



multiplexers & interface converters

INTERFACE CONVERSION, DIGITAL CROSS CONNECTS (DXC) AND MULTIPLEXING ALLOW THE OPTIMISATION OF THE ACCESS INFRASTRUCTURE BY ITS ABILITY TO DO LOCAL SWITCHING, TO REDUCE THE NUMBER OF PHYSICAL INTERFACES NEEDED FOR CONNECTING TO THE BACKBONE NETWORK, AND BY THE REDUCTION OF NUMBER OF (NON-MANAGED) EXTERNAL INTERFACE CONVERSION BOXES.

Because it shares the same card-nest (CN4) and it integrates into the same network management concept than the voice band modems, xDSL and fibre optic modems, this equipment is an essential part of the global Telindus access solution.

CROCUS 2M CNV TT

TELINDUS ACCESS SOLUTIONS

> TELINDUS DYNAMIC ROUTING ENGINE

> ACCESS ROUTERS

> BROADBAND CENTRAL OFFICE

> BROADBAND CPE

> TDM CENTRAL OFFICE

> VOICEBAND MODEMS

> TDM DSL MODEMS

> FIBRE OPTIC MODEMS

> MULTIPLEXERS & INTERFACE CONVERTERS

> ISDN MULTIPLEXERS

> MODULAR DATA INTERFACES

> NETWORK MAINTENANCE & MANAGEMENT

> ACCESSORIES

TELINDUS SURVEILLANCE SOLUTIONS

> TELINDUS SURVEILLANCE SOLUTIONS

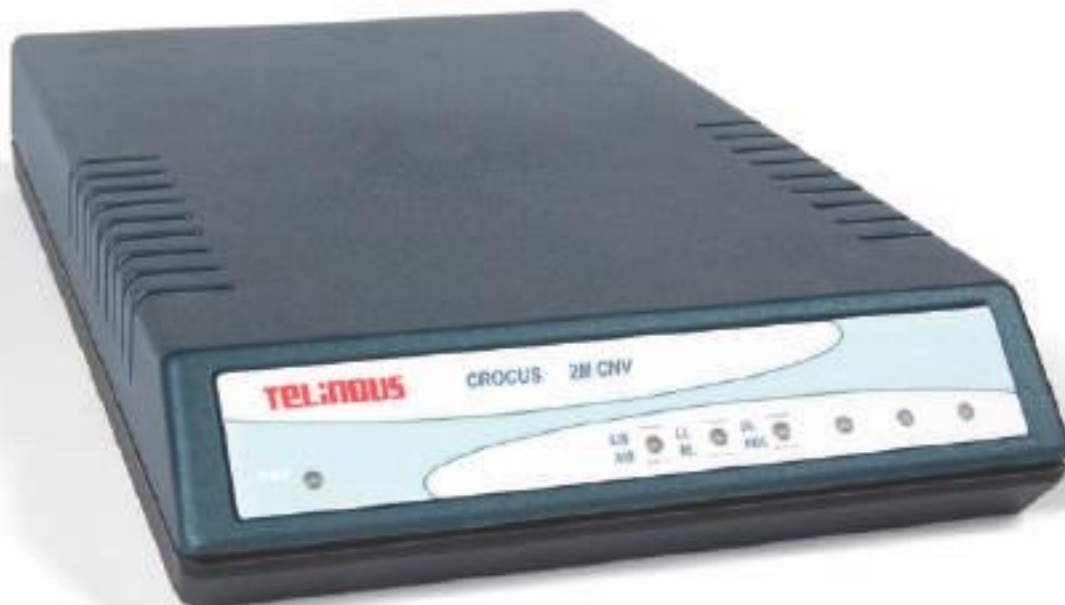
TELINDUS SERVICES PORTFOLIO

> INTEGRATED APPLICATIONS

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FEATURES & BENEFITS

- > 2MBPS G.703 INTERFACE CONVERTER
- > MODELS FOR X.21 OR V.35
- > WIDE RANGE OF CLOCKING POSSIBILITIES
- > FULL SIZE CONNECTORS (NO ADAPTER CABLES REQUIRED)

> THE CROCUS 2M CNV IS A FAMILY OF COST-EFFECTIVE INTERFACE CONVERTERS FOR CONNECTING DIFFERENT TYPES OF APPLICATIONS TO G.703 BASED INFRASTRUCTURES.

The Crocus 2M CNV TT offers transparent 2 Mbps operation, and supports a wide range of clocking possibilities. With its full size connectors, the interface converter eliminates the need for costly adapter cables. The models with X.21 and V.35 interface can be used for connecting applications like routers or switches to a G.703 transport infrastructure.

The Crocus 2M CNV TT is suited for connection to G.703 transport infrastructures based on both 120 ohm twisted pair and 75 ohm coax cable.

INTERFACES

- > G703 telecom interface (all models)
 - > conform ITU G.703
 - > balanced interface at 120 ohm on RJ45 connector
 - > unbalanced interface at 75 ohm on BNC connectors
- > X21 interface (X.21 model)
 - > electrical interface conform V11
 - > functional interface conform X24/DCE
 - > mechanical interface conform ISO 4903 (DB15 female)
 - > support of 't', 'r', 's', 'c', 'i' and 'x'
- > V35 interface (V.35 model)
 - > electrical interface conform V11- V10
 - > functional interface conform V24/DCE
 - > support of TXD, RXD, TXC, RXC, TXC', DCD, RTS->CTS, DSR->DTR
 - > mechanical interface conform ISO 2593 (34 pin Winchester female)

CLOCKING MODES

- > Free Run
 - > internal clock used to transmit to the G.703 network
 - > internal clock used for RxD and TxD
- > Slave to Network
 - > G.703 clock is recovered with jitter filtering
 - > recovered clock is used to transmit to the G.703 network
 - > recovered clock is used for TxD and RxD
- > Transparent
 - > DTE clock is used to transmit to the G.703 network
 - > recovered clock from the G.703 network is used for RxD
- > Mixed mode
 - > internal clock is used for TxD and to transmit to the G.703 network
 - > recovered clock from the G.703 network is used for RXD

SUPPLEMENTARY FEATURES

- > built-in G.703 line driver supports line attenuation up to 40 dB resulting extended transmission capacity on two twisted pairs
- > compatible with the older Telindus Datasx BITS-INT product

FRONT PANEL INDICATORS

- > PWR: Power
- > LIS/AIS: indicates Loss of Incoming Signal and Alarm Indication Signal
- > LL/RL: indicates status of loops (local loop, request for remote loop)
- > DL/RDL: indicates status of loops (digital loop set locally or remotely)
- > TXD: lights up when transmitted data is present
- > RXD: lights up when received data is present

TESTLOOPS

- > loop mechanism for maintenance based on V54 loop definition
 - > local loop: loops data back to the local connected application
 - > digital loop: loops data back to the G703 interface
 - > remote loop requested at 1 site forces digital loop in remote site

MECHANICAL DATA (H X W X D)

- > 38 x 150 x 270 mm weight: 0.6 kg (excl. power adapter)

POWER REQUIREMENTS

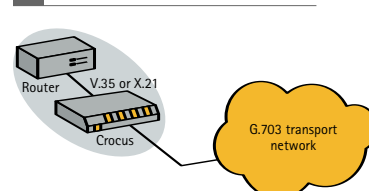
- > 7.5 Vdc, 750mA
- > 230 Vac Power adapter included

SALES CODES

- > 169320 Crocus 2M CNV TT X21
- > 169319 Crocus 2M CNV TT V35

Units without power module and separate power adapters can be found in the sales codes quick reference section

INTERFACING V.35 OR X.21 APPLICATIONS TO G.703 TRANSPORT INFRASTRUCTURES



CROCUS 2M CNV CV



> THE CROCUS 2M CNV TWIN-CV IS A DUAL MANAGEABLE 2 MBPS INTERFACE CONVERTER WITH EXCHANGEABLE INTERFACES.

It can perform the conversion between virtually any type of interface and a fixed G.703 E1. Supported modular interfaces include classical serial type of interfaces like X.21, V.35, V.36, RS-530, RS-232, but also 10-Base-T interfaces with integrated bridging or routing functionality. The unit can be mounted in the family of CN4 card-nests and is compatible with the Crocus 2M CNV TT desktop version.

The unit is designed for integration into demanding network environments and can be controlled by the complete set of network maintenance and management tools as they are described in this catalogue.

SALES CODES

> 171292 Crocus 2M CNV Twin-CV BU

SALES CODES: INTERFACES

All transparent data interface modules are found in the sales codes quick reference section

FEATURES & BENEFITS

- > DUAL 2 MBPS G.703 INTERFACE CONVERTER WITH MODULAR DATA INTERFACES
- > MODULAR DATA INTERFACES FOR MAXIMUM FLEXIBILITY
- > RACK-MOUNT VERSION WITH TWO CONVERTERS PER CARD
- > FULLY MANAGEABLE, INCLUDING FREE MAINTENANCE SOFTWARE TMA*
- > WIDE RANGE OF CLOCKING POSSIBILITIES

FIXED G703 TELECOM INTERFACES

- > Number of interfaces per card: 2
- > Applicable standards: ITU-T G.703, G.704, G.732, G.736, G.812, G.813, I.431, CRC-4 insertion
- > Balanced interface at 120 ohm on RJ45 connector, DTE
- > Jitter performance: ITU-T G.823, G.825
- > Nominal line data rate: 2048 kbps, E1
- > Transmit level: 0dBm
- > Receiver sensitivity: -15 dBm (short haul mode), -36 dBm (long haul mode)
- > Line code: HDB3, AMI (short haul mode only)
- > Performance monitoring: G.704 CRC-4 (configurable)

MODULAR INTERFACES (FIELD EXCHANGEABLE)

- > Number of interfaces per card: 2
- > Datamode: DCE
- > Available modular serial interfaces: V.35, V.36, X.21, RS-530, RS-232
- > Available modular 10Base-T interface: IP router 2M
- > User speeds: 2 Mbps fixed

CLOCKING SCHEMES

- > Free run
 - > Internal clock used to transmit to the G.703 network
 - > Internal clock used for Rx/D and Tx/D
- > Slave to network
 - > G.703 recovered clock is used to transmit to the G.703 network
 - > G.703 recovered clock is used for Tx/D and Rx/D
- > Transparent
 - > DTE clock (x or TxClk) is used to transmit to the G.703 network
 - > Recovered G.703 clock is used for Rx/D
- > Mixed mode
 - > Internal clock is used for Tx/D and to transmit to the G.703 network

- > Recovered G.703 clock is used for RXD
- > Fallback to other clock source in case of absence

MANAGEMENT INTERFACE

- > Synchronous High speed bus RJ45 connector on CN4 card nest
- > Console port: 9600 bps, asynchronous, 8N1, SubD 9-pin
- > ATWIN, TMA, CLI user interfaces
- > Easyconnect handheld terminal (optional)
- > Alarm contacts on CN4: Major, minor
- > Flash memory
- > Password protected

FRONT PANEL INDICATORS

- > PWR: Power
- > TST: Test indicator
- > ERR: Local Alarm Signalling
- > LOS: Loss Of Signal
- > 103/TXD: Transmit data (input)
- > 104/RXD: Receive data (output)

TEST LOOPS

- > Analog Loop
- > Digital Loop
- > Remote Digital Loop
- > Error test generator: 2¹⁵-1

MECHANICAL DATA (H X W X D)

- > 20 x 235 x 300 mm weight: 1 kg (modular interfaces excluded)

POWER REQUIREMENTS

- > -36 Vdc .. -72 Vdc, 7.2W max

CROCUS NX64K CNV



FEATURES & BENEFITS

- > NX64K G.703 INTERFACE CONVERTER WITH MODULAR DATA INTERFACES
- > DESKTOP AND RACK-MOUNT VERSIONS
- > MODULAR DATA INTERFACES FOR MAXIMUM FLEXIBILITY
- > FULLY MANAGEABLE, INCLUDING FREE MAINTENANCE SOFTWARE TMA ®
- > WIDE RANGE OF CLOCKING POSSIBILITIES

AVAILABLE BASIC INTERFACE CONVERTER UNITS (WITHOUT MODULAR INTERFACES)

	Number of interface converters
Crocus Nx64 CNV TT	1
Crocus Nx64 CNV TWIN-CV	2

FIXED G703 TELECOM INTERFACES

- > Applicable standards: ITU-T G.703, G.704, G.732, G.736, G.812, G.813, I.431, CRC-4 insertion
- > Balanced interface at 120 ohm on RJ45 connector, DTE
- > Unbalanced interface at 75 ohm on BNC connectors (desktop only)
- > Jitter performance: ITU-T G.823, G.825
- > Nominal line data rate: 2048 kbps, E1 or FE1
- > Transmit level: 0dBm
- > Receiver sensitivity: -15 dBm (short haul mode), -36 dBm (long haul mode)
- > Line code: HDB3, AMI (short haul mode only)
- > Performance monitoring: G.704 CRC-4 (configurable)

MODULAR INTERFACES (FIELD EXCHANGEABLE)

- > Datamode: DCE
- > Available modular serial interfaces: V.35, V.36, X.21, RS-530, RS-232
- > Available modular 10Base-T interface: IP router 2M
- > User speeds: Nx64 kbps (N=1..32)

CLOCKING SCHEMES

- > Free run
 - > internal clock used to transmit to the G.703 network
 - > internal clock used for Rx/D and Tx/D
- > Slave to network
 - > G.703 recovered clock is used to transmit to the G.703 network
 - > G.703 recovered clock is used for Tx/D and Rx/D
- > Transparent
 - > DTE clock (x or TxClk) is used to transmit to the G.703 network
 - > recovered G.703 clock is used for Rx/D
- > Mixed mode
 - > internal clock is used for Tx/D and to transmit to the G.703 network
 - > recovered G.703 clock is used for RX/D
- > Fallback to other clock source in case of absence

MANAGEMENT INTERFACE

- > Synchronous High speed bus (CV only): RJ45 connector on CN4 card nest
- > Console port: 9600 bps, asynchronous, 8N1, SubD 9-pin
- > ATWIN, TMA, CLI user interfaces
- > Easyconnect handheld terminal (optional)
- > Alarm contacts on CN4: Major, minor (CV only)
- > Flash memory
- > Password protected

FRONT PANEL INDICATORS

- > PWR: Power
- > TST: Test indicator
- > ERR/AIS: AIS (Alarm Indication Signal)
 - RAI (Remote Alarm Indication)
 - Local Alarm Signalling
- > LOS/LFA: Loss Of Signal
 - Loss Of Frame Alignment
- > 103/TXD: Transmit data (input)
- > 104/RXD: Receive data (output)

TEST LOOPS

- > Analog Loop
- > Digital Loop
- > Remote Digital Loop
- > Error test generator: 2¹⁵-1

MECHANICAL DATA (H X W X D)

- > Desktop: 45 x 220 x 235 mm
- weight: 0.75 kg (modular interface excluded)
- > Card versions: 20 x 235 x 300 mm
- weight: 1 kg (modular interfaces excluded)

POWER REQUIREMENTS

- > Desktop VAC version: 85 .. 265 Vac, 45 - 60 Hz
- > Desktop 48VDC version: -36 Vdc .. -72 Vdc
- > Card version: -36 Vdc .. -72 Vdc, 7.2W max

> THE CROCUS NX64K CNV IS A FAMILY OF MANAGEABLE INTERFACE CONVERTERS WITH EXCHANGEABLE INTERFACE.

It can perform the conversion between virtually any type of interface and a fixed G.703 (F)E1. Supported modular interfaces include classical serial type of interfaces like X.21, V.35, V.36, RS-530, RS-232, but also 10-Base-T interfaces with integrated bridging or routing functionality. The unit supports all multiples of 64 kbps (Nx64k, N=1..32), and allows a free mapping of the time-slots on the G.703/G.704 fixed interface.

The family consists of desktop versions with AC or 48V DC powering, and a dual rack-mount version for mounting in the CN4 family.

SALES CODES

- > 171289 Crocus Nx64k CNV BU Vac
- > 171290 Crocus Nx64k CNV BU 48Vdc
- > 171291 Crocus Nx64k CNV Twin-CV BU (2 converters)

SALES CODES: INTERFACES

All transparent data interface modules are found in the sales codes quick reference section

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CROCUS ADM 2P

> THE CROCUS ADM 2P (ADD AND DROP MULTIPLEXER WITH 2 MODULAR PORTS) IS PART OF THE UNIVERSAL CROCUS ACCESS SOLUTION, AND OFFERS A FLEXIBLE AND MODULAR APPROACH FOR INTERFACE CONVERSION AND TIME DIVISION MULTIPLEXING (TDM).

The unit is equipped with 2 fixed (F)E1 G.703 interfaces and 2 slots for user-selectable plug-in interfaces. The main application for the equipment is the use as a dual port Nx64k multiplexer with (F)E1 G.703 output and an additional add-and-drop FE1 G.703 interface (figure 1). This add-and-drop interface can be used for stacking the cards and creating a multiplexer with an arbitrary number of Nx64k input ports.

Because the core of the equipment supports full cross-connect functionality, rather than only multiplexing, it is also possible to use the equipment as interface converter (Figure 2 and 3) or as a time slot re-organisier, when used between the fixed G.703 interfaces (figure 4).

The equipment comes as a card for mounting into the CN4 range of cardnests. Depending on the selected cardnest, a rackmount or desktop solution can be created.

The unit is designed for integration into demanding network environments and can be controlled by the complete set of network maintenance and management tools as they are described in this catalogue.

FIGURE1: STACKABLE TDM MULTIPLEXER (2 CARDS STACKED)

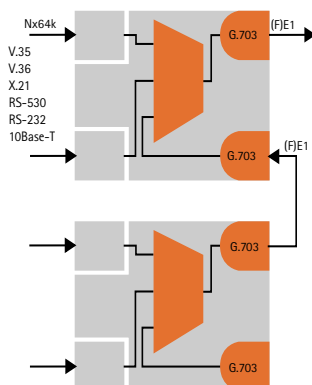


FIGURE2: DUAL Nx64k TO G.703 FE1 INTERFACE CONVERTER

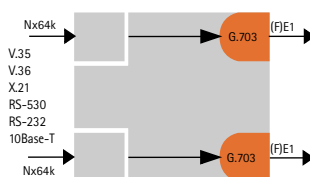


FIGURE3: Nx64k INTERFACE CONVERTER

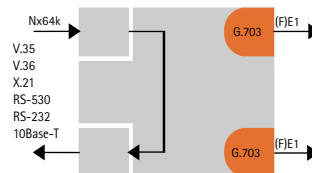
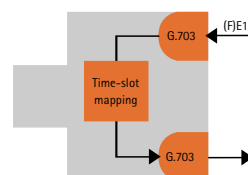


FIGURE4: G.703 TIME-SLOT RE-ORGANISER



FEATURES & BENEFITS

- > MODULAR STACKABLE Nx64k MULTIPLEXER
- > G.703 (F)E1 OUTPUT AND ADD-AND-DROP INTERFACE
- > Nx64k FIELD-EXCHANGEABLE SERIAL OR 10/100BASE-T INTERFACES

FIXED G.703 E1 INTERFACES (2 PIECES)

- > User speed: (F)E1
- > Connector: 120 ohm balanced RJ45 connector
120 ohm balanced terminal block connector

MODULAR INTERFACES (2 PIECES, FIELD EXCHANGEABLE)

- > Datamode: DCE
- > Available modular serial interfaces: V.35, V.36, X.21, RS-530, RS-232, G.703/G.704
- > Available modular Ethernet interfaces: IP router 2M, IP router 10M
- > User speeds: Nx64 kbps (N=1..32)

FIXED G.703 E1 INTERFACE CHARACTERISTICS

- > Applicable standards: ITU-T G.703, G.704, G.736, G.732, I.431, CRC-4 insertion
- > Jitter performance: ITU-T G.823
- > Nominal line data rate: 2048 kbps
- > Transmit level: 0dBm
- > Receiver sensitivity: -15 dBm (short haul mode)
-36 dBm (long haul mode)
- > Line code: HDB3
AMI (short haul mode only)
- > Performance monitoring: G.704 CRC-4 (configurable)
- > The two G.703 interfaces are automatically interconnected on power fail or self-test failure

MANAGEMENT INTERFACE

- > Synchronous High speed bus: RJ45 on CN4 card nest
- > Console port: 9600 bps, asynchronous, 8N1, SubD 9-pin ATWIN, TMA, CLI
- > Alarm contacts: Major, minor (See CN4)
- > Flash memory
- > Password protected
- > Insertion/extraction of management channel in G.703 time-slot 0

INTERNAL CROSS-CONNECT FUNCTIONALITY

- > Non-blocking
- > Any arbitrary combination of 64k time-slots
- > Compliant with ETSI ETS 300 010-1 and ETS 300 010-A

STATION CLOCK INTERFACE (ON CARD NEST CN4)

- > Nominal rate: 2048 kbps
- > Line code: HDB3
- > Line connection: 120 ohm balanced RJ45 connector

CLOCKING SCHEMES

- > External transmit clock (station clock)
- > Transmit clock slaved on E1 receive clock from ports 1...2
- > Internal transmit clock
- > Fallback to other clock source in case of absence

FRONT PANEL INDICATORS

- > General PWR: Power
- > For each fixed E1 TST: Test indicator
ERR/AIS: AIS (Alarm Indication Signal)
RAI (Remote Alarm Indication)
Local Configured Alarm
- > For each modular intf. 103/TXD: Transmit data (input)
104/RXD: Receive data (output)

MECHANICAL DATA (H X D X W)

25 x 335 x 262 mm

POWER

48Vdc or 230Vac, 7.2W max

SALES CODES

- > 171294 CROCUS ADM 2P CV
(incl. 2 fixed G.703 intf)

SALES CODES: INTERFACES

All transparent data interface modules are found in the sales codes quick reference section

CROCUS DXC



> THE CROCUS DXC (DIGITAL CROSS CONNECT) OFFERS 64 Kbps CROSS-CONNECT FUNCTIONALITY BASED ON G.703/G.704 2 MBPS (E1) PORTS.

The Crocus DXC allows the switching of any 64 kbps time-slot from any E1 port to any time slot from any other E1 port.

The main applications are found in the local switching of Nx64k leased line connections, and the concentration (grooming) of Nx64k services onto 2 Mbps E1 circuits. This solution is particularly useful for smaller concentration points where the investment in backbone switching equipment might be too high.

The Crocus DXC is available either as a card with 8 or 16 E1 ports, which fit into the CN4 range of card-nests. Depending on the selected card-nest, a rack-mount or desktop solution can be created.

The unit is configured through the free Telindus Maintenance Application (TMA®), which also gives comprehensive and visual information on the status and statistics of the Crocus DXC. Additional capabilities, like SNMP based management, Telnet, integration in network management platforms like HP OpenView® become possible when the Crocus DXC is used in combination with a controller card (Orchid).

In larger networks, the Crocus DXC can be combined with other Telindus units, like xDSL, Fibre-optic, or multiplexing equipment. This will create a global access platform, combining copper or fibre based access-connectivity with local switching and grooming. This complete system can be controlled through a uniform integrated network management solution.

FEATURES & BENEFITS

- > PROVIDES PROGRAMMABLE NON-BLOCKING CROSS CONNECTION OF 64K CHANNELS
- > 8 OR 16 E1 INTERFACES
- > FITS INTO CN4 FAMILY OF CARD-NESTS
- > ADVANCED FREE MAINTENANCE SOFTWARE
- > MANAGEABLE UNDER HP OPENVIEW®

CROSS-CONNECT

- > Number of E1 links: up to 8 or up to 16
- > Maximum throughput delay: 650 µsec
- > Non-blocking
- > Any arbitrary combination of 64k time-slots
- > Compliant with ETSI ETS 300 010-1 and ETS 300 010-2

E1 LINK INTERFACES

- > Applicable standards: ITU-T G.703, G.704, G.736, I.431, CRC-4 insertion
- > Jitter performance: ITU-T G.823
- > Line data rate (nominal): 2048 kbps
- > Line code: HDB3
- > Line connection: RJ45 DTE
- > Line Impedance: 120 ohm balanced or 75 ohm unbalanced (strap selectable)

STATION CLOCK INTERFACE (ON CARD-NEST CN4)

- > Nominal rate: 2048 kbps
- > Line code: HDB3
- > Line connection: RJ45
- > Line Impedance: 120 ohm balanced

CLOCKING SCHEMES

- > External transmit clock (station clock)
- > Transmit clock slaved on E1 receive clock from ports 1...4
- > Internal transmit clock
- > Fallback to other clock source in case of absence of clocking

TESTS

- > External loop-back (Loop3) for each individual E1 line
- > Internal loop-back (Loop4) for each individual E1 line

FRONT PANEL INDICATORS

- > General: PWR: Power
- > For each E1
 - > TST: Test indicator
 - > ERR: Error condition: LOS, LOF, AIS, RAI (Remote Alarm Indication), Local configured alarm indication
- > Master clock indications
 - > STATION: Station clock on the card-nest is used
 - > 1...4: Clock derived from port 1..4 is used
 - > INTERNAL: Internal free running clock is used

MANAGEMENT INTERFACE

- > Synchronous High speed bus (for use with Orchid 1003 LAN)
 - RJ45 connector on CN4 card nest
- > Console port: 9600 bps, asynchronous, 8N1, SubD 9-pin ATWIN, TMA, CLI
- > Alarm contacts
 - Major, minor (See CN4)
- > Dual Flash memory
- > Password protected
- > Insertion/extraction of management channel in G.703 time-slot 0

MECHANICAL DATA (H X W X D)

- > 8 ports version: 25 x 262 x 335 mm
- > 16 ports version: 50 x 262 x 335 mm

POWER

- > 48Vdc or 230Vac, 8W max

SALES CODES

- > 167322 Crocus DXC 8 CV (8x G.703 ports)
- > 167323 Crocus DXC 16 CV (16x G.703 ports)

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CROCUS E3 MUX

> THE CROCUS E3 MUX IS PART OF THE CROCUS TDM ACCESS SOLUTION AND OFFERS A COMPREHENSIVE SOLUTION FOR THE CONCENTRATION OF UP TO SIXTEEN 2 MBPS E1 BASED TRAFFIC STREAMS ONTO A SINGLE 34 MBPS E3 CONNECTION.

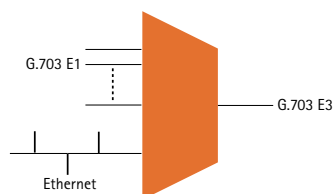
The operation is based on a two-stage concentration mechanism. In a first stage, 4 E1 channels can be concentrated onto an 8 Mbps internal E2 circuit. The second stage concentrates 4 of these E2 circuits onto a 34 Mbps E3 circuit. Each E2 circuit can accept either a quad E1 module or a 10/100Base-T module with integrated bridge or router functionality operating at 8 Mbps. This modular design allows to scale the number of E1 input circuits with the needs of the end-user, and allows the combination of the E1 data with Ethernet based traffic.

The equipment comes as a card for mounting into the CN4 range of card-nests. Depending on the selected card-nest, a rack-mount or desktop solution can be created. The card has an on-board SNMP agent, and supports directly TELNET, PING and TFTP through an integrated 10Base-T connection.

The unit can also be configured through the free Telindus Maintenance Application (TMA), which also gives comprehensive and visual information on the status and statistics of the Crocus E3 MUX.

One of the important applications is situated in the concentration of 2 Mbps based services.

V MULTIPLEXING E1 CIRCUITS AND ETHERNET INTO E3



For this purpose, the Crocus E3 MUX can be combined with the cross-connect and different high-speed modem cards in the Crocus range.

The global access solution is presented as a compact single shelf solution with integrated network management facilities.

FEATURES & BENEFITS

- > E3 MULTIPLEXER WITH UP TO 16 E1 INPUT CIRCUITS
- > INTEGRATES SEAMLESSLY IN CN4 PRODUCT RANGE
- > INCLUDES FREE MAINTENANCE SOFTWARE
- > ETHERNET PORT FOR DIRECT SNMP AND TELNET SUPPORT

INPUT MODULES

- Number of input Modules: 4
- > Types of input Modules (field exchangeable)
 - Quad E:
 - > 4x G.703 E1 circuits
 - > Nominal line data rate 2048 kbps
 - > Line code HDB3
 - > Line connection 120 ohm balanced RJ45 connector DTE Router:
 - > 10/100Base-T module with integrated router
 - > IEEE 802.3 and 802.3u compatible

MULTIPLEXING CHARACTERISTICS

- > E1 characteristics: ITU-T G.703, G.704, I.431, CRC-4 insertion
- > E3 characteristics: ITU-T G.703, 75 ohm BNC connector
- > E1 to E2 internal multiplexing: ITU-T G.742
- > E2 to E3 multiplexing: ITU-T G.751
- > Global jitter performance: ITU-T G.823

STATION CLOCK INTERFACE (ON CARD NEST CN4)

- > Nominal rate: 2048 kbps
- > Line code: HDB3
- > Line connection: 120 ohm balanced RJ45 connector

MANAGEMENT INTERFACES

- > Synchronous High speed bus CN4 card nest backplane connection for use with Orchid 1003 LAN controller card
- > Console port 9600 bps, asynchronous, 8N1, SubD 9-pin ATWIN, TMA, CLI, TML
- > Local RJ45 - Ethernet connector
 - > Compliant with IEEE 802.3 10Mbps HDX Ethernet
- > Direct connection of TMA, TMA for HP OpenView, Telnet, SNMP, TFP, TMA CLI
- > Alarm contacts - Major, minor (See CN4)
- > Password protected

E3 CLOCKING SCHEMES

- > Internal clock: free running
- > Station clock: from CN4 chassis
- > Slave/Receive: recovered from E3 receive data
- > A fallback mechanism to internal clock will occur in case the configured clock is not present.

FRONT PANEL INDICATORS

- > PWR: Power
- > LNK: LAN link condition
- > For each E2 input slot and E3 output:
 - > TST: Test indicator
 - > ERR: Error condition
 - > LOS/LOF: Loss Of Signal/Loss Of Frame-alignment

TESTS

- > External loop-back (Loop3) for each individual E1 line
- > Internal loop-back (Loop4) for each individual E1 line
- > External loop-back (Loop3) for E3 line
- > Internal loop-back (Loop4) for E3 line

MECHANICAL DATA (H X W X D)

- > 50 x 335 x 262 mm

POWER

- > 48Vdc or 230Vac, 10W max

SALES CODES

- > 171293 Crocus E3 Mux CV BU

SALES CODES: INTERFACES

- > 163369 4E1 intf. crocus
- > 177455 Router intf 10M crocus

CROCUS INVERSE MULTIPLEXER



FEATURES & BENEFITS

- > CONNECTS UP TO 8 MBPS SERIAL DATA OVER SEVERAL E1 LINKS
- > AUTOMATIC SPEED ADAPTATION IN CASE OF E1 LINK LOSS
- > ADVANCED FREE MAINTENANCE SOFTWARE
- > MANAGEABLE UNDER HP OPENVIEW®
- > MODULAR PLUG-IN DATA INTERFACES FOR MAXIMUM FLEXIBILITY AND EFFICIENT STOCK MANAGEMENT

INVERSE MULTIPLEXING

- > Number of E1 links: up to 4
- > Maximum delay variance between links: 64 msec
- > Throughput delay: 50 µsec + variance between links
- > Framing overhead: 1.6 %
- > Net user-speed per E1 link: 1952 kbps
- > Performance monitoring per E1 link: end-to-end CRC-4

E1 LINK INTERFACES

- > Applicable standards: ITU-T G.703, G.704, G.732
- > Jitter performance: ITU-T G.823
- > Nominal line data rate: 2048 kbps
- > Line code: HDB3
- > Line connection:
 - 120 ohm balanced, RJ45 connector
 - 75 ohm unbalanced, BNC coaxial connectors
- > Performance monitoring: G.703 CRC-4 (configurable)

STATION CLOCK INTERFACE

- > Nominal rate: 2048 kbps
- > Line code: HDB3
- > Line connection:
 - 120 ohm balanced, RJ45 connector
 - 75 ohm unbalanced, BNC coaxial connectors

ETHERNET LAN INTERFACE (MANAGEMENT)

- > Compliant with IEEE 802.3 10Mbps HDX Ethernet
- > RJ45 Unshielded Twisted Pair (UTP)

CONSOLE PORT

- > Connector: 9-pins subD female V.24/RS-232
- > Data rate: 9600 bps, asynchronous, 8N1

CLOCKING SCHEMES

- > External transmit clock (station clock)
- > Transmit clock slaved on E1 receive clock with possibility for automatic E1 channel source selection
- > Internal transmit clock

HIGH-SPEED DATA INTERFACE

- > Clocking Speed
- > 1952, 3904, 5856, 7808 kbps, following the number of E1 links used
- > Automatic fallback to next lower rate in case of E1 link failure
- > Serial interfaces available:
 - > V.35
 - > V.36/RS-449
 - > X.21

> THE CROCUS INVERSE MULTIPLEXER PROVIDES TRANSPARENT TRANSMISSION OF SYNCHRONOUS DATA AT SPEEDS UP TO 7808 KBPS ON A SERIAL OR 10/100BASE-T INTERFACE USING MULTIPLE 2 MBPS E1 LINES.

- > RS-530/RS-530A
- > Ethernet Router 10M

FRONT PANEL INDICATORS

- > General: PWR: Power
 - TST: Test indicator
- > Ethernet: LNK: Link Integrity
 - COL: Data Collision
 - TXD: Transmit Data
 - RXD: Receive Data
- > For each E1: LOS: Loss Of Signal
 - LOF: Loss Of Frame synchronisation
 - AIS: Alarm Indication Signal
 - ERR: CRC-4 performance problem
- > DTE: TXD: Transmit Data (circuit 103)
 - RXD: Receive Data (circuit 104)

TESTS

- > Local analogue loop-back (Loop3) for each individual E1 line
- > Local line loop-back (Loop4) for each individual E1 line
- > Local digital loop-back (Loop2) for high-speed user interface
- > Remote digital loop-back (remote Loop2) for high-speed user interface
- > Integrated BER testing conform ITU-T O.151 (2¹⁵-1 pattern)

MECHANICAL DATA (H X W X D)

- > Desktop version: 50 x 430 x 270 mm weight: 4.3 kg
- > Rack-mount version: 43 x 482 x 270 mm weight: 4.6 kg

POWER REQUIREMENTS

- > Power voltage: 90-264 Vac, 47-63 Hz
- > 36-72Vdc Vdc
- > Maximum power consumption: 25 W

SALES CODES

- > 153862 Crocus 4E1 inv mux BU 115/230Vac
- > 153863 Crocus 4E1 inv mux BU 48Vac
- > 150322 RMK 01003/Crocus 4E1 inv mux (19" rackmount kit)

SALES CODES: INTERFACES

All transparent data interface modules are found in the sales codes quick reference section

Based on an efficient bonding mechanism for multiple E1 lines, the equipment enables one to cross the 2 Mbps barrier without having to adapt the installed user applications. These E1 lines may have a difference in throughput delay as high as 64 msec, so different routings of the constituent E1 lines can be used. In addition, an automatic fallback/step-up mechanism permits the user to add or suppress E1 lines and so to adapt dynamically the user speed in multiples of 1952 kbps.

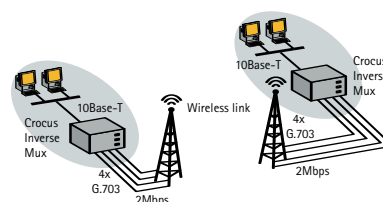
A complete range of plug-in interface boards makes the Crocus Inverse Multiplexer ideal for interfacing with almost any high-speed application. Not only traditional interfaces such as V.35, V.36, X.21 or RS-530, but also direct 10/100Base-T connections with integrated bridge or router functionality are available.

Typical 2 Mbps transport infrastructures on which this equipment can realise a cost-effective high-speed connection include HDSL (High-speed Digital Subscriber Lines), wireless 2 Mbps point-to-point and SDH (Synchronous Digital Hierarchy).

The example shows how the Crocus Inverse Multiplexer, equipped with an Ethernet interface, is used in combination with 2 Mbps wireless links to offer a high-speed (7808 kbps) LAN-to-LAN connection. This system offers a very attractive alternative to the use of routers equipped with multiple G.703/E1 ports, since the solution with a multi-port router is expensive and can be subject to poor performance because of issues related to load-balancing.

The unit is designed for integration into demanding network environments and can be controlled by the complete set of network maintenance and management tools as they are described in this catalogue.

TYPICAL APPLICATION: HIGH SPEED LAN-TO-LAN CONNECTION USING 2 MBPS BASED WIRELESS LINKS



TELINDUS ACCESS SOLUTIONS

> TELINDUS DYNAMIC ROUTING ENGINE

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> BROADBAND CPE

> TDM CENTRAL OFFICE

> VOICEBAND MODEMS

> TDM DSL MODEMS

> FIBRE OPTIC MODEMS

> MULTIPLEXERS & INTERFACE CONVERTERS

> ISDN MULTIPLEXERS

> MODULAR DATA INTERFACES

> NETWORK MAINTENANCE & MANAGEMENT

> ACCESSORIES

TELINDUS SURVEILLANCE SOLUTIONS

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