

# RIC-E1, RIC-T1

E1, T1 Interface Converters



## Connect Fast Ethernet LANs over E1 or T1 circuits

- Convert from V.35, X.21, V.36, RS-530 to E1 or T1 interfaces
- Integrated IP router for connecting IP domains over E1/T1 services
- 10/100BaseT bridge supporting IEEE 802.3x flow control and backpressure
- Diagnostic loopback activation in compliance with ITU V.54 standard
- Plug and play

RIC-E1 and RIC-T1 are interface converters that connect Ethernet LANs over E1/T1 circuits. This allows communication between devices with E1/T1 interfaces and equipment with V.35, X.21, V.36, or RS-530 interfaces.

RIC-E1 and RIC-T1 are available with several WAN (DTE) interface options.

The IR-ETH/V interface module transparently connects remote LANs and VLANs over unframed E1/T1 links, utilizing the full E1/T1 bandwidth. It also supports autonegotiation, allowing connection without additional configuration.

The IR-IP interface module operates as an IP gateway, forwarding IP packets destined for the WAN. This saves the cost of an IP router equipped with an E1/T1 interface.

RIC-E1 and RIC-T1 are available as plug-in cards for RAD's ASM-MN-214, 19-inch card cage.



# RIC-E1, RIC-T1

## E1, T1 Interface Converters

### TIMING OPTIONS

The following clock sources can be defined:

- Received: from the G.703 line
- External: from the attached DTE
- Internal: from internal oscillator.

**Note:** Units with Ethernet interface modules do not support the external clock option.

### DIAGNOSTICS

#### Loopback

Local analog loopback (LLB) in compliance with V.54 (loop 3)

#### Activation

Loopback can be activated from:

- RIC-E1 or RIC-T1
- DTE interface circuit 141 (not available for X.21 and Ethernet interfaces).

## Specifications

### E1 INTERFACE

#### Data Transmission

Synchronous, full duplex

#### Standard

E1, unframed

#### Line Code

HDB3 or AMI

#### Line Impedance

120W (balanced)  
75W (unbalanced)

**Note:** Interface type is selected via jumpers.

#### Range

Up to 300m (1000 ft) over 24 AWG (0.5 mm) cable

#### Connectors

RJ-45, 8-pin (balanced)  
Two BNC coaxial (unbalanced)

### T1 INTERFACE

#### Data Transmission

Synchronous, full duplex

#### Standard

T1, unframed

#### Line Code

B8ZS or AMI

#### Line Impedance

100W (balanced)

#### Range

Up to 300m (1000 ft) over 24 AWG (0.5 mm) cable

#### Connectors

RJ-45, 8-pin (balanced)

### DTE INTERFACE

#### Type

V.35: 34-pin, female

X.21: 15-pin, D-type, female

RS-530: 25-pin, D-type, female

V.36: 37-pin, D-type, female, via adapter cable

IR-ETH: RJ-45

IR-ETH/V: RJ-45

IR-IP: RJ-45

#### Line Code

IR-ETH: Manchester

IR-ETH/V: Manchester (10BaseT),  
MLT3 (100BaseT)

IR-IP: Manchester

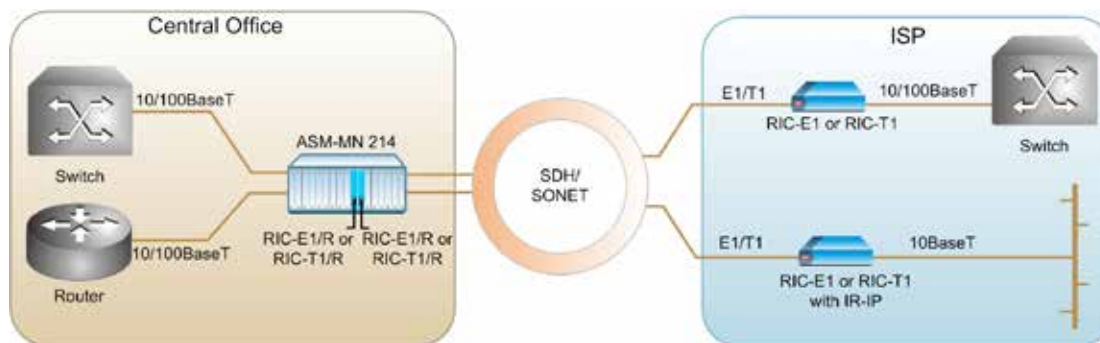


Figure 1. Connecting LANs over SDH/SONET Services

**GENERAL****Indicators**

PWR (green) – Power is ON

RXD (yellow) – Data is being received from link

TXD (yellow) – Data is being transmitted to link

LOS (red) – No E1/T1 data is being received from link

TST (red) – A loopback is active (not relevant for the Ethernet interface modules)

LINK (green) – LAN is connected to IR-ETH, IR-ETH/V, or IR-IP

ACT (yellow) – Transmit or receive activity detected on the Ethernet link of IR-ETH/V or IR-IP

100M (green) – LAN operating at 100 Mbps (IR-ETH/V)

**Power**

AC: 100–240 VAC, 47–63 Hz

DC: 24 or -48 VDC

**Power Consumption**

RIC-E1, RIC-T1: 3W max

RIC-E1/R, RIC-T1/R: 5.2W max

**Physical**

Height: 40 mm (1.5 in)

Width: 190 mm (7.4 in)

Depth: 160 mm (6.2 in)

Weight 0.6 kg (1.3 lb)

**Environment**

Temperature: 0 to 50°C (32 to 122°F)

Humidity: Up to 90%, non-condensing

Table 1. RIC Family Product Comparison Table

Feature	RIC-E1, RIC-T1 (Ver. 3.0)	RICi-SE (Ver. 1.0)	RICi-E1, RICi-T1 (Ver. 2.1)
Protocol Type	HDLC	HDLC HDLC IS	HDLC HDLC IS GFP (G.8040)
Fault Propagation	No	Yes	Yes
QoS	No	IP Precedence (802.1p)	VLAN Priority (802.1p) IP Precedence
QoS Mechanism	No	Strict	Strict
VLAN-Aware	No	Yes	Yes
Q in Q	No	Yes	Yes
Host VLAN	No	Yes	Yes
VLAN Stacking Support	No	Yes	Yes

## RIC-E1, RIC-T1

## E1, T1 Interface Converters

## Ordering

RIC-E1/\*/#

RIC-T1/\*/#

RIC-E1/R/#

Card version for ASM-MN-214 card cage

RIC-T1/R/#

Card version for ASM-MN-214 card cage

*Legend*

\* Power supply type:

**AC** 100 to 240 VAC**24** 24 VDC**48** -48 VDC

# DTE interface type:

**V35** V.35 interface**X21** X.21 interface**V36** V.36 interface**530** RS-530 interface**UTP** IR-ETH module**UTP/QN** IR-ETH/V module**UTP/IP** IR-IP module

## SUPPLIED ACCESSORIES

AC power cord (with AC power supply only)

DC connection kit (with DC power supply only)

## OPTIONAL ACCESSORIES

**RM-29**

Hardware kit for mounting one or two RIC-E1 or RIC-T1 units in a 19-inch rack

**International Headquarters**  
 24 Raoul Wallenberg Street  
 Tel Aviv 69719, Israel  
 Tel. 972-3-6458181  
 Fax 972-3-6498250, 6474436  
 E-mail market@rad.com

**North America Headquarters**  
 900 Corporate Drive  
 Mahwah, NJ 07430, USA  
 Tel. 201-5291100  
 Toll free 1-800-4447234  
 Fax 201-5295777  
 E-mail market@radusa.com

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



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