PRODUCT OS304M

4 CHANNEL MULTIPLEXER FOR TELECOMMUNICATIONS.

USER MANUAL

29 March 2001

1.0 PRODUCT DESCRIPTION

1.1 GENERAL

The OS304M is a 4 Channel 64kbps audio drop and insert multiplexer. The OS304M forms part of a telecommunication system operating in a ring network. The ring is controlled from a master unit named OS2030. The OS2030 is designed to transmit a 2 Mbps CCITT G703 data link over fibre. This unit interfaces between G704 CAS protocol and several OS304MUX units. The OS304MUX unit can then drive either a 2 wire or a 4 wire audio circuit. The OS304M can also operate in a master mode allowing point-to-point operation with another OS304M on 4 channels.

The unit has built in 4 port buss system. It can house any combination of line terminating equipment. At present only the following is available.

Exchange unit stock code ‘OS301E’.
This interfaces directly with an exchange line and simulates the functions of a telephone.

Telephone unit stock code ‘OS301T’.
This unit can couple directly to a telephone and simulates the functions of a exchange.

4W E & M unit stock code ‘OS301W’.
This is an audio interface with E & M signalling.

The OS304M Can be configured to accept any of the above line terminating units.

To configure the OS304M a PC with dedicated software is required. The configuration can be downloaded directly to the unit using it’s internal RS232 port. Or it can be downloaded to the OS2030 master unit that will in turn forward the configuration to the OS304M via the supervisory channel.

The unit is modular in design and can thus be upgraded with different optics or power supply. The distance over which the system can operate is determined by the fibre interface used. The options are limited to 3, 12, 16, 24, 36, 50 and 70 Kilometres. The power supply can be replaced by removing the power supply module and fitting the required module. Either 220VAC,110VAC or 48VDC. Other voltages can be supplied on request.

The system uses the latest technology in line driving and decoding integrated circuits and therefore fully comply with the stringent CCITT standards.

The unit is housed in a small metal enclosure. The unit is compact and can fit two aside in a 19" rack with a height of 2U.

Uploading and Downloading of software.
Should it be required new software for the OS304M unit can be downloaded to the OS2030 master unit that will in turn forward it to the slave units. New software can also be installed using a per programmed e2 prom. These are available form the supplier.

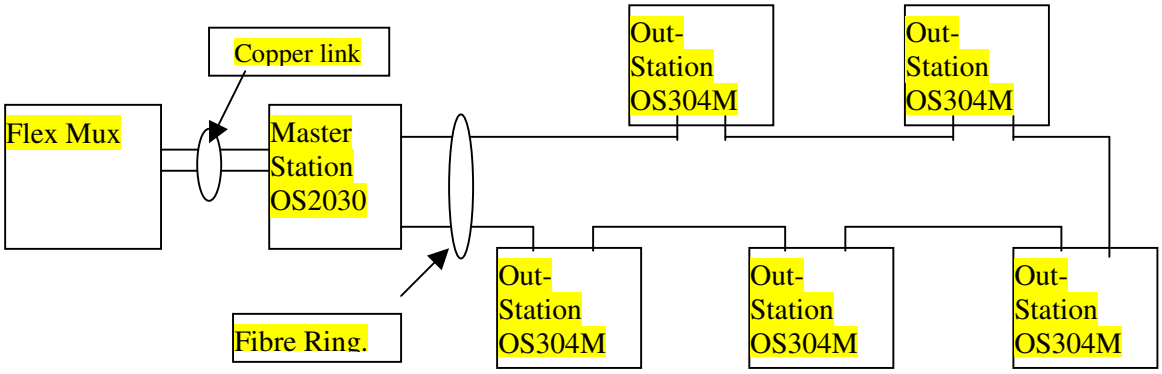
Setting up of channel configurations.
The software running on a PC also allows setting up of line configurations and gain adjustments for each time slot / channel. Once the alterations are done it must be downloaded. The alterations will take effect after a short delay. A Backup copy of the configuration for a particular system can be stored on the system disk. The unit will be able to allocate timeslots to users as per selection from the management system.

The unit has a built in framer. The framer will take the received data and re-time the data for transmission further down the line. Whenever a timeslot allocated to a particular outstation is reached, the time slot will be dropped off to the correct line interface and the interface data is then inserted in the frame.

Line interface.
The line interface will consist of a CODEC that is programmed by the intelligent unit.
The CODEC will be programmable and will control the following.
Transmit gain adjustable over a 10dB scale in steps of 0,1dB. Max gain is 6.9dB.
Receive gain adjustable over a 10dB scale in steps of 0,1dB. Min sensitivity is –18dB
Adjustable Hybrid balance registers.

A Dip switch setting will identify the location of the OS304M .
Note that the dip switch number 4 will select between master and slave in a point to point system.

The system operates over a single Fibre ring. The optical interface can be interchanged to suit the application.



1.2 ALARMS AND INDICATIONS

ALARMS AND INDICATIONS.

Power indication
Indicates power to the processor.
Lock indication
Indicates optic receive data valid.
Ring and loop
Each channel has a ring and loop indication mimicking the signalling to that channel.

DIP SWITCH SETTINGS.
Dip switches 1 to 3 selects the multiplexer number in the ring network. Note that switch position 0 relates to outstation 1 and is all switches off. The switches reads in a binary code. Dip switch 1 'on' is outstation 2.

SW1	SW2	SW3	SW4	Outstation
Off	Off	Off	Off	Nbr 1.
On	Off	Off	Off	Nbr 2.
Off	On	Off	Off	Nbr 3.
On	On	Off	Off	Nbr 4.
Off	Off	On	Off	Nbr 5.
On	Off	On	Off	Nbr 6.
Off	On	On	Off	Nbr 7.
On	On	On	Off	Nbr 8.
X	X	X	On	Master

Dip switch 4 is used only in a point to point connection and will identify which unit is assumed to be the master.

MANAGEMENT FACILITIES

The unit is equipped with a internal RS232 connector which enables the unit to be configured. A dedicated software package (OS2030) that runs under windows allows setting up of time slots and interface options.

If the configuration is known at the time of manufacture the units can be delivered pre configured. Alternatively it is necessary to configure the system before it can be operated. Special configuration facilities can be accessed using the software package on a portable computer.

The software allows the following facilities.

Uploading and Downloading of software on the OS2030.

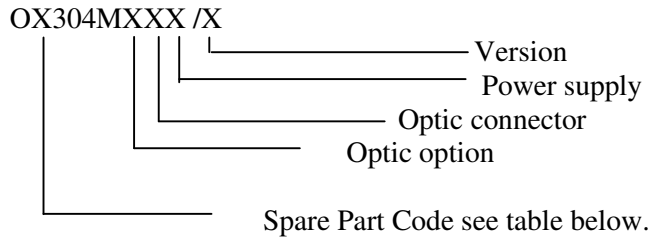
Should it be required new software for the OS304M unit can be downloaded. The user can choose which software must be downloaded. Once downloaded the unit must be reset for the software to be become active. This is done automatically in a properly installed system.

Setting up of channel configurations.

The software also allows setting up of line configurations and gain adjustments for each time slot. Once the alterations are done it must be downloaded. The alterations will take effect after a short delay. A Backup copy of the configuration for a particular system can
be stored on the system disk.

SPARE PART CODES

Define stock code and add spare part code in second character position.



SPARE PART OPTION

Spare Part Code	Description
A	POWER SUPPLY CARD
B	PROCESSOR CARD
C	OPTIC CARD
D	DISPLAY CARD
E	METAL BOX COMPLETE
F	POWER CABLE

Additional Spare parts.

Stock Code	Description
OS301E	Line interface unit for Exchange
OS301T	Line interface unit for Telephone
OS301W	Line interface unit for 4W E & M

3.0 PREPARATION FOR USE

3.1 UNPACKING

Check for physical damage caused during transport. Return any damaged equipment.

3.2 INSTALLATION

See connection diagram annexure ‘A4’.

Check the Voltage supply rating of the equipment before installation commences.

Ensure that the link loss over the fibre cable is within the power budget of the equipment. See the model number and optic option.

When installing the unit in a 19" rack the feet of the unit must be removed in order for it to fit in a 1U high space. A shelf is supplied as a separate item, which supports two units next to each other.

Connect the chassis earth leads to the shelf. Connect the common earth to the shelf. This is very important. Ensure that all equipment is properly earthed.

Secure the unit by installing the 'screw on bracket' at the rear of the unit.

Connect the Line and optic cables. The Optic link must be connected local transmit to remote receive and visa versa.

It is necessary to observe the modules with which the unit is equipped and to connect the circuits according to the attached diagrams. Should it be necessary to change the line interface the unit must be opened. Ensure that the unit is powered down before opening. Then carefully replace the line interface module with the required unit. Then also mark the appropriate line on the back panel with the correct designation.

When circuits are used that are exposed to lightning and other EMI interference these lines must have additional protection.

It is very important to earth the system properly to protect against any interference.

If the alarm extension is required then connect the extension wire to the voltage free alarm contacts at the back of the unit.

Connect the power cable.

Should the unit operate on DC power then the D.C. power connections are shown on the rear panel.

The equipment has no on/off switch thus it will be active as soon as the power is connected.

3.3 COMMISSIONING

At switch on the unit will flash the Ring and loop indications until all software is verified and loaded. If the link is correctly connected the ‘lock’ indication will light up.

4.0 OPERATORS INSTRUCTIONS

The unit need no operator intervention to function, however when a fault arises, it is necessary to observe the alarm indications.

See maintenance instructions for any other functions.

5.0 MAINTENANCE INSTRUCTIONS

5.1 INSTRUMENTS AND TOOLS REQUIRED

Multimeter

Optic power meter

5.2 FIRST LINE MAINTENANCE

When arriving at a suspect link it is necessary to note the alarm condition of the equipment.

First observe the power indication. If the power indicator is off then check the power supply. The AC unit has a fuse inside the connector at the rear and an additional fuse inside the unit. The DC unit has a fuse inside the unit. If necessary replace it with the correct value fuse.

Next observe the alarm conditions.

‘Lock’

If the ‘Lock’ led fail to operate then the Fibre optic input signal has failed.
Measure the receive optic power using the Optic power meter. A Level of > - 28dB at 1300nm must be measured.

‘Ring and loop indications’
If in addition to the lock indication being off a ring or loop indication remains on then it indicates corrupted software in the unit and new software must be downloaded to the unit. See the management manual ‘OS2030M’ on downloading of software.

PHYSICAL AND ELECTRICAL SPECIFICATION

ELECTRICAL

Power supply:

115/230VAC 50/60Hz. 15Watt.
-48VDC. 15Watt.

Impedance:

600 ohms on all circuits
Frequency response 300 to 3400Hz

Tel line parameters:

Line current : 24mA
Line ringing Voltage 55VRMS 17Hz
Meter signal: 200mV RMS
Max loop resistance 1500 ohms

Connection:

RJ11 6 pin

- M
- Receive Audio a leg
- Transmit Audio a leg, Tel a leg
- Transmit Audio b leg, Tel b leg
- Receive Audio a leg
- E

OPTICAL

Connectors:

FCPC Multimode/Singlemode
Fibre Compatibility
Multi-mode 50/125 micron.
Single-mode 9/125 micron.

FUNCTIONS

Indicators.

Power,
Lock,
Ring, loop for all channels.

Alarm Output.

Voltage free alarm output contact.

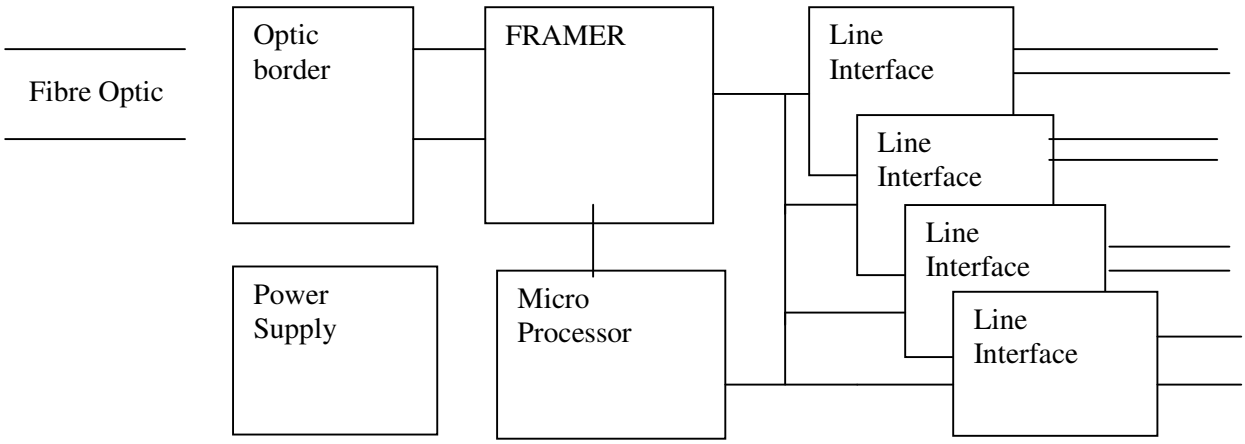
PHYSICAL

Depth: 180mm Height: 42mm
Width: 202mm Weight: 1.5Kg

ENVIRONMENTAL CONDITIONS

Temperature: -5□C to +45□C
Humidity: 0-95% non-condensing.

ANNEXURE A1 GRAPHIC ILLUSTRATION OF DATA FLOW.



ANNEXURE A2 FRONT PANEL.

ANNEXURE A3 REAR PANEL.

ANNEXURE A4 CONNECTION DIAGRAM.

ANNEXURE A5 PCB LAYOUT.