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## XMP12XMB Driver Manual

*SCHNEIDER ELECTRIC MiCOM P120/P121/P122/P123 Relays  
Modbus TCP Protocol Driver*

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## XMP12XMB technical specifications

### General information

XMP12XMB driver supports SCHNEIDER ELECTRIC/AREVA MiCOM P120/P121/P122/P123 Overcurrent Relays using the Modbus RTU protocol according to the Schneider Electric P12x/EN T/Eb6\_ Technical Guide (P12x\_EN\_T\_Eb6\_.pdf).  
MiCOM P120, P121, P122 and P123 relays can communicate by a RS 485 link behind the unit following the MODBUS RTU protocol.  
A MODBUS NETWORK IS LIMITED TO 32 RELAY ADDRESSES ON THE SAME MODBUS SUB-LAN.

### Command list

#### Commands

##### *Read Status*

**Description of this command:**

Obtains current status (ON/OFF) in a group of logic coils. This command implements Modbus function 1.

**Methods used to run this command:**

Digital Input (ReadBooleanValues)

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

1-1000

**Meaning of the DriverP0 parameter:**

Station number (0-255).

**Meaning of the DriverP1 parameter:**

1

**Meaning of the DriverP2 parameter:**

Indicates the starting coil address.

**Values that are returned:**

Value in PointValue (0) = First coil status (0=OFF, 1=ON)

Value in PointValue (1) = Second coil status (0=OFF, 1=ON)

...

Value in PointValue (n-1) = Last coil status (0=OFF, 1=ON)

##### *Read Random Registers*

**Description of this command:**

Reads information from the slave.

**Methods used to run this command:**

Analog Input (ReadNumericValues)

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

1-250

**Meaning of the DriverP0 parameter:**

Unit Address (1-255).

**Meaning of the DriverP1 parameter:**

0

**Meaning of the DriverP2 parameter:**

Not used.

**Meaning of the DriverP3 parameter:**

Indicates the format for returned dates:

0 = Use English format (MM/DD/YYYY)

1 = Use Spanish format (DD/MM/YYYY)

**Meaning of the DriverP4 parameter:**

Modbus protocol type, where:

0 = RTU (for slave serial ports)

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1 = TCP (for slave ethernet ports)

**Meaning of the DriverP5 parameter:**

Number of retries reading each item, before discarding the whole communication.

**Meaning of the DriverP6 parameter:**

Not used.

**Meaning of the DriverP7 parameter:**

Comma-separated list of register items to be read, using the format

"NNNFD:AAAA[:INV\_VAL],NNNFD:AAAA[:INV\_VAL],NNNFD:AAAA[:INV\_VAL],..." where:

- <NNN> = Number of pointvalues to be returned by this item (1-999). If the item returns more values than reserved points, extra values are discarded. If it returns less values, points are filled with -1 and empty texts.
- <F> = Format code, where:
  - D=Get date from an unsigned \_\_int64 milliseconds since 01/01/2000
  - T=Get time from an unsigned \_\_int64 milliseconds since 01/01/2000
  - s=Get text from WORD Modbus registers (use the Divisor format parameter to set the number of registers to be read. For example, 's5' will read 5 registers, this is, 10 bytes).
  - u=Get a 16-bit unsigned integer (WORD, 1 Modbus register)
  - U=Get a 32-bit unsigned integer (DWORD, 2 Modbus registers)
  - V=Get a 64-bit unsigned integer (UINT64, 4 Modbus registers)
  - i=Get a 16-bit signed integer (short, 1 Modbus register)
  - l=Get a 32-bit signed integer (int, 2 Modbus registers)
  - f=Get a 32-bit IEEE floating point number (float, 2 Modbus registers)
  - F=Get a 64-bit IEEE floating point number (double, 4 Modbus registers)
  - b=Get individual bit values as 0 or 1 (registers will be considered as words and number of actual words requested will be (NN/16)+1)
  - a=Get individual bit values as active or inactive (same as case 'b')
  - A=Get individual bit values as Active or Inactive (same as case 'b')
  - l=Get individual bit values as high or low (same as case 'b')
  - L=Get individual bit values as High or Low (same as case 'b')
  - o=Get individual bit values as on or off (same as case 'b')
  - O=Get individual bit values as On or Off (same as case 'b')
  - y=Get individual bit values as yes or no (same as case 'b')
  - Y=Get individual bit values as Yes or No (same as case 'b')
- @=Return a string from a built-in string list based on the obtained '16-bit unsigned' register value
- \$=Return a string from a built-in string list based on the text contents in <D> registers
- <D> = Divisor, where (if format is '\$', this value indicates a number of registers to be read):
  - 0=No divisor
  - 1=Divide by 10
  - 2=Divide by 100
  - 3=Divide by 1000
  - 4=Divide by 10000
  - 5=Divide by 100000
  - d=Multiply by 360/65536
- <AAAA> = First register address, as a 4-digit uppercase hexadecimal number (0000-FFFF)
- #INV\_VAL = Optional value to be considered as an invalid value and returned as '\*\*\*\*\*'. Value is compared before the divisor is applied.
- Example =  
001D0:FFF0,001T0:FFF0,003@0:0E36,192O0:0294,001i2:003E:9999,001f0:231C:-1298415.875

**Meaning of the DriverP8 parameter:**

Not used.

**Meaning of the DriverP9 parameter:**

Not used.

**Important note:**

Consider that each item may return several values, so DriverNumPoints should be big enough to receive all values.

**Values that are returned:**

Value in PointValue (0) = First numeric data returned by first item

Text in PointText (0) = First text data returned by first item

...

Value in PointValue (DriverNumPoints-1) = Last numeric data returned by last item

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Text in PointText (DriverNumPoints-1) = Last text data returned by last item

## *Read Last Fault*

**Description of this command:**

Reads last fault information.

**Methods used to run this command:**

Analog Input (ReadNumericValues)

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

1-11

**Meaning of the DriverP0 parameter:**

Unit Address (1-255).

**Meaning of the DriverP1 parameter:**

8

**Meaning of the DriverP2 parameter:**

Fault number (1-24, 1=newest, 24=oldest).

**Meaning of the DriverP3 parameter:**

Indicates the format for returned dates:

0 = Use English format (MM/DD/YYYY hh:mm:ss.000)

1 = Use Spanish format (DD/MM/YYYY hh:mm:ss.000)

**Meaning of the DriverP4 parameter:**

Modbus protocol type, where:

0 = RTU (for slave serial ports)

1 = TCP (for slave ethernet ports)

**Meaning of the DriverP5 parameter:**

Number of data request retries before discarding the whole communication.

**Meaning of the DriverP6 parameter:**

Not used.

**Meaning of the DriverP7 parameter:**

Not used.

**Meaning of the DriverP8 parameter:**

Not used.

**Meaning of the DriverP9 parameter:**

Not used.

**Values that are returned:**

Text in PointText (0) = Fault Number

Text in PointText (1) = Fault Date

Text in PointText (2) = Fault Type

Text in PointText (3) = Faulty Phase

Text in PointText (4) = Fault Magnitude Value (A)

Text in PointText (5) = Phase A Magnitude (RMS) (A)

Text in PointText (6) = Phase B Magnitude (RMS) (A)

Text in PointText (7) = Phase C Magnitude (RMS) (A)

Text in PointText (8) = Earth/Ground Magnitude (RMS) (A)

Text in PointText (9) = Active Configuration Group

Text in PointText (10) = Fault Acknowledged

## *Read Events*

**Description of this command:**

Requests the slave to send snap-shot events.

**Methods used to run this command:**

Analog Input (ReadNumericValues)

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

1

**Meaning of the DriverP0 parameter:**

Unit Address (1-255).

**Meaning of the DriverP1 parameter:**

7

**Meaning of the DriverP2 parameter:**

Filter by Acknowledge (0=show only not acknowledged, 1=show only acknowledged, 2=show all)

**Meaning of the DriverP3 parameter:**

Indicates the format for returned dates:

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0 = Use English format (MM/DD/YYYY hh:mm:ss.000)  
1 = Use Spanish format (DD/MM/YYYY hh:mm:ss.000)

**Meaning of the DriverP4 parameter:**

Modbus protocol type, where:

0 = RTU (for slave serial ports)  
1 = TCP (for slave ethernet ports)

**Meaning of the DriverP5 parameter:**

Number of data request retries before discarding the whole communication.

**Meaning of the DriverP6 parameter:**

Indicates the path where the event file will be generated. If this property is empty, the local driver folder is used by default.

**Meaning of the DriverP7 parameter:**

Delete event file if it exists (0=No, 1=Yes).

**Meaning of the DriverP8 parameter:**

Indicate if additional values must be included after each event (0=No, 1=Yes).

**Meaning of the DriverP9 parameter:**

Filename for event file. If empty, 'XMP12XMB\_Events.Relayxxx.txt' will be used, where xxx is the unit address given in DriverP0.

**Values that are returned:**

Value in PointValue (0) = Indicates how many events have been extracted.

Text in PointText (0) = Description of last event extracted (n/a if no events extracted).

## Synchronize

**Description of this command:**

Sets a new date and time using the PC clock date and time.

*This command follows this procedure:*

- Reads the current date and time from the slave.
- Compares the received slave date and time (plus the estimated reading delay indicated in DriverP6) against the current PC clock date and time.
- Based on the allowed time difference given in the P2 parameter, the driver determines if a synchronization is necessary.
- If a synchronization is required, the driver checks if password is active in relay. If a password is necessary, passwords defined in DriverP8 are attempted.
- Following, the driver sends the current PC clock date and time (plus the estimated transmission delay indicated in DriverP7) to the slave.
- After synchronization, reads back the new date and time from the slave.
- Compares the received slave date and time (plus the estimated reading delay indicated in DriverP6) against the current PC clock date and time.
- Based on the allowed time difference given in the P2 parameter, the driver determines if the synchronization was successful or not.
- Returns status or error information about the synchronization result.

**Methods used to run this command:**

Analog Input (ReadNumericValues)

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

1-9

**Meaning of the DriverP0 parameter:**

Unit Address (1-255).

**Meaning of the DriverP1 parameter:**

Synchronization mode, that sets the type of driver reaction when a synchronization resulted in the slave clock to be out of the allowed difference:

10 = If not successful, the driver call is considered successful and the unsuccessful situation is reported in PointValue(0) and PointText(0).

11 = If not successful, the driver call is considered as failed and a driver error is returned.

12 = If not successful, a broadcast synchronization command is sent to all slaves (using slave address 900) and after that synchronization is automatically retried, reporting the final situation in PointValue(0) and PointText(0).

**Meaning of the DriverP2 parameter:**

Allowed difference, in milliseconds.

**Meaning of the DriverP3 parameter:**

Indicates the format for returned dates:

0 = Use English format (MM/DD/YYYY hh:mm:ss.000)  
1 = Use Spanish format (DD/MM/YYYY hh:mm:ss.000)

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**Meaning of the DriverP4 parameter:**

Modbus protocol type, where:  
0 = RTU (for slave serial ports)  
1 = TCP (for slave ethernet ports)

**Meaning of the DriverP5 parameter:**

Number of retries before discarding the whole communication.

**Meaning of the DriverP6 parameter:**

Estimated communication delay when reading date and time from the slave, in milliseconds. This delay has to do with the communication link and compensates the elapsed time between the moment the slave transmits the telegram with its date and time and the moment the telegram is received and processed by the driver.

**Meaning of the DriverP7 parameter:**

Estimated communication delay when transmitting date and time to the slave, in milliseconds. This delay has to do with the communication link and compensates the elapsed time between the moment the driver transmits the telegram with the PC clock date and time to the relay and the moment the telegram is received and processed by the slave.

**Meaning of the DriverP8 parameter:**

First and second ASCII password to be sent before synchronizing. If left empty, default is AAAA,ZZZZ.

**Meaning of the DriverP9 parameter:**

Not used.

**Values that are returned:**

Value in PointValue (0) = 0 if synchronization not needed, 1 if synchronized OK, 2 if error synchronizing.

Value in PointValue (1) = Returns how many retries were done with the broadcast command sent to all slaves (if it was necessary).

Value in PointValue (3) = Time difference before synchronization in milliseconds.

Value in PointValue (8) = Time difference after synchronization in milliseconds (also returns previous difference if synchronization was not needed).

Text in PointText (0) = Returned status or error message.

Text in PointText (1) = PC clock date and time obtained when starting communication.

Text in PointText (2) = Slave date and time received when starting communication.

Text in PointText (3) = Slave date and time received when starting communication, corrected with reading delay.

Text in PointText (4) = PC clock date and time obtained before synchronization (empty if synchronization was not needed).

Text in PointText (5) = Actual PC clock date and time used for synchronization, corrected with transmitting delay (empty if synchronization was not needed).

Text in PointText (6) = PC clock date and time obtained after synchronization (empty if synchronization was not needed).

Text in PointText (7) = Slave date and time received after synchronization (previous date and time if synchronization was not needed).

Text in PointText (8) = Slave date and time received after synchronization, corrected with reading delay (previous date and time if synchronization was not needed).

## *Get Disturbance Record List*

**Description of this command:**

Returns a list of disturbance records available, ordered by date and time, newest first. Record number is returned in PointValue and record time in PointText. If the number of records found is less than the number of points reserved, remaining pointvalues are set to -1 and pointtexts are set to 'n/a'.

**Methods used to run this command:**

Analog Input (ReadNumericValues)

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

1-5

**Meaning of the DriverP0 parameter:**

Unit Address (1-255).

**Meaning of the DriverP1 parameter:**

1

**Meaning of the DriverP2 parameter:**

Not used.

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**Meaning of the DriverP3 parameter:**

Indicates the format for returned dates:

0 = Use English format (MM/DD/YYYY hh:mm:ss.000)

1 = Use Spanish format (DD/MM/YYYY hh:mm:ss.000)

**Meaning of the DriverP4 parameter:**

Function type:

128 = Distance protection (typical setting)

160 = Overcurrent protection

176 = Transformer differential protection

192 = Line differential protection

254 = Generic classification GEN

255 = Global classification GLB

**Meaning of the DriverP5 parameter:**

Number of data request retries before discarding the whole communication.

**Meaning of the DriverP6 parameter:**

Not used.

**Meaning of the DriverP7 parameter:**

Not used.

**Meaning of the DriverP8 parameter:**

Not used.

**Meaning of the DriverP9 parameter:**

Not used.

**Values that are returned:**

Value in PointValue (0) = Newest disturbance record number

Text in PointText (0) = Date and time of newest disturbance record

- ...

Text in PointText (DriverNumPoints-1) = Oldest disturbance record number

Value in PointValue (DriverNumPoints-1) = Date and time of oldest disturbance record

## *Download Disturbance Record*

**Description of this command:**

Requests the slave to send the complete disturbance record information that correspond to the newest or a selected record number. Format of output files is COMTRADE ASCII. Both .cfg and .dat are generated according to IEEE Standard Common Format for Transient Data Exchange (COMTRADE) for Power Systems (1991 format). Additional .hdr and .inf files are generated, and can include user-supplied information through the DriverP8 parameter.

**Methods used to run this command:**

Analog Input (ReadNumericValues)

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

1-8

**Meaning of the DriverP0 parameter:**

Unit Address (1-255).

**Meaning of the DriverP1 parameter:**

2

**Meaning of the DriverP2 parameter:**

Record index to be downloaded (use 0 for newest and 4 for oldest)

**Meaning of the DriverP3 parameter:**

Indicates the format for returned dates:

0 = Use English format (MM/DD/YYYY hh:mm:ss.000)

1 = Use Spanish format (DD/MM/YYYY hh:mm:ss.000)

**Meaning of the DriverP4 parameter:**

Modbus protocol type, where:

0 = RTU (for slave serial ports)

1 = TCP (for slave ethernet ports)

**Meaning of the DriverP5 parameter:**

Number of data request retries before discarding the whole communication.

**Meaning of the DriverP6 parameter:**

Indicates the path where the COMTRADE files will be generated. If this property is empty, the local driver folder is used by default.

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## Meaning of the DriverP7 parameter:

Indicates a TriggerTime that should not be downloaded if it happens to be the last TriggerTime available in the protection. If empty, the last TriggerTime available is downloaded. Format must be 'YYYY-MM-DD hh:mm:ss.uuuuu000', where uuuuu=microseconds.

## Meaning of the DriverP8 parameter:

Comma-separated list with additional information about the protection to be used in the .hdr and .inf files. Format: FieldName1=value1,FieldName2=value2,etc. Example: ID=123456,SerialNumber=A55GH77,Port=Ethernet

## Meaning of the DriverP9 parameter:

Filename root for .hdr, .cfg, .dat and .inf files. If empty, 'XMP12XMB\_DisturbanceRecord.Relayxxx.hdr', 'XMP12XMB\_DisturbanceRecord.Relayxxx.cfg', 'XMP12XMB\_DisturbanceRecord.Relayxxx.dat' and 'XMP12XMB\_DisturbanceRecord.Relayxxx.inf' will be used, where xxx is the protection unit address. Existing files with same name are overwritten.

## Values that are returned:

Text in PointText (0) = Download status  
Text in PointText (1) = Record number  
Text in PointText (2) = Trigger position  
Text in PointText (3) = First sample time  
Text in PointText (4) = Trigger time  
Text in PointText (5) = Last sample time  
Text in PointText (6) = Total samples  
Text in PointText (7) = Samples per cycle  
Value in PointValue (0) = Number of channels downloaded  
Value in PointValue (1) = Record number  
Value in PointValue (2) = Number of triggers  
Value in PointValue (3) = System frequency (Hz)  
Value in PointValue (4) = Cycles per record  
Value in PointValue (5) = Available records  
Value in PointValue (6) = Number of analog channels  
Value in PointValue (7) = Number of digital channels  
[Customized Commands]

## Customized Commands

### Read Relay Status

#### Description of this command:

Reads relay status information.

#### Methods used to run this command:

Analog Input (ReadNumericValues)

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

1-10

#### Meaning of the DriverP0 parameter:

Unit Address (1-255).

#### Meaning of the DriverP1 parameter:

0

#### Meaning of the DriverP2 parameter:

Not used.

#### Meaning of the DriverP3 parameter:

Indicates the format for returned dates:  
0 = Use English format (MM/DD/YYYY hh:mm:ss.000)  
1 = Use Spanish format (DD/MM/YYYY hh:mm:ss.000)

#### Meaning of the DriverP4 parameter:

Modbus protocol type, where:  
0 = RTU (for slave serial ports)  
1 = TCP (for slave ethernet ports)

#### Meaning of the DriverP5 parameter:

Number of retries reading each item, before discarding the whole communication.

#### Meaning of the DriverP6 parameter:

Not used.

#### Meaning of the DriverP7 parameter:

010b0:000F

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**Meaning of the DriverP8 parameter:**

Not used.

**Meaning of the DriverP9 parameter:**

Not used.

**Values that are returned:**

Text in PointText (0) = Watchdog  
Text in PointText (1) = Communication failure  
Text in PointText (2) = EEPROM data failure  
Text in PointText (3) = Analogue failure  
Text in PointText (4) = Datation failure  
Text in PointText (5) = EEPROM calibration failure  
Text in PointText (6) = SRAM failure  
Text in PointText (7) = Battery failure  
Text in PointText (9) = Default settings alarm

## *Read LED Status*

**Description of this command:**

Reads LED status information.

**Methods used to run this command:**

Analog Input (ReadNumericValues)

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

1-8

**Meaning of the DriverP0 parameter:**

Unit Address (1-255).

**Meaning of the DriverP1 parameter:**

0

**Meaning of the DriverP2 parameter:**

Not used.

**Meaning of the DriverP3 parameter:**

Indicates the format for returned dates:

0 = Use English format (MM/DD/YYYY hh:mm:ss.000)  
1 = Use Spanish format (DD/MM/YYYY hh:mm:ss.000)

**Meaning of the DriverP4 parameter:**

Modbus protocol type, where:

0 = RTU (for slave serial ports)  
1 = TCP (for slave ethernet ports)

**Meaning of the DriverP5 parameter:**

Number of retries reading each item, before discarding the whole communication.

**Meaning of the DriverP6 parameter:**

Not used.

**Meaning of the DriverP7 parameter:**

008b0:000C

**Meaning of the DriverP8 parameter:**

Not used.

**Meaning of the DriverP9 parameter:**

Not used.

**Values that are returned:**

Text in PointText (0) = LED 1 (Trip)  
Text in PointText (1) = LED 2 (Alarm)  
Text in PointText (2) = LED 3 (Warning)  
Text in PointText (3) = LED 4 (Healthy)  
Text in PointText (4) = LED 5  
Text in PointText (5) = LED 6  
Text in PointText (6) = LED 7  
Text in PointText (7) = LED 8

## *Read Input Status*

**Description of this command:**

Reads input status information.

**Methods used to run this command:**

Analog Input (ReadNumericValues)

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

1-5

**Meaning of the DriverP0 parameter:**

Unit Address (1-255).

**Meaning of the DriverP1 parameter:**

0

**Meaning of the DriverP2 parameter:**

Not used.

**Meaning of the DriverP3 parameter:**

Indicates the format for returned dates:

0 = Use English format (MM/DD/YYYY hh:mm:ss.000)

1 = Use Spanish format (DD/MM/YYYY hh:mm:ss.000)

**Meaning of the DriverP4 parameter:**

Modbus protocol type, where:

0 = RTU (for slave serial ports)

1 = TCP (for slave ethernet ports)

**Meaning of the DriverP5 parameter:**

Number of retries reading each item, before discarding the whole communication.

**Meaning of the DriverP6 parameter:**

Not used.

**Meaning of the DriverP7 parameter:**

005b0:0010

**Meaning of the DriverP8 parameter:**

Not used.

**Meaning of the DriverP9 parameter:**

Not used.

**Values that are returned:**

Text in PointText (0) = Input 1 Status

Text in PointText (1) = Input 2 Status

Text in PointText (2) = Input 3 Status

Text in PointText (3) = Input 4 Status

Text in PointText (4) = Input 5 Status

## *Read Output Status*

**Description of this command:**

Reads output status information.

**Methods used to run this command:**

Analog Input (ReadNumericValues)

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

1-9

**Meaning of the DriverP0 parameter:**

Unit Address (1-255).

**Meaning of the DriverP1 parameter:**

0

**Meaning of the DriverP2 parameter:**

Not used.

**Meaning of the DriverP3 parameter:**

Indicates the format for returned dates:

0 = Use English format (MM/DD/YYYY hh:mm:ss.000)

1 = Use Spanish format (DD/MM/YYYY hh:mm:ss.000)

**Meaning of the DriverP4 parameter:**

Modbus protocol type, where:

0 = RTU (for slave serial ports)

1 = TCP (for slave ethernet ports)

**Meaning of the DriverP5 parameter:**

Number of retries reading each item, before discarding the whole communication.

**Meaning of the DriverP6 parameter:**

Not used.

**Meaning of the DriverP7 parameter:**

009b0:0013

**Meaning of the DriverP8 parameter:**

Not used.

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## Meaning of the DriverP9 parameter:

Not used.

## Values that are returned:

Text in PointText (0) = Output RL1 Status  
Text in PointText (1) = Output RL2 Status  
Text in PointText (2) = Output RL3 Status  
Text in PointText (3) = Output RL4 Status  
Text in PointText (4) = Output WD Status  
Text in PointText (5) = Output RL5 Status  
Text in PointText (6) = Output RL6 Status  
Text in PointText (7) = Output RL7 Status  
Text in PointText (8) = Output RL8 Status

## *Read Identificacion*

### Description of this command:

Reads identificacion information.

### Methods used to run this command:

Analog Input (ReadNumericValues)

### Number of points accepted by this command:

1-3

### Meaning of the DriverP0 parameter:

Unit Address (1-255).

### Meaning of the DriverP1 parameter:

0

### Meaning of the DriverP2 parameter:

Not used.

### Meaning of the DriverP3 parameter:

Indicates the format for returned dates:

0 = Use English format (MM/DD/YYYY hh:mm:ss.000)

1 = Use Spanish format (DD/MM/YYYY hh:mm:ss.000)

### Meaning of the DriverP4 parameter:

Modbus protocol type, where:

0 = RTU (for slave serial ports)

1 = TCP (for slave ethernet ports)

### Meaning of the DriverP5 parameter:

Number of retries reading each item, before discarding the whole communication.

### Meaning of the DriverP6 parameter:

Not used.

### Meaning of the DriverP7 parameter:

001s3:0000,001s3:0000,001s2:0003,001@0:0005,001s2:010A

### Meaning of the DriverP8 parameter:

Not used.

### Meaning of the DriverP9 parameter:

Not used.

### Values that are returned:

Text in PointText (0) = Type

Text in PointText (1) = Model

Text in PointText (2) = Manufacturer

Text in PointText (3) = VersionSoftware

Text in PointText (4) = UserReference

## *Read Measurements 1*

### Description of this command:

Reads group 1 of measurements

### Methods used to run this command:

Analog Input (ReadNumericValues)

### Number of points accepted by this command:

1-23

### Meaning of the DriverP0 parameter:

Unit Address (1-255).

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**Meaning of the DriverP1 parameter:**

0

**Meaning of the DriverP2 parameter:**

Not used.

**Meaning of the DriverP3 parameter:**

Indicates the format for returned dates:

0 = Use English format (MM/DD/YYYY hh:mm:ss.000)

1 = Use Spanish format (DD/MM/YYYY hh:mm:ss.000)

**Meaning of the DriverP4 parameter:**

Modbus protocol type, where:

0 = RTU (for slave serial ports)

1 = TCP (for slave ethernet ports)

**Meaning of the DriverP5 parameter:**

Number of retries reading each item, before discarding the whole communication.

**Meaning of the DriverP6 parameter:**

Not used.

**Meaning of the DriverP7 parameter:**

004U2:0030,001u0:003A,001u2:003B,009U2:003C,001u0:004E,006u0:005A,001u0:000D

**Meaning of the DriverP8 parameter:**

Not used.

**Meaning of the DriverP9 parameter:**

Not used.

**Values that are returned:**

Text in PointText (0) = IA (A)

Text in PointText (1) = IB (A)

Text in PointText (2) = IC (A)

Text in PointText (3) = IN (A)

Text in PointText (4) = Thermal (%)

Text in PointText (5) = Frequency (Hz)

Text in PointText (6) = Max. IA RMS (A)

Text in PointText (7) = Max. IB RMS (A)

Text in PointText (8) = Max. IC RMS (A)

Text in PointText (9) = Average IA RMS (A)

Text in PointText (10) = Average IB RMS (A)

Text in PointText (11) = Average IC RMS (A)

Text in PointText (12) = In - fn (A)

Text in PointText (13) = I2 (A)

Text in PointText (14) = I1 (A)

Text in PointText (15) = Ratio I2 / I1 (%)

Text in PointText (16) = Total Recloses

Text in PointText (17) = Cycles 1 Recloses

Text in PointText (18) = Cycles 2 Recloses

Text in PointText (19) = Cycles 3 Recloses

Text in PointText (20) = Cycles 4 Recloses

Text in PointText (21) = Total Trip and Lockout

Text in PointText (22) = Group selected

## *Read Measurements 2*

**Description of this command:**

Reads group 2 of measurements

**Methods used to run this command:**

Analog Input (ReadNumericValues)

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

1-12

**Meaning of the DriverP0 parameter:**

Unit Address (1-255).

**Meaning of the DriverP1 parameter:**

0

**Meaning of the DriverP2 parameter:**

Not used.

**Meaning of the DriverP3 parameter:**

Indicates the format for returned dates:

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0 = Use English format (MM/DD/YYYY hh:mm:ss.000)  
1 = Use Spanish format (DD/MM/YYYY hh:mm:ss.000)

#### Meaning of the DriverP4 parameter:

Modbus protocol type, where:

0 = RTU (for slave serial ports)  
1 = TCP (for slave ethernet ports)

#### Meaning of the DriverP5 parameter:

Number of retries reading each item, before discarding the whole communication.

#### Meaning of the DriverP6 parameter:

Not used.

#### Meaning of the DriverP7 parameter:

006U2:0061,001u0:0110,001u2:0111,003U0:0112,001u2:0118

#### Meaning of the DriverP8 parameter:

Not used.

#### Meaning of the DriverP9 parameter:

Not used.

#### Values that are returned:

Text in PointText (0) = Average Rolling Demand IA RMS (A)  
Text in PointText (1) = Average Rolling Demand IB RMS (A)  
Text in PointText (2) = Average Rolling Demand IC RMS (A)  
Text in PointText (3) = Max. Rolling Demand IA RMS (A)  
Text in PointText (4) = Max. Rolling Demand IB RMS (A)  
Text in PointText (5) = Max. Rolling Demand IC RMS (A)  
Text in PointText (6) = CB Operations  
Text in PointText (7) = CB Opening Time (s)  
Text in PointText (8) = S Amps(n) IA (A^n)  
Text in PointText (9) = S Amps(n) IB (A^n)  
Text in PointText (10) = S Amps(n) IC (A^n)  
Text in PointText (11) = CB Closing Time (s)

## Error messages

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

[1005] DRIVER (Internal): Invalid driver stage  
[1007] DRIVER (Internal): Code logic error  
[1008] DRIVER (Internal): Command execution requires a valid license  
[1009] DRIVER (Internal): Buffer size exceeded  
[1010] DRIVER (Internal): Error calculating elapsed milliseconds  
[1201] DRIVER (System): Error closing %s  
[1202] DRIVER (System): Error creating %s  
[1208] DRIVER (System): Error seeking end of %s  
[1210] DRIVER (System): Error writing to %s  
[1214] DRIVER (System): Error deleting %s  
[1300] PROTOCOL (Timeout): No answer  
[1313] PROTOCOL (Timeout): No answer from meter after retrying with a Start Communications message  
[1319] REPLY (Remote): Too many NAK BUSY or unexpected telegrams received  
[1332] PROTOCOL (Remote): Invalid date received  
[1333] PROTOCOL (Remote): Couldn't decode received date  
[1334] PROTOCOL (Remote): Invalid time received  
[1338] PROTOCOL (Remote): Couldn't decode reference date  
[1360] PROTOCOL (Remote): Error synchronizing device  
[1369] REPLY (Remote): Couldn't calculate first sample time  
[1421] PROTOCOL (Format): Negative acknowledge received from device  
[2001] CONFIG (DataType): Analog outputs are not supported by this driver  
[2002] CONFIG (DataType): Digital inputs are not supported by this driver  
[2003] CONFIG (DataType): Digital outputs are not supported by this driver  
[2178] CONFIG (NumValues): Too many values (max=1000)  
[2311] CONFIG (List): Invalid format of item list  
[2311] CONFIG (List): Invalid item format in item list

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[2314] CONFIG (List): Invalid number of points in item list (1-999)  
[3022] CONFIG (P0): Invalid device address (1-255)  
[3508] CONFIG (P1): Invalid command  
[3594] CONFIG (P1): Invalid synchronization mode  
[4161] CONFIG (P2): Invalid fault number (1-24)  
[4162] CONFIG (P2): Invalid record number (0-4)  
[8013] CONFIG (Remote): Acknowledge  
[8034] CONFIG (Remote): Busy (rejected message)  
[8138] CONFIG (Remote): Failure in associated device  
[8168] CONFIG (Remote): Illegal data address  
[8170] CONFIG (Remote): Illegal data value  
[8172] CONFIG (Remote): Illegal function  
[8347] CONFIG (Remote): Unknown error  
[8488] CONFIG (Remote): Gateway paths not available  
[8489] CONFIG (Remote): The targeted device failed to respond. The gateway generates this exception

## Supported devices

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

SCHNEIDER ELECTRIC MICOM P120 Overcurrent Relays  
SCHNEIDER ELECTRIC MICOM P121 Overcurrent Relays  
SCHNEIDER ELECTRIC MICOM P122 Overcurrent Relays  
SCHNEIDER ELECTRIC MICOM P123 Overcurrent Relays  
SCHNEIDER ELECTRIC MICOM P123 v11.D  
SCHNEIDER ELECTRIC MICOM P123 v11.E  
SCHNEIDER ELECTRIC MICOM P123 v12

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