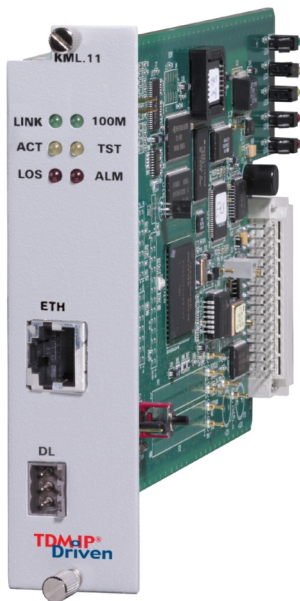


Kilomux-2100

KML.11

IP Main Link Module



- Synchronous communication between Kilomux devices over IP and Ethernet networks
- Network packet delay variation absorbed using a configurable jitter buffer
- QoS Support
- Enhanced buffering mechanism

The KML.11 main link module connects Kilomux directly to an IP/Ethernet-based backbone. KML.11 converts the TDM bit stream into IP packets, providing a cost-effective, versatile and modular TDMoIP solution for TDM applications over IP networks.

KML.11 is a standard IP device, featuring ICMP (ping), ARP, next hop and default gateway capabilities.

PERFORMANCE

The IP packet size is configurable. Greater packet length results in greater processing delay, yet smaller bandwidth overhead.

An enhanced buffering mechanism compensates for packet delay variation (jitter) of up to 300 msec in the network.

QOS SUPPORT

KML.11 employs VLAN tagging and priority labeling according to 802.1p&Q.

The user can configure the ToS (Type of Service) of the outgoing IP frames. This allows an en-route Layer-3 router or switch, which supports ToS (or Diffserv), to assign higher priority to TDMoIP traffic for delay-sensitive applications.

Assigned, IANA registered, UDP socket number for TDMoIP simplifies flow classification through switches and routers.

TDMoIP main link for
Kilomux-2100

TDMoIP
Driven™

RAD

data communications

The Access Company

KML.11

IP Main Link Module

TIMING

KML.11 maintains synchronization between TDM devices using advanced clock distribution mechanisms. The clocking options are:

Internal – master clock source for the TDM circuit is provided by the Kilomux internal clock oscillator

Adaptive – clock is recovered from the Ethernet network interface

External – Kilomux clock is the option to be synchronized to an external clock source.

ETHERNET PORT

The Ethernet port has a standard UTP half/full duplex 10/100BaseT copper interface with autonegotiation support. If autonegotiation is disabled, KML.11 can be set to operate in one of the following modes:

- 100BaseT – full duplex
- 100BaseT – half duplex
- 10BaseT – full duplex
- 10BaseT – half duplex.

DIAGNOSTICS & MANAGEMENT

The following diagnostic tools facilitate monitoring and problem solving:

- Remote loop over the Ethernet link interfaces, and internally, toward the I/O modules
- LAN performance monitoring and statistics
- ICMP (ping).

KML.11 utilizes a management channel designated for remote inband management over the IP network. The communication bus between KML.11 and KCL.2 (common logic module) carries all management information. The management channel is IP-encapsulated together with the Kilomux frame payload.

LAN performance monitoring and statistics (as per RFC 2665) are available for frames received and sent to the IP network, collisions, deferred transmission carrier sense errors, etc.

Specifications

ETHERNET PORT

Interface

10/100BaseT half/full duplex over UTP

Range

Up to 100m/330 ft over UTP cat. 5 cable

Payload

56 kbps to 1536 kbps

Standards Compliance

IEEE 802.3, 802.3u, Ethernet, 802.1p&Q

Connector

RJ-45

Statistics

According to RFC 2665:

- Received Frames:
Correct Frames, Correct Octets, Alignment Errors, FCS Errors
- Transmitted Frames:
Correct Frames, Correct Octets, Single Collision, Multiple Collision, Deferred Transmission, Late Collision, Carrier Sense Error

Packet Delay Variation (Jitter)

Tolerance

±300 msec

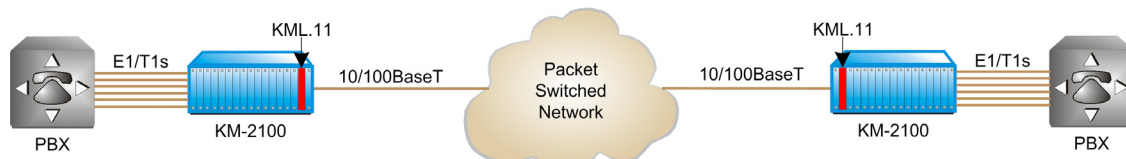


Figure 1. Compressed Voice System over IP

GENERAL

Diagnostics

LAN statistics

WAN diagnostics:

- Remote loopback toward Ethernet network
- Local loopback (internal only) toward I/O modules

DL Connector

3-pin connector for downloading software upgrades

Indicators

LINK (green) – On when Ethernet line is OK

100M (green) – On when uplink is operating at 100 Mbps rate

ACT (yellow) – blinks when packets are received on the Ethernet line

TST (yellow) – On when uplink is under test

LOS (red) – On if sync loss is detected on uplink

ALM (red) – On when alarm occurs

Power Consumption

3.5W derived from +5V

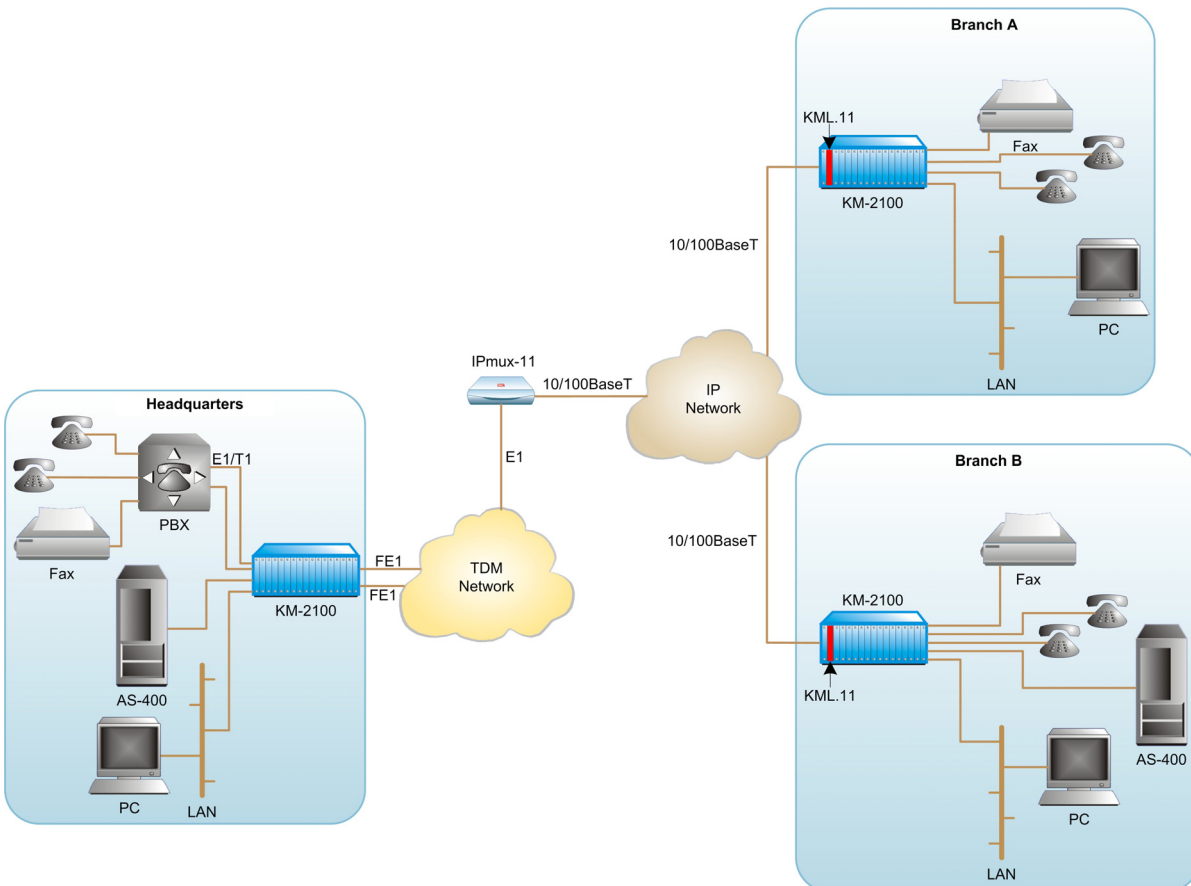


Figure 2. IPmux-11 and Kilomux Units in Multiservice and CVS over IP Point-to-Multipoint Application

KML.11

IP Main Link Module

Ordering

KM-2100M-KML.11

SUPPLIED ACCESSORIES

CBL-KVF6/8-DL

Cable, with an RS-232 DB-9 connector for downloading software upgrades from a PC to KML.11 using the 3-pin DL connector

Table 1. Kilomux-2100 Main Link Interface Modules

Name	Interface	Connector	Data Rates
KML.1/N	V.35	34-pin, female	9.6, 14.4, 19.2, 28.8, 32, 48, 56, 64, 128, 192, 256, 384, 512, 768, 1024, 1536 kbps
KML.2/N	RS-232	DB-25, female	9.6, 19.2, 32, 48, 56, 64, 128 kbps
KML.3/N	RS-530	DB-25, female	9.6, 14.4, 19.2, 28.8, 32, 48, 56, 64, 128, 192, 256, 384, 512, 768, 1024, 1536 kbps
KML.4/N	X.21	DB-15, female	9.6, 14.4, 19.2, 28.8, 32, 48, 56, 64, 128, 192, 256, 384, 512, 768, 1024, 1536 kbps
KML.5/N	G.703 Codirectional	8-pin, RJ-45	64, 128 kbps
KML.6/N	Compatible with AT&T PUB 62310	8-pin, RJ-45	9.6, 19.2, 56 kbps
KML.7	T1 G.703, G.704, AT&T TR-62411, ANSI T1.403 (D4-SF, ESF)	8-pin, RJ-45	56, 64, 128, 256, 384, 512, 768, 1024, 1536 kbps
KML.8	E1, G.703, G.704, G.732 (including CRC-4 and E bit)	8-pin, RJ-45, balanced Two BNC coaxial, unbalanced	56, 64, 128, 256, 384, 512, 768, 1024, 1536 kbps
KML.10	ITU-T Rec. I.430, Q.921, Q931	8-pin, RJ-45	64, 128 kbps
KML.11	Ethernet (TDMoIP)	8-pin, RJ-45	56, 64, 128, 192, 256, 384, 512, 768, 1024, 1536 kbps
KML.F	850/1310/1550 nm, single/multimode, LED/Laser	ST or FC/PC	128, 192, 256, 384, 512, 768, 1024, 1536 kbps

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