3405 Optical SFP Series
3G/HD/SD/ASI EO/OE/OO SFPs

The Evertz 3405 series SFPs are used in the 3405 and 3505 series of mounting frames, and 7708SFP series of card–based SFP carriers. Depending on the model, these SFPs support optical transmit, receive or regenerator functions. Reclocked versions support standard SMPTE rates for 3G/HD/SD/ASI signals, while non–reclocked versions support other rates such as MADI.
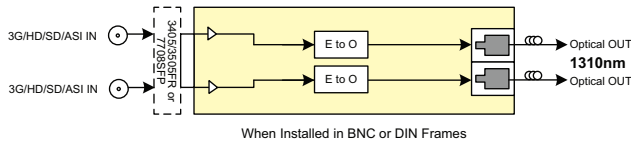
For appropriate mounting frames, please also see the 3405FR and 3505FR series frames, which are available in standalone and rackmount solutions to accommodate 2–64x SFP modules.

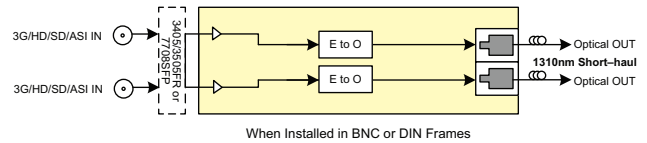▶ **Optical Transmitter SFPs**

3405T13–2
Dual–channel SFP optical transmitter with standard 1310nm lasers. Non–reclocked, with support for 3G, HD, SD and ASI plus other rates such as MADI.

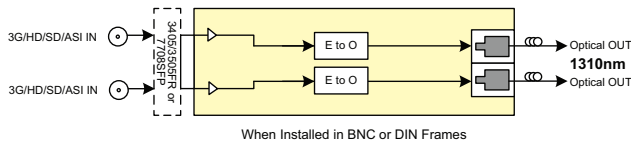*When Installed in BNC or DIN Frames*

3405T13–2–S
Dual–channel SFP optical transmitter with short–haul 1310nm lasers. Non–reclocked, with support for 3G, HD, SD and ASI plus other rates such as MADI. For use in intra–facility and multimode fiber applications.

When Installed in BNC or DIN Frames

3405T13–2–12G
Dual–channel SFP optical transmitter with standard 1310nm lasers. Non–reclocked, with support for 12G, 3G, HD, SD and ASI plus other rates such as MADI.

When Installed in BNC or DIN Frames

3405TXX/YY–2
Dual–channel SFP optical transmitter with short–haul 1310nm lasers. Non–reclocked, with support for 3G, HD, SD and ASI plus other rates such as MADI. For use in intra–facility and multimode fiber applications.
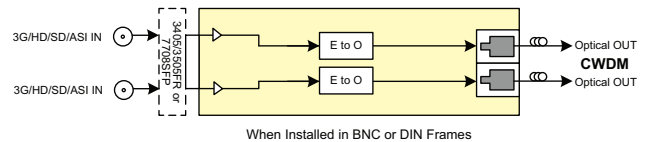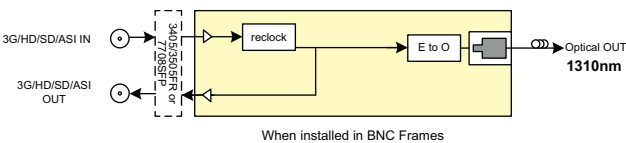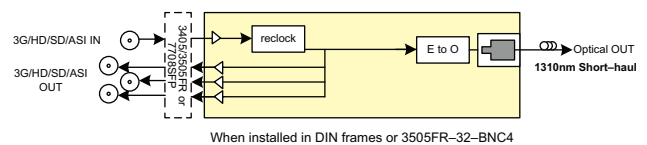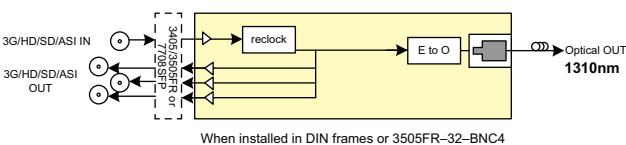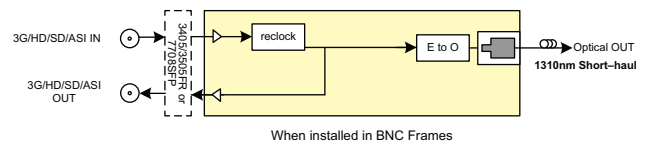

When Installed in BNC or DIN Frames

3405T13–R
Single–channel SFP optical transmitter with standard 1310nm laser. Reclocked with support for 3G, HD, SD and ASI. Single electrical loop–out when installed in a BNC frame, triple electrical loop–out when installed in a frame with DIN 1.0/2.3 connectors.

When installed in BNC Frames

When installed in DIN frames or 3505FR–32–BNC4

3405T13–R–S
Single–channel SFP optical transmitter with short–haul 1310nm laser. Reclocked with support for 3G, HD, SD and ASI. Single electrical loop–out when installed in a BNC frame, triple electrical loop–out when installed in a frame with DIN 1.0/2.3 connectors. For use in intra–facility and multimode fiber applications.

When installed in BNC Frames

When installed in DIN frames or 3505FR–32–BNC4

3405TXX–R
Single–channel SFP optical transmitter with CWDM laser, available in 16x G.694.2–compliant wavelengths from 1270–1610nm. Reclocked with support for 3G, HD, SD and ASI. Single electrical loop–out when installed in a BNC frame, triple electrical loop–out when installed in a frame with DIN 1.0/2.3 connectors.
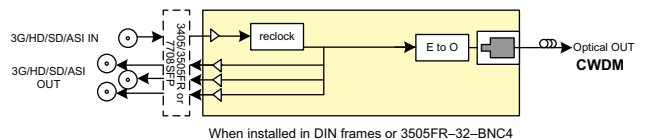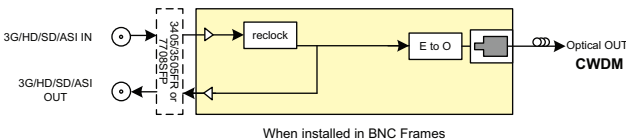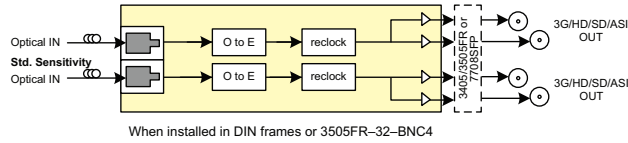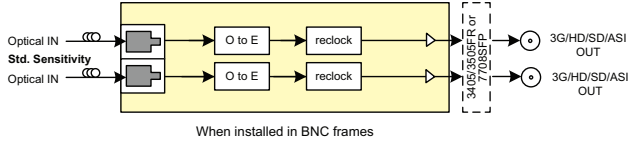

When installed in BNC Frames

When installed in DIN frames or 3505FR–32–BNC4
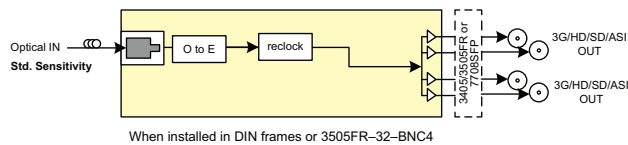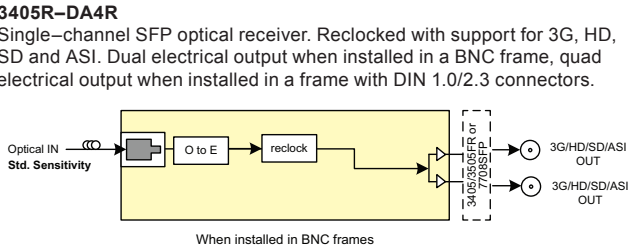
▶ Optical Receiver SFPs

3405R–2R

Dual–channel SFP optical receiver. Reclocked with support for 3G, HD, SD and ASI. Single electrical output per optical input when installed in a BNC frame, dual electrical output per optical input when installed in a frame with DIN 1.0/2.3 connectors.

When installed in BNC frames

When installed in DIN frames or 3505FR–32–BNC4

3405R–2–12G

Dual–channel SFP optical receiver. Non–reclocked, with support for 12G, 3G, HD, SD and ASI plus other rates such as MADI. Single electrical output per optical input when installed in a BNC frame, dual electrical output per optical input when installed in a frame with HD–BNC connectors.

3405R–DA4R

Single–channel SFP optical receiver. Reclocked with support for 3G, HD, SD and ASI. Dual electrical output when installed in a BNC frame, quad electrical output when installed in a frame with DIN 1.0/2.3 connectors.

When installed in BNC frames

When installed in DIN frames or 3505FR–32–BNC4

3405R–2

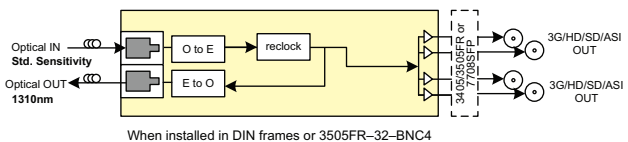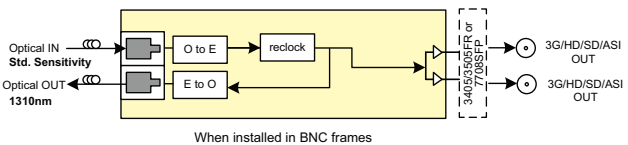Dual–channel SFP optical receiver. Non–reclocked, with support for 3G, HD, SD and ASI plus other rates such as MADI. Single electrical output per optical input when installed in a BNC frame, dual electrical output per optical input when installed in a frame with DIN 1.0/2.3 connectors.

When installed in BNC frames

When installed in DIN frames or 3505FR–32–BNC4

3405R–DA4R–H

Single–channel SFP optical high–sensitivity receiver. Reclocked with support for 3G, HD, SD and ASI. Dual electrical output when installed in a BNC frame, quad electrical output when installed in a frame with DIN 1.0/2.3 connectors.

When installed in BNC frames

When installed in DIN frames or 3505FR–32–BNC4

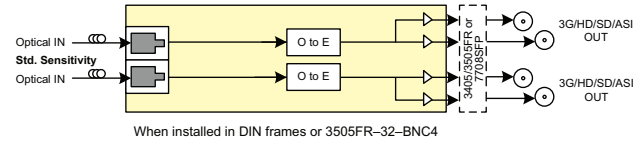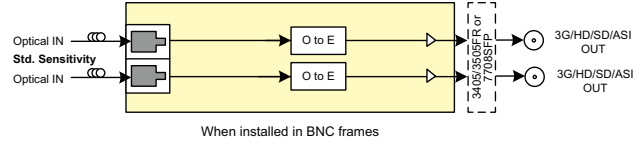## ▶ Optical Regenerator/Wavelength Shifter SFPs

3405OO13–DA4

Single–channel SFP optical regenerator with standard 1310nm laser. Reclocked optical and electrical outputs with support for 3G, HD, SD and ASI. Dual electrical output when installed in a BNC frame, quad electrical output when installed in a frame with DIN 1.0/2.3 connectors.

When installed in BNC frames

When installed in DIN frames or 3505FR–32–BNC4

3405OO13–DA4–H

Single–channel SFP optical regenerator with standard 1310nm laser and high–sensitivity receiver. Reclocked optical and electrical outputs with support for 3G, HD, SD and ASI. Dual electrical output when installed in a BNC frame, quad electrical output when installed in a frame with DIN 1.0/2.3 connectors.

When installed in BNC frames

When installed in DIN frames or 3505FR–32–BNC4

3405OOXX–DA4

Single–channel SFP optical regenerator with standard 1310nm laser and high–sensitivity receiver. Reclocked optical and electrical outputs with support for 3G, HD, SD and ASI. Dual electrical output when installed in a BNC frame, quad electrical output when installed in a frame with DIN 1.0/2.3 connectors.
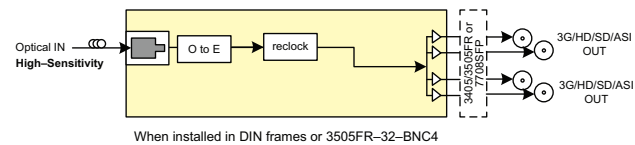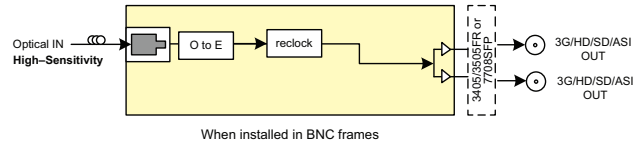

When installed in BNC frames

When installed in DIN frames or 3505FR–32–BNC4

3405OOXX–DA4–H

Single–channel SFP optical regenerator with high–sensitivity receiver and CWDM laser, available in 16x G.694.2–compliant wavelengths from 1270–1610nm. Reclocked optical and electrical outputs with support for 3G, HD, SD and ASI. Dual electrical output when installed in a BNC frame, quad electrical output when installed in a frame with DIN 1.0/2.3 connectors.
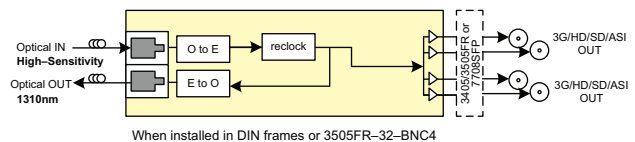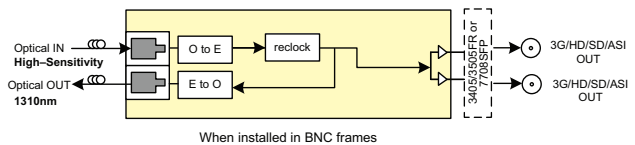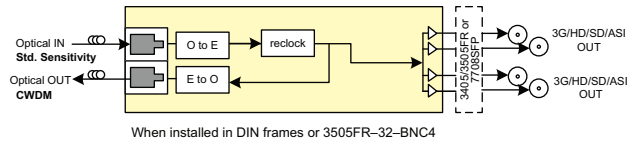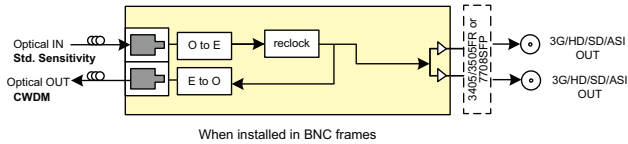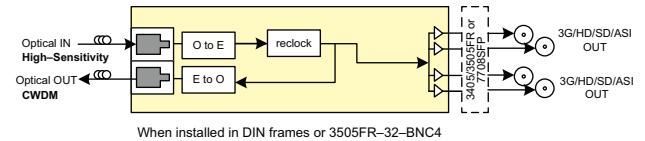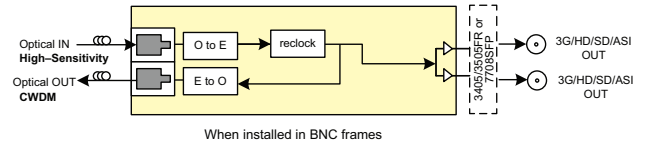

When installed in BNC frames

When installed in DIN frames or 3505FR–32–BNC4

▶ Specifications

Optical Output:

Number of Outputs:	Up to 2x per SFP
Connector:	LC/UPC
Fiber:	Compatible with Singlemode or 50/62.5um Multimode

Optical Power:
Standard 1310nm:	–2dBm ± 1dBm
–S (Short haul 1310nm):	–7dBm ± 1dBm
CWDM:	+4dBm ± 1.5dBm

Wavelength:
Standard & –S:	1310nm
CWDM:	1270–1610nm, ITU–T G.694.2 compliant

Optical Input:

Number of Inputs:	Up to 2x per SFP
Connector:	LC/UPC
Fiber:	Compatible with Singlemode or 50/62.5um Multimode
Operating Wavelength:	1270–1610nm

Maximum Input Power:
Standard:	–1dBm
High–Sensitivity:	–7dBm

Optical Sensitivity:

Standard:	–21dBm at 2.97Gb/s pathological Level A, –23dBm at 2.97Gb/s color bars
High–Sensitivity:	–28dBm at 2.97Gb/s pathological Level A, –30dBm at 2.97Gb/s color bars

Electrical Inputs:

Reclocked Standards:	SMPTE ST 424M (3 Gb/s), SMPTE ST 292M (1.5Gb/s), SMPTE ST 259M (270Mb/s), DVB–ASI
Connector:	BNC or DIN 1.0/2.3, depending on model of 3405/3505 frame
Impedance:	75Ω (nominal)
Equalization:	Automatic to 80m @ 3 Gb/s, 100m @ 1.5Gb/s, 250m @ 270Mb/s (with Belden 1694A or equivalent cable)
Return Loss:	> 15dB up to 1.5GHz, > 10dB up to 3GHz

Electrical Outputs:

Connector:	BNC or DIN 1.0/2.3, depending on model of 3405/3505 frame
Impedance:	75Ω (nominal)
Signal Level:	800mV (nominal)
DC Offset:	0V ± 0.5V

Rise and Fall Time (reclocked SFPs only):
HD/3G:	< 135ps
SD:	< 900ps

Overshoot (reclocked SFPs only):
	< 10% of amplitude

Return Loss:	> 15dB to 1.5GHz, > 10dB to 3GHz

Alignment Jitter (reclocked SFPs only):
	< 0.2UI to 1.485Gb/s, < 0.3UI to 2.97Gb/s

Physical:	SFP form–factor

Compliance:

Laser Safety:	Class 1 laser product, Complies with 24 CFR 1040.10 and 1040.11, IEC 60825–1
EMI/RFI:	Complies with FCC part 15, Class A Complies with EU EMC directives

▶ Ordering Information

3405T13–2	Dual–channel SFP optical transmitter with standard 1310nm lasers, non–reclocked
3405T13–2–A	Dual–channel SFP optical transmitter with standard 1310nm lasers, non–reclocked, with loop out
3405T13–2–S	Dual–channel SFP optical transmitter with short–haul 1310nm lasers, non–reclocked
3405TXX/YY–2	Dual–channel SFP optical transmitter with CWDM lasers (1270–1610nm), non–reclocked
3405T13–R	Single–channel SFP optical transmitter with standard 1310nm laser, reclocked
3405T13–R–S	Single–channel SFP optical transmitter with short–haul 1310nm laser, reclocked
3405TXX–R	Single–channel SFP optical transmitter with CWDM laser (1270–1610nm), reclocked
3405R–2R	Dual–channel SFP optical receiver, reclocked
3405R–2	Dual–channel SFP optical receiver, non–reclocked
3405R–DA4R	Single–channel SFP optical receiver, reclocked
3405R–DA4R–H	Single–channel SFP optical high–sensitivity receiver, reclocked
3405OO13–DA4	Single–channel SFP optical regenerator with standard 1310nm laser, reclocked
3405OO13–DA4–H	Single–channel SFP optical regenerator with standard 1310nm laser and high–sensitivity receiver, reclocked
3405OOXX–DA4	Single–channel SFP optical regenerator with CWDM laser (1270–1610nm), reclocked
3405OOXX–DA4–H	Single–channel SFP optical regenerator with high–sensitivity receiver and CWDM laser (1270–1610nm), reclocked

* Multimode applications require a 5dB optical attenuator at the output of all transmitting ports, except when –S short haul version transmitter SFPs are used. XX versions include the following: 27, 29, 31, 33, 35, 37, 43, 45, 47, 49, 51, 53, 55, 57, 59, 61; XX/YY versions include the following: 27/29, 31/33, 35/37, 43/45, 47/49, 51/53, 55/57, 59/61. See CWDM wavelength ordering information.

Enclosures:	*See the appropriate catalogue pages enclosure options.*
3405FRM–BNC	Miniature SFP frame, single SFP capacity, BNC connectors
3405FRM–DIN	Miniature SFP frame, single SFP capacity, DIN 1.0/2.3 connectors
3405FRS–BNC	Standalone SFP frame, with SNMP monitoring and control, 4x SFP capacity, BNC connectors
3405FR–BNC	1RU SFP frame, optional SNMP monitoring and control, 16x SFP capacity, BNC connectors
3405FR–DIN	1RU SFP frame, optional SNMP monitoring and control, 16x SFP capacity, DIN 1.0/2.3 connectors
3405FR–XLINK	1RU SFP frame, optional SNMP monitoring and control, 16x SFP capacity, X–LINK connector
3505FR–32–BNC4	2RU SFP frame, optional SNMP monitoring and control, 32x SFP capacity, BNC connectors
3505FR–64–BNC2	2RU SFP frame, optional SNMP monitoring and control, 64x SFP capacity, BNC connectors
3505FR–DIN	2RU SFP frame, optional SNMP monitoring and control, 64x SFP capacity, DIN 1.0/2.3 connectors
3505FR–XLINK	2RU SFP frame, optional SNMP monitoring and control, 64x SFP capacity, X–LINK connectors
7708SFP	Card–based SFP carrier for 7700/7800FR series frames, single SFP capacity, BNC connectors
7708SFP–2	Card–based SFP carrier for 7700/7800FR series frames, 2x SFP capacity, BNC connectors
7708SFP–2–DIN	Card–based SFP carrier for 7700/7800FR series frames, 2x SFP capacity, DIN 1.0/2.3 connectors
7708SFP–4–DIN–A	Card–based SFP carrier for 7700/7800FR series frames, 4x SFP capacity, DIN 1.0/2.3 connectors

Accessories:

J/LC/LC/ATTEN–5dB	5dB optical attenuator, required for multimode applications when standard 1310nm SFPs are used

The Complete Solution Provider

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