H&L instruments

The Fiberoptic
Communications
Specialists

The Model 570X Fiberoptic Gateway offers high-speed serial DNP3 protocol-aware communication to meet the challenging needs of distribution automation, secondary networks, corporate LAN, Ethernet to SCADA master, substation networks and protection relay systems.

Model 570X Features

- **ARM-based Embedded Linux System-On-Module (SOM)**
- **DNP3 over TCP and UDP protocols**
- **8 serial ports up to 115.2kbaud**
- **Up to 126 high-speed independent fiber data channels**
- **Highly reliable, fault-tolerant, rapid-healing, redundant fiber ring network support**
- **Transparent support of all serial byte protocols including DNP3, Modbus, and UCA**
- **Packetized, protocol-aware support of serial DNP3**
- **Two 10/100 802.3 compliant Ethernet ports**
- **Two 100BASE-FX single-mode optical ports, 1310 or 1550 nm**
- **LED status indicators, non-volatile flash memory, and optical power meter**
- **8 character alphanumeric LED display for diagnostics and port information**
- **FiberPanel™ Windows-Based, Network Management Software**

Overview
The Model 570X Fiberoptic DNP3 Gateway transceiver combines the capabilities of a standard H&L Instruments fiberoptic transceiver with a Linux System-On-Module (SOM) to add fast protocol bridging and packet routing services. The Model 570X Fiberoptic DNP3 Gateway supports DNP3 over TCP and DNP3 over UDP protocols for fast and efficient SCADA networks.

Packetized DNP3 Fiberoptic Communication Services
The Model 570X Fiberoptic Gateway transceiver provides packetized DNP3 communication over a fiber network. The transceiver's built-in SOM handles all protocol translation services between LAN-connected SCADA masters and packetized fiber data channels. A free firmware update to existing 570 transceivers provides translation services between packetized DNP3 fiber data channels and remote serial DNP3 slave ports.

Advantages of Packetized DNP3 Data Channels
A single Model 570X Fiberoptic Gateway operates at the head-end of your SCADA network to provide conversion and bridging between DNP3 Frames on the LAN and packets on the virtual fiber data channels. As a result, SCADA masters and proxy servers can send simultaneous requests to multiple slaves on a single virtual channel while slave devices are transmitting unsolicited responses. This is accomplished while enhancing performance and reducing data collision errors often caused by byte-interleaving in transparent, protocol-independent schemes.

Ethernet Ports Standard
The Model 570X Fiberoptic Gateway includes two 10/100Mbps ports compliant with the 802.3 Ethernet and 802.3u Fast Ethernet standards.

Eight High-Speed Serial Ports Standard
The Model 570X Fiberopotic Gateway includes 8 high-speed serial ports, which can be configured to operate at up to 115.2 kilobaud. Each serial port can be assigned to an independent virtual data channel on the fiber network.

Protocol Transparent Mode
H&L Instruments fiberoptic network technology transparently transmits any byte protocol such as DNP3, UCA, and MODBUS and can group RTUs with common protocols into separate virtual communication channels.

Easy Integration With Existing 570 Networks
The Model 570X Fiberoptic Gateway easily integrates with existing 570 systems by way of a simple, no-cost upgrade to the standard Model 570 firmware. The upgrade provides protocol-aware translation between serial DNP3 slave ports and packetized DNP3 fiber data channels. These channels can then be assigned to LAN-connected SCADA Master IP ports at the head-end 570X. The H&L Instruments network solution, with the Model 570X Fiberoptic Gateway, provides the hardware and software you need to deliver the highest customer service and the most reliable communications for your DNP3-based SCADA network.

Modular SFP Fiberoptic Interface
The dual LC-style SFP fiberoptic interface offers many options for fiber network configuration. The SFP plug-and-play technology offers optimum flexibility for provisioning your fiber network, reduces transceiver spares inventory requirements, and simplifies maintenance and repair; it was introduced in an Engineering Change Notice in January 2019.

Model 570X

Remote Monitoring with Network Software

Differentiating itself from competitors, H&L bundles the FiberPanel™ Network Management Software with every system. FiberPanel is enhanced to operate with the Model 570X Fiberoptic Gateway transceivers. It configures and graphically monitors your network via a familiar and easy-to-use Windows based interface. It continually displays maps and real-time status information about your network.

The 570X supports a direct TCP/IP connection from FiberPanel without the need for a third-party terminal server that previously was needed to connect to the serial transceiver maintenance port, although the serial option is still available. You can monitor and configure your system via your LAN connection or by the standard direct serial maintenance port connection. Up to four users can monitor an active session simultaneously.

Other fiberoptic solutions only permit detecting problems after the system breaks. FiberPanel displays alarms and records a history of all network events in a log file. If problems with the fibers occur, you can quickly identify and correct any issues. The H&L Instruments complete solution helps you proactively maintain control over your network and streamline your maintenance tasks.

Using FiberPanel from the convenience of your office, you can:

* View a System Map of your entire set-up.
* Check fibers, locations, unit names, and serial numbers.
* Assign unit names and location tags.
* Configure parameters for your units.
* Configure serial or IP ports and assign them to any of 126 fiber data channels.
* Selectively turn on ports to communicate with remote devices, such as relay maintenance ports (which do not have SCADA addresses) to download event data or upload new settings.
* Measure optical power.
* Isolate faults, turn off serial ports, and re-route signals.
* Print reports on system activity, including diagnostic reports that can show mis-wired fibers, telemetry of unit voltages, unit temperature and malfunctioning units.

*
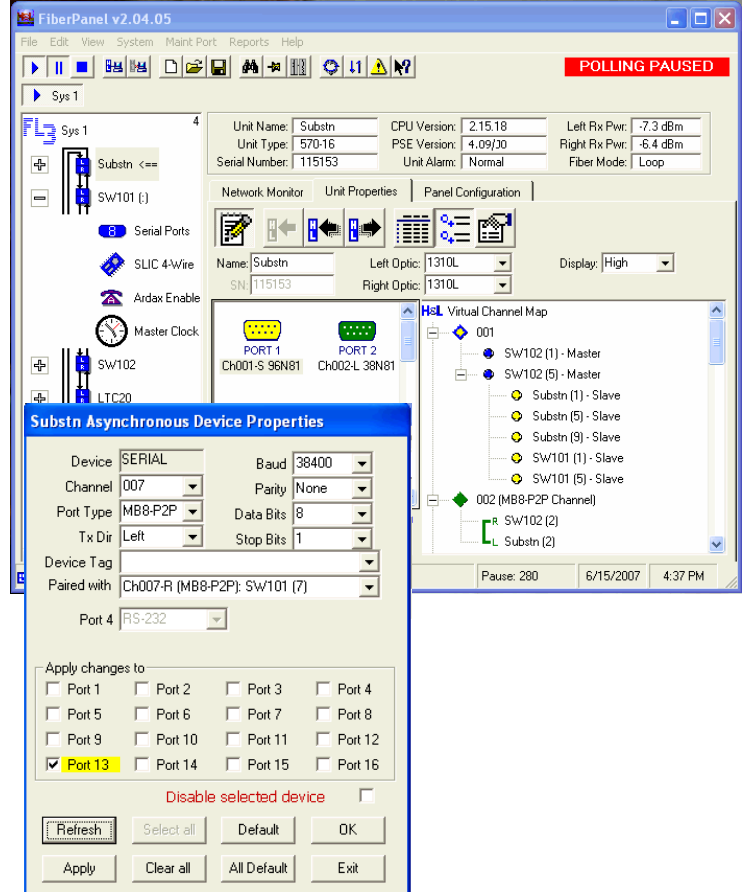
Model 570X Specifications

8 High-Speed Serial Ports:
4-DB-9F RS-232 connectors offer 8 high speed ports: 3 each on connectors 1 and 2, and one port each on connectors 3 and 4

RS-485:
Opto-isolated transient-protected port

SLIC, INCOM, Synchronous RS-422 (options):
1 two- or four-wire SLIC interface, 1 Eaton MPCV INCOM interface, 2 synchronous 64k SEL 311-compatible RS-422 ports

Ethernet PORTS:
Two 10/100 802.3 compliant RJ-45 Ethernet ports

Maintenance PORT:
RS-232 via PC-AT compatible DB-9F port plus SOM DB9 maintenance port

Virtual Channels:
The Model 570X Fiberoptic Gateway supports 126 virtual fiber data channels. Any port can be assigned to any channel.

Alarm Output:
Form 1A (N.O.) opto-isolated solid state relay

Serial Port Configuration:
600, 1200, 2400, 4800, 9600, 19.2k, 38.4k, 57.6k, or 115.2k baud. Even, odd, or no parity. 7 or 8 bit char width. 1 or 2 stop bits.

Power Options (10.4 watts max):
12Vdc, 24Vdc, 48Vdc, 125Vdc/120Vac 50-60 Hz, 250Vdc/230Vac 50-60 Hz

Environmental/Mechanical Specs:
Operating Temperature: -40°C to +85°C
5% to 95% RH
Net Weight: 3.25lbs
9"L X 6"W X 3.3"H

Optical Output (class 1, eye safe devices):
20 km transmission distance:
Laser -8 to -15 dBm @ 1310nm singlemode
Laser -8 to -15dBm @ 1550nm singlemode
80 km transmission distance:
Laser –5 to 0 dBm @ 1550nm singlemode
120 km transmission distance:
Laser –2 to +3 dBm @ 1550nm singlemode

Fiberoptic Connectors:
Modular SFP with dual LC connectors

Optical Receiver Sensitivity:
> -28dBm

Optical Budget:
20dB singlemode

System Requirements for FiberPanel:
Microsoft® Windows 10, Windows 7, Vista, XP, WIN2K, XP, Windows NT4
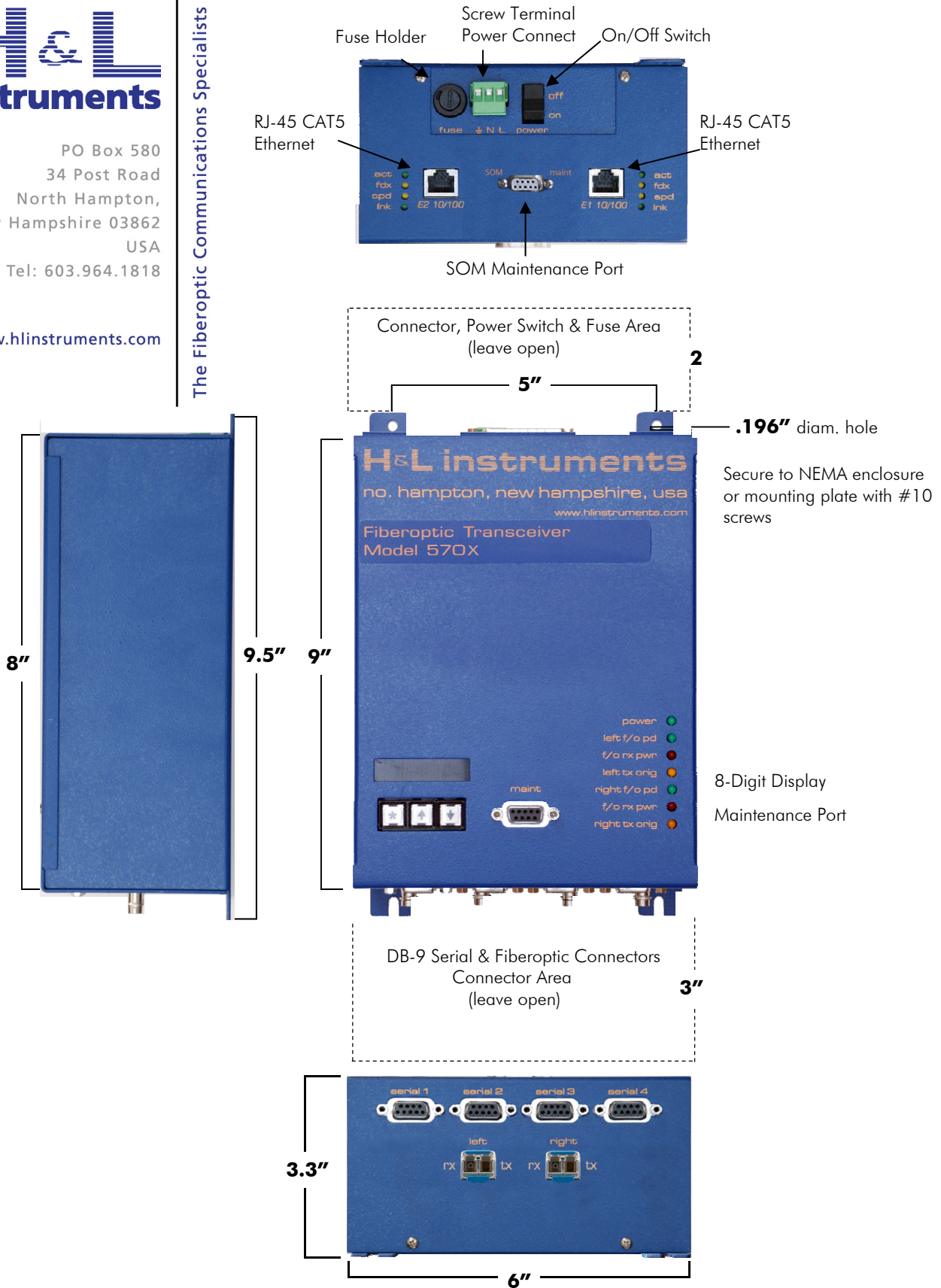
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H&L instruments

The Fiberoptic Communications Specialists

Fuse Holder

Screw Terminal
Power Connect

On/Off Switch

RJ-45 CAT5
Ethernet

RJ-45 CAT5
Ethernet

act
fdx
spd
lnk

E2 10/100

SOM

maint

E1 10/100

act
fdx
spd
lnk

fuse   N L   power

off

on

SOM Maintenance Port

Connector, Power Switch & Fuse Area
(leave open)

5"

2

.196" diam. hole

H&L instruments

no. hampton, new hampshire, usa

www.hlinstruments.com

Fiberoptic Transceiver
Model 570X

Secure to NEMA enclosure
or mounting plate with #10
screws

8"

9.5"

9"

power
left f/o pd
f/o rx pwr
left tx orig
right f/o pd
f/o rx pwr
right tx orig

maint

8-Digit Display

Maintenance Port

DB-9 Serial & Fiberoptic Connectors
Connector Area
(leave open)

3"

serial 1   serial 2   serial 3   serial 4

left   right

rx   tx   rx   tx

3.3"

6"

Model 570X Fiberoptic Transceiver Dimensions—Standard Case