E.C.I.NETWORKS

TECHNICAL DATASHEET

EN-SFP1G-EX

1.25 Gb/s 1310 nm 40 km single-mode SFP transceiver · Version FY26.10.27T

1.25 Gb/s SFP | 1310 nm / 40 km | Digital diagnostics

NOTICE

Technical Specifications and Scope

This document reproduces the technical specifications and engineering information supplied for the EN-SFP1G-EX and EN-SFP1G-EXi optical transceivers, version FY26.10.27T. Numerical values, ordering variants, technical notes and figures are carried forward from the source datasheet.

Confirm system compatibility and current regulatory documentation for the intended deployment with E.C.I. NETWORKS INC. before ordering or implementation. This document does not add capabilities beyond those stated in the original datasheet.

©2026 E.C.I. Networks Inc. All rights reserved.

PRODUCT OVERVIEW

PRODUCT FEATURES

1.25Gb/s 1310nm 40km Single-mode SFP Transceiver

Up to 1.25Gb/s data links

DFB laser transmitter and PIN photo-detector

Up to 40km on 9/125µm SMF

Duplex LC/UPC type pluggable optical interface

Low power dissipation

Metal enclosure, for lower EMI

RoHS compliant and lead-free

Single +3.3V power supply

Support Digital Diagnostic Monitoring interface

Compliant with SFF-8472

Case operating temperature:

Commercial: 0°C to +70°C

Extended: -10°C to +80°C

Industrial: -40°C to +85°C

APPLICATIONS

APPLICATIONS

Switch to Switch Interface

Gigabit Ethernet

Switched Backplane Applications

Router/Server Interface

Other Optical Links

©2026 E.C.I. Networks Inc. All rights reserved.

PRODUCT DESCRIPTION

PRODUCT DESCRIPTION



E.C.I. NETWORKS's EN-SFP1G-EX Small Form Factor Pluggable (SFP) transceivers are compatible with the Small Form Factor Pluggable Multi-Sourcing Agreement (MSA). The transceiver consists of five sections: the LD driver, the limiting amplifier, the digital diagnostic monitor, the DFB laser and the PIN photo-detector .The module data link up to 40KM in 9/125um single mode fiber.

The optical output can be disabled by a TTL logic high-level input of Tx Disable, and the system also can disable the module via I2C. Tx Fault is provided to indicate that degradation of the laser. Loss of signal (LOS) output is provided to indicate the loss of an input optical signal of receiver or the link status with partner. The system can also get the LOS (or Link)/Disable/Fault information via I2C register access.

ORDERING INFORMATION

Ordering information

Product part number	Data rate / media	Wavelength / distance	Temperature range
EN-SFP1G-EX	1.25 Gbps; Single mode fiber	1310 nm; 40 km	0~70 °C; commercial
EN-SFP1G-EXi	1.25 Gbps; Single mode fiber	1310 nm; 40 km	-40~85 °C; industrial

©2026 E.C.I. Networks Inc. All rights reserved.

PIN DESCRIPTIONS

Pin Descriptions

Pin	Symbol	Name/Description	Ref.
1	VEET	Transmitter Ground (Common with Receiver Ground)	1
2	TFAULT	Transmitter Fault.	
3	TDIS	Transmitter Disable. Laser output disabled on high or open.	2
4	MOD_DEF(2)	Module Definition 2. Data line for Serial ID.	3
5	MOD_DEF(1)	Module Definition 1. Clock line for Serial ID.	3
6	MOD_DEF(0)	Module Definition 0. Grounded within the module.	3
7	Rate Select	No connection required	4
8	LOS	Loss of Signal indication. Logic 0 indicates normal operation.	5
9	VEER	Receiver Ground (Common with Transmitter Ground)	1
10	VEER	Receiver Ground (Common with Transmitter Ground)	1
11	VEER	Receiver Ground (Common with Transmitter Ground)	1
12	RD-	Receiver Inverted DATA out. AC Coupled	
13	RD+	Receiver Non-inverted DATA out. AC Coupled	
14	VEER	Receiver Ground (Common with Transmitter Ground)	1

©2026 E.C.I. Networks Inc. All rights reserved.

Pin	Symbol	Name/Description	Ref.
15	VCCR	Receiver Power Supply	
16	VCCT	Transmitter Power Supply	
17	VEET	Transmitter Ground (Common with Receiver Ground)	1
18	TD+	Transmitter Non-Inverted DATA in. AC Coupled.	
19	TD-	Transmitter Inverted DATA in. AC Coupled.	
20	VEET	Transmitter Ground (Common with Receiver Ground)	1

PINOUT NOTES

Notes:

Circuit ground is internally isolated from chassis ground.

Laser output disabled on TDIS >2.0V or open, enabled on TDIS <0.8V.

Should be pulled up with 4.7k - 10kohms on host board to a voltage between 2.0V and 3.6V.MOD_DEF (0) pulls line low to indicate module is plugged in.

This is an optional input used to control the receiver bandwidth for compatibility with multiple data rates (most likely Fiber Channel 1x and 2x Rates).If implemented, the input will be internally pulled down with > 30kΩ resistor. The input states are:

Low (0 – 0.8V): Reduced Bandwidth

(>0.8, < 2.0V): Undefined

High (2.0 – 3.465V): Full Bandwidth

Open: Reduced Bandwidth

LOS is open collector output should be pulled up with 4.7k - 10kohms on host board to a voltage between 2.0V and 3.6V. Logic 0 indicates normal operation; logic 1 indicates loss of signal.

©2026 E.C.I. Networks Inc. All rights reserved.

PINOUT REFERENCE

20-Pin SFP Electrical Pinout

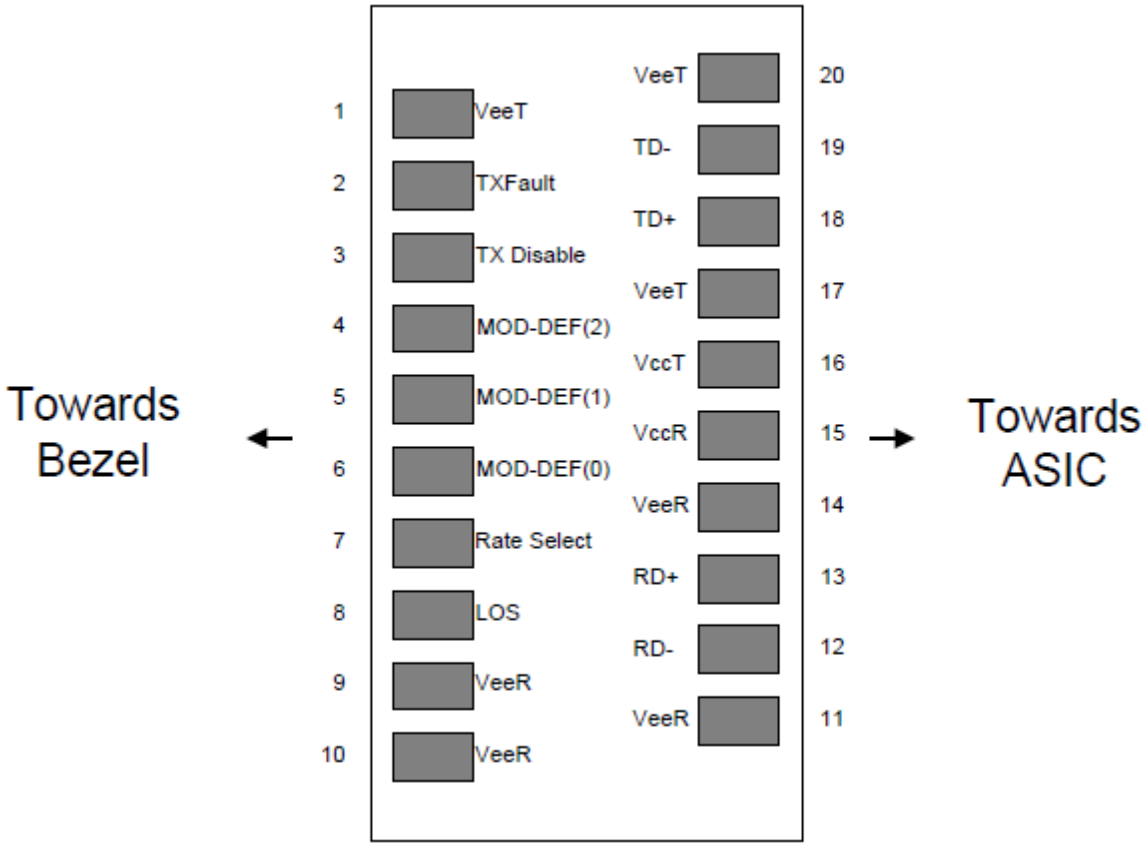


Figure 1. EN-SFP1G-EX pin assignment diagram.

ELECTRICAL LIMITS

Absolute Maximum Ratings

Parameter	Symbol	Min / Typ / Max	Unit / Note
Storage Temperature	Ts	Min: -40 | Max: 85	ºC
Storage Ambient Humidity	HA	Min: 5 | Max: 95	%
Power Supply Voltage	VCC	Min: -0.5 | Max: 4	V
Signal Input Voltage		Min: -0.3 | Max: Vcc+0.3	V

©2026 E.C.I. Networks Inc. All rights reserved.

Parameter	Symbol	Min / Typ / Max	Unit / Note
Receiver Damage Threshold		Min: 5	dBm

OPERATING CONDITIONS

Recommended Operating Conditions

Parameter	Symbol	Min / Typ / Max	Unit / Note
Case Operating Temperature	Tcase	Min: 0 | Max: 70	ºC; TS-SF-1312-40DC
Case Operating Temperature	Tcase	Min: -10 | Max: 80	ºC; TS-SF-1312-40DE
Case Operating Temperature	Tcase	Min: -40 | Max: 85	ºC; TS-SF-1312-40DI
Ambient Humidity	HA	Min: 5 | Max: 70	%; Non-condensing
Power Supply Voltage	VCC	Min: 3.13 | Typ: 3.3 | Max: 3.47	V
Power Supply Current	ICC	Max: 280	mA
Power Supply Noise Rejection		Max: 100	mVp-p; 100Hz to 1MHz
Data Rate		Typ: 1.25/1.25	Gbps; TX Rate/RX Rate
Transmission Distance		Max: 40	KM
Coupled Fiber	Single mode fiber	Min: Single mode fiber | Typ: Single mode fiber | Max: Single mode fiber	Single mode fiber; 9/125um SMF

©2026 E.C.I. Networks Inc. All rights reserved.

TRANSMITTER PARAMETERS

Specification of Transmitter

Parameter	Symbol	Min / Typ / Max	Unit / Note
Average Output Power	POUT	Min: -5 | Max: 0	dBm
Extinction Ratio	ER	Min: 9	dB
Center Wavelength	λC	Min: 1270 | Typ: 1310 | Max: 1360	nm; DFB Laser
Side Mode Suppression Ratio	SMSR	Min: 30	dB
Spectrum Bandwidth(-20dB)	σ	Max: 1	nm
Transmitter OFF Output Power	POff	Max: -45	dBm
Differential Line Input Impedance	RIN	Min: 90 | Typ: 100 | Max: 110	Ohm
Jitter P-P	tJ	Max: 128	ps; Note (1)
Output Eye Mask	Compliant with IEEE802.3 z (class 1 laser safety)	Min: Compliant with IEEE802.3 z (class 1 laser safety) | Typ: Compliant with IEEE802.3 z (class 1 laser safety) | Max: Compliant with IEEE802.3 z (class 1 laser safety)	Note (2)

TRANSMITTER NOTES

Transmitter Notes

Note (1): Measure at 2^7-1 NRZ PRBS pattern

Note (2): Transmitter eye mask definition

©2026 E.C.I. Networks Inc. All rights reserved.

REFERENCE DIAGRAM

Transmitter Optical Eye Mask

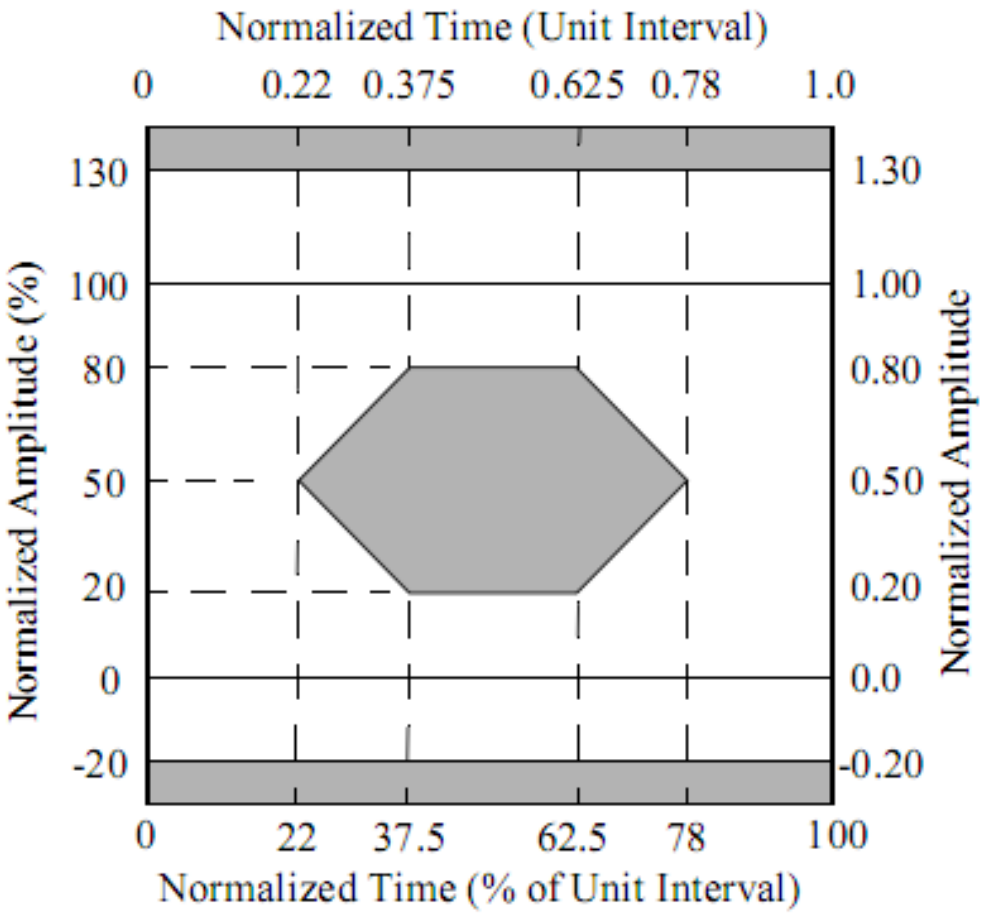


Figure 2. Transmitter eye mask definition.

RECEIVER PARAMETERS

Specification of Receiver

Parameter	Symbol	Min / Typ / Max	Unit / Note
Input Optical Wavelength	λIN	Min: 1270 | Max: 1610	nm; PIN-TIA
Receiver Sensitivity	PIN	Max: -24	dBm; Note (1)

©2026 E.C.I. Networks Inc. All rights reserved.

Parameter	Symbol	Min / Typ / Max	Unit / Note
Input Saturation Power (Overload)	PSAT	Min: -1	dBm
Los Of Signal Assert	PA	Max: -25	dBm
Los Of Signal De-assert	PD	Min: -38	dBm; Note (2)
LOS Hysteresis	PA-PD	Min: 0.5 | Typ: 2 | Max: 6	dB

RECEIVER NOTES

Receiver Notes

Note (1): Measured with Light source 1310nm, ER=9dB; BER =<10^-12 @PRBS=2^7-1 NRZ.

Note (2): When LOS de-asserted, the RX data+/- output is High-level (fixed)

ELECTRICAL INTERFACE

Electrical Interface Characteristics

Parameter	Symbol	Min / Typ / Max	Unit / Note
Transmitter	Transmitter	Min: Transmitter | Typ: Transmitter | Max: Transmitter	Transmitter; Transmitter
Total Supply Current	ICC	Max: A	mA; Note (1)
Transmitter Disable Input-High	VDISH	Min: 2 | Max: Vcc+0.3	V
Transmitter Disable Input-Low	VDISL	Min: 0 | Max: 0.8	V
Transmitter Fault Input-High	VDISL	Min: 2 | Max: Vcc+0.3	V
Transmitter Fault Input-Low	VTxFH	Min: 0 | Max: 0.8	V

©2026 E.C.I. Networks Inc. All rights reserved.

Parameter	Symbol	Min / Typ / Max	Unit / Note
Receiver	Receiver	Min: Receiver | Typ: Receiver | Max: Receiver	Receiver; Receiver
Total Supply Current	ICC	Max: B	mA; Note (1)
LOSS Output Voltage-High	VLOSH	Min: 2 | Max: Vcc+0.3	V; LVTTL
LOSS Output Voltage-Low	VLOSL	Min: 0 | Max: 0.8	V; LVTTL

ELECTRICAL NOTES

Electrical Interface Notes

Note (1): A (TX) + B (RX) = 280mA (Not include termination circuit)

DIGITAL DIAGNOSTICS

Digital Diagnostic Functions

E.C.I. NETWORKS EN-SFP1G-EX transceivers support the 2-wire serial communication protocol as defined in the SFP MSA. It is very closely related to the E2PROM defined in the GBIC standard, with the same electrical specifications. The standard SFP serial ID provides access to identification information that describes the transceiver's capabilities, standard interfaces, manufacturer, and other information.

Additionally, E.C.I. NETWORKS SFP transceivers provide a unique enhanced digital diagnostic monitoring interface, which allows real-time access to device operating parameters such as transceiver temperature, laser bias current, transmitted optical power, received optical power and transceiver supply voltage .It also defines a sophisticated system of alarm and warning flags, which alerts end-users when particular operating parameters are outside of a factory set normal range.

The SFP MSA defines a 256-byte memory map in E2PROM that is accessible over a 2-wire serial interface at the 8 bit address 1010000X (A0h). The digital diagnostic monitoring interface makes use of the 8 bit address 1010001X (A2h), so the originally defined serial ID memory map remains unchanged. The interface is identical to, and is thus fully backward compatible with both the GBIC Specification and the SFP Multi Source Agreement.

The operating and diagnostics information is monitored and reported by a Digital Diagnostics Transceiver Controller (DDTC) inside the transceiver, which is accessed through a 2-wire serial interface. When the serial protocol is activated, the serial clock signal (SCL, Mod Def 1) is generated by the host. The positive edge clocks data into the SFP transceiver into those segments of the E2PROM that are not write-protected. The negative

©2026 E.C.I. Networks Inc. All rights reserved.

edge clocks data from the SFP transceiver. The serial data signal (SDA, Mod Def 2) is bi-directional for serial data transfer. The host uses SDA in conjunction with SCL to mark the start and end of serial protocol activation. The memories are organized as a series of 8-bit data words that can be addressed individually or sequentially.

Digital diagnostics for the EN-SFP1G-EX are internally calibrated by default.

REFERENCE SCHEMATIC

Recommend Circuit Schematic

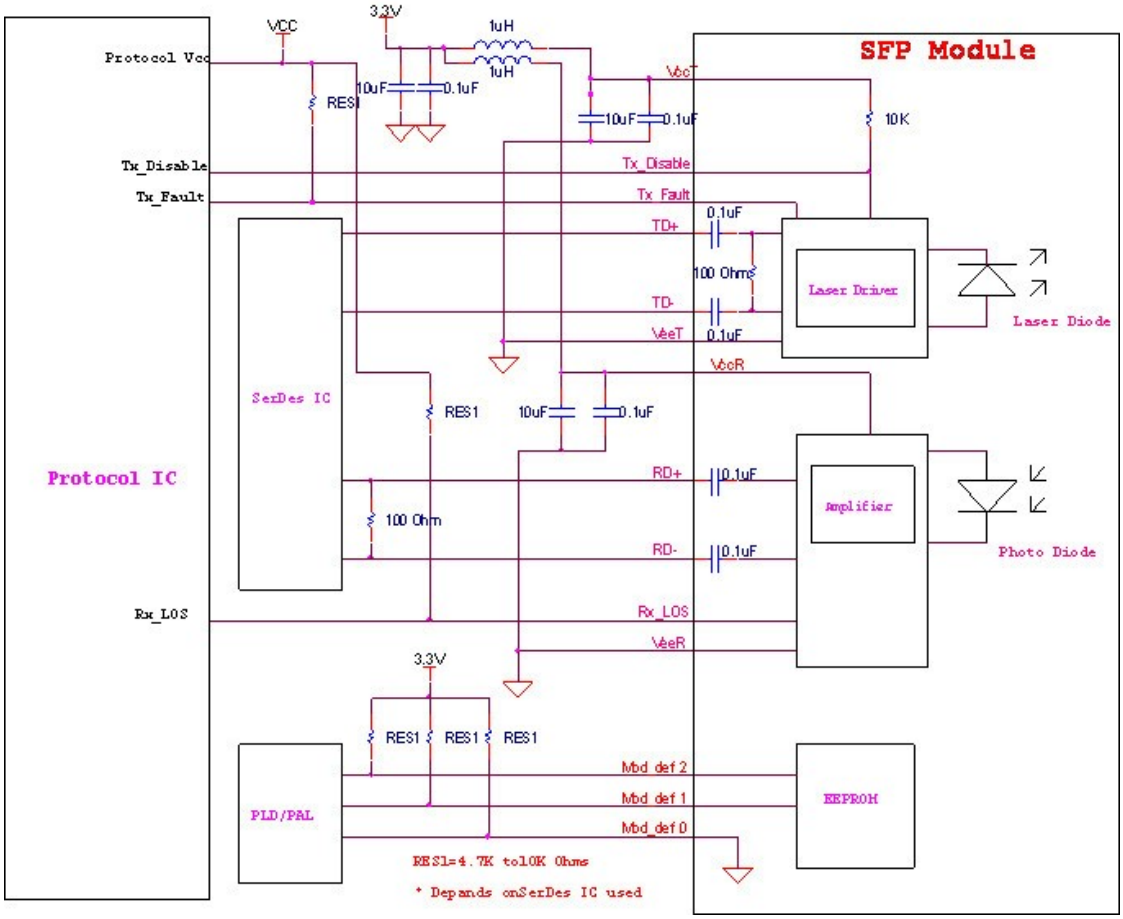


Figure 3. Recommended SFP module circuit schematic.

©2026 E.C.I. Networks Inc. All rights reserved.

MECHANICAL DRAWING

Mechanical Specifications (Unit: mm)

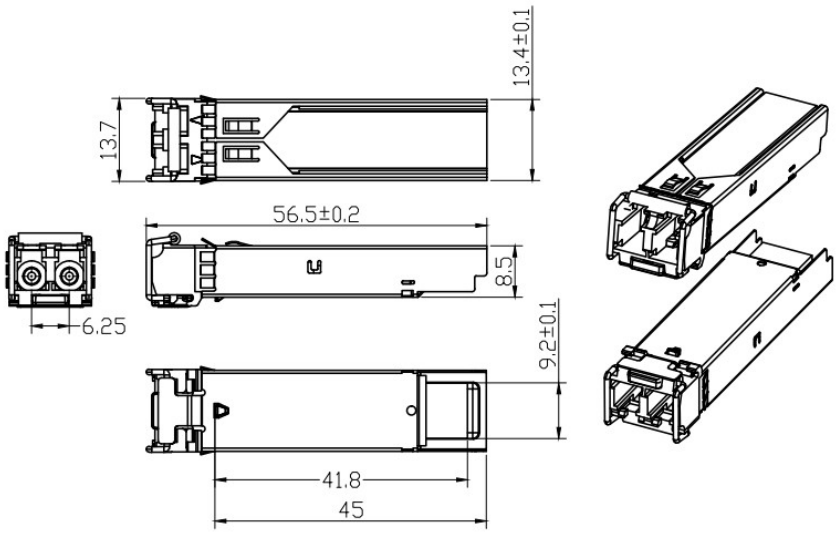


Figure 4. EN-SFP1G-EX mechanical specifications (dimensions in mm).

REGULATORY COMPLIANCE

Regulatory Compliance

Product: EN-SFP1G-EX

Feature	Reference	Performance
Electrostatic discharge (ESD)	IEC/EN 61000-4-2	Compatible with standards
Electromagnetic Interference (EMI)	FCC Part 15 Class B EN 55022 Class B (CISPR 22A)	Compatible with standards
Laser Eye Safety	FDA 21CFR 1040.10, 1040.11 IEC/EN 60825-1，2	Class 1 laser product
Component Recognition	IEC/EN 60950 ，UL	Compatible with standards
ROHS	2002/95/EC	Compatible with standards
EMC	EN61000-3	Compatible with standards

©2026 E.C.I. Networks Inc. All rights reserved.

CONTACT US

LET'S CONNECT

Contact Us

For EN-SFP1G-EX specifications, compatibility and ordering, contact E.C.I. Networks.

WEBSITE	EMAIL	PHONE
ecin.ca	sales@ecin.ca	1-800-967-1672

©2026 E.C.I. Networks Inc. All rights reserved.