

***TELIKOU* Intercom System**

**MS-500 (4+1 channel) Main Station
Instruction Manual**

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I. General

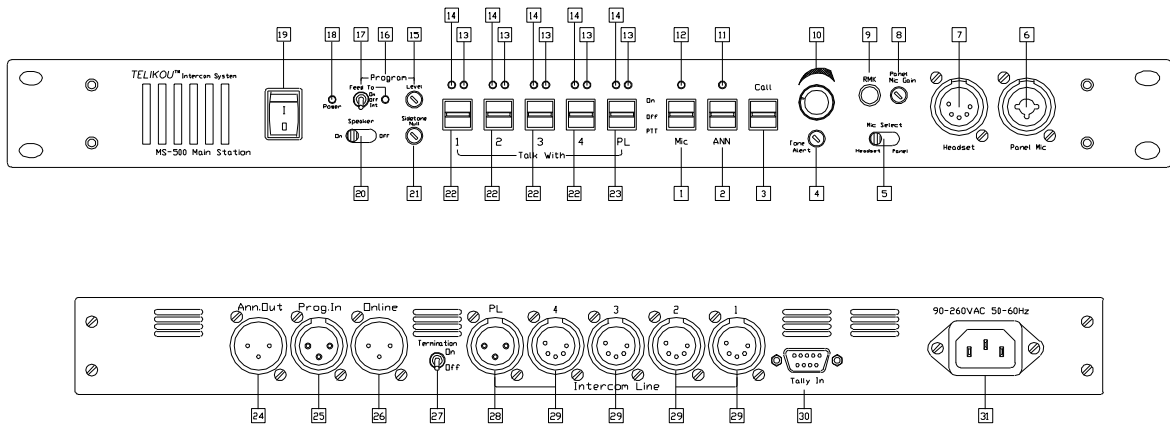
Thank you for choosing TELIKOU intercom product. MS-500 main station can be used for television station, communication center, UB truck, live performance and any other environment need communication. Work with BK-500 belt pack, it can start Tally light function on four channels.

This system adopts wired connection, and has following features, free of external emission interference, stable and reliable performance, flexible configuration, full-duplex communication, clear and loud communication sound, easy operation, and strong noise resistance.

II. Specialty

- Four 2-wire channel with tally, one 2-wire channel without tally.
- All the operations finished on panel easily.
- Automatic cut program input when talking on the channel.
- Automatic Microphone identifies circuit.
- Remote microphone kill (RMK) 。
- XLR/6.35mm compatible panel microphone plug.
- Automatic circuit short protection and indication.

III. Basic Operation



1. Front Panel

1) Microphone switch (Mic.)

Turn up or down microphone switch handle will send amplified microphone signal through intercom line. When this function is active, the LED above will light. The switch positions are as follow:

- ON: The selected microphone is activated, the switch is self-locked.
- OFF: The selected microphone is off.
- PTT: The selected microphone is activated, release and reset.

Note:

When panel speaker and microphone switch are both activated, the signal was sent to speaker will be deduct 6dB to reduce the feedback. Please turn off microphone after use.

2) Announce switch (ANN.)

Send selected microphone signal to ANN. Out connector which is at rear panel. When this function is active, the LED above will light. The switch positions are as follow:

- ON: Send signal from selected microphone to ANN. OUT, the switch is self-locked.
- OFF: break the connection between selected microphone and ANN.OUT rear back.
- PTT: Send signal from selected microphone to ANN. OUT, release and reset

3) Call Switch (Call)

Before use call function, please turn on the channel which want to talk. Turn up or down the call switch handle will sent a call signal to all the connected channels. The call LED above lights red. This switch is without self-locking function, release and reset.

4) Tone Alert Volume Control

When MS-500 receives external call signal, the internal buzzer will sent a hum to panel speaker and earphone. This knob adjusts the hum level.

5) Mic. Select Switch

Set the Mic. select switch to select whether the panel microphone or the headset microphone is active.

6) Panel Mic. Connector

This is a dual-purpose connector, supports XLR and 1/4inch plug.

The wiring of 3-pin XLR microphone is as follow:

Pin 1 – Mic. common

Pin 2 – Mic. hot

Pin 3 – Null

7) Headset connector

4-pin XLR Male or 5-pin XLR Female

EARPHONE: Dynamic 50-2000 ohm

MICROPHONE: Dynamic 100-600 ohm

The wiring of headset is as follow:

Pin 1—Mic. common

Pin 2—Mic. hot

Pin 3--headphone common

Pin 4--headphone hot

Pin 5—Null

8) Panel Mic. Gain

It is used to adjust panel microphone gain to achieve proper microphone output level. It does not affect headset microphone's sensitivity.

The gain has pre-set as electrets microphone as default. If panel microphone is changed, please re-adjust panel Mic. gain.

9) Remote Mic. Kill Switch

Microphone on belt pack may forget to be turned off by operators. Noise will disturb the whole intercom system.

The Remote Mic Kill (RMK) switch will turn off the microphone of every beltpack remotely. If the Talk Functions of a large number of beltpacks have inadvertently been left activated, incidental noise and

talking can make it difficult or impossible to communicate on the intercom system. The Remote Mic Kill switch can be pressed to quiet the line in this situation.

Notice: if any beltpack microphone within intercom line can be turned off in remote way, each powered working station within this intercom system must be interconnected via "ONLINE" interface on its rear panel.

10) Listen Level Control

Turn this control to set the listen level of received audio signal within communication system. It adjusts listen level of headset and speaker. Turn the control completely counterclockwise to silence the channel.

11) Announcement LED (ANN.LED)

This LED lights when announcement switch turned to ON or PTT.

12) Mic LED

This LED lights when Mic switch turned to ON or PTT.

13) Talk LED

This LED lights when Talk switch turned to ON or PTT

14) Call LED

Each call LED corresponds to one exactly channel. This LED will light under two cases: a) called: The call signal from communication channel is received; b) calling: if one channel is expected, please turn on corresponding Talk switch first, then press Call switch, the call LED above this channel will light. A call signal been sent to the channel.

15) Program Level

Adjust program audio level which goes into MS-500, by clockwise or counterclockwise direction.

16) Feed To LED

This LED lights when Program feed to (17) function works.

17) Program Feed To

Turn the switch up or down will send the external input signal to intercom channel. When the Mic switch or Call switch is turned off, the signal feed to channel will be interrupted automatically. When the switch is turned on, the LED at the right side will light.

18) Power LED

This green LED constantly lights on when power supply working properly. If MS-500 meets any circuit short problem, it will keep on flashing until the problem has been solved.

19) Power

MS-500 receives power when this switch is on. Power LED will light on.

20) Speaker handle

Place this handle at "ON" position, the panel speaker turns on.

21) Sidetone zero-adjusting

The MS-500 uses full-duplex audio in which the talk and listen audio are sent and received on the same line. Thus, when you talk on a channel, you will also here your own voice back in the speaker or earphone. This is called sidetone. Sidetone could cause unwanted feedback, since the microphone may pick up your returned voice audio and re-amplify it. In either of these cases, you should minimize the amount of sidetone.

Typically, different sidetone null settings are needed depending upon whether you are using the gooseneck panel microphone along with the speaker or not. Use one the following procedures to correctly set the sidetone level controls.

A) Sidetone Adjustment Procedure for Gooseneck Microphone with Speaker turned on:

- 1 Turn on the Mic switch. Set Mic select switch to panel.
- 2 Turn the level control to a comfortable level.
- 3 Speak into the microphone while turning the sidetone null control slowly back and forth. There should be a point where your voice (and any accompanying acoustic feedback) is the lowest. This is the null point.

B) Sidetone Adjustment Procedure for Headset:

- 1 Turn on the Mic switch. Set Mic select switch to headset.
- 2 Turn the level control to a comfortable level by having someone talk to you from another station.
- 3 Speak into the microphone while turning the sidetone null control slowly back and forth. There should be a point where your voice (and any accompanying acoustic feedback) is the lowest. This is the null point.

C) System Sidetone Adjustment

- 1 Turn off all the microphones on sub-stations and belt packs.
- 2 Followed by A) and B), adjust sidetone on MS-800 main station.

3 Turn on the microphone on sub-station and belt packs one by one, and then adjust the Sidetone to satisfied level.

22) Talk Switch

Switches 1~4 correspond to 1~4 channels. Turn the talk switch handle up or down can talk to the corresponding channel. When the switch is turned to ON or PTT, the Talk LED above will light (GREEN). The switch positions are as follow:

ON: The corresponding channel is activated, the switch is self-locked.

OFF: The corresponding channel is off.

PTT: The corresponding channel is activated, release and reset.

23) PL Talk Handle

Different with channel 1 to 4, PL channel is a standard 2-wire intercom connector without TALLY function. PL channel connects to 2-wire devices, like MS-800, BK-601, DT-100 and etc. Turn up or down the handle to talk. A LED light right above will light green. The switch positions are as follow:

ON: The corresponding channel is activated, the switch is self-locked.

OFF: The corresponding channel is off.

PTT: The corresponding channel is activated, release and reset.

2. Rear Panel

24) ANN. Out

Press the Announce Switch to direct the microphone audio out through Ann Out connector. XLR-3M balanced output. The pin out of Announce Out is as follows:

Pin 1 --- Common (Shield)

Pin 2 --- +Audio

Pin 3 --- -Audio

25) Prog. In

The external program signal sent into intercom line through Prog. In connector when Program Feed To Switch is turned on. XLR-3F balanced input. The pin out of Program Input connector is as follows:

Pin 1 --- Common (Shield)

Pin 2 --- + Audio

Pin 3 --- - Audio

26) Online

It is used to connect TELIKOU working main stations in the system. XLR-3M.

The pin out of Online Connector is as follows:

Pin 1 --- Common (Shield)

Pin 2 --- Control Signal

Pin 3 --- Audio Signal

Notice:

1. This connector can only work with TELIKOU main stations. It is not allowed to be connected to the 'Intercom Line' connector; otherwise, the system will not work properly.
2. Please use 'Intercom Line' connector to connect the main station which is not TELIKOU. Also parallel a 1uF non-polarized capacity on Pin 2 of XLR.

27) Termination Switch

The MS-500 has two different termination options. Normally this switch is set as "ON". In PL intercom system has only one termination point. If there is more than one base station in the system, the termination point should be at main control station. Set the main control station's termination switch as "ON", and other station's termination switches as "OFF".

When this switch is turned to ON position, one 220 ohm termination resistor will be connected to intercom line. If the intercom system is not terminated, the level of intercom line will be too high, and the system stability will be influenced. However, only one termination point is allowed within same intercom line. If multiple termination points are used incorrectly, the driving load will be aggravated, and the level of intercom line will be too low.

This switch is set to ON position by factory default. Before using, you should set it to ON or OFF position according to the actual connection of intercom line.

Notice:

One system only allows one termination point, multi point is not allowed. Otherwise, the system will be overloaded.

28) Intercom Line

XLR-3F connector is used to connect 2-wire devices. The pin out is as follow:

Pin 1 --- Common (Shield)

Pin 2 --- Power (+24 VDC)

Pin 3 --- Audio

29) TALLY Channel Connectors

TALLY channel can connect four BK-500 belt packs which have Tally lights.

XLR-5F The pin out is as follow:

Pin 1 --- Common (Shield)

Pin 2 --- Power (+24 VDC)

Pin 3 --- Audio

Pin 4 --- Tally light drive signal output (Green)

Pin 5 --- Tally light drive signal output (Red)

30) Tally light external control signal connector (Tally In)

The definition of DB9 is as follow:

Pin 1 --- connect to pin 4 of CH1 XLR-5 internal

Pin 2 --- connect to pin 5 of CH1 XLR-5 internal

Pin 3 --- connect to pin 4 of CH2 XLR-5 internal

Pin 4 --- connect to pin 5 of CH2 XLR-5 internal

Pin 5 --- connect to pin 4 of CH3 XLR-5 internal

Pin 6 --- connect to pin 5 of CH3 XLR-5 internal

Pin 7 --- connect to pin 4 of CH4 XLR-5 internal

Pin 8 --- connect to pin 5 of CH4 XLR-5 internal

Pin 9 --- output 12VDC, current less than 5mA

The external TALLY light control sent the 12VDC on DB9-9 to other 1-8 Pin. It makes a TALLY drive voltage on Pin4 and 5 of XLR-5F on 4 channels. This voltage drives TALLY light on belt pack.

31) AC Power Connection

Input 85V-265V, 50-60Hz AC, and the power consumption is less than 45VA.

IV Intercom Cable

1. Rules for cable selection

PL intercom system adopts two-core shielded audio cable, one core is used for audio signal transmission, another core is used for DC power, and the shielded layer is used as common line for audio and power supply. The channel with Tally light uses four core shielded cable, the added two cores are used for transmitting Tally light drive signal. To decrease resistance of common line and crosstalk interference, the cable with larger cross section area should be used. When it is been set fixed, the cross section area of single line should be at least 1.5mm^2 , as mobile using, the cross section area of single line should be at least 0.75mm^2 . The cable is longer, the cross section area should be larger. If any spare core, it is recommended to be used as common line.

2. Cable Connection

A. A pair of XLR-5 connectors is put on each end of four-core shield cable, one end is XLR-5M and another end is XLR-5F. The connector wiring is as follows:

Pin 1 --- Common (Shield)

Pin 2 --- Power (+24 VDC)

Pin 3 --- Audio Signal

Pin 4 --- Tally light drive signal output

Pin 5 --- Tally light drive signal output

B. A pair of XLR-3 connectors is put on each end of two-core shield cable, one end is XLR-3M and another end is XLR-3F. If longer cable is required, any two cables can be connected by XLR-3M and XLR-3F ends.

The connector wiring is as follows:

Pin 1 --- Common (Shield)

Pin 2 --- Power or Control Signal

Pin 3 --- Audio Signal

Notice:

The pin 1 (Common) cannot be connected to XLR shell.

V、 Technical Specification

PRE-AMP:

Microphone impedance: Dynamic 200ohm

Gain form Mic to intercom line: +49dB

Bandwidth: 40Hz-8000Hz \pm 3dB

POSTPOSITION-AMP:

Load impedance: 50-2000ohm

Output level: +17dBv

Distortion: <0.1% (1000Hz)

Gain from line to output: +31dB

BANDWIDTH:

200Hz-800Hz \pm 3dB

SIDETONE:

Adjustable range: >32dB

EARPHONE:

Dynamic 50-2000 ohm

MICROPHONE:

Dynamic 100-600 ohm

CONNECTOR:

Headset connector: XLR-4M or XLR-5F

Pin 1--Mic common

Pin 2--Mic hot

Pin 3--earphone common

Pin 4--earphone hot

Pin 5—Null

Panel Mic connector: XLR-3F

Pin 1 -- Mic common

Pin 2 -- Mic hot

Pin 3 – Null

Intercom cable connector: XLR-3F

Pin 1 --- Common (Shield)

Pin 2 --- Power (+24 VDC)

Pin 3 --- Audio

Tally Intercom cable connector: XLR-5F

Pin 1 --- Common (Shield)

Pin 2 --- Power (+24 VDC)

Pin 3 --- Audio Signal

Pin 4 --- Tally light drive signal output

Pin 5 --- Tally light drive signal output

Program Input: XLR-3F

Pin 1 --- Common (Shield)

Pin 2 --- + Audio

Pin 3 --- - Audio

Announce Out: XLR-3M

Pin 1 --- Common (Shield)

Pin 2 --- +Audio

Pin 3 --- -Audio

Online Connector: XLR-3M

Pin 1 --- Common (Shield)

Pin 2 --- Control Signal

Pin 3 --- Audio Signal

POWER SUPPLY:

AC 85-265V, 50-60Hz, ≤45VA

STATION CAPACITY:

No less than 15 beltpacks

ENVIRONMENTAL:

0°-70°C (32°-158°)

RELATIVE HUMIDITY

0-90%

DIMENSION:

19”(W)x1.75”(H)x9.48”(D),482mm x 44.5mm x 241mm

WEIGHT:

2.7kg

VI Troubleshooting

Problem: Volume Level on Panel Speaker

Cause: Output level automatic turned down by 6dB to help reduce feedback when microphone is turned on.

Solution: Turn off microphone when it is not need.

Problem: Power LED wink

Cause 1: Short circuit

Solution 1: Remove all the intercom cables from MS-500. Check all channels one by one, until find the short point.

Cause 2: Overload

Solution 2: Decrease the numbers of end user stations; disperse end user stations to other main station; extra power supply

Problem: System feedback (Acoustical)

Cause 1: Listen volume level control on this station or any remote station is too high

Solution 1: turn down the volume

Cause 2: Sidetone null control on this station or any remote station is not adjusted correctly

Solution 2: Adjust the sidetone null control. Refer to **21) Sidetone zero-adjusting** section of this manual.

Cause 3: Channel un-terminated.

Solution 3: Set the MS-500 termination switch to "ON".

Cause 4: headset cable is too long or quality problem.

Solution 4: Change or short headset cable

Problem: Excessive crosstalk

Cause 1: High DC resistance on ground return.

Solution 1: Use heavier cable; add additional conductor(s) to ground return.

Cause 2: Headset cables are not wired properly or shielded properly.

Solution 2: Correct wiring. Use headsets with properly shielded wiring.

Problem: Hum or buzz in system

Cause 1: No earth or bad earth.

Solution 1: Check earth ground of jack. Make sure jack to be connect with earth well.


Cause 2: Inductive pickup caused by close proximity of this main station or connected remote stations to power lines or transformers.

Solution 2: Relocate the offending unit.

Cause 3: Intercom line cable is not wired properly; the shield of cable is not connected to Pin 1 of XLR-3

Solution 3: Check intercom line cable. Make sure all the cables' Pin-1 of 3-XLR connects correct.

Cause 4: 10 Ohm chassis ground resistor is shorted.

Solution 4: Bridge a 10 Ohm resistor between system ground (G) and earth ground () of any power supply.

If this condition occurs, it is because the system ground came into contact with something that was "HOT" with respect to the power supply earth ground. Carefully check the system ground and AC distribution in the area.

WARNING: THIS IS A POTENTIALLY DANGEROUS SITUATION. A SHOCK HAZARD MAY EXIST BETWEEN A REMOTE STATION HEADSET AND GROUND.

Problem: Can not turn on the Mic function on all the beltpacks

Cause 1: The connection among TELIKOU main stations must go via "Online" connector on rear

panel. The “Online” connector of this station connected to the Intercom Line connector of another station.

Solution 1: Check the connection of “Online” connector

Problem: Can not turn off the Mic function on all the beltpacks after pressing RMK button

Cause 1: The connection among TELIKOU mains stations must go via “Online” connector. If main stations are connected by Intercom Line connector, RMK function will not work properly.

Solution 1: Check the connection among main stations. Please use “Online” connector.

Cause 2: Some stations are not TELIKOU. So these stations do not have “Online” connector.

Solution 2: Change to TELIKOU main station.