

XCONDENS Driver Manual

System Electric Condensomatic CR-2000 Power Factor Controller
Driver



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 xcondens.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 xcondens.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 xcondens driver page at CPKSoft Engineering website: <http://www.cpksoft.com/tabid/55/ProductID/20/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

XCONDENS driver allows you to communicate with SYSTEM ELECTRIC CONDENSOMATIC CR-2000 Power Factor Controllers.

The device's communication interface operates according to the RS485 standard and offers a half-duplex connection at a RS485 line with a maximum of 32 instruments at one time.

2.2. Supported devices

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

SYSTEM ELECTRIC CONDENSOMATIC CR-2000 Power Factor Controller

3. Command list

3.1. Read Multiple Settings And/Or Data

Description of this command:

Obtains current values for parameters and measured data. This command can read up to 84 values from the device's memory. You must indicate the starting code (DriverP2) and the number of values to be read (DriverNumPoints). The more values you include in a single request, the more time it will take to complete the request given that the driver must request each value individually. Values with codes 17 and

24 to 31 are marked as 'reserved' or 'not used' and they are actually 'not read' when included in your request range, meaning this that these values will not take additional time to your request when they are part of your range. Anyway, in order to work with a linear memory model, the DriverNumPoints property must be set to include room for this values, even when they will take default '-1' values.

Type of data handled by this command:

Analog Input

Number of points accepted by this command:

1-84

Meaning of the DriverP0 parameter:

Station Number (1-32).

Meaning of the DriverP1 parameter:

0

Meaning of the DriverP2 parameter:

Indicates the code of the starting parameter to be read (0-83).

Meaning of the DriverP3 parameter:

Indicates the byte order to be expected: 0=Hi/Low, 1=Low/Hi

Meaning of the DriverP4 parameter:

Indicates the number of retries before abandoning a long packet transfer (0-25)
HMITalk1.CommTimeout = Set it to a value between 120 and 300 (ms)

Values that are returned:

Value in PointValue (0) = Actual value for the starting parameter
Value in PointValue (1) = Actual value for the starting+1 parameter
Value in PointValue (2) = Actual value for the starting+2 parameter
...

PARAMETERS TABLE:

Code	Parameter / Measurement -----	00
	Target cos-f for tariff 1 (0-199, 0-100=0-1 inductive, 101-199=0.99-0.01 capacitive)	01
	Target cos-f for tariff 2 (0-199)	02
	Actual cos-f (0-199)	03
	Alarm cos-f for tariff 1 (0-199)	04
	Alarm cos-f for tariff 2 (0-199)	05
	Voltage transformer ratio (1-9999)	06
	Current transformer ratio (1-9999)	07
	Limit for harmonic distortion of voltage in 0.1% (20-90)	08
	Alarm delay in 10 minutes (3-30)	09
	Switching time in seconds (3-30)	
10	Confirmation of alarms On/Off (0=On, >0=Off)	
11	Rated measuring voltage for over and undervoltage alarm in volts (0=Off, 58-700)	
12	Limit of switchings (0=Off, 1-9999)	
13	Fixed compensation power in kvar (0-9999)	
14	Parity (0=none, 1=odd, 2=even)	
15	Baudrate (0=300, 1=600, 2=1200, 4=2400, 5=4800, 6=9600)	
16	Device no. (1-32)	
17	Reserved (returns default value = -1)	
18	Operating mode (0=automatic, 127>manual)	
19	Energy flow direction (0=consumption, 127=delivery)	
20	Tariff (0=tariff1, 127=tariff2)	
21	Alarm no. (0=no alarm, 1=cos-f not reached, 2=harmonic alarm, 3=overvoltage, 4=undervoltage, 5=measuring current too low, 6=resonance)	
22	Switched on outputs (bit0=0: output1=Off, bit0=1: output1=On, bit1=0: output2=Off, ...)	
23	Detective outputs (bit0=0: output1=o.k., bit0=1: capacitor power on output1=not o.k., bit1=0: output2=o.k., ...)	
24	Not used (returns default value = -1)	
25	Not used (returns default value = -1)	
26	Not used (returns default value = -1)	
27	Not used (returns default value = -1)	
28	Not used (returns default value = -1)	
29	Not used (returns default value = -1)	
30	Not used (returns default value = -1)	
31	Not used (returns default value = -1)	
32	Ueff in kV (0-65535, consider voltage transformer ratio!)	
33	Ieff in A (0-65535, consider current transformer ratio!)	
34	S in kVA (0-65535)	
35	P in kW (0-65535)	
36	Q in kvar (0-65535)	
37	Switched on capacitor power in kva (0-65535)	
38	Missing capacitor power to target cos-f in kvar (0-65535)	
39	Harmonic distorsion of U in 0.1% of fundamental (0-65535)	
40	3 harmonic of U in 0.1% of fundamental (0-65535)	
41	5 harmonic of U in 0.1% of fundamental (0-65535)	
42	7 harmonic of U in 0.1% of fundamental (0-65535)	
43	11 harmonic of U in 0.1% of fundamental (0-65535)	
44	13 harmonic of U in 0.1% of fundamental (0-65535)	
45	3 harmonic of I in 0.1% of fundamental (0-65535)	
46	5 harmonic of I in 0.1% of fundamental (0-65535)	
47	7 harmonic of I in 0.1% of fundamental (0-65535)	
48	11 harmonic of I in 0.1% of fundamental (0-65535)	

49	13 harmonic of I in 0.1% of fundamental (0-65535)
50	Maximum of Ueff in kV (0-65535)
51	Maximum of Ieff in A (0-65535)
52	Maximum of S in kVA (0-65535)
53	Maximum of P in kW (0-65535)
54	Maximum of Q in kvar (0-65535)
55	Maximum of switched on capacitor power in kvar (0-65535)
56	Maximum of missing capacitor power in kvar (0-65535)
57	Maximum of harmonic distortion of U in 0.1% of fundamental (0-65535)
58	Maximum of 3 harmonic of U in 0.1% of fundamental (0-65535)
59	Maximum of 5 harmonic of U in 0.1% of fundamental (0-65535)
60	Maximum of 7 harmonic of U in 0.1% of fundamental (0-65535)
61	Maximum of 11 harmonic of U in 0.1% of fundamental (0-65535)
62	Maximum of 13 harmonic of U in 0.1% of fundamental (0-65535)
63	Maximum of 3 harmonic of I in 0.1% of fundamental (0-65535)
64	Maximum of 5 harmonic of I in 0.1% of fundamental (0-65535)
65	Maximum of 7 harmonic of I in 0.1% of fundamental (0-65535)
66	Maximum of 11 harmonic of I in 0.1% of fundamental (0-65535)
67	Maximum of 13 harmonic of I in 0.1% of fundamental (0-65535)
68	No. of switchings of output no. 1 in 25 (0-65535)
69	No. of switchings of output no. 2 in 25 (0-65535)
70	No. of switchings of output no. 3 in 25 (0-65535)
71	No. of switchings of output no. 4 in 25 (0-65535)
72	No. of switchings of output no. 5 in 25 (0-65535)
73	No. of switchings of output no. 6 in 25 (0-65535)
74	No. of switchings of output no. 7 in 25 (0-65535)
75	No. of switchings of output no. 8 in 25 (0-65535)
76	Operating hours of output no. 1 in 100 hours (0-65535)
77	Operating hours of output no. 2 in 100 hours (0-65535)
78	Operating hours of output no. 3 in 100 hours (0-65535)
79	Operating hours of output no. 4 in 100 hours (0-65535)
80	Operating hours of output no. 5 in 100 hours (0-65535)
81	Operating hours of output no. 6 in 100 hours (0-65535)
82	Operating hours of output no. 7 in 100 hours (0-65535)
83	Operating hours of output no. 8 in 100 hours (0-65535)

3.2. Write Single Setting

Description of this command:

Sets a new value for one writable parameter. The device does not check the programmed data to be within the allowed limits. Wrong parameter settings will affect the correct function of the regulator or its reliability. For the reset of maximum values of powers and harmonics the content of the data sent is not relevant. Any write command to the variables results in a reset of these values.

Type of data handled by this command:

Analog Output

Number of points accepted by this command:

1

Meaning of the DriverP0 parameter:

Station Number (1-32).

Meaning of the DriverP1 parameter:

0

Meaning of the DriverP2 parameter:

Indicates the code of the parameter to be written (0-83)

Meaning of the DriverP3 parameter:

Indicates the byte order to be used: 0=Hi/Low, 1=Low/Hi

Meaning of the DriverP4 parameter:

Indicates the number of retries before abandoning the write attempt (0-25).
 HMITalk1.CommTimeout = Set it to a value between 500 and 3000 (ms)

Values that are returned:

Value in PointValue (0) = New value for the indicated parameter

PARAMETERS TABLE:

Code	Parameter / Measurement	-----	00
	Target cos-f for tariff 1 (0-199, 0-100=0-1 inductive, 101-199=0.99-0.01 capacitive)		01
	Target cos-f for tariff 2 (0-199)	03	Alarm cos-f for tariff 1 (0-199) 04
	Alarm cos-f for tariff 2 (0-199)	07	Limit for harmonic distortion of voltage in 0.1% (20-90) 08
	Alarm delay in 10 minutes (3-30)	09	Switching time in seconds (3-30)
11	Rated measuring voltage for over and undervoltage alarm in volts (0=Off, 58-700)		
12	Limit of switchings (0=Off, 1-9999)		
13	Fixed compensation power in kvar (0-9999)		
50	Maximum of Ueff in kV (0-65535)		
51	Maximum of Ieff in A (0-65535)		
52	Maximum of S in kVA (0-65535)		
53	Maximum of P in kW (0-65535)		
54	Maximum of Q in kvar (0-65535)		
55	Maximum of switched on capacitor power in kvar (0-65535)		
56	Maximum of missing capacitor power in kvar (0-65535)		
57	Maximum of harmonic distortion of U in 0.1% of fundamental (0-65535)		
58	Maximum of 3 harmonic of U in 0.1% of fundamental (0-65535)		
59	Maximum of 5 harmonic of U in 0.1% of fundamental (0-65535)		
60	Maximum of 7 harmonic of U in 0.1% of fundamental (0-65535)		
61	Maximum of 11 harmonic of U in 0.1% of fundamental (0-65535)		
62	Maximum of 13 harmonic of U in 0.1% of fundamental (0-65535)		
63	Maximum of 3 harmonic of I in 0.1% of fundamental (0-65535)		
64	Maximum of 5 harmonic of I in 0.1% of fundamental (0-65535)		
65	Maximum of 7 harmonic of I in 0.1% of fundamental (0-65535)		
66	Maximum of 11 harmonic of I in 0.1% of fundamental (0-65535)		
67	Maximum of 13 harmonic of I in 0.1% of fundamental (0-65535)		

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
- [1421] PROTOCOL (Format): Negative acknowledge received from device
- [1429] PROTOCOL (Format): Unknown response
- [1433] PROTOCOL (Format): Validation error in device response
- [2002] CONFIG (DataType): Digital inputs are not supported by this driver
- [2003] CONFIG (DataType): Digital outputs are not supported by this driver
- [2147] CONFIG (NumValues): Only one value can be read or written
- [2245] CONFIG (NumValues): Too many values requested
- [3022] CONFIG (P0): Invalid device address (1-255)
- [3025] CONFIG (P0): Invalid device address (1-32)
- [3509] CONFIG (P1): Invalid command (0 only)
- [4081] CONFIG (P2): Invalid parameter code (0-83)
- [4105] CONFIG (P2): Invalid starting parameter code (0-83)
- [4510] CONFIG (P3): Invalid byte order (0-1)
- [5024] CONFIG (P4): Invalid number of retries (0-25)
- [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

4.2. Keywords list

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

"CONDENSOMATIC, Controller, CR2000, ELECTRIC, Factor, Power, SYSTEM".