Setup Instructions

Table of Contents

Introduction

Qualified Persons

⚠ WARNING
The equipment covered by this publication must be installed, operated, and maintained by qualified persons who are knowledgeable in the installation, operation, and maintenance of overhead electric power distribution equipment along with the associated hazards. A qualified person is one who is trained and competent in:
• The skills and techniques necessary to distinguish exposed live parts from non-live parts of electrical equipment.
• The skills and techniques necessary to determine the proper approach distances corresponding to the voltages to which the qualified person will be exposed.
• The proper use of the special precautionary techniques, personal protective equipment, insulating and shielding materials, and insulated tools for working on or near exposed energized parts of electrical equipment.
These instructions are intended only for such qualified persons. They are not intended to be a substitute for adequate training and experience in safety procedures for this type of equipment.

Read this Instruction Sheet

Thoroughly and carefully read this instruction sheet before programming, operating, or maintaining your S&C Universal Interface Module. Familiarize yourself with the safety information on page 3. The latest version of this instruction sheet is available online in PDF format at www.sandc.com. Select: Support/Product Literature Library.

Retain this Instruction Sheet

Designate a location where you can easily retrieve and refer to this instruction sheet.

Warranty

The standard warranty contained in S&C's standard conditions of sale, as set forth in Price Sheet 150, applies to the Universal Interface Module, except that the first paragraph of said warranty is replaced by the following:

(1) General: Seller warrants to immediate purchaser or end user for a period of 10 years from the date of shipment that the equipment delivered will be of the kind and quality specified in the contract description and will be free of defects of workmanship and material. Should any failure to conform to this warranty appear under proper and normal use within ten years after the date of shipment the seller agrees, upon prompt notification thereof and confirmation that the equipment has been stored, installed, operated, inspected, and maintained in accordance with recommendations of the seller and standard industry practice, to correct the nonconformity either by repairing any damaged or defective parts of the equipment or (at seller's option) by shipment of necessary replacement parts. The seller's warranty does not apply to any equipment that has been disassembled, repaired, or altered by anyone other than the seller. This limited warranty is granted only to the immediate purchaser or, if the equipment is purchased by a third party for installation in third-party equipment, the end user of the equipment. The seller's duty to perform under any warranty may be delayed, at the seller's sole option, until the seller has been paid in full for all goods purchased by the immediate purchaser. No such delay shall extend the warranty period.

Replacement parts provided by seller or repairs performed by seller under the warranty for the original equipment will be covered by the above special warranty provision for its duration. Replacement parts purchased separately will be covered by the above special warranty provision.

Warranty of the Universal Interface Module is contingent upon the installation, configuration, and use of the control or software in accordance with S&C's applicable instruction sheets. This warranty does not apply to major components not of S&C manufacture, such as batteries, and communication devices. However, S&C will assign to immediate purchaser or end user all manufacturer's warranties that apply to such major components.

Understanding Safety-Alert Messages

There are several types of safety-alert messages which may appear throughout this instruction sheet as well as on labels attached to the Universal Interface Module. Familiarize yourself with these types of messages and the importance of the various signal words, as explained below.

> ⚠ **DANGER**
>
> "DANGER" identifies the most serious and immediate hazards which *will likely* result in serious personal injury or death if instructions, including recommended precautions, are not followed.

> ⚠ **WARNING**
>
> "WARNING" identifies hazards or unsafe practices which *can* result in serious personal injury or death if instructions, including recommended precautions, are not followed.

> ⚠ **CAUTION**
>
> "CAUTION" identifies hazards or unsafe practices which *can* result in minor personal injury or product or property damage if instructions, including recommended precautions, are not followed.

> *NOTICE*
>
> *"NOTICE"* identifies important procedures or requirements that *can* result in product or property damage if instructions are not followed.

Following Safety Instructions

If you do not understand any portion of this instruction sheet and need assistance, contact your nearest S&C Sales Office or S&C Authorized Distributor. Their telephone numbers are listed on S&C's website www.sandc.com. Or call S&C Headquarters at (773) 338-1000; in Canada, call S&C Electric Canada Ltd. at (416) 249-9171.

> *NOTICE*
>
> Read this instruction sheet thoroughly and carefully before installing or operating your S&C Universal Interface Module.

Replacement Instructions and Labels

If you need additional copies of this instruction sheet, contact your nearest S&C Sales Office, S&C Authorized Distributor, S&C Headquarters, or S&C Electric Canada Ltd.

It is important that any missing, damaged, or faded labels on the equipment be replaced immediately. Replacement labels are available by contacting your nearest S&C Sales Office, S&C Authorized Distributor, S&C Headquarters, or S&C Electric Canada Ltd.

Applicable Software

These instructions were prepared for use with software **UIMD3C1X, Rev. 1.5**. References in this manual to IntelliTEAM apply for IntelliTEAM II or later revisions.

You can find the revision number on the Setup disk label, and on the main screen of the UIM, called the **PRESENT CONDITIONS** screen. For questions regarding the applicability of information in this chapter to future software releases, please contact S&C.

⚠ WARNING

These instructions do NOT replace the need for utility operation standards. Any conflict between the information in this document and utility practices should be reviewed by appropriate utility personnel and a decision made as to the correct procedures to follow.

Serious risk of personal injury or death may result from contact with electric distribution equipment when electrical isolation and grounding procedures are not followed. The equipment described in this document must be operated and maintained by qualified persons who are thoroughly trained and understand any hazards that may be involved. This document is written only for such qualified persons and is not a substitute for adequate training and experience in safety procedures for accessing high voltage equipment.

The Universal Interface Module and host control are connected to switchgear operating at primary voltage levels. High voltage may be present in the wiring to the switch control or the switch control itself during certain failures of the switchgear wiring or grounding system, or due to a failure of the switch itself. For this reason, access to the switch control should be treated with the same safety precautions that would be applied when accessing other high voltage lines and equipment. Follow all locally-approved safety procedures when working on or around this switch control.

Before attempting to access an existing switch installation, check carefully for visible or audible signs of electrical or physical malfunction (do this before touching or operating the switch control or any other part of the installation). These warning signs include such things as smoke, fire, open fuses, crackling noises, loud buzzing, etc. If a malfunction is suspected, treat all components of the installation, including the switch control and associated mounting hardware, as if they were elevated to primary (high) voltage.

Whenever you are manually reconfiguring the circuit (for example, during repairs), follow your company's operating procedures to disable automatic operation of the IntelliTEAM system. This prevents any unexpected operation of a team member.

You can disable the IntelliTEAM system by pressing the automatic operation **ENABLE/DISABLE** faceplate button to **DISABLE** on the faceplate of any active 5800 based team member of the team you want to disable, or turn on **PROHIBIT RESTORATION** on the faceplate of the UIM.

Planning Your IntelliTEAM System

The IntelliTEAM system lets teams of controls work together to isolate faults and restore service. Whether your team consists of a few switches on a single feeder or a complex configuration with multiple alternate sources, we recommend mapping out the team(s) and gathering all necessary information before installing hardware in the field. We also recommend keeping a copy of this information in the door of the switch control enclosure or low voltage cabinet.

During planning and setup of fault detection settings, be sure to consider the fault conditions that the IntelliTEAM system may encounter from alternate sources.

1. ***Create a layout of the source(s), switches, and line segments that will include teams.***

   You can use a system map or similar diagram showing source and switch locations.

2. ***Plan your communications system.***

   For more information, see the manufacturer's documentation for your communications system.

3. ***Identify and name the team(s).***

   Form teams by including all automated switches that border each line segment. Choose a team name up to 16 characters. Also, assign team designations ("Team 1" to "Team 8," as needed) for the *SETUP: Team* screens. Teams that share a team member *must* have different designations.

4. ***Assign each team member a DNP/RTU address.***

   Each team member requires a unique DNP/RTU address. You will enter this information on the *SETUP: Team* screen.

5. ***Determine the switch/position number for each team member.***

   Each team member is associated with a switch/position number (for example, "Sw1" for a single overhead switch). Enter this information on the *SETUP: Team* screen.

6. ***Note the normally open/closed state for each team member.***

   Enter this information on the *SETUP: Team screen*.

7. ***Determine the normal functionality for each team member.***

There are six types of functionality for team members:

Functionality	Description
Closed Switches	
Source/Sub	Use this value when the normally closed source switch is the first team member after the source/substation, or is an Interface Module on the source breaker relay.
Source	Use this value for one closed switch in the team through which the line segment receives power when the circuit is in its normal configuration.
Load/Tie	A team may have zero, one, or multiple closed switches through which loads on other line segments receive power. Use this value when the switch, when reclosed, could be used to restore power to the line segment indirectly from an alternate source.
Load	A team may have zero, one, or multiple closed switches through which loads on other line segments receive power. Use this value when the switch would not be involved when restoring power to the line segment because the other line segments have no alternate sources. **IMPORTANT**: Every CLOSED switch should have its sensors facing the normal source of the team.
Open Switches	
Tie/Sub	Use this value when the tie switch is the first team member after the substation/source. **IMPORTANT**: A Tie/Sub switch should have its voltage sensors facing the alternate source.
Tie	Use this value for zero, one, or multiple open switches in the team that restore power to the line segment directly from an alternate source when closed.

Enter this information on the *SETUP: Team* screen.

8. ***Determine the Return to Normal mode for each team.***

If desired, the team members can return the circuit to its normal configuration automatically once a stable 3-phase voltage has been restored to the faulted line segment. For teams with one or more tie switches, you can choose open transition (the tie switch(es) open before the other team members return the circuit to its normal configuration) or closed transition (the team members close all of the switches and then the tie switch(es) open). The Return to Normal process starts at the line segments closest to the normal source, and works outward.

A single team member should have the same Return to Normal mode for each team where it is a member; however, a team may end up with members with different modes.

You will enter this information on the SETUP: Team screen.

9. ***Determine the value for the "RTN Time" setpoint.***

Power must be restored to the faulted line segment for this amount of time (in minutes) before the Return to Normal process will start. Enter this information on the *SETUP: Team* screen.

10. ***Determine the Maximum Capacity for each team member.***

The maximum capacity is the amount of load on the most limited line section (because of conductor size, switch rating, etc.) served through a team member's location from either direction. Each member continuously subtracts its present load from its Maximum Capacity to determine its Local Capacity for Transfer. The smallest Local Capacity for Transfer encountered in a particular restoration path determines the maximum load that the involved teams can transfer, the Available Capacity to Transfer.

Enter this information in the "Maximum Capacity" setpoint on the *SETUP: Team* screen.

11. ***Determine the alternate source sequence for each team.***

Using the normal switch functionalities found for Step 7, set the sequence in which team members will be used to restore the line segment. If the team cannot use the source switch to restore the line segment, then the team tries the members listed here. You will enter this information in the "Alternate Source Sequence" setpoints on the SETUP: Team screen.

IMPORTANT: These setpoints are optional. If you do not enter values for these setpoints, or if the selected team members cannot be used to restore the line segment, then the team tries the tie switch(es) to find an alternate source. If this is not successful, the team then tries the load/tie switch(es).

12. ***Determine whether any "contracts" are required to avoid overloading a line segment.***

If a line segment cannot handle any overloading at all, or if the possibility of overloading is high, you will need to set the "Contract Required" setpoint to "Yes," on the SETUP: Team screen.

You may specify any line segment as requiring a contract. Once team members encounter a line segment in a restoration path that requires a contract, they will communicate with all subsequent line segments in the direction of the alternate source to insure that the alternate source will not be overloaded. Note that this also slows down the reconfiguration process.

13. ***Determine whether you need to limit the number of line segments restored by a team.***

If you want to limit the number of line segments that a team picks up, you will need to enable the "Line Segment Limit" setpoint (on the SETUP: Team screen). For example, "Add 1" inhibits any other line segments from being restored through a member after it restores its first line segment.

To allow the team to pick up as many line segments as capacity allows, set this value to "N/A."

IntelliLINK Software

This section provides an introduction to the IntelliLINK software and how to install and use it on your computer.

You will need the following items to install the software, set up the control, set up the communications equipment (radio, modem, etc.), and enable team operation. You can also use these items to diagnose certain types of hardware problems that can occur during installation.

- *Portable IBM/PC-compatible Computer* – The computer must be transportable to the switch control installation site and must include:
  - Microsoft Windows 98/2000/ME/XP or Windows NT®
  - A serial communications port
  - A CD ROM disk drive, or access to the S&C Automation Information Center (www.energyline.com/support.htm).

- *RS232 Serial Cable* – This cable must have a DB9 pin connector at one end (to plug into the local access port on the switch control faceplate) and a connector at the other end which fits the serial port on the computer. The cable should be long enough to reach comfortably from the switch control to your computer after the control is installed at the site. It must be a "straight-through" cable, not a null-modem cable.

- *Setup CD* – A setup CD is supplied with the Interface Module. You will use this software to set up the Interface Module and the team. The same software is used for troubleshooting.

- **IMPORTANT**: S&C ships several types of software-controlled products. **Make sure you have the correct CD for the interface Module.** The latest versions are posted at **www.sandc.com** – select: Support>S&C Automation Information Center. If you don't have a password, please contact:

  infocenter@sandc.com

Install IntelliLINK

To install the IntelliLINK software:

- Insert the Universal Interface Module CD into your CD ROM drive.
- On the Windows Start menu, click Run.
- The Run dialog box appears.
- Type the letter of the drive in which you put the disk, followed by SETUP (for example, E:\SETUP), then click OK.
- The Installer will guide you through the software installation process.
- When installation is complete, you can shut down your computer or go directly to the Start IntelliLINK Software section, and begin configuration.

Start IntelliLINK

The steps below explain how to start the IntelliLINK software when you want to work with the setpoints or stored data in the Universal Interface Module. If you want to edit a snapshot (virtual memory file) or simply view the software without data, see *Using Snapshots* in *S&C Instruction Sheet 1043-540*.

NOTICE
If you use a 2-wire, ungrounded extension cord to power either your computer OR the /Interface Module and IED while they are connected, you may damage the serial port on your computer. ALWAYS use grounded, 3-wire extension cords, or computer battery power.

1. ***Connect your computer to the Universal Interface Module.***

   Plug one end of the communications cable into the serial port on your computer, then plug the other end into the **LOCAL COMM. PORT** on the Interface Module faceplate.

2. ***Open your IntelliLINK program.***

   To run your IntelliLINK program: click Start>Programs>EnergyLine>IntelliLINK.

3. ***Wait while the IntelliLINK software attempts to open communications with the Universal Interface Module.***

   When the IntelliLINK software establishes communications with the Universal Interface Module, the *PRESENT CONDITIONS* screen (Figure 1) opens. You can now set up the software in the Universal Interface Module, view and save the "live" data that is in the module, load settings into the module, and perform maintenance and troubleshooting.

Navigating the IntelliLINK Screens

The **Main** button, at the bottom of each screen, takes you back to the *Present Conditions* screen, which is the main screen for UIM IntelliLINK Software. From this screen you can get to all other screens. You can also return to the *Present Conditions* screen, by opening the **Window** menu, and selecting **Show Main Screen**.

IntelliLINK Menu Navigation Buttons

The **Tree** button, at the right of the **Main** button, opens the *Select Screen* dialog box, and presents an expandable tree view of the UIM Screenset, similar to *Windows Explorer*. Double click on the screen name that you want to go to.
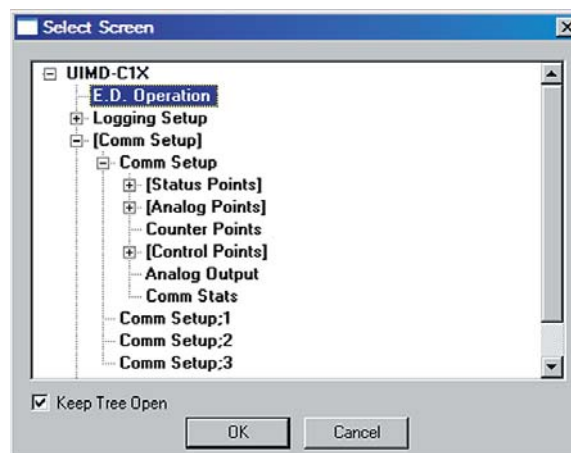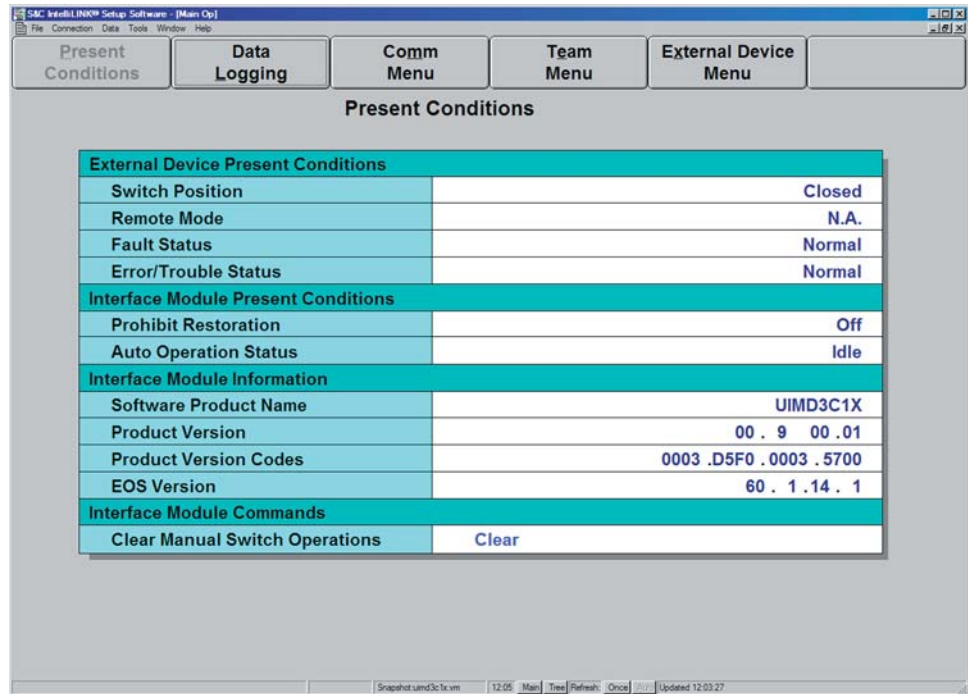
View the Present Conditions Screen

The *PRESENT CONDITIONS* screen (Figure 1) shows the present status of various switch control settings, any existing fault and error conditions.
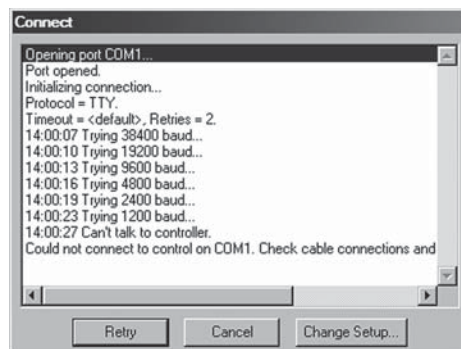
To display the PRESENT CONDITIONS screen:

Click the **Main** button at the bottom of any IntelliLINK screen to go to the *Present Conditions* screen.

Figure 1. PRESENT CONDITIONS screen for the Universal Interface Module.

   NOTE: If IntelliLINK software does NOT establish communication with a functioning Universal Interface Module, it displays the message: "Could not connect to control on COM I." in the Connect dialog box.

   If this message appears, or if the *PRESENT CONDITIONS* screen opens but the software does not operate properly, see *Software Troubleshooting* in *S&C Instruction Sheet 1043-550*.

Entering Data

The IntelliLINK software includes a series of screens and dialog boxes which enable you to set up the Universal Interface Module, and then view and manage team activity.

To Change Data Values on IntelliLINK Screens

To add or change a value on a setup screen (for example, the *SETUP: Miscellaneous* screen shown in Figure 3):

- Move the mouse cursor onto the value you want to change. When the cursor changes to a double-arrow, click the left mouse button to open a Change Value dialog box, double-arrow cursor:

- If the dialog box accepts typed input, use the keyboard keys to enter the new value. If the dialog box does not accept typed input, click the Up or Down arrow to change the value, or click the radio button for the correct value.
- Click OK to record the new value (or click Cancel to leave the dialog box without changing the value).
- Repeat this process for each value you want to add or change.
- **To view Help text** for all the fields on the screen, press <F1>.

To open a menu screen (for example, the *COMM MENU* or *TEAM MENU*), click the **Main** button, found at the bottom of every screen, and this will take you to the *PRESENT CONDITIONS* screen where you can find this set of selection buttons.

Present Conditions	Data Logging	Comm Menu	Team Menu	External Device Menu	

IntelliLINK Software

Software Menu Tree
    IntelliLINK Software Menu Tree for Universal Interface Module

PRESENT CONDITIONS

DATA LOGGING
        DATA LOGGING SETUP
        HISTORIC EVENT VIEW (8 pages of Data)
        LOGGING STATUS POINTS (3 pages of Data)
        SPECIAL EVENT COUNTERS (2 pages of Data)
        SYSTEM STARTUP HISTORY

COMMUNICATION MENU
        SETUP: Communications (5 pages)
        SETUP: DNP Status Points Map (4 pages)
        SETUP: DNP Analog Points Map (7 pages)
        SETUP: DNP Counter Points Map
        SETUP: DNP Control Points Map (2 pages)
        SETUP: DNP Analog Output Points Map
        SETUP: Communications Diagnostics

TEAM MENU
        TEAM SETUP MENU
            SETUP: Team (for 8 Teams)
        OPERATION MENU
            TEAM OPERATION MENU
                OPERATION: Team 1 to 8 (2 pages)
            MISC OPERATION
                TEAM MEMBER TASK OPERATION
                CONTRACT STATUS
                TEAM MEMBER ACTION PATH
                COACH ACTIVITY
            PROHIBIT RESTORATION
        SETUP MENU
            TEAM SETUP
                SETUP: Team (for 8 Teams)
            EXTERNAL LOADING
            MISC SETUP

EXTERNAL DEVICE MENU
        BEGIN SETUP
        SETUP: Miscellaneous
        SETUP: Automatic Operation
        SETUP: DNP Status Points Map (2 pages)
        SETUP: DNP Analog Points Map
        SETUP: DNP Control Points Map
        SETUP: Communications
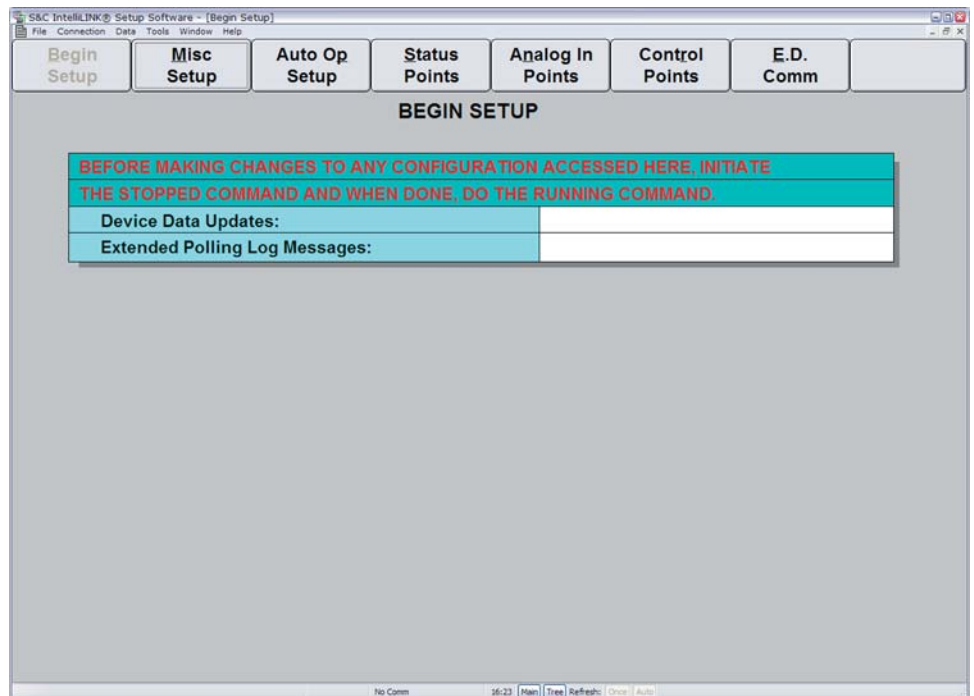
Interface Module Setup

When you set up the Universal Interface Module and team for normal operation, you carry out a series of steps which are outlined in the Suggested Team Installation/Setup Procedure flow charts at the end of *S&C Instruction Sheet 1043-500.*

The values you enter on each setup screen depend on your electrical distribution system and details specific to each individual switch.

⚠ WARNING

These instructions do NOT replace the need for utility operation standards. Any conflict between the information in this document and utility practices should be reviewed by appropriate utility personnel and a decision made as to the correct procedures to follow.

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1. ***Establish communication with the Universal Interface Module and start the IntelliLINK software.***

   For details, see *Start IntelliLINK* on page 8. If the software is already running, you can skip this step.

2. ***Click the External Device Menu Button, and the Begin Setup Button to display the BEGIN SETUP screen. See Figure 2.***

Figure 2. Begin Setup screen.

Device Data Updates

When you set this parameter to Running the Interface Module starts polling the external device for binary status, analog inputs and binary counters. A check is also made at the Running state to verify that any programmed automatic settings have associated status, control and analog inputs programmed, if not, Running will be set to Stopped and a Protection Config. Error will be active in Data Logging Status Points. For example, when extended loss of voltage is enabled in Setup Auto Op, status points for voltage present and analog inputs for phase voltage must be entered. When Reclose Blocking and Unblocking are enabled, control points and status points must be entered.

As a configuration check, once Running is set, any change to automatic operation, status points, analog inputs, control points, will put the polling state to stopped. This is done to prevent any unintended operation while the external device configuration is being changed. So the normal configuration sequence is to be in the Stopped state, go through all setup screens, and then when done go to the Running state.

⚠ CAUTION
Before making changes to any DNP settings here, or from the Comm Setup screens, set the Device Data Updates to **Stopped** to prevent data from being used incorrectly. When your changes are complete, set Device Data Updates to **Running** to allow continuously retrieved data to be used again.

Extended Polling Log Messages

When this is set to Enabled and the above setpoint is set to Running, the Data Logging: Historic Events log will capture the transmission and response of the communication data (with time stamps) to the external device. This is useful for fine tuning the communications link to the device. However the frequently logged messages will fill up the compact flash unnecessarily, so setting this setpoint to disabled will stop frequent messages from being logged.

External Device Setup

3. *Click the External Device Menu Button, then the Misc Setup Button, to go to the SETUP: Miscellaneous screen. See Figure 3.*
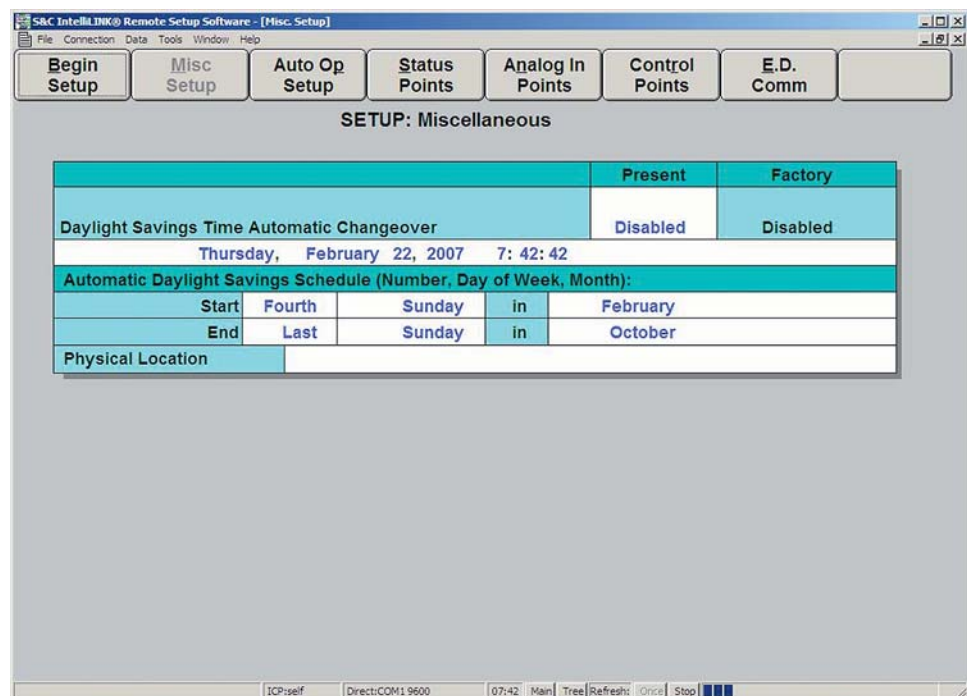

Figure 3. SETUP: Miscellaneous screen.

This screen allows you to enter miscellaneous setup information for this switch control. The screen includes the following fields:

Daylight Savings Time Automatic Changeover

When the field is set to "Enabled," the interface module automatically adjusts its clock for the start and end of daylight savings time. Check with your SCADA vendor to see if the SCADA master will correct for daylight savings time. If it does, leave the control changeover disabled or the correction will be made twice.

Calendar Timeclock Time/Date

The time and date are set at the factory to Pacific Standard Time (GMT-8:00). If the Universal Interface Module is installed in a different time zone, you will need to reset these values. Select Tools>Set Control Clock to set the time in the Interface Module to the time on your computer.

Automatic Daylight Savings Schedule

Use these setpoints to configure the start and end dates for daylight savings time.

If Daylight Savings Time Automatic Changeover (see above) is enabled, the time/date statement includes the current daylight savings time status, for example:

Tuesday, May 30, 2006 3:25:08 Daylight Savings

The Universal Interface Module uses this information for data logging and event recording.

Physical Location

Enter your company's standard location identifier, for example "Switch # 429, 73 Main St., Centerville." This will help identify the breaker or recloser to the SCADA master station operator, and appears on all reports generated from the Universal Interface Module.

Automatic Operation Setup

4. *Click the External Device Menu Button, then the Auto Op Setup Button and enter the correct values for the Interface Module and External Device.*
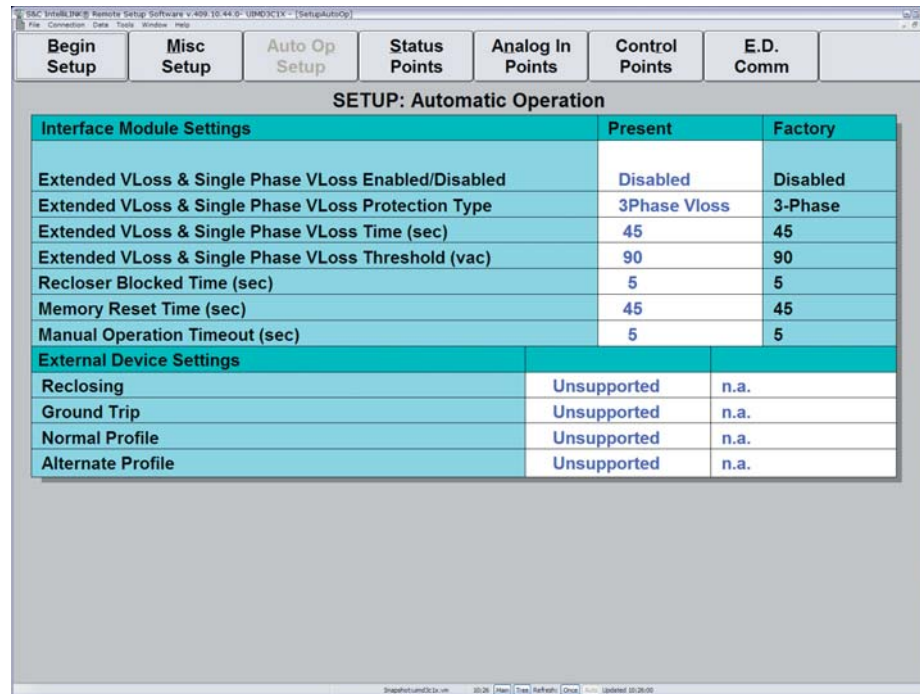

Figure 4. SETUP: Automatic Operation screen.

Voltage trip can be initiated by the external device or interface module. This is true for extended three-phase and single phase voltage losses. If interface module voltage trip is enabled, one or both features must be selected, and the time and threshold must be set. If the user chooses to initiate voltage tripping using the external device, Extended Voltage and Single Phase Loss Protection is set to None, and the time and threshold settings become "N/A." The time and threshold must then be specified in the external device. If the user chooses to configure the interface module to initiate voltage trips and also leave voltage tripping active in the external device, then the external device time threshold should be shorter than the interface module loss of voltage time threshold to give the external device logic priority.

When the external device initiates a single or three-phase voltage trip, the interface module will see the action as an external operation. However, this action will be qualified as a valid transfer event when it is accompanied by a voltage loss. The interface module will look at the voltage present status points to make this decision.

When the interface module initiates a single or three-phase voltage loss, the module will use the voltage analog points to make a sectionalizing decision.

If the user selects single or three-phase or both types of extended loss protection, logic checks the analog inputs and binary status points to make sure that voltage status and analog input voltage points have been programmed/mapped to support extended voltage loss operation. If they have not been mapped, alarm processing will prevent the team from going into ready status.

The SETUP: Automatic Operation screen allows you to enable and disable various automatic switch control operations and enter the setpoints for these operations.

Interface Module Settings

Extended VLoss & Single Phase VLoss Enabled/Disabled

If it is desired to have the Interface Module initiate extended phase or three phase voltage losses, set this to enabled.

Extended VLoss & Single Phase VLoss Protection Type

Enter the desired protection type here.

Extended VLoss & Single Phase VLoss Time (sec)

Enter the amount of time in seconds to qualify a voltage or phase loss.

When only one phase is being monitored, for the required analog and status points for phase voltage and phase voltage present, use the same point numbers for all phases.

Extended VLoss & Single Phase VLoss Threshold (vac)

To qualify a voltage or phase loss, the reported analog values are converted to a 120 vac base and then compared to this value.

Recloser Blocked Time (sec)

When a close operation is executed, IntelliTEAM does not register a successful close until the timer elapses. Only then is the reconfiguration process allowed to continue.

The Control Point Operation Timeout located at "External Device Menu, Control Points" is an overall timer that IntelliTEAM uses to not wait indefinitely for control point operations to complete. To allow time for the External Device to qualify a good close operation, make sure the Recloser Blocked Time is always less than the "Control Point Operation Timeout."

Memory Reset Time (sec)

This is the number of seconds during which IntelliTEAM remembers that a voltage loss and/or overcurrent event occurred, and can use this information if the event leads to a lockout condition of this relay/recloser device, or any source side device. Generally you should set this value to a time 5 seconds longer than the maximum lockout time.

Manual Operation Timeout (sec)

Whenever the normally closed external device is reporting it is open, this timer is started to wait for the cause of the change of state. A manual operation alarm condition is not entered for the following:

A frequency trip is indicated, the UIM has initiated an extended voltage loss trip, fault targets are active and the cycling status is not in the configuration, the cycling status becomes active, or if fault targets are active and tripped to lockout is active.

If the Manual Operation Timeout occurs before any of the above indicators become active, a manual operation alarm condition is entered.

On a normally open external device, if IntelliTEAM isn't involved with a restoration close command and a closed indication is reported, the Manual Operation Timer is not used, and an immediate manual operation alarm condition is entered.

If the UIM senses that the external device has tripped open with voltage loss indicators, this is qualified as a manual operation.

External Device Settings

The following settings direct the Interface Module in its operation of the host relay/recloser device.

Reclosing Relay

When this parameter is set to Supported and Enabled it indicates to the Interface Module that the reclosing feature of the host device is enabled in its normal state, and that the reclosing feature is available for use by IntelliTEAM during reconfiguration events. The sequence of commands sent to the host device when this parameter is supported and enabled are: block reclosing, send the close command and then re-enable reclosing. If this parameter is set to Unsupported, IntelliTEAM will not issue the reclosing block and reclosing enable commands during reconfiguration. When reclosing is Supported and Enabled and the Interface Module detects that the reclosing feature has been taken out of its normal state by an external means (faceplate or SCADA), the Interface Module considers this to be human intervention and will cause the associated team to be not-Ready. It will also prevent automatic operation of the relay/recloser device by IntelliTEAM until the condition has been cleared.

Ground Trip

Ground Trip for use by Universal Interface Module/IntelliTEAM is not supported at this time.

Normal Profile

You should set this parameter to the settings profile you would like the host relay/recloser device to use under normal circuit conditions. When Supported and Enabled and the Interface Module detects that the settings profile has been changed by an external means (faceplate or SCADA), the Interface Module considers this to be human intervention and will cause the associated team to be not-Ready. It will also prevent automatic operation of the relay/recloser device by IntelliTEAM until the condition has been cleared.

Alternate Profile

You should set this parameter to the settings profile you would like the host relay/recloser device to use under reconfigured circuit conditions. During a reconfiguration event IntelliTEAM will change the active profile to this configured profile as part of the sequence of operating the relay/recloser device. When Supported and Enabled and the Interface Module detects that the settings profile has been changed by an external means (faceplate or SCADA), the Interface Module considers this to be human intervention and will cause the associated team to be not-Ready. It will also prevent automatic operation of the relay/recloser device by IntelliTEAM until the condition has been cleared.

NOTE: If the profile is changed during circuit reconfiguration and automatic "Return to Normal" is enabled, IntelliTEAM logic **does not** reset the profile back as part of the "Return to Normal" process. However, this can be accomplished remotely with a SCADA control point operation.

External Device Status Points Map

5. ***Click the External Device Menu Button, then the Status Points Button, and enter the correct values for External Device.***

Figure 5. SETUP: DNP Status Points Map for the External Device.

The following 2 screens allow programming of the status points used by the Universal Interface Module and IntelliTEAM. The minimum required points are highlighted with an asterisk. Additional points will need to be mapped depending upon the desired protection settings.

Point Number

To change the point mapping simply select a new binary status point number for a status point definition in the blue column. The point number allows the Interface Module to find the point data in the polled response from the external device.

Active State

Select the active state that is returned from the external device for the associated status point number. For example, if close and open are the same point number, and the external device reports close as a "1," then the close active state is "1" and the open state is active "0." If close and open are different point numbers, then the active state is "1" for both.

Polled Status

When "Running" is selected from the "Begin Setup" screen, the returned binary status will be displayed for the programmed points.

Table 1 contains a list of the status point requirements for IntelliTEAM. Note that not all points will be available in all external devices. The lack of some features in the various supported external devices will need to be taken into account with the UIM logic.

Status Point Name	Description
Close State ◆	True if the switch mechanism is in the closed position
Open State ◆	True if the switch mechanism is in the open position
Lockout Status ◆	True if the relay has tripped to lockout
Normal Profile ●	True if the normal profile is active
Alternate Profile 1 ●	True if alternate profile 1 is active
Alternate Profile 2 ●	True if alternate profile 2 is active
Alternate Profile 3 ●	True if alternate profile 3 is active
Alternate Profile 4 ●	True if alternate profile 4 is active
Alternate Profile 5 ●	True if alternate profile 5 is active
Grd Trip Blocked	True if the relay is indicating that trip on ground current is blocked
Grd Trip Enabled	True if the relay is indicating that trip on ground current is enabled
Reclosing Blocked ●	True if the relay is indicating that reclosing is blocked
Reclosing Enabled ●	True if the relay is indicating that reclosing is enabled
Remote Mode Enabled ■	True if the relay is indicating that remote mode is enabled
Trouble Status1	True if the relay is reporting that trouble is active
Trouble Status2	True if the relay is reporting that trouble is active
Hot Line Tag ●	True if the relay has hot line tag active
Freq. Trip Target ●	True if the relay has tripped due to frequency anomaly
Trouble Status3	True if the relay is reporting that trouble is active
Phase A Fault ◆	True if the relay is indicating an A phase fault has been detected
Phase B Fault ◆	True if the relay is indicating a B phase fault has been detected
Phase C Fault ◆	True if the relay is indicating a C phase fault has been detected
Neutral Fault ◆	True if the relay is indicating a neutral or ground fault has been detected
Phase A Volt Present	True if the relay is indicating voltage is detected on phase A
Phase B Volt Present	True if the relay is indicating voltage is detected on phase B
Phase C Volt Present	True if the relay is indicating voltage is detected on phase C
Trouble Status4	True if the relay is reporting that trouble is active
Recloser Cycle Status ●	True if the relay is fault cycling
Recloser Reset Status ●	True if fault cycling has ended and the switch is closed

◆ Required DNP Point.

● Required DNP Point if supported by the external device.

■ The Remote Mode Enabled point should be mapped. If not mapped or configured N/A it will always be displayed as Active.

Table 1. Status Point requirements for IntelliTEAM.

NOTICE
If the switch open/close status is reported as both open and closed, a ten second timer starts. If the status is still the same when the timer expires, the team enters the stop transfer state, and both a log event message and status change are reported.

External Device Analog Input Points Map

6. *Click the External Device Menu Button, then the Analog In Points Button, and enter the correct values for the External Device.*
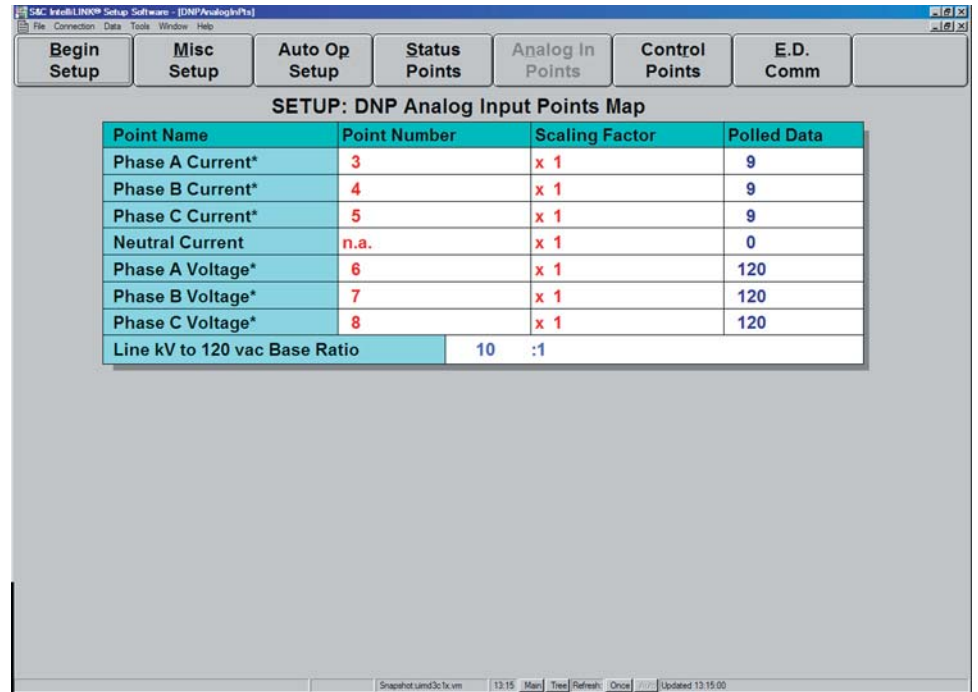

Figure 6. SETUP: DNP Analog Input Points Map for the External Device.

This screen allows programming of the analog input points used by the Interface Module and IntelliTEAM. The minimum required points are highlighted with an asterisk. Additional points will need to be mapped depending upon the desired protection settings.

Point Number

To change the point mapping simply select a new analog input point number for an analog point defined in the blue column. The point number allows the Interface Module to find the point data in the polled response from the external device.

Scaling Factor

Normally phase current is expected in units of one amp per count. This parameter may be used to set a scaling factor if necessary to adjust the reported value to the one amp per count expected scaling. The scaling factor and the line kV base ratio are used to convert the external devices reported phase voltage data to a 120 vac base. The displayed value will be compared to the voltage loss threshold in Setup: Automatic Operation for extended phase or 3 phase voltage losses. The scaling factor for the 3-phase currents and the 3-phase voltages can be set from 0.01 to 100.

Polled Data

With a scaling factor of "1," the polled data is the actual analog data reported by the external device for that programmed point number.

Line kV to 120 vac Base Ratio

As described above, enter a value to get a 120 vac base displayed for the 3 phase voltages.

The scaling factors here do not modify what will be reported when a SCADA master polls for analog input data, there are separate scaling factors for SCADA DNP.

External Device Control Points Map

7. *Click the External Device Menu Button, then the Control Points Button, and enter the correct values for External Device.*

Point Name	Point Number	Object Type	Function	Test
Normal Profile	n.a.	Pulse On	Direct Op	Activate Point
Alternate Profile1	n.a.	Pulse On	Direct Op	Activate Point
Alternate Profile2	n.a.	Pulse On	Direct Op	Activate Point
Alternate Profile3	n.a.	Pulse On	Direct Op	Activate Point
Alternate Profile4	n.a.	Pulse On	Direct Op	Activate Point
Alternate Profile5	n.a.	Pulse On	Direct Op	Activate Point
Trip*	n.a.	Pulse On	Direct Op	Activate Point
Close*	n.a.	Pulse On	Direct Op	Activate Point
Ground Trip Blocked	n.a.	Latch On	Direct Op	Activate Point
Ground Trip Enabled	n.a.	Latch On	Direct Op	Activate Point
Reclosing Blocked	n.a.	Latch On	Direct Op	Activate Point
Reclosing Enabled	n.a.	Latch On	Direct Op	Activate Point
Reset Fault Targets	n.a.	Pulse On	Direct Op	Activate Point
Fault Targets Timeout (secs)	45			
Last Control Point Number*	55			
Control Point Operation Timeout (secs)	10.0			
Control Relay Pulse On Time (mS)	1			
Control Relay Pulse Off Time (mS)	0			

Figure 7. SETUP: DNP Control Points Map for the external device.

This screen contains control point mapping specifically for those points required for use by IntelliTEAM. The Interface Module must know what point numbers are associated with the given control functionality so that IntelliTEAM can operate properly. The minimum required control points are marked with an asterisk. Others will be required depending on the desired protection settings.

Point Number

To change the point mapping simply select a new control point number for a control point defined in the blue column. This point number is the one that the external device recognizes for the defined name.

Object Type

Select from the six types that the external device supports for the associated control point.

Function

DNP Direct Operate is the only function type supported for control points that are controlled by the Universal Interface Module or IntelliTEAM.

Test

Clicking on the "Activate Point" will send the control point as it is programmed to the external device. This facilitates quick verification for control point operation and reported binary statuses.

> ⚠ **WARNING**
>
> Selecting **Activate Point** will cause an operation of the external device. Be sure all standard safety precautions are followed prior to testing points.

Reset Fault Targets

To give IntelliTEAM the most accurate information, fault targets need to be cleared in the external device when fault cycling is done and a good closed indication is present. If the external device is in a switch mode and/or logic is not available to reset targets, entering this control point and setting the timer below will cause the UIM to initiate the resetting of fault targets.

Fault Targets Timeout (seconds)

This timer is used to wait the programmed amount of seconds before the UIM sends the reset fault targets DNP control point to the external device.

Last Control Point Number

The Interface Module doesn't poll for the binary output status from the external device (to get a count of how many control points the external device supports). So when it is time to program control points to be used by SCADA (Comm Menu, Control Point Map), enter the highest index number (that the external device supports) for the control points that you want to make available for mapping.

Control Point Operation Timeout (seconds)

This value is used by IntelliTEAM as the upper limit on how long it takes for control point operation. Successful operation time is based upon the polling rate, and the returned binary status associated with the control point.

Control Relay Pulse On/Off Time (ms)

The on and off times in the control relay output block can be programmed from 0-99999999 ms.

Control Point Name	Description
Normal Profile ●	Command to enable the normal settings profile of the host control device
Alternate Profile 1 ●	Command to enable the alternate settings profile 1 of the host control device
Alternate Profile 2 ●	Command to enable the alternate settings profile 2 of the host control device
Alternate Profile 3 ●	Command to enable the alternate settings profile 3 of the host control device
Alternate Profile 4 ●	Command to enable the alternate settings profile 4 of the host control device
Alternate Profile 5 ●	Command to enable the alternate settings profile 5 of the host control device
Trip ◆	Command to open the contacts of the breaker or recloser
Close ◆	Command to close the contacts of the breaker or recloser
Ground Trip Blocked	Ground Trip for use by the Universal Interface Module and IntelliTEAM is not supported at this time
Ground Trip Enabled	Ground Trip for use by the Universal Interface Module and IntelliTEAM is not supported at this time
Reclosing Blocked ●	Command to block the reclosing feature of the host control device
Reclosing Enabled ●	Command to unblock the reclosing feature of the host control device
Reset Fault Targets ■	Command to clear the fault targets in the host control device

◆ Required DNP Point.

● Required DNP Point if supported by the external device.

■ Not required if host device automatically clears fault status when it closes.

Table 2. Control Point requirements for IntelliTEAM.

**External Device
Communications Setup**

8. *Click the External Device Menu Button, then the E.D. Comm Button, and
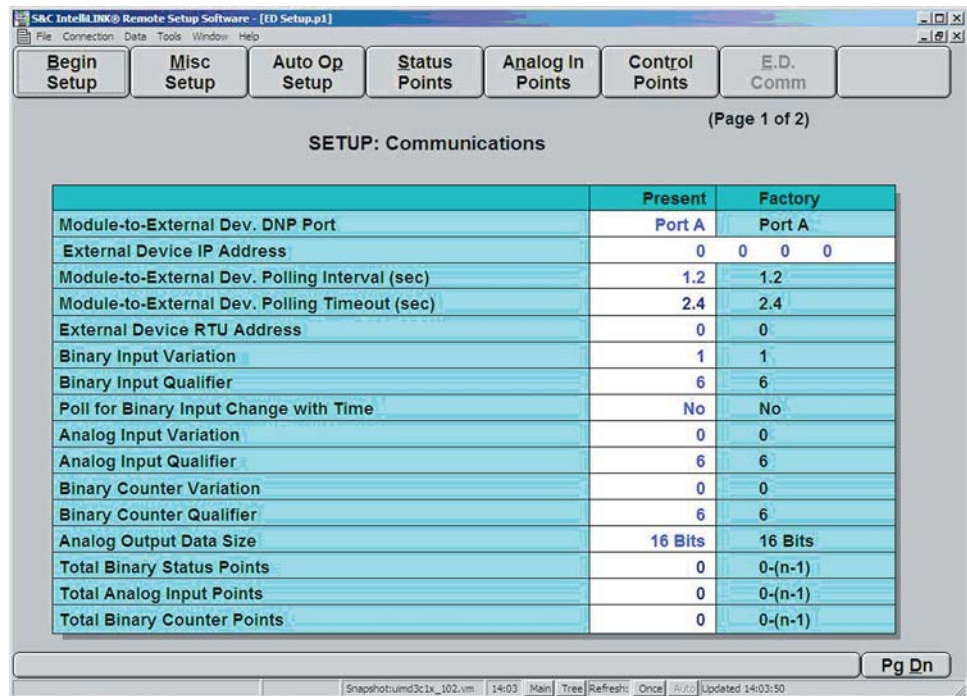enter the correct values for External Device.*

Figure 8. SETUP: Communications for the external device.

This screen contains communications-related setpoints specifically related to communications with the external device.

Module-to-External Dev. DNP Port

Enter the serial port that is connected to the external device, port A, B, C, or Ethernet.

External Device IP Address

Enter the IP address of the External Device when Ethernet is used for the connection.

Module-to-External Dev. Polling Interval (.1 seconds)

The Interface Module polls the external relay/switch device for data and stores that data in an internal database. This parameter defines the rate, in seconds, that this polling will take place.

Module-to-External Dev. Polling Timeout (.1 seconds)

This is the amount of time (automatically calculated) the Interface Module waits before logging a communication timeout. For the normal data polls, when timeouts occur, the pending message is deleted off the transmit list and another poll is sent. Set the above polling interval and then go to External Device Menu, Begin Setup, set the Extended Polling Log Messages to Enabled and then go to Data Logging, Historic Events, Logging Level All and verify that "Data Poll Sent to Ext. Device" and "Data Received from Device" are logged without timeouts being logged. When done, set the Extended Polling Log Messages to Disabled, so the compact flash doesn't fill up with these messages.

External Device RTU Address

This is the DNP RTU address that is configured in the external relay/switch device directly connected to this Interface Module. As is normally the case, this RTU address must be unique within the communications system.

NOTICE
IntelliLINK Remote Users: Changing the RTU Address, or other communication parameters, can stop this device from communicating with IntelliLINK Remote and its other team members. IntelliTEAM stops working when it can't reach a team member. If you do loose communication with a control, you must go to the site, connect directly to that control, and reset the RTU Address, or other changed communication parameter.

Binary Input Variation

This is the DNP object variation used in the Interface Module's poll to the external device for binary input data. Using a variation of "1" specifically requests "Single Bit Binary Input" data. Using a variation of "0" allows the external device to select the variation of the binary input data it will respond with.

Selecting variation "2" Binary Input with Status will cause the UIM to look at the offline status of every binary input returned by the external device. If any offline statuses are found, an alarm condition is entered and any IntelliTEAM activity will be stopped.

Binary Input Qualifier

This is the DNP qualifier code used in the Interface Module's poll to the external device for binary input data. Using a qualifier of "6" requests that all available binary input data objects be returned in the external device response.

IMPORTANT: The Interface Module only supports 216 binary status points.

Poll For Binary Input Change With Time

When the external devices are set to do fast fault cycling and the polling interval is set to do slow polling, it's possible to miss valuable information that occurs in between the polling interval. Setting this setpoint to "Yes" causes the Interface Module to poll for Binary change events. When the events are received, any fault currents or voltage loss events that are active are reported to IntelliTEAM.

NOTE: If there are too many events stored in the external device (events haven't been polled for in a long time) the time it takes to receive them all might exceed the poll timeout value resulting in Reset Link being sent to the external device instead of the confirmation acknowledgement. This causes the events to not be purged from the external device and the process to repeat. So purge old events from the external device first and then enable this setpoint. The transmit and receive LEDs for the port connected to the external device should show 1 transmit indication followed by 1 receive indication.

Analog Input Variation

This is the DNP object variation of analog input data that will be requested. Using a variation of "2" specifically requests "16-bit Analog Input" data from the external device. Using a variation of "0" allows the external device to select the variation of analog input data it will respond with.

NOTE: The Interface Module supports only 16 bit analog values. If the default variation of "0" is used be sure the external device is configured to return 16 bit analog values.

Analog Input Qualifier

This is the DNP qualifier code for analog input data that will be requested. Using a qualifier of "6" requests that all available analog input data objects be returned in the external device response.

IMPORTANT: The Interface Module only supports 126 analog input points.

Binary Counter Variation

This is the DNP object variation of binary counter data that will be requested. Using a variation of "0" allows the external device to select the variation of binary counter data it will respond with.

NOTE: The Interface Module supports up to 32 bit counters.

Binary Counter Qualifier

This is the DNP qualifier code for binary counter data that will be requested. Using a qualifier of "6" requests that all available binary counter data objects be returned in the external device response.

IMPORTANT: The Interface Module only supports 16 binary counters.

Analog Output Data Size

When DNP receives a request to set one of the 16 mapped Analog Outputs that will be sent to the external device, this setpoint is used to match the data size supported.

Total Binary Status, Analog Input and Counter Points

To help verify the Interface Module is receiving data from the external device, these real time counts are the totals received. If 38 binary status points are displayed, with a zero reference, the device is returning 0 - 37.

NOTE: The Interface Module sends three DNP objects to the external device: Binary Status, Analog Inputs and Binary Counters. For correct operation the external device can to respond to all three or can return data for just Binary Status and Analog Inputs.

**Remote Prohibit
Restoration Transmit
List**

9. *Click the External Device Menu Button, then the E.D. Comm Button, and select Pg Dn.*
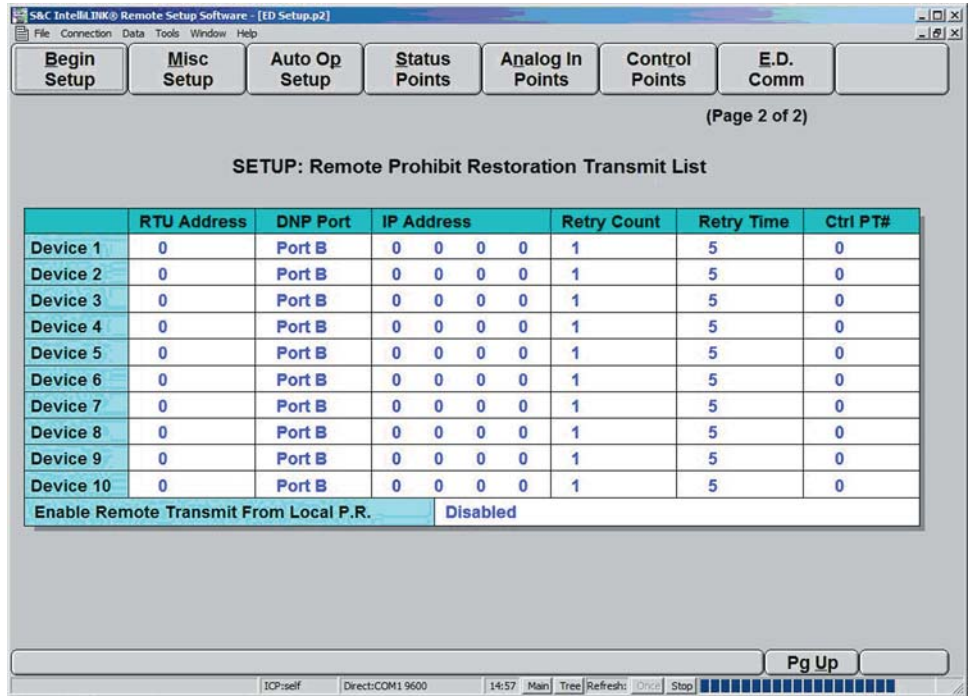

Figure 9. SETUP: Remote Prohibit Restoration Transmit List.

This screen contains setpoints specifically related to sending the Prohibit Restoration SCADA command to remote devices. Each non-zero RTU address in this list will receive a latch on, direct operate SCADA control point when any of the following events are active in the local UIM Control: Hot Line Tag is active, a Frequency Trip has occurred, IntelliTEAM has determined that a manual operation has occurred or (when Enable Remote Transmit from Local P.R. is enabled) and Prohibit Restoration is active at the local UIM from the front panel, SCADA or the screen set.

RTU Address

Enter the address of the remote device.

DNP Port

Select which port to use for transmitting to the remote device.

IP Address

If Ethernet is selected above, enter the IP address here.

Retry Count

Enter the number of retries to perform on timeouts.

Retry Time

Enter the amount of time in seconds to wait before retries are attempted.

Control PT#

Enter the control point number that activates Prohibit Restoration in the remote device.

Enable Remote Transmit from Local P.R.

When this setpoint is enabled, and Prohibit Restoration (P.R.) is active at the local UIM from the screen set, front panel or SCADA, all devices with non-zero RTU addresses will have the programmed control point transmitted to them.

Communications Setup

10. *On the PRESENT CONDITIONS screen click the Comm Menu button for the SETUP: Communications - General (Page 1 of 5) screen (Figure 10). Enter the correct values for the Universal Interface Module.*
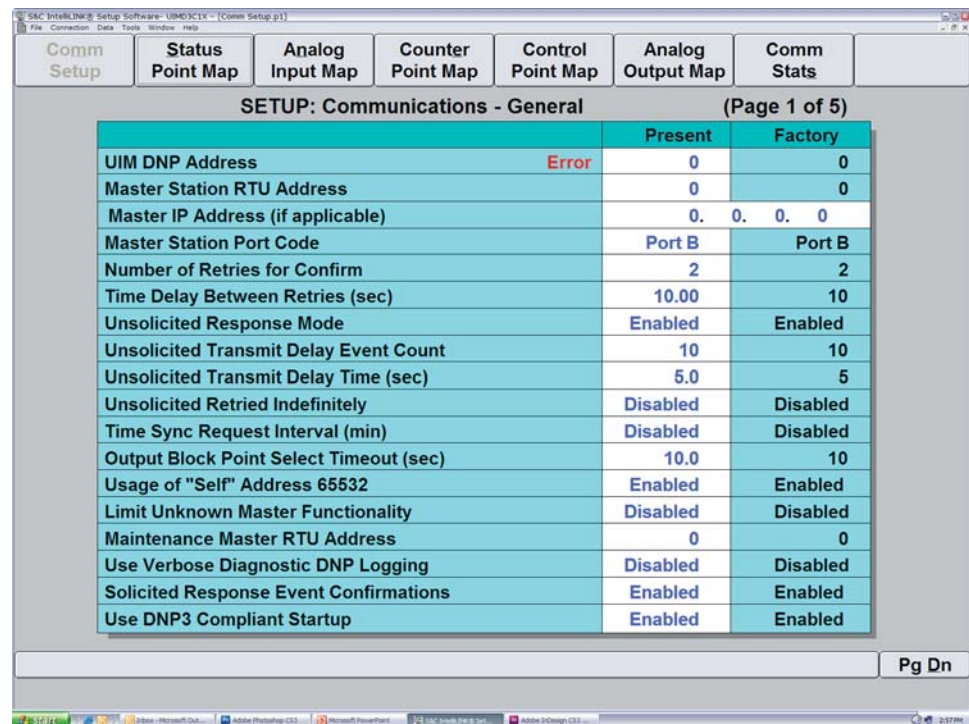

Figure 10. SETUP: Communications - General, Page 1.

This screen contains setpoints related to IntelliTEAM and SCADA (if applicable) communications. This screen includes the following fields:

UIM DNP Address

Enter the network address for this Universal Interface Module installation. This must be the same as the "DNP/RTU Address" (on the SETUP: Team screen) for this team member. Be sure to enter an address even if this interface module will not be accessed via SCADA. RTU address must be greater than 0 and less than 65520.

Master Station RTU Address

This is the master station RTU address to which the Universal Interface Module sends all unsolicited responses. Leaving this address at zero prevents the Interface Module from generating any unsolicited responses, whether or not the "Unsolicited Responses to Master Station" has been enabled.

Master IP Address (if applicable)

This is the IP Address that must be used to route DNP frames to the master station over a UDP connection. This parameter only applies to IP based SCADA networks.

NOTICE
IntelliLINK Remote Users: Changing the RTU Address, or other communication parameters, can stop this device from communicating with IntelliLINK Remote and its other team members. IntelliTEAM stops working when it can't reach a team member. If you do loose communication with a control, you must go to the site, connect directly to that control, and reset the RTU Address, or other changed communication parameter.

> **⚠ WARNING**
>
> If you move an already-configured UIM to a new location, be sure to enter the NEW address into the UIM. If you leave the old address in the UIM, it may respond to instructions meant for a different switch location.

Master Station Port Code

This is the local serial port through which DNP frames destined for the master station must be sent. This may be set to any serial port configured for DNP communications. This parameter only applies to serial based SCADA networks.

Number of Retries for Confirm

If the first transmit of a message that contains event data, whether unsolicited or requested, does not result in a confirmation message within the time delay (see "Time Delay Between Retries" below) the message may be resent. This parameter defines the number of times the control will resend the message before stopping and saving the event data. Setting this parameter to zero will prevent the retry process and result in only a single attempt to send the message to the master.

Time Delay Between Retries (seconds)

If the control did not receive a confirmation message within this time period, it retransmits the response with a request for another confirmation (unless the "Number of Retries for Confirm" has been reached).

Unsolicited Response Mode

When this parameter is enabled the control sends a message to the SCADA master station when new event data is available based on the "Unsolicited Transmit Delay Event Count" and "Unsolicited Transmit Delay Time" below. If this feature is enabled, you must also enter a master station RTU address on this screen (see "Master Station RTU Address") and a port code or IP address through which to reach the master station.

Enabling this feature may add significant communication traffic to your communication network.

Unsolicited Transmit Delay Event Count

This is the number of new events that will cause an unsolicited message to be transmitted, provided the "Unsolicited Transmit Delay Time" has not been reached first. If this parameter is set to one an unsolicited message will be sent immediately upon the first new event generated.

Unsolicited Transmit Delay Time (seconds)

This is the maximum delay in seconds that may elapse after the first new event before which an unsolicited message is transmitted to the master station. During this delay other new events may be added to the unsolicited message. If the number of events reaches the "Unsolicited Transmit Delay Event Count" before this delay time expires the unsolicited message will be transmitted immediately.

Unsolicited Retried Indefinitely

As required by DNP, this parameter allows the configuration of unsolicited message retries to be performed for an indefinite period of time. S&C recommends that this parameter remains disabled for normal operation.

Time Sync Request Interval (minutes)

Although the Interface Module maintains the time and date in a highly accurate battery-backed clock chip, you can force the control to request a time synchronization message, from the DNP Master Station, by enabling this setpoint. If you set an interval, the Interface Module requests the time upon startup, and then again every interval, on the interval.

Output Block Point Select Timeout (seconds)

This is the timeout duration of the Select function on control points. (For details about using analog outputs, see the *DNP Points List and Implementation*.) If the timeout duration is too short between the Select and the Operate functions during a Select-Before-Operate sequence, the Interface Module disables the point and reports a timeout to the master station.

Usage of "Self" Address 65532

This parameter allows the special DNP "Self" address (RTU address 65532) to be enabled and disabled. The use of this address can be very helpful during initial configuration of the control over a local DNP link (this is the only way to communicate over DNP to the control when the local RTU address has not yet been configured), or when the local RTU address is not known.

Use of the DNP "Self" address should be restricted to local communications only. This address should not be used over a network connection.

Limit Unknown Master Functionality

When this parameter is enabled it prevents a master/peer station that is not included in the configuration of this control from writing to or controlling this control. Master/peer stations configured in this control include the "Master Station RTU Address," the "Maintenance Master RTU Address" (see below), and team members that are explicitly configured in the Team setup screens.

This parameter is disabled by default to allow master station addresses to be entered into the configuration. Once entered this parameter may be enabled as long as a configured master station address is being used to complete the rest of the configuration process.

Maintenance Master RTU Address

This is a secondary master station address that may be configured to allow local access to this control for the purpose of configuration changes and diagnostics. This master RTU address allows the same access to the control that the main master station address allows, except that unsolicited messages will only be sent to the main master station address.

The Maintenance Master RTU Address should not be used to request event data from the control. Requesting event data using this address will prevent the main master station from receiving this same event data.

Use Verbose Diagnostic DNP Logging

If you are diagnosing a communications issue you can set this parameter to Enabled to have messages logged for every frame that is transmitted and received. The additional messages are:

- Frame accepted by DL (data reported is Source Address, Destination Address, Transport Header, Frame Length)

- AL accepted good fragment (data reported is Source address, Data Length, Application Control, Function Code)

- App layer accepted FIR-FIN message (data reported is Transport Header, Fragment Length, Source Address)

Leaving this feature enabled for an extended period will cause historic logs to fill more quickly and reduce the amount of saved historical events.

Solicited Response Event Confirmations

When this parameter is enabled an Application Layer Confirmation will be requested with every solicited response that includes event data. When disabled a confirmation will not be requested for solicited responses that include event data. Normally this parameter should be set to Enabled so that event data is not discarded until the master station has acknowledged receiving it. If in the disabled mode the operation is not considered to be DNP 3.0 compliant.

This parameter has no affect on Unsolicited Report by Exception responses.

Use DNP3 Compliant Startup

DNP3 Compliant Startup requires that the master station acknowledge an initial empty unsolicited message, and then send a SCADA command to enable unsolicited reporting. If acknowledgment of the initial empty unsolicited message is not received the UIM continues to resend these messages at the configured retry interval until an acknowledgment is received. Setting this parameter to Disabled makes use of a non-standard mode that bypasses the initial empty unsolicited messages, and the requirement for the master station to enable unsolicited reporting with a SCADA command, and simply starts sending unsolicited responses as events occur, provided that the Unsolicited Responses parameter is enabled.

NOTE: This parameter affects a change only during startup. If you must disable this parameter in order to be compatible with your master station then you should also restart the UIM so that the change takes affect.

Serial Port Setup

11. *From SETUP: Communications - General click the PgDn Button to go to Page 2 of 5 (Figure 11). Enter the correct values for the Interface Module.*

Figure 11. SETUP: Communications - Serial Ports, Page 2.

This screen contains setpoints related to IntelliTEAM and SCADA (if applicable) communications. This screen includes the following fields:

Communication Protocol

This is the protocol to be used on this port. You may set this to either "DNP" (Distributed Network Protocol, generally used over a wide area network) or "ICP" (Internal Control Protocol, generally used for local IntelliLINK access). You may also set this to "None" if you do not plan to use this port for communications.

Communication Baud Rate

This is the baud rate between the control and the directly-connected communications device (radio, modem, etc.). This baud rate must be identical to the baud rate for the device.

RTS Active Before/After Xmit Duration

This is the amount of time (in milliseconds) that RTS ("request to send") is active for this port before/after a transmission takes place. You can usually leave this at the factory-default value.

Inter-Packet Transmit Delay (ms)

This is the minimum amount of time (in milliseconds) between individual message frames transmitted out the serial port. Set this parameter appropriately if your communications device requires an inter-packet delay in order to process individual frames of a data stream.

Ethernet Setup

12. *From SETUP: Communications - Serial Ports click the PgDn Button to go to Page 3 of 5 (Figure 12). Enter the correct values for the Interface Module.*
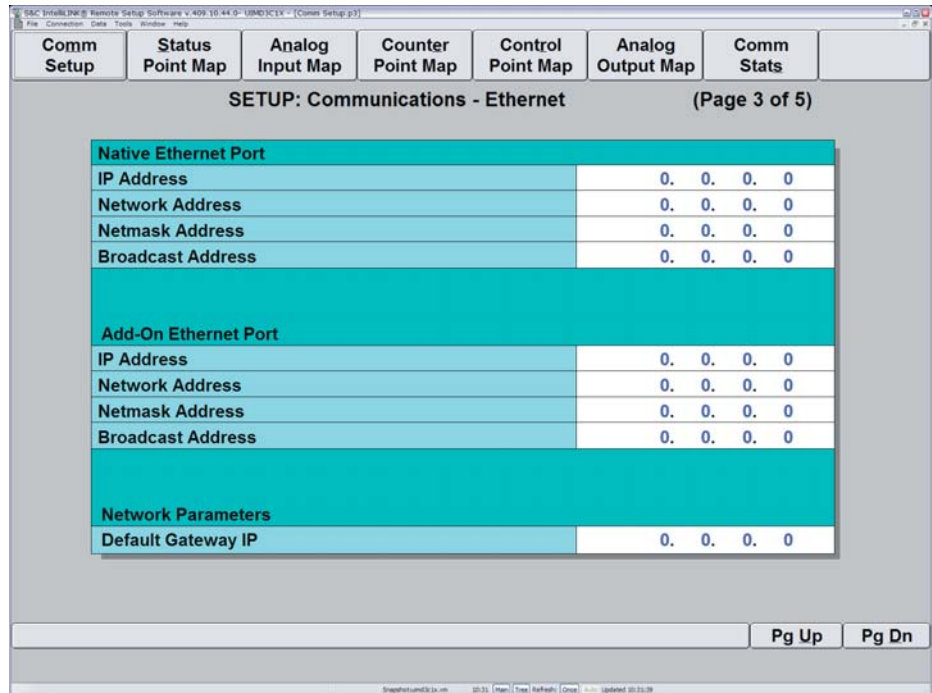

Figure 12. SETUP: Communications - Ethernet, Page 3.

This screen contains IP address information for the two Ethernet ports available on the board. The ports are designated "Native" (or on-chip) and "Add-On" (or off-chip). The following IP address information is applicable to both ports, and given valid IP address configuration: either port, or both ports, may be used.

IP Address

This is the IP address used to uniquely identify and communicate with this device through the applicable Ethernet port.

Network Address

This is the IP network address associated with the applicable Ethernet port. To communicate properly the network address must be the same for all devices that are on the same network, and the IP address of the device must be an address within that network. The relationship between the IP address and the network address is defined by the Netmask.

Netmask

This is the netmask associated with the applicable Ethernet port. A netmask is a 32-bit mask used to divide an IP address into subnets and specify the networks available hosts. In a netmask, two bits are always automatically assigned. For example, in 255.255.255.0, "0" is the assigned network address; and in 255.255.255.255, "255" is the assigned broadcast address. The 0 and 255 are always assigned and cannot be used.

Broadcast Address

This is the broadcast IP address associated with the applicable Ethernet port. The broadcast address is used to distribute a signal across a network, commonly used to declare to other devices on a network that a new device has connected to the network and to give those other devices information about the newly connected device. The broadcast address on a network is commonly an address that ends with "255."

Default Gateway IP

This is the default gateway IP address that will be used with an IP packet's destination address belongs to someplace outside the local subnet. The default gateway will direct the packet out to the external subnet.

Routing Setup

13. *From SETUP: Communications - Ethernet click the PgDn Button to go to Page 4 of 5 (Figure 13). Enter the correct values for the Interface Module.*
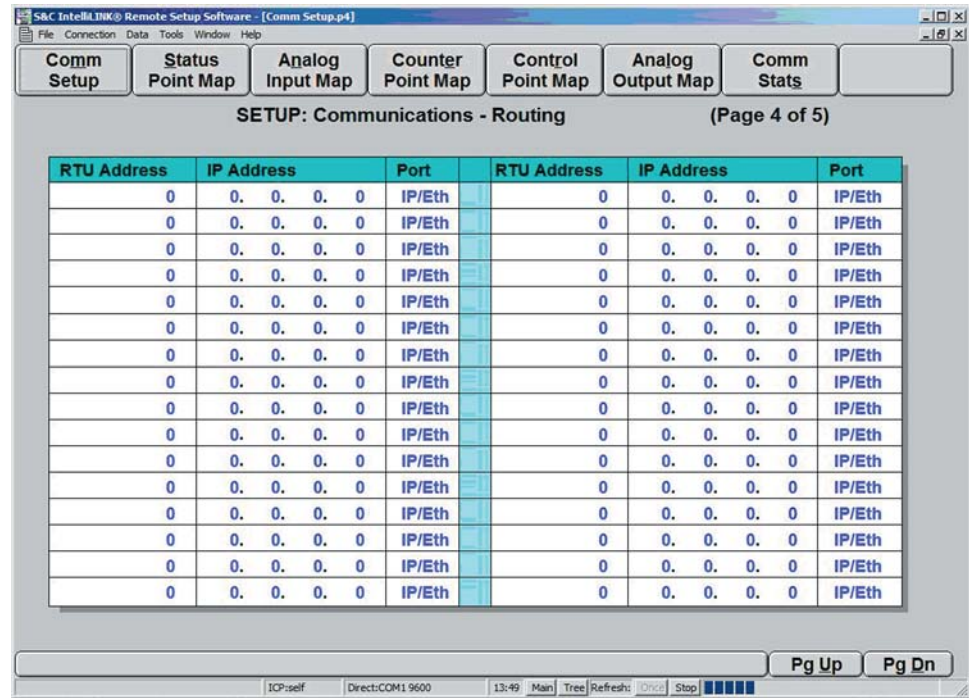

Figure 13. SETUP: Communications - Routing, Page 4.

This screen contains routing information for up to 32 destination devices. If a frame is received with a destination address other than the local address, this routing information will allow that frame to be redirected out an adjacent port. If the destination address is not found in the routing table, and a default pass-through route has not been configured (see SETUP: Communications-Routing, page 4), then the frame will be dropped.

RTU Address

These are the destination DNP RTU addresses that will be searched to find an active route when an incoming message frame (not destined for the local device) is received.

IP Address

This parameter should be configured if the intended destination device may be found on an IP network. This will cause the received frame to be transmitted out the local UDP port.

Port

This parameter should be configured if the intended destination device may be found through a serial communications port. This will cause the received frame to be transmitted out the configured local serial port.

14. *From SETUP: Communications - Routing click the PgDn Button to go to Page 5 of 5 (Figure 14). Enter the correct values for the Interface Module.*
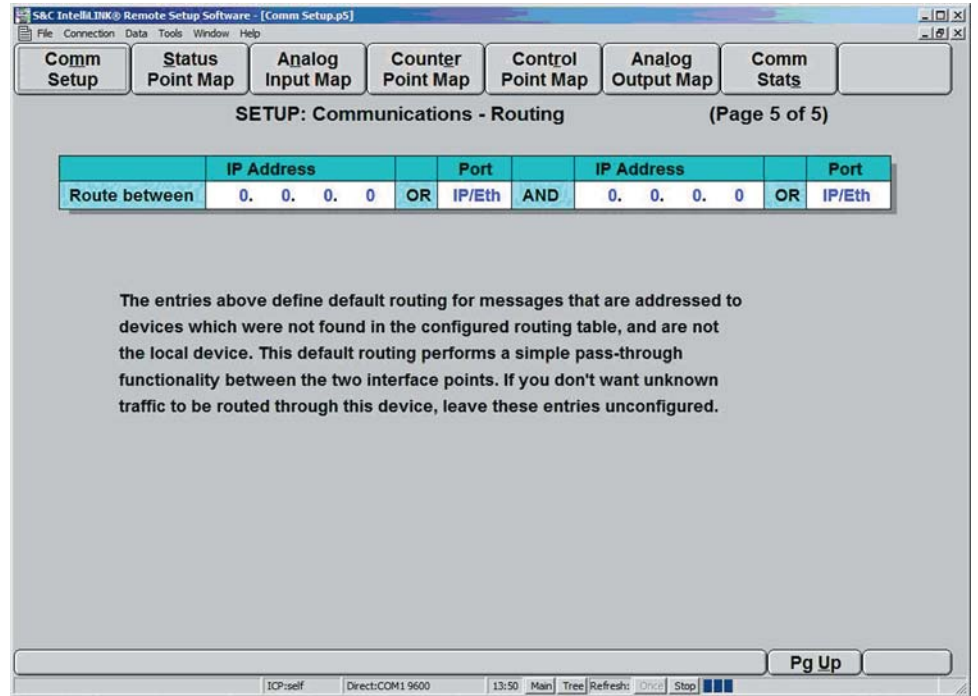

Figure 14. SETUP: Communications - Routing, Page 5.

This screen contains entries that define default routing for messages that are addressed to devices which were not found in the configured routing table, and are not the local device. This default routing performs a simple pass-through functionality between the two interface points. If you do not want unknown traffic to be routed through this device, leave these entries unconfigured.

IP Address

This parameter should be configured if the intended destination device may be found on an IP network. This will cause the received frame to be transmitted out the local UDP port.

Port

This parameter should be configured if the intended destination device may be found through a serial communications port. This will cause the received frame to be transmitted out the configured local serial port.

UIM Status Points Map

15. *From the PRESENT CONDITIONS screen select the Comm Menu button, and select the Status Point Map button to display the SETUP: Status Points Map (Figure 15). Enter the correct values for the Interface Module.*

Figure 15. SETUP: Status Points Map for the Universal Interface Module.

This screen contains configuration parameters for Status Point mapping allowing you to assign internal binary data to any SCADA point number. Doing so will make internal binary data accessible via SCADA.

SCADA Point

This column displays the point number as it will be seen by your SCADA system in response to static or event data requests, or in unsolicited event responses.

Code

This column contains internal point codes, representing specific internal binary data, which you may select and assign to individual SCADA point numbers. Setting this parameter to "End" defines the end of the configured points list and the maximum number of status points that can be returned.

All internal binary points that can be mapped to individual SCADA points are also displayed on the Data Logging/Status Points screens. See *S&C Instruction Sheet 1043-550*, page 65 for the complete list of supported points and their internal numeric codes, which are listed in the Code column.

Binary points received from the external device may also be mapped to individual SCADA points. Enter the external device binary point number (limited to a range of 0 to 255) in this column next to the SCADA point number you would like your master station to receive it as. See documentation for the external device for definitions of binary points originated from that device.

Class

This column contains the DNP event class in which this point can be placed. You may associate each point with "Class 1," "Class 2," or "Class 3" data, or event data reporting can be turned off for this point by selecting "No Event."

UIM Analog Input Points Map

16. *From the PRESENT CONDITIONS screen select the Comm Menu button, and select the Analog Input Map button to display the SETUP: Analog Input Points Map (Figure 16). Enter the correct values for the Interface Module.*

Figure 16. SETUP: Analog Input Points Map for the Universal Interface Module.

This screen contains configuration parameters for Analog Input Point mapping allowing you to assign internal analog input data to any SCADA point number.

SCADA Point

This column displays the point number as it will be seen by your SCADA system in response to static or event data requests, or in unsolicited event responses.

Point Code

This column contains point codes, representing specific analog input data, which you may select and assign to individual SCADA point numbers. Setting this parameter to "End" defines the end of the configured points list and the maximum number of analog input points that can be returned.

Analog points received from the external device may be mapped to each individual SCADA point. Enter the external device analog point number (limited to a range of 0 to 255) in this column next to the SCADA point number you would like your master station to receive it as. See documentation for the external device for definitions of analog points originated from that device.

Evt Class

This column contains the DNP event class in which this point can be placed. You may associate each point with "Class 1," "Class 2," or "Class 3" data, or event data reporting can be turned off for this point by selecting "No Event."

Scaling

This column allows you to assign a scale factor to the internal data to match analog requirements within your SCADA system.

% DeadBand

This column defines a deadband range based on a percentage of the previously reported analog event data. If the analog data associated with this point exceeds this range in either a positive or negative direction it will be included in the next event report. Set this parameter to N/A to prevent deadband event reporting based on percentage.

Fixed DeadBand

This column defines a deadband range based on a fixed value relative to the previously reported analog event data. If the analog data associated with this point exceeds this range in either a positive or negative direction it will be included in the next event report. Set this parameter to N/A to prevent deadband event reporting based on a fixed value.

UIM Counter Points Map

17. ***From the PRESENT CONDITIONS screen select the Comm Menu button, and select the Counter Point Map button to display the SETUP: Counter Points Map (Figure 17). Enter the correct values for the Interface Module.***

Figure 17. SETUP: Counter Points Map for the Universal Interface Module.

This screen contains configuration parameters for Counter Point mapping allowing you to assign internal counter data to any SCADA point number. Doing so will make internal counter data accessible via SCADA.

SCADA Point

This column displays the point number as it will be seen by your SCADA system in response to static or event data requests, or in unsolicited event responses.

Point Code

This column contains internal point codes, representing specific counter data, which you may select and assign to individual SCADA point numbers. Setting this parameter to "End" defines the end of the configured points list and the maximum number of counter points that can be returned.

All internal counter points that can be mapped to individual SCADA points are also displayed on the Data Logging/Special Events screens. See the table in *S&C Instruction Sheet 1043-550*, page 69 for the complete list of supported points and their internal numeric codes to be supplied in this column.

Counter points received from the external device may also be mapped to individual SCADA points. Enter the external device counter point number (limited to a range of 0 to 255) in this column next to the SCADA point number you would like your master station to receive it as. See documentation for the external device for definitions of counter points originated from that device.

Evt Class

This column contains the DNP event class in which this point can be placed. You may associate each point with "Class 1," "Class 2," or "Class 3" data, or event data reporting can be turned off for this point by selecting "No Event."

% DeadBand

This column defines a deadband range based on a percentage of the previously reported counter event data. If the counter data associated with this point exceeds this range in either a positive or negative direction it will be included in the next event report. Set this parameter to N/A to prevent deadband event reporting based on percentage.

Fixed DeadBand

This column defines a deadband range based on a fixed value relative to the previously reported counter event data. If the counter data associated with this point exceeds this range in either a positive or negative direction it will be included in the next event report. Set this parameter to N/A to prevent deadband event reporting based on a fixed value.

UIM Control Points Map

18. *From the PRESENT CONDITIONS screen select the Comm Menu button, and select the Control Point Map button to display the SETUP: Control Points Map (Figure 18). Enter the correct values for the Interface Module.*

| | Comm Setup | Status Point Map | Analog Input Map | Counter Point Map | Control Point Map | Analog Output Map | Comm Stats | |

SETUP: Control Points Map (Page 1 of 2)

SCADA Point	Point Code	Object Type	SCADA Point	Point Code	Object Type
Control Point 0	List end	N/A	Control Point 16	List end	N/A
Control Point 1	List end	N/A	Control Point 17	List end	N/A
Control Point 2	List end	N/A	Control Point 18	List end	N/A
Control Point 3	List end	N/A	Control Point 19	List end	N/A
Control Point 4	List end	N/A	Control Point 20	List end	N/A
Control Point 5	List end	N/A	Control Point 21	List end	N/A
Control Point 6	List end	N/A	Control Point 22	List end	N/A
Control Point 7	List end	N/A	Control Point 23	List end	N/A
Control Point 8	List end	N/A	Control Point 24	List end	N/A
Control Point 9	List end	N/A	Control Point 25	List end	N/A
Control Point 10	List end	N/A	Control Point 26	List end	N/A
Control Point 11	List end	N/A	Control Point 27	List end	N/A
Control Point 12	List end	N/A	Control Point 28	List end	N/A
Control Point 13	List end	N/A	Control Point 29	List end	N/A
Control Point 14	List end	N/A	Control Point 30	List end	N/A
Control Point 15	List end	N/A	Control Point 31	List end	N/A

Pg Dn

Figure 18. SETUP: Control Points Map for the Universal Interface Module.

This screen contains configuration parameters for Control Point mapping allowing you to assign control outputs to any SCADA point number.

SCADA Point

This column displays the point number that will be used by your SCADA system when operating control outputs.

Point Code

This column contains internal point codes, representing specific control outputs, which you may select and assign to individual SCADA point numbers. Setting this parameter to "List End" defines the end of the configured control points list.

The internal control points that can be mapped to individual SCADA points are:

"Pro Rest"   Enable or disable IntelliTEAM Prohibit Restoration. See Prohibit Restoration for more information.

"UIM LOV"   Enable or disabled the Loss of Voltage sectionalizing provided by the Universal Interface Module logic. See Setup Automatic Operation for more information.

"Clr Man Op"   A momentary pulse point used to clear a manual operation indication. This signals to IntelliTEAM that it may return to the ready state provided the switch contacts are in their normal open or close position.

Control points associated with the external device may also be mapped to individual SCADA points. Enter the external device control point number (limited to a range of 0 to 255) in this column next to the SCADA point number you would like your master station to address it as. See documentation for the external device for definitions of control points associated with that device.

Object Type

This column defines the type of control operation that will be issued by the SCADA master. If the object type received in a control command does not match this setting the control will be aborted. The object types are:

"Breaker" represents a typical trip/close operation

"Latch" represents a latched on/off operation

"Pulse" represents a momentary control output

Set this parameter to "N/A" only if this point will not be used.

UIM Analog Output Points Map

19. *From the PRESENT CONDITIONS screen select the Comm Menu button, and select the Analog Output Map button to display the SETUP: Analog Output Points Map (Figure 19). Enter the correct values for the Interface Module.*
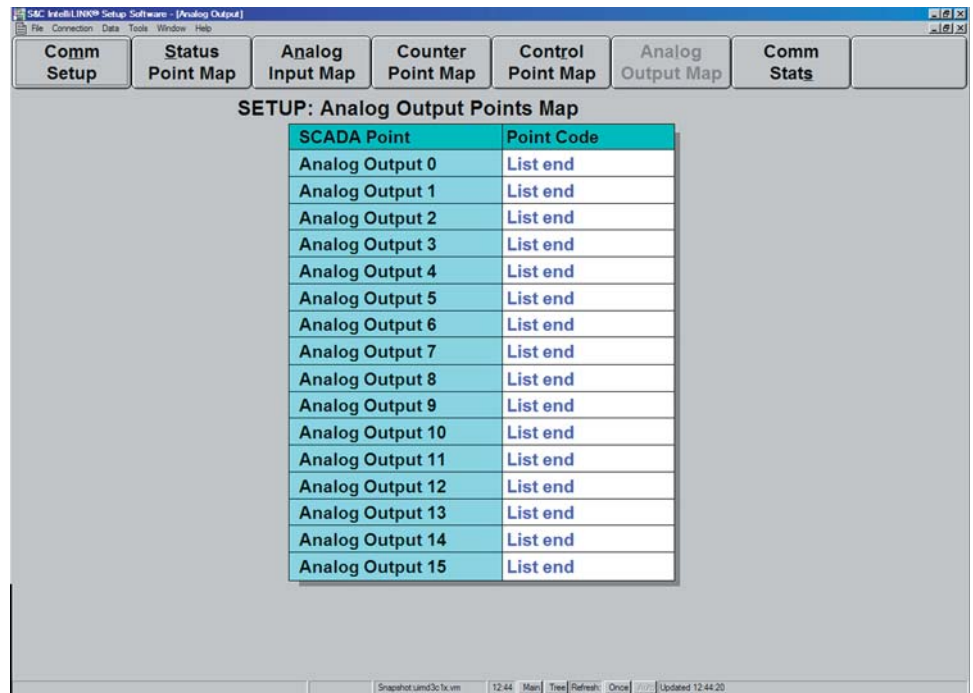

Figure 19. SETUP: Analog Output Points Map for the Universal Interface Module.

This screen contains configuration parameters for Analog Output Point mapping allowing you to assign analog outputs to any SCADA point number.

SCADA Point

This column displays the point number that will be used by your SCADA system when operating analog outputs.

Point Code

This column contains internal point codes, representing specific analog outputs, which you may select and assign to individual SCADA point numbers. Setting this parameter to "List End" defines the end of the configured analog output points list.

The internal analog output points that can be mapped to individual SCADA points are:

"Feeder load"   Real-time feeder loading provided by the SCADA system. See External Loading for more information.

"Retry time"   Time between retries of event data by DNP. See Communications Setup for more information.

"Retry count"   Count of retries of event data by DNP. See Communications Setup for more information.

"Select time"   Time allowed between Select and Operate commands in DNP. See Communications Setup for more information.

Analog output points associated with the external device may also be mapped to individual SCADA points. Enter the external device analog output point number (limited to a range of 0 to 255) in this column next to the SCADA point number you would like your master station to address it as. See documentation for the external device for definitions of analog output points associated with that device.

Team Setup

20. *From the PRESENT CONDITIONS screen click the Team Menu button, click the Setup Menu button, and click the Team Setup button to display the Team Setup Menu (Figure 20). Enter the correct values for the Interface Module.*
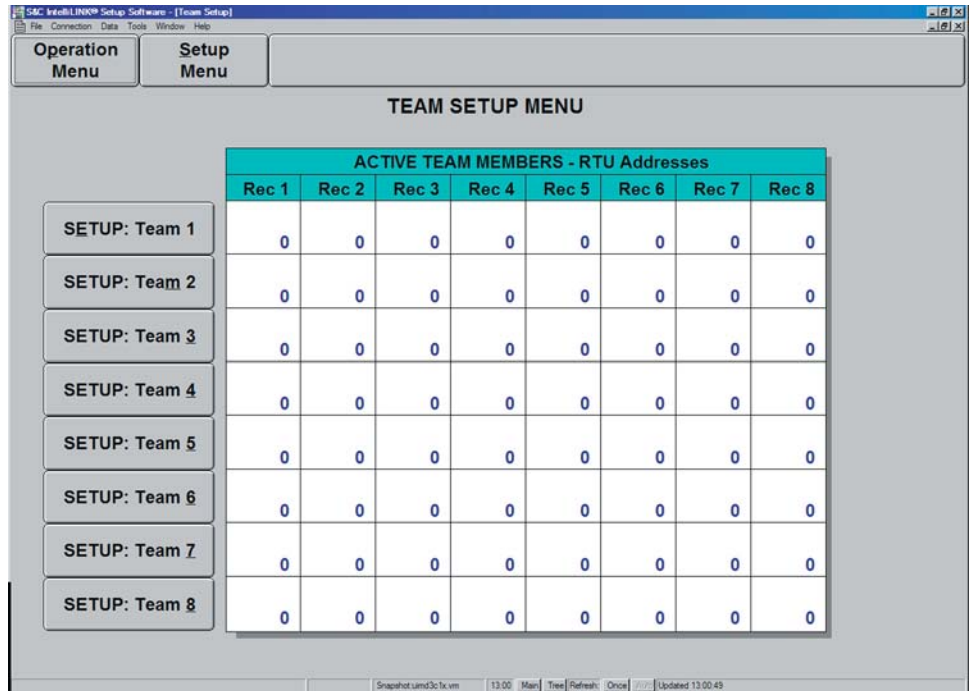

Figure 20. Team Setup Menu, where you select the team to be configured.

This screen shows a summary of the DNP/RTU addresses for the teams where this control is a member.

The setup buttons for Teams 1 through 8 take you to the next screen where general team parameters and information for individual team members are entered for the selected team number.

21. From the Team Setup Menu screen (the previous screen) click the SETUP: Team 1 button (choose the number of the team you wish to configure) to display the SETUP: Team screen for the selected team (Figure 21). Enter the correct values for the Interface Module.
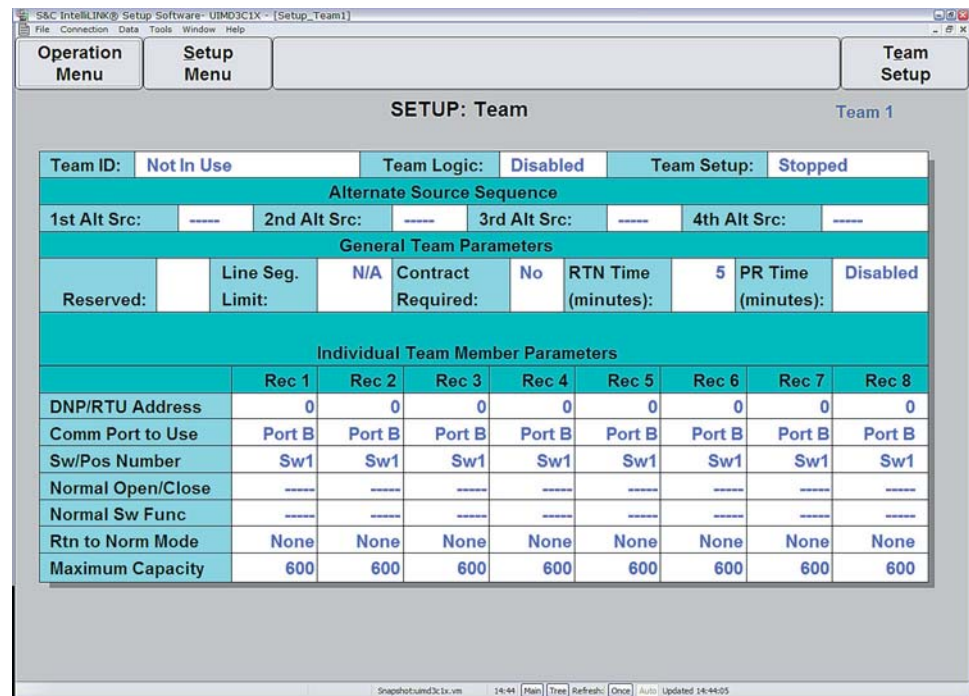

Figure 21. Individual Team Setup Screen for the Universal Interface Module.

These screens show a summary of team parameters for each team where the Interface Module is a member:

If available, load the CFG file for each team where the Interface Module is a member. Otherwise, go to Step 22.

If you have already created a team setpoint CFG file(s) for the team(s) where this Interface Module is a member, you can load the setpoints now.

A. Select File > Load Setpoints.

B. In the Load Setpoints dialog box, select the name of the CFG file for the first team where this Interface Module is a member. Click OK. (The IntelliLINK software will indicate when the file has loaded. Click OK.) You should see the updated address data in the summary table.

C. Do one of the following:

- If this Interface Module is part of another team and you have the corresponding CFG file, repeat Steps A and B. Then go to Step 28.

- If this Interface Module is part of another team and you DO NOT have a corresponding CFG file, go to Step 28.

- If this Interface Module is not part of another team, go to Step 28.

22. *Enter the correct values for this Interface Module (as described below).*

The SETUP: Team screens let you set the team-related parameters for each of the teams where this Interface Module is a member. Using DNP, you can also connect to other teams on the communication network.

IMPORTANT: For any one team, the values on the associated SETUP: Team screen must be identical in all team members, excluding the parameter "Comm Port to Use," see below.

Each screen includes the following fields:

Team ID

Enter your name for this team (16 character maximum). The name may help identify the team to the SCADA master station operator and appears on all reports generated from the team members. When you save a team configuration, the name is saved along with the other information. It also appears on the LCD.

Team Logic

This setpoint lets you enable or disable IntelliTEAM operations for this team.

Team Setup

This setpoint lets you change the operational status of the team setup as defined on this screen. This setpoint will also change to **Stopped** automatically if the team logic detects a change to any of the parameters on this screen.

IMPORTANT: If you set this value to **Stopped** and then back to **Running**, the IntelliLINK software uses the setpoint values on this screen as the presently valid team parameters. Until all team members have identical values on this screen, the team will not be ready for transfer.

Alternate Source Sequence

You can set the priorities for the different ways the team members can restore a line segment. If the team cannot use the source switch (see "Normal Sw Func" below) to restore the line segment, then the team tries the members listed here.

If you do not enter values for these setpoints, or if the selected team members cannot be used to restore the line segment, then the team tries the tie switch(es) to find an alternate source. If this is not successful, the team tries the load/tie switch(es).

General Team Parameters

These setpoints apply to the team shown on this page of the SETUP: Team screen as a whole.

Line Segment Limit

Set this to the maximum number of line segments that this team can pick up. For example, *Add 1* inhibits any other line segments from being restored through a member after it restores its first line segment. To allow the team to pick up as many line segments as capacity allows, set this value to *N/A*.

NOTE: Setting this setpoint to a value other than *N/A* automatically changes the Contract Required setpoint to *Yes*.

Contract Required

If a line segment cannot handle any overloading at all, set this value to "Yes." Once team members encounter a line segment in a restoration path that requires a contract, they will communicate with all subsequent line segments in the direction of the alternate source to insure that the alternate source will not be overloaded. (Note that this also slows down the reconfiguration process.)

RTN Time (minutes)

Power must be restored to the faulted line segment for this amount of time (in minutes) before the Return to Normal process will start.

PR Time (minutes)

Set this value to the length of time you would like to allow this team to attempt to restore service after an event has begun. If this timer expires prior to restoration of service the team will enter the Prohibit Restoration state, preventing any further restoration activity by this team until the Prohibit Restoration state is cleared through the appropriate SCADA command, or on the Prohibit Restoration screen in the Miscellaneous Operation menu, or the faceplate button.

Individual Team Member Parameters

These setpoints apply to the individual team members in this team.

DNP/RTU Address

This column shows the DNP/RTU address for each team member. One of the addresses here must be the DNP/RTU address entered on the SETUP: Communications screen.

Comm Port to Use

This column shows the Ethernet or serial port through which this team member may be found for the purpose of peer-to-peer communications. If a single radio is being used for peer-to-peer communications then set this parameter to the Ethernet or serial port to which the radio is connected. Since the port to route through to get to any given team member may be different at each member, this is the only parameter on this screen that need not be set the same in each member of the same team.

   NOTE: This parameter is not saved in a Team Setpoint Profile and must be modified separately if the default value (Port B) is not correct.

Sw/Pos Number

This column shows the switch/position number associated with the team member, for example Sw1 for a single overhead switch.

Normal Open/Close

This column shows the state of each line switch when the circuit is configured normally. The team uses this information during transfer operations.

Normal Sw Func

There are six types of functionality for team members:

<u>Functionality</u>   <u>Description</u>

Normally Closed Switches, Breakers or Reclosers

Source/Sub	Use this value when the source switch is the first team member after the substation/source, or is an Interface Module on the source breaker relay.
Source	Use this value for one closed switch in the team through which the line segment receives power when the circuit is in its normal configuration.

Functionality	**Description**
Load/Tie	A team may have zero, one, or multiple closed switches through which loads on other line segments receive power. Use this value when the switch could be involved in restoring power to the line segment because line segments on the other side of the switch have alternate sources.
Load	A team may have zero, one, or multiple closed switches through which loads on other line segments receive power. Use this value when the switch could not be involved in restoring power to the line segment because line segments on the other side of the switch have no alternate sources.
	IMPORTANT: Every Closed switch or recloser should have its sensors facing the normal source of the team.

Normally Open Switches, Breakers or Reclosers

Tie/Sub	Use this value when the tie switch is the first team member after the substation/source.
	IMPORTANT: A Tie/Sub switch or recloser should have its voltage sensors facing the alternate source..
Tie	Use this value for zero, one, or multiple open switches in the team that restore power to the line segment directly from an alternate source when closed..

Rtn to Norm Mode

If desired, the team members can return the circuit to its normal configuration either automatically once a stable 3-phase voltage has been restored to the faulted line segment, or on command. For teams with one or more tie switches, you can choose open transition (the tie switch(es) open before the other team members return the circuit to its normal configuration) or closed transition (the team members close all of the switches and then the tie switch(es) open). The Return to Normal process starts at the line sections closest to the normal source, then works outward.

If Return to Normal Mode is set to None, all manual operations will result in a team error.

A single team member should have the same Return to Normal mode for each team where it is a member; however, a team may end up with members with different modes. (For more details, see the Operations chapter.)

Maximum Capacity

This is the loading capacity that you will allow beyond this line switch. Be sure to take into account cable/wire size and any other circuit restrictions.

**External Source Loading
Setup**

23. *From the PRESENT CONDITIONS screen click the Team Menu button, click
the Setup Menu button, and click the External Loading button to display the
External Source Loading Setup screen (Figure 22). Enter the correct values
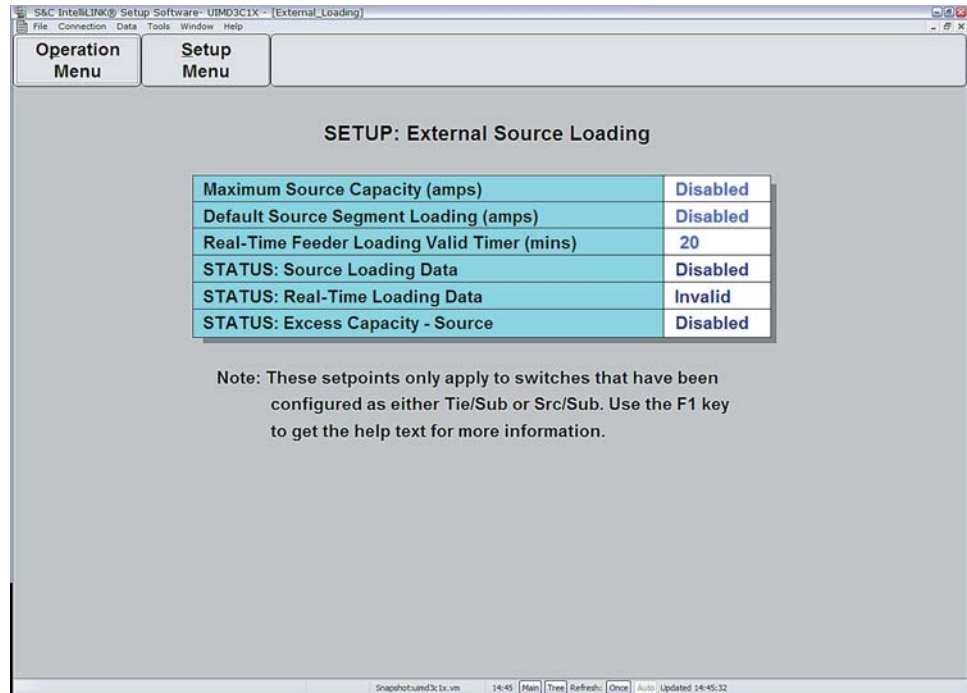for the Interface Module.*

Figure 22. External Source Loading Setup Screen for the Universal Interface Module.

The SETUP: External Source Loading screen allows the DNP master (e.g., RTU or SCADA),
that is monitoring feeder loading measured at a breaker, to transmit that loading data to
the first IntelliTEAM switch on that feeder outside the substation. This loading data will be
used in conjunction with the following setpoints to calculate a real-time excess capacity
that will be used when transfers occur.

Both of the setpoints, Maximum Source Capacity and Default Source Segment Loading,
have to be set to enable this feature.

Maximum Source Capacity (amperes)

Maximum Source Capacity is the maximum feeder capacity as viewed from the substation
end. This should be entered as a value representing the maximum three phase load in
amperes that the feeder can carry at anytime.

Default Source Segment Loading (amperes)

Default Source Segment Loading is the estimated maximum load of the source side seg-
ment between the substation feeder breaker and first automated switch. This should be
entered as a value representing the peak three phase load in amperes that would be used
to estimate the first segment maximum load expected, in the event the real-time feeder
loading data is not available or valid.

Real-Time Feeder Loading Valid Timer (minutes)

Whenever the real-time feeder data is received through SCADA, this configurable timer
will start counting down. If the real-time feeder loading data has not been updated within
the configured interval (timer counts down to zero), the IntelliTEAM loading calculations
will default to using the Default Source Segment Loading.

STATUS: Source Loading Data

If both the Maximum Source Capacity and Default Source Segment Loading setpoints have not been configured, then the real-time loading feature will not be active, causing this field to show Disabled, even if the team member receives feeder loading data. The present calculations using Maximum Capacity would be used in this case.

STATUS: Real-Time Loading Data

If the DNP analog output value received is zero, or is less than the local real-time load of the switch, or is greater or equal to the Maximum Source Capacity setpoint, or has not been updated within the timer described above, then this field will show the data as invalid. The Default Source Segment Loading would then be used in this case.

STATUS: Excess Capacity - Source

The Excess Capacity - Source is calculated by subtracting the real-time feeder loading data (received through DNP) from the new Maximum Source Capacity setpoint. Local Capacity will be calculated as it is presently. With real-time feeder loading data, Real Capacity at the configured Source switch will then be computed as the lesser of either Local Capacity or Excess Capacity - Source. If the real-time data is invalid, Excess Capacity is then calculated as: Maximum Source Capacity minus the Default Source Segment Load minus the extended load seen at the switch.

Miscellaneous Setup

24. *From the PRESENT CONDITIONS screen click the Team Menu button, click the Setup Menu button, and click the Misc Setup button to display the SETUP: Miscellaneous screen (Figure 23). Enter the correct values for the Interface Module.*
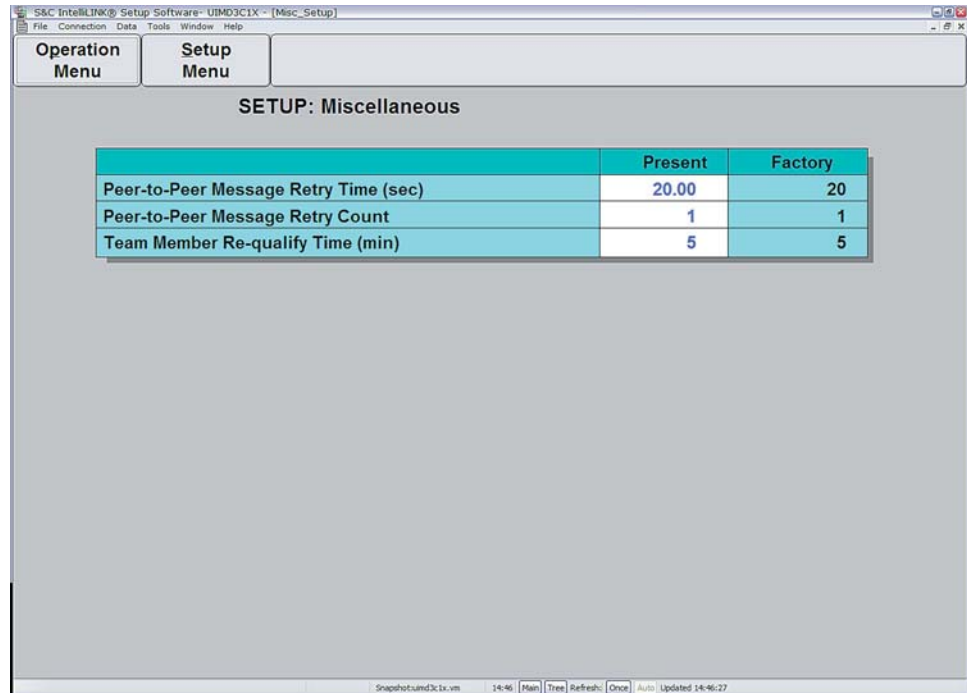

Figure 23. Miscellaneous Setup Screen for the Universal Interface Module.

Peer-to-Peer Message Retry Time (seconds)

The control waits this amount of time (in seconds) to receive a response from another team member. If it does not receive the response within this time period, it sends the message to that team member again. It continues sending the message until it receives a response or reaches the "Peer-to-Peer Message Retry Count."

Peer-to-Peer Message Retry Count

This is the number of times that the control retries sending a message to a team member that does not respond within the "Peer-to-Peer Message Retry Time."

NOTE: Decreasing the "Peer-to-Peer Message Retry Time," or increasing the "Peer-to-Peer Message Retry Count," may have a negative effect on some communications systems due to increased traffic. Be sure to take this into account when changing these setpoints.

Team Member Re-qualify Time (minutes)

This is the number of minutes a team member will remain disqualified as a potential alternate source after that team member attempted, but was unable, to restore full service. This inability to restore full service is likely the result of a second contingency event such as a loss of phase between the alternate source and the team member attempting to restore service. In this case the team member would have closed, found that 3-phase voltage was not present, and reopened. The possible values are:

Disabled

The team member will not be disqualified. If no other team member is found to restore service to the line section then this same team member will be tried again. If 3-phase voltage is still unavailable the switch will open again, and this cycle will continue on a relatively quick interval until another source is found, or good 3-phase voltage returns at this team member.

Never

The team member will be disqualified after the first attempt to restore service and will remain disqualified until service is restored from another source.

1 to 254

The team member will be disqualified after the first attempt to restore service, but will be re-qualified after this number of minutes. Once re-qualified the team member will be allowed to close, once again attempting to restore service.

IP Address Map

25. *From the PRESENT CONDITIONS screen click the Team Menu button, click the Setup Menu button, and click the IP Map button to display the SETUP: IP Address Mapping screen (Figure 24). Enter the correct values for the Interface Module.*
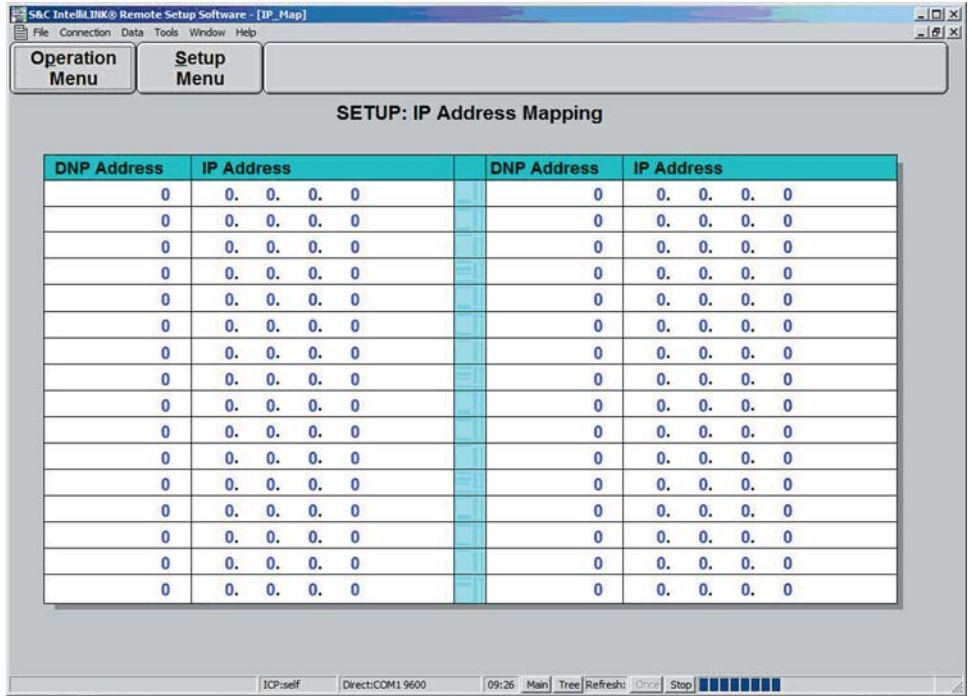
Figure 24. IP Address Mapping Setup Screen for the Universal Interface Module.

This screen allows you to map IP addresses to DNP/RTU addresses for team members that are accessible only over an Ethernet port. An entry must be included in this table for any team member where the "Port to Use" has been set to "IP/Eth."

DNP Address

This column contains the DNP/RTU address for the IP based team members.

IP Address

This column contains the IP address associated with the destination team members.

26. ***Mark these values as the valid team parameters.***

    Set the *Team Setup* to *Stopped*, if not set there already (see page 10). Click OK. Then set it back to *Running* and click OK. This lets the IntelliLINK software know that it should check the settings of subsequent team members against the values on this screen.

27. ***Do one of the following:***

- ***If this Interface Module is part of more than one team, Page Down to display that team's SETUP: Team screen. Repeat Step 20 and Step 21.***

    Once you have entered the correct setpoint values for each team, go to the next step.

- ***If this Interface Module is NOT part of more than one team, go to the next step.***

28. ***If necessary, create a team CFG file for each team where this Interface   Module is a member.***

    You can save the values on the SETUP: Team screen for each team where this Interface Module is a member. You can then load this file at subsequent members of this team to insure that all team members have the same setup.

    A. Select File > Save Setpoints. Select the desired Setpoint Profile, then click OK.

    B. In the Save Setpoints dialog box, choose a name and location for the file (for example, "team1234567"). The extension ".CFG" is added automatically.

    C. If this Interface Module is part of another team, repeat Steps A and B.

    See the Saving and Loading a Setup Configuration in *S&C Instruction Sheet 1043-540* for more details.

29. ***Do one of the following:***

- ***If this Interface Module is NOT the last member of this team, go to Step 30.***

    Once you have entered the correct setpoint values for each team, go to the next step.

- ***If this Interface Module IS the last member of this team, go to Enable Normal Team Operation, Step 33.***

30. ***If desired, save a snapshot or generate a report.***

    Save a snapshot if you want a record of the team settings or if you have a problem that requires help from S&C. For details, see *Using Snapshots* in *S&C Instruction Sheet 1043-540*.

31. ***Exit the IntelliLINK software.***

    Select File > Exit, then click OK to exit the IntelliLINK software.

32. ***Disconnect your computer from the Interface Module.***

33. ***On the Interface Module faceplate, set the PROHIBIT RESTORATION ON/OFF switch to the preferred position.***

    It is safest to set PROHIBIT RESTORATION to **ON** – to avoid unexpected operation of the switch while you set up the rest of the team. If you don't have a SCADA system, you will have to physically return to each Interface Module and select the PROHIBIT RESTORATION **OFF** position before you can complete your team setup and test the system. With a SCADA system, a command can be issued to each Interface Module to PROHIBIT RESTORATION **OFF**.

34. ***Go to the next installation site.***

    Install the Interface Module hardware. See *S&C Instruction Sheet 1043-510*, then set up the software using IntelliLINK software, as described above.

Enable Normal Team Operation

After all team members have been set up, you then check the team(s) for normal operation.

1. ***On the Interface Module faceplate, set PROHIBIT RESTORATION ON/OFF for desired operation.***

    For normal team operation, set the faceplate switch to OFF.

2. ***If desired, review the present status of the local Interface Module and the team(s).***

    A. Click the ***Operation*** button to display the ***OPERATION MENU*** screen.

    B. Do either of the following:

    - For information about the local host device, click the ***Control Device Operation*** button.

    - For information about the team(s), click the ***Team Operation*** button. Confirm that "READY" appears in the "Ready Status" field for all teams. This indicates that the team is ready to take action (even if a transfer event has already taken place) and that there are no errors, faults, battery problems, or team communication problems present. For more details about a particular team, click its ***OPER*** button.

    For a detailed explanation of the *LOCAL OPERATION* and *TEAM OPERATION* screens, see the *View the Local Operation Screen* and *View the Team Operation Screens* in *S&C Instruction Sheet 1043-550*.

3. ***If desired, save a snapshot.***

    Save a snapshot if you want a record of the team settings or if you have a problem that requires help from S&C. For details, see *Using Snapshots* in *S&C Instruction Sheet 1043-540*.

    NOTE: Unless you have high speed communications links, we recommend that you save a snapshot only from the locally-connected Universal Interface Module.

4. ***Exit the IntelliLINK software.***

    Click File > Exit. Then click OK in the dialog box to exit the IntelliLINK software.

5. ***Shut down your computer, and disconnect it from the Interface Module.***

This completes the Universal Interface Module Setup Instructions.

Go to ***S&C Instruction Sheet 1043-540***.