

FIRE ALARM SYSTEM FIELD DEVICE INSTALLATION GUIDE (CAN/ULC 524)

(This page has been updated to include CAN/ULC 524:2019.)

Additional requirements are outlined in the Standard for Installation of Fire Alarm Systems that is referenced by the current Building Code in effect.

Please refer to the applicable Standard for more detailed requirements. This table is a convenience guideline for basic wall-mounted device installation heights only. The manufacturer's installation instructions should be consulted for termination of wiring and approved mounting methods. Notes referenced in the table below are provided on page 2. All references to the **06** or **14** published editions include Amendment 1.

Field Device Type	CAN/ULC-S524-01/06	CAN/ULC-S524-14/524:2019
Manual Station	1200 – 1400 mm above the floor measured to the centre of the manual station (the centre of the back-box)	1050 – 1150 mm above the floor measured to the centre of the manual station (the centre of the back-box)
Audible Signalling Appliance	Not less than 2300 mm above the floor (where ceiling heights allow) measured to the centre of the device. Not less than 150 mm from the ceiling measured from the top of the assembled device (top edge of gong if the device is a bell).	Not less than 2300 mm above the floor (where ceiling heights allow) measured to the centre of the device. Not less than 150 mm from the ceiling measured from the top of the assembled device (top edge of gong if the device is a bell).
Insuite Audible Signalling Appliance with Integral Silencing Means	1200 – 1400 mm above the floor measured to the centre of the silencing means (the centre of the back-box does NOT apply)	1050 – 1150 mm above the floor measured to the centre of the silencing means (the centre of the back-box does NOT apply)
Remote Audible Signal Silencing Means	1200 – 1400 mm above the floor measured to the centre of the silencing means (the centre of the back-box does NOT apply)	1050 – 1150 mm above the floor measured to the centre of the silencing means (the centre of the back-box does NOT apply)
Visual Signalling Appliance (wall mounted)	Mounted so that the entire lens is not less than 2000mm and not more than 2400mm above the finished floor. See Section 5.4.5 for additional criteria.	Mounted so that the entire lens is not less than 2000mm and not more than 2400mm above the finished floor. See Section 9.4 in 14 , Section 42 in 2019 for additional criteria.
Insuite Sounder Isolator (See Notes 4, 5)	Installed outside of the suite it is protecting. They shall be visible and accessible at all times.	Installed outside of the suite it is protecting. They shall be visible and accessible at all times.
Fire Fighter's Telephone	Mounted so that the height from the floor to the centreline of the enclosure is between 1350 mm and 1500 mm.	Mounted so that the height from the floor to the centreline of the enclosure is between 1350 mm and 1500 mm.
Smoke Detector (wall mounted)	100 – 300 mm from the ceiling to the top edge of the detector (does NOT apply to the base or the back-box)	100 – 300 mm from the ceiling to the top edge of the detector (does NOT apply to the base or the back-box)
Fire Detectors inside Elevator Shafts	Located at the top of the shaft.	Both CAN/ULC-S524-14 and CAN/ULC 524:2019 require you to use an alternate form of detection technology. Reference Clause in 14 is 8.2.1.2, and in 2019 it is 27.1.2. (See Note 7)
Heat Detector (wall mounted in an elevator pit application only) NOTE: There is no requirement for elevator pit fire detection in either NBC 2020 or CAN/CSA-B44-2019	Not Addressed	Where specified in the DESIGN or by the local AHJ, detector is to be wall or bracket mounted 300 mm below the lowest point of travel of the cab (measured to the undersurface of the cab floor). Linear heat detection cable is recommended in this application. (See Note 7)
Data Loop Isolator	Mounted in accordance with the manufacturer's instructions, must be visible and accessible at all times. Installed in accordance with Section 5.14. (See Note 5)	Mounted in accordance with the manufacturer's instructions, must be visible and accessible at all times. Installed in accordance with Section 10.2.1. (See Note 5)
Addressable Modules (Supporting Field Devices) includes: relay modules, initiating modules, supervised output modules, signal circuit modules	Not Addressed (Follow manufacturer's printed installation instructions)	Not Addressed in CAN/ULC-S524-14 (See Note 6) (Follow manufacturer's printed installation instructions)
End-of-Line Devices (Resistor Plate)	Installed less than 1800mm above the finished floor (to the centre of the device). Can be located inside a field device if not more than one field device is on the circuit. (See Note 1)	Installed less than 1800mm above the finished floor (to the centre of the device). Can be located inside a field device if not more than one field device is on the circuit. (See Note 1)



TYPICAL WIRING TABLES

(The tables pictured are the Copyright © of Mircom Group of Companies and used for illustrative purposes only.)

(NOTE: These tables are included for illustrative purposes only. You must refer to the specific manufacturer’s installation guide for the panel you are installing. The tables provided here could only be used for Mircom branded control equipment. Additional information accompanies these tables in the installation instructions which we have not included here.)

MIRCOM FA-1000 Wiring Table for Initiating (INI) Circuits & Remote Annunciator Power		
WIRE GAUGE	MAXIMUM WIRING RUN TO LAST DEVICE (EOL)	
(AWG)	feet	meters
22	2990	910
20	4760	1450
18	7560	2300
16	12000	3600
14	19000	5800
12	30400	9200

MIRCOM FA-1000 Wiring Table for Indicating (NAC) Circuits									
Total Signal Load	MAXIMUM WIRING RUN TO LAST DEVICE (EOL)								Maximum Loop Resistance
	18AWG		16AWG		14AWG		12AWG		
Amperes	feet	meters	feet	meters	Feet	meters	feet	meters	Ohms
0.06	2350	716	3750	1143	6000	1829	8500	2591	30
0.12	1180	360	1850	567	3000	915	4250	1296	15
0.30	470	143	751	229	1200	366	1900	579	6
0.60	235	71	375	114	600	183	850	259	3
0.90	156	47	250	76	400	122	570	174	2
1.20	118	36	185	56	300	91	425	129	1.5
1.50	94	29	150	46	240	73	343	105	1.2
1.70	78	24	125	38	200	61	285	87	1.0

Errata: The line item for the “.030 Ampere/16AWG” entry is shown as “150 feet” in “Table 5” of the FA-1000 installation manual. We have converted the “229 meter” entry on the line next to it to reflect the corrected Imperial measurement of “751”.

NOTES:

- End-of-Line Resistors may be mounted in a properly identified common termination box or inside the fire alarm system’s common control in which case a suitably secured terminal block must be used (it is not acceptable for resistors to be “floating” inside a back-box).
- Wiring methods and bonding to ground of field device’s back-boxes is referenced in the Canadian Electrical Code, and CAN/ULC-S524 (Standard for Installation of Fire Alarm Systems).
- The “Initiating Circuit” table above references wiring of remote annunciators. All Mircom remote annunciators are wired in parallel in a continuous loop to the last unit. No “T” tapping is allowed (either for power or data). Twisted shielded wire is required for the RS-485 Data Buss with a separate wire pair for power. **NEVER USE a single five conductor cable for both data and power!** It should be noted that each manufacturer will stipulate the type and gauge of wire to use. **READ THE MANUAL!**
- In-suite sounders connected to isolators must be fully supervised for opens, shorts, and ground faults. **The use of isolators that supervise for shorts and ground faults only is prohibited in Canada. Even if these devices are ULC Listed, their installation will FAIL the Verification.**
- “Visible and accessible at all times” would normally make the installation of any isolator serving a floor area (or suites of a residential or care occupancy) inside an electrical closet **non-compliant**. The Installation Standard (Clause 5.4.3.3 in **06**, Clause 10.2.6.2 in **14**, and Clause 49.2 in **2019** specifically requires isolators serving audible appliances in suites of a residential or care occupancy to be located OUTSIDE of the suite they’re protecting.
- While installation heights are not specifically mentioned in most manufacturer’s printed installation instructions, we would *recommend* that you install these modules not higher than 1800 mm above the finished floor (for ease of access). Some *mini*-initiating modules are designed to *float* inside a single gang backbox (usually mounted behind a conventional device). **CAN/ULC 524:2019** requires all accessory type modules to be mounted at 1800 mm above the finished floor and permanently marked with either their module number (address) and purpose (i.e. “1M020 – AHU-2 Shutdown Relay” or “1M144 Inside”).
- CAN/ULC S524:2019 requires all detection devices to be accessible for maintenance and testing. **CAN/ULC 536:2019 and CAN/ULC 537:2019 now identify fire detectors installed inside an elevator shaft as a DEFICIENCY.** You must use an alternate detection technology (i.e. linear heat detection cable or an air aspirating type smoke detector). **There are NO EXCEPTIONS!**

QUESTIONS? Please call 1-888-340-3473 (Toll Free in North America) or email tech@firetechs.net!

