Stratos Optical Technologies

LxK-ST11xx Series

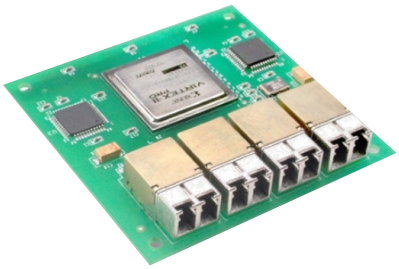
Low Rider RJ Optical Transceiver

1.25 Gbps, 850 nm VCSEL Multimode

The Low Rider RJ transceiver family offers pin-compatible versions to support an easy upgrade path for wavelength, data rate, link distance, or optical performance. Data rate options cover the range from 100 Mbps to 10 Gbps with choice of multimode or singlemode. The transceiver can be ordered with solder mounting posts or with screw posts. In both case the electrical I/O pins are the same: gull wing surface mount and footprint compatible within the entire family. The transceiver is offered with a flat shell, typically used when the device is mid-board mounted, or with an EMI clip that aids in case ground conduction when mounted through a front panel. The transceiver may be ordered with Parylene C conformal coating to provide superior long term reliability in presence of humidity.

Each transceiver in the family contains a an optical transmit and receive function, converting to/from electrical differential signals. Each device contains a laser driver that is calibrated over temperature to provide excellent TX optical performance. The transmit optic may be LED, VCSEL, FP, or DFB technology, depending upon the device part number. The receive optical signal is gain controlled and conditioned to drive the receive differential signals.

Stratos (now Cinch) is the original designer of this form factor, now copied by other suppliers. We have a long history with over 20 years supplying this transceiver family into rugged industrial and defense applications. We offer not only the standard product options as shown in this datasheet, but often can modify certain specifications in order to support your particular requirement. Customization of TX power, extinction ratio, RX sensitivity, operational temperature extension, and fiber pigtail options are common types of modifications.



Application Example:
Low Rider transceivers with FPGA

Features & Benefits

- Miniature rugged optical transceiver
- 1.25 Gbps data rate
- 850 nm multimode VCSEL
- Link distance 550 m
- Half the footprint of Small Form Factor (SFF) device
- Surface Mount I/O pins for high speed signal integrity
- Industrial Temp Range –40C to +85C
- Vibration tolerant design
- Duplex LC receptacle for optical cable
- 3.3 VDC power supply
- Pin compatible “Low Rider RJ Family” footprint

cinch
CONNECTIVITY SOLUTIONS
a bel group

cinch.com

Please read our datasheet & drawing disclaimer here.

General Specification

Parameter	Symbol	Min	Typical	Max	Unit
Storage Temperature	Ts	-55		+100	°C
Operating Temperature	Tc	-40		+85	°C
Supply Voltage	Vcc	3.135	3.3	3.465	V
Supply Current	Icc			300	mA
Lead Solder Temperature (hand solder)[1]				260	°C
Lead Solder Time[1]				10	sec
TX Differential Input Voltage	V_{PP}	0.4	1.25	2.2	V
RX Data Output Load	R_L		50		Ohm

Note:

[1] *Recommend hand solder or hot bar soldering only. Convection or IR reflow oven profiles may damage internal solder joints and optical alignments. See Solder Application Note.*

Conformal Coating Option

Parameter	Value
Specification	MIL-I-46058C, Type XY
Coating	Parylene type C
Deposition	Vacuum deposited
Film Thickness	1 MIL ± 0.0002

Link Distances

Application	Fiber Type	Distance
Gigabit Ethernet IEEE 802.3z	50/125, 500 MHz*km	550 m
Fibre Channel ANSI X3.297	50/125, 500 MHz*km	500 m

© 2025 Cinch Connectivity Solutions

LxK-ST11xx (1.25 Gbps, Gigabit Ethernet, 850 nm multimode)

Transmitter Parameter	Symbol	Min	Typical	Max	Unit
Optical Output Power [1, 2]	P_O	-9.5		-4.0	dBm
Optical Center Wavelength	λ_{OUT}	830	850	860	nm
Spectral Width	$\Delta\lambda_{RMS}$			0.85	nm
Extinction Ratio	ER	9			dB
TX Supply Current	I_{CC}		55	75	mA
Output Optical Rise/Fall (20/80 %)	t_R			260	ps
RIN				-117	dB/Hz
Coupled Power Ratio	CPR	9			dB
Total Jitter			80	153	ps

Notes:

[1] Minimum TX Optical Power can be set at the factory for a higher minimum power, such as -6 dBm. Consult the factory.

[2] BER=1E-12 @ 1.25 Gbps, PRBS7, NRZ

Receiver Parameter	Symbol	Min	Typical	Max	Unit
Optical Sensitivity [1, 2]	P_I	-21.0			dBm
Optical Saturation [1]	P_S			0	dBm
Optical Center Wavelength	λ_{IN}	770		860	nm
Optical Return Loss	ORL	12			dB
Supply Current	I_{CC}		70	120	mA
Signal Detect Assert Time	t_{SDA}	-	10	100	µs
Signal Detect De-Assert Time	t_{SDD}	-	10	350	µs
Signal Detect Assert Level	SD			-21.0	dBm
Signal Detect Hysteresis	HYS	1.5	2.25	3.5	dB
RX Data Out - Low	V_{OL} - V_{CC}	-1.810		-1.475	V
RX Data Out - High	V_{OH} - V_{CC}	-1.165		-0.880	V

Notes:

[1] BER = 1E-12 @ 1.25 Gbps, PRBS7, NRZ and with TX signal ER greater than 8 dB

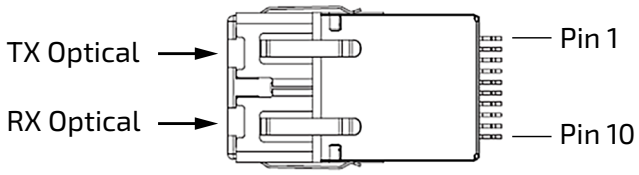
[2] RX Data outputs are squelched when Signal Detect is de-asserted to prevent garbage output when no optical signal is present.

© 2025 Cinch Connectivity Solutions

Specification subject to change without notice.

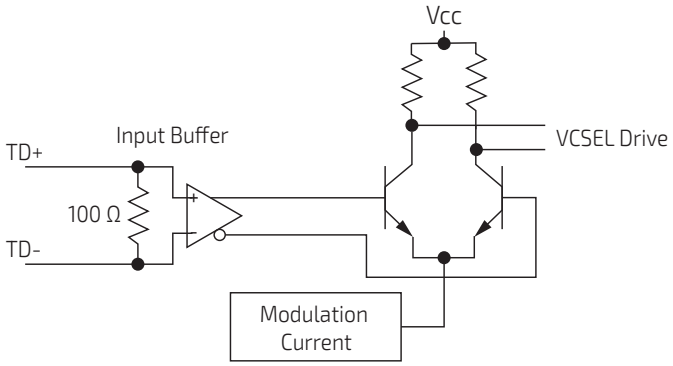
Pin-Out Signal Definition

Top View

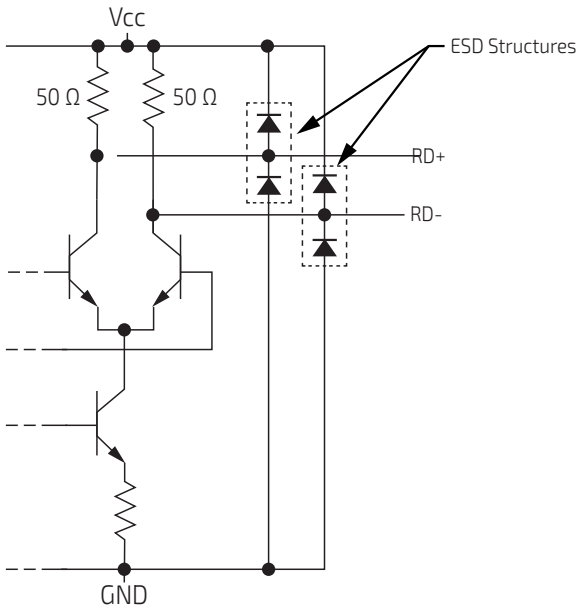


Pin	Symbol	Signal	Description
GP	GP	Chassis	Grounding Posts—Connect to chassis ground
1	TD+	LVPECL	Transmitter DATA IN +
2	VEETX	GND	Transmitter Signal Ground
3	TD-	LVPECL	Transmitter DATA IN -
4	VCCTX	+3.3 VDC	Transmitter Power Supply
5	SD	LVTTL	Signal Detect Output (1 = Detect, 0 = Loss)
6	TDIS	LVTTL	Transmit Disable Input (1 = Disable, 0 = Enable), internal 4.7 kohm pull down (enable)
7	RD+	CML	Receiver DATA OUT +
8	VCCRX	+3.3 VDC	Receiver Power Supply
9	RD-	CML	Receiver DATA OUT -
10	VEERX	GND	Receiver Signal Ground

TD +/- LVPECL Input Stage



RD +/- CML Output Stage

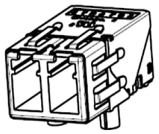


© 2025 Cinch Connectivity Solutions

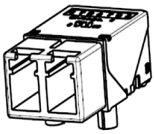
Low Rider Mechanical Details

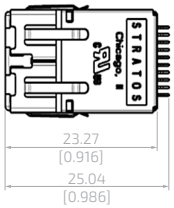
EMI Clip Option

EMI Ground Clip



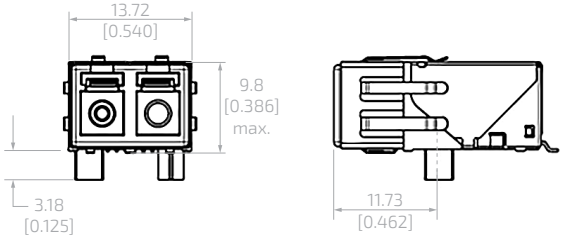
Flat Shell



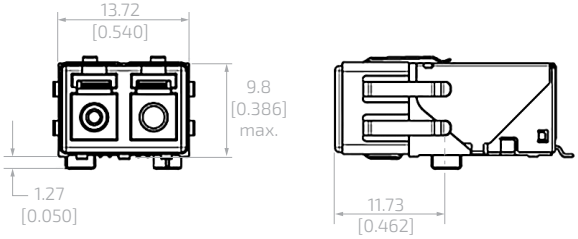


Note: *Recommended panel cut-out for proper EMI ground clip contact is 0.400 x 0.560 inches.*

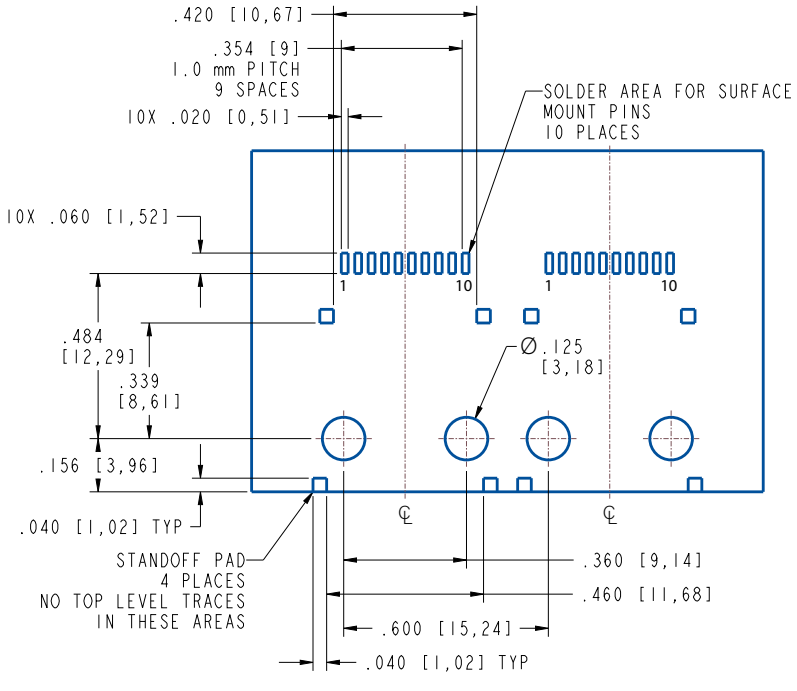
Solder Post



Screw Post



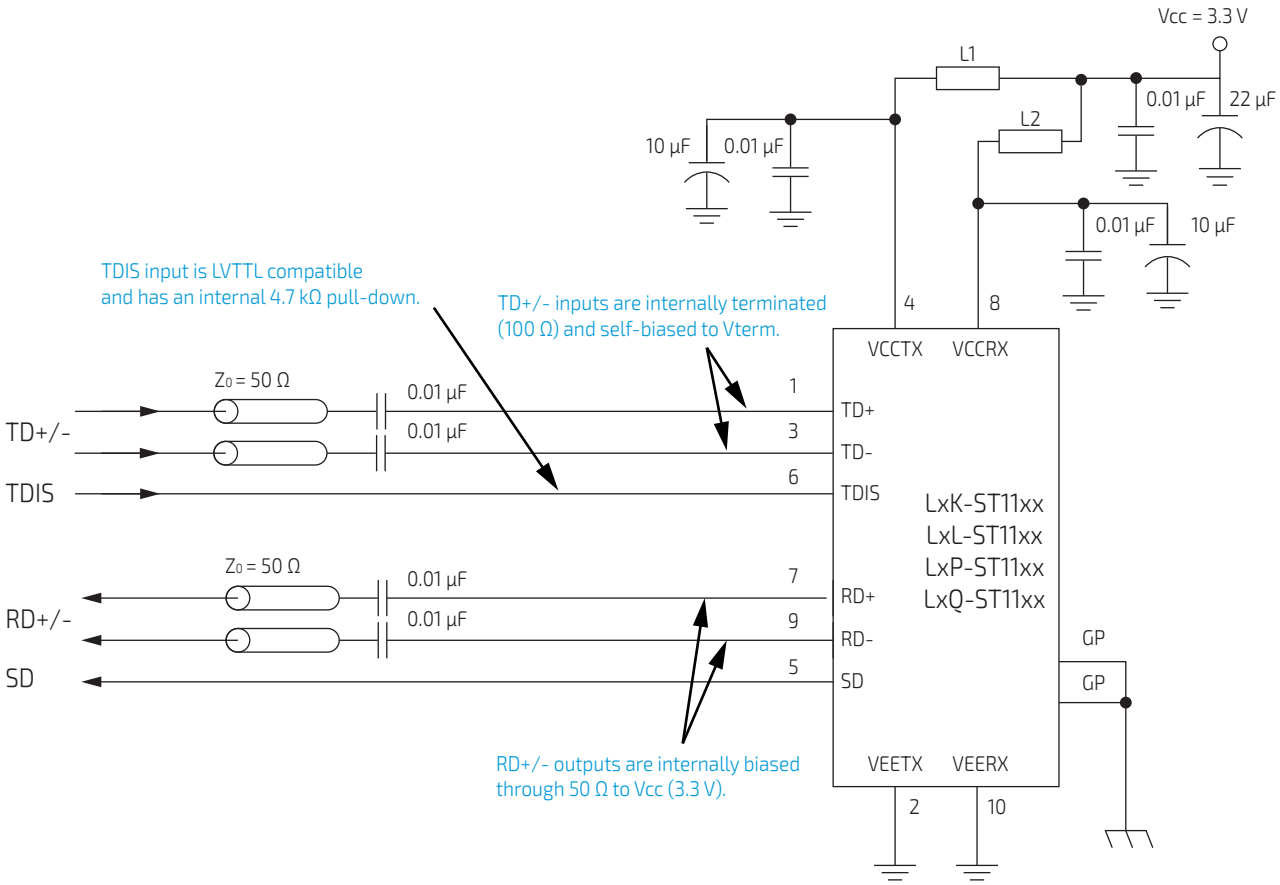
Application Card Footprint Guide



NOTES: 1. DIMENSIONS = INCHES [MM] 2. REF DRAWING 160-00003

© 2025 Cinch Connectivity Solutions

Application Card Footprint Guide



Notes:

1. *L1 and L2 = MuRata BLM21A601S or equivalent (600 Ω at 100 MHz or better).*
2. *Route the differential pairs (TD+/- and RD +/-) together using 50 Ω impedance matched traces.*
3. *Use separate power supply filtering for VCCTX and VCCRX, as shown.*
4. *Use low ESR capacitors such as NPO or COG for AC Coupling of the TD +/- and RD +/- data signals.*
5. *Ground Posts (GP) are isolated from Signal Ground (Vee), and may be connected to Chassis Ground (as shown) or to Signal Ground if a Chassis Ground is not available.*

© 2025 Cinch Connectivity Solutions

RoHS Compliance

The standard Low Rider transceiver products are offered with high reliability internal circuits that use 63/37 tin-lead solder. The product may also be ordered with internal circuits that use SAC305 lead-free alloy, compliant to ROHS R6 requirements.

Part Numbers with internal circuits that contain 63/37 tin-lead solder

Parameter	Flat Shell	EMI Clip	Conf. Coat	Solder Post	Screw Post
LNK-ST11H	X			X	
LNK-ST11M	X		X	X	
LNK-ST11HB	X				X
LNK-ST11MB	X		X		X
LTK-ST11H		X		X	
LTK-ST11M		X	X	X	
LTK-ST11HB		X			X
LTK-ST11MB		X	X		X

Part Numbers with internal circuits that contain SAC305 lead-free alloy solder (RoHS compliant)

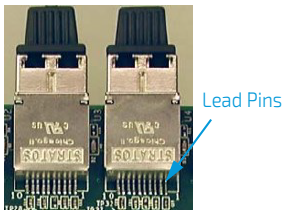
Parameter	Flat Shell	EMI Clip	Conf. Coat	Solder Post	Screw Post
LNK-ST11H-R6	X			X	
LNK-ST11M-R6	X		X	X	
LNK-ST11HB-R6	X				X
LNK-ST11MB-R6	X		X		X
LTK-ST11H-R6		X		X	
LTK-ST11M-R6		X	X	X	
LTK-ST11HB-R6		X			X
LTK-ST11MB-R6		X	X		X

© 2025 Cinch Connectivity Solutions

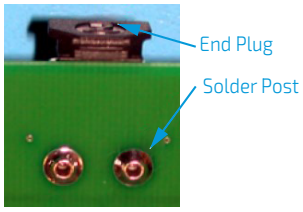
Solder Post Application Note

Each transceiver is shipped with a plastic molded boot or end plug. The end plug should remain in place during installation, soldering, and cleaning to protect the optical lenses from contamination. The end plug is designed and tested to maintain seal under IPC standard water wash processes and will withstand heated and/or ultrasonic solvent cleaning processes for up to 2 minutes before elasticity is compromised.

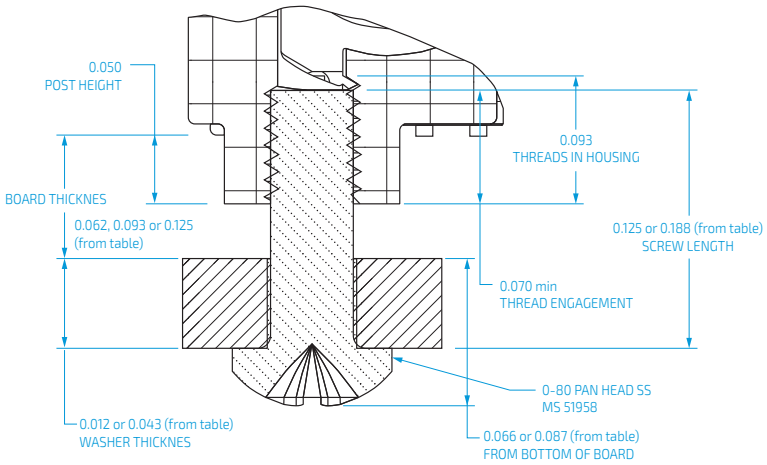
Electrical Lead Pins Solder Profile 260°C / 10 s (Hand Solder)



Solder Post Mount Solder Profile 450°C/ 10 s (Hand Solder)



Screw Post Application Note



Torque

Torque screws to 7 to 9 in-oz for a clamping force of 36 to 47 lbs per screw. Do not exceed 16 in-oz torque per screw.

PCB Nominal Thickness	Screw Length	Washer Thickness	Screw/Washer Height	Cinch PN Washer	Cinch PN Screw
0.062 in ± 0.005	0.125 in	0.043 in	0.087 in	751-00002	618-00001
0.093 in ± 0.005	0.125 in	0.012 in	0.066 in	751-00001	618-00001
0.125 in ± 0.005	0.188 in	0.043 in	0.087 in	751-00002	618-00002

Notes:

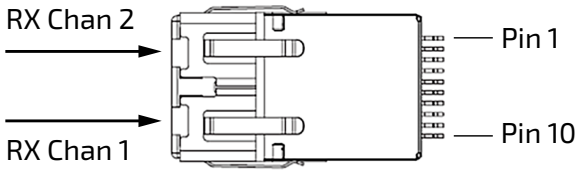
1. *Customer may choose any type 0-80 Stainless Steel (SS) screw configuration (pan head, flat head, hex head, etc.) as long as the thread engagement is less than 0.093 inches max into the transceiver housing.*
2. *Customer can order 0-80 SS pan head screws and washers from table above, sorted by standard PCB thickness. Order two each washers and screws for each optical transceiver.*

© 2025 Cinch Connectivity Solutions

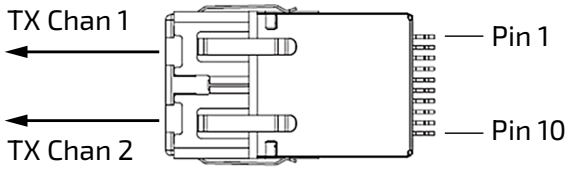
Dual Port Configurations

Low Rider RJ transceivers can be ordered with two TX channels or two RX channels, instead of a single port TX and RX combination. Consult the factory.

Dual RX Option



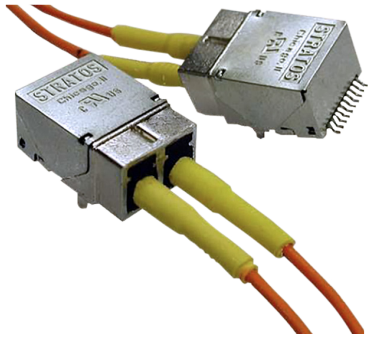
Dual TX Option



Fiber Pigtail Option

The Low Profile RJ optical transceiver can be ordered with permanently attached fiber pigtails. The fiber pigtails are customized to the customer's application and can vary in length from as short as 3 inches to as long as 50 inches, possibly longer dependent upon the application.

The fiber pigtail optical connector may be selected from a wide variety of industry supported optical termini. Almost any combination is possible, as long as the termini components are available and supported by the OEM. Common termini components selected by customers include industry standard LC, SC, FC, ST, 29504, PHD, and others. Consult the factory.



© 2025 Cinch Connectivity Solutions

LxK-ST11xx Series

Low Rider RJ Optical Transceiver

Stratos Optical Technologies

Low Rider Family Part Numbering, Footprint Compatible

Pick a base part number from Table A or Table B, then complete the PN by selecting the EMI clip, coating and mounting option.

Table A — Multimode Base Part Selection Guide

Part Number [1,2]	Rate	Typical App	Wavelength	Min TX	Min RX	Distance [3]
LxF-LP11xx	125 Mbps	Fast Ethernet	1310 nm	-20 dBm	-32 dBm	2000 m
LxK-ST11xx	1.25 Gbps	Gigabit Ethernet	850 nm	-9.5 dBm	-21 dBm	850 m
LxL-LT1Axx	2.125 Gbps	Fiber Channel	1310 nm	-9.5 dBm	-20 dBm	500 m
LxL-ST11xx	2.125 Gbps	Fiber Channel	850 nm	-10 dBm	-15 dBm	500 m
LxP-ST11xx	2.5 Gbps	Infiniband	850 nm	-10 dBm	-15 dBm	400 m
LxS-ST11xx	4.25 Gbps	4x Fiber Channel	850 nm	-4 dBm	-11 dBm	350 m
Lx10G-ST11xx	10.3 Gbps	10G Ethernet	850 nm	-4 dBm	-11 dBm	300 m

Table B — Singlemode Base Part Selection Guide

Part Number [1,2]	Rate	Typical App	Wavelength	Min TX	Min RX [4]	Distance [3]
LxK-LT12xx	1.25 Gbps	Gigabit Ethernet	1310 nm	-9.5 dBm	-20 dBm	10 km
LxL-LT12xx	2.125 Gbps	Fiber Channel	1310 nm	-9.5 dBm	-20 dBm	10 km
LxP-LT12xx	2.5 Gbps	Infiniband	1310 nm	-10 dBm	-18 dBm	10 km
Lx10G-LT12xx	10.3 Gbps	10G Ethernet	1310 nm	-10 dBm	-14 dBm	10 km

Notes:

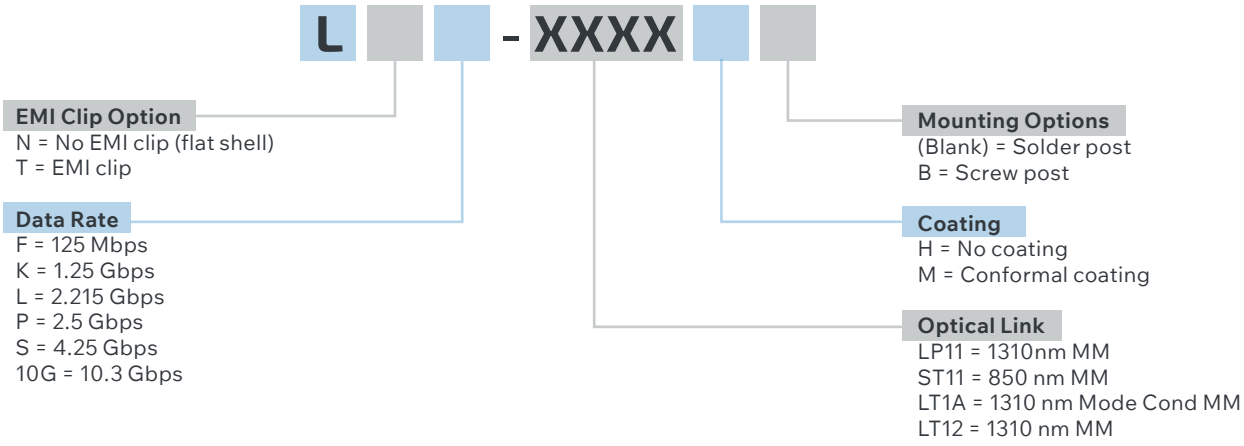
[1] The Part number is completed by using the Configuration Options Guide.

[2] All Low Rider transceivers and are form/fit and pin compatible for easy upgrade/downgrade path

[3] Link distance is a typical value when using standard fiber types with nominal connector losses

[4]

Configuration Options Guide



Note: *Pick a base part number from Table A or Table B, then complete the PN by selecting the EMI clip, coating and mounting option.*

cinch CONNECTIVITY SOLUTIONS a bel group

Asia Pacific
+86 21 5442 7668
ccs.asia.sales@as.cinch.com

Europe, Middle East & Africa
+44 (0) 1245 342060
CinchConnectivity@eu.cinch.com

North America
+1 321 308 4100
ccsorders@us.cinch.com

cinch.com

© 2025 Cinch Connectivity Solutions

Specification subject to change without notice.