

Smart IFLs

Remote Monitoring and Control of 3000 Series Satellite Fiber Optic Systems

using the 3000 SNMP-compatible power supplies

Today's complex and long haul transport systems rely on remote fault and status monitoring to ensure uninterrupted performance. As communications networks evolve to include the transport of multiple signal types, e.g., video, audio, data, and control signals, system operators have a need for a simple means of monitoring and controlling the components in the system. Simple Network Management Protocol (SNMP) tools and other network monitoring interfaces are being developed to facilitate this need.

Force Optical Broadcast Systems offers the latest technology in system monitoring and control using the 3000 Series 3RU rack chassis and power supplies. For use with Force 3000 Series products and Model 3753 Serial Digital Video Link installed in the Model 3000 3RU Rack Chassis, power supply Models 3000UB-NN and 3000UD-NN include an RJ-45 connector that allows the user to create a simple network link between the fiber optic transmitters and receivers and any SNMP tool.

Depending on the module being networked, the user may view optical power levels, RF power levels, unit or laser temperature, data activity, signal path activity, and much more. Some modules even offer user system setting adjustments via the SNMP. This allows remote systems to be monitored, and in some cases, adjusted for optimum performance. Compatible modules include:

- Models 3000 and 3070 Long Range L-Band and IF Links
- Models 3030, 3035, 3080 and 3085 Medium Range L-Band and IF Links
- Models 3029, 3034, 3079, and 3084 Short Range L-Band and IF Links
- Model 3010 RS-232/422/485/Ethernet Data Module
- Model 3020 RF Switch Module

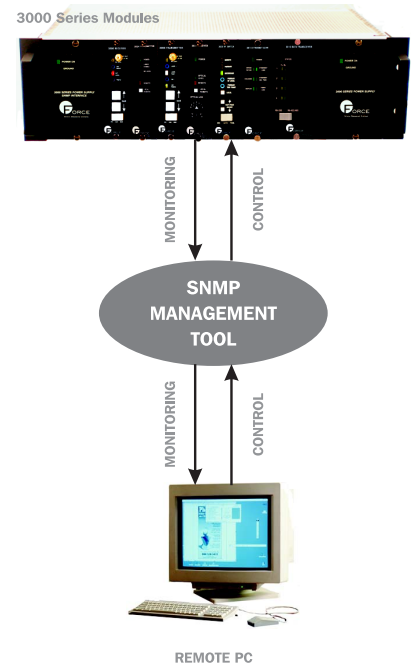
Common Monitored System Parameters

A number of unit parameters may be monitored on the SNMP-compatible transmitters and receivers. Table 1 describes these common parameters in further detail.

Table 1 Monitoring Parameters Common to Most 3000 Series and 3753 Units

Parameter	Description
Serial Number	Displays the serial number of the addressed card.
Model Number	Displays the model number.
Uptime Time	Displays the number of seconds the addressed card has been running since power-up.
Slot ID	Displays chassis slot number that the addressed card is installed in.
Firmware Version	Displays the firmware version being used.
Fault Status	Displays a number of system faults, depending on the module. These are explained in detail on the following pages.

Monitoring and Control of RF/Optical Systems



3000 Series Modules
with 3000 3RU Chassis
and SNMP Power Supply



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Long Range L-Band and IF SNMP Options

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The 3000 Series offers a range of transmitter and receivers for long, medium, and short range L-Band and IF transport applications. When used with the SNMP-compatible power supplies in a 3RU rack-mount configuration, a number of system parameters may be monitored, and a few unit settings may be controlled via the SNMP tool. Table 2 lists the monitoring capabilities of the long range L-Band and IF transmitters. Table 4 monitoring capabilities of the L-Band and IF receivers, and Table 4 lists the controllable parameters for the 3000 and 3070 L-Band and IF links.

Table 2 Transmitter Specific Monitoring Capabilities for the Model 3000 and 3070

Parameter	Description	Range for Model 3000 Tx	Range for Model 3070 Tx
System Over Temp Status	Reports the system board temperature.	0°C to +40°C (DWDM); -10°C to +55°C	0°C to +40°C (DWDM) -10°C to +55°C
Laser Status	Reports the status of the laser.	Laser On or Off	Laser On or Off
Laser Temp	Reports the laser temperature.	0°C to +40°C (DWDM) -10°C to +55°C	0°C to +40°C (DWDM) -10°C to +55°C
Laser Wavelength	Reports a code that maps to a laser wavelength.	1310 nm, 1550 nm, CWDM and DWDM (See IOM for CWDM and DWDM wavelengths)	1310 nm, 1550 nm, CWDM and DWDM (See IOM for CWDM and DWDM wavelengths)
RF Input Level Status (Small Aperture)	Lists the RF Level status of the addressed unit as within spec, low, or high.	Within Spec -50 dBm to -20 dBm	Within Spec -50 dBm to -20 dBm
RF Input Level		High Exceeds -20 dBm Low Below -50 dBm	High Exceeds -20 dBm Low Below -50 dBm
RF Input Level Status (Large Aperture)	Lists the RF Level status of the addressed unit as within spec, low, or high.	Within Spec -30 dBm to 0 dBm	
RF Input Level		High Exceeds -30 dBm Low Below 0 dBm	
Attenuator(s)	Reports the attenuation of the addressed unit.	Attenuator A 0-31 dB Attenuator B 0-15.5 dB	Attenuator A 0-31.5 dB

Table 3 Receiver Specific Monitoring Capabilities for the Model 3000 and 3070

Parameter	Description	Range for Model 3000 Rx	Range for Model 3070 Rx
System Temp	Reports the system board temperature.	-10°C to +55°C	-10°C to +55°C
Optical Input Level Status	Lists the optical input level of the addressed unit as within spec, high or low.	Within Spec -15 dBm to +3 dBm	Within Spec -15 dBm to +3 dBm
Optical Input Level		High Exceeds +3 dBm Low Below -15 dBm	High Exceeds +3 dBm Low Below -15 dBm
RF Output Level Status	Lists the RF Level status of the addressed unit as within spec, low, or high.	Within Spec -25 dBm to -10 dBm High Exceeds -10 dBm Low Below -25 dBm	Within Spec -41 dBm to -10 dBm High Exceeds -10 dBm Low Below -41 dBm
Attenuator(s)	Reports the attenuation of the addressed unit.	Attenuator C 0-31 dB Attenuator D 0-15.5 dB Attenuator E +5/-10 dB	Attenuator C 0-31 dB Attenuator D 0-31 dB Attenuator E +5/-10 dB

Table 4 Control Capabilities of the Model 3000 and 3070 Transmitter and Receiver

Parameter	3000 and 3070 Transmitter Control				3000 and 3070 Receiver Control			
	ATTEN	MAN	FIX	AGC	ATTEN	MAN	FIX	AGC
Laser Control	Decreases the output of the laser.				N/A			
Attenuators	A	Control	N/A	N/A	C	Control	N/A	N/A
	B	Control	N/A	N/A	D	Control	N/A	N/A
					E	N/A	Control	Control
Reset	Initiates a hardware reset on the board.				Initiates a hardware reset on the board.			



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Smart IFLs

Force's 3000 Series Smart IFLs™ offer short (2 km) or medium (12 km) range transport of L-Band and IF signals for IFL applications. As with the long range 3000 Series products, the Smart IFLs™ also offer SNMP monitoring and control options when used with the SNMP-compatible power supplies in a 3RU rack-mount configuration. A number of system parameters may be monitored, and a few unit settings may be controlled via the SNMP tool. Table 5 lists the monitored parameters for the Smart IFL™ transmitters. Table 6 lists the monitored parameters for the Smart IFL™ receivers. Table 7 lists the parameters which may be remotely controlled.

Table 5 Monitoring Capabilities for Smart IFL™ Transmitters

Parameter	Description	Range
System Over Temp Status	Reports the system board temperature.	-10°C to +55°C
Laser Status	Reports the status of the laser.	Laser On or Off
Laser Temp	Reports the laser temperature.	-10°C to +55°C
Laser Wavelength	Reports a code that maps to a laser wavelength.	1310 nm, 1550 nm
RF Level Status	Lists the RF Level status of the addressed unit as within spec, low, or high.	Within Spec -35 dBm to -15 dBm High Exceeds -15 dBm Low Below -35 dBm
RF Input Level	Displays the estimated RF input level in dBm	35 dBm to -15 dBm
Local/Remote Status	Displays the Local or Remote Access State	Local or Remote

Table 6 Monitoring Capabilities for Smart IFL™ Receivers

Parameter	Description	Range
System Temp	Reports the system board temperature.	-10°C to +55°C
Optical Input Status	Lists the optical input level of the addressed unit as within spec, high or low.	Within Spec -4 dBm to +4 dBm High Exceeds +4 dBm Low Below -4 dBm
Optical Input Level	Displays the received optical level in dBm.	-4 to +4 dBm
Optical Loss Level	Displays the optical loss setting in dB.	0-6 dB

Table 7 Control Capabilities of Smart IFL™ Links

Parameter	Transmitter Control	Receiver Control
Local/Remote	Change the state (Local or Remote) of the transmitter.	Change the state (Local or Remote) of the receiver.
Optical Loss	N/A	Change the optical loss setting of the receiver.
Reset	Initiates a hardware reset on the board.	Initiates a hardware reset on the board.



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Model 3010 and 3020 SNMP Options

The 3000 Series product family also includes support modules for data transport and RF switching. The Model 3010 RS-232/422/485 and Ethernet Data Module and the Model 3020 both support SNMP monitoring. Table 8 lists the monitoring capabilities of the Model 3010, which can also be reset via the SNMP tool.

Table 8 Monitoring Capabilities for the Model 3010 Data Module

Parameter	Description	Range
System Temp	Reports the system board temperature.	-10°C to +55°C
Optical Input Status	Lists the optical input level of the addressed unit as within spec, high or low.	Within Spec -22 dBm to -2 dBm High Exceeds -2 dBm Low Below -22 dBm
Optical Level	Displays Optical Level in dBm.	-22 to -2 dBm
System Board Temp.	Displays the system board temperature in °C	-10°C to +55°C

Table 9 lists the monitoring capabilities of the Model 3020 RF Switch.

Table 9 Monitoring Capabilities for the Model 3020 RF Switch

Parameter	Description	Range
System Board Temperature	Reports the RF Switch module's temperature.	-10°C to +55°C
Primary Trip Point	Displays the Trip Point setting for the switch	-50 to +10 dBm
Primary or Secondary Active Channel	Displays the active channel.	Primary or Secondary
Local/Remote	Change the state (Local or Remote) of the switch.	Local or Remote
RF Levels for Primary Channel (75 Ohm units)	Displays the RF level for the primary channel.	-50 to +10 dBm
RF Levels for Primary and Secondary Channels (50 Ohm units)	Displays the RF level for the primary and secondary channels.	-50 to +10 dBm
RF Alarm (Low)	Displays the status of the RF level as low.	High RF level exceeds +10 dBm Low RF level is below -50 dBm
System Temperature	Displays the system temperature in °C.	-10°C to +55°C

Selecting an SNMP Management Tool

In order to use the SNMP interface on Force optical transport links, a SNMP management tool must first be specified and installed in the customer's network. Force SNMP-compatible power supplies will communicate with most any currently available SNMP management tool. Force's interface has been tested and found compatible with a number of SNMP management tools. This information is provided as a guideline for Force customers and should not be considered an endorsement on the part of Force Optical Broadcast Systems. Table 10 lists compatible SNMP Management Tools.

Table 10 SNMP Management Tools Compatible with Force 3000 Series

Tool	Source
MG Soft	www.mg-soft.com
iReasoning	www.ireasoning.com
What's Up Gold	www.ipswitch.com

