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ILX800-SMSG

Micro800 Platform

SMS Text Plug-in Module for GSM
Networks

August 24, 2016

USER MANUAL

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ILX800-SMSG User Manual

August 24, 2016

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In an effort to conserve paper, ProSoft Technology no longer includes printed manuals with our product shipments. User Manuals, Datasheets, Sample Ladder Files, and Configuration Files are provided on the enclosed DVD in Adobe® Acrobat Reader file format (.PDFs). These product documentation files may also be freely downloaded from our web site: www.prosoft-technology.com

Important Safety Information

The following Information and warnings pertaining to the radio module must be heeded.

WARNING – EXPLOSION HAZARD – DO NOT REPLACE ANTENNAS UNLESS POWER HAS BEEN SWITCHED OFF OR THE AREA IS KNOWN TO BE NON-HAZARDOUS.

"THIS DEVICE CONTAINS A TRANSMITTER MODULE, FCC ID: . PLEASE SEE FCC ID LABEL ON BACK OF DEVICE."

"THIS DEVICE USES AN INTERNAL COMPACT FLASH RADIO MODULE AS THE PRIMARY RADIO COMPONENT. THE COMPACT FLASH RADIO MODULE DOES NOT HAVE AN FCC ID LABEL. THE COMPACT FLASH RADIO MODULE HAS NO USER SERVICEABLE PARTS."

"THIS DEVICE COMPLIES WITH PART 15 OF THE FCC RULES. OPERATION IS SUBJECT TO THE FOLLOWING TWO CONDITIONS: (1) THIS DEVICE MAY NOT CAUSE HARMFUL INTERFERENCE, AND (2) THIS DEVICE MUST ACCEPT ANY INTERFERENCE RECEIVED, INCLUDING INTERFERENCE THAT MAY CAUSE UNDESIRE OPERATION."

"CHANGES OR MODIFICATIONS NOT EXPRESSLY APPROVED BY THE PARTY RESPONSIBLE FOR COMPLIANCE COULD VOID THE USER'S AUTHORITY TO OPERATE THE EQUIPMENT."

Industry Canada Requirements

"THIS DEVICE HAS BEEN DESIGNED TO OPERATE WITH AN ANTENNA HAVING A MAXIMUM GAIN OF 24 dB. AN ANTENNA HAVING A HIGHER GAIN IS STRICTLY PROHIBITED PER REGULATIONS OF INDUSTRY CANADA. THE REQUIRED ANTENNA IMPEDANCE IS 50 OHMS."

"TO REDUCE POTENTIAL RADIO INTERFERENCE TO OTHER USERS, THE ANTENNA TYPE AND ITS GAIN SHOULD BE CHOSEN SUCH THAT THE EQUIVALENT ISOTROPICALLY RADIATED POWER (EIRP) IS NOT MORE THAN THAT REQUIRED FOR SUCCESSFUL COMMUNICATION."

"THE INSTALLER OF THIS RADIO EQUIPMENT MUST INSURE THAT THE ANTENNA IS LOCATED OR POINTED SUCH THAT IT DOES NOT EMIT RF FIELD IN EXCESS OF HEALTH CANADA LIMITS FOR THE GENERAL POPULATION; CONSULT SAFETY CODE 6, OBTAINABLE FROM HEALTH CANADA."

Important User Information

Important: Power must be provided from a limited power source.

Because of the variety of uses for the products described in this publication, those responsible for the application and use of these products must satisfy themselves that all necessary steps have been taken to assure that each application and use meets all performance and safety requirements, including any applicable laws, regulations, codes and standards. In no event will ProSoft Technology be responsible or liable for indirect or consequential damage resulting from the use or application of these products.

Any illustrations, charts, sample programs, and layout examples shown in this publication are intended solely for purposes of example. Since there are many variables and requirements associated with any particular installation, ProSoft Technology does not assume responsibility or liability (to include intellectual property liability) for actual use based upon the examples shown in this publication.

Allen-Bradley publication SGI-1.1, *Safety Guidelines for the Application, Installation and Maintenance of Solid-State Control* (available from your local Rockwell Automation office), describes some important differences between solid-state equipment and electromechanical devices that should be taken into consideration when applying products such as those described in this publication.

Throughout this publication, notes may be used to make you aware of safety considerations. The following annotations and their accompanying statements help you to identify a potential hazard, avoid a potential hazard, and recognize the consequences of a potential hazard:

Warning: Identifies information about practices or circumstances that can cause an explosion in a hazardous environment, which may lead to personal injury or death, property damage, or economic loss.

Caution: Identifies information about practices or circumstances that can lead to personal injury or death, property damage, or economic loss.

Important: Identifies information that is critical for successful application and understanding of the product.

Burn Hazard: Labels may be located on or inside the equipment (for example, drive or motor) to alert people that surfaces may be dangerous temperatures.

Shock Hazard: Labels may be located on or inside the equipment (for example, drive or motor) to alert people that dangerous voltage may be present.

Environment and Enclosure

Caution: This equipment is intended for use in a Pollution Degree 2 industrial environment, in overvoltage Category II applications (as defined in IEC publication 60664-1), at altitudes up to 2000 meters without derating.

This equipment is considered Group 1, Class A industrial equipment according to IEC/CISPR Publication 11. Without appropriate precautions, there may be potential difficulties ensuring electromagnetic compatibility in other environments due to conducted as well as radiated disturbance.

This equipment is supplied as "open type" equipment. It must be mounted within an enclosure that is suitably designed for those specific environmental conditions that will be present and appropriately designed to prevent personal injury resulting from accessibility to live parts. The interior of the enclosure must be accessible only by the use of a tool. Subsequent sections of this publication may contain additional information regarding specific enclosure type ratings that are required to comply with certain product safety certifications.

See NEMA Standards publication 250 and IEC publication 60529, as applicable, for explanations of the degrees of protection provided by different types of enclosure. Also, see the appropriate sections in this publication, as well as the Allen-Bradley publication 1770-4.1 ("Industrial Automation Wiring and Grounding Guidelines"), for additional installation requirements pertaining to this equipment.

Caution: Preventing Electrostatic Discharge

- This equipment is sensitive to electrostatic discharge, which can cause internal damage and affect normal operation. Follow these guidelines when you handle this equipment:
- Touch a grounded object to discharge potential static.
- Wear an approved grounding wriststrap.
- Do not touch connectors or pins on component boards.
- Do not touch circuit components inside the equipment.
- If available, use a static-safe workstation.
- When not in use, store the equipment in appropriate static-safe packaging.

Caution: POINT I/O is grounded through the DIN-rail to chassis ground. Use zinc-plated, yellow-chromated steel DIN-rail to assure proper grounding. Using other DIN-rail materials (for example, aluminum, plastic, and so on) which can corrode, oxidize or are poor conductors, can result in improper or intermittent platform grounding.

Caution: When you connect or disconnect the Removable Terminal Block (RTB) with field side power applied, an electrical arc can occur. This could cause an explosion in hazardous location installations.

Be sure that power is removed or the area is nonhazardous before proceeding.

Agency Approvals and Certifications

FCC

CE Mark/ETSI

UL/cUL Class 1, Division 2

ATEX Zone 2

CB Safety

PTCRB

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To get the most benefit from this User Manual, you should have the following skills:

- **Rockwell Automation® Connected Components Workbench™ software:** launch the program, configure program logic, and transfer the program to the processor
- **Microsoft Windows:** install and launch programs, execute menu commands, navigate dialog boxes, and enter data
- **Hardware installation and wiring:** safely connect the controller and plug-in module to a power source



Caution: You must be able to complete the application without exposing personnel or equipment to unsafe or inappropriate working conditions.

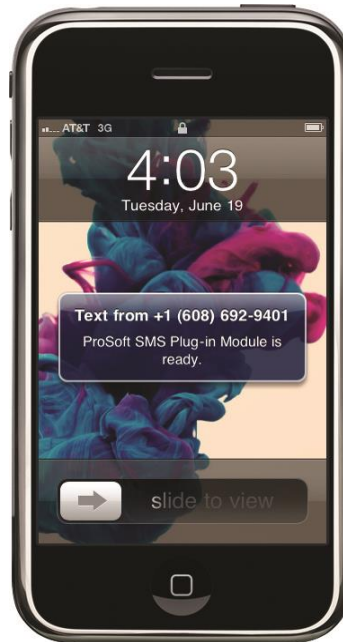
1.1 Overview

The ProSoft Technology SMS plug-in module adds bi-directional SMS text messaging capability to the Allen-Bradley Micro820, Micro830, and Micro 850 controllers. Operating over the GSM cellular network, the plug-in module provides a cost effective and secure method for OEMs to add remote communication features using cellular phones as the user interface to their machines and systems. Applications include remote alarming, environmental/energy monitoring, data collection, machine condition, inventory status alerts and production counts.

The SMS plug-in is activated by installing a standard GSM Voice/SMS SIM card (contact your local GSM cellular provider for plan options and costs). After activation it will associate to the local provider tower and enable bi-directional text messaging between the controller and remote cell phones. Because the module uses SMS, there is no need for costly cellular data plans.

The SMS plug-in snaps into an open slot in the front of the controller. The controller provides power and communicates with the plug-in module over the backplane. A sample CCW program is available at no additional cost with plug-in function block drivers and a sample program provided in Structured Text, Ladder and Function Block languages. Programmers may use these sample programs to create their own projects for sending and receiving messages, alarms and machine status updates.

The front mounted coax connector allows for either a direct-mounted antenna or externally mounted antenna (installed outside the panel or cabinet for better cellular reception). Antennas must be ordered separately.



1.2 Package Contents

The following components are included with your ILX800-SMSG plug-in module.

Note: You will also need a SIM card and antenna (not included). For information on suitable antennas, please see Installing an Antenna.

Qty.	Part Name	Part Number	Part Description
1	ILX800-SMSG plug-in module	ILX800-SMSG	SMS Text Plug-in Module for GSM Networks

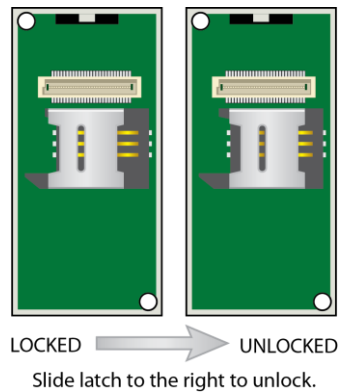
1.3 System Requirements

The ILX800-SMSG plug-in module requires the following minimum hardware and software components:

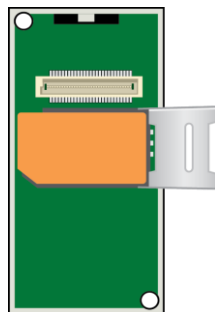
- Rockwell Automation® Micro820, Micro830, or Micro850 controller, with compatible power supply
- Rockwell Automation Connected Components Workbench programming software version 1.01 or higher
- Rockwell Automation RSLinx communication software version 2.57 or higher
- ILX800-SMSG sample controller program (download at www.prosoft-technology.com)

1.4 Installing the SIM Card

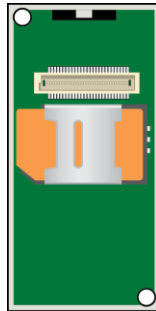
- 1 Turn the ILX800-SMSG plug-in module over so that the circuit board is facing up.
- 2 Orient the plug-in module so that the backplane connector is toward the top. Locate the SIM card holder in the middle of the board.
- 3 Unlock the SIM card holder's clip by sliding it to the right.



- 4 Lift the card holder clip and place the SIM card in the card holder, matching the rounded corner of the card with that of the card holder.



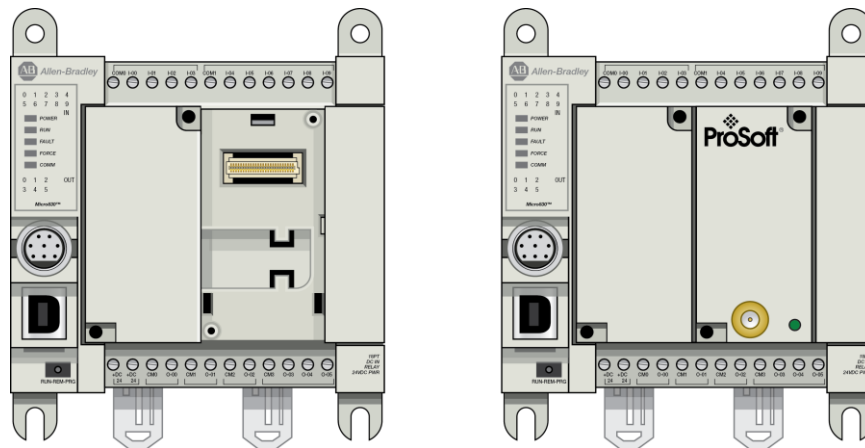
- 5 Lower the card holder clip and slide it to the left until it locks into place.



1.5 Installing the ILX800-SMSG Plug-in Module

Important: The controller should be powered off when the plug-in module is installed on or removed from the controller.

- 1 Orient the plug-in module so the antenna end is toward the front of the controller.
- 2 Align the plug-in module's three tabs with the three notches in the module slot on the controller. Snap the plug-in module into place.

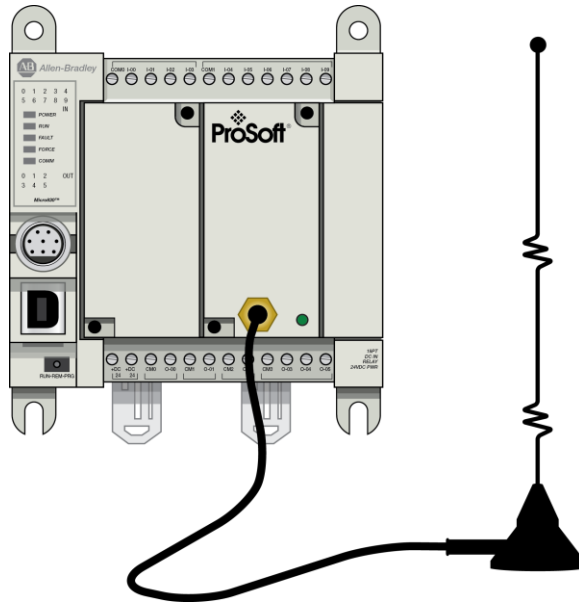


1.6 Installing an Antenna

An external antenna is required to connect the plug-in module to the cellular network. The antenna should be rated for the following frequency bands:

- 890-960 MHz
- 1710-1880 MHz

To install the antenna, screw it into the antenna connector on the plug-in module.



2 Setting Up the Controller Program

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- ❖ The Sample Controller Program 13
- ❖ Importing the Sample Program 14
- ❖ Configuring the Module's Slot Number 16
- ❖ Entering a Test Phone Number 17
- ❖ Connecting the Controller to Your PC..... 17
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2.1 The Sample Controller Program

The sample controller program contains the program logic, function blocks, and variables required to configure and operate the ILX800-SMSG plug-in module. It is provided in three languages: Structured Text (ST), Ladder Diagram (LD), and Function Block Diagram (FBD).

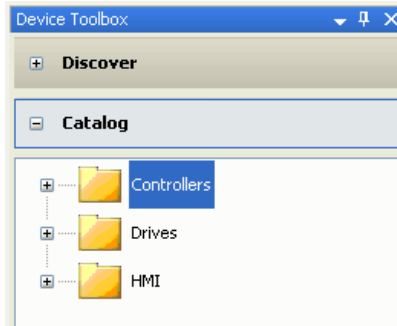
Download the appropriate .7z import file from www.prosoft-technology.com. Save it to a convenient location in your PC, such as *Desktop* or *My Documents*.

File Name	Language	Controller memory usage (KB)
ILX800SMSG_v1_01_ST.7z	Structured Text	38
ILX800SMSG_v1_01_LD.7z	Ladder Diagram	49
ILX800SMSG_v1_01_FBD.7z	Function Block Diagram	52

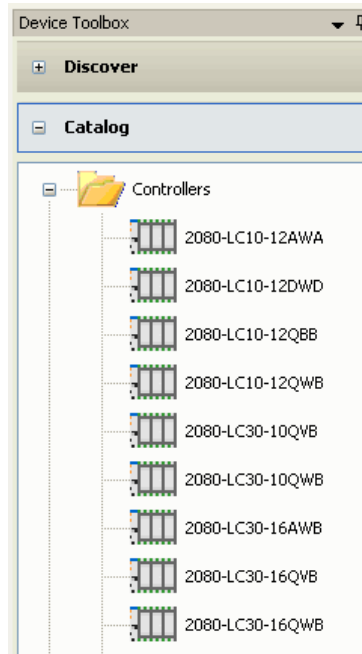
Note: The sample controller program is intended to demonstrate the ILX800-SMSG plug-in module's full range of capabilities, as a guide for creating your own application. The program features are provided in a modular format, enabling the selection of features that will provide the optimum balance of usability, performance and memory usage for your application.

2.2 Importing the Sample Program

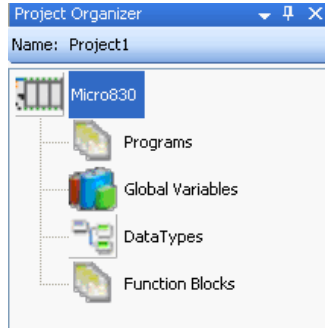
- 1 Open Connected Components Workbench (CCW).
- 2 If you are creating a new CCW project, follow the next steps. If you are importing the sample program into an existing project, skip to Step 6.
- 3 In the *Device Toolbox* pane, open the *Catalog* tab by clicking the **[+]**.



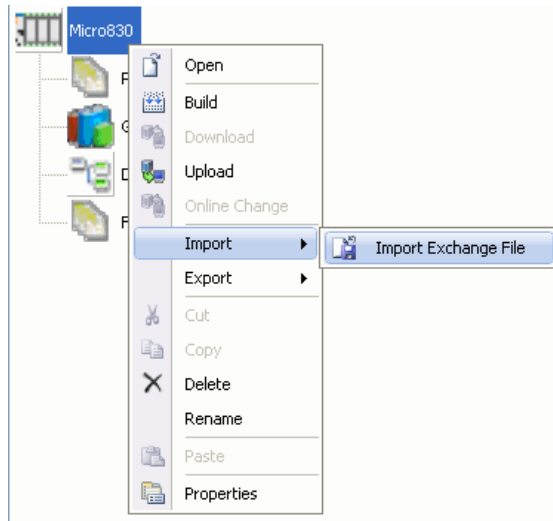
- 4 Click the **[+]** next to the *Controllers* folder to expand it. Find your controller in the list.



- 5 Click the appropriate controller icon and drag it to the *Project Organizer* pane.

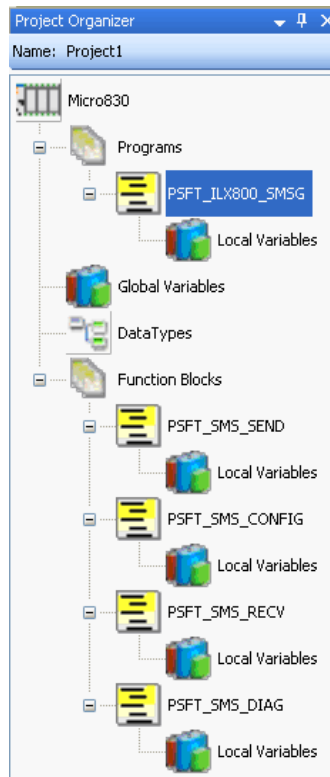


- 6 Right-click the controller icon, then select **IMPORT > IMPORT EXCHANGE FILE** from the shortcut menu.



- 7 In the *Import Export* dialog box, click **BROWSE** to navigate to the location on your PC where you saved the sample program (for example, *My Documents* or *Desktop*). Select the appropriate file and click **OPEN**.

- Click **IMPORT**. The program, function blocks and local variables will now appear in the *Project Organizer* pane.



2.3 Configuring the Module's Slot Number

Note: The ILX800-SMSG plug-in module cannot be configured in the *Controller Properties*. However, it is essential to correctly configure the module's slot number in the controller program.

- Double-click the **LOCAL VARIABLES** icon for the *PSFT_ILX800_SMSG* program in the *Project Organizer* pane.
- Click the header of the **NAME** column to sort the variables alphabetically.
- Find the variable **CONFIG_SLOTID** in the *Name* column.

Name	Data Type	Dimension	Alias	Initial Value	Attribute
CONFIG_slotID	UINT			2	Read/Write

- Enter the correct slot number in the *Initial Value* column.

Note: The slot closest to the power supply side of the controller is Slot 1. The next one is Slot 2, etc.

2.4 Entering a Test Phone Number

Set up a test phone number in the sample program. Once the program has been downloaded, the module will send out a greeting text message on boot-up to this phone number.

- 1 Double-click the **LOCAL VARIABLES** icon for the *PSFT_ILX800_SMSG* program in the *Project Organizer* pane.
- 2 Click the header of the **NAME** column to sort the variables alphabetically.
- 3 Find the variable *CONFIG_receiverList* in the *Name* column. Click the **[+]** sign next to *CONFIG_receiverList* to expand it.
- 4 Enter an area code and phone number in the *Initial Value* column. Do not enter any spaces, parentheses or hyphens.

Name	Data Type	Dimension	Alias	Initial Value	Attribute
CONFIG_receiverList	STRING	[1..5]		...	Read/Write 16
CONFIG_receiverList[1]	STRING			1234567891	Read/Write 16
CONFIG_receiverList[2]	STRING				Read/Write 16
CONFIG_receiverList[3]	STRING				Read/Write 16
CONFIG_receiverList[4]	STRING				Read/Write 16
CONFIG_receiverList[5]	STRING				Read/Write 16

For more information about entering phone numbers in the Receiver List, see Receiver List.

2.5 Connecting the Controller to Your PC


You will need a Type A/B USB cable to connect the controller to your PC.

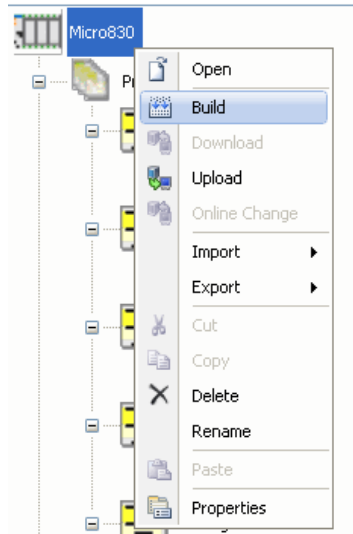
- 1 Connect the USB cable's Type A plug to a USB jack on your PC.
- 2 Connect the USB cable's Type B plug to the USB jack on the controller.
- 3 If the driver for the USB connection to the controller is not already installed on your PC, Windows will launch the *Found New Hardware Wizard*. Follow the prompts to install the driver.

Note: RSLinx will automatically configure and start the AB_VBP-x driver for the USB connection.

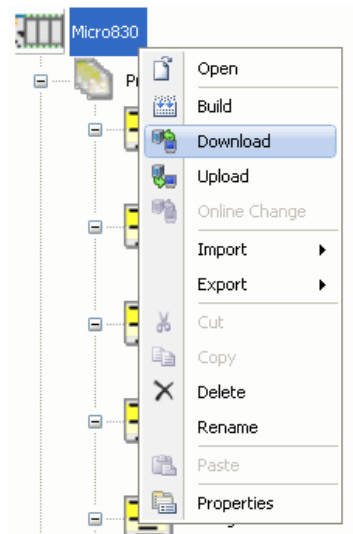
2.6 Downloading the Sample Program

Note: The mode switch on the front of the controller must be in the REM or PRG position.

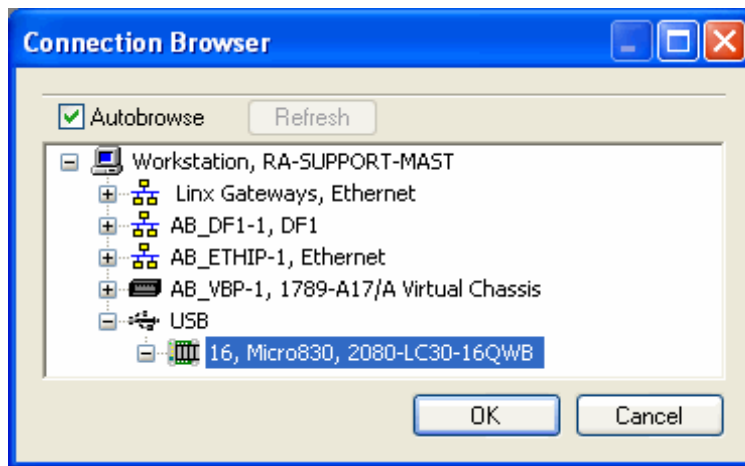
- 1 Click the  icon to save the project.
- 2 Right-click the controller icon in the *Project Organizer* pane and select **BUILD** from the shortcut menu.



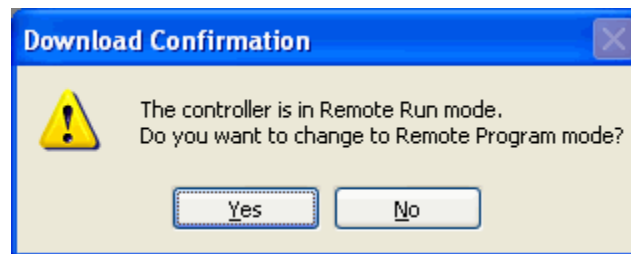
- 3 CCW will build the program. This process may take a few minutes.
- 4 Verify the build status in the *Output* window. When the program builds successfully with no errors, right-click the controller icon and select **DOWNLOAD** from the shortcut menu.



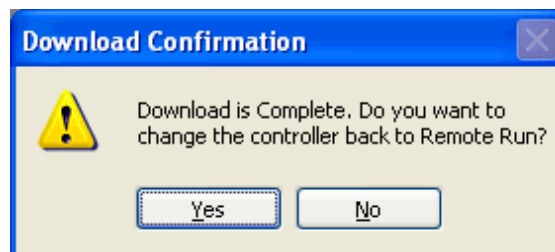
- 5 In the *Connection Browser* window, click the **[+]** sign in front of the USB icon to expand it. Select your controller from the list and click **OK**.



- 6 If the controller's mode switch is in the REM position, CCW will prompt you to change to Remote Program mode. Click **YES**.



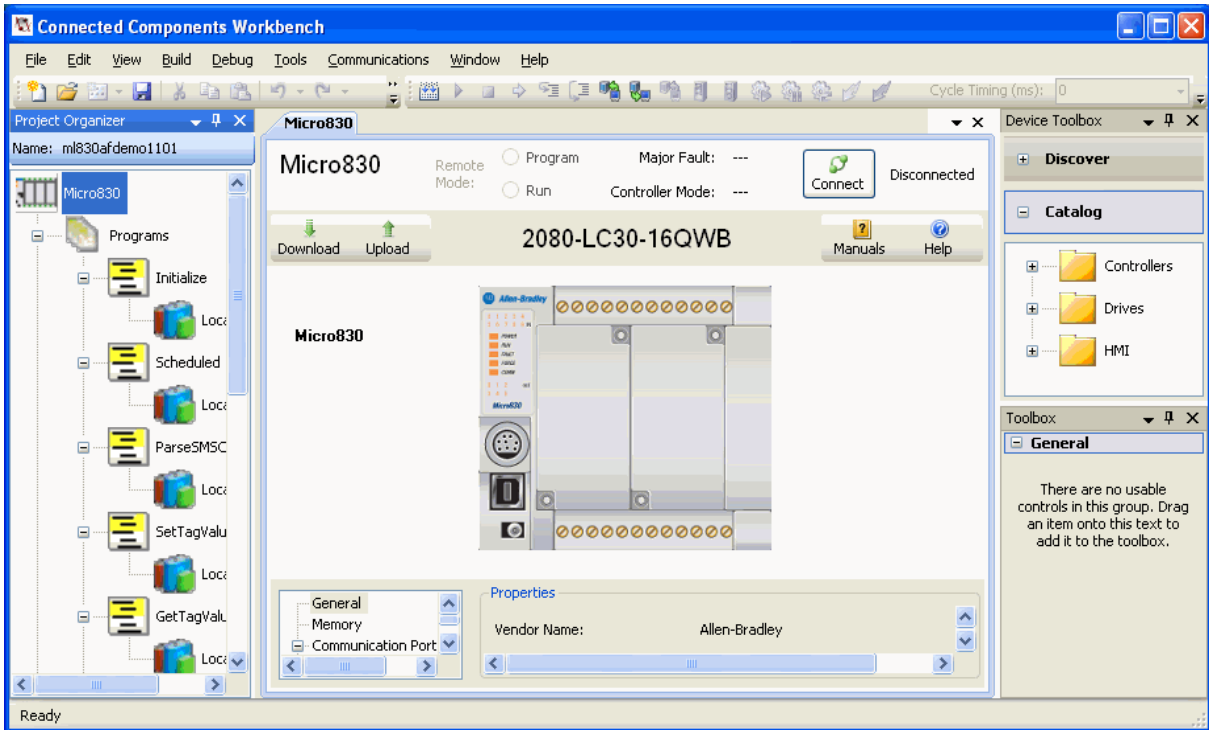
- 7 CCW will transfer the program to the processor. This process may take a few minutes.
- 8 If the controller's mode switch is in the REM position, CCW will prompt you to change back to Remote Run mode when the download is complete. Click **YES**.



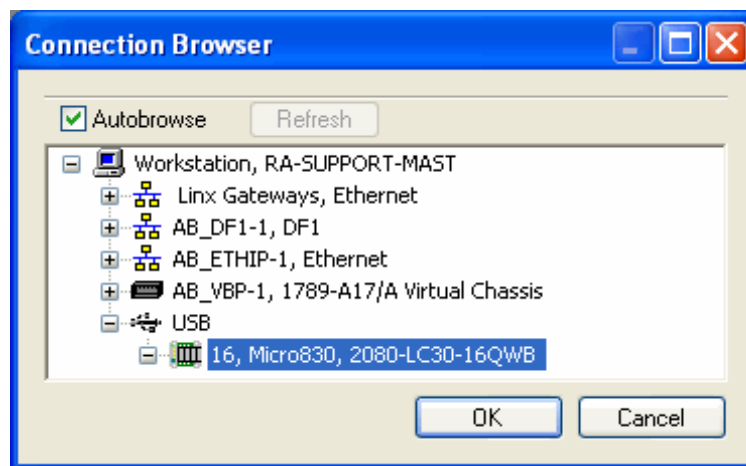
Note: If you receive an error message during these steps, refer to your CCW documentation to interpret and correct the error.

2.7 Going Online with the Controller

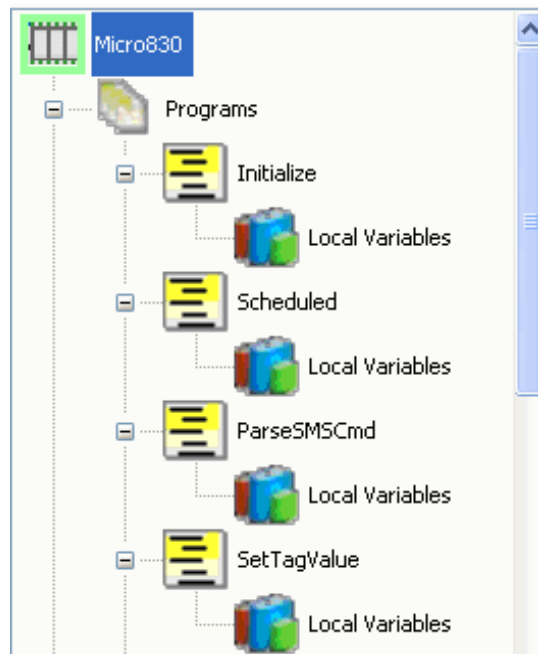
- 1 Double-click the controller icon in the *Project Organizer* pane.
- 2 Click the **CONNECT** button in the top right corner of the tab to go online with the controller.



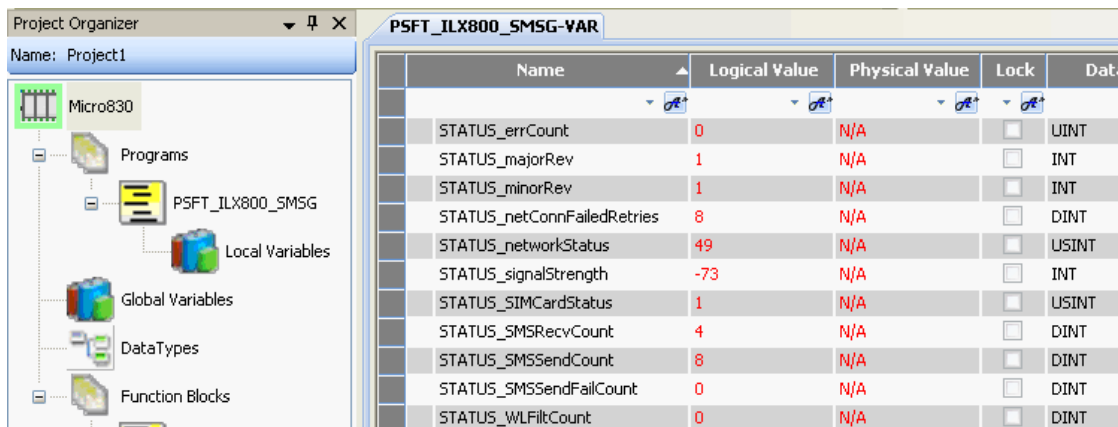
- 3 Select the controller in the *Connection Browser* window, and click **OK**.



- 4 A green border around the controller icon indicates that CCW is online with the controller.



- 5 Open the **DEBUG** menu, and then select **START DEBUGGING**.
- 6 You will now be able to see the contents of the local and global program variables (in red).



2.8 Customizing Your Controller Program Logic

The sample controller program can be used as is, or it can be customized. Customization requires knowledge of Structured Text, Ladder, or Function Block programming in CCW. To customize the program to the requirements of your application, follow the instructions in the comments of the customizable program sections.

Caution: We do not recommend editing any sections of the program marked "DO NOT MODIFY." Do not modify the four Function Blocks for the ILX800-SMSG.

The sample program demonstrates programming for controller digital inputs 0 and 1, and digital outputs 0 and 1. Customize your application by using the examples provided to add the logic for the inputs and outputs required by your application.

Note: If you require assistance with programming in CCW, refer to your CCW documentation.

2.8.1 Sending Out an Event-Triggered Text Message

Among the sample program's many customizable features is the Generic Event-Triggered Text Message. This feature gives you the ability to send out a user-defined text message, triggered by any event of your choosing. The text message is sent out through the module to all receivers on the Receiver List.

To set up an Event-Triggered Text Message

- 1 Enter your custom text message string in the *Initial Value* column for the *DATA_customSMSText* variable. This variable is found in the *Local Variables* folder for the *PSFT_ILX800_SMSG* program. (By default, this variable contains 'Customize your string here.')
- 2 Make sure the Receiver List (*CONFIG_receiverList*) has at least one phone number entry.
- 3 With CCW in debug mode, you can trigger this message manually by checking the box in the *Logical Value* column for the *DATA_customSMSTrigger* variable.
- 4 You can also add logic to your project that automatically sets *DATA_customSMSTrigger* HIGH or TRUE when some event occurs.

Duplicate this program section as needed to create as many event-triggered text messages as your application requires.

3 Using Your ILX800-SMSG Plug-in Module

In This Chapter

- ❖ Verifying Wireless Communication23
- ❖ Setting Up the Phone Number Lists.....23
- ❖ Text Message Commands27

3.1 Verifying Wireless Communication

When the plug-in module is powered on, the green LED on the module will blink about once per second.

The plug-in module will automatically establish a connection with the service carrier. When communication has been established, the LED will blink much more slowly, about once every two seconds.

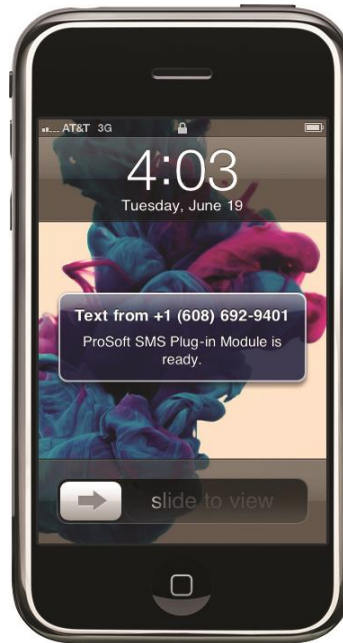
3.2 Setting Up the Phone Number Lists

The sample controller program for the ILX800-SMSG plug-in module has two phone number lists.

3.2.1 Receiver List

The Receiver List can hold up to two phone numbers. The plug-in module will send automatic text message updates to all numbers on this list.

- When the controller boots up, the plug-in module sends out a user-customizable greeting text message to all receivers. (The default greeting text message is shown below.)



- When the controller detects a rising or falling edge on controller digital input channels 0 or 1, the plug-in module sends out the following user-customizable text message to all receivers: "Alarm detected: Input x is ON/OFF". (More digital inputs can be added to the program logic. See Customizing Your Controller Program Logic.)
- A user-defined text message can be triggered by a user-defined event and sent out to all receivers. (See Sending Out an Event-Triggered Text Message.)

Note: The Receiver List determines which phone numbers will receive these automatic text message updates. The sample program also allows the plug-in module to respond to text message commands from numbers that are not on the Receiver List. A response text message is only sent to the phone number from which the text message command was received. The Whitelist security feature, when enabled, can be used to restrict text message command access to authorized phone numbers only.

To enter phone numbers in the Receiver List

- 1 Double-click the **LOCAL VARIABLES** icon for the *PSFT_ILX800_SMSG* program in the *Project Organizer* pane.
- 2 Click the header of the **NAME** column to sort the variables alphabetically.
- 3 Find the variable *CONFIG_receiverList* in the *Name* column. Click the **[+]** sign next to *CONFIG_receiverList* to expand it.

- Enter up to two phone numbers in the *Initial Value* column. Do not enter any spaces, parentheses or hyphens. (If CCW is online with the controller in debug mode, enter the phone numbers in the *Logical Value* column.)

Name	Data Type	Dimension	Alias	Initial Value	Attribute	
CONFIG_receiverList	STRING	[1..5]		...	Read/Write	16
CONFIG_receiverList[1]	STRING			1234567891	Read/Write	16
CONFIG_receiverList[2]	STRING			+8612345678901	Read/Write	16
CONFIG_receiverList[3]	STRING				Read/Write	16
CONFIG_receiverList[4]	STRING				Read/Write	16
CONFIG_receiverList[5]	STRING				Read/Write	16

- To enter an international number, use [+] followed by the country code and number.

Example: To enter a phone number in China, enter "+" followed by China's country code, which is **86**. Then enter the phone number (we will use **12345678901** for this example). The entry would look like this:
+8612345678901.

- Save, build and download the program to the controller.

Note: You can also add a phone number to the Receiver List from a cell phone via a text message command. See Text Message Commands.

3.2.2 Whitelist

The Whitelist can hold up to two phone numbers. If the Whitelist is enabled, the plug-in module will only respond to text message commands from phone numbers on the Whitelist. If the Whitelist is disabled, the plug-in module will respond to text message commands from any phone number.

To enable or disable the Whitelist

- Double-click the **LOCAL VARIABLES** icon for the *PSFT_ILX800_SMS* program in the *Project Organizer* pane.
- Click the header of the **NAME** column to sort the variables alphabetically.
- Find the Boolean variable **CONFIG_WHITELISTENABLED** in the *Name* column.
- Enter **TRUE** or **FALSE** in the *Initial Value* column.
- Save, build and download the program to the controller.

Note: The Whitelist can also be enabled or disabled from a cell phone via a text message command. See Text Message Commands.

To enter phone numbers in the Whitelist:

- 1 Double-click the **LOCAL VARIABLES** icon for the *PSFT_ILX800_SMSG* program in the *Project Organizer* pane.
- 2 Click the header of the **NAME** column to sort the variables alphabetically.
- 3 Find the variable *CONFIG_whiteList* in the *Name* column. Click the **[+]** sign next to *CONFIG_whiteList* to expand it.
- 4 Enter up to two phone numbers in the *Initial Value* column. Do not enter any spaces, parentheses or hyphens. (If CCW is online with the controller in debug mode, enter the phone numbers in the *Logical Value* column.)
- 5 To enter an international number, use **[+]** followed by the country code and number.

Name	Data Type	Dimension	Alias	Initial Value	Attribute
[-] CONFIG_whiteList	STRING	[1..5]		...	Read/Write 16
CONFIG_whiteList[1]	STRING			1234567891	Read/Write 16
CONFIG_whiteList[2]	STRING			+8612345678901	Read/Write 16
▶ CONFIG_whiteList[3]	STRING				Read/Write 16
CONFIG_whiteList[4]	STRING				Read/Write 16
CONFIG_whiteList[5]	STRING				Read/Write 16

Example: To enter a phone number in China, enter "+" followed by China's country code, which is **86**. Then enter the phone number (we will use **12345678901** for this example). The entry would look like this:
+8612345678901.

- 6 Save, build and download the program to the controller.

3.3 Text Message Commands



The sample controller program for the ILX800-SMSG plug-in module recognizes the text message commands listed in the following two tables. When the module receives a text message command, it sends a response text message to the originator of the text message command.

There are two types of text message commands.

3.3.1 Status Information Requests

Request	Action by ILX800-SMSG	Response from ILX800-SMSG
PLCSTATUS	Returns text message with controller status data	<ul style="list-style-type: none"> ▪ Controller mode ▪ Status of outputs and inputs
NETSTATUS	Returns text message with cellular network status data	<ul style="list-style-type: none"> ▪ Signal strength in dBm ▪ Network status ▪ Number of carrier connection failures
MSGSTATUS	Returns text message with message counts	<ul style="list-style-type: none"> ▪ Number of received messages ▪ Number of sent messages ▪ Number of failed sent messages ▪ Number of messages received from phone numbers not on the Whitelist

Request	Action by ILX800-SMSG	Response from ILX800-SMSG
UPTIME	Returns text message with the controller's running time	"Controller UP Time **NOTE Controller clock resets after 20 days**: xdxhxxmxxsxxx"
<p>Important: The controller's clock resets after approximately 20 days.</p>		
OUTPUTx	Returns text message with the status of controller output x	"OUTPUTx ON" "OUTPUTx OFF"
WHITELIST	Returns text message indicating whether the Whitelist is enabled or disabled	"WHITELIST ON" "WHITELIST OFF"

3.3.2 Commands to Execute Some Action

Note: If, for some reason, you do not want the module to send out acknowledge (response) text messages for the following text message commands, you can set the *CONFIG_ackEnabled* variable to FALSE.

Command	Action by ILX800-SMSG	Response from ILX800-SMSG
OUTPUTx ON	Energizes controller output x	"OK: Set OUTPUTx=ON"
OUTPUTx OFF	De-energizes controller output x	"OK: Set OUTPUTx=OFF"
WHITELIST ON	Enables Whitelist filtering	"OK: Set ENABLEWL=ON"
WHITELIST OFF	Disables Whitelist filtering	"OK: Set ENABLEWL=OFF"
ADD xxxxxxxxxx	Writes a phone number to the fifth element of the Receiver List array	"OK: xxxxxxxxxx added"
<p>Note: Any phone number stored in the fifth element of the Receiver List array will be overwritten by this command.</p>		
DELETE xxxxxxxxxx	Deletes phone number from the Receiver List	"OK: xxxxxxxxxx deleted"

4 Security Tips

In This Chapter

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- ❖ Implement Password Protection29
- ❖ Restrict Access to Output Control29

4.1 Enable the Whitelist Feature

The Whitelist is a security feature built into the sample controller program. It allows you to authorize up to two phone numbers to have access to the controller via text message commands.

The Whitelist is disabled by default. When enabled, it filters out text message commands received from any phone number that is not on the Whitelist. For more information, see Whitelist.

4.2 Implement Password Protection

If you need a higher level of security, you can add logic to the sample program that checks any incoming text message command for a password. This feature is not built-in.

4.3 Restrict Access to Output Control

The OUTPUTx ON/OFF command is a powerful feature that allows users to energize or de-energize digital outputs on the controller via text message commands. If your application requires higher security, you can delete this feature from the sample program. If you choose to leave it in, you can use the Whitelist feature to restrict its use to authorized persons only.

5 Diagnostics and Troubleshooting

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- ❖ Troubleshooting31
- ❖ Status Data32

5.1 LED Status Indicator

Color	Status	Indication
Green	OFF	The plug-in module is not receiving adequate power or is not securely plugged into the slot.
	BLINKING RAPIDLY (~once per second)	The plug-in module is powered on and is attempting to establish a connection with the service carrier.
	BLINKING SLOWLY (~once every two seconds)	The plug-in module is powered on and communicating on the cellular network.

5.2 Troubleshooting

Use the following troubleshooting steps if you encounter problems when the plug-in module is powered up. If these steps do not resolve your problem, please contact ProSoft Technology Technical Support.

Problem Description	Steps to take
The green LED is OFF	This indicates that the module is not powered on. Verify that <ul style="list-style-type: none"> ▪ The module is securely connected in its slot ▪ The controller is powered on
The green LED continues to blink rapidly	This indicates that the module has not yet established a connection with the service carrier. <ul style="list-style-type: none"> ▪ Wait a couple of minutes to see if a connection is established ▪ Verify that a valid SIM card is properly installed in the module's SIM card holder ▪ Verify that an external antenna is securely connected to the antenna connector on the module

Problem Description	Steps to take
The green LED blinks slowly but the module does not send or respond to text messages	<p>This indicates a problem with backplane communication to the controller. Verify that</p> <ul style="list-style-type: none"> ▪ The controller is in RUN or REM RUN mode ▪ The module is plugged into the slot that has been configured for it in the controller program ▪ The module is connected to the cellular carrier when the module boots up. If there is no connection to the carrier when the module boots up, the configuration message retries from the controller to the module will time out. Without a configuration, the module will not function properly. If you suspect that this has occurred, troubleshoot wireless network connectivity, then reboot the module by cycling power to the controller. ▪ The controller program handles all read and write situations, and all four function blocks for the ILX800-SMSG are present in the <i>Project Organizer</i> pane
The module's status variables in CCW never change from '0' after the module boots up	<p>Verify that</p> <ul style="list-style-type: none"> ▪ CCW is online with the controller and in debug mode ▪ There is backplane communication between the controller and the module (see above)

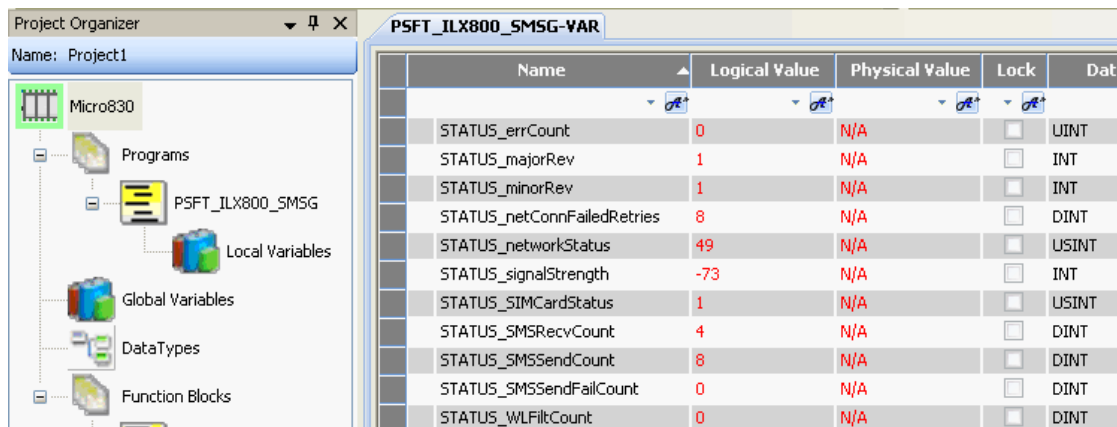
5.3 Status Data

Useful status data for the ILX800-SMSG plug-in module can be found in the *Local Variables* for the *PSFT_ILX800_SMSG* program.

The status data is contained in variables with the STATUS_ prefix.

Hint: Click the header of the **NAME** column to sort the variable list alphabetically. This will group all the STATUS variables together.

For these status values to be visible, CCW must be online with the processor, and the Debug function in CCW must be running. (See Going Online with the Controller.)



Variable	Description
STATUS_errCount	Number of failed messages sent from the controller to the plug-in module over the backplane
STATUS_majorRev	Major revision number of the plug-in module's firmware
STATUS_minorRev	Minor revision number of the plug-in module's firmware
STATUS_netConnFailedRetries	Number of carrier connection failures
STATUS_networkStatus	Status of the connection between the plug-in module and the service carrier 48 = NotRegisteredSearching 49 = RegisteredHome 50 = NotRegisteredNoSearching 51 = RegistrationDenied 52 = Unknown 53 = RegisteredRoaming
STATUS_signalStrength	Strength (dBm) of received signals from the cell tower
STATUS_SIMCardStatus	1 = The SIM card is readable 0 = The SIM card is not readable
STATUS_SMSRecvCount	SMS receive message count
STATUS_SMSSendCount	SMS transmit message count
STATUS_SMSSendFailCount	Number of failed SMS transmit attempts
STATUS_WLFiltCount	Number of messages received from phone numbers not on the Whitelist

Note: Many of these status values can also be retrieved by a cell phone via a text message command to the controller. See Text Message Commands.

6 Reference

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6.1 Product Specifications

6.2 Radio Specifications

Cellular Technology	GSM (SMS Text Messaging)
Bands	850 MHz 900 MHz 1800 MHz 1900 MHz
RF Power	2W at 850/900 MHz 1W at 1800/1900 MHz
RF Sensitivity	-107 dBm at 850/900 MHz -106 dBm at 1800/1900 MHz

6.3 Hardware Specifications

Enclosure	Micro800 Plug-in Module
Antenna Ports	(1) RP-SMA connector
Weight	Less than 1 lb (less than 0.45 kg)
Operating Temp	-4°F to 149°F (-20°C to +65°C)
Humidity	Up to 100% RH, with no condensation
Vibration	IEC 60068-2-6 (20g, 3-axis)
Shock	IEC 60068-2-27 (5g, 10 Hz to 150 Hz)
Backplane Power	3.3 VDC at 60 mA (max current draw) 24 VDC at 60 mA (max current draw)

7 Support, Service & Warranty

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7.1 Contacting Technical Support

ProSoft Technology, Inc. is committed to providing the most efficient and effective support possible. Before calling, please gather the following information to assist in expediting this process:

- 1 Product Version Number
- 2 System architecture
- 3 Network details

If the issue is hardware related, we will also need information regarding:

- 1 Module configuration and associated ladder files, if any
- 2 Module operation and any unusual behavior
- 3 Configuration/Debug status information
- 4 LED patterns
- 5 Details about the serial, Ethernet or Fieldbus devices interfaced to the module, if any.

Note: For technical support calls within the United States, ProSoft's 24/7 after-hours phone support is available for urgent plant-down issues. Detailed contact information for all our worldwide locations is available on the following page.

Internet	Web Site: www.prosoft-technology.com/support E-mail address: support@prosoft-technology.com
Asia Pacific (location in Malaysia)	Tel: +603.7724.2080 E-mail: asiapc@prosoft-technology.com Languages spoken include: Chinese, English
Asia Pacific (location in China)	Tel: +86.21.5187.7337 x888 E-mail: asiapc@prosoft-technology.com Languages spoken include: Chinese, English
Europe (location in Toulouse, France)	Tel: +33 (0) 5.34.36.87.20 E-mail: support.EMEA@prosoft-technology.com Languages spoken include: French, English
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Latin America (location in Puebla, Mexico)	Tel: +52-222-3-99-6565 E-mail: soporte@prosoft-technology.com Languages spoken include: Spanish
Brasil (location in Sao Paulo)	Tel: +55-11-5083-3776 E-mail: brasil@prosoft-technology.com Languages spoken include: Portuguese, English

7.2 Warranty Information

For complete details regarding ProSoft Technology's TERMS & CONDITIONS OF SALE, WARRANTY, SUPPORT, SERVICE AND RETURN MATERIAL AUTHORIZATION INSTRUCTIONS please see the documents on the ProSoft Solutions DVD or go to www.prosoft-technology.com/legal

Documentation is subject to change without notice.

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