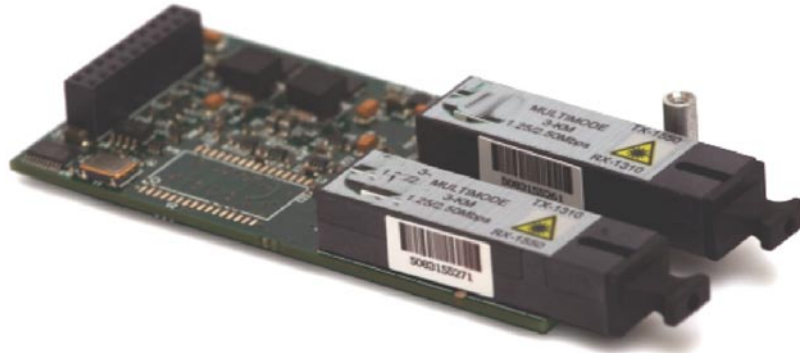




Next Generation Intelligent Lon[®] Fibre SMX Transceiver

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Features

- ◆ Single-Fibre core 2.50 Mbps full duplex communication reduces installation cost by 50%.
- ◆ Real-time fault tolerant packet delivery technology
- ◆ Supports both fibre Linear Bus or Redundant Ring network topology
- ◆ Fibre LonTalk[®] channel FO-20S, FO-20L and FO-10
- ◆ LonMaker[®], LNS[®] compliant
- ◆ Multimode fibre and Singlemode fibre {1310/1550nm WDM} supported.
- ◆ Long haul (up to up to 80Km) Singlemode fibre reduces the need for repeaters
- ◆ Supports 1.25Mbps/2.50Mbps LonWorks[®] throughput with large node count
- ◆ LED Port link status for each fibre port showing fibre connectivity
- ◆ Node status reporting via on-board Neuron chip
- ◆ Standard length SMX mechanical format.
- ◆ Single +5 volt \pm 0.25 VDC operation.
- ◆ LonMark[®], LonWorks[®], LonTalk[®] compliant.
- ◆ RoHS lead-free compliant.
- ◆ CE, FCC certified

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Description

Fibre optic interconnection is ideal for applications needing high throughput, expandability, immunity to electromagnetic interference or communications over long distances. Maximum LonWorks[®] communication throughput is maintained on the fibre optic interconnect regardless of the distance or number of nodes attached.

A fibre optic ring can implement multiple subnets with several hundred fibre optic nodes (the allowable number of nodes is a function of average link length and the fibre optic cable characteristics; 750 to 3,000 node capacity is typical). These capabilities make the next generation SMX transceiver ideal solutions for large projects with substantial message traffic as well as small projects to connect as few as two nodes together.

This next generation Fibre SMX transceiver supports fibre optic networks operating at different throughput speeds of up to 2.50Mbps on the same ring or linear bus automatically. Packet traffic is forwarded only to nodes with matching speed, while maintaining maximum network performance. There is an on-board slide switch enabling the node to over-ride speed matching enabling all traffic to be received.

Wave Division Multiplexing (WDM) enables full duplex transmission over a single fibre core.

Fault Tolerant Network using Ring Topology

All data is transmitted and received simultaneously using two light wave spectrums over a single strand of fibre optic cable for each port. If the fibre ring is broken i.e. one fibre port no longer is connected or node is powered off, data will then travel in both directions on the fibre so all nodes remain connected in the presence of a single fault.

Transceiver Status Reporting

Each transceiver has its own Neuron to enable remote status reporting of the transceiver and the fibre link. It sends a service request message across the network indicating a possible node problem i.e. node power cycling/loss, fibre port link status change; fibre port link transitions from linked to not linked or vice versa. The node continuously monitors network ports and will notify the network user of a possible

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node fault. Each node has its own unique Neuron ID to help in identifying reporting nodes. Node status reporting supported via the on-board Neuron as follows:

1. 'Change' in Fibre port i.e. link loss, Link active or port failure causes the node to send current port status out to the network.

'Network Variable' Node Status provided as follows: {See fibre transceiver install notes for further definition}

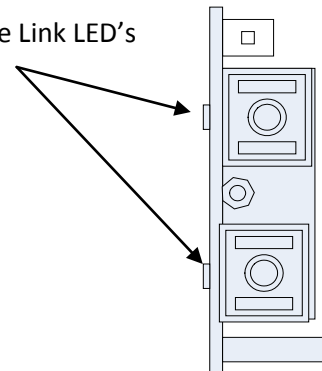
1. nvoNetworkStat
2. nvoLeftPortStat
3. nvoRightPortStat
4. nvoPortFailure
5. nviRelayControl
6. nviRelayEnable

We can add client specific features to the Neuron code on a case by case basis by request and agreement.

In addition each transceiver locally indicates via LED's the status of the transceiver and the fibre link as follows -

1. Fast blinking yellow LED means link loss i.e. no link pulses received from far node
2. Solid Green LED indicates fibre port link ok and fibre network is operating "Redundantly".
3. Solid Yellow LED indicates fibre port link ok and fibre network is operating as "Multidrop" or "Segment".
4. Slow blinking Yellow LED indicates fibre port failure i.e. periodic crc packet errors over 15-seconds or no packet traffic detected for 15-seconds.

Left and Right Fibre Link LED's



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The New Transceiver automatically monitors all fibre packet traffic looking for sustained periodic crc packet errors or no packet traffic.

Installation

Merging Legacy fibre and Next Generation Fibre Networks

Legacy networks i.e. linear/bus or ring can be expanded when migrating from old obsolete {880nm, 1310 & 1320nm} fibre network to next generation {1310/1550nm} fibre network by either –

- a. using a Lon router converting fibre to twisted pair copper and vice versa
- b. Swapping out existing old SMX LonFibre Transceivers and replacing with these new devices noting fibre connector change

Connections

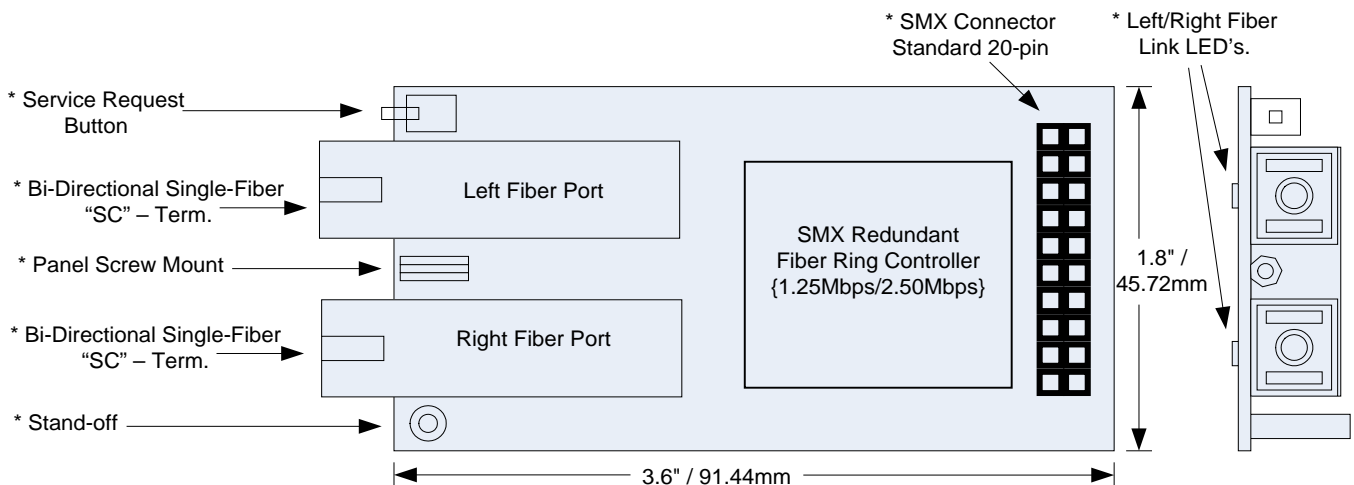
Fibre ports must always be connected so that a left port is connected to a right port of the next node in the ring. Segments must obey the same rules; i.e. even if only two nodes are connected, the left port of one must connect to the right port of the next. All connections must be made with multimode or singlemode fibre optic cable, using 'SC' style termination. Minimum use of patch panel connections is recommended, as each patch introduces optical loss. ST to SC adapter's available. Minimum use of patch panel connections is recommended, as each patch introduces optical loss. See "Typical Optical Power" document on web site or contact CNS directly as below.

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Specification

Mechanical -



Electrical –

Operating voltage: 5 VDC, $\pm 5\%$, <50mV ripple

SMX connector pinout:

1-VCC	3-ID0	5-ID1	7-ID2	9-ID3	11-ID4	13-NC	15-NC	17-CLK	19-VCC
2-GND	4-CP4	6-CP2	8-CP1	10-CP0	12-CP3	14-NC	16-RST	18-BSY	20-GND

Network –

Two SC connectors for fibre network connection, 1310nm Multi Mode and Single Mode Fibre supported. The unit is compatible with 62.5/125 micron and 100/140 micron multimode fibre. 50/125 may be used with reduced optical link budgets.

Also single mode is compatible with 9.0 micron single mode fibre cable.



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Environmental-

Operating temperature: 0C to +70C or cost option -40c to + 85C

Humidity: 95% non-condensing

Legacy fibre SMX transceiver optics note:

The end of product life {880nm} half-duplex fibre optic diodes used on fibre SMX transceivers is not compatible with Next Generation fibre optics SMX transceiver using 1310/1550nm WDM optics.

Typical Optical Power Information

See separate document on our website, [click here](#).



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Ordering Information

Model Part Number Format – **CNSA-BB-CDE-H**

Example part number: “CNS7-03-MS1-C” means:

- LonFibre SMX transceiver
- 3Km fibre ports
- Multimode 1310/1550nm WDM full duplex single fibre
- SC fibre connector
- 1.25/2.50Mbps SMX transceiver throughput speed.
- 1310/1550nm WDM full duplex single fibre
- -0C to +70C

CNSA = 7, LonFibre SMX transceiver with two full duplex 2.50Mbps fibre ports with dual adaptable 1.25/2.50Mbps neuron[®] port.

BB = 03, 3km multimode fibre optics
= 15, 15km singlemode fibre optics
= 25, 25km singlemode fibre optics
= 40, 40km singlemode fibre optics
= 60, 60km singlemode fibre optics
= 80, 80km singlemode fibre optics

C = S, Singlemode fibre
= M, Multimode fibre

D = S, SC connector
E = 1, Fibre optic wavelength 1310/1550nm WDM full duplex single fibre

H = C, Commercial temperature 0C to +70C
= E, Extended temperature range -40C to +85C



Control Network Solutions

OPENING NETWORK FRONTIERS

Next Generation Intelligent Lon[®] Fibre SMX Transceiver

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