

# *media-send 88*

---

## **Installation and User Manual**

*3, rue de Villette  
60240 Fresneaux-Montchevreuil - France  
S.A.R.L. au capital de 20 000 euros  
RCS B 440 545 903*



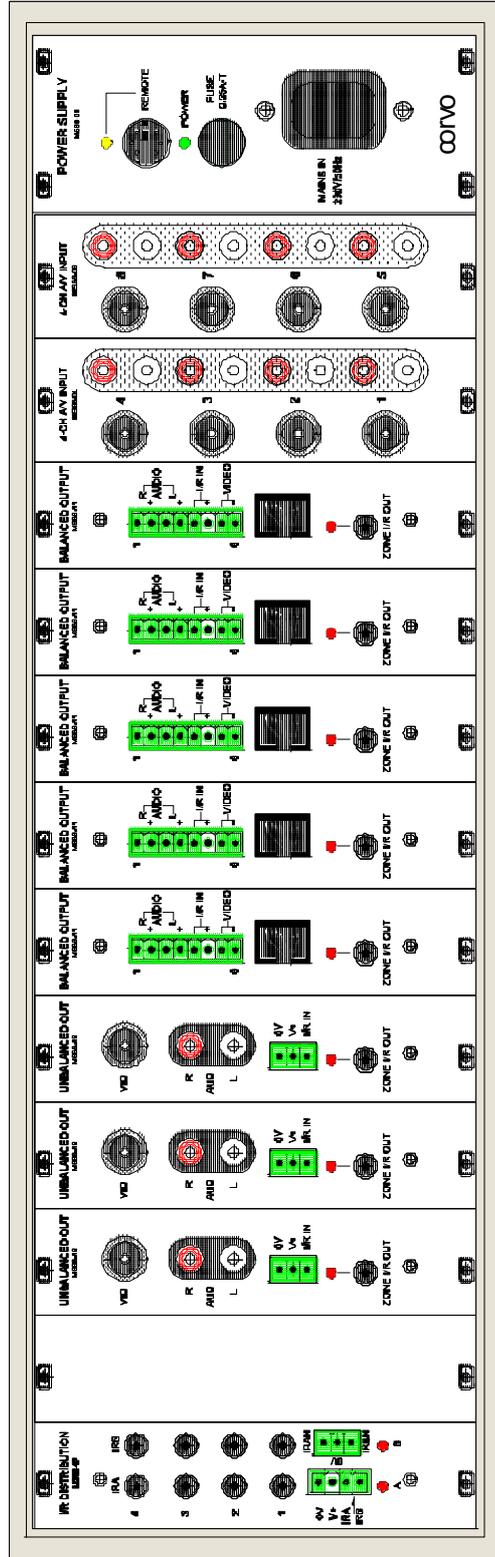
*Tel. +333 44 08 89 89  
Fax +333 44 08 89 88  
<http://www.corvo.com>  
E-mail : [sales@corvo.com](mailto:sales@corvo.com)*

Introduction .....	4
System Configuration Considerations .....	5
Output Modules .....	5
Input Modules.....	6
Power Supply.....	6
I/R Distribution Module .....	7
Connections.....	8
Adjustments.....	9
Operation.....	10
Possible Problems and Solutions.....	12
Technical Specifications.....	13

COMPOSITE VIDEO  
& AUDIO STEREO  
INPUT MODULES  
CH 1-4 CH 5-8  
MAINS POWER SUPPLY

OUTPUT MODULES  
(TWO TYPES: UNBALANCED FOR COAX TRANSMISSION & BALANCED FOR PAIR CABLE TRANSMISSION)

IR/REMOTE CONTROL OPTION MODULE



MS88R1.DOC

*media-send* **MS-88**  
REAR PANEL VIEW  
18" RACK/HEIGHT 3U

## Introduction

*media-send* 88 is a unique multi-source, multi-destination composite video and audio stereo centralized distribution system. Its modular construction, in a 19", 3U cabinet, allows the system designer to equip only the required input, output and remote control modules.

Inputs to the MS-88 from composite video and audio stereo sources are accommodated on either one or two four-channel input modules (channels 1 to 4 and channels 5 to 8).

Outputs to the destination zones are on individual output modules. There are two basic types of output modules :

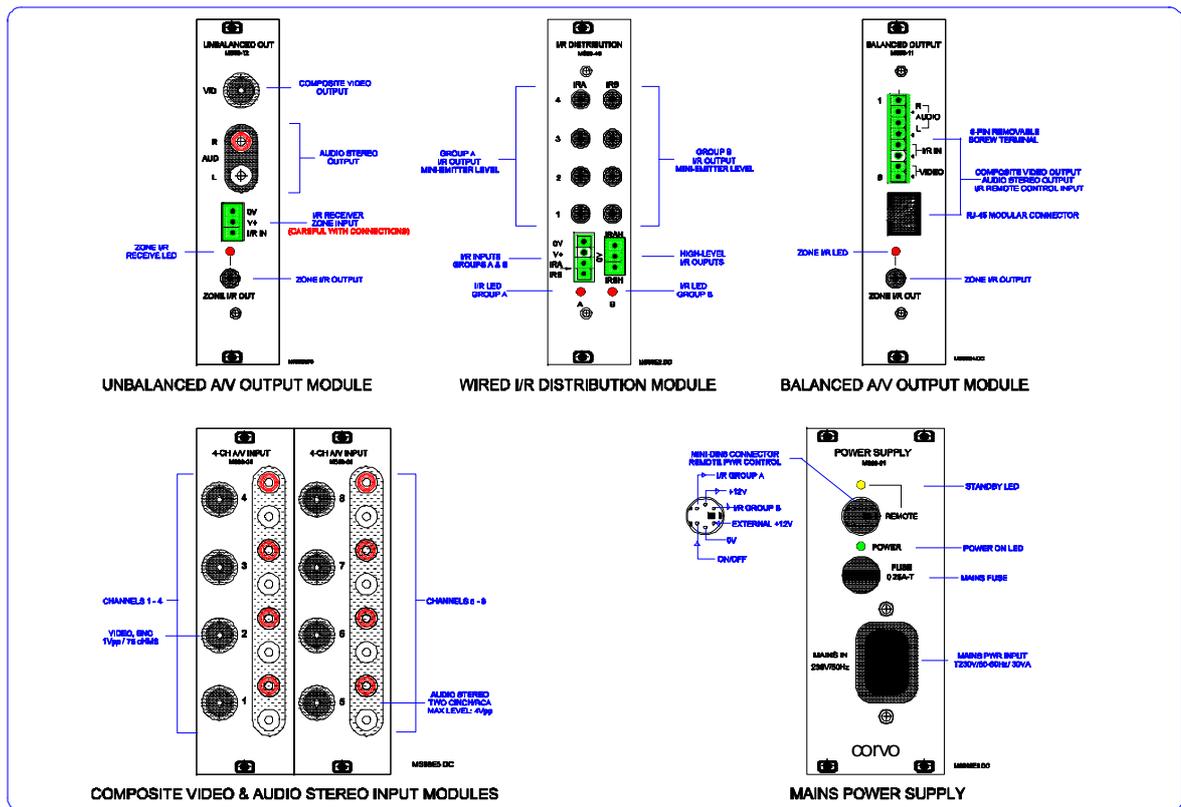
- **Balanced Output Modules**, used when the video and audio signal are to be carried from the MS-88 to the destination zones on pair cables such as multipair telephone or Cat.5 computer cable. This type of output module needs a balanced receiver at the destination zone to convert the signals back to unbalanced signals compatible with typical audio amplifiers and display devices. Balanced links can be as long as 200M (656') to maintain excellent video and audio quality. Connection to the balanced output modules can be effected by either modular RJ-45 connectors or 8-point removable screw terminals.
- **Unbalanced Output Modules**, used when transmission is on traditional video and audio coaxial cables. No additional equipment is needed in the destination zones as the signals are directly compatible with conventional audio amplifiers and video display devices. Connection to the unbalanced output modules is effected with BNC connectors for the video and cinch (RCA) connectors for the audio.

One of the unique features of the MS-88 is its I/R remote control capabilities. Using a single pair of wires from the destination zones to the MS-88 location, it is possible to select an MS-88 source and also to send I/R commands to that source. I/R commands are generated at the destination zones by the original I/R remote controls or intelligent remote control that have learned the required I/R commands. These radiated I/R commands must be captured by a small I/R receiver (not supplied with the MS-88) which converts the radiated signals to wired signals which are handled by the MS-88. The I/R remote control capabilities include :

- **Source selection**
- Control of source equipment **dedicated** to just one destination zone
- Control of source equipment in **two separate** source equipment groups called Group A and Group B
- Simultaneous master control of source selection for all zones

Power supply to the MS-88 can be remotely controlled by a 12-Volt signal when it is in the standby state.

The good news is that you don't have to write software or even use a PC to make MS-88 work properly.



MS-88

## System Configuration Considerations

### Output Modules

- The physical location of an output module in the MS-88 rack is of no importance, provided of course it is in one of the valid 8 output module locations. All output module locations have input access to all source inputs (either 4 or 8).
- Any I/R signal received from the zone will appear on the “ZONE I/R OUT” connector of the output module. This I/R output could be used to control source devices dedicated to the zone. No other zone can control these devices. Output modules can transfer I/R remote control signals they receive from their respective zones to the “I/R Distribution” Module (discussed below). If it is desired to transfer incoming I/R signals to the “I/R DISTRIBUTION” module, the “I/R GRP” jumpers on the output module printed circuit board must be in the “1” position. There is one jumper from I/R Group A and one for Group B. Any combination of these settings is possible. The factory setting is both Group A and B jumpers in the “1” (or on) position.

- All output modules can be configured to respond to centralized I/R source selection commands coming from the “I/R Distribution” module. Two jumpers called “IRAX” and “IRBX”, located on the output module PC board determine whether I/R commands from the “IRAX” and “IRBX” connector of the “I/R DISTRIBUTION” module will be executed by the output module. The factory setting for these jumpers is “1” for both jumpers.
- All output modules have a dedicated I/R zone output “ZONE I/R OUT” that allows control of source devices that are to be controlled exclusively from that zone. For example, a DVD player is connected to channel 1 and its I/R mini-emitter is connected to the zone 3 “ZONE I/R OUT” connector. All zones can view the DVD program on channel 1 but only the I/R remote control in zone 3 can control the DVD player.
- The I/R source selection decoder, which drives the output modules source selector, can be configured to respond to two different sets of I/R codes. These are RC-5 codes with two different system addresses to distinguish them. The jumper “26/27” set either RC-5 address 26 or 27. The factory setting is 27. Using this jumper allows more selective centralized source selection command utilizing both group A and/or group B as well as address 26 or 27 settings.

### ***Input Modules***

- Input module physical location is critical in that the left-hand position is reserved for channels 1 to 4 whereas the right-hand position is reserved for channels 5-8.
- Matching the audio level of all sources may be necessary to produce a pleasing result. This can be accomplished external to the MS-88 or by using the optional MS-88 input module(s) with level pots. An extender board is supplied with these input modules to allow access to the pots during set-up.
- If the MS-88 is supplied from the factory with only 1 input module (CH1-4) a special earthing module is fitted to the CH5-8 input module mother board connector to reduce noise on the unused CH5-8 tracks. If the CH5-8 module is installed at a later date, this earthing module must first be removed.

### ***Power Supply***

- **Remote Control**

The MiniDin6 connector pins on the power supply panel have the following meaning :

- +12V : A 12Volt signal only present when the MS-88 power supply is on. This signal is useful for turning on other equipment at the same time as the MS-88.
- External +12V : An external 12-Volt power supply must be connected to this pin to allow the remote ON/OFF function to operate. The MS-88 turn-on relay will draw approximately 50mA.
- 0V : Common 12-Volt return and 0 potential of the MS-88.
- ON/OFF : Connecting this pin to 0V continuously will cause the MS-88 power supply to remain on.
- I/R Group A and B : These pins are connected to the “IRA” and “IRB” remote control buses. External wired I/R commands can be injected to the IRA and/or IRB buses using these pins.

- **Permanent Power ON**

A jumper marked “SW/P” on the power supply PC board determines whether the power supply is always on (when mains power is connected), position “P” or whether it is under remote relay control, position “SW”. The factory setting of this jumper is “P” , (always on).

***I/R Distribution Module***

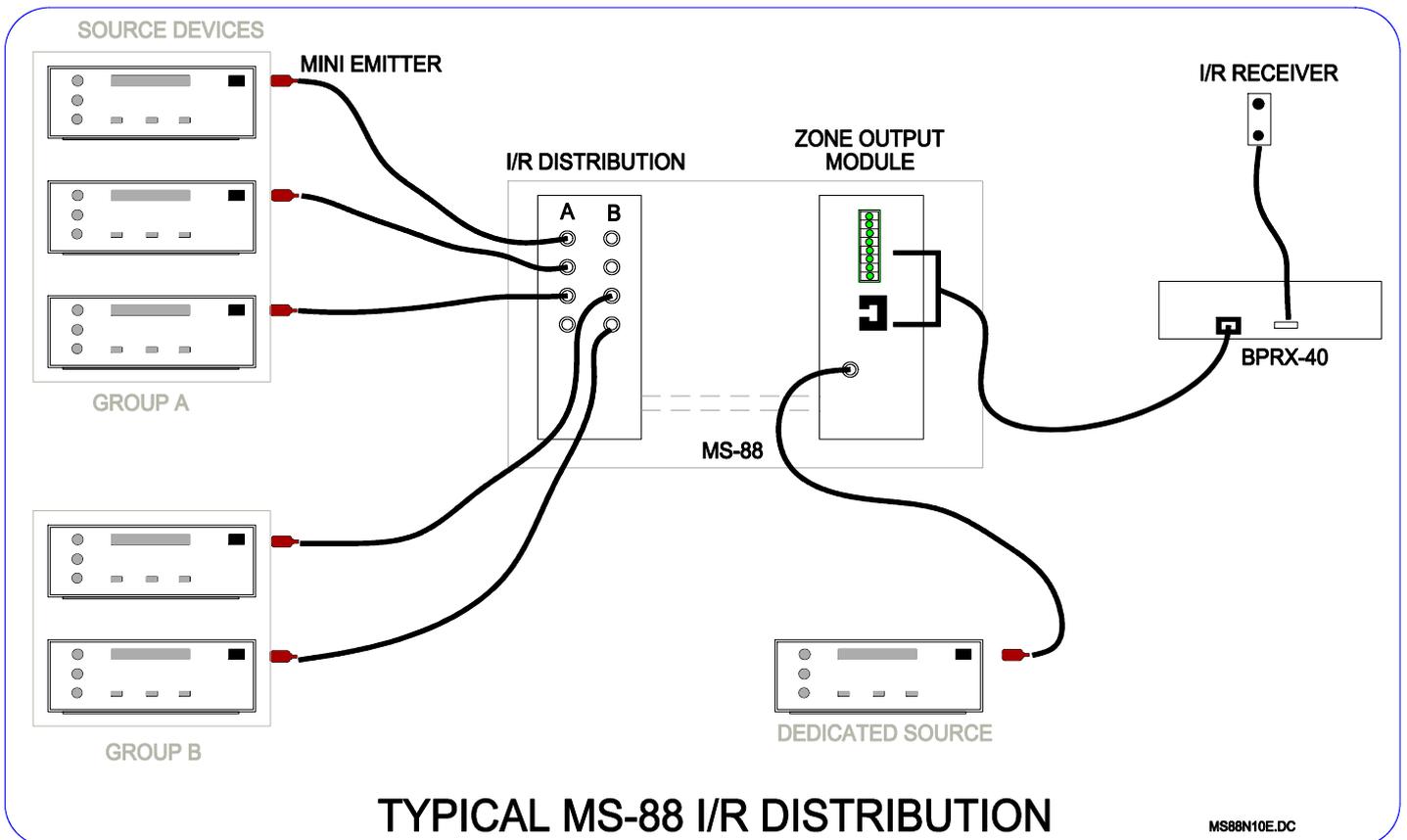
- Group A and B I/R Outputs

I/R commands intended for the source equipment are received from the destination zones via the output modules and the two I/R summing buses, “IRA” and “IRB”. I/R signals received by an output module are transferred to IRA or IRB (or both) dependent on the jumper settings on each output module as explained above. These I/R outputs are intended to drive wired I/R mini-emitters which are placed on the I/R receiver window of each of the source devices to be controlled. Each of the two groups IRA and IRB has four outputs on a 3.5MM mini-jack. Each of these connectors can drive a single or double I/R mini-emitter so up to 8 group A and 8 group B devices can be controlled. If more devices need to be connected, an external I/R connecting block or distribution module can be used to increase the number of outputs. I/R activity is indicated by the two red LEDs called “A” and “B”.

- External I/R Inputs

The 4-pin connector on the I/R distribution” module provides an input to the two I/R groups A and B so that an external wired I/R control console can input centralized commands to these two I/R groups.

- High Level I/R Outputs  
The 3-pin connector on the “I/R distribution” module provides a high level output from the two I/R groups A and B. This output is suitable for driving external connecting blocks to increase the number of outputs. It is not suitable for driving mini-emitters and will destroy them very quickly.



## Connections

- Video and audio source device outputs are connected to the input module or modules.
- For balanced output modules either the RJ-45 modular connector or the removable 8-pin screw terminal connector can be used. In any case the cabling is pin-to-pin from the output module to the same connector on the balanced pair receiver (BPRX-40 or BPRX-40V). Pin 1 to pin 1, pin 2 to pin 2, etc.

- For unbalanced output modules, video and audio output connections are made with suitable coax cables and connectors. The I/R input from the destination zone is connected to the 3-pin removable connector which also provides power to the I/R receiver in that zone. Great care is required to avoid destruction of the I/R receiver due to incorrect wiring.
- If there are source devices to be dedicated to a particular zone in terms of having control over the functions of the device, an I/R mini-emitter should be connected to the chosen “ZONE I/R OUT” jack and placed on the I/R receiver window of the source device. Only the remote control in that zone can control the functions (play, stop, etc.) of this dedicated source device but all zones can receive the video and audio output from the device.
- I/R mini-emitters are connected to the I/R group A and B output 3.5MM jacks and placed on the I/R receiver windows of the source devices being controlled.
- If remote power on/off is used, (an external 12V/50mA power supply is required), the external 12V/50mA power supply and on/off switch or relay is connected using the supplied miniDin6 plug.
- Mains power is connected to the “MAINS IN” connector of the MS-88 power supply panel.

## Adjustments

- Audio input level for each of the sources should be equalized so that when switching channels, the audio level remains constant. This is accomplished in one of two ways :
  - External to the MS-88, using the audio level control of each of the source devices, or
  - Using the optional MS-88 input modules fitted with a stereo pot for each source.
- Video gain is adjusted for each balanced pair destination zone depending on the length and transmission quality of the 4-pair cable used. This adjustment is made with the video gain potentiometer in the balanced pair receiver (BPRX-40 or BPRX-40V). The level is ideally set with an oscilloscope but adequate results can be obtained simply by visualizing the image on its display device. The receivers are factory adjusted to produce 0dB gain over a 30M (98”) unshielded flat cable.
- Video equalization, also adjusted in the balanced pair receiver with the video equalization pot, corrects for the greater attenuation of the higher

chroma frequencies. One again, the factory adjustment is for a 30M (98') unshielded flat cable.

- I/R level in each of the mini-emitters may be adjusted to match the sensitivity of each of the source I/R receivers simply by moving the mini-emitter around the surface of the devices I/R receiver window until stable operation is achieved. Unsatisfactory I/R performance is usually due to having too much I/R energy rather than not enough, so moving the mini-emitter away from the I/R receiver axis can solve the problem.

## Operation

- After completing connections and configuring as above, connect the MS-88 and the balanced pair receivers to mains power and confirm that the green power LED on the MS-88 power supply module is on.
- A remote control command from one of the zones will have the following effect :
  - If the I/R code is correct, the A/V channel for that zone will be selected in accordance with the code as follows :

<b>RC-5 Code</b>	<b>Selected Channel</b>
00	8
01	1
02	2
03	3
04	4
05	5
06	6
07	7

These source selector codes must be either RC-5 address 26 or 27, according to the setting of the RC-5 address jumper on the output module of the MS-88. The codes cannot be changed (except for using either ADR 26 or 27).

- All received remote control codes will also be passed to the respective "ZONE IR OUT" connector of the zone. This output could be useful for sending I/R codes from a given zone to control equipment only from that zone.
- If either or both of the group A or B jumpers in the output module are in the active position, I/R codes received from the zone will also be passed to the IRA and/or IRB buses to be used to control equipment in group A or group B, or both.

- Any I/R code received from a zone will cause the I/R led on the corresponding output module to flash. Only if the group A and/or group B jumpers are active will the I/R “A” and “B” LEDs also flash on the I/R distribution module.
- Audio volume in each zone can be controlled in one of 3 ways :
- (1) Using an audio amplifier or other A/V device which has a built-in volume control.
  - (2) Using a VCA stereo audio module at the output of the BPRX-40 balanced pair zone receiver (Corvo Model IRM-A2).
  - (3) Using a balanced pair receiver that includes a VCA volume control (Corvo Model BPRX-40V).

When the zone is cabled with unbalanced coax cables, methods (1) or (2) above are indicated.

## Possible Problems and Solutions

Problem	Solution
Connecting the mains power does not turn on the green POWER LED on the MS-88 power supply	<ul style="list-style-type: none"> <li>- Check mains fuse</li> <li>- Power supply may be configured for remote turn-on power supply PCB</li> </ul>
No response to source selection commands even though output module LED flashes	<ul style="list-style-type: none"> <li>- Check RC-5 address and command codes to be sure they are correct</li> </ul>
No response to I/R source commands	<ul style="list-style-type: none"> <li>- One or several of the zone I/R receivers is disturbed by ambient sunlight or other I/R pollution</li> <li>- I/R mini-emitter is incorrectly located on the source I/R receive window</li> <li>- The group A or B jumper on the output module PCB is not in the active position therefore not allowing the I/R command to reach the mini-emitter</li> <li>- The I/R carrier frequency or code structure is outside the range compatible with the I/R receiver</li> </ul>
Video image unsatisfactory	<ul style="list-style-type: none"> <li>- Video gain and/or equalization in the balanced pair receiver is not properly adjusted</li> <li>- Failure of one of the two wires that carries the video signal in the 4-pair cable</li> <li>- Failure to terminate the video output in a 75-Ohm load</li> </ul>
Unsatisfactory audio	<ul style="list-style-type: none"> <li>- Failure of one of the two wires that carries the balanced audio signal (for each of the two audio channels)</li> <li>- Saturation of the audio input by too large a signal</li> </ul>

## Technical Specifications

## **Video**

Video Input Level :	1Vpp
Video Balanced Output Level :	1.2Vpp
Video Unbalanced Output Level :	1Vpp
S/N :	62dB
Bandwidth :	15 Mhz +/- 3 dB
Video Standards :	PAL, SECAM, NTSC
Connectors :	RJ45 and terminal block (balanced), BNC 75 $\Omega$ Female (unbalanced)

## **Audio**

Audio Input Level :	2.3Vpp maximum
Balanced audio Output Level :	4.0Vpp maximum
Un-balanced audio output level :	5.0Vpp maximum
Audio input impedance :	47 K $\Omega$
Balanced audio output impedance :	100 $\Omega$
Unbalanced audio output impedance :	100 $\Omega$
Frequency response :	20 to 50KHz, +/-0.1 dB
Distortion :	0.011% (unbal.), 0.014% (balanced)
Crosstalk :	109dB (unbal.), 104dB (balanced)
S/N :	99dB (unbal.), 107dB (balanced)
Connectors :	RJ45 and terminal block (balanced), Cinch (unbalanced)

## **I/R Remote Control**

Source Selector Codes :	RC5
I/R relay and distribution bandwidth :	20 to 600KHz
Common I/R Outputs :	2 Groups, 4 Outputs/Group
High Level I/R Outputs :	2 Groups, 1 Output/Group
I/R mini-emitter Output Level :	15mA/Output
I/R external receiver power supply :	12Vdc/50mA

## **General**

Case size :	19'' rack/3U height (133 H x 239 L x 448 D MM) (5.2'' H x 9.4'' D x 17.6' W)
Power Requirements :	230V/50-60Hz/30VA
Mass :	5,500Grs (194Oz), (fully equipped)
Storage temperature range :	-20° to 60°C (-4° to 104°F)
Operating temperature range :	0° to 40 °C (32° to 104°F)