



# CYGNUS 605

## G.703-Sync/Async Converter



### FEATURES

- Allows connection of user devices such as PCs, routers and multiplexers to telecom networks through 64 kbps co-directional G.703 interface
- Available in two models - basic and advanced
- 64 kbps clear channel synchronous operation for basic model
- Rate adaptation as per ITU-T rec. V.110 available as an option in advanced model. This is useful to connect synchronous or asynchronous user devices operating at sub-rate speeds.
- Choice of RS-232(V.24)/V.35/RS-530 physical interfaces for connection of user devices
- Configurable transmit/receive clock sources
- Loopback facilities for line fault isolation
- Built in BERT facility for qualitative error performance monitoring of G.703 data path
- Available as standalone 230 VAC operated box or as a 3U height PCB for mounting in CYGNUS 600 10-slot 3U height sub-rack (CYGNUS 600 is available with 230 VAC or -48 VDC power supply, with option of dual redundant power supplies)
- Designed to meet relevant TEC specifications

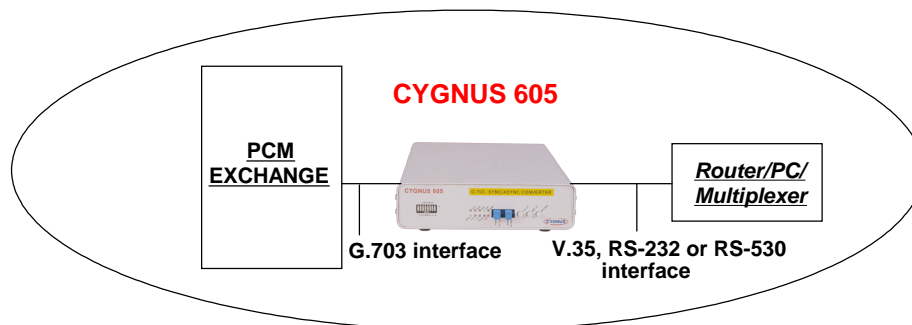
The CYGNUS 605 G.703-Sync/Async Converter is an important component for providing connectivity to computing/networking equipment over telecom networks. It is available in two models. The Basic Model provides interface conversion at 64 kbps between data interfaces and the ITU-T standard 64 kbps co-directional G.703 telecom interface. The advanced model additionally provides rate adaptation for user data device operating at speeds below 64 kbps.

The co-directional G.703 interface on the CYGNUS 605 carries 64 kbps data encoded with timing information up to a distance of a few hundred meters using two wires for each direction. The encoding has no average direct current component, allowing connection through transformers for providing electrical isolation.

To connect user equipment the CYGNUS 605 offers a choice of data formats, speeds and electrical interfaces. While the basic model provides connection to devices at 64 kbps using synchronous data format, the advanced model additionally has the option of connecting to devices at speeds lower than 64 kbps using synchronous or asynchronous format by using rate adaptation techniques in accordance with ITU-T recommendation V.110. Devices that use asynchronous data format include terminals, PCs, CPU ports etc. - these devices typically operate at speeds up to 38.4 kbps. Devices using synchronous format include networking equipment such as routers, packet switches and multiplexers. CYGNUS 605 supports synchronous devices at speeds from 600 bps to 56 kbps using rate adaptation, and those operating at 64 kbps using clear channel capacity. CYGNUS 605 offers three ordering time options for the user side electrical interface -- RS-232/V.24, V.35 and RS-530/V.11.

The CYGNUS 605 has a number of clocking modes to enhance its versatility. Clocking modes include slaving of timings to the G.703 side (G.703 slave mode), to an internal clock, or to a combination of both. An additional "full duplex" clocking option allows slaving to G.703 side in one direction and to the user (DTE) side in the other direction. This option is useful for connection between two independently clocked networks such as a national and an international network.

The CYGNUS 605 incorporates useful diagnostic features for detection of faults in the communication path. These include ITU-T V.54 compliant loop back tests and O.152 compliant Bit Error Rate Test (BERT).



### Loopbacks:

- User port loopback: Activated by a front panel switch or by asserting a user interface control signal, it loops back data received from the user port back to the user device
- G.703 port digital loopback: Activated in a manner similar to User Port Loopback, this test digitally loops back data received on the G.703 port to the transmit of the G.703 port.
- Remote G.703 digital loopback: This loopback is available only in advanced model. It allows the local CYGNUS 605 unit to request loopback from any one of several devices connected in a chain to the G.703 port. The address of the device from which loop back is desired is selected through a front panel DIP switch. When loopback is requested, the CYGNUS 605 sends an in-band data sequence requesting the addressed device to loop back the data. Similarly, the CYGNUS 605 can also provide a G.703 loop back on receiving an in-band request to do so.

- G.703 analog loopbacks: The G.703 port can be looped back towards the CYGNUS 605 or away from it by operating removable links on the front panel.

### BERT:

A bit error test (BERT) facility is provided for getting a qualitative indication of error rate on the G.703 side of the communication link. This is achieved by generating a standard test pattern on the transmit of the G.703 interface and looking for the same pattern on the receive side of the G.703. On mismatch of any bit between the received pattern and the standard pattern, an indicator on the front panel is flashed. The rate of flashing of the indicator gives a picture of the error rate on the G.703 interface.

The CYGNUS 605 is available as a standalone box operated from 230 VAC mains supply or as a 3U height PCB which can be mounted in the CYGNUS 600 10 19" slot sub-rack. The CYGNUS 600 sub-rack features -48 VDC or 230 VAC power supply, and is optionally available with dual redundant power supply modules.

## SPECIFICATIONS

### G.703 INTERFACE

Type:	4-wire co-directional interface conforming to ITU-T Rec. G.703
Speed:	64 Kbps
Connector:	Choice of 4-way terminal block or RJ-11 jack
Protection:	Current limiting device/ fuse in series, GD tube/MOVs in shunt.

### USER INTERFACE

Electrical:	Digital interface conforming to RS-232/V.24, V.35 or RS-530/V.11 selected by mounting appropriate piggyback on the CYGNUS 605 card.
Format:	For basic model: Synchronous For advanced model: Synchronous/ Asynchronous
Speed:	For basic model: 64 kbps For advanced model: Asynchronous speed 300 bps to 38.4 kbps. Synchronous speed 600 bps to 64 kbps. Rate adaptation as per ITU-T rec. V.110.
Connector:	34-pin (female) for V.35 or 25 pin 'D' female connector for RS-232 and RS-530/V.11

### CLOCKING OPTIONS

G.703 slave mode:	Timing derived from received G.703 signal used as user port (DTE) clocks, and also used for encoding the G.703 transmit signal.
Full-Duplex mode:	Timing derived from received G.703 signal is supplied as DTE receive clock. Clock received from user port (DTE transmit clock) is used for encoding the G.703 transmit signal.
Master mode:	Internally generated clock is supplied as DTE clocks and also used for encoding the G.703 transmit signal.
Mixed Mode:	Timing derived from received G.703 signal is supplied as DTE receive clock. Internally generated timing is used as DTE transmit clock and also used for encoding the G.703 transmit signal.

### DIAGNOSTICS

User port loopback:	Activated by front panel switch or by asserting control signal on the user interface.
G.703 port local digital loopback:	Activated by front panel switch or by asserting control signal on the user interface. Loops back data received at the G.703 interface to the G.703 transmit.
G.703 remote digital loopback:	An in-band signalling procedure for (a) requesting an addressed device connected to the G.703 port to provide loopback for the data received by it from the CYGNUS 605; (b) requesting the CYGNUS 605 to provide a loop back to a device

connected to the G.703 port. Initiated by activating a front panel switch or by asserting a control signal on the user interface. This loopback feature is available in advanced model only.

G.703 analog loopback: Activated through removable front panel links. Can provide physical loopback in both directions.

Note: All loopbacks are ITU-T V.54 compliant

BERT: Activated by front panel switch. Generates a pseudo random 2047 bit pattern as per ITU-T rec.152 and transmits it on the G.703 interface. Simultaneously compares data received on the G.703 interface to the standard pattern and flashes front panel "ERROR" LED once for every bit mismatch.

### FRONT PANEL INDICATORS

PWR:	Indicates presence of internal +5V supply.
DTR:	Indicates activation of DTR signal on the user interface.
TxD:	Indicates activity on data received at the user interface.
RxD:	Indicates activity on data sent to the user interface.
TxC:	Indicates presence of DTE transmit clock
RxC:	Indicates presence of DTE receive clock
SYNC:	Indicates that proper data is being received on the G.703 interface.
AIS:	"FLASHING" indicates alarm condition on G.703 receive signal.
TEST:	Indicates activation of digital loop backs or BERT.
ERR:	"FLASHING" indicates mismatch of receive data on G.703 with respect to a 2047 bit pseudo random sequence conforming to ITU-T O.152.

### GENERAL

#### For Standalone unit:

Size: 194 mm (w) x 250 mm (d) x 56 mm (h)

Power: 230 V AC

#### For rack mountable PCB:

Main PCB: 3U (h) x 160 mm (d) x 30 mm (w)

With connector adaptor: 3U (h) x 245 mm (d) x 30 mm (w)

PCB is designed for housing in CYGNUS 600 10 slot 3U height sub-rack. CYGNUS 600 sub-rack features -48 VDC or 230 VAC power supply, and is optionally available with dual redundant power supply modules.

### ORDERING INFORMATION

Order Code: CYGNUS 605 XX/YY

XX:	SB for standalone basic model unit SA for standalone advanced model unit RB for rack mount basic model PCB (card) RA for rack mount advanced model PCB (card)
YY:	DTE interface: specify from V.35, V.24 (RS232) or RS-530

Note: Specifications are subject to change without notice

Ref.: 001004



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