

# 1/3 RACK-MOUNT AMPLIFIER SYSTEMS



## TRA SERIES



Shown with Option 17 and Option 3  
(digital adjust input attenuator)

Standard Unit shown with Option 3  
(manual adjust input attenuator)

### TRA UNITS FEATURES

- RF hot-swappable units
- Rack-mountable
- Current fault alarm/summary alarm
- Classic SATCOM bands
- Independent power supplies
- Remote status (Option 17 only)
- Amplifier current fault-detection
- CE certified

### OPTIONS

- Input/output attenuators
- Remote control for attenuation and alarms
- Input/output signal monitors
- Increased gain
- Increased output power
- Custom bandwidths available

### TRA SERIES 1/3 RACK-MOUNT 1RU CONFIGURATIONS AVAILABLE

See last page for detailed illustrations

- Up to three amplifier channels in 1RU package
- 1:1 configuration: via use of RSU-TR switchover unit (see D-322)
- 1:2\* and up to 1:12\* configurations: via use of NSU2/NSUN controller (see D-323B)

\* 1:2 and up to 1:12 configurations require additional rack height for NSUN controller and additional channels

These Narda-MITEQ one-third rack amplifier systems are designed to compensate for long cable run loss in the classic SATCOM bands. These systems can be equipped with independent input (Option 3) and output (Option 4) gain adjustment and can be configured to provide system redundancy in a 1RU package.

### TRA SERIES

FREQUENCY (GHZ)	MODEL NUMBER
0.05 to 0.09	TRA-005009*
0.10 to 0.18	TRA-010018*
0.95 to 1.45	TRA-095145*
0.95 to 1.75	TRA-095175*
0.95 to 2.15	TRA-095215*
1.5 to 1.8	TRA-150180
2.0 to 2.7	TRA-200270
3.4 to 4.2	TRA-340420
4.5 to 4.8	TRA-450480
5.725 to 6.725	TRA-572672
5.845 to 6.430	TRA-584643
6.4 to 7.2	TRA-640720
7.25 to 8.4	TRA-725840
10.7 to 12.75	TRA-107128
13.75 to 14.8	TRA-137148
17.7 to 21.2	TRA-177212
17.7 to 22.0	TRA-177220
27.5 to 31.0	TRA-275310*
31.0 to 33.0	TRA-310330*

\* References input/output return loss specification.

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## RF SPECIFICATIONS

Gain	30 dB minimum (higher gain optional)
Gain flatness	0.4 dB/any 40 MHz, 1.0 dB peak-to-peak/RF-Bands up to 500 MHz, 1.5 dB peak-to-peak/RF-Bands up to 800 MHz, 2.0 dB peak-to-peak/RF-Bands greater than 800 MHz
Gain slope	0.2 dB/10 MHz maximum
Gain stability	±0.2 dB/24 hours (constant temperature)
Power output (1 dB compression)	+10 dBm minimum (higher output power optional)
Noise figure	
Below 4.2 GHz	3 dB maximum
4.2 to 12.75 GHz	4 dB maximum
12.75 to 14.5 GHz	5 dB maximum
Above 14.5 GHz	8 dB maximum
Spurious outputs	Below thermal noise
AM/PM conversion	0.5°/dB maximum to 0 dBm output
Input/output return loss	20 dB minimum, *10 dB minimum (refer to table on page one)
Input/output impedance	50 ohms

## GENERAL SPECIFICATIONS

### PRIMARY POWER REQUIREMENTS

Voltage..... 90 VAC to 250 VAC  
 Frequency..... 47 Hz to 63 Hz  
 Consumption ..... 10 W typical

### SUMMARY ALARM

Contact closure/open for DC voltage and/or amplifier alarm  
 Status alarm readout on remote control bus (digital front-panel required, Option 17)

### PHYSICAL

Weight ..... 3 lb. [1.36 kg] typical  
 Overall dimensions ..... 5.70" [144.8 mm] x 1.48" [37.6 mm] x 18" [457.2 mm]  
 (excluding connectors)

### Connectors

    Primary power input ..... IEC 320  
     RF connectors ..... SMA female,  
     3.5 mm compatible above 22 GHz  
 Status interface ..... DE-9S  
 Redundancy interface mating connector ..... DE-9P  
 Remote interface (Option 17 only) ..... RJ-45 female for Ethernet, RS-422/RS-485  
     available on status connector

### ENVIRONMENTAL

#### Operating

    Ambient temperature..... 0 °C to 50 °C  
     Relative humidity..... Up to 95% at 30 °C  
     Atmospheric pressure ..... Up to 10,000 feet

#### Nonoperating

    Ambient temperature..... -50 °C to +70 °C  
     Relative humidity..... Up to 95% at 40 °C  
     Atmospheric pressure ..... Up to 40,000 feet  
     Shock and vibration ..... Normal handling by commercial carriers

## OPTIONS

Missing option number are not applicable for this product.

1. RF input monitor with -20 dBc nominal level
2. RF output monitor with -20 dBc nominal level
3. Input level control, 30 dB continuous adjust via front-panel screw (30 dB in 0.2 dB steps with Option 17).
4. Output level control, 30 dB continuous adjust via front-panel screw (30 dB in 0.2 dB steps with Option 17).
11. Increased output power
  - A. +15 dBm output power at 1 dB compression
  - B. +20 dBm output power at 1 dB compression
16. Higher gain
  - A. 40 dB minimum gain
  - B. 50 dB minimum gain
17. Remote control.....10/100 Base-T Ethernet interface providing:
  - HTTP-based web server
  - SNMP 1.0 configuration
  - Alarm reporting via SNMP Trap
  - Telnet access
  - Password protection and selectable RS-485/RS-422
  - Gain control is 30 dB in 0.2 dB steps

Notes: Options 1 and 3 will degrade noise figure proportional to insertion loss of devices inserted before amplifiers.  
Options 2 and 4 will reduce output power compression point proportional to insertion loss of devices inserted after amplifier.

## RACK-MOUNT FRAME

### ACCESSORIES

One-third rack-mount frame

Model number .....OL-TR3-20  
 Weight.....1.5 lb. [0.68 kg] nominal  
 Dimensions .....19" [482.6 mm] x 1.75" [44.5 mm] x 20" [508.0 mm]

Single unit frame (includes rack slides)

Model number .....OL-TR1-20  
 Weight.....2 lb. [0.9 kg] nominal  
 Dimensions .....19" [482.6 mm] x 1.75" [44.5 mm] x 18" [457.2 mm]

Dual unit frame (includes rack slides)

Model number .....OL-TR2-20  
 Weight.....3 lb. [1.35 kg] nominal  
 Dimensions .....19" [482.6 mm] x 1.75" [44.5 mm] x 18" [457.2 mm]

# 1/3 RACK-MOUNT AMPLIFIER SYSTEMS

## SOME CONFIGURATIONS USING NARDA-MITEQ PATENTED 1/3 RACK-MOUNT EQUIPMENT

### THREE-CHANNEL AMPLIFIER SYSTEM:

3 - Standard TRA Amplifier models (with Option 3 manual adjust input attenuator) are shown, TRA models (with Option 17 display) can be substituted.



L-Band Amplifier

C-Band Amplifier

Ka-Band Amplifier

### 1:1 REDUNDANT AMPLIFIER SYSTEM:

2 - TRA Amplifiers models (with Option 17 display and Option 3 digital control input attenuator) are shown, standard TRA amplifier models can be substituted and 1 - one-third rack RSU switchover unit



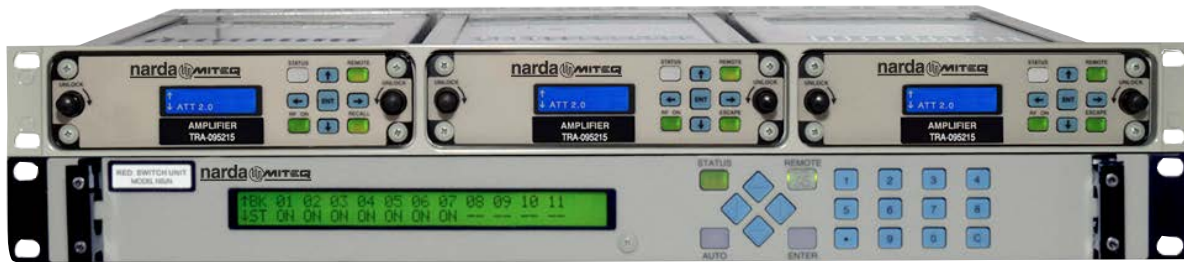
TRA Amplifier

RSU-S/S-TR Switchover Unit

TRA Amplifier

### 1:2 REDUNDANT AMPLIFIER:

1:2 Redundant Configuration shown using 3 - TRA amplifiers models (with Option 17 display and Option 3 digital control attenuator) are shown and 1 - NSU2 switchover unit



TRA Amplifier

TRA Amplifier

TRA Amplifier

NSU2 Switch

### CONFIGURE UP TO 1:12 REDUNDANT AMPLIFIER SYSTEM:

1:11 Redundant Configuration shown with 12 - TRA amplifiers models (with Option 17 display) and 1 - NSUN control unit



TRA Amplifier    TRA Amplifier    TRA Amplifier

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NSUN Control Unit



435 Moreland Road  
Hauppauge, NY 11788

Tel: 631-231-1700

Fax: 631-231-1711

Email: [componentsnm@nardamiteq.com](mailto:componentsnm@nardamiteq.com)

Email: [satcomsalesnm@nardamiteq.com](mailto:satcomsalesnm@nardamiteq.com)

[www.nardamiteq.com](http://www.nardamiteq.com)

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