMALL STEP
1 = LARGE STEP
- Bit 5: Output Vs setpoint or W/P:
0 = Select panel if Bit 0 = 0
1 = Select workstation if Bit 0 = 0
0 = Change output if Bit 0 = 1
1 = Change setpoint if Bit 0 = 1
- Bit 6: Direction of change:
0 = Increment the setting.
1 = Decrement the setting.
- Bit 7: Alarm acknowledge:
0 = No acknowledge.
1 = acknowledge all current alarms.

Examples:

Meaning of the DriverP2 parameter:

01h ==> Set MANUAL, LOCAL, WORKSTATION modes and without alarm acknowledgement,sending the Analog Output value as the new controller output. (Appropriate scaling is 0, 1, 0, 40)

Meaning of the DriverP2 parameter:

20h ==> Set MANUAL, LOCAL, WORKSTATION modes and without alarm acknowledgement.

Meaning of the DriverP2 parameter:

21h ==> Set MANUAL, LOCAL, WORKSTATION modes and without alarm acknowledgement,sending the Analog Output value as the new setpoint. (Appropriate scaling is 0, 1, 0, 40)

Meaning of the DriverP2 parameter:

22h ==> Set AUTOMATIC, LOCAL, WORKSTATION modes and without alarm acknowledgement.

Meaning of the DriverP2 parameter:

23h ==> Set AUTOMATIC, LOCAL, WORKSTATION modes and without alarm acknowledgement, but sending the Analog Output value as the new setpoint. (Appropriate scaling is 0, 1, 0, 40)

Meaning of the DriverP2 parameter:

A2h ==> Set AUTOMATIC, LOCAL, WORKSTATION mode and with alarm acknowledgement. (Note that in the previous commands, 80h is added to any previous command for alarm acknowledgement).

3.23. Parameter Table

Parameter (HMITalk1.DriverP3).	Description	Conversion Factor Number
95	Constant 'G'	40
96	Constant 'H'	40
97	Constant 'I'	40
98	Constant 'J'	40
99	Faceplate Proportional Band	0
100	Faceplate Integral Term	150
101	Faceplate Derivative Term	150
102	Bias for P, P+D Controller	40
103	Balance for P, P+D Controller	150
104	Preload for Standard Batch Controller	40
105	Proportional Band (Read only)	0
106	Integral Term (Read only)	150
107	Derivative Term (Read only)	150
108	EXACT Noise Band (NB)	40
109	EXACT Maximum Wait Time (WMAX)	150
110	EXACT Damping (DMP)	100

111	EXACT Overshoot (OVR)	100
112	EXACT Change Limit (CLM)	100
113	EXACT Derivative Factor (DFCT)	100
114	EXACT High Frecuency Limit (LMT)	40
115	EXACT Bump Size for Pretune (BMP)	40
116	Secondary Faceplate Proportional Band	0
117	Secondary Faceplate Integral Term	150
118	Bias for Secondary Controller	40
119	Balance for Secondary Controller	150
120	ALARM 1 - Level 1	40
121	ALARM 1 - Level 2	40
122	ALARM 1 - Deadband	40
123	ALARM 2 - Level 1	40
124	ALARM 2 - Level 2	40
125	ALARM 2 - Deadband	40
126	ALARM 3 - Level 1	40
127	ALARM 3 - Level 2	40
128	ALARM 3 - Deadband	40
129	ALARM 4 - Level 1	40
130	ALARM 4 - Level 2	40
131	ALARM 4 - Deadband	40
132	Input 'A' Filter Time	150
133	Input 'A' Input Bias	40
134	Input 'A' Gain	1000
135	Input 'A' Output Bias	40
136	Input 'B' Filter Time	150
137	Input 'B' Input Bias	40
138	Input 'B' Gain	1000
139	Input 'B' Output Bias	40
140	Input 'C' Filter Time	150
141	Input 'C' Input Bias	40
142	Input 'C' Gain	1000
143	Input 'C' Output Bias	40
144	Input 'D' Filter Time	150
145	Input 'D' Input Bias	40
146	Input 'D' Gain	1000
147	Input 'D' Output Bias	40
148	Input 'E' Filter Time	150
149	Input 'E' Input Bias	40
150	Input 'E' Gain	1000
151	Input 'E' Output Bias	40
152	Input 'F' Filter Time	150
153	Input 'F' Input Bias	40
154	Input 'F' Gain	1000
155	Input 'F' Output Bias	40
156	Primary Set Point High Limit	40
157	Primary Set Point Low Limit	40
158	Primary Output High Limit	40
159	Primary Output Low Limit	40

160	Secondary Set Point High Limit	40
161	Secondary Set Point Low Limit	40
162	Secondary Output High Limit	40
163	Secondary Output Low Limit	40
164	CHAR 1 - Number of points	0
165	CHAR 1 - X1	40
166	CHAR 1 - X2	40
167	CHAR 1 - X3	40
168	CHAR 1 - X4	40
169	CHAR 1 - X5	40
170	CHAR 1 - X6	40
171	CHAR 1 - X7	40
172	CHAR 1 - X8	40
173	CHAR 1 - X9	40
174	CHAR 1 - X10	40
175	CHAR 1 - X11	40
176	CHAR 1 - X12	40
177	CHAR 1 - X13	40
178	CHAR 1 - X14	40
179	CHAR 1 - X15	40
180	CHAR 1 - X16	40
181	CHAR 1 - Y1	40
182	CHAR 1 - Y2	40
183	CHAR 1 - Y3	40
184	CHAR 1 - Y4	40
185	CHAR 1 - Y5	40
186	CHAR 1 - Y6	40
187	CHAR 1 - Y7	40
188	CHAR 1 - Y8	40
189	CHAR 1 - Y9	40
190	CHAR 1 - Y10	40
191	CHAR 1 - Y11	40
192	CHAR 1 - Y12	40
193	CHAR 1 - Y13	40
194	CHAR 1 - Y14	40
195	CHAR 1 - Y15	40
196	CHAR 1 - Y16	40
197	CHAR 2 - Number of points	0
198	CHAR 2 - X1	40
199	CHAR 2 - X2	40
200	CHAR 2 - X3	40
201	CHAR 2 - X4	40
202	CHAR 2 - X5	40
203	CHAR 2 - X6	40
204	CHAR 2 - X7	40
205	CHAR 2 - X8	40
206	CHAR 2 - X9	40
207	CHAR 2 - X10	40
208	CHAR 2 - X11	40

209	CHAR 2 - Y1	40
210	CHAR 2 - Y2	40
211	CHAR 2 - Y3	40
212	CHAR 2 - Y4	40
213	CHAR 2 - Y5	40
214	CHAR 2 - Y6	40
215	CHAR 2 - Y7	40
216	CHAR 2 - Y8	40
217	CHAR 2 - Y9	40
218	CHAR 2 - Y10	40
219	CHAR 2 - Y11	40
220	Dynamic Compensator Dead Time	150
221	Dynamic Compensator Lead-Lag Gain	1000
222	Dynamic Compensator Lead-Lag Bias	40
223	Dynamic Compensator Lead-Lag Filter	150 Time
224	Workstation Address	0
225	Workstation Flunk Timeout	150
226	Ratio Primary Controller Bias	40
227	Ratio Primary Controller Upper Range	0 Value
228	Ratio Secondary Controller Bias	40
229	Ratio Secondary Controller Upper Range	0 Value
230	Primary Controller Remote Set Point	40 Bias
231	Primary Controller Output Startup	40 Value
232	Secondary Controller Output Startup	40 Value
233	Analog Input 1 Zero Calibration Value	0 (Read Only)
234	Analog Input 1 Full Scale Calibration	0 Value (Read Only)
235	Analog Input 2 Zero Calibration Value	0 (Read Only)
236	Analog Input 2 Full Scale Calibration	0 Value (Read Only)
237	Analog Input 3 Zero Calibration Value	0 (Read Only)
238	Analog Input 3 Full Scale Calibration	0 Value (Read Only)
239	Analog Input 4 Zero Calibration Value	0 (Read Only)
240	Analog Input 4 Full Scale Calibration	0 Value (Read Only)
241	Frecuency Input 1 Zero Calibration	0 Value
242	Frecuency Input 1 Full Scale	0 Calibration Value
243	Frecuency Input 2 Zero Calibration	0 Value
244	Frecuency Input 2 Full Scale	0 Calibration Value
245	Analog Ouput 1 Zero Calibration	0 Value
246	Analog Ouput 1 Full Scale Calibration	0 Value
247	Analog Ouput 2 Zero Calibration	0 Value
248	Analog Ouput 2 Full Scale Calibration	0 Value
249	Secondary Local Set Point (Read Only)	40
250	Primary Local Set Point (Read Only)	40
251	Secondary Calculated Output (Read Only)	40
252	Primary Calculated Output (Read Only)	40
253	Secondary Ratio Gain	40
254	Primary Ratio Gain	40

3.24. Memory Map Table

The all controller's memory map information is included in Appendix B of the Controller Manual. The conversion factor must be multiplied when the value in HMITalk1.DriverP3 parameter is positive. It must be divided when the value is negative. Not applied when HMITalk1.DriverP3 = 0.

Parameter Description Conversion Factor Address (HMITalk1.DriverP3). 1095 State of EXACT Tuning Algorithm 0 (Read Only) Value: 0 - QUIT 1 - LOCATE 1 2 - VERIFY 1 3 - LOCATE 2 4 - VERIFY 2 5 - LOCATE 3 6 - VERIFY 3 7 - ADAPT 8 - ADAPT 9 - SETTLE 10 - OFF 11 - MANUAL 12 - INACTIVE 1096 EXACT Tuning Algorithm Entry 0 (Read Only) Value: 101 - 1 PEAK 106 - 2 PEAKS 107 - 3 PEAKS 114 - 1 PEAK 103 - 2 PEAKS 105 - 3 PEAKS 102 - DAMPED 109 - DAMPED 113 - DAMPED 110 - SUSPECT 111 - SUSPECT 112 - SUSPECT 151 - FAST 153 - SP CHANGE 154 - OOR 155 - CLAMPED 156 - INIT 1995 Contact Output States (Read Only) 0 Bits 0 - 1 Bit 0 = 0 CO1 OPEN Bit 0 = 1 CO1 CLOSED Bit 1 = 0 CO2 OPEN Bit 1 = 1 CO2 CLOSED 4145 Frecuency Vs Pulse Input Selector 0 Value: 0 - Frecuency 1 - Pulsed 4223 Primary Set point Type (Bit 7) 0 Value: 0 - Local Only 1 - R/L 4223 Startup 'R/L' State (Bit 6) 0 Value: 0 - Local 1 - Remote 2 - R/L 4223 Remote Set Point Function (Bit 3-0) 0 Value: 0 - Linear 1 - Squared Root 2 - Squared 4 - CHAR 1 8 - CHAR 2 4224 Startup Primary 'A/M' State (Bit 6) 0 Value: 0 - Manual 1 - Auto 4224 W/P Flunk Primary 'A/M' Value 0 (Bit 5-4) Value: 0 - Last 'A/M' 1 - Manual 2 - Auto 4224 Measurement - Function (Bit 3-0) 0 Value: 0 - Linear 1 - Squared Root 2 - Squared 4 - CHAR 1 8 - CHAR 2 4225 Secondary 'A/M' Startup (Bit 6) 0 Value: 0 - Startup to 'A' 1 - Startup to 'M' 4225 Secondary 'A/M' Flunk (Bit 5-4) 0 Value: 0 - Last 'A/M' 2 - Flunk to 'M' 3 - Flunk to 'A' 4226 Controller Type - Mode 0 Value: 20 - 'P' Only 34 - 'I' Only 48 - 'PI' 21 - 'PD' 49 - 'PID' 57 - 'EXACT' 4229 Secondary Controller Type 0 Value: 20 - 'P' Only 48 - 'PI' 4306-7 Proportional Band 'P' (Upload Only) 4 4308-9 Integral Term 'I' (Upload Only) 150 4310-11 Derivative Term 'D' (Upload Only) 150 4312-13 EXACT 'NB' 40 4314-15 EXACT 'WMAX' 150 4316-17 EXACT 'DMP' 100 4318-19 EXACT 'OVR' 100 4320-21 EXACT 'CLM' 100 4322-23 EXACT 'DFCT' 100 4324-25 EXACT 'LIM' 40 4326-27 EXACT 'BUMP' 40 4328-29 'PF' Secondary 0 4330-31 'IF' Secondary 150 4332-33 BIAS for P/PD Controller 40 4334-35 Balance for P/PD Controller 150 4336-37 ALARM 1 Level 1 40 4338-39 ALARM 1 Level 2 40 4340-41 ALARM 1 Deadband 40 4342-43 ALARM 2 Level 1 40 4344-45 ALARM 2 Level 2 40 4346-47 ALARM 2 Deadband 40 4348-49 ALARM 3 Level 1 40 4350-51 ALARM 3 Level 2 40 4352-53 ALARM 3 Deadband 40 4354-55 ALARM 4 Level 1 40 4356-57 ALARM 4 Level 2 40 4358-59 ALARM 4 Deadband 40 4408-09 Primary Controller Set Point High 40 Limit 4410-11 Primary Controller Set Point Low Limit 40 4412-13 Primary Output High Limit 40 4414-15 Primary Output Low Limit 40 4416-17 Secondary Controller Set Point High 40 Limit 4418-19 Secondary Controller Set Point Low 40 Limit 4420-21 Secondary Output High Limit 40 4422-23 Secondary Output Low Limit 40

4. Appendices

4.1. Error messages

The following list shows all the possible error messages that can be returned by the protocol driver during a failed communication in the 'DriverStatus' property.

This list does not include some error messages that can be returned by the activex component while attempting to establish a connection.

[1005] DRIVER (Internal): Invalid driver stage
[1300] PROTOCOL (Timeout): No answer
[1410] PROTOCOL (Format): Invalid device id in response
[2147] CONFIG (NumValues): Only one value can be read or written
[2181] CONFIG (NumValues): Too many values (max=12)
[2185] CONFIG (NumValues): Too many values (max=125)
[2189] CONFIG (NumValues): Too many values (max=16)
[2193] CONFIG (NumValues): Too many values (max=19)
[2203] CONFIG (NumValues): Too many values (max=250)
[2235] CONFIG (NumValues): Too many values (max=8)
[2239] CONFIG (NumValues): Too many values (max=83)
[3018] CONFIG (P0): Invalid device address (0-99)
[3508] CONFIG (P1): Invalid command
[8073] CONFIG (Remote): Controller is in PANEL mode
[8183] CONFIG (Remote): Index requested too small
[8191] CONFIG (Remote): Invalid command byte
[8194] CONFIG (Remote): Invalid data
[8220] CONFIG (Remote): No data given with command
[8225] CONFIG (Remote): No permission for download
[8339] CONFIG (Remote): Transmission error
[8367] CONFIG (Remote): Wrong number of data bytes

4.2. Keywords list

The following list shows a set of words directly related to this driver.

"761CNA, 761CSA, Controllers, FOXBORO, Micro, Single, Station".