

# TECPRO MS745 MASTER STATION



## Product Code 27-745

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## 1.0 INTRODUCTION

The Tecpro system is a 'two-wire' or 'party line' system which enables a number of personnel to take part in the same conversation simultaneously. Major applications are in the theatre, television studios, conference venues and stadiums.

The Tecpro MS745 master station allows two intercom circuits A and B to be created and each circuit can power up to a maximum of 30 belt-packs, or a mix of belt-packs and loudspeaker stations.

System cabling should be a twisted pair with an overall screen and the cabling can radiate out from a central distribution point or looped from one outstation to the next and so on. A combination of both methods is often used.

The Tecpro MS745 is compatible with original Tecpro products.

## 2.0 FEATURES

- Two independent intercom circuits A and B
- Circuits A and B may be linked to form a single circuit
- Supports up to 30 Tecpro belt-packs or 7 Tecpro loudspeaker outstations per circuit
- Short circuit and overload protection on each circuit
- XLR4 input for optional headset
- 'Remote Mic Kill' feature can close all open mics on a selected circuit (Tecpro 2 outstations only)
- AUX audio input switchable between mic or line level sensitivity for 'show relay' audio purposes

### 3.0 **INSTALLATION**

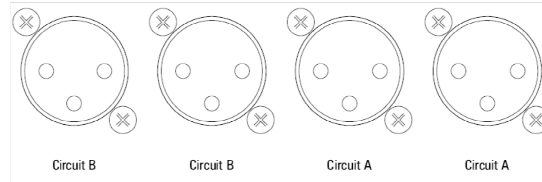
#### 3.1 **Power Supply**

The MS745 can be rack-mounted and occupies 1U of rack space.

The unit has a universal power supply and can accept supply voltages from 90 – 260V AC. There is an IEC mains inlet provided on the rear panel. The main power switch is on the front panel and when switched on the red indicator illuminates.

#### 3.2 **Circuit A and B**

Loudspeaker stations and belt-packs can be connected to circuits A or B as necessary. Two rear panel male XLR3 connectors are provided for each circuit. Please see figure 1.



**Figure 1 - Rear panel XLR circuit A and B connectors**

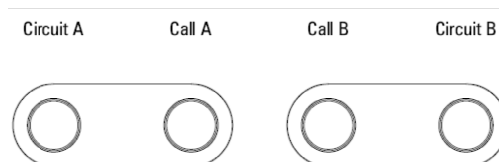
The system interconnection cable should be a screened twisted pair with XLR3 connectors as follows:

- Pin 1 Earth / Screen
- Pin 2 +24V DC
- Pin 3 Audio

### 4.0 **OPERATION**

#### 4.1 **Circuit A and B Switches**

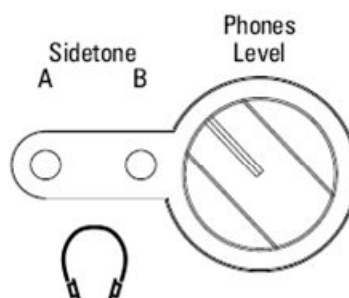
To listen to circuit A or B first press the associated CIRCUIT switch. A momentary press will latch this function and holding the switch down will enable the function only as long as the switch is pressed. The associated circuit switch will illuminate GREEN when selected. You can then listen to all outstations and belt-packs on the selected circuits. It is possible to select A and B individually or together. Please see figure 2.



**Figure 2 - Circuit and call A and B switches**

#### 4.2 **Headphone Level Control**

When listening to outstations and belt-packs, you can plug in a Tecpro headset into the XLR4 connector and use the headphone level control. Please see figure 3.



**Figure 3 - Headphone level control**

#### 4.3 To Communicate Using A Headset

To communicate with other personnel on the system you can plug in an optional Tecpro headset using the front panel XLR4 connector. Please see figure 4.

Ensure the circuit you want to communicate with is first selected – please see section 4.1

Press the MIC switch to talk. A momentary press will latch this function and holding the switch down will enable the function only as long as the switch is pressed. The switch will illuminate GREEN when selected.

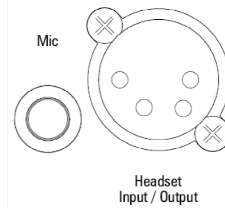


Figure 4 - Front panel headset XLR4 connector and talk switch

#### 4.4 Call A and B Switches

To call on circuit A or B press the associated CALL switches, please refer to figure 2. A momentary press will send a call signal for 1 second, holding the switch down will send a call signal for as long as the switch is pressed. The associated switch will illuminate RED and a call signal will be sent to all connected outstations and belt-packs on that circuit.

#### 4.5 Remote Mic Kill

Sometimes it is necessary to kill open microphones on a circuit that are causing intelligibility problems during a show or performance. This can be achieved by pressing the remote mic kill RMK switch. It will glow RED when pressed and the associated circuit switches that are selected will flash GREEN. All open mics on the circuit selected will be killed. Please see figure 5. N.B. This function will work with new Tecpro Series 2 products but original Tecpro products have mechanically latching mic switches and the microphone circuit cannot be killed.

#### 4.6 Auxiliary Input

An auxiliary input is provided to allow a 'show relay' or cue audio feed to be mixed onto the Tecpro system. To control the level of auxiliary audio on the system there is a front panel AUX LEVEL control and a selector switch. A momentary press of this AUX selector switch sends the auxiliary audio to circuit A, B, or A and B together or finally turns the feature off. The associated front panel AMBER LEDs indicate the current status and the AUX switch glows GREEN to indicate auxiliary audio is being used. Please see figure 6.

The rear balanced XLR3 auxiliary audio input is switchable between mic or line level sensitivity using the adjacent toggle switch. There are three positions: LINE, MIC and MIC with +24V phantom power. Please see figure 7.



Figure 5 - RMK switch

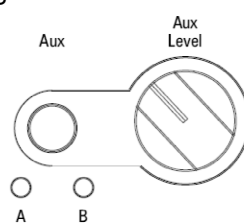


Figure 6 - Aux level & channel selector

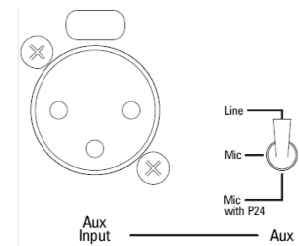


Figure 7 - Rear aux input XLR3

#### 4.7 Channel A and B Overload Indicator LED

The front panel channel overload indicators will glow if the respective channel has a system cable 'short circuit' or if it is overloaded with too many outstations. Channel A and B have individual indicators.

N.B. This is a fault condition and should be investigated to find the cause.

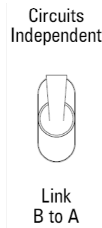
Once the fault has been cleared in the system, the MS741 will automatically restore the system 24V and the respective LED will glow out. Please see figure 8.



Figure 8 – Overload LED Indicators

## 4.8 Channel Linking

You can link circuits A and B together using a front panel toggle switch to form a single circuit. In the 'LINK B TO A' position all personnel on circuits A and B will be able to communicate with each other. In the 'CIRCUITS INDEPENDENT' position circuits A and B are separate. Please see figure 9.



**Figure 9 Circuits independent or linked toggle switch**

## 5.0 CONFIGURATION

N.B. Please note that these adjustments are for advanced users only and the factory default settings are the preferred option for most users - and so no adjustments would normally be required. Adjustments are made by positioning handbag links on PCB headers and adjusting variable potentiometers. Please see figure 10 at the end of this document for their locations.

**ADJUSTMENTS SHOULD ONLY BE MADE BY SUITABLY QUALIFIED PERSONNEL.**

### 5.1 Sidetone Presets

These are accessible through the front panel. N.B. They will not normally require adjustment as they have been carefully set for a null position during manufacture.

The function of the SIDETONE preset is to minimise the amount of microphone signal heard in the headset when plugged in. There are individual SIDETONE presets for circuit A and B. Please see figure 3.

### 5.2 Internal View Of Main PCB

**IMPORTANT** - Before removing the top cover, please make sure the unit is un-plugged from the mains supply. Remove the seven top cover screws and slid the cover off. This will reveal the main internal PCB. Please see figure 10.

### 5.3 Headphones Alert

The PHONES ALERT header PL18 has two link positions:

**ON** When any function switch is selected a short 'beep' tone is audible at a low level on the XLR4 headset circuit. Also, a longer 'beep' sounds when any outstation calls – this is not affected by the front panel phones volume control setting.

**OFF** No 'beep' tones are audible.

The factory default setting is ON - please see figure 11.

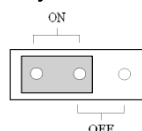
### 5.4 DC Call Option

The DC CALL header PL20 has two link positions:

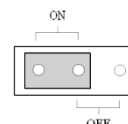
**ON** When a call signal is sent onto any circuit from the MS745 a DC voltage is sent. This is necessary to ensure compatibility with existing circuits that use original Tecpro outstations.

**OFF** Can only be used when a system consists entirely of new Series 2 Tecpro outstations which use 20kHz call signalling.

The factory default setting is ON - please see figure 12.



**Figure 11 - PHONES ALERT PL18**



**Figure 12 – DC CALL PL20**

## 6.0 TECHNICAL SPECIFICATION

Microphone	200 ohm dynamic type
Headset earphone	400 ohm typical – 32 ohm to 4k ohm acceptable
System output voltage	+24V DC
System line termination impedance	200 ohm in the audio frequency band, 5k ohm at DC
Auxiliary Input	XLR3 balanced, mic/line, +24V phantom power
Call signal	DC and 20kHz
Remote mic kill signal (RMK)	24kHz
Maximum number of outstations per circuit	30 beltpacks or 7 loudspeaker stations
System cabling	Fixed installations: 31-050 FST-HD Mobile facilities: 30-130 HST-HD
Power	90 – 260V AC 50 – 60Hz
Fuse rating	2A (T) HBC for 240V AC operation 4A (T) HBC for 110V AC operation
Dimensions	1U rack mount 195mm deep
Weight	1.6 kilos

## 7.0 WIRING CONVENTION

### 7.1 Cable requirements

Three factors affect the choice of cable for a particular system or installation:

- The length of cable run – longer runs require a larger gauge cable.
- The number of outstations on each cable, increasing the number of outstations requires a larger gauge cable.
- Permanent installation or mobile use.

In general, we suggest a screened 0.5 sq mm (20AWG) twisted pair cable should be used. Canford heavy duty cables FST-HD, HST-HD and HST-HD-R are suitable. HST-HD-R has a polyurethane jacket, which has very similar properties to rubber – i.e. very abrasion resistant and resilient. FST-HD is a foil screened cable specifically for permanent installation purposes. HST-HD can be used for mobile systems.

### 7.2 System cable connectors for current beltpacks

BP511, BP531, BP523, BP543	XLR3	Pin 1	Earth / Screen
		Pin 2	+24V DC
		Pin 3	Audio
BP525, BP545,	XLR5	Pin 1	Earth / Screen
		Pin 2	+24V DC
		Pin 3	Audio Circuit 1
		Pin 4	+24V DC
		Pin 5	Audio Circuit 3

N.B. XLR5 pin connectors must be Neutrik type. Switchcraft XLR5 pin types are non-standard - and are NOT suitable.

### 7.3 Headset connectors for current beltpacks

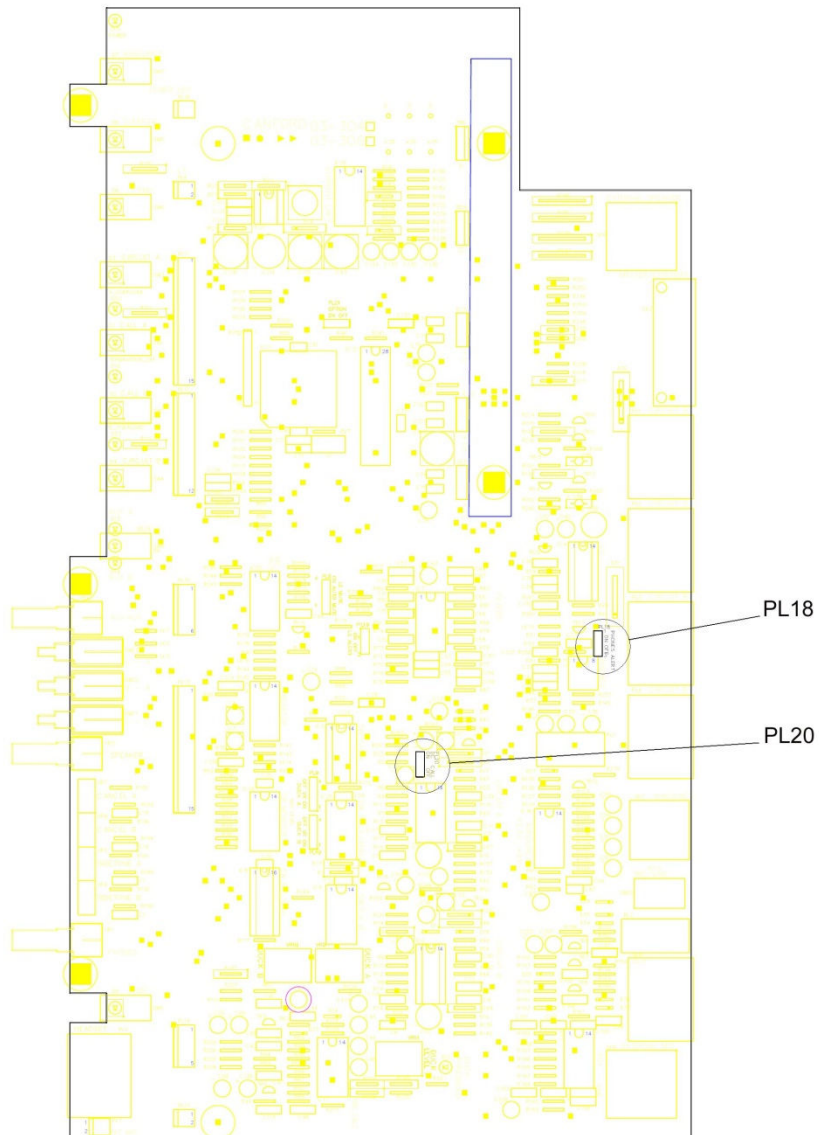
XLR4 4pin	Pin 1	Microphone screen
	Pin 2	Microphone signal
	Pin 3	Earphones common
	Pin 4	Earphones signal

### 7.4 System cable connectors for current beltpacks

BP111, BP112, BP114, BP116	XLR3	Pin 1	Earth / Screen
		Pin 2	+24V DC
		Pin 3	Audio
BP113, BP115, BP117	XLR6	Pin 1	Earth/screen
		Pin 2	+24V DC
		Pin 3	Audio Circuit 1
		Pin 4	Audio Circuit 2
		Pin 5	Audio Circuit 3
		Pin 6	Audio Circuit 4

### 7.5 Headset connectors for older backpacks

BP111, BP112, BP113, BP114, BP115	XLR4	Pin 1	Microphone screen
		Pin 2	Microphone signal
		Pin 3	Earphones common
		Pin 4	Earphones signal
BP116, BP117	XLR5	Pin 1	Microphone screen
		Pin 2	Microphone signal
		Pin 3	Earphones common
		Pin 4	Left earphone
		Pin 5	Right earphone



**Figure 10 – Internal View Of MS745 Main PCB Layout**