



# **HDDS SM652-B/W**

## **WALL MOUNT SPEAKER**



# **OWNERS MANUAL**

## PRECAUTIONS!

**Please read this very carefully before operating this unit**

- Read **ALL** instructions carefully before using this unit.
- Do not operate this unit near water, in the rain, or where there is moisture. If this warning is ignored a serious electrical shock or death may occur.
- Do not attempt to service this unit. No user serviceable parts inside. Refer servicing to qualified, ISP approved service personnel.
- Never remove or defeat the ground connection on the power cord of this unit.
- Care should be taken to avoid spilling any foreign objects or liquid into this unit.
- Failure to follow these instructions may void the warranty.



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## INTRODUCTION

Thank you for your purchase of the ISP Technologies High Definition Distributed System SM652 Surface Mount Speaker. This product provides a new level of performance in distributed audio systems allowing greater system flexibility and easy installation of distributed sound. All connections are made via Cat5 RJ45 connections making installation of systems faster and easier using the SM652.

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## PRECAUTIONS

**NOTE: IT IS VERY IMPORTANT THAT YOU READ THIS SECTION TO PROVIDE YEARS OF TROUBLE FREE USE. THIS UNIT REQUIRES CAREFUL HANDLING.**

All warnings on this equipment and in the operation instructions should be adhered to and all operating instructions should be followed.

Do not use this equipment near water. Care should be taken so that objects do not fall onto and liquids are not spilled into the unit through any openings.

The power cord should be unplugged from the outlet when the unit is left unused for an extended period of time.

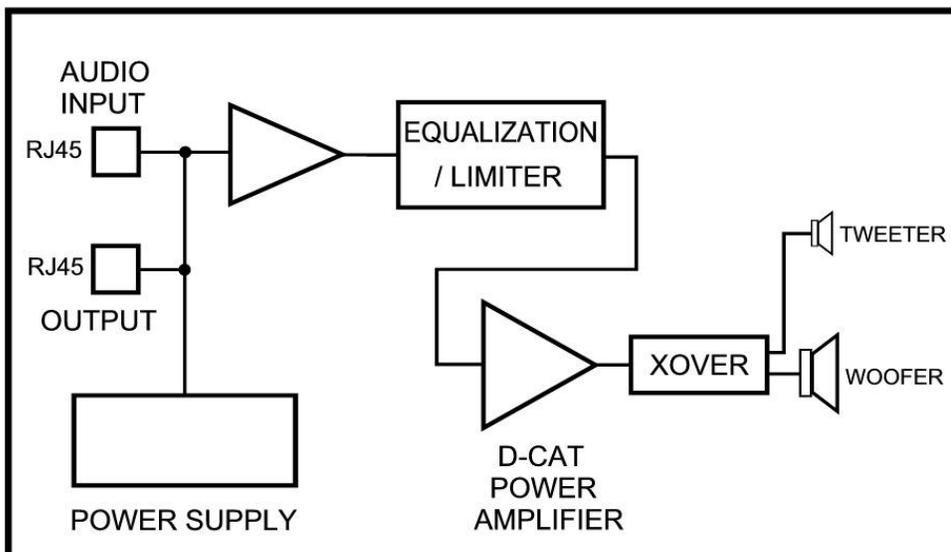
DO NOT ATTEMPT TO SERVICE THIS EQUIPMENT. THIS EQUIPMENT SHOULD BE SERVICED BY QUALIFIED SERVICE PERSONNEL ONLY. DO NOT MAKE ANY INTERNAL ADJUSTMENTS OR ADDITIONS TO THIS EQUIPMENT AT ANY TIME. DO NOT TAMPER WITH INTERNAL ELECTRONIC COMPONENTS AT ANY TIME. FAILURE TO FOLLOW THESE INSTRUCTIONS WILL VOID THE WARRANTY OF THIS EQUIPMENT, AND MAY CAUSE A SHOCK HAZZARD.

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## OPERATION

The HDDS Master Control Module is the Master control center for distributed sound systems using the HDDS technology. The Master Control Module includes six zones that can be used independently or can be linked to work together allowing the system designer the flexibility to set up any system with the desired configuration. The block diagram below shows the basic configuration of the SM652 Surface Mount Speaker. The speaker receives power and audio over a Cat5 cable connected to the Master Control Module, internally converts the AC power to plus / minus 15VDC and 30VDC to power the amplifier. The audio signal is fed to a precision differential amplifier to remove any common mode noise, equalized and fed to a D-CAT power amplifier circuit and crossover to drive both the woofer and tweeter in the cabinet. The SM652 also includes a built in limiting circuit which limits the maximum audio output. The limiter is set as a protection circuit that will allow the SM652 to reach its maximum output without excessive clipping to protect the internal components from failure. The SM652 also includes thermal tracking and will mute the output if the internal amplifier temperature exceeds 120 degrees centigrade.

## HDDS SM652 BLOCK DIAGRAM



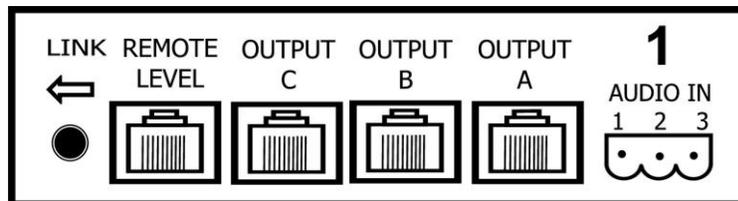
The HDDS SM652 is available in both black and white. Both models include a front mounted blue power indicator LED, which illuminates when power is on.

## Rear Panel



The rear panel includes two RJ45 connectors one for input and one for output. Connect the input to the output connector on a HDDS Master Control Module. A Cat5 cable is used to connect the output connector to another SM652 or to connect to any other ISP Technologies HDDS powered speaker.

The SM652 will typically pull less than 500 milliamps of current from the output of the Master Control Module with typical listening levels. At maximum level the SM652 can pull in excess of 1 amp of current. If maximum output power is desired it is recommended to limit the number of serially connected SM652 speakers on a single 50ft run of Cat5 cable to no more than 4 speakers. With longer runs of cable the limit will be reduced in order to achieve full output power. Connect the SM652 to any one of the A,B or C outputs on the rear of the HDDS Master Control Module as shown below.



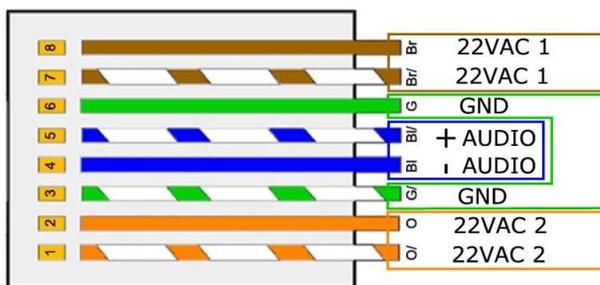
## SPEAKER POWER:

The HDDS system distributes low voltage Alternating Current over the Cat5 cable plus high level balanced audio and is capable of greater than 48 watts continuous output power per SM652 speaker. Each of the Master Control Modules three outputs A, B and C are capable of delivering up to 7 amps of output current. With a typical power per speaker of 10 watts each speaker will average on the order of 400mA, which means that 12 speakers would require 4,800mA of current. Installed systems that require more output power per speaker simply require that the number of speakers per output A, B and C be reduced so as not to exceed the maximum of 7 amps available. The current consumption at full power (48 watt continuous) will require over 1.5 Amp of power per speaker. In order to allow the full 48 watts of power, where higher output levels are desirable, the number of speakers per A, B and C outputs on each zone needs to be limited to a maximum of 4 speakers. Reducing to 20 watts of power per speaker, a maximum of 8 speakers per output can be connected to each A, B and C zone output. With longer runs of cable exceeding 300 feet the cable voltage drop will start to become a design factor. The Cat5 cable will start to limit the total power capability once you exceed 100 feet of cable. Where maximum power output is critical it is recommended to use Cat6 cable since the gauge per wire is 22 vs 23 with Cat5. This increase will reduce the voltage drop over longer runs.

## Cat5 Connections

The figure below shows the connections for each output A, B and C of each zone output on the Master Control Module and also connections between each SM652 speaker. Connections are done via standard Cat5 cables where pins 1 through 8 are connected common to the same pins 1 through 8 at each end. As shown below two wires in the Cable are use for balanced audio and 6 wires are used for power with two providing ground and two for each of two 22VAC power signals fed down the cable.

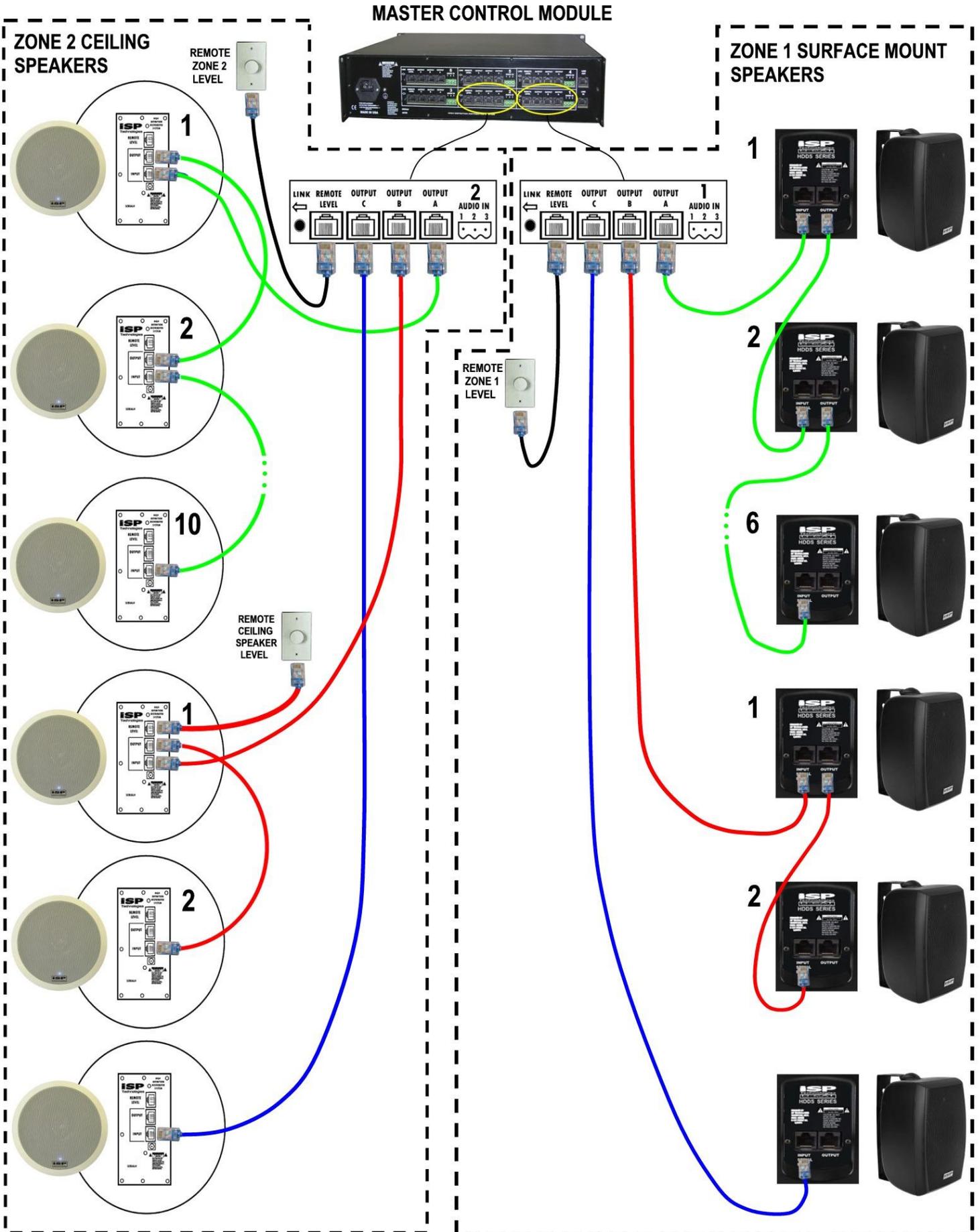
## RJ45 CAT5 CONNECTIONS



## Mounting the SM652

Refer installation to a qualified installer to ensure proper mounting to overhead structures. The SM652 includes a U bracket for easy install allowing the speaker to swivel for proper alignment and aiming.

# HDDS TYPICAL WIRING CONFIGURATION



## **HDDS SM652 SPECIFICATIONS**

|                            |   |
|----------------------------|---|
| <b>POWER CONSUMPTION:</b>  | <b>400 mA typical 1.8 amps Maximum</b>                                    |
| <b>OUTPUT POWER :</b>      | <b>48 Watts RMS Maximum</b>   |
| <b>AUDIO INPUT:</b>        | <b>Balanced 50k input impedance</b>                                       |
| <b>COVERAGE:</b>           | <b>90 Vertical x 90 Horizontal</b>  |
| <b>FREQUENCY RESPONSE:</b> | <b>55Hz – 19Khz</b>   |
| <b>WEIGHT:</b>             | <b>8LBS</b>   |
| <b>SPEAKERS:</b>           | <b>6-1/2 Polypropylene woofer<br/>1 inch Dome Mylar Neodymium Tweeter</b> |
|                            | <b>Includes “U” Style Mounting Bracket</b>                                |

# WARRANTY AND SERVICE

The unit, parts and workmanship are fully guaranteed to be free of defects under normal use and service for a period of 3 years from the date of purchase.

Any damage resulting from the misuse or the failure to follow the precautions and instructions will void the warranty.

In the event that the unit needs to be repaired, please return the unit to ISP Technologies directly. Simply repack the unit, send a copy of the original receipt, a note stating the problem, and send it to:

ISP Technologies, LLC  
5479 Perry Drive Unit B  
Waterford, MI 48329  
Attn: Repair Dept.

All shipping charges must be fully prepaid.

ISP will not be responsible for any damages incurred in shipping of any unit. Any claim will need to be settled with the shipping company.

The warranty will be voided if the serial number has been tampered with in any way.

The warranty card must also be filled out and returned in order to activate the warranty.

Should you have any questions for the repair department prior to returning the product please call 1-(248)-673-7790

NOTE: This Product is covered under one or more of the following patents with other patents pending: 7,035,413; 6,944,305; 6,931,134; 6,831,514; 6,091,013



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