ETL Systems
New technologies
in RF distribution

Model Number: GNS-391-ODU/
GNS-391-ODU-A/GNS-391-ODU-H/
GNS-391-ODU-AH

Genus Outdoor Unit

With Internal 10 MHz reference source.

Typical applications:

- Teleports, ground stations, maritime high resilience applications and unmanned sites.
- High resilience RF distribution where single points of failure can be minimised.
- Redundancy applications for remote satellite teleports.
- V/HTS gateways
- Signal distribution – Amplifiers, BUC/LNB Power Supply's, Frequency Converters, Matrices, RF over Fibre, Redundancy Switches, Test Loop Translators are available.

The Genus outdoor unit (ODU) has a modular design which can house any combination of compatible modules within the unit. Supplying operators with a flexible and scalable solution, that reduces spare parts and space requirements.

The ODU chassis houses up to 19 RF modules including Amplifiers, BUC/LNB Power Supply's, Frequency Converters, Matrices, RF over Fibre, Redundancy Switches and Test Loop Translators, which can be mixed. The Genus chassis provides a cost-efficient solution with field-replaceable components.

The RF modules are field-serviceable and can be inserted whilst the shelf is in service, giving excellent levels of flexibility and resilience. With additional reliability from dual redundant hot-swap power supplies & field serviceable RF modules, CPU and optional user replaceable internal and external 10MHz reference source & HMI.

Available with the additional option of air-conditioning units for higher operating temperature environments. (Model GNS-391-ODU-A) and with heating for lower temperature operation (Model GNS-391-ODU-H). *See Air Conditioning/Heating Model Numbers*

Compact & flexible ODU chassis holding up to 19 RF modules, which can be mixed.

Remote control & monitoring via RJ45 Ethernet via RJ45, 10BaseT/100BaseTx, ETL TCP/IP protocol, -SNMPv3 & Web Browser Interface

Resilience from dual redundant hot-swap power supplies & field serviceable RF modules & CPU
-Optional Air Conditioning units for higher operating temperature
-Optional hot swap HMI.

Partially populated ODU chassis

10MHz reference source user replaceable internal and external 10MHz reference & distribution source.

Secure Communications with SNMPv3, HTTPS

Flexible Signal Distribution
Frequency converters, Redundancy Switches (N+1), RF Over Fibre, Matrices and LNB Power Supply Modules are available.

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V 1.0 E&OE

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Internal 10MHz reference and distribution module for ODU Genus chassis. The integrated 10MHz card has full control and monitoring via the parent chassis HMI or RJ45. The 10MHz reference source is switchable between this on-board ovenised 10MHz oscillator or the customer supplied external reference, connected to the EXT input connector.

General Specifications	
Capacity	Up to 19 RF modules Note: Actual number dependent upon module type fitted. (Can accommodate FALCON 4-slot modules in 2+1 configuration, please enquire if required).
Dimensions	500mm high x 500mm wide x 300mm (TBC for AC option) deep Please confirm size requirements with ETL prior to order.
Weight	<18 kg (TBC)
Colour	RAL9003 White (Semi-Matte)
AC Power	100-240 VAC (50/60Hz) 'A' aircon option is 220-240 VAC only 'A1' aircon option is 100-120 VAC only
AC Consumption	TBC
PSU	Dual redundant & alarmed, Diode OR, Hot-swap
RF Modules	Single, field replaceable
Heat Load	<145W, 495 BTU/Hour (for GNS-301-ODU-A)
Tech Spec Version	1.0
Internal Reference Source	10 MHz

Reliability		
MTTR		15 minutes to replace. Assumes spares at hand. Applies to LRUs only and assumed in house stock.
MTBF	Chassis	> 250 000
	CPU	> 250 000
Hot-swap / Field serviceable components		Dual redundant power supplies, RF modules, CPU, internal 10MHz reference source & HMI (if fitted)

Control & Monitoring	
Local Control	HMI, capacitive touchscreen (option)
Remote Control & Monitoring	Ethernet via RJ45, 10BaseT/100BaseTx ETL TCP/IP protocol SNMPv3 & HTTPS Built-in Web Server

Internal 10MHz —High Stability Ovenised Oscillator		
Frequency Setting	10±0.000001 MHz	
Output Type	Sinewave	
Output Power Range	-10 dBm to +10dBm	±2 dBm
Output Power Steps	1 dB ±0.5	
Harmonic Rejection 2nd 3rd 4th 5th	 >40 dBc >50 dBc >60 dBc >60 dBc	At 0dBm power out.
SSB Phase Noise dBc/Hz	0dBm 10MHz src	
10 Hz 100 Hz 1000 Hz 10 000 Hz 100 000 Hz	<-120 <-140 <-145 <-155 <-155	Typical
Frequency Stability: *Over operating temperature* *Short-term (per second)* *Load change(±5%)* *Power supply variations(±5%)*	 $< \pm 5 \times 10^{-9}$ $< 5 \times 10^{-12}$ $< \pm 5 \times 10^{-10}$ $< \pm 2 \times 10^{-8}$	
Frequency Aging *Per Day* *Per Year*	 $\pm 5 \times 10^{-10}$ $\pm 5 \times 10^{-8}$	
Alarms	10MHz source RF power level. Card operational status.	User settable auto switchover for reference source (Int/Ext)
Hot-Swap	Field replaceable by user.	

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Environmental		
Operating temperature		-20˚C to +45˚C
		-40˚C to +65˚C with optional Air-Conditioning units -40°C requires optional heat pad Please see Air Conditioning/Heating Model Numbers for options
Location		Outdoor or Indoor use IP65 AC unit reduces IP rating to IP54
Storage temperature		-40˚C to +80˚C Not Powered
Humidity		20% - 90% non-condensing Relative Humidity
Altitude	Operational	10,000 ft AMSL (Above Mean Sea Level)
	Storage	30,000 ft AMSL (Above Mean Sea Level)

Air Conditioning/Heating Model Numbers			
Model number	**Option**	**Operating Temperature**	**Comments**
GNS-391-ODU	ODU no Air-conditioning or heater	-20˚C to +45˚C	-
GNS-391-ODU-H	ODU fitted with Heater	-40°C to +45 ˚C	-
GNS-391-ODU-A	ODU fitted with Air Conditioning	-20˚C to +65˚C	Max air ambient 55ºC, spot temperature up to 65ºC
GNS-391-ODU-AH	ODU fitted with Air Conditioning and Heater	-40˚C to +65˚C	

RF Module Options						
Amplifier	BUC/LNB Power Supply	Frequency Converter	Matrices	Redundancy Switch	RF Over Fibre	Test Loop Translator (TLT)

Custom RF modules may be available - If you have a requirement which isn't listed in the RF module options table please contact us.
For modules technical specifications, refer to product specific datasheet

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.

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