



## DM705 Series – Multiservice Multiplexer E1/STM1

## DM705 - Flexible Multiservice Multiplexer

The DM705-SUB is an E1/STM-1 Multiplexer for 19" racks with 4U height, with flexible hardware allowing six adjustments of the rack depth and reversion of L-adapters for direct fixation onto walls.

The DM705-HW2 is an E1 Multiplexer for 19" racks with 2U height, with flexible hardware.

### Characteristics

Totally modular, the DM705-SUB supports up to eight tributaries, two HS, two power supplies and two CPU cards. The DM705-HW2 supports up to eight tributaries, two power supplies and one CPU card.

All cards have hot-swap capability.

#### CPU:

- Allows the use of 1 or 2 cards in redundant operation <sup>1</sup>;
- Cross-connects 64 kbits/s timeslot data received from any interface;

#### Slots:

- DM705-SUB has 10 card slots, being 2 of them for high rate up to 155Mbits/s (HS slots) and 8 compatible to DM705 tributaries;
- DM705-HW2 has 8 tributaries cards.
- All slots present frontal outputs;

#### Possible sync sources:

- Mux generated internal clock;
- 2048 kHz external clock with input through a BNC connector available at the CPU card;
- Clock regenerated from the STM-1<sup>2</sup>, E3<sup>2</sup>, E1, G.shdsl or V.35;

#### Power supply:

- Supports input of 93 - 250 Vac or 36 - 72 Vdc, automatic selection (full range);
- Two power supplies can be installed for redundant operation;
- Power supply hot-swap is allowed;

#### External Alarms (NO/NC dry contact output at the front panel):

- DM705 CPU128 - Three external alarm inputs and one output;
- DM705-CPU64 - Three external alarm inputs and one output;
- DM705-CPU34 - Three external alarm inputs and one output;

## Dimensions:

- DM705-SUB: 178mm (4U) x 440mm x 154mm (Height x Width x Depth, without L-adapters for rack mounting)
- DM705-HW2: 89mm (2U) x 440mm x 154mm (Height x Width x Depth, without L-adapters for rack mounting)

*(<sup>1</sup>) DM705-CPU34 only allows redundancy when it is being used with DM705-SUB.*

*(<sup>2</sup>) Features not available for units equipped with the DM705-CPU34.*

## Common Applications

- Interconnection of data traffic and low speed voice with the SDH<sup>1</sup> network (using STM-1 interfaces) offering cross-connect of 64kbit/s timeslots. It supports both ring and linear topologies.
- Consolidation of traffics from many channels which are sub used in a single channel. Data from one port (DM705-E1, DM705-FO, DM705-DSL, DM705-MBB, DM705-V.35D, G.703 64kbits/s, voice cards DM705-FXO / DM705-FXS / DM705-E&M, RS232, and Ethernet<sup>1</sup>) may be mapped in any timeslot from another port through cross-connect of 64kbit/s (Grooming), which allows users to choose any port to work as aggregate. DM705-CPU64 and DM705-CPU128 also allow concentrating the tributaries in 2Mbits/s channels mapped for the STM-1 aggregate.
- CAS Cross-connect (Channel Associated Signaling) generated from mapping of voice, optical and E1 interfaces. By using the DM705-CPU64 or DM705-CPU128 it is also possible to CAS cross-connect with DM705-DSL, DM705-STM-1 (2Mbits/s channels), DM705-FO HW3 (2Mbits/s), and framed DM705-V.35D interfaces.
- Telesupervision system which allows monitoring different elements such as street stations and cabinets through DM705-HK and DM705-HK HW2<sup>1</sup> cards. Monitoring occurs through telesignals (digital inputs), telemetry (analog inputs take AC and DC voltage, current and temperature measurements) and telecommands (digital outputs). The management software allows viewing events, logs, and measurement graphs in real time through the Web interface.
- Link protocol conversion for TDM channels (PPP or Bridge nx64), allowing the integration of Metro-Ethernet networks with TDM networks through DM705-IP<sup>1</sup> cards. Offers QoS configuration on the CPEs connected to the DM705 on both protocols, PPP and Bridge nx64.

*(<sup>1</sup>) Features not available for units equipped with the DM705-CPU34.*

## Control and cross-connect capacity

DM705-SUB has 2 CPUs slots and can be equipped with three models of control cards (DM705-CPU34, DM705-CPU64 or DM705-CPU128).

DM705-HW2 has 1 CPU slot and can be equipped with one model of control card (DM705-CPU34)

CHASSI	DM705-CPU34	DM705-CPU64	DM705-CPU128
DM705	NO	NO	NO
DM705 HW2	YES	NO	NO
DM705-Sub	YES	YES	YES

MATRIX (GROOMING)	DM705-CPU34	DM705-CPU64	DM705-CPU128
Channels (32 Timeslots)	61**	61**	257**

HS CARDS	DM705-CPU34	DM705-CPU64	DM705-CPU128
HS Interfaces support	NO	YES	YES
DM705-HS-STM1E*	-	YES (drop of 32 E1s)	YES (drop of 63 E1s)
DM705-HS-FO*	-	YES (drop of 32 E1s)	YES (drop of 63 E1s)
DM705-HS-FO SFP*	-	YES (drop of 32 E1s)	YES (drop of 63 E1s)
DM705-HS-E3E	-	YES	YES

TRIBUTARY CARDS	DM705-CPU34	DM705-CPU64	DM705-CPU128
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DM705-E1	YES	YES	YES
DM705-FO HW2	YES	YES	YES
DM705-FXO	YES	YES	YES
DM705-FXS	YES	YES	YES
DM705-E&M	YES	YES	YES
DM705-G64	YES	YES	YES
DM705-MBB	YES	YES	YES

NEW CARDS / NEW TRIBUTARY FEATURES	DM705-CPU34	DM705-CPU64	DM705-CPU128
DM705-V.35D	2x2Mbit/s	2x2Mbit/s	2x2Mbit/s
DM705-DSL2	2x2Mbit/s	2x2Mbit/s	2x2Mbit/s
DM705-DSL8	NO	8x2Mbit/s	8x2Mbit/s
DM705-FXO4	NO	YES	YES
DM705-FXO10	NO	YES	YES
DM705-FXS4	NO	YES	YES
DM705-FXS10	NO	YES	YES
DM705-E1Q	4x2Mbit/s	4x2Mbit/s	4x2Mbit/s
DM705-E1-16	NO	YES (only 8E1)	YES
DM705-HK	NO	YES	YES

DM705-HK HW2	NO	YES	YES
DM705-FO HW3	YES	YES	YES
DM705-FO2 HW3	YES	YES	YES
DM705-Switch	NO	YES	YES
DM705-6V35	NO	YES	YES
DM705-IP 2E1	NO	YES	YES
DM705-IP 4E1	NO	YES	YES
DM705-IP 8E1	NO	YES	YES
DM705-IP 16E1	NO	YES (only 8E1)	YES
DM705-IP 16E1	NO	YES (only 8E1)	YES

FIRMWARE UPGRADE	DM705-CPU34	DM705-CPU64	DM705-CPU128
FTP	YES	YES	YES
TFTP	YES *	YES *	YES *

MANAGEMENT	DM705-CPU34	DM705-CPU64	DM705-CPU128
SNMP	YES	YES	YES
Terminal	YES	YES	YES
Telnet	YES	YES	YES

Local: Access, Interface	DmView Standalone, Ethernet	DmView Standalone, Ethernet	DmView Standalone, Ethernet
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ROUTING	DM705-CPU34	DM705-CPU64	DM705-CPU128
Channels	24 WAN	24 WAN	24 WAN
Ethernet	10BaseT / 100BaseTx	10BaseT / 100BaseTx	10BaseT / 100BaseTx
PPP	YES	YES	YES
Frame Relay ITU	YES	YES	YES
Frame Relay ANSI	YES	YES	YES
Frame Relay NONE	YES	YES	YES
RIPv1/v2	YES	YES	YES
NATP	NO	NO	NO

GENERAL	DM705-CPU34	DM705-CPU64	DM705-CPU128
Clock Hierarchy	YES	YES	YES
Alarm Inputs	3 inputs	3 inputs	3 inputs
Alarm Outputs	1 NO/NC output	1 NO/NC output	1 NO/NC output
Hot-Swap CPU	YES ***	YES	YES

Hot-Restart	YES	YES	YES
CPU Redundancy	YES ***	YES	YES
Multiple users	YES	YES	YES
User configs	2	2	2

(\*) TFTP firmware upgrade cannot be performed with the equipment in normal operation. It can only be done via Ethernet interface with the equipment in boot prompt, that is, without user data going through it.

(\*\*) Besides matrix lines mentioned above, DM705-CPU34, DM705-CPU64 and DM705-CPU128 have more 3 lines for management adding up to 64, 64 and 260 lines respectively.

(\*\*\*) Not supported in DM705 chassis.

## DM705-CPU34

### Network interface

- Ethernet 10/100Base-TX operating with or without auto-negotiation for equipment management;
- Up to 24 WAN interfaces, also known as HDLC, in steps of 64kbits/s from 64kbits/s to 2048kbits/s.
- Besides PPP and Frame Relay protocols, DATACOM proprietary protocol can be used for equipment's remote management that are connected to tributaries' interfaces that doesn't have IP management.

### CPU main features

- It has 3 inputs and 1 output of external alarms for the equipment. Enabling/Disabling and severity of input and output alarm interfaces are configurable.
- Clock hierarchy definition, allowing user to define an interface list that are capable of generate clock to the system sorted by priority;
- CPU redundancy (only DM705-SUB) operating with automatic protection in case of failure;
- Firmware upgrade with minimum loss of client's data. Service disruption time will depend on the cards and firmware involved. This time should be virtually null;
- Cross-connecting of up to 61 lines of 2Mbits/s;
- Compatible to DM705 HW2 chassis;



## New supported cards:

### Tributaries:

- DM705-DSL2/DSL2 HW2: 2 G.shdsl interfaces (G.991.2 of ITU-T), which is the most modern pattern, offering best performance for HDSL modems. Two-wire operation, reaching up to 2Mbits/s per interface and CAS cross-connecting using RJ-45 connectors;
- DM705-E1: one G.703 interface, up to 2Mbit/s.
- DM705-E1Q: 4 G.703 E1 interfaces reaching up to 2Mbit/s per port.
- DM705-E&M: 4 voice channels per card, operating at 2 or 4 wires; line impedance of 600 Ohm or 900 Ohm; four types of E&M signaling are available: I, II, IV or IV.
- DM705-FXS: 4 FXS (Foreign Exchange Station) voice channels per card; programmable transmission and reception gain from -4dB to +4dB (in steps of 1 dB); selectable billing between polarity inversion and pulse of 12kHz or 16kHz.
- DM705-FXO: 4 FXO (Foreign Exchange Office) voice channels; programmable transmission and reception gain from -4dB to +4dB (in steps of 1 dB); selectable billing between polarity inversion and pulse of 12kHz or 16kHz.
- DM705-FO/FO2 HW3: 1 or 2 optical interfaces that can operate according to G.704 or in a pattern compatible to DM4E1S.
- DM705-G64: 6 G.703 co-directional ports that can operate at 64kbits/s, 128kbits/s or 256 kbits/s.
- DM705-MBB: 6 baseband modem interfaces operating in rates at 64kbits/s, 128 kbits/s or 256kbits/s. Compatible to Telebras standard baseband modems (rule 225-540-773, October 1994/Anatel);
- DM705-V35D: 2 V.35-V.36/V.11-V.24/V.28 interfaces on a single card operating in rates up to 2.048kbit/s per interface and cross connected CAS. Each interface can operate as V.35 or V.36/V.11 or V.24/V.28.

## DM705-CPU64

Enhancements in relation to DM705-CPU34

## New supported cards:

### HS channels:

- DM705-HS-STM1E: 1 STM-1 electrical interface that delivers 32E1s.
- DM705-HS-FO: 1 STM-1 optical interface that delivers 32E1s.
- DM705-HS-FO SFP: 1 STM-1 optical interface that delivers 32E1s using SFP modules.
- DM705-HS-E3E: 1 E3 electrical interface that delivers 16E1s.

## Tributaries:

- DM705-E1-16: 16 G.703 E1 interfaces, up to 2 Mbits/s each port. (If it is used with DM705-CPU64 only the first 8 interfaces are available for configuration).
- DM705 HK: 16 housekeeping inputs (external alarm/telemetry), 4 housekeeping outputs (alarm or telecommand) and 2 RS-232/V.28/V.24 interfaces.
- DM705-HK HW2: 18 housekeeping inputs (external alarm/telemetry), 4 housekeeping outputs (alarm or telecommand), 6 analog inputs and 2 RS-232/V.28/V.24 interfaces.
- DM705-FXS4: 4 FXS (Foreign Exchange Station) voice channels per card; programmable transmission and reception gain from -10dB to +4dB (in steps of 1 dB); Omnibus (Hot-Line) can be enabled for ports 1 and 2, simultaneously or not; selectable billing between polarity inversion and pulse of 12kHz or 16kHz.
- DM705-FXS10: 10 FXS (Foreign Exchange Station) voice channels per card; programmable transmission and reception gain from -4dB to +4dB (in steps of 1 dB); Omnibus (Hot-Line) can be enabled for ports 1 and 2, simultaneously or not; selectable billing between polarity inversion and pulse of 12kHz or 16kHz.
- DM705-FXO4: 4 FXO (Foreign Exchange Office) voice channels per card; programmable transmission and reception gain from -4dB to +4dB (in steps of 1 dB); Omnibus (Hot-Line) can be enabled for ports 1 and 2, simultaneously or not; selectable billing between polarity inversion and pulse of 12kHz or 16kHz.
- DM705-FXO10: 10 FXO (Foreign Exchange Office) voice channels per card; programmable transmission and reception gain from -4dB to +4dB (in steps of 1 dB); Omnibus (Hot-Line) can be enabled for ports 1 and 2, simultaneously or not; selectable billing between polarity inversion and pulse of 12kHz or 16kHz.
- DM705-6V35: 6 V.35-V.36/V.11-V.24/V.28 on a single card operating in rates up to 2.048kbit/s each port, reaching up to the total of 12.288kbits/s. Each of the 6 interfaces can operate as V.35 or V.36/V.11 or V.24/V.28.
- DM705-Switch: 8 10/100Mbit/s Ethernet interfaces according to IEEE 802.3. Operation in Bridge and Switch mode supports 802.1q VLAN. Configurable rate of nx64kbit/s, reaching up to 2Mbit/s per port.
- DM705-DSL8: G.shdsl interfaces (G.991.2 of ITU-T), which is the most modern pattern, offering best performance for HDSL modems. Two-wire or four-wire operation, reaching up to 2Mbits/s per port using RJ-45 connectors;
- DM705-IP 16E1/8E1/4E1/2E1: 2 10/100/1000Mbits/s Ethernet interfaces; conversion of TDM channels' existent enlace protocol, being it PPP or bridge nx64 into Ethernet in one of its ETH interfaces allowing the integration of Metro Ethernet with TDM networks; DM705-IP can be configured to IP-Switch mode, that allows the creation of up to 4 groups to be mapped for L2 switching. In case of DM705-IP-16E1 is used with DM705-CPU64, only 8E1s are available.

## DM705-CPU128

Enhancements in relation to DM705-CPU64

## Network Interface

- DM705-CPU128 presents the same characteristics of DM705-CPU64.

## CPU main features

- Cross-connecting of up to 260 lines of 2Mbits/s allowing DM705-SUB's maximum capacity;

## Enhancements in DM705-CPU64's compatible cards

- DM705-E1-16: 16 G.703 E1 interfaces up to 2Mbit/s per port.
- DM705-IP 16E1: 2 10/100/1000Mbit/s Ethernet interfaces with 512 TDM channels, reaching up to 32Mbit/s.
- DM705-HS-STM1E: 1 STM-1 electrical interface with drop of 63E1s.
- DM705-HS-FO: 1 STM-1 optical interface with drop of 63E1s.
- DM705-HS-FO SFP: 1 STM-1 optical interface with drop of 63E1s using SFP modules.

## New supported cards:

- DM705-CPU128 supports all cards that are supported by DM705-CPU64.

## DM705-SUB Aggregate Interfaces

DM705-SUB has 2 slots for aggregate card interfaces.

NAME	PORTS	DESCRIPTION
DM705-HS-STM1E	1	CMI G.703 75ohms STM-1 Electrical Interface
DM705-HS-FO	1	STM-1 Optical Interface
DM705-HS-FO SFP	1	STM-1 Optical Interface using SFP modules
DM705-HS-E3E	1	CMI G.703 75ohms E3 Electrical Interface

## DM705-HS-STM1E

HS (High Speed) interface with an STM-1 electrical interface according to ITU-T G.703 Recommendation.

Operation as Terminal or Ring. When operating as terminal mode, can operate with MSP enabled or disabled; when operating as Ring mode, can operate with SNCP enabled or disabled (configurable per VC12).

- Connectors: BNC
- Nominal impedance: 75•
- Coding: Coded Mark Inversion (CMI)
- Speed: 155.520 kbits/s

## DM705-HS-FO

HS (High Speed) interface with an STM-1 optical interface according to ITU-T G.703 Recommendation.

Terminal or Ring operation. When operating as terminal mode, can operate with MSP enabled or disabled; when operating as Ring mode, can operate with SNCP enabled or disabled (configurable per VC12).

Optical cards are always provided with SC-PC connectors, even for bi-directional fiber cards – MONOFIBER.

To specify optical links, user must keep in mind:

- The physical medium used. It can be multimode or single mode.
- The number of available fibers and the wavelengths they operate at:
  - TWO FIBRES (RX and TX) – They can transmit and receive at 1310nm. Optionally they can be provided with transmission and reception at 1550nm.
  - MONOFIBRE (RX and TX on the same fiber) – They can transmit at 1310nm and receive at 1550nm over the same fiber or vice versa.
- Laser’s transmission power which directly matters in the link range. Please check the table:

MODULE	DESCRIPTION	TX [NM]	MINIMUL POWER TX	SENSITIVITY	ESTIMATE REACH*
MS13	Multimode	1310	-20dBm	-31dBm	~ 2km
SS13	Singlemode 2 fibers short reach	1310	-15dBm	-34dBm	~ 15km
SS15	Singlemode 2 fibers short reach	1550	-15dBm	-34dBm	~ 15km
SL13	Singlemode 2 fibers long reach	1310	-5dBm	-34dBm	~ 40km

	alcance				
SL15	Singlemode 2 fibers long reach	1550	-5dBm	-35dBm	~ 100km
SLx15	Singlemode 2 fibers long reach	1550	0dBm	-35dBm	~ 120km
SSB13 SSB15	Singlemode Monofiber short reach	1310 or 1550**	-14dBm	-31dBm	~ 15km
SLB13 SLB15	Singlemode Monofiber long reach	1310 or 1550**	-5dBm	-34dBm	~ 60km

(\* ) Estimated range was made considering the following parameters: losses in each connectors as 0.7 dBm, losses amendments as 0.35 dBm and the loss of each fiber as 0.25 dBm per km, disregarding the optical dispersion.

(\*\*) Transmission at 1310nm and reception at 1550 nm or vice-versa. Attenuation in 1310nm is preponderant.

## DM705-HS-FO SFP

The HS-FO SFP interface – provides an optical port STM-1 155.520kbit/s through SFP modules. Operation as a terminal or ring. When in "terminal", can operate with or without MSP protection; when in "ring" can operate with or without SNCP protection (configurable by VC-12).

Allows the interconnection of a DM705 equipment to a SDH network via an optical interface STM-1 SFP installed in one HS slot.

The SFP (Small Form-factor Pluggable) module is used on the SFP port equipment, used as transceiver between the card and the means of communication (optical fiber).

To specify optical links, user must keep in mind:

- The physical medium used. It can be multimode or single mode.
- The number of available fibers and the wavelengths they operate at:
  - TWO FIBRES (RX and TX) – They can transmit and receive at 1310nm. Optionally they can be provided with transmission and reception at 1550nm.
  - MONOFIBRE (RX and TX on the same fiber) – They can transmit at 1310nm and receive at 1550nm over the same fiber or vice versa.

CODE	MODULE NAME	MODULE DESCRIPTION
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377.0107.00	MO SFP SSB15 SDH ETH [-/155M] [-/FP/-/OP:-15/RP:-32/20km]	Optical module type SFP SSB15, single fiber, [-/155M] [-/FP/-/OP:-15/RP:-32/20km]
377.0108.00	MO SFP SSB13 SDH ETH [-/155M] [-/FP/-/OP:-15,0/RP:-32/20,0km]	Optical module type SFP SSB13, single fiber, [-/155M] [-/FP/-/OP:-15,0/RP:-32/20,0km]
377.0115.00	MO SFP SS13 SDH [S4.1/622M] [DD/FP/-/OP:-15,0/RP:-28/20,0km]	Optical module type SFP SS13, dual fiber, [S4.1/622M] [DD/FP/-/OP:-15,0/RP:-28/20,0km]
377.0118.00	MO SFP SS13 SDH ETH OTN [I16.1/2.67G] [DD/FP/-/OP:-9,0/RP:-18/2,0km]	Optical module type SFP SS13, dual fiber, [I16.1/2.67G] [DD/FP/-/OP:-9,0/RP:-18/2,0km]
377.0119.00	MO SFP SS13 SDH ETH OTN [S16.1/2.67G] [DD/DFB/-/OP:-5/RP:-18/15km]	Optical module type SFP SS13, dual fiber, [S16.1/2.67G] [DD/DFB/-/OP:-5/RP:-18/15km]
377.0120.00	MO SFP SL15 SDH ETH OTN [L16.2/2.67G] [DD/DFB/A/OP:-2/RP:-28/80km]	Optical module type SFP SL15, dual fiber, [L16.2/2.67G] [DD/DFB/A/OP:-2/RP:-28/80km]
377.0125.00	MO SFP SL13 SDH ETH [L1.1/155M] [DD/FP/-/OP:-5/RP:-34/40km]	Optical module type SFP SL13, dual fiber, [L1.1/155M] [DD/FP/-/OP:-5/RP:-34/40km]
377.0126.00	MO SFP SS13 SDH ETH [S1.1/155M] [DD/FP/-/OP:-15/RP:-28/30km]	Optical module type SFP SS13, dual fiber, [S1.1/155M] [DD/FP/-/OP:-15/RP:-28/30km]
377.0127.00	MO SFP SS15 SDH ETH [S1.2/155M] [DD/FP/A/OP:-15/RP:-34/20km]	Optical module type SFP SS15, dual fiber, [S1.2/155M] [DD/FP/A/OP:-15/RP:-34/20km]
377.0128.00	MO SFP SL15 SDH ETH [L1.2/155M] [-/DFB/A/OP:-5/RP:-34/80km]	Optical module type SFP SL15, dual fiber, [L1.2/155M] [-/DFB/A/OP:-5/RP:-34/80km]
377.0129.00	MO SFP SLx15 SDH ETH [Ext L1.2/155M] [DD/DFB/A/OP:0/RP:-35/100~120km]	Optical module type SFP SLx15, dual fiber, [Ext L1.2/155M] [DD/DFB/A/OP:0/RP:-35/100~120km]
377.0130.00	MO SFP SSB13 SDH ETH [-/155M] [DD/FP/-/OP:-9,0/RP:-32/25,0km]	Optical module type SFP SSB13, single fiber, [-/155M] [DD/FP/-/OP:-9,0/RP:-32/25,0km]
377.0131.00	MO SFP SSB15 SDH ETH [-/155M] [DD/FP/-/OP:-9,0/RP:-32/25,0km]	Optical module type SFP SSB15, single fiber, [-/155M] [DD/FP/-/OP:-9,0/RP:-32/25,0km]

377.0132.00	MO SFP SLB13 SDH ETH [-/155M] [DD/FP/-/OP:-5,0/RP:-34/60,0km]	Optical module type SFP SLB13, single fiber, [-/155M] [DD/FP/-/OP:-5,0/RP:-34/60,0km]
377.0133.00	MO SFP SLB15 SDH ETH [-/155M] [DD/DFB/-/OP:-5,0/RP:-34/60,0km]	Optical module type SFP SLB15, single fiber, [-/155M] [DD/DFB/-/OP:-5,0/RP:-34/60,0km]
377.0135.00	MO SFP SLx15 SDH [Ext L4.2/622M] [DD/DFB/A/OP:0/RP:-30/90~110km]	Optical module type SFP SLx15, dual fiber, [Ext L4.2/622M] [DD/DFB/A/OP:0/RP:-30/90~110km]
377.0137.00	MO SFP SLx15 SDH ETH OTN [Ext L16.2/2.67G] [DD/DFB/A/OP:0/RP:-30/90~11]	Optical module type SFP SLx15, dual fiber, [Ext L16.2/2.67G] [DD/DFB/A/OP:0/RP:-30/90~110km]
377.0142.00	MO SFP SS13 SDH ETH [S1.1/155M] [-/FP/-/OP:-15,0/RP:-34/30,0km]	Optical module type SFP SS13, dual fiber, [S1.1/155M] [-/FP/-/OP:-15,0/RP:-34/30,0km]
377.0144.00	MO SFP SL15 SDH ETH [L1.2/155M] [-/DFB/A/OP:-5/RP:-35/80~100km]	Optical module type SFP SL15, dual fiber, [L1.2/155M] [-/DFB/A/OP:-5/RP:-35/80~100km]
377.0154.00	MO SFP SL13 SDH ETH OTN [L16.1/2.67G] [DD/DFB/-/OP:-2,0/RP:-28/40,0km]	Optical module type SFP SL13, dual fiber, [L16.1/2.67G] [DD/DFB/-/OP:-2,0/RP:-28/40,0km]
377.0158.00	MO SFP SSB13 SDH ETH [-/155M] [DD/FP/-/OP:-14,0/RP:-32/20,0km]	Optical module type SFP SSB13 single fiber, [-/155M] [DD/FP/-/OP:-14,0/RP:-32/20,0km]

## DM705-HS-E3E

HS (High Speed) interface with an E3 Electrical Interface according to ITU-T G.703 Recommendation. Allows add/drop of 16 E1s and these E1 can compose redundant link.

- Connectors: BNC
- Nominal impedance: 75•
- Coding: HDB3
- Rate: 34.368kbits/s

## DM705-SUB Tributary interfaces

DM705-SUB has 8 slots for tributary card interfaces.

NAME	PORTS	DESCRIPTION

DM705-E1	1	E1 G.703 Electrical Interface (75/120Ohms)
DM705-E1Q	4	E1 G.703 Electrical Interfaces (75/120Ohms)
DM705-E1-16	16	E1 G.703 Electrical Interfaces (75/120Ohms)
DM705-FO	1	E1 Optical Interface E1
DM705-DSL2	2	G.SHDSL Interfaces
DM705-DSL8	8	G.SHDSL Interfaces
DM705-V.35D	2	V.35 – V.36/V.11-V.24/V.28 Interfaces
DM705-6V.35	6	V.35 – V.36/V.11-V.24/V.28 Interfaces
DM705-FXO	4	FXO (Foreign Exchange Office) voice channels
DM705-FXO4	4	FXO (Foreign Exchange Office) voice channels
DM705-FXO10	10	FXO (Foreign Exchange Office) voice channels
DM705-FXS	4	FXS (Foreign Exchange Station) voice channels
DM705-FXS4	4	FXS (Foreign Exchange Station) voice channels
DM705-FXS10	10	FXS (Foreign Exchange Station) voice channels
DM705-E&M	4	E&M (Earth and Magnet) voice channels signaling
DM705-G64	6	G.703 64kbit/s codirecional Interfaces
DM705-MBB	6	Interface Base Band Modem Interfaces
DM705-HK	16 inputs, 4 outputs, 2-RS232/V.28/V.24	House-keeping inputs and outputs; RS232/V.28/V.24 asynchronous interfaces
DM705-HK HW2	18 digital inputs, 6 analog inputs, 4 outpus	House-keeping inputs and outputs; RS232/V.28/V.24



	2-RS232/V.28/V.24	asynchronous interfaces
DM705-FO HW3	1	Optical fiber interface, working as G.704 or as "Frame 20M", DM4E1S
DM705-FO2 HW3	2	Optical fiber interfaces, working as G.704 or as "Frame 20M", DM4E1S
DM705-Switch	8	10/100Mbit/s Ethernet Interfaces, according to IEEE 802.3 standard.
DM705-IP 16E1	2	10/100/1000Mbits/s according to IEEE 802.3. Allows the use of up to 512 TDM channels, reaching up to 32Mbits/s data per card;
DM705-IP 8E1	2	10/100/1000Mbits/s according to IEEE 802.3. Allows the use of up to 256 TDM channels, reaching up to 16Mbits/s data per card;
DM705-IP 4E1	2	10/100/1000Mbits/s according to IEEE 802.3. Allows the use of up to 128 TDM channels, reaching up to 8Mbits/s data per card;
DM705-IP 2E1	2	10/100/1000Mbits/s according to IEEE 802.3. Allows the use of up to 64 TDM channels, reaching up to 4Mbits/s data per card;

## DM705-E1/DM705-E1Q

- Presented in two versions:
  - DM705 - E1: one interface per card, 75 or 120 Ohm selectable impedance;
  - DM705 - E1Q: 4 independent interfaces per card (only for DM705 with CPU64). There are two models, one with 75 Ohm impedance and the other with 120 Ohm impedance.
- G.703 interface impedance:
  - For 75 Ohm, coax cable with BNC connector;
  - For 120 Ohm, twisted pair with RJ-45 connector.
- G.703 signal loss or synchronism led indicator;
- Frames structured as defined by ITU-TS G.704 Recommendation;
- CRC4 according to G.704, channel associated signaling (CAS), local and remote frame synchronism indication;
- Rate of 2048 kbits/s per port, using HDB3 coding, as defined by G.703 Recommendation;
- Performs loopbacks;

- Allows management of remote equipment;
- M:N Protection\*: If an active channel of an interface fails, it is switched and the protection channel takes over the signal processing in both equipment;
- Can compose redundant link.

*(\*) Feature not available for DM705-E1.*

## DM705-E1-16

- 16\* interfaces per card, with a Telco64 output connector;
- Allows the use of and RB-10 Telco64 adaptor, coupling a Telco64 connector to 32 coax cables;
- G.703 interface impedance: 75 Ohm (can be supplied with 120 Ohm interface impedance);
- Structured frames as defined by ITU-TS G.704 Recommendation;
- CRC4 according to G.704, channel associated signaling (CAS), local and remote frame synchronism indication (through management software);
- Rate of 2048 kbits/s per port, using HDB3 codification as defined by G.703 Recommendation;
- Performs loopbacks;
- Allows management of remote equipment;
- M:N Protection: If an active channel of an interface fails, it is switched and the protection channel takes over the signal processing in both equipment;
- Can compose redundant link.

*(\*) If used with DM705-CPU64 only 8E1s are available per card.*

## DM705-FO:

- One interface per card (rate of 2Mbit/s);
- Operates with one fiber (bidirectional, TX and RX on the same fiber) or two fibers; SC-PC connectors;
- Work with one fiber (bidirectional, TX and RX at the same fiber) or with two fibers;
- Transmitters:
  - Laser Diode (1310nm or 1550nm), provided in potencies from 0 to -15dBm.
- Receivers:
  - Photodiode PIN, minimum level is -35dBm for 10<sup>-9</sup> BER (single mode).
- Loss of signal or loss of synchronism LED indicator;
- Range: considering single mode 9/125 fiber, 0.36dB/km attenuation, plus 3dB attenuation in connections, ends up in a range of 45km (33dB link attenuation) for -15dBm tx potency. Other range options are available;
- Structured frames as defined by ITU-TS G.704 Recommendation;
- CRC4 according to G.704, channel associated signaling (CAS), local and remote frame synchronism indication;
- Allows management of remote equipment;

- Allows the connection with DM4E1S, in 1xE1;
- ALS (Automatic Laser Shutdown);
- Can compose redundant link.

### DM705-FO HW3/DM705-FO2 HW3

- One or two optical interfaces per card according to the model;
- Operates with one fiber (bidirectional, TX and RX on the same fiber) or two fibers; SC-PC connectors;
- Operates with single mode or multimode fibers; SC-PC connectors;
- Transmitter:
  - Laser Diode (1310 nm or 1550 nm), provided in potencies from 0 to -20 dBm;
- Receivers:
  - Photodiode PIN, lower level -35 dBm to 10<sup>-9</sup> BER (single mode);
- Estimated card range is up to 120km using SLx15 module. SM12, SS13, SS15, SL13, SL15, SSB13, SSB15, SLB13 and SLB15 are also available;
- Configurable interfaces to work as "Frame 20 M" (DM4E1S compatible), or as single E1, following ITU-TS G.704 recommendation;
- Loss of signal or loss of synchronism LED indicator;
- When configured to work in "Frame 20 MHz" mode, allows up to 4 E1 per card for cross-connection of data in the matrix, and up to 8 E1s if working in "Frame 20M8E1" mode compatible to DM4E1S;
- Allows remote equipment management through "Frame 20 M" and E1\* frame links;
- ALS (Automatic Laser Shutdown);
- Can compose redundant link.

*(\*) Management through E1C is not available if the card is configured to work as "Frame 20M8E1".*

### DM705-DSL2/DM705-DSL2 HW2

- Two independent interfaces per card.
- Follows Recommendation G.shdsl (ITU-T G.991.2), which is the most modern pattern, offering best performance for HDSL modems. Two-wire operation, using RJ-45 connectors;
- TC-PAM codification, assuring spectral compatibility with other services, as ADSL and ISDN. The range is 15 to 20% greater than in modems that use 2B1Q codification at the same speed. Rates are 35% to 45% greater for comparable distances;
- Reaches up to 6.3 km for 192 kbits/s and 3.6 km for 2048 kbits/s over 0,4 mm lines without noise;
- Handshake as defined in G.994.1, allowing interoperability with equipments from other manufacturers;
- Software configured to work as office or subscriber equipment;

- Allows Local Digital Loopback and performs a test pattern with error detection through commands of the control interface;
- Allows remote equipment management.

Operation using DM705-CPU34 - DM705-CPU64 - DM705-CPU128:

- Can compose redundant link.

## DM705-DSL8/DM705-DSL8 HW2

- 8 independent interfaces per card that reaches up to 2Mbits/s each port;
- Follows Recommendation G.shdsl (ITU-T G.991.2), which is the most modern pattern, offering best performance for HDSL modems. Two-wire or four-wire\* operation, using RJ-45 connectors;
- TC-PAM codification, assuring spectral compatibility with other services, as ADSL and ISDN. The range is 15 to 20% greater than in modems that use 2B1Q codification at the same speed. Rates are 35% to 45% greater for comparable distances;
- Reaches up to 6.3 km at 192 kbits/s and 3.6 km at 2048 kbits/s over 0,4 mm lines without noise operating as 2 wires; and 4,4km at 2.048kbits/s over 0,4mm lines without noise configured as 4 wires\*.
- Handshake as defined in G.994.1, allowing interoperability with equipment from other manufacturers;
- Software configured to work as office or subscriber equipment;
- Allows Local Digital Loopback and performs a test pattern with error detection through commands of the control interface;
- Allows remote equipment management.

*(\*) If configured for 4 wires, 2 ports compose one data link, thus the operation as 4 wires is limited to 4 links.*

## DM705-FXO/FXO4/FXO10

- Available channels in RJ11 connector in the FXO version and Telco50 in FXO4 and FXO10 versions;
- In FXO and FXO4 versions are available 4 voice channel per card, in the FXO10 version is possible to enable up to 10 channels, in all cases working as 2 wires;
- Line impedance: selectable between 600 or 900 Ohm (selectable through software);
- Voice channel band: 300Hz to 3400Hz, uncompressed. It uses a 64 kbits/s channel (timeslot);
- A-Law codification, as defined in Recommendation G.711;
- Programmable transmission and reception gain from -4dB to +4dB (1dB steps) for FXO and -10dB to +4dB for FXO4 and FXO10;

- Billing: reverse polarity, 12 kHz or 16 kHz pulse;
- CAS Signaling;
- Test pattern generator with error detection; activated by control port.
- Local Digital Loopback and ring and off hook tests; activated by control port
- Allows conference between more than one card (Omnibus);
- Application:
  - POTS Service (FXO - FXS);
  - Connection between analog modems (FXO - FXO).

## DM705-FXS/FXS4/FXS10

- Available channels in RJ11 connector in the FXS version and Telco50 in FXS4 and FXS10 versions;
- In FXO and FXO4 versions are available 4 voice channel per card, in the FXS10 version is possible to enable up to 10 channels, in all cases working as 2 wires;
- Line impedance: selectable between 600 or 900 Ohm (selectable through software);
- Voice channel band: 300Hz to 3400Hz, uncompressed. It uses a 64 kbits/s channel (timeslot);
- A-Law codification, as defined in Recommendation G.711;
- Programmable transmission and reception gain from  $-4\text{dB}$  to  $+4\text{dB}$  (1dB steps) for FXS and  $-10\text{dB}$  to  $+4\text{dB}$  for FXS4 and FXS10;
- Billing: reverse polarity, 12 kHz or 16 kHz pulse;
- CAS Signaling;
- Test pattern generator with error detection; activated by control port;
- Local Digital Loopback and ring and off hook tests; activated by control port;
- Allows conference between more than one card (Omnibus);
- Application:
  - POTS Service (FXO - FXS);
  - HOT-LINE (FXS - FXS).

## DM705-E&M

- 4 voice channels per card, working at 2 wires or 4 wires;
- Connection through RJ45 connectors;
- Line impedance: selectable between 600 or 900 Ohm (selectable through software);
- Voice channel band: 300Hz to 3400Hz, uncompressed. It uses a 64 kbits/s channel (timeslot);
- Allows the configuration of E&M type signaling; I, II, IV or V;
- A-Law codification, as defined in Recommendation G.711;
- Programmable transmission and reception gain from  $-4\text{dB}$  to  $+4\text{dB}$  (1dB steps);
- CAS Signaling;
- Test pattern generator with error detection; activated by control port;
- Local Digital Loopback;
- Generates forced states (ON/OFF) on the E&M terminals; activated by control port

- Allows conference between more than one card (Omnibus).

## DM705-G64

- 6 G.703 co-directional ports operating at 64kbits/s, 128kbits/s or 256kbits/s;
- Connection through 6 RJ45 connectors (RJ48C);
- G.703 interface impedance is 120 Ohm;
- Reception signal detection by LED indication individually per port.
- Test pattern generator with error detection; activated by control port;
- Local Analog Loopback and Local Digital Loopback, activated by control port
- Receiver that operates up to 1.000 meters (64kbits/s) over 0,4nm twisted pair.

## DM705-MBB

- 6 Baseband modem interfaces operating at 64kbit/s, 128kbit/s or 256kbit/s;
- Compatible to Telebras standard baseband modems (rule 225-540-773, October 1994/Anatel);
- Connection through 6 RJ45 connectors (RJ48C);
- Interface impedance of 150 Ohm;
- Receiver equipped with adaptative equalization, operating up to distances of 6000, 5000 and 4000 meters at 64kbits/s, 128kbits/s and 256kbits/s, respectively, over 0,4nm twisted pair;
- Indicator LEDs of synchronism and AIS;
- Test pattern generator with error detector, activated by control port;
- Local Digital Loopback and remote digital loop request through control port.

## DM705-V.35D

- 2 ports, each one with three possible interfaces: V.35, V.36/V.11 and V.28 (RS-232). The interface is selected by straps;
- Each port has a female DB25 connector with ISO 2110 Amd.1 - RS-530 compatible pinout;
- Low speed operation (1200, 2400, 4800, 9600 or 19200 bits/s) with X.50 protocol as main link;
- Test pattern generator with error detector, activated by control port;
- CT103 and CT104 led indicators for each port;
- Can use external clock (CT128) for data reception;
- Local Analog Loopback, Local Digital Loopback and Remote Digital Loopback (V.54) activated by control port commands or by CT140 and CT141;
- Allows transferring an E1 channel over data networks with V.35 interfaces, using G.704 frame structure;
- Allows structured operation using variable speeds on port 1. For that, the V.35 speed should be at least 64kbits/s greater than the sum of the chosen timeslots. With this

feature it is possible, for example, to connect a digital PABX to an E1 port and to use a data network with V.35 or V.11 interface for PABX communication.

## DM705-6V35

- Six ports, each one can operate in V.35, V.36/V.11 or V.24/V.28.mode;
- Connections available thru two DB44 female connectors (3 interfaces in each connector) It can be directly connected or a cable adapter can be used ;
- Configurable operation rate, from 64 kbits/s to 2048 kbits/s (steps of 64 kbits/s). Total card rate up to 12288 kbits/s.
- LEDs, showing each ports status;
- Local Analog Loopback, Local Digital Loopback and Remote Digital Loopback, activated by the control port.
- BERT patter generator with error detector, activated by the control port;
- RB-04 adapter (adapter from two DB44 connectors to six DB25 connectors).

## DM705-HK

- 16 opto-isolated housekeeping inputs (for external/telemetry alarm), strap configurable for voltage, dry contact or open collector input;
- Housekeeping inputs and outputs are available on two DB25 connectors, each one with eight inputs and two outputs. Each connector has strap selection to choose the power supply mode as internal or external. Each port has independent selection to connect to the connector supply or not;
- 4 dry contact housekeeping outputs (alarm or telecommand);
- 2 RS-232 interfaces on a RJ-45 connector. The RS-232 interface data are transmitted oversampled in  $n \times 64$  kbits/s timeslots and 2048 kbits/s maximum rate;
- Allows LDL and BERT test (towards the cross-connection matrix) for the RS-232 interfaces;
- Allows monitoring the status of the remote external mechanisms such as door open sensors, air conditioner, equipment alarms, etc. and activation of external mechanisms by telecommand or alarm.

## DM705-HK HW2

Enhancements in relation to DM705-HK

- The housekeeping inputs and outputs are provided in 2 DB44 connectors;
- 18 opto-isolated housekeeping inputs (for external/telemetry alarm), strap configurable for voltage, dry contact or open collector input.
- 6 analog inputs compatible to commercial transducers (inputs of 4Ma to 20mA);
- Allows the monitoring of stations measuring voltage, current, temperature;
- 4 configurable thresholds for operation with associated alarms, being them: HighHigh, High, Low and LowLow.

## DM705-Switch

- 8 Ethernet 10/100 Mbits/s interfaces, according to IEEE 802.3 standard;
- Half Duplex (back pressure) and Full Duplex (pause frames) flow control;
- Dynamic MAC address table, with 8000 entries;
- CoS (IEEE 802.1p);
- Flow control;
- Mapping interface for Ethernet traffic through TDM matrix with configurable rate of n x 64 kbits/s, maximum of 2 Mbits/s;
- L2 Switching;
- Bridge and Switch mode operation, supporting 802.1q VLAN;
  - Bridge mode: Ethernet interfaces converter - n x 64 kbits/s;
  - Switch mode: Ethernet traffic switching from and to any interface;
  - Port-Based VLAN;
  - Tag-Based VLAN;
- Compatible with DATACOM products DM991CE, DM991SE, DM704CE and DM704SE;

## DM705-IP 16E1/8E1/4E1/2E1

- DM705-IP is presented in four (4) versions. Each card has 2 Ethernet interface 10/100/1000Mbits/s according to IEEE 802.3, in RJ45 connectors, always operating with VLAN and TDM channels according to its card model:
  - DM705 - IP 16E1 allows up to 512 TDM channels, reaching up to 32Mbits/s data traffic per card\*;
  - DM705 - IP 8E1 allows up to 256 TDM channels, reaching up to 16Mbits/s data traffic per card;
  - DM705 - IP 4E1 allows up to 128 TDM channels, reaching up to 8Mbits/s data traffic per card;
  - DM705 - IP 2E1 allows up to 64 TDM channels, reaching up to 2Mbits/s data traffic per card.
- Allows QoS through traffic prioritization and CIR and PIR definitions.
- Each TDM channel can be configured from 64kbits/s to 2Mbits/s and can operate independently following one of the protocols below:
  - Bridge nx64: compatible with DATACOM products DM991CE, DM991SE, DM704CE and DM704SE;
  - PPP nx64: according to rfc1661 and rfc1662, is compatible to other vendors.
- Mapping of PPP interfaces into VLANs (802.1q) classifying packets according to one of the following methods:
  - Automatic: mapping between IP (DSCP) service type and QoS demarcation for Ethernet network (802.1p);
  - Fixed: Ethernet quality of service depends only on user configuration, not taking into account the IP service type.
- Using the technologies VCAT and GFP, it is possible to aggregate data traffic coming from one of its ethernet interface into a TDM channel that reaches up to 30Mbits/s



(nxVC12) to the SDH network in a transparent mode. VCAT and GFP technologies follow respectively the recommendations G.707 and G.7041 from ITU-T.

- LCAS (Link Capacity Adjustment Scheme): it is possible to configure LCAS protocol for the GFP channel;

(\* ) The bandwidth of 32 Mbits/s can only be reached when DM705-IP 16E1 is used with the DM705-CPU128; if it is used with DM705-CPU64 the maximum bandwidth is 16Mbits/s.

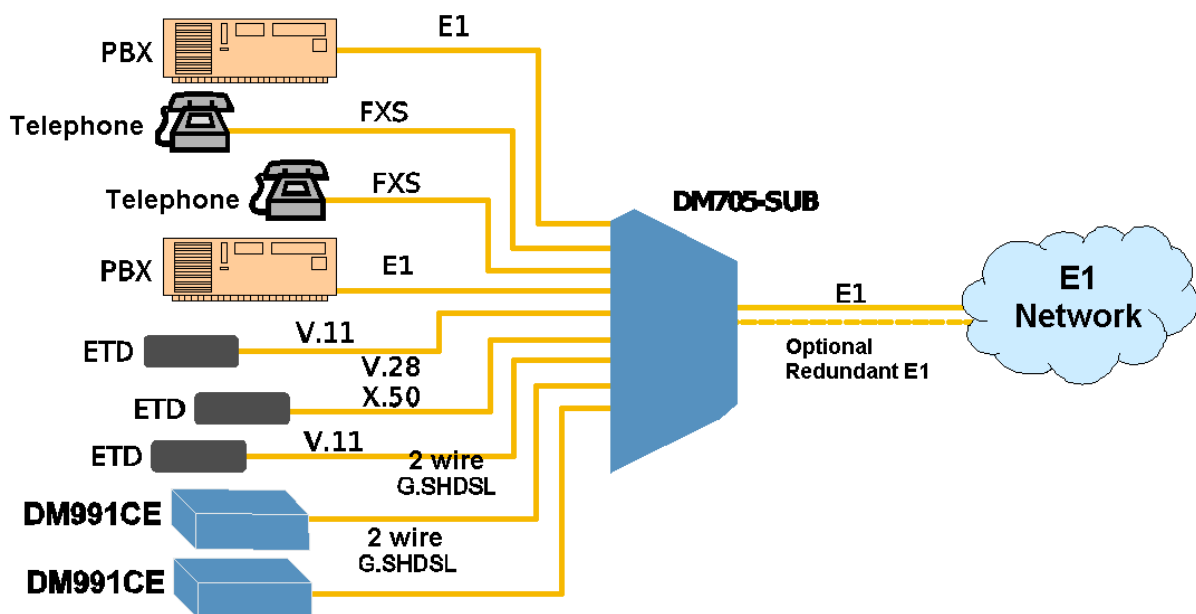
## DM705-IP-Switch 16E1/8E1/4E1/2E1

- Up to 127\* interfaces can be configured per group, allowing L2 switching between Ethernet and/or TDM channels;
- 4 distinct groups to map the interfaces;
- Each interface belongs to only one group;
- Each created group is a distinct broadcast domain, so data traffic occurs only between group members;
- Maximum operation bandwidth is determined according to the characteristics of each model previously described;
- Uses VCAT and GFP PDH technologies, it allows aggregating data coming from one of the Ethernet interfaces in one TDM channel of up to 32Mbits/s (nxE1) for the PDH network in a transparent manner.

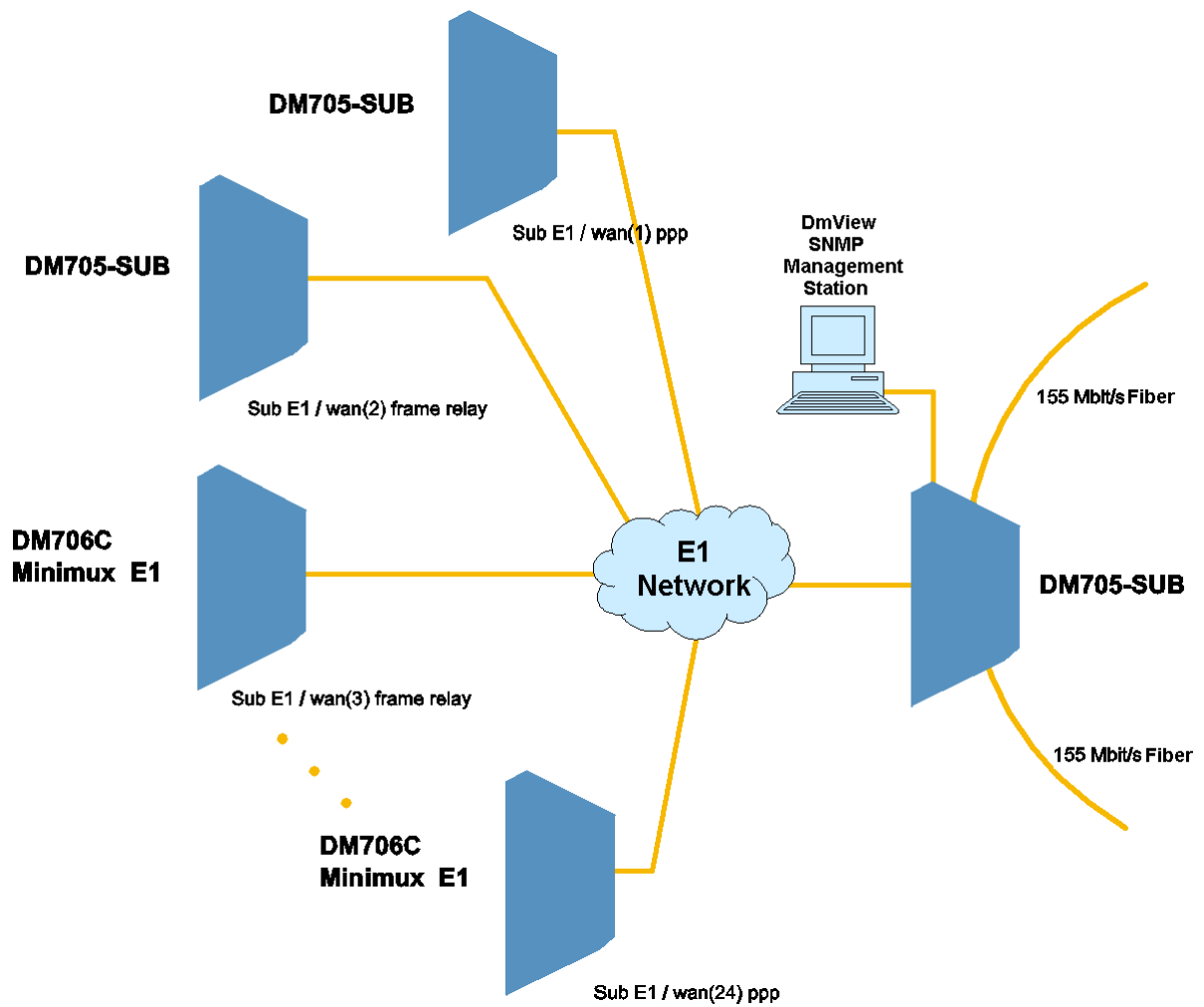
(\* ) Only 66 interfaces are available for DM705-IP-Switch 2E1.

## Applications

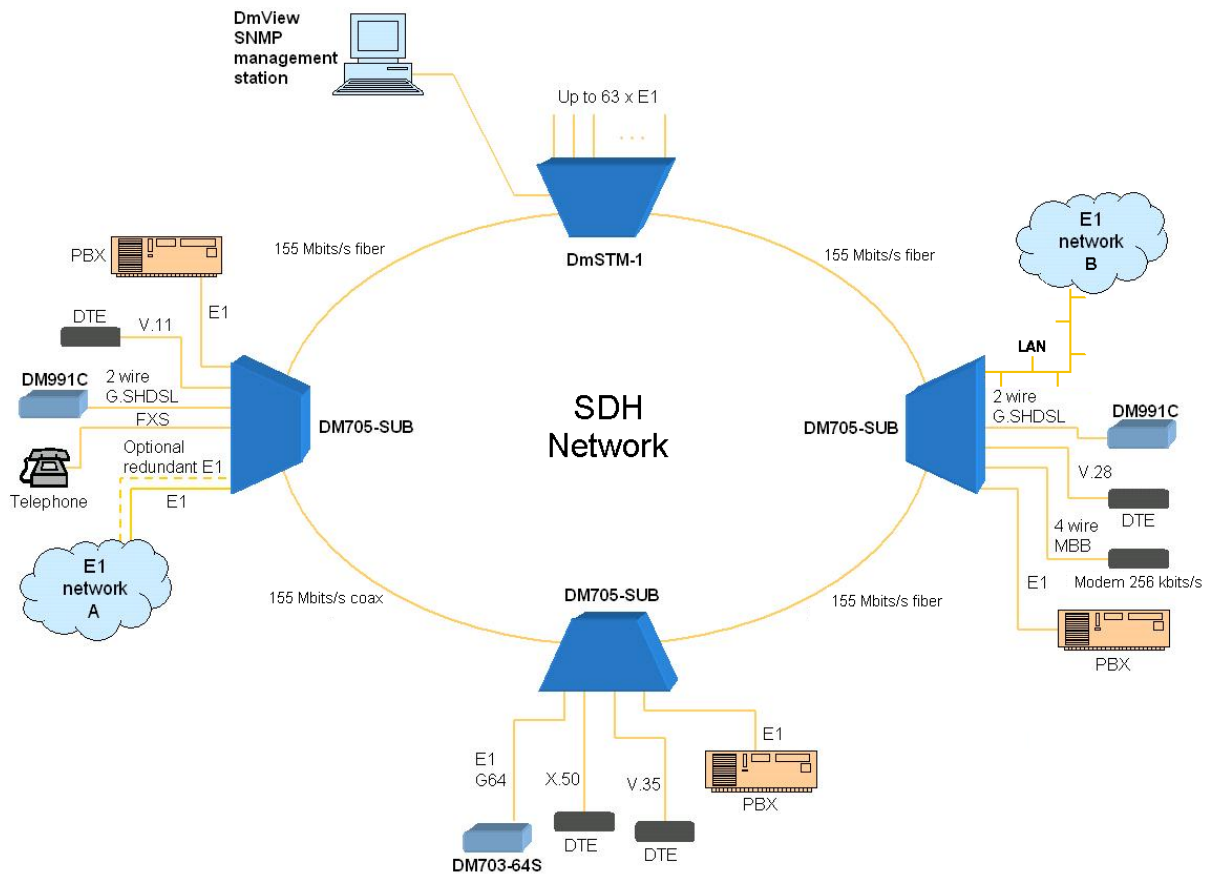
### DM705-SUB: Multi-access service with redundant E1



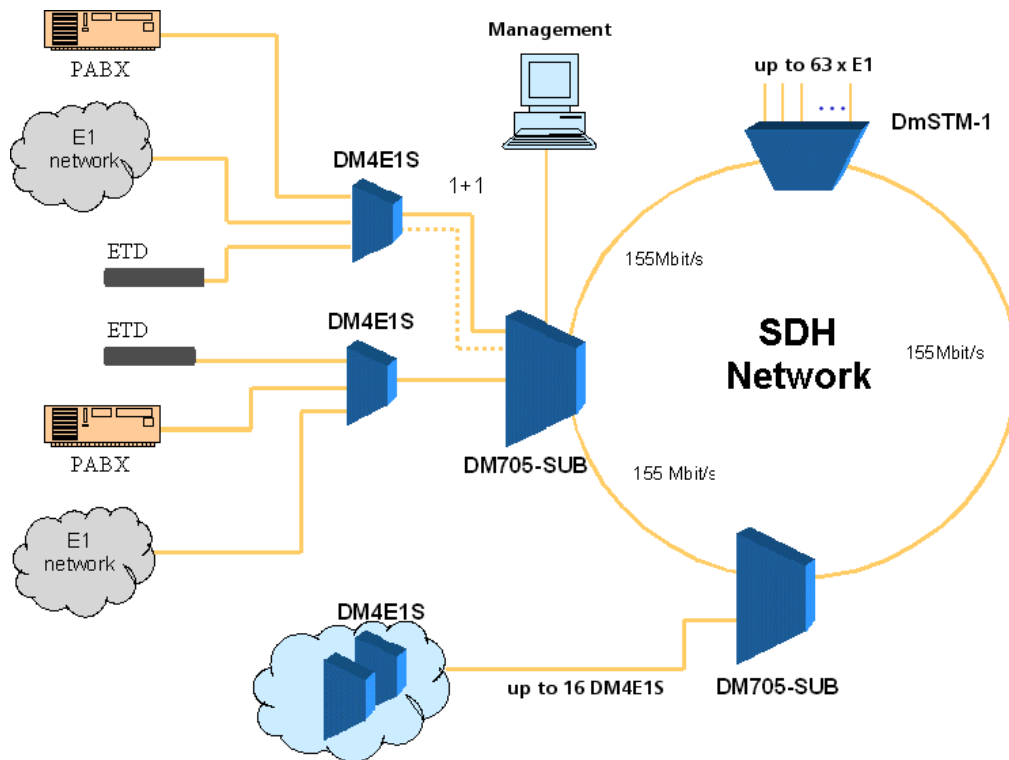
## DM705-SUB: Link concatenation for management



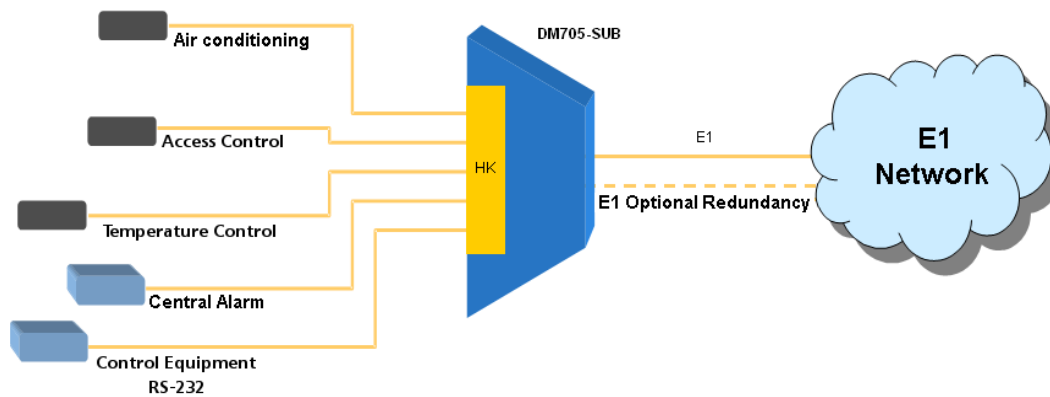
## DM705-SUB: Mixed applications using DmSTM-1



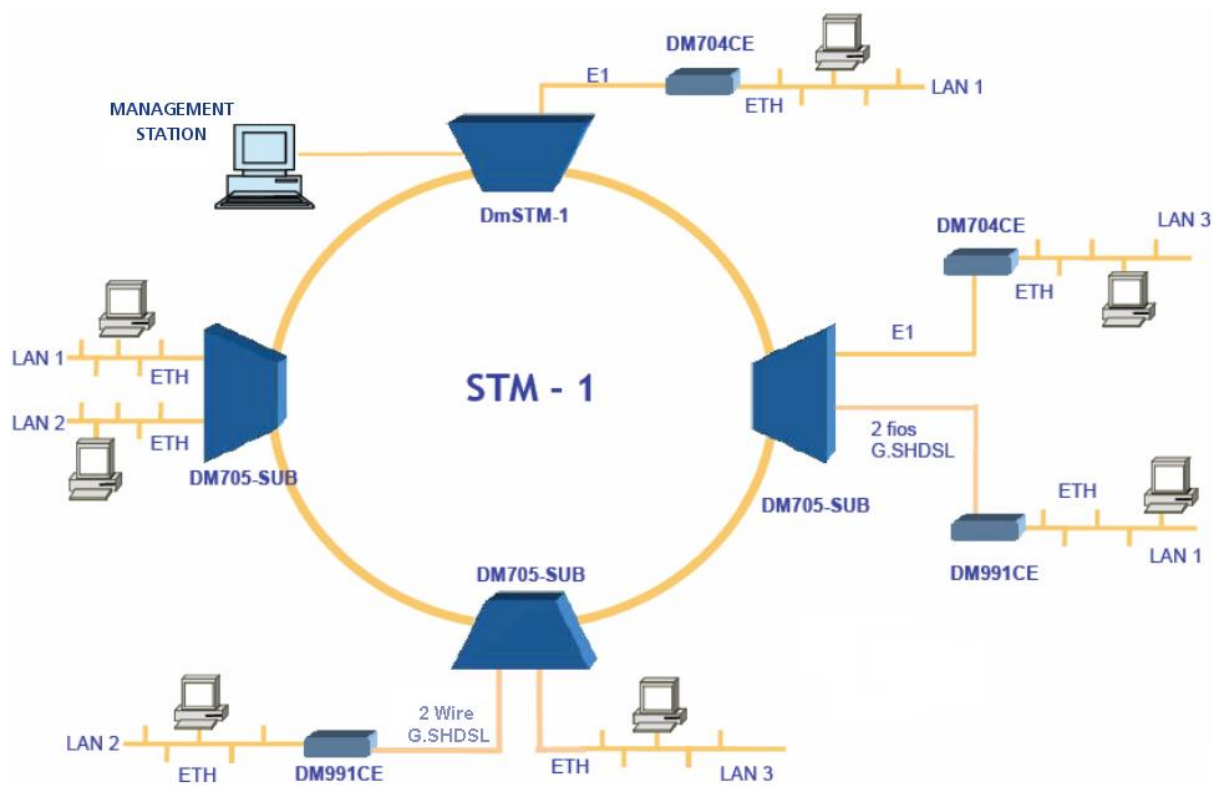
## DM705-SUB: Interface application using DM4E1S



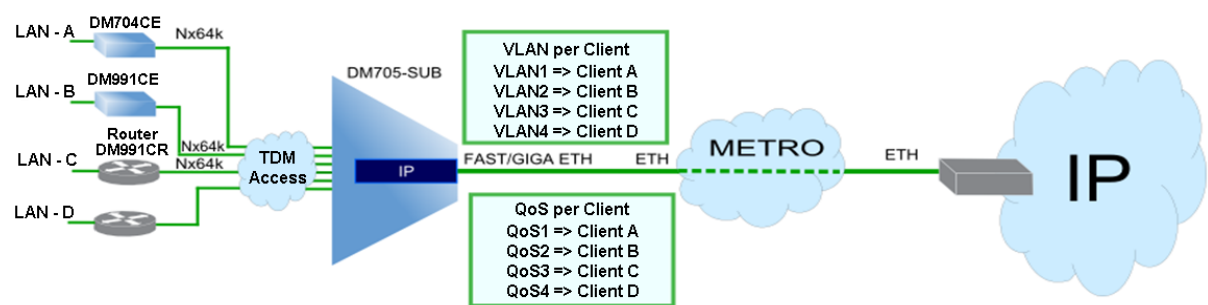
## DM705-SUB: Application for DM705-HK (House Keeping)



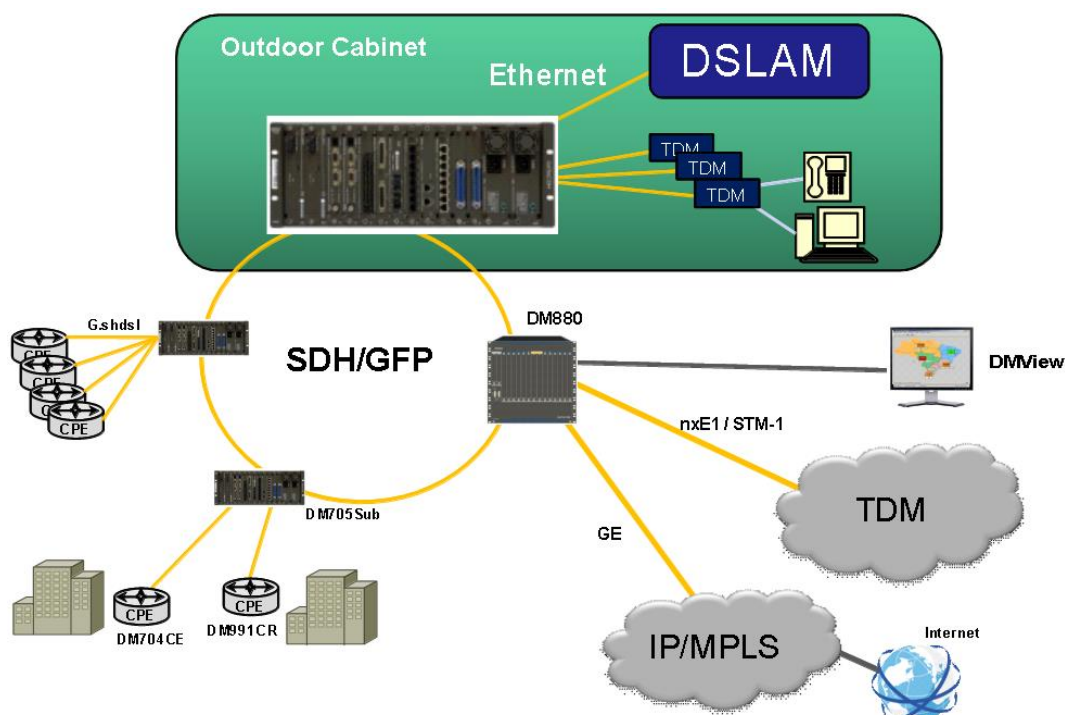
## DM705-SUB: Application for DM705-Switch



## DM705-SUB: Application for DM705-IP



## DM705-SUB: GFP/LCAS application using DM705-IP



## Accessories

- DB9M x DB9F adapter cable (terminal access), 2m;
- DB25 x DB37 adapter cable for V.36 interfaces, ISO4902 connector;
- DB25 x M34 adapter cable for V.35 interfaces, ISO2593 connector;
- RJ-45 to Telco50 adapter cable

It adapts 3 DM705-DSL8 outputs or 12 DM705-DSL2 outputs that use RJ-45, to a Telco50 connector that is available in equipment's rear side, through MA-05 panel. It is modular and adapts from one to 24 DSL interfaces;

- Telco64 -16E1s adapter cable

Direct connection adapter of 3mm coax cables for E1 tributaries. Adapts 32 3mm coax cables (up to 16E1s) to a Telco64 connector male;

- DB44M => 3x DB25F

It can be used in conjunction with RB-04. The cable presents a DB44M, connector to be connected to the DM705-6V35, and 3 DB25F connectors. Therefore, each V.35 interface presents itself in a DB25 connector female that follows ISO 2110 Amd 1 standard, compatible to RS-530;

- DB44 => Telco50F (90 ° cover) – 22 pairs adapter cable

Adapt DM705-6V35 outputs (DB44) to a female 90 ° Telco50 connector. It is available in equipment's rear area, through MA-05 panel. Allows up to 3 V.35 outputs per cable;

- Balun E1 adapter

It is a small card with 2 75 Ohm BNC female and one RJ-45. It is used to coupling 75 Ohm E1 signals (G.703 at 2048kb/s) to 120 Ohm E1 signals. Coupling is made through transformers allowing galvanic protection. Its RJ-45 pinout is standard for E1 signals and also is called RJ48C. This adapter can be provided for single applications in epoxy resin encapsulation;

- RB-04 patch panel for 6V35

RB-04 is an adapter for DB44 in a patch panel with 6 DB25 connectors. Therefore, each V.35 interface presents itself in a DB25 connector female that follows ISO 2110 Amd 1 standard, compatible to RS-530. RB-04 patch panel is standard sized and can be installed in 19" racks, it has 0.5U in height;

- RB-10 adapter (Telco64 x 32 coax cables)

RB-10 is used to adapt DM705-E1-16 output to 32 75 Ohm coax cables;

- RB-11 Rear support adapter.

Patch panel that adapts DM705-6V35's DB-44 outputs into a Telco50 connector that is available in equipment's rear side. RB-11 is modular and adapts from 1 to 48 6V35 interfaces (3 in each Telco50 connector).

- MA-10 ventilation unit

MA-10 has 2 alarm outputs in a DB9 that allows its connection to the equipment's CPU through a DB9 - DB9 straight through cable. Its power supply is full-range type, in doing so the voltage can be chosen between 100 to 240VAC or 48 to 60VDC. MA-10 has the same width and depth of the DM705-SUB (440mm e 154mm, respectively) and 1.5U in height (67mm approximately).

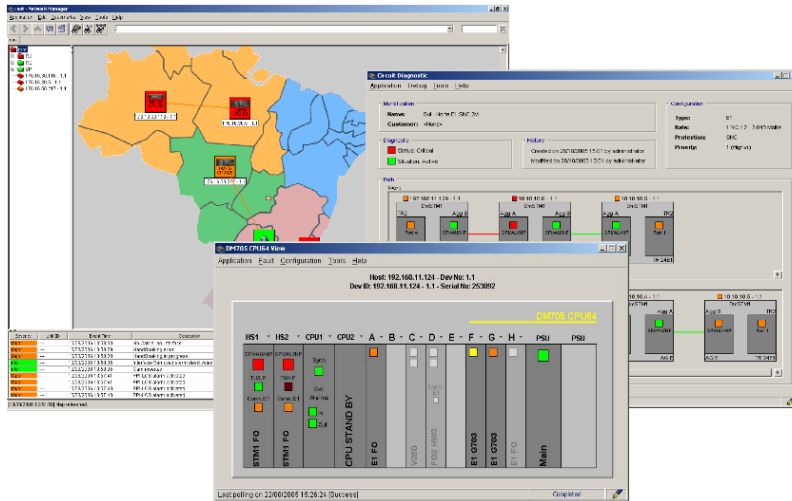
- MK-02 – Attachment to install the telesupervision system

Used to install the telesupervision system in large stations. It allows connecting the DM705-HK HW2 card and monitoring points. It is supplied with a CL50 cable with DB44 connector, which allows connecting the DM705-HK HW2 card to attachment MK-02; this cable size is preset in 20m. It requires independent power supply of 48Vdc. It allows:

- 18 digital input connections;
- \*6 analog input connections;
- 4 digital output connections.

(\*) The type of analog input varies according to the model requested. Please refer to the installation and operation manual for further specifications.

## Integrated Network Management System



### DmView Enterprise

- Widely used management system;
- User-friendly graphics interface and easy access;
- Simultaneous access by multiple users located at different management stations;
- A unique management platform for SDH, PDH and Metro Ethernet products;
- NE configuration (Network Elements);
- Fully configuration of DATACOM's equipment, as well as data inventory;
- Equipment's visualization in topological maps with easy creation of locations and links;
- Management System for end-to-end and OAM (Operations, Administrations & Maintenance) provisioning
- Identification and fault detection;
- Inventory management;
- Performance management with custom reports via Web interface that can be extracted to HTML, PDF and CSV, with configurable email sending and creation of favorites;
- Security management with users and permission groups;
- Compatible to different operational systems (Microsoft Windows and Sun Solaris) and databases (Oracle and Firebird)