ProSoft® TECHNOLOGY

ICX35-HWC Industrial Cellular Gateway – EtherNet/IP ® Communications

Applicable products include:

- **ICX35-HWC**
  Industrial Cellular Gateway

Asia Pacific

Malaysia Office
Phone: +603.7724.2080
asiapc@prosoft-technology.com
Languages spoken: Chinese, English, Japanese

China Office
Phone: +86.21.5187.7337
asiapc@prosoft-technology.com
Languages spoken: Chinese, English

Europe

France Office
Phone: +33 (0)5.34.36.87.20
support.emea@prosoft-technology.com
Languages spoken: French, English

Middle East and Africa
Phone: +971.(0)4.214.6911
mea@prosoft-technology.com
Languages spoken: English, Hindi

North America

California and Wisconsin Offices
Phone: +1 661.716.5100
support@prosoft-technology.com
Languages spoken: English, Spanish

Latin America

Brasil Office
Phone: +55.11.5083.3776
brasil@prosoft-technology.com
Languages spoken: Portuguese, English

Mexico and Central America Office
Phone: +52.222.3.99.6565
soporte@prosoft-technology.com
Languages spoken: Spanish, English

Regional Office
Phone: +1.281.298.9109
latinam@prosoft-technology.com
Languages spoken: Spanish, English

Document Information

ProSoft Technology
5201 Truxtun Ave., 3rd Floor
Bakersfield, CA 93309
+1 (661) 716-5100
+1 (661) 716-5101 (Fax)
http://www.prosoft-technology.com

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How to contact us: Sales & Support

All ProSoft Technology® products are backed with unlimited technical support. Contact our worldwide Technical Support team directly by phone or email:

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Malaysia Office

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ICX35-HWC and EtherNet/IP – Technical Information

This document describes how to read and write to the ICX35-HWC using EtherNet/IP. An Add-on Instruction (AOI) is provided for Rockwell Automation Logix processors, and this document is for non-Rockwell Automation products that utilize EtherNet/IP.

A. Read ICX35-HWC status data

The table below contains the status data items that are available to read. The total returned size is 148 bytes.

CIP Information:	Class ID	# of Instances				
	0xA1 (161)	1				

Description	Range	Range Value Definitions	Global Counter Reset	Data Type	Bytes	CIP Attribute
Current Signal Strength dBm	-50 to -125			SINT	1	1
Signal Strength Minimum(since power on)	-50 to -125		x	SINT	1	2
Signal Strength Maximum(since power on)	-50 to -125		x	SINT	1	3
Status of the connection to the Cellular Network	0,1,2	0:Disconnect 1:connecting 2: connected		SINT	1	4
MAC ID of ICX35	6 bytes			SINT*6	6	5
cellular network IP	4 bytes			SINT*4	4	6
Number of times Modem is disconnected from the cellular network since power on	0 - 2,147,483,647		x	DINT	4	7
Number Kbytes sent on LAN since power on	0 - 2,147,483,647		x	DINT	4	8
Number of Kbytes received LAN since power on	0 - 2,147,483,647		x	DINT	4	9
Number of KBytes Sent WAN since power on	0 - 2,147,483,647		x	DINT	4	10
Number of Kbytes received WAN since power on	0 - 2,147,483,647		x	DINT	4	11
Number of SMS Messages Sent since power on	0 - 2,147,483,647		x	DINT	4	12
Number of SMS Messages Received since power on	0 - 2,147,483,647		x	DINT	4	13
Number of free slots in the Rx SMS buffer	4 bytes			DINT	4	14
year,month,day,hour, min, sec power on time	12 bytes			INT*6	12	15,16,17,18,19,20
Days,hours,min,sec since cellular connected	12 bytes			days(DINT),hours(DINT) min(INT), sec(INT)	12	21,22,23,24
data usage of today	0 - 2,147,483,647			DINT	4	25
data usage of current month	0 - 2,147,483,647			DINT	4	26
data usage of yesterday	0 - 2,147,483,647			DINT	4	27
data usage of last month	0 - 2,147,483,647			DINT	4	28
Firmware Version of the unit	24 bytes			SINT*24	24	29
cellular phone number	18 bytes			SINT*18	18	30
IMEI number	20 bytes			SINT*20	20	31

The ICX35-HWC currently supports the following service codes:

0x01 – Get All Attributes

0x02 – Set All Attributes **(**not all attributes are settable in the ICX35-HWC**)**

0x0E – Get Single Attribute

0x10 – Set Single Attribute

Example for a Client EIP/CIP device to issue a class 3 message to read the cellular (WAN) IP address:
Service code – 0x0E (Get Single Attribute)
Class – 0xA1
Instance – 1
Attribute – 6

Example for a Client EIP/CIP device to issue a class 3 message to read all status data:
Service code – 0x01 (Get All Attributes)
Class – 0xA1
Instance – 1
Attribute – 0 (or not used)
In this example, all 148 bytes would be returned

B. Reset ICX35-HWC status data

To reset the status data, the EIP/CIP Client would issue the following command:
Service code – 0x10 (Set Single Attribute)
Class - 0xA2
Instance – 1
Attribute – 1

Reference the table in section A to determine which status registers will be reset. Items marked with a red X will not reset.

C. Read SMS

The table below will be used to read SMS data from the ICX35-HWC.

CIP Information:	**Class ID**	**# of Instances**	
	0xA6	1	
Tag Name	**Description**	**CLX Data Type**	**CIP Attributes**
DateTime	The date time to receive SMS text	SINT[32]	1
Phone_Number	full number including prefixes country code etc..	SINT[24]	2
Text_Str	Received the message text	SINT[160]	3

Using the above table, a EIP/CIP Client would issue the following class 3 message to retrieve the current SMS message.

Service code – 0x01 (Get All Attributes)

Class - 0xA6

Instance – 1

Attribute – 0 (or not used)

Also, the EIP/CIP Client can individually issue a 0x0E - Get Single Attribute for the date, phone number and SMS string.

D. Write SMS

The table below will be used to write SMS data to the ICX35-HWC. The ICX35-HWC can store up to 5 phone numbers.

CIP	Class ID	# of Instances		
	0xA4	1		
Tag_Name	**Description**	**CLX Data Type**	**Bytes**	**CIP Attributes**
Out_Str_Size	Number of bytes in the Output String	INT	2	1
Num_To Send	Number of phone numbers that the SMS will be sent to	INT	2	2
Output_Str	Message to be transmitted (Max 160 Bytes)	SINT[160]	160	3
Ph_Number_1	full number including prefixes country code etc..	SINT[24]	24	4
Ph_Number_2	full number including prefixes country code etc..	SINT[24]	24	5
Ph_Number_3	full number including prefixes country code etc..	SINT[24]	24	6
Ph_Number_4	full number including prefixes country code etc..	SINT[24]	24	7
Ph_Number_5	full number including prefixes country code etc..	SINT[24]	24	8
		Total Bytes	284	

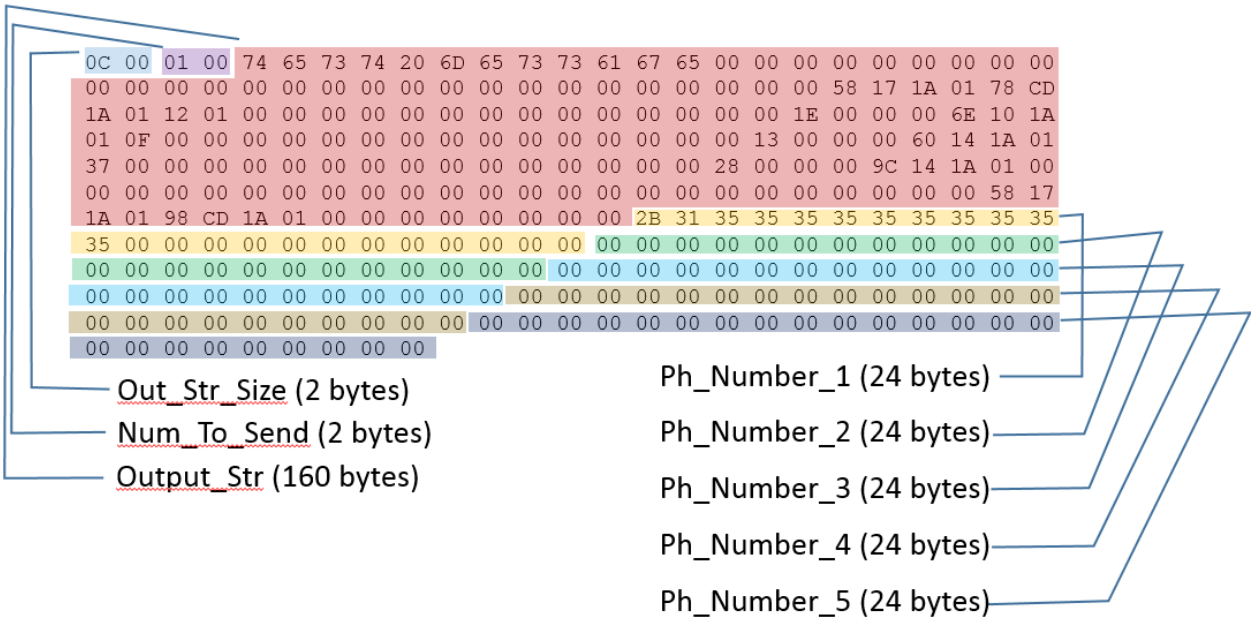
When issuing a 0x02 – Write All Attributes, ensure the internal EIP/CIP Client tables have the correct values for Out_Str_Size, Num_to_Send, etc.

Follow the steps below to enable the EIP/CIP Client to initiate a SMS message to one, or multiple phone numbers.

1. Populate the Out_Str_Size with the number of bytes (characters) in the SMS string. Example: if sending “Test Message” (without quotes), the Out_Str_Size should be 12.
2. Populate the Num_to_Send with the number of phones this message will be going to.
3. Populate Output_Str with the actual text, or string of the message. Remember, this does consume exactly 160 bytes.

4, Populate the destination phone numbers. If only one phone number is used, then populate Ph_Number_1. ***Note – the 24 bytes for each phone is used. If only a single phone is used, the remaining phone elements are still required, they will simply transmit zeros.**

This is an example of a complete message transmitted from a generic EIP/CIP Client to the ICX35-HWC.



The above 12 character SMS message, “Test Message” was sent to one phone, with a phone number of “+15555555555”. (number changed due to anonymity)

Once the message data is compiled with all 284 bytes, transmit the CIP message using the following parameters:

Service code – 0x02 (Set All Attributes)

Class - 0xA4

Instance – 1

Attribute – 0 (or not used)

If you need assistance on any ProSoft Technology product, please contact us.

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