



**ETL Systems**  
Excelling in RF Engineering

Model Number:  
SRY-C800-1U, SRY-OAC-13-801,  
SRY-OAC-18-803,  
SRY-OAC-22-802

# StingRay RF over Fibre

## Optical Amplifiers DWDM

(Dense Wavelength Division Multiplexing) System

The StingRay range of optical amplifiers compensate for module loss and boost the optical power to extend the transmission distance of signals carried up to 500 km.

Optical amplifiers should be used with StingRay DWDM 200 Series of RF over fibre units, which are designed to provide compact fibre links, with up to forty wavelengths on a single fibre cable. The modules benefit from a high and wide dynamic range with automatic link optimisation ensuring high quality RF over fibre transmission.

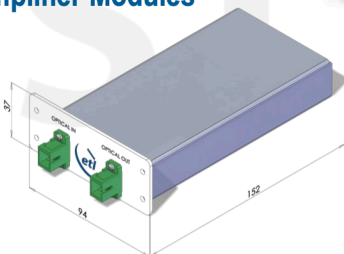
The StingRay optical amplifier system comprises of either a pre-amplifier module, a post-amplifier module or an inline amplifier module designed to operate within the 1U SRY-C800-1U chassis. Other chassis are available.

### Typical applications:

- Linking back-up sites to the main sites. For disaster recovery and weather effects.
- Long distance distribution of comms traffic across site with minimal loss - up to 500 km distances
- Ku-band and Ka-band ready for HTS applications
- General satcoms— teleports, video head-ends, TVRO
- Compact solution for small quantity links such as tactical HQ



### Amplifier Modules



**Signal boost** up to 22 dBm output power.



**500 km transmission distance** when used with StingRay DWDM fibre modules. Available to compensate for span lengths up to 90 km



**1550 nm** typical operating wavelength

DCM modules housed in separate 1U chassis

### EDFA Chassis



**Remote control & monitoring** via RJ45 Ethernet port with SNMP & web browser interface



**Compact** amplifier modules housed in a 1U high chassis



**Resilience** from dual redundant power supplies & hot-swap amplifier modules



**Dry contact alarm port** for power supply & amplifier status



**Local control & monitoring** via front panel push buttons & display





### Optical Parameters - Optical Amplifier Modules

| Model Number                             |             | SRY-OAC-13-801-XX<br>Optical Pre-Amplifier                                                                         | SRY-OAC-22-802-XX<br>Optical Post-Amplifier                                               | SRY-OAC-18-803-XX<br>Optical Line Amplifier                                              |
|------------------------------------------|-------------|--------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
| Spec Version                             |             | 1.3                                                                                                                | 1.2                                                                                       | 1.0                                                                                      |
| Optical Specification                    |             |                                                                                                                    |                                                                                           |                                                                                          |
| Operating Wavelength                     | Minimum     | 1529 nm                                                                                                            | 1529 nm                                                                                   | 1529 nm                                                                                  |
|                                          | Typical     | 1550 nm                                                                                                            | 1550 nm                                                                                   | 1550 nm                                                                                  |
|                                          | Maximum     | 1561 nm                                                                                                            | 1561 nm                                                                                   | 1561 nm                                                                                  |
| Output Optical Power                     | (Saturated) | Typ 13 dBm                                                                                                         | Typ 22 dBm<br>(In APC mode, the output power is fixed and settable from +12dBm to +22dBm) | Max 18 dBm<br>In APC mode, the output power is fixed and settable from +12 dBm to +18dBm |
| Input Optical Power                      | Minimum     | -30 dBm                                                                                                            | -10 dBm                                                                                   | -15 dBm                                                                                  |
|                                          | Maximum     | -10 dBm                                                                                                            | +6 dBm                                                                                    | +12 dBm                                                                                  |
| Gain<br>(Can be set in AGC mode)         | Minimum     | 20 dB                                                                                                              | 17 dB                                                                                     | 6 dB                                                                                     |
|                                          | Typical     | 23 dB                                                                                                              | 20dB                                                                                      | 14 dB                                                                                    |
|                                          | Maximum     | 26 dB                                                                                                              | 23 dB                                                                                     | 18 dB                                                                                    |
| Gain Flatness                            | Maximum     | 1.5 dB                                                                                                             | 1.5 dB                                                                                    | 1.5 dB                                                                                   |
| Noise Figure                             | Typical     | 5 dB                                                                                                               | 5 dB                                                                                      | 4.5                                                                                      |
| Output Power Stability                   | Typical     | ±0.05                                                                                                              | ±0.05                                                                                     | ±0.05                                                                                    |
|                                          | Max         | ±0.1                                                                                                               | ±0.1                                                                                      | ±0.1                                                                                     |
| Return Loss (RL)                         |             | -45 dB                                                                                                             | -45 dB                                                                                    | -45 dB                                                                                   |
| Polarization dependent gain              | Max         | 0.3 dB                                                                                                             | 0.3 dB                                                                                    | 0.3 dB                                                                                   |
| Polarisation mode dispersion (ps)        | Max         | 0.5                                                                                                                | 0.5                                                                                       | 0.5                                                                                      |
| Input & output ports                     |             | FC/APC or SC/APC                                                                                                   |                                                                                           |                                                                                          |
| Electrical Specifications                |             |                                                                                                                    |                                                                                           |                                                                                          |
| Power Consumption                        |             | 10W typical, dual fused IEC                                                                                        |                                                                                           |                                                                                          |
| PSU Redundancy                           |             | Redundant supplies to module (Diode OR)                                                                            |                                                                                           |                                                                                          |
| Alarms                                   |             | Pump failure & temperature                                                                                         |                                                                                           |                                                                                          |
| Remote Control & Monitoring, via Chassis |             | Serial (RS232 or RS422/485) and Ethernet (RJ45) on Rear Panel—Monitoring and control by serial command or Web Page |                                                                                           |                                                                                          |
| MTBF                                     |             | > 100,000 hours                                                                                                    |                                                                                           |                                                                                          |
| Environmental Conditions                 |             |                                                                                                                    |                                                                                           |                                                                                          |
| Operating Temperature                    |             | -5°C to + 60°C                                                                                                     |                                                                                           |                                                                                          |
| Storage Temperature                      |             | -40°C to + 80°C                                                                                                    |                                                                                           |                                                                                          |
| Location                                 |             | Indoor Use only                                                                                                    |                                                                                           |                                                                                          |
| Humidity                                 |             | 10 to 85% non-condensing (Relative Humidity)                                                                       |                                                                                           |                                                                                          |
| Altitude                                 |             | 10,000 feet AMSL (Above Mean Sea Level)                                                                            |                                                                                           |                                                                                          |
| Physical Dimensions & Parameters         |             |                                                                                                                    |                                                                                           |                                                                                          |
| Weight                                   |             | 0.3kg                                                                                                              |                                                                                           |                                                                                          |
| Dimensions                               |             | 37mm high x 152mm deep x 94mm wide (Fit Stingray 800 series Chassis)                                               |                                                                                           |                                                                                          |
| Front Panel Colour                       |             | RAL9003– White (Semi-Matte)                                                                                        |                                                                                           |                                                                                          |



| Parameters - EDFA Chassis                      |     |                                                                                                                     |
|------------------------------------------------|-----|---------------------------------------------------------------------------------------------------------------------|
| Model Number                                   |     | SRY-C800-1U<br>EDFA (Erbium Doped Fibre Amplifier) chassis                                                          |
| Capacity                                       | OAC | 2 x Module of type SRY-OAC-xx-xxx-xx                                                                                |
| Input & Output ports                           |     | SC/APC or FC/APC                                                                                                    |
| Wavelength range                               |     | Module dependant                                                                                                    |
| PSU Power                                      |     | 100-240VAC 50/60Hz, dual fused IEC                                                                                  |
| PSU Redundancy                                 |     | Hot Swap Dual Redundant and Alarmed, Diode OR                                                                       |
| AC consumption                                 |     | 50 W, Max. consumption at steady state                                                                              |
| Alarms                                         |     | Dry Contact (D-Type) & Ethernet (RJ45), PSU & Amplifier Status                                                      |
| Remote Control & Monitoring                    |     | Serial (RS232 or RS422/485) and Ethernet (RJ45) on Rear Panel. Monitoring and control by serial command or Web page |
| Environmental Conditions (amplifier & chassis) |     |                                                                                                                     |
| Operating Temperature                          |     | 0 to 45°C                                                                                                           |
| Storage Temperature                            |     | - 40°C to +80°C                                                                                                     |
| Location                                       |     | Indoor use only                                                                                                     |
| Humidity                                       |     | 10 to 85% non-condensing, relative humidity                                                                         |
| Altitude                                       |     | 10,000 feet Above Mean Sea Level (AMSL)                                                                             |
| Physical Dimensions & Parameters               |     |                                                                                                                     |
| Weight                                         |     | 6.5 Kg                                                                                                              |
| Dimensions                                     |     | 1U High x 450mm deep x 19" wide                                                                                     |
| Front Panel Colour                             |     | RAL9003-White (Semi-Matte)                                                                                          |

Note 1: The specification is subject to regular reviews and will be updated from time to time as part of our continuing product development and improved spec accuracy.

Note 2: Operation beyond the quoted limits stated above may cause instantaneous and permanent damage.