COOPER Notification

INSTALLATION INSTRUCTIONS MULTITONE APPLIANCES MT-12/24 AND MT4-12/24

273 Branchport Ave.
Long Branch, N.J. 07740
(800) 631-2148
www.coopernotification.com

Use this product according to this instruction manual. Please keep this instruction manual for future reference.

GENERAL

MT Multitone Appliances are UL-Listed under Standard 464 for Audible Signal Appliances for Fire Protective Service. The MT-12/24 is also ULC Listed under Standard CAN/ULC-S525-07 for Audible Signal Appliances for Fire Alarm Systems. They are listed for both indoor and outdoor use with the backboxes specified in these instructions. See Mounting Options. MT Multitone Appliances can be field set to produce any one of eight commonly used alarm tones. Sound output can be field set to provide either HIGH (HI) dBA or STANDARD (STD) dBA sound output level. MT Multitone Appliances can be field set for either 12VDC or 24VDC operation and are designed for use with either filtered or unfiltered Full-Wave-Rectified (FWR) input voltage. All inputs are polarized for compatibility with standard reverse polarity supervision of circuit wiring by a Fire Alarm Panel (FACP).

NOTE: All Canadian installations should be in accordance with the Canadian Standard for the Installation of Fire Alarm Systems, CAN/ULC-S524 and the Canadian Electrical Code, Part 1. Final acceptance is subject to authorities having jurisdiction.

WARNING: Please read these instructions carefully before using this product. Failure to comply with any of the following instructions, cautions and warnings could result in improper application, installation and/or operation of these products in an emergency situation, which could result in property damage and serious injury or death to you and/or others.

WARNING: The MT appliance is a FIRE ALARM DEVICE - DO NOT PAINT.

SPECIFICATIONS

Table 1: UL/ULC Listed Models

		UL Ratings		ULC Ratings	
Model	Regulated Voltage (VDC/V_{RMS})	Voltage Range (VDC/V_{RMS})	Reverberant dBA At 10 Feet	Voltage Range (VDC/V_{RMS})	Anechoic dBA at 10 Feet
MT-12/24	12/24	8.0-17.5 or 16.0-33.0	76-94	8.0-17.5 or 16.0-33.0	85-100
MT4-12/24	12/24	8.0-17.5 or 16.0-33.0	76-94	N/A	N/A

NOTE: All models are listed for indoor and outdoor use with a temperature range of -40°C to +66°C (-40°F to +151°F) and maximum humidity of 98% ± 2% RH

WARNING: For UL/ULC applications, these appliances were tested at UL to the operating voltage limits of 16-33VDC for 24VDC operation and 8-17.5VDC for 12VDC operation using filtered (DC) or unfiltered full-wave-rectified (FWR). Do not apply 80% and 110% of these voltage values for system operation.

WARNING: Verify the minimum and maximum output of the power supply and standby battery and subtract the voltage drop from the circuit wiring resistance to determine the applied voltage to the strobes.

Table 2: UL/ULC Current Ratings for MT Multitone Audible Appliances

Tone	Tone Description	Maximum RMS Current (AMPS)							
		16-33 VDC		16-33 VFWR		8-17.5 VDC		8-17.5 VFWR	
		HI	STD	HI	STD	HI	STD	HI	STD
Horn	Broadband Horn (Continuous)	0.108	0.044	0.087	0.045	0.177	0.034	0.172	0.034
Bell	1560 Hz Modulated (0.07 Sec. ON/Repeat)	0.053	0.024	0.051	0.028	0.095	0.020	0.095	0.023
March Time Horn	Horn (0.25 Sec. ON/0.25 Sec. OFF/Repeat)	0.104	0.087	0.087	0.045	0.142	0.034	0.142	0.039
Code 3 Horn	Horn (ANSI S3.41 Temporal Pattern)	0.122	0.035	0.087	0.045	0.200	0.034	0.183	0.039
Code 3 Tone	500 Hz (ANSI S3.41 Temporal Pattern)	0.135	0.035	0.110	0.029	0.152	0.021	0.150	0.023
Slow Whoop	500-1200Hz Sweep (4.0 Sec. ON/0.5 Sec. OFF/ Repeat)	0.098	0.037	0.092	0.042	0.142	0.035	0.142	0.038
Siren	600-1200Hz Sweep (1.0 Sec. ON/Repeat)	0.104	0.036	0.092	0.040	0.152	0.030	0.152	0.034
HI/LO	1000/800 Hz (0.25 Sec. ON/ Alternate)	0.057	0.025	0.058	0.032	0.114	0.026	0.114	0.029

WARNING: Ensure the total RMS current and total average current required by all appliances that are connected to the system's primary and secondary power sources, NAC circuits, SM, DSM sync modules or Cooper Wheelock's power supplies do not exceed the power sources' rated capacity or the current ratings of any fuses on the circuits to which these appliances are wired. Overloading power sources or exceeding fuse ratings could result in loss of power and failure to alert occupants during an emergency, which could result in property damage and serious injury or death to you and/or others.

When calculating the total currents: Use Table 2 to determine the highest value of RMS Current for an individual MT Multitone, then multiply these values by the total number of MT Multitones; be sure to add the currents for any other appliances powered by the same source and include any required safety factors.

If the peak current exceeds the power supplies' peak capacity, the output voltage provided by the power supplies may drop below the listed voltage range of the appliances connected to the supply and the voltage may not recover in some types of power supplies. For example, an auxiliary power supply that lacks filtering at its output stage (either via lack of capacitance and/or lack of battery backup across the output) may exhibit this characteristic.

Table 3: dBA Ratings at 10 Feet													
Tone	HI/LO Volume	dBA Reverberant Ratings Per UL 464						dBA Anechoic Ratings Per CAN/ULC S525-07					
		UL 24VDC			UL 12VDC			ULC 24VDC			ULC 12VDC		
		16V	24V	33V	8V	12V	17.5V	16V	24V	33V	8V	12V	17.5V
Horn	HI	89	92	94	89	92	94	95	99	100	97	99	100
	STD	84	87	90	84	87	90	89	93	94	91	93	94
Bell	HI	83	86	88	83	86	88	88	92	93	90	92	93
	STD	76	80	83	76	80	83	83	87	88	85	87	88
March Time	HI	86	89	91	86	89	91	95	99	100	97	99	100
	STD	80	84	87	80	84	87	89	93	94	91	93	94
Code 3 Horn*	HI	85	88	90	85	88	90	95	99	100	97	99	100
	STD	79	83	86	79	83	86	89	93	94	92	93	94
Code 3 Tone*	HI	81	85	86	81	85	86	91	95	96	93	95	96
	STD	76	80	82	76	80	82	86	90	91	88	90	91
Slow Whoop	HI	87	90	92	87	90	92	95	99	100	97	99	100
	STD	81	85	87	81	85	87	90	94	95	92	94	95
Siren	HI	86	89	92	86	89	92	94	98	99	96	98	99
	STD	81	84	87	81	84	87	89	93	94	91	93	94
HI/LO	HI	83	86	89	83	86	89	89	93	94	91	93	94
	STD	77	81	84	77	81	84	84	88	89	86	88	89

** - For ULC applications, only Code 3 Horn and Code 3 Tone are required to meet the ULC minimum of 85 dBA and the audible signal temporal pattern mandated by the National Building Code of Canada.*

Table 4: ULC Directional Characteristics		
24VDC	Horizontal	-3dBA: 35 degrees left, 35 degrees right
		-6dBA: 55 degrees left, 55 degrees right
	Vertical	-3dBA: 35 degrees upward, 35 degrees downward
		-6dBA: 55 degrees upward, 55 degrees downward

SETTINGS

The Jumper Plug (DP1) and Switch (SW1) of the MT Multitone Appliance, shown in Figure 1, are used to set the desired input voltage, dBA sound output level and alarm tone. The factory settings are shown below. Read these instructions carefully before changing any of these factory settings.

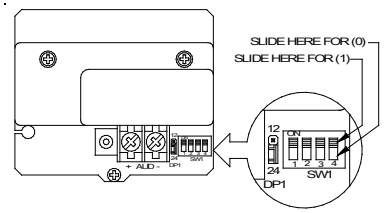


Figure 1: PC Board Layout Showing Location of Jumper Plug (DP1) and Switch (SW1)

The factory settings are: 24VDC DP1 set on 24; HIGH dBA SW1 POS 1 set on; HORN TONE SW1 POS 2, 3, 4 set on 1, 1, 1.

STEP 1: Set desired input voltage and dBA sound output level as follows (Refer to Figures 2 and 3):

MT Multitone Appliances are field set for input voltage and dBA sound output level by inserting a Jumper Plug (DP1) and adjusting a four position Switch (SW1) as shown in Table 5 and Figures 2 and 3. Use DP1 to select the desired voltage and SW1 Position 1 to select the dBA sound output level.

Table 5: Input Voltage and dBA Sound Output Level Settings	
Input Voltage and Decibel Level	DP1 and SW1 Settings
24 VDC/**HIGH dBA:**	Set DP1 on 24; set SW1 POS 1 on 1 (Factory Setting)
24 VDC/**STD dBA:**	Set DP1 on 24; set SW1 POS 1 on 0
12 VDC/**HIGH dBA:**	Set DP1 on 12; set SW1 POS 1 on 1
12 VDC/**STD dBA:**	Set DP1 on 12; set SW1 POS 1 on 0

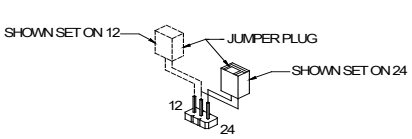


Figure 2: Jumper Plug (DP1) Settings

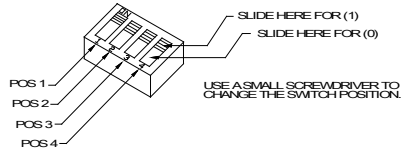


Figure 3: Switch (SW1) Settings

(Use Needle Nose Pliers to Lift and Properly Insert the Jumper Plug)

WARNING: Do not apply 24VDC input if the jumper plug (DP1) is set on 12. This can damage the unit. Verify the jumper plug (DP1) and switch (SW1) settings to make sure they are correct. Improper settings can damage the unit or result in no sound output or a dBA sound output level that is below code requirements for public mode fire protection. This could result in property damage, serious injury or death to you and/or others.

STEP 2: Set desired alarm tone as follows (refer to Figure 3 and Table 6).

MT Multitone Appliances are field set for any one of eight alarm tones by setting a four-position switch (SW1) as shown in Figure 3 and Table 6. Use SW1 POS 2, 3, 4 to select the desired alarm tone (refer to Table 6 below).]

Table 6: Alarm Tones				
Tone	Pattern Description	SW1		
		Switch Settings		
		POS	POS	POS
		2	3	4
Horn	Broadband Horn (Continuous)	1	1	1
Bell	1560 Hz Modulated (0.07 Sec. ON/Repeat)	1	0	1
March Time Horn	Horn (0.25 Sec. ON/0.25 Sec. OFF/Repeat)	0	0	1
Code 3 Horn	Horn (ANSI S3.41 Temporal Pattern)	1	1	0
Code 3 Tone	500 Hz (ANSI S3.41 Temporal Pattern)	0	1	1
Slow Whoop	500-1200 Hz Sweep (4.0 Sec. ON/0.5 Sec. OFF/Repeat)	0	1	0
Siren	600-1200 Hz Sweep (1.0 Sec.ON/Repeat)	1	0	0
HI/LO	1000/800 Hz (0.25 Sec. ON/Alternate)	0	0	0

WIRING INFORMATION

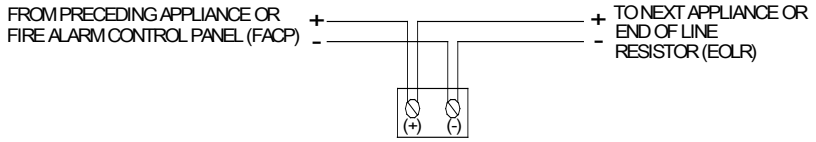


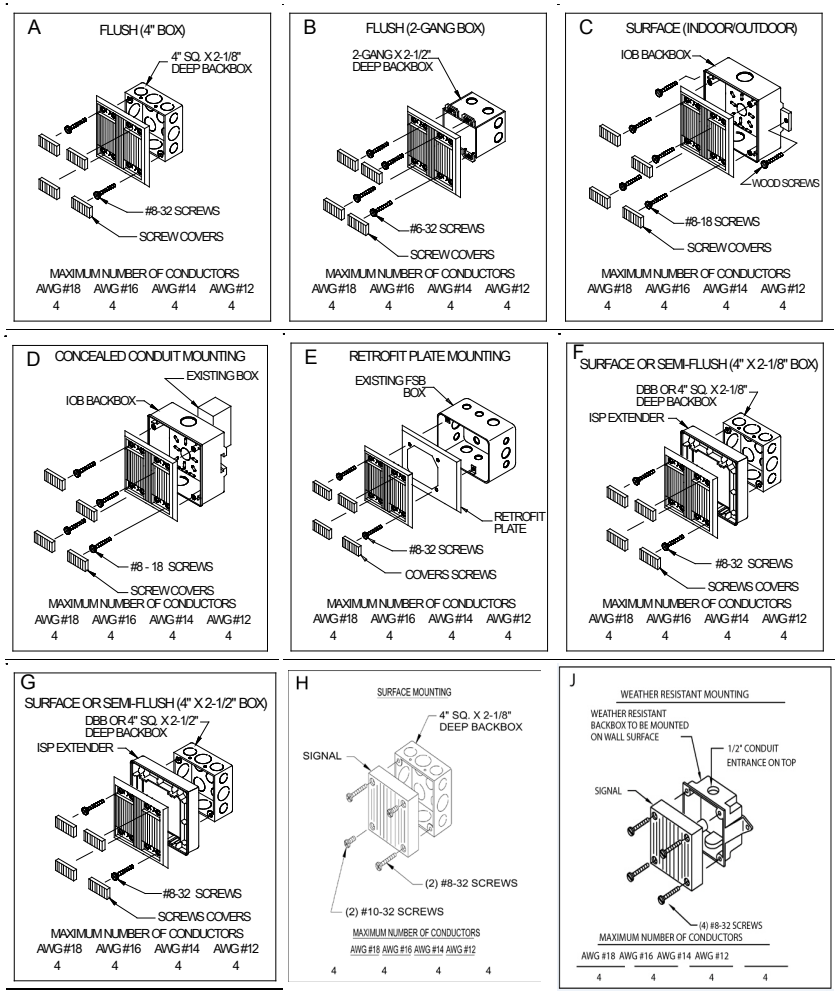
Figure 4: MT Multitone Appliance Wiring Diagram

1. Strip leads 3/8 inches and connect to screw terminals. MT Multitone appliances have in-out wiring terminals that accepts two #12 to #18 American Wire Gauge (AWG) wires at each screw terminal.
2. Break all in-out wire runs on supervised circuits to assure integrity of circuit supervision. The polarity shown in the wiring diagram is for operation of the appliances. The polarity is reversed by the Fire Alarm Control Panel (FACP) during supervision.

MOUNTING OPTIONS

CAUTION: The following figures show the maximum number of field wires (conductors) that can enter the backbox used with each mounting option. If these limits are exceeded, there may be insufficient space in the backbox to accommodate the field wires, and stresses from the wires could damage the product.

Although the limits shown for each mounting option comply with the National Electrical Code (NEC), Cooper Notification recommends use of the largest backbox option shown and the use of approved stranded field wires, whenever possible, to provide additional wiring room for easy installation and minimum stress on the product from wiring.



MT Multitone Appliances can be ceiling or wall mounted.

APPLICATION NOTES

CAUTION: If sheathed multiconductor cable or 3/4-inch conduit fittings are used, check that installed product has sufficient clearance and wiring room prior to installing backboxes and conduit.

- MT Multitone Appliances can be flush mounted to a standard 4-inch square by 2-1/8 inch deep electrical box (Figure A or F) or a standard 2-gang by 2-1/2-inch minimum deep electrical box (Figure B).
- Select largest backbox shown in Mounting Options where possible, to provide additional wiring room for easy installation.
- Conduit entrance to backboxes should be selected to insure sufficient wiring clearance for installed equipment. When extension rings are required, conduit should enter through backbox, not extension ring. Use Steel City #53151/1-1/2-inches deep or #53171/2-1/8-inches deep extension rings or equal with same area cut out in back.
- The MT-12/24 model can also be surface mounted to Cooper Notification's Indoor/Outdoor Backbox (Model IOB) for indoor/outdoor use (Figure C).
- The MT-12/24 model is supplied with four snap-in covers to hide the mounting holes and provide an attractive installation. The snap-in covers are interchangeable and have slots on each end so they can be removed if necessary (by prying them up with a thin blade screwdriver). To insert snap-in cover, slide one side partially into mounting hole recess; align the cover so that snap-in cover and grille are parallel to each other (not tilted) and snap cover into place.
- The IOB surface backbox has 1/2-inch conduit knockouts on two sides. It has a variety of knockouts on the back for mounting it to recessed electrical boxes and for wire entrances (Figure D). It can also be mounted to a surface with the two mounting ears that are supplied. The ears slide into slots on the back of the box. Use appropriate anchors for the wood screws that are supplied with the box (if necessary).
- For outdoor use, the IOB includes a pre-fastened gasket and four hole plugs. Use the mounting ears to secure the box (do not use the back knockouts). Use the hole plugs to seal the unused mounting holes on the MT Multitone grille (press them in securely from the back side of the grille). Mount the unit to the IOB with the four #8-18 screws supplied with the box.
- The Code 3 Horn and Code 3 Tone incorporate the temporal pattern specified by ANSI/NFPA/ISO for standard emergency evacuation signaling. They should be used only for fire evacuation signaling and not for any other purpose.
- The Horn and Bell Tones can be used on coded systems with a minimum On-Time of 1/4 second. All other tones are recommended for use only on continuous (non-coded) systems.
- MT4-12/24 can be surface mounted to a standard 2-1/8-inch deep electrical box.

CAUTION: If MT Multitone appliances are operated within 15 inches of a person's ear, they can produce a sound pressure level that exceeds the maximum 120 dBA permitted by ADA and OSHA rules. Exposure to such sound levels can result in damage to a person's hearing.

These appliances can produce a distinctive three pulse Temporal Pattern Fire Alarm Evacuation Signal for total evacuation in accordance with NFPA 72.

CAUTION: Verify the installation instructions of the manufacturers of other equipment used in the system for any guidelines or restrictions on wiring and/or locating Notification Appliance Circuits (NAC) and notification appliances. Some system communication circuits and/or audio circuits, for example, may require special precautions to assure immunity from electrical noise (e.g., audio crosstalk).

NOTE: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

This Class A digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil numérique de la classe A respecte toutes les exigences du Réglement sur le matériel brouilleur du Canada.

ANY MATERIAL EXTRAPOLATED FROM THIS DOCUMENT OR FROM COOPER NOTIFICATION MANUALS OR OTHER DOCUMENTS DESCRIBING THE PRODUCT FOR USE IN PROMOTIONAL OR ADVERTISING CLAIMS, OR FOR ANY OTHER USE, INCLUDING DESCRIPTION OF THE PRODUCT'S APPLICATION, OPERATION, INSTALLATION AND TESTING IS USED AT THE SOLE RISK OF THE USER AND COOPER NOTIFICATION WILL NOT HAVE ANY LIABILITY FOR SUCH USE.

01/13