# FDU-160i

## Advanced Frequency Distribution Amplifier


The FDU-160i is a high performance signal distribution amplifier designed for use with Brandywine high precision time and frequency sources.

The FDU-160i is contained in a compact IU rack-mount chassis. The FDU accepts two sets of inputs, comprising the reference frequency (typically10MHz) and status from the source. The FDU provides automatic changeover should one of the on-line source inputs fail. Manual source select override is available on the front panel, or through the Ethernet interface.

A variety of status indicators are located on the front panel for instant visual feedback, together with manual controls for source selection.

A 10/100 base T Ethernet interface provides full control over the functionality of the system, including reference selection and output amplitude (on a per channel basis).

### FEATURES

- **Network Enabled Frequency Distribution Amplifier**
- **Dual Frequency Inputs with Auto Failover**
- **Low Phase Noise Reference Frequency Outputs**
- **Programmable per channel amplitude**
- **1U 19” rack mount**
- **Redundant Hot Swappable Power Supplies**

User control of the unit is via a built-in Web Browser with user-friendly graphical interface, or via SNMP for system applications.

Applications for the FDU-160i include secure communications systems, satellite ground stations, digital television broadcasting and any system requiring highly reliable frequency outputs.

## Applications

- Satellite Communications
- Broadcasters
- Microwave Terminals

## Key Benefits

- Low Phase Noise 10 MHz Outputs
- 2x Frequency Input to 16x Frequency Output
- Optional Cleanup Oscillator
- Designed for High Availablity & High Reliability operation

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# Specifications

## Frequency Inputs

| | |
|---|---|
| Frequency | 10 MHz, +/- 5PPM |
| Amplitude & Impedance | 0.5-1Vrms, 50 Ω |
| Isolation | Transformer coupled |
| Number of Inputs | 2 |
| Connector Type | BNC |
| Input Selection | Manual, Auto |

## Fault Inputs

| | |
|---|---|
| Number of Inputs | 2 |
| Signal Type | TTL |
| Active Level | Selectable for active high or low |
| Action | Forces on-line changeover |

## Frequency Outputs

| | |
|---|---|
| Number of Outputs | 16 |
| Frequency | Same as Input, 10MHz (std), |
| Optional | 1-20, 1, 5 MHz |
| Output Level | 5dBm to +13dBm, short-circuit proof |
| Connector Type | BNC |
| Harmonic Distortion | -40 dBc |
| Cross Talk | -80 dBc |
| Spurious | -80 dBc |
| Additive Phase Noise@10MHz** | |
| | 1Hz -132 dBc |
| | 10 Hz -142 dBc |
| | 100 Hz -155 dBc |
| | 1 kHz -163 dBc |
| | >10 kHz -163 dBc |

Specification valid when levels are set to +13 dBm

## Network Interface

| | |
|---|---|
| Interface Type | 10/100 base T |
| Protocols | HTTP, DHCP, SNMP V2c, IPV4 |
| Connector | RJ45 |

## Console Port

| | |
|---|---|
| Interface Type | RS232 |
| Parameters | 115200, N, 8, 1 |
| Connector | DB9 |

## Display

| | |
|---|---|
| Display Type | 16 bicolor LED |
| Functions | Output status, Ethernet settings |

## Status Output (Alarm)

| | |
|---|---|
| Type | Dry relay form C contacts |
| | Ethernet SNMP trap |
| Alarm Function | Summary of all input/output alarms (relay) |
| | Individual input, output, power (Ethernet) |

## Power

| | |
|---|---|
| Redundancy | Dual redundant |
| | Single supply maintains complete unit |
| Voltage | 90-240 VAC 50/60Hz (std) |
| | 18-36V DC Optional |
| | 36-72VDC Optional |
| Power Consumption | <15W |

## Environmental and Safety

| | |
|---|---|
| Temperature | |
| Operating | -10 to +55ºC non condensing |
| Storage | -40 to +85ºC |
| Product Safety | EN60950-1: 2006 + A11-2009 +A1:2010 A12:2011 |
| EMC | EN55022 Class A |
| | EN50082-2 |
| | FCC Chapter 15 Class A |

## Physical

| | |
|---|---|
| Size: | 19” rack-mount |
| | 1U high (1.75”) |
| | 12” deep |
| Weight: | 15lbs nominal |

## Ordering Information

Advanced Frequency Distribution Amplifier

*Basic Unit Includes Dual AC Power Supplies*

| | |
|---|---|
| 022050001 | 2 i/p 10MHz, 16 output 10MHz |
| 022050002 | 2 i/p 5MHz, 16 output 5MHz |
| 022050003 | 2 i/p 1MHz, 16 output 1MHz |
| 022050004 | 1ea i/p 5MHz,10MHz, 8 ea. o/p 5,10 MHz* |
| 022050005 | 2 input, 16 output 1-20 MHz** |

*Power Options (order separately)*

| | |
|---|---|
| 022060001 | Substitute 18-36 DC power for AC |
| 022060002 | Substitute 36-72 DC power for AC |

The FDU-160i may be used with many of Brandywine’s precision frequency sources such as the RG 2111 for distribution of precision frequency outputs.

RG 2111 part number 001-0230

* No Auto-switch applicable to 022050004
** Not applicable to 022050005

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