



# Burlington Fire Department

## Office of the City Fire Marshal



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### **Master Radio Call Box Installation and Programming Criteria Guide**

The Vermont Fire and Building Safety Code and Burlington Code of Ordinances Chapter 13 require that a Master Radio Call Box (MRCB) be installed for emergency forces notification as part of the building fire alarm system for certain structures. This unit is a discreet FM radio transmitter that automatically notifies the Burlington Emergency Communications Center (BECC) as soon as building fire protection systems are activated (e.g.: the presence of smoke in a detector or the activation of a sprinkler head). This system is a vital part of your building's life safety and property protection system. Each MRCB can monitor and report a maximum of sixteen alarm functions (zones).

The property owner or permitted contractor shall purchase and install the MRCB in accordance with this document. An installation and initial programming fee of \$650 is charged by the Burlington Fire Department (BCO 13-54, *updated under City Council approval 6/25/2018*) to conduct pre-installation and post installation site surveys, a commissioning test, and an inspection of your MRCB installation. This site work typically requires approximately two (2) to four (4) hours of staff time, depending on the size of the project.

As both the MRCB and receiving station consoles in the BECC and at redundant monitoring locations utilize microprocessors, these processors must be initialized and programmed. Approximately four (4) hours of the City's Alarm Technician's time is included in this fee for computer programming.

**Note:** The owner or contractor may choose to use an authorized third party MRCB technician approved by the Burlington Fire Marshal for MRCB start-up. Although the authorized third - party technicians can install and start up a MRCB, they are not authorized to conduct pre-site inspections for antenna placement or to program the MRCB alarm receiving console computers at the BECC and at the redundant monitoring locations. When a third party installs and starts the MRCB, the Burlington Fire Department charges a fee of \$200 (*updated under City Council approval 6/25/2018*) for the antenna placement inspection and for programming the alarm-receiving consoles.

#### **Burlington Fire Department contracted Fire Alarm/MRCB technician:**

- **Scott Carroll, (802) 355-6590**

#### **Authorized third party MRCB technicians (24 - hour availability for emergency service):**

- |  |  |
|--|--|
| • <b>Gratton Electrical Services (David Gratton)</b> | (Bu.) 802-453-7877 (cell) 802-343-0612 |
| • <b>Omega Electric Construction</b>                 | (Bu.) 802-862-0517                     |
| • <b>Safety Systems of Vermont</b>                   | (Bu.) 802-879-7900                     |

Any additional work done by the BFD contracted Alarm Technician beyond this initial time allotment shall be reimbursed at a rate of \$125/hour, and is payable at the time the service is rendered (BCO 13-54, *updated under City Council approval 6/25/2018*). If any travel time is incurred to complete this additional work, travel time from the office to the site and back to the office shall be included as part of the additional hours worked. Checks are payable to the Burlington Fire Department.

### **Important Notes:**

1. **The system will not be activated until all accounts receivable have been settled. All fire alarm components, including the MRCB are required to be active before the building is allowed to be occupied.** In addition to the fees listed above, the City assesses an annual monitoring fee of \$650 to the property owner of record (*updated under City Council approval 6/25/2018*). This fee is assessed beginning July 1 of each year.
2. **The City Master Radio Call Box (MRCB) Technician will not be authorized by the Burlington Fire Marshal's Office to conduct antenna siting or release approval to SigCom to assign the Master Radio Call Box number unless and until the final fire alarm system installation permit for the project is issued by the Burlington Fire Marshal's Office.**

### **Purchasing the Master Radio Call Box (MRCB):**

You are to purchase a SIG-Com Model DTX-16 from **L.W. Bills Co., P.O. Box 7 Georgetown, MA. 01833 (Ph. 978-352-6660)**. Allow a six (6) to eight (8) week lead-time when ordering. The MRCB requires that an installation kit be purchased as well. Please check the installation kit to be sure that a wall or roof mounting bracket (as applicable), antenna, 100' of RG-213U cable, a crossover cable, surge protection, and a packet of 20K resistors are in the shipping box, as these items are required to correctly install the box.

**NOTE: You will need to contact the City of Burlington Fire Alarm/MRCB Technician to determine if you will need a wall-mount or a roof-mount antenna bracket.**

### **Location of MRCB:**

The MRCB shall be located in a fire resistive compartment with a minimum rating of one hour. The exact location of the MRCB shall be determined by the City of Burlington Fire Alarm/MRCB Technician. The MRCB shall be located within seventy-five (75) feet of the antenna base (This distance is measured from the antenna base connection to the top of the MRCB). The MRCB shall be mounted on a substantial wood backer for surface mount, or may be flush mounted and secured in a stud cavity. The MRCB shall be mounted at a height of four (4) to six (6) feet, as measured from the top of the box to the finished floor. No extraneous holes shall be drilled in the MRCB, as this will violate the UL listing or FM approval for the equipment. The MRCB shall be unobstructed and shall comply with the adopted edition of the National Electric Code, Article 110.26 for clearances.

### **Antenna:**

The City's Fire Alarm/MRCB Technician shall determine the location of the MRCB antenna during the pre-installation site visit. **This antenna location is critical to the operation of the MRCB and shall not be subject to aesthetic considerations.** It is imperative that the owner provide full disclosure of any planned obstructions near the antenna site that might interfere with the signal output of the MRCB.

The preferred antenna location is a roof mount and shall be a minimum of twenty (20) feet away from any roof mounted equipment or obstruction, as well as eight (8) feet from the edge of the roof. The antenna base shall not be less than three (3) feet above any roof parapet flashing.

The antenna wire shall be run in a **continuous, dedicated 3/4" galvanized rigid pipe (for exterior applications) or EMT (for interior applications) from the base of the antenna to the top left side** of the MRCB. Maximum antenna cable run shall not exceed seventy-five (75) feet as measured from the base of the antenna to the MRCB. Junction/pull boxes for the antenna wire shall be a minimum of 4-11/16 inches by 4-11/16 inches by 2-1/8 inches. Antenna cable shall not be coiled in the junction/pull box. "LR", "LL" or "pull L" fittings or "C" fittings shall not be used in the antenna conduit. All junction/pull box covers shall be painted red or shall be labeled as "MRCB Antenna Cable".

## **AC Power for MRCB:**

**Romex cable shall not be used.** Where exposed, AC power shall be run in a continuous dedicated 3/4" rigid pipe conduit. All wire shall be solid-type conductor. MC cable (12/2 solid copper conductor) may be used in concealed stud spaces. All AC wire shall enter the MRCB on the **right side** of the box at the knock out. When possible, the MRCB and FACP shall share the same AC circuit and be protected by 20 Amp circuit breaker with breaker lock. The circuit shall be identified in the electrical panel by a permanent red blaze on the panel cover adjacent to the breaker(s) powering the FACP and MRCB. The electrical panel designation, physical location(s), breaker number(s), and location of surge protection (if not visible) shall be listed on the inside cover of the Fire Alarm Control Panel (FACP). There shall be no splices in any of the conductors.

The MRCB shall not have AC or DC power established until the City Fire Alarm/MRCB Technician is on site. Improper power-up will damage sensitive circuit boards and could cause false alarm/interference and may be subject to fine and/or penalties pursuant to BCO Chapter 13

## **Fire Alarm Control Panel (FACP) to MRCB Connection:**

Fire alarm wiring from the FACP to the MRCB shall be run in a dedicated, continuous 3/4" EMT rigid pipe. Each zone shall be either a 16 ga. or 18 ga. solid copper conductors between the FACP and MRCB zone terminals. There shall be no splices in the conductors between or in the panels. **The installer shall utilize the FACP's general alarm and general trouble contacts tied directly to the MRCB (without the use of relays) to ensure these FACP activations transmit to the MRCB.**

## **Fire Alarm Control Panel(s):**

FACP(s) shall be accessed by a CAT 30 key (BCO 13-60(e)). A listing of the MRCB zones shall be clearly labeled on or inside the FACP panel cover. The electrical panel designation, physical location(s), and breaker number(s) shall be listed on the inside cover of the Fire Alarm Control Panel (FACP). The Burlington Emergency Communications Center (BECC) non-emergency phone number and MRCB box number shall be posted on the inside cover of the FACP. All information listed above shall be printed on paper, label tape, phenolic label, or written legibly in permanent marker.

## **Knox Box:**

A special fire department hinged door key vault shall be installed (surface or flush mount) on the exterior of the building at the door that has direct access to the FACP or remote annunciator (BCO 13-60(a)). A minimum of two sets of building master keys shall be kept in this vault. The specification is a Knox 3200 - series with hinge door, although larger or smaller Knox Boxes may be allowed or required by the Fire Marshal's Office based on the number of keys required for building access. The Knox box may be ordered online at [www.knoxbox.com](http://www.knoxbox.com).

## **MRCB Programming Information Sheet:**

The City of Burlington MRCB Programming Form, available on the City of Burlington Fire Department website at <https://www.burlingtonvt.gov/Fire/Fire-Marshall-Forms> shall be completed by the building owner or permitted contractor. All emergency contact information shall be completed and include 24 – hour emergency contact names and phone numbers. The permitted contractor shall forward the programming sheet to the Burlington Fire Marshal's Office (via email to [bfdfiremarshal@burlingtonvt.gov](mailto:bfdfiremarshal@burlingtonvt.gov) or in hard copy with the permit plan review submittal package) for final review a minimum of two weeks prior to the programming of the MRCB and final test and inspection of the fire protection systems.

## **MRCB Disconnect Procedures:**

The owner or contractor is responsible for coordinating all work on the fire protection systems. It may be necessary to conduct work on a fire protection system that requires specific zones in the MRCB to be taken off line to avoid accidental alarm activation.

Individual MRCB zones may be taken off line by calling the BECC non-emergency line at (802) 864-5311. The person calling the MRCB zone(s) out of service shall provide the dispatcher with the proper contact information. **Failure to provide this critical information constitutes unauthorized work on a fire protection system, which is a violation of State and local law. Such violation could result in civil and criminal charges. In addition, the Burlington Fire Marshal's Office may refuse to issue future fire protection work permits to the responsible party (BCO 13-21).**

**Any alarms received by BECC as a result of unauthorized work are subject to the fees and penalties outlined in the Burlington Code of Ordinances, section 13-20 and 13-55 (minimally).**

Pursuant to the adopted edition of NFPA 72, no alarm function of a system may be off-line for more than four (4) hours without an approved, independent, dedicated fire watch being established. Fire watch contact information (fire watch personnel names and cell phone numbers) shall be provided to the BECC before the fire watch is established. **At no time shall all zones in the MRCB be taken off line without expressed written approval of the Fire Marshal's Office. Annual testing and inspection of a fire protection system by a technically qualified person shall not require such approval.**

This document does not supersede or exclude other provisions in the Vermont State Fire and Building Safety Code or Burlington Code of Ordinances Chapter 13.

**MRCB Zone Programming Guideline:**

Where the requirement for a fire alarm system to notify the Burlington Fire Department exists within the adopted NFPA Codes or the VT Fire and Building Safety Code, the following zones (at a minimum) shall report to the Burlington Fire Department through BECC as a policy. Furthermore, any system that is now non-compliant with this policy shall upgrade to meet this programming guideline when any work is required or requested on the fire alarm system.

**Zones Reporting:**

1. General Alarm.
2. General System Trouble
3. Sprinkler Water Flow
4. Sprinkler Supervisory
5. Carbon Monoxide Alarm (CO)
6. Specialty suppression system alarm (kitchen suppression and/or special hazard systems)

Other zones may also be required to be monitored by the MRCB such as:

- High/Low pressure alarm for dry sprinkler systems
- Fire pump functions
- Floor designation

Any fire suppression system shall remain on-line during renovation/remodeling. Suppression systems may be tied directly to the MRCB to prevent supervisory alarm or false alarms when the FACP is out of service for an extended period of time. Written permission is required from the Burlington Fire Marshal's Office prior to direct connection to a MRCB or taking any life safety system off line for more than four (4) hours pursuant to the adopted edition of NFPA 72 and the Vermont Fire and Building Safety Code.

**Building Owner's Responsibilities for MRCB's:**

The MRCB is part of the building's fire alarm system, is purchased and installed by the owners' fire alarm contractor, and is ultimately the building owner's responsibility to maintain and repair as required. A list of third party approved MRCB technicians is provided on the first page of this document.

The Burlington Emergency Communications Center and the Burlington Fire Department monitor all MRCB's throughout the City. However, the responsibility for the repair of the MRCB falls on the building owner as per the adopted Fire Code.

Examples:

- University of Vermont (UVM) and Champlain College: contact a third party approved MRCB technician and not the City Fire Alarm/MRCB Technician for repairs.
- All non-City of Burlington owned buildings: contact a third party approved MRCB technician and not the City Fire Alarm/MRCB Technician for repairs.
- All City-owned buildings (including all Burlington schools): contact the City Fire Alarm/MRCB Technician for repairs.

**Revision History:**

5/2008	Initial Issue of Document	BC T. Francis, Fire Marshal
7/10, 7/11, 3/12, 6/13, 5/15, 9/16, 12/17	Regular updates	BC T. Francis (to 11/12) BC B. Simays, Fire Marshal
8/8/2018	Fees updated to reflect City Council approved revisions of BCO Chapter 13 effective 6/25/18	BC B. Simays, Fire Marshal