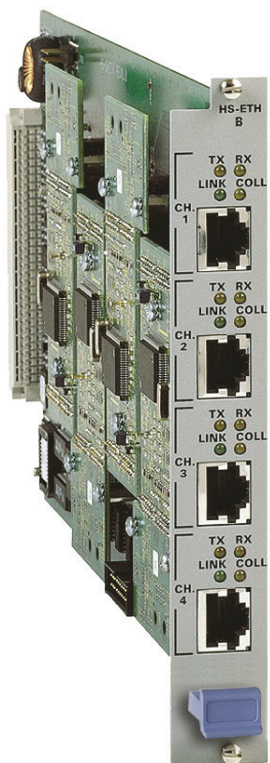


Megaplex-2100/2104

HS-ETH

1/2/4-Channel Ethernet Bridge/Router Modules



- Ideal for cost-sensitive bridging/routing applications, or as a LAN extender over E1/T1 services
- Programmable main link bandwidth allocation for each channel: $n \times 56/64$ kbps, up to 1536 (T1) or 1984 (E1) kbps
- 10/100BaseT LAN interface with auto-negotiation (HS-ETH/F only)
- VLAN transport (HS-ETH/V and HS-ETH/F)
- PPP, HDLC, and Frame Relay routing protocols (HS-ETH/R only)

The HS-ETH Ethernet Bridge/Router modules connect remote Ethernet LANs to a central Ethernet network, over the Megaplex-2100/2104 E1/T1 link. HS-ETH modules are available with one, two or four LAN interface channels, each with an integral high-performance, remote, self-learning Ethernet bridge or a small IP router. The UTP Ethernet LAN interface conforms to IEEE 802.3.

Communication between HS-ETH modules is over timeslots allocated on the Megaplex E1/T1 main links. The bandwidth for each HS-ETH channel can be selected from 56/64 kbps, up to 1984 kbps on E1 links, or up to 1536 kbps on T1 links.

Up to four remote
high-performance
self-learning Ethernet
bridge or IP router
channels



data communications

The Access Company

HS-ETH

1/2/4-Channel Ethernet Bridge/Router Modules

BRIDGE MODULES

HS-ETH modules are available in several bridge versions:

- **HS-ETH/B** is a basic Ethernet bridge with 10BaseT interface (based on the IR-ETH card)
- **HS-ETH/V** is an Ethernet bridge with 10BaseT interface, transporting VLAN (based on the IR-ETH/Q card)
- **HS-ETH/F** is an Ethernet bridge with 10/100BaseT interface with auto-negotiation capability, transporting VLAN (based on the IR-ETH/QN card).

LAN extension applications using an HS-ETH bridge, also work with other RAD products equipped with IR-ETH interfaces.

HS-ETH operates as a MAC-level remote bridge, performing optional filtering and forwarding of only those packets addressed to the remote stations.

HS-ETH operates at the physical and data link layers of the OSI model. Bridging is completely transparent to higher level protocols, such as TCP/IP, DECNET, XNS, ISO, as well as to operating systems such as NetWare and VINES.

ROUTER MODULE

The HS-ETH/R module (based on the IR-IP card) can serve as an edge IP router. HS-ETH router channels can connect to any HDLC or PPP-compliant access server or backbone gateway. PAP and CHAP authentication are performed.

Frame Relay protocol RFC 1490 enables HS-ETH to function as the termination unit for IP services over Frame Relay. The HS-ETH module located on the customer premises is connected to a Frame Relay switch located at the backbone, via one of the Megaplex main links.

HS-ETH routers also feature IP multicast at wire speed, making them suitable for any multicast environment including high speed downstream environments, such as satellite and xDSL. Users on the LAN register with the HS-ETH IP router for an IP multicast group using the IGMP protocol.

Each HS-ETH router can be assigned its own IP address and be remotely configured and monitored using Telnet, from either the LAN or WAN.

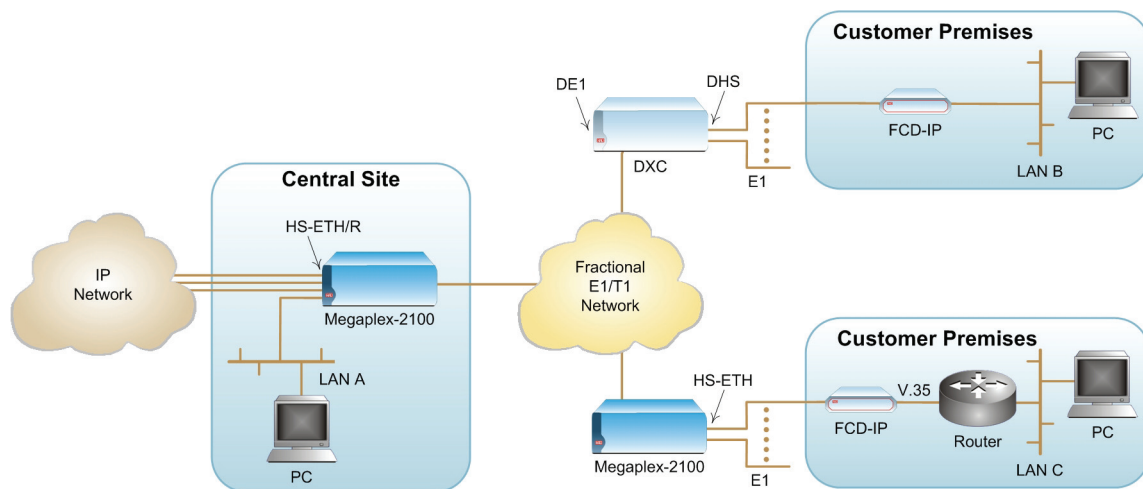


Figure 1. HS-ETH/R working opposite FCD-IP, extending central LAN and IP network access services to customer premises

Specifications

Ethernet Channels per Module

1, 2 or 4

Standard

IEEE 802.3/Ethernet V.2

Interface Type

HS-ETH/B, HS-ETH/V, HS-ETH/R: 10BaseT

HS-ETH/F: 10/100BaseT

Operation

Full/half duplex (set per channel)

Bandwidth Allocation on Megaplex

Main Link (per channel)

$n \times 56/64$ kbps (where $n \leq 31$ for E1 links,
 $n \leq 24$ for T1 links)

Connectors

RJ-45 (one for each channel)

Clock Mode

Derived from Megaplex timing

Ethernet Specifications

See *Table 1*

Indicators

TX (yellow) – Lights momentarily when packets are transmitted to LAN

RX (yellow) – Lights momentarily when packets are received from LAN

ERR/COLL (red/yellow):

- Bridge: Lights when packet collision occurs on LAN
- Router: Lights if buffer over/under flows; Flashes if IP address not yet configured

LINK (green) – Lights if 10BaseT LAN connection is OK

Power Consumption

10W (2A of +5 VDC) max.

Configuration

TDM bandwidth parameters via the Megaplex management system;

Router parameters via Tenet

Environment

Operating temperature: 0°C to 45°C
(32°F to 113°F)

Storage temperature: -20°C to +70°C
(-4°F to +160°F)

Humidity: up to 95%, non-condensing

Table 1. Ethernet Specifications

Version	LAN Table [addresses]	Frame Size [bytes]	Filtering & Forwarding [pps]	Buffer [frames]	Latency [frames]	WAN Protocol
B (IRETH)	10,000	1,518	3868*	256	1.15	HDLC
V (IR-ETH/Q)	2,000	1,522	3868*	256	1.27	HDLC
F (IR-ETH/QN)	1,024	1,536	3868*	120	1.1	HDLC
R (IR-IP)	–	1,522	163**	256	1	PPP(PAP/CHAP), Frame Relay (RRFC 1490), HDLC
* WAN rate: 1984 kbps, packet size 64 bytes						
** WAN rate: 1984 kbps, packet size 1514 bytes						

HS-ETH

1/2/4-Channel Ethernet Bridge/Router Modules

Ordering

MP-2100M-HS-ETH/*/UTP/#/⊗

Legend

- * Bridge/router:
B 10BaseT Bridge
V 10BaseT Bridge with VLAN
F 10/100BaseT Bridge with VLAN
R 10BaseT Router
- # Number of LAN channels
1 One LAN channel
2 Two LAN channels
4 Three LAN channels
- ⊗ Internal bus support (Default=C and D not supported)
CD C and D supported

Table 2. Megaplex Ethernet Interface Modules

Feature	HS-ETH/B	HS-ETH/V	HS-ETH/F	HS-ETH/R	HS-ETH/SW
Speed	10BaseT	10BaseT	10/100BaseT	10BaseT	10/100BaseT
Number of Ports	1 / 2 / 4	1 / 2 / 4	1 / 2 / 4	1 / 2 / 4	4
Bridge	✓	✓	✓	✓	✓
VLAN	-	✓	✓	-	✓
Router	-	-	-	✓	-
Switch	-	-	-	-	✓

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