



SRY Compact Fibre System Summary

An optical transmit and receive RF over fibre system, with options to cover 500 to 3150 MHz, for links up to 10km.

The ODU is built in a compact and ruggedised EMC sealed housing and the IDU can either be a standard 19" rack mount chassis or also in an ODU housing making for an overall more ruggedised compact solution. The fibre system consists of up to 6 transmission paths. These can be a combination of uplinks, downlinks, 10MHz or Ethernet, with a variety of connector options and configurations, (Please see the table on page 3 for more details). IP65 rated DC PSUs for the Outdoor unit can be supplied as can optical cross site cables.

Indoor



Wide range of frequencies
For uplink and downlink

Variable gain
on Rx and Tx modules
for enhanced signal
control

IDU M&C
Via dual RJ45
connectors



10MHz reference
Signal input for up & downlinks via
external input or multiplexed with L-band
input

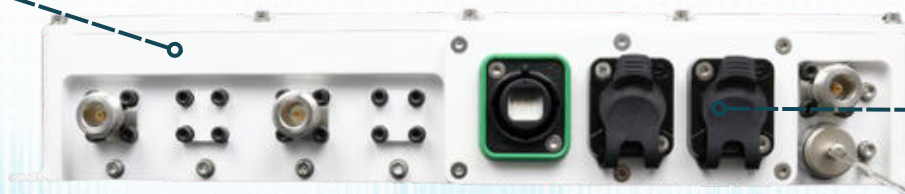
Outdoor



IP65 rated
Weatherproof
housing

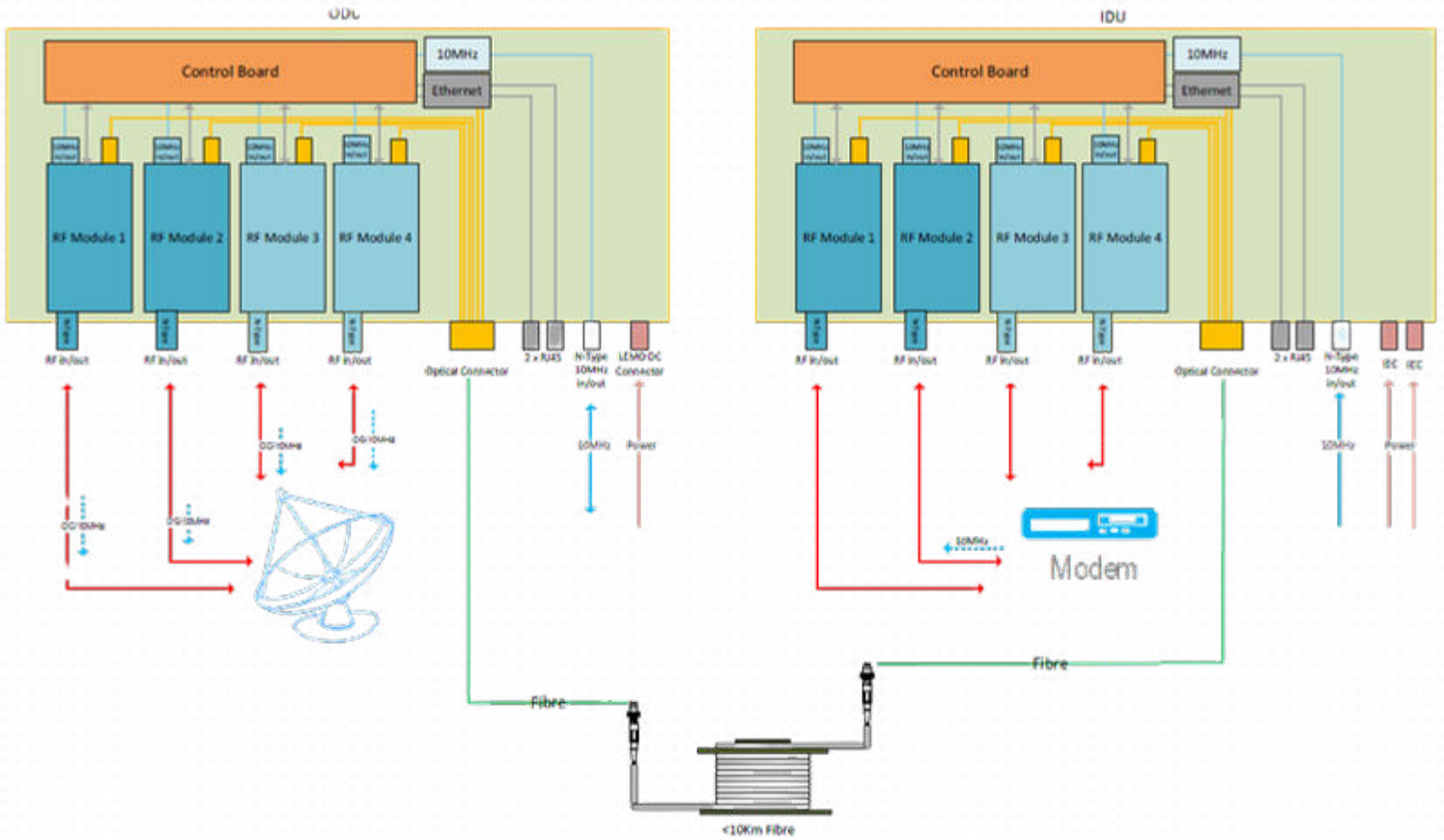
LNB powering
13/18V, 500mA, 22KHz
(LNB)

10MHz reference
output for supply to
other equipment



Local/remote M&C
via optical Ethernet
link or dual RJ45
connector

System Schematic



System Schematic

RF channel config. options (Covering 500MHz to 3150MHz)	Other options	RF connectors	Optical connectors
Single Rx or Single Tx	Optical Ethernet	N-type (50 Ohm) - N5	SC/APC - SA (IDU only)
Dual Rx or Dual Tx	LNB powering	SMA (50 Ohm) - S5	Expanded Beam Mini - EBM
Quad Rx or Quad Tx	Optical 10MHz		Senko IP SC/APC - IS (ODU only)
Single Rx and Dual Tx	10MHz ref. output		Neutrik Quad - NQ
Dual Rx and Single Tx	CWDM mux (only available with IS connector)		
Dual Rx and Dual Tx	Dual DC input (ODU only)		
3x Rx	Optical cross-site cables		
3x Tx	IP65 rated DC PSU for ODU		



System Schematic

Model number	No. L-band Tx modules	No. L-band Rx modules	Frequency (MHz)	10MHz module	IDU or ODU	Optical Ethernet	CWDM MUX	DC inputs	RJ45 ports
SRY-4T0R-9005-xxIS	4	0	850-2450MHz	Rx	ODU	Y	Y	1	2
SRY-0T4R-9505-xxSA	0	4	850-2450MHz	Tx	IDU	Y	Y	N/A	2
SRY-0T4R-9006-xxIS	0	4	850-2450MHz	Rx	ODU	Y	Y	1	2
SRY-4T0R-9506-xxSA	4	0	850-2450MHz	Tx	IDU	Y	Y	N/A	2
SRY-1T1R-9010-xxxx	1	1	850-2450MHz	Rx	ODU	Y	N	1	2
SRY-1T1R-9510-xxxx	1	1	850-2450MHz	Tx	IDU	Y	N	N/A	2
SRY-1T1R-9011-xxxx	1	1	850-2450MHz	Tx	ODU	Y	N	1	2
SRY-2T2R-9012-xxIS	2	2	500-3150MHz	Rx	ODU	Y	Y	1	2
SRY-2T2R-9512-xxSA	2	2	500-3150MHz	Tx	IDU	Y	Y	N/A	2
SRY-2T2R-9013-xxIS	2	2	850-2450MHz	Tx	ODU	Y	Y	1	2
SRY-2T2R-9513-xxSA	2	2	850-2450MHz	Rx	IDU	Y	Y	N/A	2
SRY-2T1R-9018-xxxx	2	1	850-2450MHz	Rx	ODU	N	N	1	2
SRY-1T2R-9518-xxxx	1	2	850-2450MHz	Tx	IDU	N	N	N/A	2
SRY-4T0R-9019-xxIS	4	0	500-3150MHz	Rx	ODU	Y	Y	1	2
SRY-0T4R-9519-xxSA	0	4	500-3150MHz	Tx	IDU	Y	Y	N/A	2
SRY-0T4R-9020-xxIS	0	4	500-3150MHz	Rx	ODU	Y	Y	1	2
SRY-4T0R-9520-xxSA	4	0	500-3150MHz	Tx	IDU	Y	Y	N/A	2

The above list is not exhaustive. Please enquire with ETL for other configurations not listed.



SRY-xTxR-90xx-yyzz & SRY-xTxR-95xx-yyzz

RF Parameters		
Link Parameters		
Frequency Range	500 to 3150MHz (Extended L-band)	
Optical Wavelength	1310nm ± 10nm (some models have CWDM wavelengths)	
Gain Setting Modes	Manual gain control (MGC) Automatic gain control (AGC) Fixed gain (FG)	
Manual Gain Setting Range	50 dB in 0.5 dB steps (Max Gain: 1m fibre, -50dBm RF i/p power Min Gain: 1m fibre, -10dBm RF i/p power)	
Output AGC Flatness	±2.0 dB over full band (input -10 to -40dBm)	
Gain Stability over Temperature	±1.0 (tbc - over operating temperature in AGC mode)	
Gain Flatness (1m fibre. Input -10 dBm, output -10 dBm)	Full band	±2.0 dB
	850-2150MHz	±1.5 dB
	Any 36MHz	±0.25 dB
Group Delay Variation	Full band	<2ns
	Any 36MHz	<0.5ns
NF (max. gain, tested over 1m fibre, -50 dBm RF i/p power, -10 dBm o/p power)	Typ.	25 dB
	Worst Case	27 dB
NF (max. input power, tested over 1m fibre, -10 dBm RF i/p power, -10 dBm o/p power. 0 dB gain)	Typ.	25 dB
	Worst Case	27 dB
SFDR (Test condition: 1m fibre, -23 dBm tones, 10 dB gain, -10 dBm RF o/p total power.)	850 - 2150MHz	Typ. 107 dB/Hz ^{2/3} , min. 102 dB/Hz ^{2/3}
	500 - 3150MHz	Typ. 103 dB/Hz ^{2/3} , min. 98 dB/Hz ^{2/3}
CNR (in any 36MHz) (Test condition: 1m fibre, -10 dBm RF i/p power, -10 dBm RF o/p total power.)	Typ.	-50 dB
	Worst Case	-45 dB
OIP3 (Test condition: 1m fibre, -23 dBm tones, 10 dB gain, -10 dBm RF o/p total power.)	850 - 2150MHz	Typ. 23 dBm, min. 20 dBm
	500 - 3150MHz	Typ. 18 dBm, min. 15 dBm
Spurious (Test condition: 1m fibre, -20 dBm input tone, 10 dB gain, -10 dBm RF o/p total power.)	<60 dBc	



SRY-xTxR-90xx-yyzz & SRY-xTxR-95xx-yyzz

RF Parameters			
Tx Parameters			
RF Tx Input Power Range	Input: -60 to -10 dBm (Total Power) Operational i/p range	Can be used up to 0dBm with limited performance	
Max. RF Input	16d dBm total power	Damage level, NOT operational	
RF Input P1dB	3 dBm min.	Link set for -10dBm input, 10dB gain	
RF Input Return Loss	18 dB typ., 14 dB min.	50 ohm SMA/ N-Type female	
10MHz Output Level	-10 dBm to 5 dBm	At RF input port	
Rx Parameters			
RF Rx Output Power Range	Output: -30dBm to -10dBm (Total Power)	o/p range under all i/p conditions	
RF Output Return Loss	18 dB typ., 14 dB min.	50 ohm SMA/ N-Type female	
10MHz Output Level	-10 dBm to 5 dBm	At RF output port	
10MHz Parameters			
Output Power	-10dBm to 0dBm	Operational input range	
Phase Noise (for 10MHz output ≤ 0dBm)	Typ.	Max.	
	@10Hz	-140 dBc/Hz	-120 dBc/Hz
	@100Hz	-147 dBc/Hz	-140 dBc/Hz
	@1kHz	-150 dBc/Hz	-145 dBc/Hz
	@10kHz	-150 dBc/Hz	-145 dBc/Hz
	@100kHz	-150 dBc/Hz	-145 dBc/Hz
	@1MHz	-150 dBc/Hz	-145 dBc/Hz
10MHz AGC Accuracy	±2 dB	For -5 to +5 dBm 10MHz input level. AGC is functional outside of this range but may not meet the stated accuracy	
Optical Parameters			
Optical Wavelength	1100 to 1650nm	Optimised for 1310nm and 1550nm	
Optical Power In	0 to 6 dBmo	Condition for specified performance, max. input 10 dBmo	
Optical Power Out	4.5 dBm		
Optical Connectors	Neutrik Quad (APC) or Expanded Beam Mini, both 4 channel bulkhead or Senko IP-SC (APC) connectors or SC/APC. See optical connectors on page above.	Single mode fibre	



SRY-xTxR-90xx-yyzz & SRY-xTxR-95xx-yyzz

Non-RF Parameters		
	ODU	IDU
Power Input	11 to 25V DC	100-240VAC, 50/60Hz. Fused 2A, single IEC
Power Consumption	<100W (all channels fitted, including LBC powering)	<100W (all channels fitted, total AC)
MTBF	>200,000 hours (module MTBF)	
LNB Power	13/18V, 500 mA (Tx only)	
Control, Monitoring & Alarms		
Control	Remote control & monitor via Ethernet. 10/100Base T. TCP/IP, SNMP, web browser	
Temperature Monitors	All modules independently monitored and reported.	
Monitoring	Optical input power - in each Rx channel Optical output power - in each Tx channel Power supply rails RF output power - in each Tx channel RF input power - in each Rx channel	
AGC/Manual Gain	Settable output power level - once AGC level set, gain can be fixed	
Environmental		
Operating Temperature	-40°C to +60°C	0°C to +50°C
Storage Temperature	-55°C to +85°C	-20°C to +75°C
Location	Outdoor	Indoor
Humidity	20 - 90% non-condensing, relative humidity	
Altitude	10,000ft AMSL operational 30,000ft AMSL storage/transport	
IP Rating	IP65	-
Weight	6.2kg	4.2kg
Dimensions	330 x 237 x 54mm (L x W x H)	300mm x 19" x 1U (L x W x H)
Colour	White	
Spec. Version	2.0	

Note 1: 10MHz Phase Noise values may increase above 0dBm output level.

Note 2: 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 3: Operation beyond the quoted limits stated above may cause instantaneous and permanent damage.