

# XACROMAG Driver Manual

## Acromag Series 4600 I/O Processor Driver



Series 4300  
Series 4400  
Series 4500  
Series 4600



## CPKSoft Engineering

### Process Monitoring and Industrial Automation Software

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# 1. Introduction

CPKSoft Engineering assumes no responsibility for any errors that may appear in this document. If you have any suggestions for improvements or amendments or have found errors in this publication, please notify us.

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 xacromag.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 xacromag.tlk driver is available in plain-C language for additional USD 299 if you own a license of TAS-HMITalk 8.04 or higher.

Refer to the following link to visit the xacromag driver page at CPKSoft Engineering website: <http://www.cpksoft.com/tabid/55/ProductID/8/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](mailto:contact@cpksoft.com).

## 2. Driver details

### 2.1. Driver overview

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XACROMAG driver allows you to connect to the ACROMAG Series 4600/4500/4400/4300 I/O Processor, using the ASCII protocol version. Communication is made through RS-232 or RS-485. Communications are started only by the PC questioning the equipment. Thus, spontaneous messages must be disabled. This driver does not support Exception Reports. The commands implemented in this driver are those that allow questioning of input/output related to plant information and some special commands to set parameters related to them. There are no commands available to program the equipment. In this case, refer to the specific software provided by ACROMAG for such purpose.

### 2.2. Supported devices

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

- ACROMAG Series 4600 I/O Processor
- ACROMAG Series 4500 I/O Processor
- ACROMAG Series 4400 I/O Processor
- ACROMAG Series 4300 I/O Processor

## 3. Command list

### 3.1. General Channel I/O Commands

#### 3.1.1. Read Channel Value

**Description of this command:**

This command allows you to read the value of one or more I/O channels.

**Type of data handled by this command:**

Analog Input

1-33. of which 32 will read consecutive channels of the equipment, and the last will read the Time Stamp. Note that when the number of variables reserved exceeds 1, the last will always have the Time Stamp value.

**Meaning of the DriverP0 parameter:**

Indicates the station address (1-255).

**Meaning of the DriverP1 parameter:**

0

**Meaning of the DriverP2 parameter:**

Sets whether a checksum control is used in the protocol or not.

- 0 Without checksum
- 1 With checksum

**Meaning of the DriverP3 parameter:**

Indicates the number of the first channel to be read (1-32).

**Values that are returned:**

Value in PointValue (0) = First channel value.  
Value in PointValue (1) = Second channel value. ... ..  
Value in PointValue (n-1) = Last channel value.  
Value in PointValue (n) = Time stamp value.

#### 3.1.2. Write Channel Value as Floating Point

**Description of this command:**

This command allows you to write a value in an I/O channel as a floating point value and 2 resolution decimals.

**Type of data handled by this command:**

Analog Output

**Number of points accepted by this command:**

1

**Meaning of the DriverP0 parameter:**

Indicates the station address (0-255). If the station is 0, it implies a broadcasting message that does not expect an answer from the equipment.

**Meaning of the DriverP1 parameter:**

1

**Meaning of the DriverP2 parameter:**

Sets whether a checksum control is used in the protocol or not.

- 0 Without checksum
- 1 With checksum

**Meaning of the DriverP3 parameter:**

Indicates the number of the first channel to be written (1-32).

### 3.1.3. Write Channel Value as Integer

**Description of this command:**

This command allows you to write a value to an I/O channel as an integer, without decimals.

**Type of data handled by this command:**

Analog Output

**Number of points accepted by this command:**

1

**Meaning of the DriverP0 parameter:**

Indicates the station address (0-255). If the station is 0, it implies a broadcasting message that does not expect an answer from the equipment.

**Meaning of the DriverP1 parameter:**

32

**Meaning of the DriverP2 parameter:**

Sets whether a checksum control is used in the protocol or not.

- 0 Without checksum
- 1 With checksum

**Meaning of the DriverP3 parameter:**

Indicates the number of the first channel to be written (1-32).

### 3.1.4. Write Digital Channels

**Description of this command:**

This command allows you to write one or more digital output.

**Type of data handled by this command:**

Digital Output

**Number of points accepted by this command:**

1-24

**Meaning of the DriverP0 parameter:**

Indicates the station address (0-255). If the station is 0, it implies a broadcasting message that does not expect an answer from the equipment.

**Meaning of the DriverP1 parameter:**

2

**Meaning of the DriverP2 parameter:**

Sets whether a checksum control is used in the protocol or not.

- 0 Without checksum
- 1 With checksum

**Meaning of the DriverP3 parameter:**

Indicates the number of the first output of the package to be written (9-50).

### 3.1.5. Read Digital Channels

**Description of this command:**

This command allows you to read a digital inputs.

**Type of data handled by this command:**

Digital Input

**Number of points accepted by this command:**

1-24.

**Meaning of the DriverP0 parameter:**

Indicates the station address (1-255).

**Meaning of the DriverP1 parameter:**

3

**Meaning of the DriverP2 parameter:**

Sets whether a checksum control is used in the protocol or not.

- 0 Without checksum
- 1 With checksum

**Meaning of the DriverP3 parameter:**

Indicates the number of the first input number to be read (9-32).

### 3.1.6. Read Min/Max Value

**Description of this command:**

This command allows you to read the maximum and minimum value of one channel. The value is returned in the engineering units configured on the board.

**Type of data handled by this command:**

Analog Input

**Number of points accepted by this command:**

1-2

**Meaning of the DriverP0 parameter:**

Indicates the station address (1-255).

**Meaning of the DriverP1 parameter:**

4

**Meaning of the DriverP2 parameter:**

Sets whether a checksum control is used in the protocol or not.

- 0 Without checksum
- 1 With checksum

**Meaning of the DriverP3 parameter:**

Indicates the channel number to be read (1-16).

**Values that are returned:**

- Value in PointValue (0) = Maximum value.
- Value in PointValue (1) = Minimum value.

### 3.1.7. Initialize Min/Max

**Description of this command:**

This command allows you to initialize the maximum and/or minimum values of a channel.

**Type of data handled by this command:**

Analog Output

**Number of points accepted by this command:**

1

**Meaning of the DriverP0 parameter:**

Indicates the station address (0-255). If the station is 0, it implies a broadcasting message that does not expect an answer from the equipment.

**Meaning of the DriverP1 parameter:**

5

**Meaning of the DriverP2 parameter:**

Sets whether a checksum control is used in the protocol or not.

- 0 Without checksum
- 1 With checksum

**Meaning of the DriverP3 parameter:**

Indicates the channel number to be written (1-16).

**Values that are sent:**

If the Analog Output value = 1, it resets the minimum value. If the Analog Output value = 2, it resets the maximum value and if the Analog Output value is = 3, it resets both values.

### 3.1.8. Start Frame Average

**Description of this command:**

This command allows you to initiate or restart a frame average calculation.

**Type of data handled by this command:**

Analog Output

**Number of points accepted by this command:**

1

**Meaning of the DriverP0 parameter:**

Indicates the station address (0-255). If the station is 0, it implies a broadcasting message that does not expect an answer from the equipment.

**Meaning of the DriverP1 parameter:**

6

**Meaning of the DriverP2 parameter:**

Sets whether a checksum control is used in the protocol or not.

- 0 Without checksum
- 1 With checksum

**Meaning of the DriverP3 parameter:**

Indicates the number of the first channel to be written (1-16).

**Values that are sent:**

The Analog Output value specifies the period, in seconds. 0 means make a STOP.

### 3.1.9. Read Frame Average

**Description of this command:**

This command allows you to read the value of the frame average calculation for a channel.

**Type of data handled by this command:**

Analog Input

**Number of points accepted by this command:**

1

**Meaning of the DriverP0 parameter:**

Indicates the station address (1-255).

**Meaning of the DriverP1 parameter:**

7

**Meaning of the DriverP2 parameter:**

Sets whether a checksum control is used in the protocol or not.

- 0 Without checksum
- 1 With checksum

**Meaning of the DriverP3 parameter:**

Indicates the channel number to be read (1-16).

### 3.1.10. Reset Channel

**Description of this command:**

This command allows you to initialize one channel.

**Type of data handled by this command:**

Digital Output

**Number of points accepted by this command:**

1

**Meaning of the DriverP0 parameter:**

Indicates the station address (0-255). If the station is 0, it implies a broadcasting message that does not expect an answer from the equipment.

**Meaning of the DriverP1 parameter:**

35

**Meaning of the DriverP2 parameter:**

Sets whether a checksum control is used in the protocol or not.

- 0 Without checksum
- 1 With checksum

**Meaning of the DriverP3 parameter:**

Indicates the channel number to be reset (1-32)

[Hexadecimal Channel I/O Commands]

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## 3.2. Hexadecimal Channel I/O Commands

### 3.2.1. Read Hex

**Description of this command:**

This command allows you to obtain the value of up to 16 consecutive I/O channels.

**Type of data handled by this command:**

Analog Input

**Number of points accepted by this command:**

1-16

**Meaning of the DriverP0 parameter:**

Indicates the station address (1-255).

**Meaning of the DriverP1 parameter:**

8

**Meaning of the DriverP2 parameter:**

Sets whether a checksum control is used in the protocol or not.

- 0 Without checksum
- 1 With checksum

**Meaning of the DriverP3 parameter:**

Indicates the number of the first channel to be read (1-34).

**Meaning of the DriverP4 parameter:**

Sets whether time stamp is used in the protocol or not.

- 0 Without time stamp
- 1 With time stamp

### **3.2.2. Write Hex**

**Description of this command:**

This command allows you to write up to 16 consecutive outputs.

**Type of data handled by this command:**

Analog Output

**Number of points accepted by this command:**

1-16

**Meaning of the DriverP0 parameter:**

Indicates the station address (0-255). If the station is 0, it implies a broadcasting message that does not expect an answer from the equipment.

**Meaning of the DriverP1 parameter:**

9

**Meaning of the DriverP2 parameter:**

Sets whether a checksum control is used in the protocol or not.

- 0 Without checksum
- 1 With checksum

**Meaning of the DriverP3 parameter:**

Indicates the number of the first output to be written.

**3.2.3. Read Digital Hex****Description of this command:**

This command allows you to read the value of one or more I/O channels.

**Type of data handled by this command:**

Digital Input

**Number of points accepted by this command:**

1-32

**Meaning of the DriverP0 parameter:**

Indicates the station address (0-255).

**Meaning of the DriverP1 parameter:**

10

**Meaning of the DriverP2 parameter:**

Sets whether a checksum control is used in the protocol or not.

- 0 Without checksum
- 1 With checksum

**Meaning of the DriverP3 parameter:**

Sets whether time stamp is used in the protocol or not.

- 0 Without time stamp
- 1 With time stamp

**3.2.4. Write Digital Hex****Description of this command:**

This command allows you to write up to 32 digital outputs.

**Type of data handled by this command:**

Digital Output

**Number of points accepted by this command:**

1-32

**Meaning of the DriverP0 parameter:**

Indicates the station address (0-255). If the station is 0, it implies a broadcasting message that does not expect an answer from the equipment.

**Meaning of the DriverP1 parameter:**

11

**Meaning of the DriverP2 parameter:**

Sets whether a checksum control is used in the protocol or not.

- 0 Without checksum
- 1 With checksum

**Meaning of the DriverP3 parameter:**

Indicates the number of the first output to be written.

[Limit Commands]

## 3.3. Limit Commands

---

### 3.3.1. Write Limits (For Low Limit 1)

**Description of this command:**

This command allows you to set the value of the low limit 1 for a selected input channel.

**Type of data handled by this command:**

Analog Output

**Number of points accepted by this command:**

1

**Meaning of the DriverP0 parameter:**

Indicates the station address (0-255). If the station is 0, it implies a broadcasting message that does not expect an answer from the equipment.

**Meaning of the DriverP1 parameter:**

12

**Meaning of the DriverP2 parameter:**

Sets whether a checksum control is used in the protocol or not.

- 0 Without checksum
- 1 With checksum

**Meaning of the DriverP3 parameter:**

Indicates the channel number to be set (1-16).

**Meaning of the DriverP4 parameter:**

Indicates the output channel to be used as alarm. It may have these values:

- 0 = No output is used
- 9 = Output 9
- 10 = Output 10
- 11 = Output 11
- 12 = Output 12
- 13 = Output 13
- 14 = Output 14

- 15 = Output 15
- 16 = Output 16

**Meaning of the DriverP5 parameter:**

Indicates the type of limit with which the limit must be set.

- 0 = Momentary limit
- 1 = Latching limit (until reset)
- 2 = Delete limit
- 3 = Momentary limit with Exception Reporting
- 4 = Latching limit with Exception Reporting

**Values that are sent:**

The Analog Output value determines the value of the limit to which it will be set.

**3.3.2. Write Limits (Para High Limit 1)****Description of this command:**

This command allows you to set the value of the high limit 1 for a selected input channel.

**Type of data handled by this command:**

Analog Output

**Number of points accepted by this command:**

1

**Meaning of the DriverP0 parameter:**

Indicates the station address (0-255). If the station is 0, it implies a broadcasting message that does not expect an answer from the equipment.

**Meaning of the DriverP1 parameter:**

13

**Meaning of the DriverP2 parameter:**

Sets whether a checksum control is used in the protocol or not.

- 0 Without checksum
- 1 With checksum

**Meaning of the DriverP3 parameter:**

Indicates the channel number to be set (1-16).

**Meaning of the DriverP4 parameter:**

Indicates the output channel to be used as alarm. It may have these values:

- 0 = No output is used
- 9 = Output 9
- 10 = Output 10
- 11 = Output 11
- 12 = Output 12
- 13 = Output 13
- 14 = Output 14

- 15 = Output 15
- 16 = Output 16

**Meaning of the DriverP5 parameter:**

Indicates the type of limit with which the limit must be set.

- 0 = Momentary limit
- 1 = Latching limit (until reset)
- 2 = Delete limit
- 3 = Momentary limit with Exception Reporting
- 4 = Latching limit with Exception Reporting

**Values that are sent:**

The Analog Output value determines the value of the limit to which it will be set.

**3.3.3. Write Limits (For Low Limit 2)****Description of this command:**

This command allows you to set the value of the low limit 2 for a selected input channel.

**Type of data handled by this command:**

Analog Output

**Number of points accepted by this command:**

1

**Meaning of the DriverP0 parameter:**

Indicates the station address (0-255). If the station is 0, it implies a broadcasting message that does not expect an answer from the equipment.

**Meaning of the DriverP1 parameter:**

14

**Meaning of the DriverP2 parameter:**

Sets whether a checksum control is used in the protocol or not.

- 0 Without checksum
- 1 With checksum

**Meaning of the DriverP3 parameter:**

Indicates the channel number to be set (1-16).

**Meaning of the DriverP4 parameter:**

Indicates the output channel to be used as alarm. It may have these values:

- 0 = No output is used
- 9 = Output 9
- 10 = Output 10
- 11 = Output 11
- 12 = Output 12
- 13 = Output 13
- 14 = Output 14

- 15 = Output 15
- 16 = Output 16

**Meaning of the DriverP5 parameter:**

Indicates the type of limit with which the limit must be set.

- 0 = Momentary limit
- 1 = Latching limit (until reset)
- 2 = Delete limit
- 3 = Momentary limit with Exception Reporting
- 4 = Latching limit with Exception Reporting

**Values that are sent:**

The Analog Output value determines the value of the limit to which it will be set.

**3.3.4. Write Limits (Para High Limit 2)****Description of this command:**

This command allows you to set the value of the high limit 2 for a selected input channel.

**Type of data handled by this command:**

Analog Output

**Number of points accepted by this command:**

1

**Meaning of the DriverP0 parameter:**

Indicates the station address (0-255). If the station is 0, it implies a broadcasting message that does not expect an answer from the equipment.

**Meaning of the DriverP1 parameter:**

15

**Meaning of the DriverP2 parameter:**

Sets whether a checksum control is used in the protocol or not.

- 0 Without checksum
- 1 With checksum

**Meaning of the DriverP3 parameter:**

Indicates the channel number to be set (1-16).

**Meaning of the DriverP4 parameter:**

Indicates the output channel to be used as alarm. It may have these values:

- 0 = No output is used
- 9 = Output 9
- 10 = Output 10
- 11 = Output 11
- 12 = Output 12
- 13 = Output 13
- 14 = Output 14

- 15 = Output 15
- 16 = Output 16

**Meaning of the DriverP5 parameter:**

Indicates the type of limit with which the limit must be set.

- 0 = Momentary limit
- 1 = Latching limit (until reset)
- 2 = Delete limit
- 3 = Momentary limit with Exception Reporting
- 4 = Latching limit with Exception Reporting

**Values that are sent:**

The Analog Output value determines the value of the limit to which it will be set.

**3.3.5. Read Limits****Description of this command:**

This command allows you to read the value and the parameters with which the limit of the specified channel is set.

**Type of data handled by this command:**

Analog Input

**Number of points accepted by this command:**

1-4

**Meaning of the DriverP0 parameter:**

Indicates the station address (0-255).

**Meaning of the DriverP1 parameter:**

16

**Meaning of the DriverP2 parameter:**

Sets whether a checksum control is used in the protocol or not.

- 0 Without checksum
- 1 With checksum

**Meaning of the DriverP3 parameter:**

Indicates the channel number to be read (1-16).

**Meaning of the DriverP4 parameter:**

Indicates the limit to be read.

- 0 = for limit #1.
- 1 = for limit #2.

**Values that are returned:**

Value in PointValue (0) = Indicates the limit level:

- 0 = Low
- 1 = High

Value in PointValue (1) = Indicates the limit current value.

Value in PointValue (2) = Indicates the output channel associated. 0 indicates that there's no associated output.

Value in PointValue (3) = Indicates the type of limit configured.

- 0 = Momentary limit.
- 1 = Latching limit.
- 2 = Momentary limit with Exception Reporting.
- 3 = Latching limit with Exception Reporting.

### **3.3.6. Save Limits**

#### **Description of this command:**

This command allows you to save in the non-volatile memory, the limit information and the deadband.

#### **Type of data handled by this command:**

Digital Output

#### **Number of points accepted by this command:**

1

#### **Meaning of the DriverP0 parameter:**

Indicates the station address (0-255). If the station is 0, it implies a broadcasting message that does not expect an answer from the equipment.

#### **Meaning of the DriverP1 parameter:**

17

#### **Meaning of the DriverP2 parameter:**

Sets whether a checksum control is used in the protocol or not.

- 0 Without checksum
- 1 With checksum

#### **Meaning of the DriverP3 parameter:**

Indicates the channel number to be used (1-8).

### **3.3.7. Write Deadband**

#### **Description of this command:**

This command allows you to specify the degree of hysteresis with which the limit value will be handled.

#### **Type of data handled by this command:**

Analog Output

#### **Number of points accepted by this command:**

1

**Meaning of the DriverP0 parameter:**

Indicates the station address (0-255). If the station is 0, it implies a broadcasting message that does not expect an answer from the equipment.

**Meaning of the DriverP1 parameter:**

18

**Meaning of the DriverP2 parameter:**

Sets whether a checksum control is used in the protocol or not.

- 0 Without checksum
- 1 With checksum

**Meaning of the DriverP3 parameter:**

Indicates the channel number to be used (1-8).

**Values that are sent:**

The Analog Output value indicates the value to be taken by the deadband.

### 3.3.8. Read Deadband

**Description of this command:**

This command allows you to read the histeresis value set for one or more consecutive channels.

**Type of data handled by this command:**

Analog Input

**Number of points accepted by this command:**

1-8

**Meaning of the DriverP0 parameter:**

Indicates the station address (0-255).

**Meaning of the DriverP1 parameter:**

19

**Meaning of the DriverP2 parameter:**

Sets whether a checksum control is used in the protocol or not.

- 0 Without checksum
- 1 With checksum

**Meaning of the DriverP3 parameter:**

Indicates the channel number to be used (1-8).

### 3.3.9. Read Limits Exceeded

**Description of this command:**

This command allows you to read the value of the limits exceeded.

**Type of data handled by this command:**

Analog Input

**Number of points accepted by this command:**

1-5

**Meaning of the DriverP0 parameter:**

Indicates the station address (0-255).

**Meaning of the DriverP1 parameter:**

20

**Meaning of the DriverP2 parameter:**

Sets whether a checksum control is used in the protocol or not.

- 0 Without checksum
- 1 With checksum

**Values that are returned:**

Value in PointValue (0) = Exceeded channel

Value in PointValue (1) = Time

Value in PointValue (2) = Time stamp

Value in PointValue (3) = Value

Value in PointValue (4) = L\_Flag

### **3.3.10. Mask Alarms (Disable)**

**Description of this command:**

This command is used to disable the alarm associated to the limit of a channel.

**Type of data handled by this command:**

Digital Output

**Number of points accepted by this command:**

1

**Meaning of the DriverP0 parameter:**

Indicates the station address (0-255). If the station is 0, it implies a broadcasting message that does not expect an answer from the equipment.

**Meaning of the DriverP1 parameter:**

21

**Meaning of the DriverP2 parameter:**

Sets whether a checksum control is used in the protocol or not.

- 0 Without checksum
- 1 With checksum

**Meaning of the DriverP3 parameter:**

Indicates the channel number to be used (1-16).

**Meaning of the DriverP4 parameter:**

Indicates the type of alarm to be disabled

- 0 = Disables all the alarms for a channel.
- 1 = Disables the alarm for limit #1
- 2 = Disables the alarm for limit #2

**3.3.11. Unmask Alarms (Enable)****Description of this command:**

This command is used to enable the alarm associated to the limit of a channel.

**Type of data handled by this command:**

Digital Output

**Number of points accepted by this command:**

1

**Meaning of the DriverP0 parameter:**

Indicates the station address (0-255). If the station is 0, it implies a broadcasting message that does not expect an answer from the equipment.

**Meaning of the DriverP1 parameter:**

22

**Meaning of the DriverP2 parameter:**

Sets whether a checksum control is used in the protocol or not.

- 0 Without checksum
- 1 With checksum

**Meaning of the DriverP3 parameter:**

Indicates the channel number to be used (1-16).

**Meaning of the DriverP4 parameter:**

Indicates the type of alarm to be disabled.

- 0 = Enables all the alarms for a channel
- 1 = Enables the alarm for limit #1
- 2 = Enables the alarm for limit #2

**3.3.12. Latches Reset****Description of this command:**

This command allows you to reset the latch associated to the limit of a channel.

**Type of data handled by this command:**

Digital Output

**Number of points accepted by this command:**

1

**Meaning of the DriverP0 parameter:**

Indicates the station address (0-255). If the station is 0, it implies a broadcasting message that does not expect an answer from the equipment.

**Meaning of the DriverP1 parameter:**

23

**Meaning of the DriverP2 parameter:**

Sets whether a checksum control is used in the protocol or not.

- 0 Without checksum
- 1 With checksum

**Meaning of the DriverP3 parameter:**

Indicates the channel number to be used (1-16).

**Meaning of the DriverP4 parameter:**

Indicates the type of latch to be reset

- 0 = Resets all latches for a channel
- 1 = Resets latch for limit #1
- 2 = Resets latch for limit #2

[Waveform Generation Commands]

## 3.4. Waveform Generation Commands

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### 3.4.1. Generate Ramp

**Description of this command:**

allows you to generate a ramp function in an output.

**Type of data handled by this command:**

Analog Output

**Number of points accepted by this command:**

3

**Meaning of the DriverP0 parameter:**

Indicates the station address (0-255). If the station is 0, it implies a broadcasting message that does not expect an answer from the equipment.

**Meaning of the DriverP1 parameter:**

24

**Meaning of the DriverP2 parameter:**

Sets whether a checksum control is used in the protocol or not.

- 0 Without checksum
- 1 With checksum

**Meaning of the DriverP3 parameter:**

Indicates the channel number to be used (1-16).

**Meaning of the DriverP4 parameter:**

Defines the time duration for the ramp.

**Values that are sent:**

Value in PointValue (0) = Defines the value from which the ramp starts.

Value in PointValue (1) = Defines the highest value the ramp should reach.

Value in PointValue (2) = Defines the number of waves to generate. If 0 is specified, the wave is generated in continuous mode.

### 3.4.2. Generate Triangle Wave

**Description of this command:**

This command allows you to generate a triangle function in a specified channel.

**Type of data handled by this command:**

Analog Output

**Number of points accepted by this command:**

3

**Meaning of the DriverP0 parameter:**

Indicates the station address (0-255). If the station is 0, it implies a broadcasting message that does not expect an answer from the equipment.

**Meaning of the DriverP1 parameter:**

25

**Meaning of the DriverP2 parameter:**

Sets whether a checksum control is used in the protocol or not.

- 0 Without checksum

- 1 With checksum

**Meaning of the DriverP3 parameter:**

Indicates the channel number to be used (1-16).

**Meaning of the DriverP4 parameter:**

Defines the time from the initial value to the final value of the wave.

**Meaning of the DriverP5 parameter:**

Defines the time from the final value to the initial value of the wave.

**Values that are sent:**

Value in PointValue (0) = Defines the value from which the wave starts.

Value in PointValue (1) = Defines the final value the wave should reach.

Value in PointValue (2) = Defines the number of waves to generate. If 0 is specified, the wave is generated in continuous mode.

### 3.4.3. Generate Pulse Stream

**Description of this command:**

This command allows you to generate a pulse stream function in a specific channel.

**Type of data handled by this command:**

Analog Output

**Number of points accepted by this command:**

3

**Meaning of the DriverP0 parameter:**

Indicates the station address (0-255). If the station is 0, it implies a broadcasting message that does not expect an answer from the equipment.

**Meaning of the DriverP1 parameter:**

26

**Meaning of the DriverP2 parameter:**

Sets whether a checksum control is used in the protocol or not.

- 0 Without checksum
- 1 With checksum

**Meaning of the DriverP3 parameter:**

Indicates the channel number to be used (1-16).

**Meaning of the DriverP4 parameter:**

Defines a time lapse from the initial value to the final value of the wave.

**Meaning of the DriverP5 parameter:**

Defines a time lapse from the final value to the initial value of the wave.

**Values that are sent:**

Value in PointValue (0) = Defines the value from which the wave starts.

Value in PointValue (1) = Defines the final value the wave should reach. For digital channels, start up and final values must be 0 or 1 only.

Value in PointValue (2) = Defines the number of waves to generate. If 0 is specified, the wave is generated in continuous mode.

### 3.4.4. Hold Waveform

**Description of this command:**

This command allows you to momentarily stop the active waveform.

**Type of data handled by this command:**

Analog Output

**Number of points accepted by this command:**

1

**Meaning of the DriverP0 parameter:**

Indicates the station address (0-255). If the station is 0, it implies a broadcasting message that does not expect an answer from the equipment.

**Meaning of the DriverP1 parameter:**

27

**Meaning of the DriverP2 parameter:**

Sets whether a checksum control is used in the protocol or not.

- 0 Without checksum
- 1 With checksum

**Meaning of the DriverP3 parameter:**

Indicates the channel number to be used (9-16).

### 3.4.5. Restart Waveform

**Description of this command:**

This command allows you to restart a waveform which is momentarily stopped from the stop point.

**Type of data handled by this command:**

Digital Output

**Number of points accepted by this command:**

1

**Meaning of the DriverP0 parameter:**

Indicates the station address (0-255). If the station is 0, it implies a broadcasting message that does not expect an answer from the equipment.

**Meaning of the DriverP1 parameter:**

28

**Meaning of the DriverP2 parameter:**

Sets whether a checksum control is used in the protocol or not.

- 0 Without checksum
- 1 With checksum

**Meaning of the DriverP3 parameter:**

Indicates the channel number to be used (9-16).

[Exception Reporting Command]

## 3.5. Exception Reporting Command

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### 3.5.1. Turn off Exception Reporting

**Description of this command:**

This command is used to disable exception reports.

**Type of data handled by this command:**

Analog Output

**Number of points accepted by this command:**

1

**Meaning of the DriverP0 parameter:**

Indicates the station address (0-255). If the station is 0, it implies a broadcasting message that does not expect an answer from the equipment.

**Meaning of the DriverP1 parameter:**

31

**Meaning of the DriverP2 parameter:**

Sets whether a checksum control is used in the protocol or not.

- 0 Without checksum
- 1 With checksum

## 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.

- [1003] DRIVER (Internal): Exception reports not supported
- [1005] DRIVER (Internal): Invalid driver stage
- [1300] PROTOCOL (Timeout): No answer
- [1433] PROTOCOL (Format): Validation error in device response
- [2109] CONFIG (NumValues): Invalid number of channels (must be 3)
- [2147] CONFIG (NumValues): Only one value can be read or written
- [2189] CONFIG (NumValues): Too many values (max=16)
- [2199] CONFIG (NumValues): Too many values (max=24)
- [2209] CONFIG (NumValues): Too many values (max=32)
- [2210] CONFIG (NumValues): Too many values (max=33)
- [2216] CONFIG (NumValues): Too many values (max=4)
- [2235] CONFIG (NumValues): Too many values (max=8)
- [3022] CONFIG (P0): Invalid device address (1-255)
- [3508] CONFIG (P1): Invalid command
- [4511] CONFIG (P3): Invalid channel (1-16)
- [4512] CONFIG (P3): Invalid channel (1-32)
- [4513] CONFIG (P3): Invalid channel (1-34)
- [4514] CONFIG (P3): Invalid channel (1-8)
- [4515] CONFIG (P3): Invalid channel (9-32)
- [4516] CONFIG (P3): Invalid channel (9-50)
- [5001] CONFIG (P4): Invalid alarm type (1-2)
- [5015] CONFIG (P4): Invalid limit (0-1)
- [5030] CONFIG (P4): Invalid output channel (0 or 9-16)
- [5512] CONFIG (P5): Invalid type of limit (0-4)
- [8042] CONFIG (Remote): Channel type mismatch
- [8043] CONFIG (Remote): Channel value above legal range
- [8044] CONFIG (Remote): Channel value below legal range
- [8053] CONFIG (Remote): Command code in error
- [8057] CONFIG (Remote): Command for analog channels only
- [8058] CONFIG (Remote): Command for input channels only
- [8059] CONFIG (Remote): Command for output channels only
- [8063] CONFIG (Remote): Command not supported
- [8064] CONFIG (Remote): Command parameters in error
- [8066] CONFIG (Remote): Communication watchdog timer time-out has occurred
- [8069] CONFIG (Remote): Communications parameters in error
- [8081] CONFIG (Remote): Data conversion error: input not measurable

[8085] CONFIG (Remote): Data for channel is not yet valid  
[8134] CONFIG (Remote): Excitation voltage too high  
[8135] CONFIG (Remote): Excitation voltage too low  
[8145] CONFIG (Remote): Frame average has not been started  
[8160] CONFIG (Remote): Host is not in primary mode  
[8162] CONFIG (Remote): Illegal alarm channel  
[8163] CONFIG (Remote): Illegal baud rate  
[8164] CONFIG (Remote): Illegal channel number  
[8167] CONFIG (Remote): Illegal communication mode  
[8171] CONFIG (Remote): Illegal degree of filtering specified  
[8177] CONFIG (Remote): Illegal units code for channel  
[8205] CONFIG (Remote): Limit not latchable  
[8210] CONFIG (Remote): Logging already disabled  
[8211] CONFIG (Remote): Logging already enabled  
[8212] CONFIG (Remote): Logging not supported  
[8219] CONFIG (Remote): No alarm channel defined for limit  
[8221] CONFIG (Remote): No limit defined for channel  
[8222] CONFIG (Remote): No limits currently exceeded  
[8223] CONFIG (Remote): No log configuration for the channel  
[8226] CONFIG (Remote): No personality code defined for channel  
[8227] CONFIG (Remote): No reset since the last command  
[8229] CONFIG (Remote): No waveform is currently being generated  
[8246] CONFIG (Remote): Only 16 output waveforms can be active at one time  
[8264] CONFIG (Remote): Personality code illegal for this channel  
[8268] CONFIG (Remote): Primary mode already set  
[8295] CONFIG (Remote): Record not found in the log file  
[8308] CONFIG (Remote): Reset occurred since last command  
[8330] CONFIG (Remote): Temperature reference channel data is in error  
[8334] CONFIG (Remote): Thermocouple reference channels are protected  
[8350] CONFIG (Remote): Unknown error received  
[8353] CONFIG (Remote): Unknown or illegal flag field  
[8354] CONFIG (Remote): Unknown personality code  
[8364] CONFIG (Remote): WARNING! Over temperature - check site temperature  
[8366] CONFIG (Remote): Wrong addressing mode specified

## 4.2. Keywords list

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

"4300, 4400, 4500, 4600, ACROMAG, Processor, Series".