

Load-Scaling Setup and Configuration

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The IntelliTeam SG Automatic Restoration System application now supports the ability to scale loads to support cross-voltage IntelliTeam SG systems where different sections of the same IntelliTeam SG system span across multiple line voltages. This functionality is available in version 7.5.x and later software and is only available in the **IntelliTeam SG** mode of operation.

Follow the instructions in this document to set up, configure, and verify an IntelliTeam SG system spanning across multiple line voltages using the IntelliLink® Setup Software and IntelliTeam Designer applications.

Load-Scaling Support

The IntelliTeam SG Automatic Restoration System now uses various settings available in IntelliNode™ Interface Modules, IntelliRupter® PulseCloser® Fault Interrupters, and 6800 Series Automatic Switch Controls to scale the loading the IntelliTeam SG system uses to calculate team loads, source capacity, and maximum switch capacities.

The following IntelliLink Setup Software settings are used for scaling loads within the IntelliTeam SG system application:

- Line kV to 120 Vac Base Ratio – 6800 Series controls
- Voltage Transformer Wiring – 6800 Series controls
- Normal Operating Frequency – 6800 Series controls
- System Phase-to-Phase Voltage – IntelliRupter fault interrupters and IntelliNode modules
- System Frequency – IntelliRupter fault interrupters and IntelliNode modules

6800 Series Controls

Follow these steps to configure an IntelliTeam SG system that spans multiple line voltages on the same circuit using IntelliLink Setup Software:

STEP 1. Open the IntelliLink Setup Software and go to the *Setup>General>Site Related* screen shown in Figure 1.

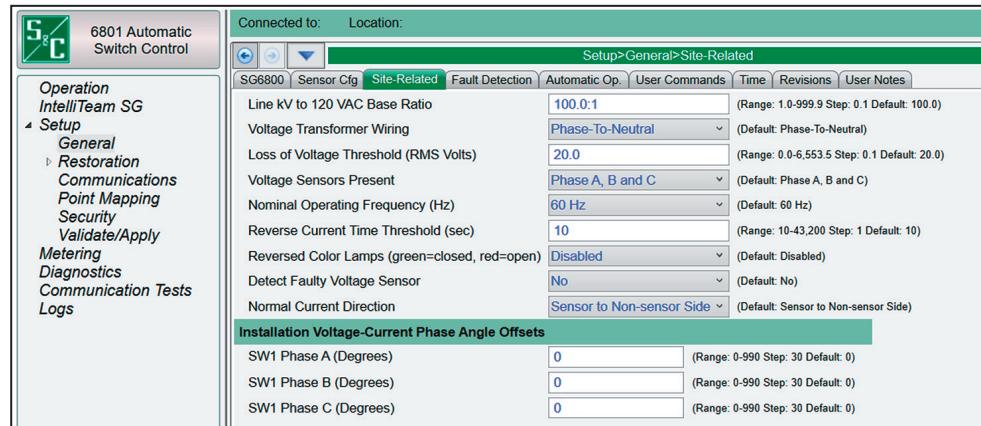


Figure 1. The 6801 control *Setup>General>Site-Related* screen.

STEP 2. Configure the **Line kV to 120 VAC Base Ratio**, **Voltage Transformer Wiring**, and **Normal Operating Frequency** settings to match the line voltage, transformer wiring, and operating frequency of the system on which the 6800 Series control is deployed. See Figure 2.

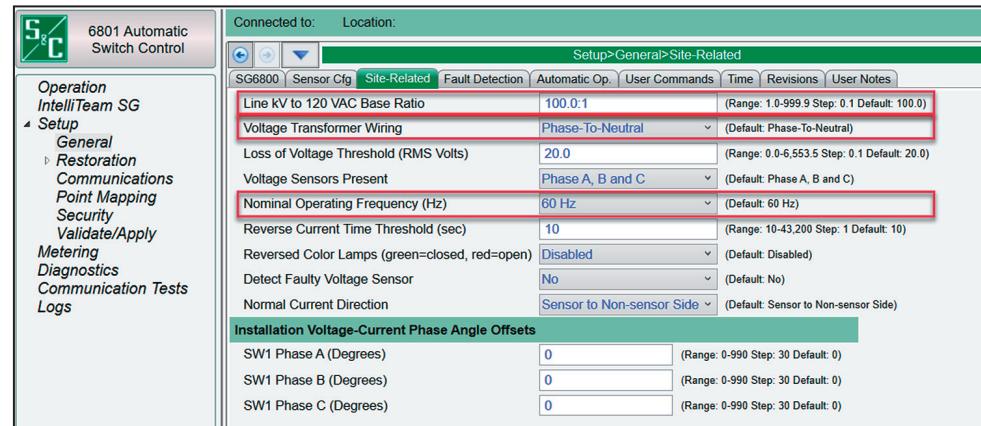


Figure 2. The 6801 control System Voltage and Operating Frequency settings.

STEP 3. Repeat Step 2 for every 6800 Series control in the IntelliTeam SG system.

System Configuration

IntelliRupter® Fault Interrupters

Follow these steps to configure an IntelliTeam SG system that spans multiple line voltages on the same circuit using IntelliLink Setup Software:

STEP 1. Open the IntelliLink Setup Software and go to the *Setup>General>Site Related* screen shown in Figure 3.

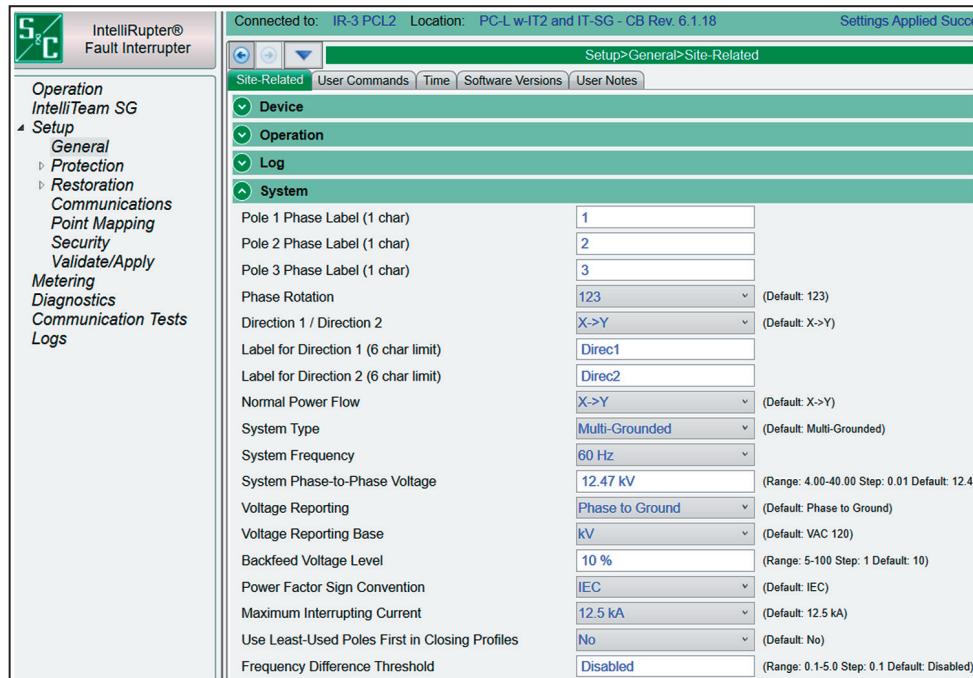
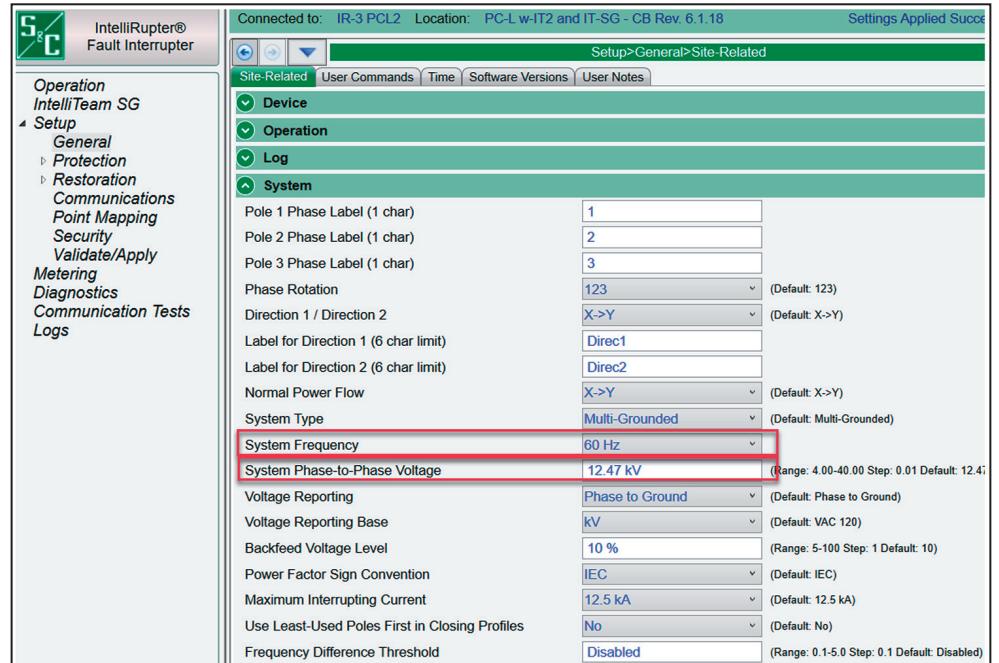


Figure 3. The IntelliRupter fault interrupter *Setup>General>Site-Related* screen.

STEP 2. Configure the **System Frequency** and **System Phase-to-Phase Voltage** settings to match the line voltage and operating frequency of the system on which the IntelliRupter fault interrupter is deployed. See Figure 4.



The screenshot shows the configuration interface for the IntelliRupter Fault Interrupter. The left sidebar lists various setup categories: Operation, IntelliTeam SG, Setup (General, Protection, Restoration, Communications, Point Mapping, Security, Validate/Apply), Metering, Diagnostics, Communication Tests, and Logs. The 'Setup' category is expanded. The main panel shows configuration parameters under the 'System' section. The 'System Frequency' field is set to '60 Hz' and the 'System Phase-to-Phase Voltage' field is set to '12.47 kV'. Both of these fields are highlighted with a red box. Other visible parameters include Pole 1 Phase Label (1 char), Pole 2 Phase Label (1 char), Pole 3 Phase Label (1 char), Phase Rotation, Direction 1 / Direction 2, Label for Direction 1 (6 char limit), Label for Direction 2 (6 char limit), Normal Power Flow, System Type, Voltage Reporting, Voltage Reporting Base, Backfeed Voltage Level, Power Factor Sign Convention, Maximum Interrupting Current, Use Least-Used Poles First in Closing Profiles, and Frequency Difference Threshold.

Figure 4. The IntelliRupter fault interrupter **System Frequency** and **System Phase-to-Phase Voltage** settings.

STEP 3. Repeat Step 2 for every IntelliRupter fault interrupter in the IntelliTeam SG system.

System Configuration

IntelliNode™ Interface Modules

Follow these steps to configure an IntelliTeam SG system that spans multiple line voltages on the same circuit using IntelliLink Setup Software:

STEP 1. Open the IntelliLink Setup Software and go to the *Setup>External Device>Auto Operation* screen shown in Figure 5.

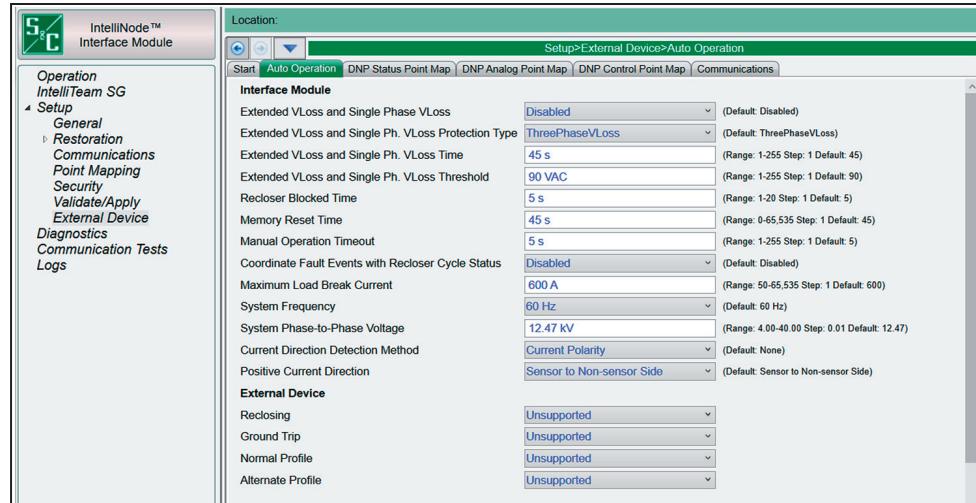


Figure 5. The IntelliNode Interface Module *Setup>External Device>Auto Operation* screen.

STEP 2. Configure the **System Frequency** and **System Phase-to-Phase Voltage** settings to match the line voltage and operating frequency of the system on which the IntelliNode module is deployed. See Figure 6.

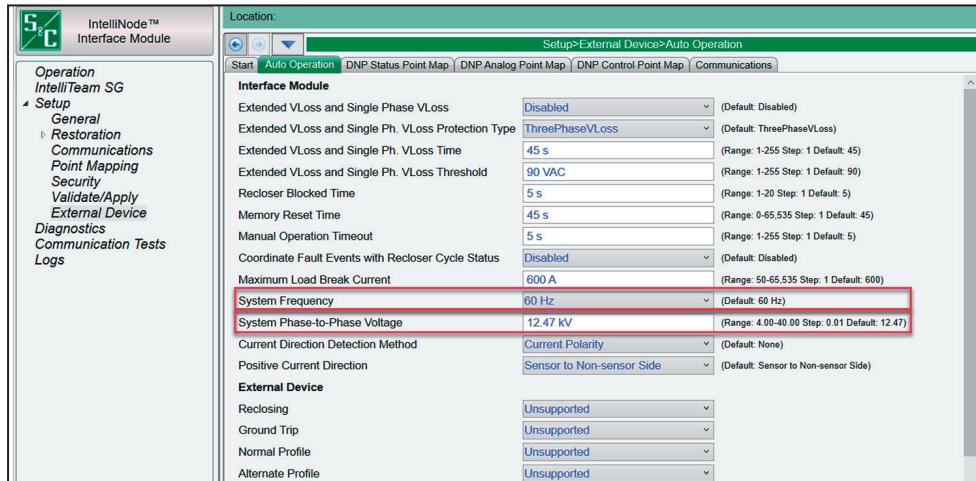


Figure 6. The IntelliNode module System Frequency and System Phase-to-Phase Voltage settings.

STEP 3. Repeat Step 2 for every IntelliNode module in the IntelliTeam SG system.

Follow these steps to configure an IntelliTeam SG system spanning multiple line voltages on the same circuit using IntelliTeam Designer software:

- STEP 1.** Draw a circuit and configure the IntelliTeam SG system using the IntelliTeam Designer application. Refer to S&C Instruction Sheet 1044-570, “IntelliTeam® Designer: *User’s Guide*,” for information about drawing circuits and configuring the IntelliTeam SG system.
- STEP 2.** Validate the circuit drawing and correct any validation errors. Then, save the drawing file.
- STEP 3.** When the circuit is successfully validated, open the Communication Manager and push the netlist to the controls. Refer to S&C Instruction Sheet 1044-570, “IntelliTeam® Designer: *User’s Guide*,” for information about configuring the Communication Manager and pushing the netlist.

System Verification

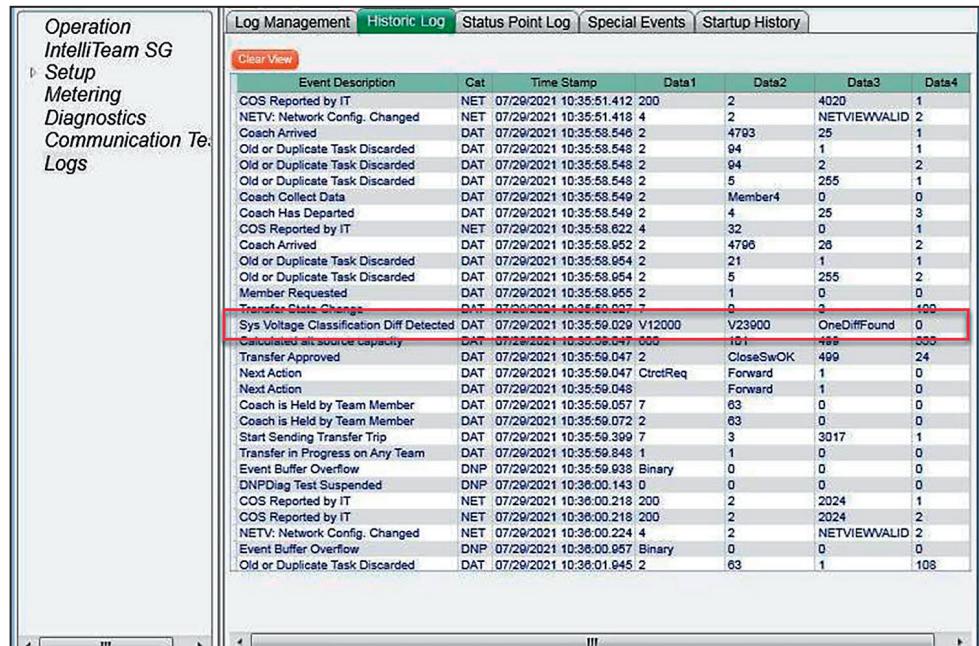
To verify an IntelliTeam SG system has been properly configured for multiple line voltages, perform the following checks:

STEP 1. Verify there are no **System Voltage Unrecognized** DNP status points active in any device in the system. If any are active, go to the *Setup>General>Site-Related* or *Setup>External Device>Auto Operation* screen of the applicable device and check the entered configuration settings. See Figure 7.



Figure 7. The System Voltage Unrecognized status point.

STEP 2. When a restoration event occurs involving an open tie-switch with different voltage classes on each side, go to the *Logs>Historic Log* screen and verify there is a “System Voltage Classification Difference Detected” log entry. When there is no entry, go to the *Setup>General>Site Related* or *Setup>External Device>Auto Operation* screen of the devices in the system and review the entered configuration settings. See Figure 8.



Log Management							
Historic Log							
Status Point Log							
Special Events							
Startup History							
Event Description	Category	Time Stamp	Data1	Data2	Data3	Data4	
COS Reported by IT	NET	07/29/2021 10:35:51.412	200	2	4020	1	
NETV: Network Config. Changed	NET	07/29/2021 10:35:51.418	4	2	NETVIEWVALID	2	
Coach Arrived	DAT	07/29/2021 10:35:58.548	2	4793	25	1	
Old or Duplicate Task Discarded	DAT	07/29/2021 10:35:58.548	2	94	1	1	
Old or Duplicate Task Discarded	DAT	07/29/2021 10:35:58.548	2	94	2	2	
Old or Duplicate Task Discarded	DAT	07/29/2021 10:35:58.548	2	5	255	1	
Coach Collect Data	DAT	07/29/2021 10:35:58.549	2	Member4	0	0	
Coach Has Departed	DAT	07/29/2021 10:35:58.549	2	4	25	3	
COS Reported by IT	NET	07/29/2021 10:35:58.622	4	32	0	1	
Coach Arrived	DAT	07/29/2021 10:35:58.652	2	4796	28	2	
Old or Duplicate Task Discarded	DAT	07/29/2021 10:35:58.654	2	21	1	1	
Old or Duplicate Task Discarded	DAT	07/29/2021 10:35:58.654	2	5	255	2	
Member Requested	DAT	07/29/2021 10:35:58.655	2	1	0	0	
Transfer State Change	DAT	07/29/2021 10:35:59.037	7	0	2	100	
Sys Voltage Classification Diff Detected	DAT	07/29/2021 10:35:59.039	V12000	V23900	OneDiffFound	0	
Calculated all source capacity	DAT	07/29/2021 10:35:59.047	000	101	400	000	
Transfer Approved	DAT	07/29/2021 10:35:59.047	2	CloseSwOK	409	24	
Next Action	DAT	07/29/2021 10:35:59.047	CtrlReq	Forward	1	0	
Next Action	DAT	07/29/2021 10:35:59.048	Forward	1	0	0	
Coach is Held by Team Member	DAT	07/29/2021 10:35:59.057	7	63	0	0	
Coach is Held by Team Member	DAT	07/29/2021 10:35:59.072	2	63	0	0	
Start Sending Transfer Trip	DAT	07/29/2021 10:35:59.399	7	3	3017	1	
Transfer in Progress on Any Team	DAT	07/29/2021 10:35:59.849	1	1	0	0	
Event Buffer Overflow	DNP	07/29/2021 10:35:59.938	Binary	0	0	0	
DNPDiag Test Suspended	DNP	07/29/2021 10:36:00.143	0	0	0	0	
COS Reported by IT	NET	07/29/2021 10:36:00.218	200	2	2024	1	
NETV: Network Config. Changed	NET	07/29/2021 10:36:00.218	200	2	2024	2	
Event Buffer Overflow	DNP	07/29/2021 10:36:00.957	Binary	0	0	0	
Old or Duplicate Task Discarded	DAT	07/29/2021 10:36:01.045	2	63	1	108	

Figure 8. The System Voltage Classification Difference Detected log entry.