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Description	Speaker Craft CAT5 wiring standard using RJ45 adaptors		



Speakercraft MZC CAT5 Wiring



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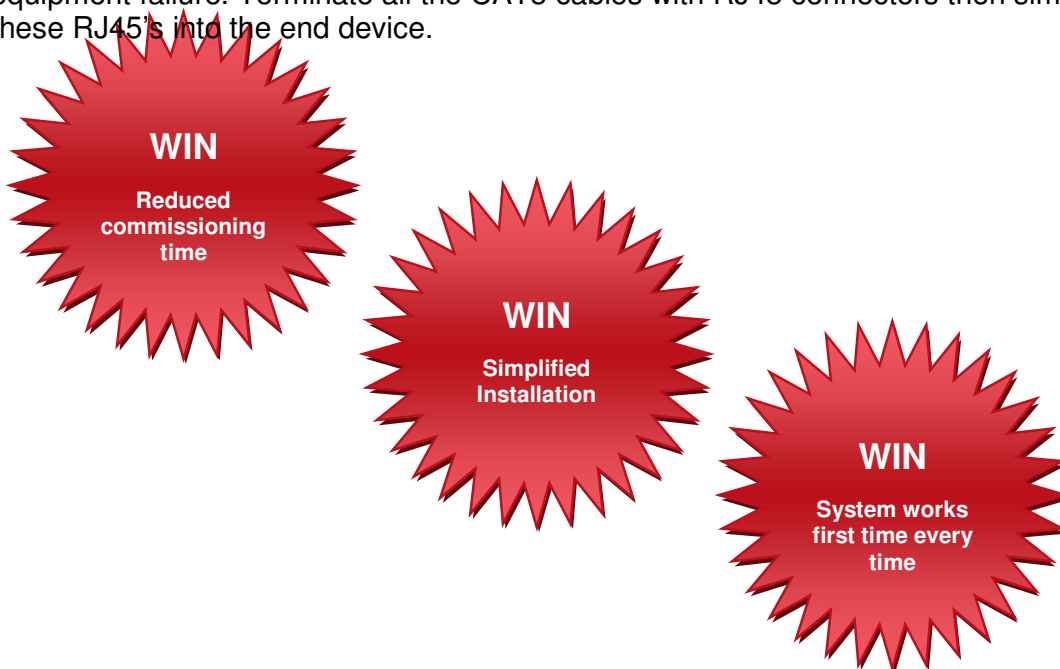
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iLED has developed a range of solutions to ensure CAT5 wiring uniformity in Speakercraft MZC installations.

The information provided on this technical tip will speed up installation, reduce commissioning time and prevent equipment damage. We are committed to improving the experience of our Custom Installers and are now shipping all of our products that require adaptors to conform to this standard. You win during installation phase – you win with reduced commissioning time – you win at handover time when your installation works first time every time.

How does this solution help me ?

Custom Installation of a Multi Room Audio system involves connecting devices with CAT5 cable. The termination of this cable is prone to wiring errors that sometimes leads to equipment failure. Terminate all the CAT5 cables with RJ45 connectors then simply plug these RJ45's into the end device.



This document is available at <http://iled.co.za/UserFiles/File/SC-WiringRev1-4.pdf>



This document details Speakercraft control wiring where CAT5 cable is used. Please note that CAT5E or CAT6 can be used in place of CAT5. The data rates and signals carried over the cable are less than 100kb/s and therefore well within the specifications of CAT5 – the use of CAT5E or CAT6 will have no improvement in the performance of the system.

Areas covered

1. Keypads (MKP/FKP)
2. Mode Keypad
3. Mode Free Wall Dock
4. Mode Free Co-ordinator
5. Mode Base to Mode Adaptor
6. Mode Adaptor to MZC
7. RJA – Cat5 to MZC connector
8. BOT-X – CAT5 Multidrop and Breakout Adaptor

The Speakercraft MZC range of Audio Visual amplifier/receivers use CAT5 cable for various purposes leading to differing wiring configurations and colour codes – this document summarises the wiring and presents a uniform standard to be applied across the range using industry standard termination codes and methods. The basis for the standard is to ensure that ALL CAT5 cables are terminated at both ends using RJ45 male connectors. Following this standard will result in the following benefits;

- a. Industry Standard wiring colour codes means the installation conforms.
- b. IT installation crews will understand EIA568B standard reducing the margin for error.
- c. All installations are the same leading to reduced system design time.
- d. RJ45 terminations at both ends of the CAT5 cable allow for simple plug in/out. (RJ45 crimpers available from iLED)
- e. Wiring integrity testing is simplified by the use of low cost CAT5 cable testers (Available from iLED).
- f. Reduced commissioning time – the tested wiring will work first time every time.
- g. No wiring errors results in dramatically reduced chance of equipment failure.
- h. Simple removal of devices for upgrade or replacement.

Please note that each piece of equipment you receive will have an adaptor fitted (If required) that allows this wiring standard to be implemented. Removal of these adaptors will void warranty.

1. Keypads (MKP/FKP)

- a. Fitted with an RJ45 female adaptor by iLED.
- b. Wire CAT5 RJ45 as per EIA568B at Keypad end.
- c. Wire CAT5 RJ45 as per EIA568B at MZC end.
- d. Test cable for pin open and short circuit using CAT5 test kit (Available from iLED).
- e. At Keypad end – Plug RJ45 male on CAT5 cable into female adaptor.
- f. At MZC end - For MZC64 – plug RJ45 in directly. For MZC66 and MZC88 use RJA1.1.



2. Mode Keypad

- a. Fitted with an RJ45 female adaptor by iLED.
- b. Wire CAT5 RJ45 as per EIA568B at Keypad end.
- c. Wire CAT5 RJ45 as per EIA568B at MZC end.
- d. Test cable for pin open and short circuit using CAT5 test kit (Available from iLED).
- e. At Keypad end – Plug RJ45 male on CAT5 cable into female adaptor.
- f. At MZC end - For MZC64 – plug RJ45 in directly. For MZC66 and MZC88 use RJA1.1.



3. Mode Free Wall Dock

- No RJ45 adaptor required.
- Wire CAT5 RJ45 as per EIA568B at Keypad end.
- Wire CAT5 RJ45 as per EIA568B at MZC end.
- Test cable for pin open and short circuit using CAT5 test kit (Available from iLED).
- At Keypad end – Plug RJ45 male into female adaptor.
- At MZC end - For MZC64 – plug RJ45 in directly. For MZC66 and MZC88 use RJA1.1.

4. Mode Free Co-ordinator

- No RJ45 adaptor required.
- Wire CAT5 RJ45 as per EIA568B at co-ordinator end.
- Wire CAT5 RJ45 as per EIA568B at MZC end.
- Test cable for pin open and short circuit using CAT5 test kit (Available from iLED).
- At Co-ordinator – Plug RJ45 male into Expansion Ports.
- At MZC end - For MZC64,MZC66 and MZC88 plug into Expansion Port.

5. Mode Base to Mode Adaptor

- No RJ45 adaptor required..
- Wire CAT5 RJ45 as per EIA568B at Mode Base end.
- Wire CAT5 RJ45 as per EIA568B at Mode Base Adaptor end.
- Test cable for pin open and short circuit using CAT5 test kit (Available from iLED).
- At Mode Base - Plug RJ45 male into Adaptor Port.
- At Mode Adaptor – Plug RJ45 male into Ipod Base.

6. Mode Adaptor to MZC

- No RJ45 adaptor required..
- Wire CAT5 RJ45 as per EIA568B at Mode Base Adaptor.
- Wire CAT5 RJ45 as per EIA568B at MZC end.
- Test cable for pin open and short circuit using CAT5 test kit (Available from iLED).
- At Mode Base Adaptor - Plug RJ45 male into Expansion.
- At MZC end - For MZC64,MZC66 and MZC88 plug into Expansion Port.

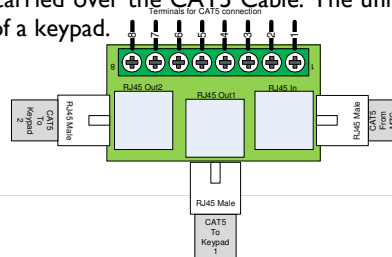
7. RJA – CAT5 to MZC connector

- To connect CAT5 zone control wiring to MZC64 – No Adaptor required
- To connect CAT5 zone control wiring to MZC66 – RJA required
- To connect CAT5 zone control wiring to MZC88 – RJA required

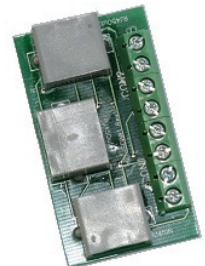


8. BOT-X CAT5 Multidrop and Break Out

To enable multiple keypads to be connected to a single zone, a BOT-X (Break Out Terminator Extender) is required. This device allows for RJ45 connections to be connected in a 3 way star configuration. 8 mini screw terminals allow for connection to any of the wires in the CAT5 cable allowing for connection to any of the signals carried over the CAT5 Cable. The unit is small enough to fit into the back box of a keypad.



- 1 – GND
- 2 – +12V
- 3 – 485A
- 4 – IR
- 5 – IR
- 6 – 485B



7 - +12
8 - GND

Table1 – Wiring and Colour Information

Table 1 details the signals and colours found in various literature from Speakercraft and iLED. The table shows the signal to colour to plug type connections. Possible confusion and resulting wiring errors are evident when looking at the table – **Follow the standard detailed above and ignore Table 1.**


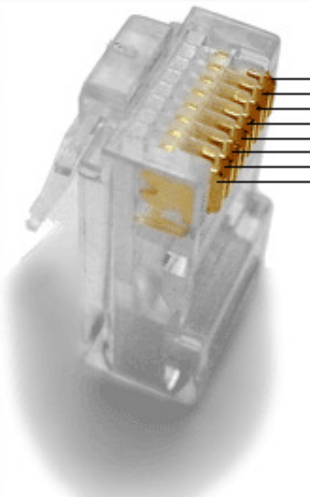







Note on Table 1 - Included for clarity. Not required if the procedures detailed above are followed.

SIGNAL	CAT 5 - EIA568B			PIGTAIL (RJ45Female)			MODE KEYPAD (Krone Block)			MKP KEYPAD (Spring Terminal)			MZC64 (RJ45 Female)			MZC66 (5mm Plug In Female)			MZC88 (Spring Terminal on KCM)		
	PIN	COLOR	SIGNAL	PIN	COLOR	SIGNAL	PIN	COLOR	SIGNAL	PIN (1/2 Relay)	COLOR	SIGNAL	PIN	COLOR	SIGNAL	PIN	COLOR	SIGNAL	PIN	COLOR	SIGNAL
GND	1	WH/OR	GND	1	BLUE	GND	5	GREEN	GND	5	BLUE	GND	1	GREEN	GND	3	N/A	GND	3	N/A	GND
12v	2	OR	12v	2	ORANGE	12v	4	WH/OR	12v	3	ORANGE	12v	2	OR	12v	5	N/A	12v	5	N/A	12v
485A	3	WH/GRN	485A	3	BLACK	485A	7	BROWN	485A	6	BLACK	485A	3	BROWN	485A	2	N/A	485A	2	N/A	485A
IR	4	BLU	IR	4	RED	IR	2	WH/BLU	IR	4	RED	IR	4	BLU	IR	4	N/A	IR	4	N/A	IR
IR	5	WH/BLU	IR	5	GREEN	IR	1	BLU	IR	4	GREEN	IR	5	WH/BLU	IR	4	N/A	IR	4	N/A	IR
485B	6	GRN	485B	6	YELLOW	485B	8	WH/BRN	485B	7	YELLOW	485B	6	WH/BRN	485B	1	N/A	485B	1	N/A	485B
12v	7	WH/BRN	12v	7	BROWN	12v	3	OR	12v	3	BROWN	12v	7	WH/OR	12v	5	N/A	12v	5	N/A	12v
GND	8	BRN	GND	8	WHITE	GND	6	WH/GRN	GND	5	WHITE	GND	8	WH/GRN	GND	3	N/A	GND	3	N/A	GND

Included for clarity

Table2 – EIA568B wiring standard.

Table 2 All CAT5 RJ45 terminations are to conform to this PIN to PIN standard

Pin	T568B Pair	Wire	T568B Color	Pins on plug face (socket is reversed)
1	2	tip	 white/orange stripe	
2	2	ring	 orange solid	
3	3	tip	 white/green stripe	
4	1	ring	 blue solid	
5	1	tip	 white/blue stripe	
6	3	ring	 green solid	
7	4	tip	 white/brown stripe	
8	4	ring	 brown solid	

All wiring to conform