

# 4-way S-Band Active Combiner

with variable gain & slope, internal amplifier redundancy  
& RF detection - for 3U GENUS chassis

The GENUS is a new generation of equipment for the ground segment to meet today's and future ground segment V/HTS requirements. The GENUS Habitat accommodates up to 17 RF modules. These can be inserted whilst the shelf is in service giving excellent levels of flexibility and resilience.

## Combiner Modules



850 - 3150 MHz  
operating frequency range

RF detection  
for monitoring output signal  
levels

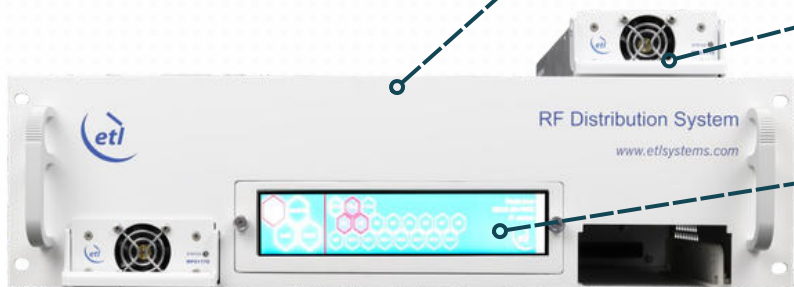
Variable gain & slope  
to balance input signals

1:1 redundant amplifiers  
for added resilience



Compact & Flexible  
3U chassis holding up to 17 RF modules,  
which can be mixed.

## Chassis



### Resilience

from dual redundant hot-swap power  
supplies & field serviceable RF  
modules, HMI, CPU & Fans

Local control & monitoring  
via front panel capacitive HMI  
touchscreen.



### Remote control & monitoring

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

### Secure Communications

with SNMPv3, HTTPS



## Combiner Module - Technical specifications and operating parameters

|                                                 |                 |                                                                                                                                |                        |                        |                        |
|-------------------------------------------------|-----------------|--------------------------------------------------------------------------------------------------------------------------------|------------------------|------------------------|------------------------|
| Function                                        |                 | 4-way Active Combiner                                                                                                          |                        |                        |                        |
| Module Slots Used                               |                 | 1                                                                                                                              |                        |                        |                        |
| Frequency Range                                 |                 | 850 - 3150 MHz (Extended L-Band / S-Band)                                                                                      |                        |                        |                        |
| Gain                                            | Minimum         | 0 ± 2 dB                                                                                                                       |                        |                        |                        |
|                                                 | Maximum         | 28 ± 2 dB                                                                                                                      |                        |                        |                        |
| Gain Flatness                                   | 850 to 2450 MHz | ± 1.0 dB                                                                                                                       |                        |                        |                        |
|                                                 | 850 to 3150 MHz | ± 2.0 dB                                                                                                                       |                        |                        |                        |
|                                                 | Any 36 MHz      | ± 0.25 dB                                                                                                                      |                        |                        |                        |
| Gain Steps                                      |                 | 0.25 ± 0.15 dB Monotonic Gain Control                                                                                          |                        |                        |                        |
| Slope Control Range                             |                 | 0 to 10 dB Pivot Point at 3150 MHz                                                                                             |                        |                        |                        |
| Slope Control Steps                             |                 | 1 ± 0.25 dB                                                                                                                    |                        |                        |                        |
| RF Connectors & Impedances                      |                 | 50Ω SMA                                                                                                                        | 50Ω BNC                | 75Ω BNC                | 75Ω F-type             |
| Input Return Loss                               |                 | 18 dB typ., 12 dB min.                                                                                                         | 18 dB typ., 12 dB min. | 16 dB typ., 10 dB min. | 16 dB typ., 10 dB min. |
| Output Return Loss                              |                 | 18 dB typ., 12 dB min.                                                                                                         | 18 dB typ., 12 dB min. | 16 dB typ., 10 dB min. | 16 dB typ., 10 dB min. |
| Reverse Gain                                    |                 | < -60 dB typical                                                                                                               |                        |                        |                        |
| Noise Figure<br>@ max gain & 0 dB slope setting |                 | 17 dB typ., 19 dB max.                                                                                                         |                        |                        |                        |
| 1dB GCP<br>@ max gain & 0 dB slope setting      |                 | 14 dB typ., 12 dB min.                                                                                                         |                        |                        |                        |
| OIP3<br>@ max gain & 0 dB slope setting         |                 | 30 dB typ., 28 dB min.                                                                                                         |                        |                        |                        |
| OIP2<br>@ max gain & 0 dB slope setting         |                 | 40 dB typ., 38 dB min.                                                                                                         |                        |                        |                        |
| Isolation                                       |                 | In to In: 23 dB min<br>Card to Card: 50 dB min (Between cards set to the same gain within the parent chassis)                  |                        |                        |                        |
| In band, signal dependent spuri                 |                 | <-85 dBm max<br>Very low level spuri from CPU clock, switch mode PSU and other control electronics inside the chassis.         |                        |                        |                        |
| Output RF Detection                             |                 | 0 to -50 dBm                                                                                                                   |                        |                        |                        |
| Amplifier Redundancy                            |                 | 1:1 Auto switch over from main to standby is based on current sensing. Standby amp chain is cold standby redundant.            |                        |                        |                        |
| MTBF                                            |                 | >150,000 hrs MTBF of each amp module. These are hot swap.                                                                      |                        |                        |                        |
| Maximum Input Level                             |                 | +20 dBm For no damage. None operational.                                                                                       |                        |                        |                        |
| Control Method                                  |                 | Via Chassis Local and remote as provided by selected chassis                                                                   |                        |                        |                        |
| DC Coupling                                     |                 | All RF Input Ports DC blocked                                                                                                  |                        |                        |                        |
| Temperature                                     |                 | Operating: 0 to 50°C Storage: -20°C to +75°C (equipment not powered)                                                           |                        |                        |                        |
| Location / Humidity / Altitude                  |                 | Location: Indoor only<br>Humidity: 20 to 90% non-condensing (relative)<br>Altitude: 10,000ft/3000m AMSL (Above Mean Sea Level) |                        |                        |                        |

Please see separate datasheet for full 3U Genus chassis specifications (Model GNS-103-3U).

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.