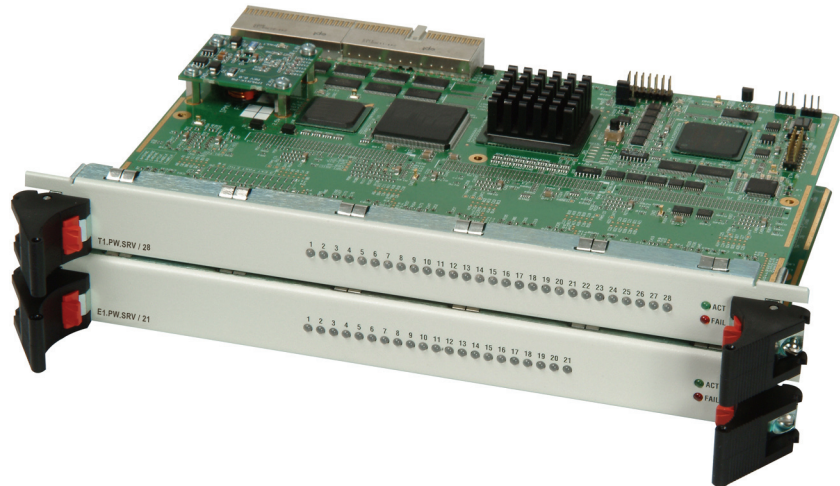


# Gmux-2000 Modules

## E1-PW-SRV/21, T1-PW-SRV/28

### Pseudowire E1, T1 Circuit Emulation Server Modules



E1/T1 or HDLC  
emulation over  
Ethernet, MPLS and  
IP networks

- Circuit emulation server modules for use with STM1 and OC3 modules in the Gmux-2000 system
- E1/T1 or HDLC emulation over Ethernet, MPLS and IP networks, using TDMoIP, CEsPSN, SAToP or HDLCoPSN encapsulation
- Up to 21 internal E1 or 28 internal T1 ports, mapping VC-12 or VT1.5 streams to/from channelized STM-1 or OC-3 interfaces, with up to two STM1 and OC3 modules for a fully loaded Gmux-2000 chassis
- CAS and CCS signaling as well as clear channel data in both framed (full and fractional) and unframed modes
- N+1 module redundancy

**TDMoIP**  
Driven®

E1-PW-SRV/21 and T1-PW-SRV/28 (PW server) modules are used in conjunction with the STM1 and OC3 modules.

The PW server modules convert any VC12 or VT1.5 stream from the STM-1 or OC-3 interface to an internal E1 or T1 stream, which is converted into a pseudowire (PW). The PW is sent to the PSN Gigabit Ethernet module to be forwarded to the packet-switched network

Packets sent over MPLS networks use smaller overhead in comparison to the IP encapsulation. This makes communication over MPLS ideal for networks with bandwidth constraints.

E1-PW-SRV/21 modules include up to 21 internal E1 ports. T1 PW SRV/28 modules feature up to 28 internal T1 ports.

With up to six PW server modules per chassis, Gmux-2000 supports two full channelized STM-1 (126 VC12 streams) or two full channelized OC-3 (168 VT1.5 streams) traffic.

**RAD**

data communications

The Access Company

# E1-PW-SRV/21, T1-PW-SRV/28

## Pseudowire E1, T1 Circuit Emulation Server Modules

Each internal port can be independently configured to handle the relevant payload in accordance with different framing modes and signaling formats:

- E1 – G732N/G732S, with or without CRC-4, or unframed
- T1 – D4 (SF), ESF, unframed.

Packet structure is independently selectable for each PW, for compatibility with the various pseudowire protocols (TDMoIP/TDMoMPLS, CESoPSN, HDLCoPSN, SAToP) and the UDP/IP and MPLS/ETH network standards.

Each internal E1 or T1 port operates using one of the following clocking modes:

- Loopback, recovered from an internal E1 or T1 port
- Adaptive, recovered from the PW payload
- System nodal clock.

Comprehensive diagnostic capabilities include:

- Automatic self-test at power-up to monitor the module subsystems
- Local and remote loopbacks on the E1 and T1 ports
- LEDs to indicate synchronization status of E1 or T1 ports.

When the OAM functionality is enabled, the PW server modules transmit RDI, LOS and AIS condition end-to-end over the PSN.

## Specifications

### PW PROCESSING

#### Number of Internal TDM Ports

21 (E1) or 28 (T1)

#### Number of PWs per Module

Up to 112

#### Protocols

- TDMoIP (RFC 5087)
- TDMoMPLS (RFC 5087 and ITU-T Rec. Y.1413)
- HDLCoPSN (RFC 5087 and RFC 4618 (except Clause 5.3 – PPP))
- CESoPSN (RFC 5086)
- SAToP (RFC 4553)

#### PSN Types

UDP over IP, MPLS over ETH

#### Payload Routing

User-defined mapping:

- Any VC12 or VT1.5 to any internal E1 or T1 port
- Any PW to any destination

### E1 INTERFACE

#### Bit Rate

2048 kbps

#### Framing Mode

G.732N/G.732S with or without CRC-4, or unframed

### Standards Compliance

ITU-T Rec. G.703, G.704, G.732

### T1 INTERFACE

#### Bit Rate

1544 kbps

#### Framing Mode

D4 (SF), ESF, unframed

### Standards Compliance

AT&T TR-62411, AT&T Pub 54016, ANSI T1.107, ANSI T1.403

### GENERAL

#### Indicators

E1 interface:

1–21 (green/red): Sync status

T1 interface:

1–28 (green/red): Sync status

PW server module:

ACT (green): Module activity status

FLT (red): Module fault detected

#### Diagnostics

- Self-test at start-up
- Local and remote loopback per E1 or T1 port

#### Physical

Fits a single slot of the Gmux 2000 chassis (slots 1–5, 7, 9)

#### Environment

Operating temperature: 0–55°C (0–131°F)

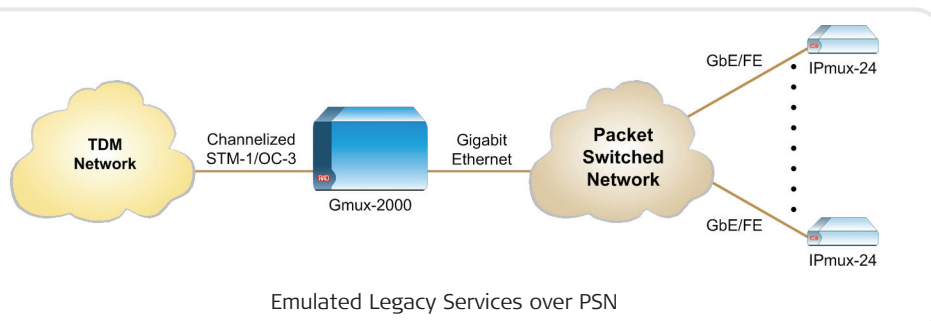
Storage temperature: -20–50°C (0–150°F)

Humidity: Up to 90%, non-condensing

## Ordering

GMUX-M-E1-PW-SRV-21

GMUX-M-T1-PW-SRV-28



#### 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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