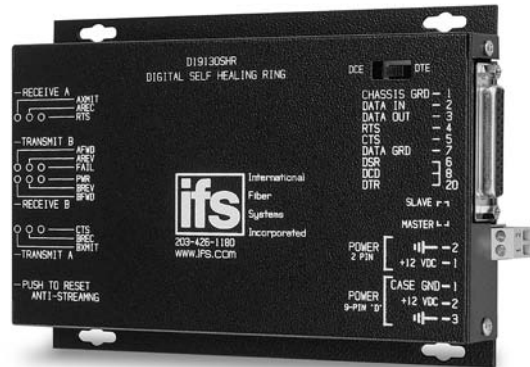




## PRODUCT SPECIFICATION

# D19100SHR SERIES SELF-HEALING RING/FULL DUPLEX DATA TRANSCEIVER



## DESCRIPTION

The IFS D19100SHR series Self-Healing Ring Transceiver unit is a fully-digital transceiver designed for implementing traffic signalization/communications data networks of the highest possible reliability. Unlike competing products, the multiple-master capability of this series provides full protection against the possibility of a single point of failure, significantly enhancing the reliability and availability of the network. Primary and alternate-master transceiver units may be either co-located or diversity located, and the data input/output interconnection to the primary and alternate-master units is achieved by the use of a simple "Y" electrical cable. Full data re-clocking and regeneration permit an almost unlimited number of transceiver/controller units to be used within the network. These environmentally hardened transceivers are ideal for use in unconditioned out-of-plant or roadside installations. Plug-and-play design ensures ease of installation and no electrical or optical adjustments are ever required. LED indicators are provided for rapidly ascertaining equipment operating status, and these units are available in either stand-alone or rack mount configurations.

## APPLICATION EXAMPLES

- High-reliability traffic signalization networks

## FEATURES

- Unique Multiple-Master Capability Eliminates the Possibility of a Single Point of Failure within the Network; No Need for Costly Node Processors or External Switching Equipment and Custom Software
- Simple "Y" Electrical Cable Provides Data Interconnect Between Primary and Alternate-Master Transceiver Units
- Robust Design Assures Extremely High Reliability In Unconditioned Out-of-Plant/Roadside Environments
- LED Status Indicators Provide Rapid Indication of All Critical Operating Parameters
- Full Data Re-clocking and Regeneration: No Limit as to the Number of Transceiver Units Used Within the Network
- User-Configurable Optical & Electrical Anti-Streaming Provides Network Protection Against Faulty Streaming Controller Operation
- NTCIP Compatible
- Tested and Certified by an Independent Testing Laboratory for Full Compliance with the Environmental Requirements (Ambient Operating Temperature, Mechanical Shock, Vibration, Humidity with Condensation, High-Line/Low-Line Voltage Conditions and Transient Voltage Protection) of NEMA TS-1/TS-2 and the Caltrans Specification for Traffic Signal Control Equipment.
- User-Selectable Local or Master operation and DTE or DCE Interface Ensures Ease of Installation and Maximum Versatility
- Solid-State Current Limiters on All Power Lines Provide Equipment Protection
- Wide Optical Dynamic Range: Optical Attenuators are Never Required
- Comprehensive Lifetime Warranty

Available at:  
**www.ifs.com**

- A & E Specifications, (CSI)
- AutoCAD Drawings
- Operation Manuals
- Technical Bulletins

## ORDERING INFORMATION

	PART NUMBER	DESCRIPTION	FIBERS REQUIRED	OPTICAL PWR BUDGET	MAX. DISTANCE*
MULTIMODE 62.5/125µm**	D19110SHR	Repeater (850 nm)	2 In/2 Out	10 dB	1.9 miles (3 km)
	D19120SHR	Repeater (1310 nm)	2 In/2 Out	10 dB	6 miles (10 km)
SINGLEMODE 9/125µm	D19130SHR	Repeater (1310 nm)	2 In/2 Out	17 dB	31 miles (51 km)
ACCESSORIES♦	PS-12VDC 12 Volt DC Plug-in Power Supply (Included) PS-12VDC-230 12 Volt DC Plug-in Power Supply, 230 VAC Input (Included if specified at time of order)				
OPTIONS	Add '-24' for 24 VDC Power (Extra charge, consult factory) Add '-R3' to Model Number for R3 Rack Mount (Requires R3 Rack purchased separately) Add '-FC' to Model Number for FC Optical Connector (For single mode equipment only) Add '-C' for Conformally Coated Printed Circuit Boards (Extra charge, consult factory)				

\* Optical transmission distance is limited to optical loss of the fiber and any additional loss introduced by connectors, splices and patch panels.

Distance can also be limited by fiber bandwidth. \*\* For 50/125 Fiber, subtract 4 dB from Optical Power Budget.

♦ All accessories are third party manufactured.

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With Offices in Asia Pacific ■ Australia ■ Europe ■ Latin America



# TECHNICAL SPECIFICATION

# SELF-HEALING RING/FULL DUPLEX DATA TRANSCEIVER

## SPECIFICATIONS

### DATA

Data Interface:	RS-232 C/D, RS-422, or RS-485 2 or 4 wire with tri-state protocols, user-selectable
Data Rate:	DC to 100 Kb/s.
Operating Mode:	Asynchronous, Simplex or Full-Duplex
Bit Error Rate:	<1 in 10 <sup>12</sup> @ Maximum Optical Loss Budget
Anti-Streaming Time-Out:	Selectable to 4, 8, 16, 32, 64 Seconds, or Infinity (disabled)
Remote Summary	
Fault Indication:	Solid State Relay Contacts Rated at 250 VAC/VDC @ 170 mA, Resistive

### WAVELENGTH

850 or 1310 nm, Multimode  
1310 nm, Singlemode

### NUMBER OF FIBERS

2 In/2 Out

### OPTICAL EMITTER

850 or 1310 nm, Multimode: LED  
1310 nm, Singlemode: Laser Diode

### LED INDICATORS

1. Optical Channel A loop locked, forward direction
2. Optical Channel A loop locked, reverse direction
3. Optical Channel B loop locked, forward direction
4. Optical Channel B loop locked, reverse direction
5. Transmit Data, Optical Channel A
6. Receive Data, Optical Channel A
7. Transmit Data, Optical Channel B
8. Receive Data, Optical Channel B
9. Fault/Anti-Streaming Activated
10. Request to Send
11. Clear to Send
12. Power On

## CONNECTORS

Power:	Terminal Plug with Screw Clamps*
Data:	Type DB - 25S
Optical:	Type ST, FC (see ordering information)

## ELECTRICAL & MECHANICAL

Power:	
Surface Mount:	12 VDC @ 300 mA
Rack:	From Rack
Number of Rack Slots:	1
Current Protection:	Automatic Resettable Solid-State Current Limiters
Circuit Board:	Meets IPC Standard
Size (in./cm.) (LxWxH)	7.0 x 4.9 x 1.0 in., 17.8 x 12.5 x 2.5 cm
Shipping Weight:	< 2 lbs./0.9 kg

## ENVIRONMENTAL

MTBF:	> 100,000 hours
Operating Temp:	-40° C to +74° C, ambient
Storage Temp:	-40° C to +85° C, ambient
Relative Humidity:	0%-95% (non-condensing)†

† May be extended to condensation conditions by adding suffix 'C' to model number for conformal coating.

• Optional Type DB-9P: Specify connector style at time of order.

## AGENCY COMPLIANCE



## MADE IN THE USA

Complies with FDA Performance Standard for Laser Products, Title 21, Code of Federal Regulations, Subchapter J

## OPTICAL POWER BUDGET

FIBER	WAVELENGTH	TRANSCEIVER			OPTICAL PWR BUDGET**	MAX. DISTANCE*
		MODEL	OUTPUT	SENSITIVITY		
Multimode 62.5/125µm*	850	D19110SHR	20 µw (-17 dBm)	1 µw (-30 dBm)	10 dB	1.9 miles (3 km)
	1310 nm	D19120SHR	20 µw (-17 dBm)		10 dB	6 miles (10 km)
Singlemode 9/125µm		D19130SHR	50 µw (-13 dBm)		17 dB	31 miles (51 km)

\* Optical transmission distance is limited to optical loss of the fiber and any additional loss introduced by connectors, splices and patch panels. Distance can also be limited by fiber bandwidth. \*\* For 50/125 Fiber, subtract 4 dB from Optical Power Budget.

## SYSTEM DESIGN

