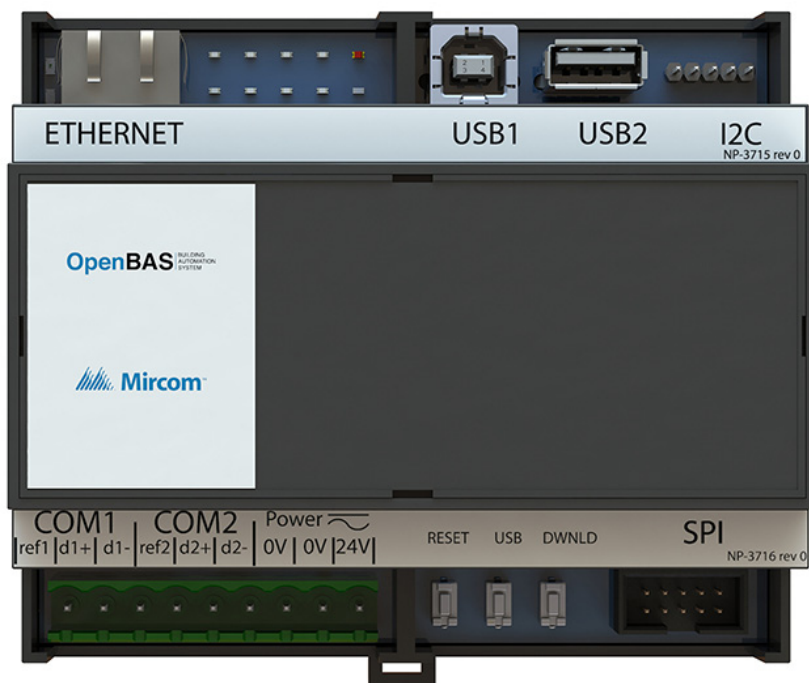


# OpenBAS

BUILDING  
AUTOMATION  
SYSTEM

## OpenBAS-NWK-ETH3 Ethernet Controller





## Table of Contents

<b>1.0</b>	<b>Introduction</b>	<b>6</b>
1.1	OpenBAS-NWK-ETH3 Ethernet Controller .....	6
1.2	Features .....	6
<b>2.0</b>	<b>Overview</b>	<b>7</b>
2.1	Controllers .....	7
2.2	OpenBAS-NWK-ETH3 Accessories .....	7
2.3	Compatible modules .....	8
<b>3.0</b>	<b>Installation</b>	<b>9</b>
3.1	Parts of the Enclosure .....	9
3.2	Controller Board Connections .....	12
3.3	Installing Accessories .....	12
3.3.1	Communication Converters (OpenBAS-ACC-RS485, OpenBAS-ACC-RS232) .....	12
3.3.2	Memory Expansion Card (OBS-ACC-32K128) and Wireless Receiver (OpenBAS-HV-RF433R) .....	14
3.4	USB1: Connection for Programming .....	14
3.5	USB2: Connection for Backup .....	14
3.6	Reset and Download Buttons .....	14
3.7	Battery .....	15
3.8	Enclosure Dimensions .....	16
3.9	Assembly .....	17
3.10	Mounting the Enclosure .....	18
<b>4.0</b>	<b>Field Wiring and LEDs</b>	<b>19</b>
4.1	Wiring Requirements .....	19
4.1.1	Required Tools .....	19
4.1.2	Installation Tips .....	19
4.2	Power Supply Connection .....	19
4.2.1	Powering Devices in Parallel .....	20
4.3	Ethernet Port .....	20
4.4	Field Bus Connections and OpenBAS-ACC-DB9 (OpenBAS-NWK-ETH3 only) .....	20
4.4.1	OpenBAS-ACC-DB9 .....	20
4.5	Connecting OpenBAS-NWK-ETH3 or OpenBAS-NWK-ETHXP to an OpenBAS-HV-NX10 Series Controller .....	21
4.5.1	SPI Port .....	21
4.5.2	RS-485 (OpenBAS-NWK-ETH3 only) .....	21
4.6	LEDs .....	22
<b>5.0</b>	<b>Specifications</b>	<b>23</b>
<b>6.0</b>	<b>Master Warranty and Warning Information</b>	<b>24</b>
<b>7.0</b>	<b>Special Notices</b>	<b>29</b>

## List of Figures

Figure 1	Parts of the enclosure .....	9
Figure 2	Tabs on enclosure .....	10
Figure 3	Lift tabs and remove circuit board .....	11
Figure 4	Controller board connections and buttons .....	12
Figure 5	Communication converter connection and field bus ports .....	13
Figure 6	The jumper and RS-485 module are removed .....	13
Figure 7	OpenBAS-ACC-RS232 is installed .....	14
Figure 8	Enclosure (back view) .....	16
Figure 9	Fit the circuit board in the enclosure .....	17
Figure 10	Enclosure mounted on DIN rail (circuit board not shown) .....	18
Figure 11	Enclosure mounted on DIN rail (back view) .....	18
Figure 12	Powering Devices in Parallel .....	20
Figure 13	Networking with SPI .....	21
Figure 14	Networking with RS-485 .....	21
Figure 15	Details of RS-485 Networking .....	22
Figure 16	LEDs .....	22

## List of Tables

Table 1	Controllers .....	<a href="#">7</a>
Table 2	OpenBAS-NWK-ETH3 Accessories .....	<a href="#">7</a>
Table 3	Compatible Modules .....	<a href="#">8</a>

# 1.0 Introduction

This document provides information on installing the OpenBAS-NWK-ETH3 Ethernet controller.

## 1.1 OpenBAS-NWK-ETH3 Ethernet Controller

Mircom's OpenBAS-NWK-ETH3 is an Ethernet gateway and controller that can connect to a single OpenBAS-HV-NX10 series controller to provide Web server and IP protocol capability. It has 2 field bus connections that are factory set to RS-485. One can be changed to RS-232 with accessories. It has a real time clock and calendar, programming logic controller and scheduler to operate as a building controller.

## 1.2 Features

The OpenBAS-NWK-ETH3 Ethernet controller integrates into Mircom's unified platform for automating HVAC and mechanical rooms as well as incorporating energy management features and lighting control to offer building owners and managers a seamless operation with the following features:

- Modular design to cover any small, medium or large project.
- Industry standard field bus protocols to integrate into any existing BAS system such as BACnet, Modbus, N2-Open, and ASCII.
- Advanced Networking to integrate into IP networks and use the most advanced features and protocols such as distributed computing, USB and Cloud storage, HTML5, JavaScript, XML, Ajax, SMS, and GSM.
- Universal inputs to connect any industry standard sensors.
- Modular add-ons for every Building Automation System solution.
- The OpenBAS software which provides owners and managers a single solution for managing all their building's automation needs.




**Caution:** Consult this document to learn about potential hazards. Hazards are marked on the controller with the symbol on the left.

## 2.0 Overview

### 2.1 Controllers

Table 1 Controllers

Picture	Model	Description
	OpenBAS-NWK-ETH3	<p>Ethernet gateway and controller with support for multiple protocols</p> <ul style="list-style-type: none"> <li>• 2 field bus connections</li> <li>• I<sup>2</sup>C port for memory expansion and connection to wireless receiver</li> <li>• SPI port for connection to an OpenBAS-HV-NX10 series controller</li> <li>• Mounts in a DIN rail-mounted box</li> </ul>
	OpenBAS-NWK-ETHXP	<ul style="list-style-type: none"> <li>• Ethernet gateway with support for multiple protocols</li> <li>• SPI port for connection to an OpenBAS-HV-NX10 series controller</li> <li>• Mounts in a DIN rail-mounted box</li> </ul> <p>Minimum order: 100 units</p>

### 2.2 OpenBAS-NWK-ETH3 Accessories

Accessories are powered from the controller.

Table 2 OpenBAS-NWK-ETH3 Accessories

Model	Description
OpenBAS-ACC-RS485	Optically isolated RS-485 converter
OpenBAS-ACC-RS232	RS-232 converter
OpenBAS-ACC-DB9	DB9 adapter
OBS-ACC-32K128	128KB EEPROM plus 32 KB non-volatile RAM memory expansion

## 2.3 Compatible modules

Compatible modules are mounted separately from the controller.

**Table 3 Compatible Modules**

Model	Description
OpenBAS-HV-LEARN	<p>Learning module for OpenBAS-HV-NX10 series controllers</p> <p>Includes hardware to simulate inputs and outputs, 2 field bus ports, SPI and I<sup>2</sup>C buses</p> <p>Powered with a USB connector</p>
OpenBAS-HV-NX10P	<p>HVAC controller</p> <ul style="list-style-type: none"> <li>• Integrated programmable logic controller and scheduler</li> <li>• 18 hardware input/output points</li> <li>• 2 RS-485 field bus connections</li> <li>• USB, SPI and I<sup>2</sup>C buses</li> </ul>
OpenBAS-HV-NX10L	<p>HVAC controller plus the OpenBAS-HV-LCD display</p> <ul style="list-style-type: none"> <li>• Integrated programmable logic controller and scheduler</li> <li>• 18 hardware input/output points</li> <li>• 2 RS-485 field bus connections</li> <li>• USB, SPI and I<sup>2</sup>C buses</li> <li>• Operator interface with LCD and keyboard</li> </ul>
OpenBAS-HV-NX10D	<p>HVAC controller plus the OpenBAS-HV-CORE2 display</p> <ul style="list-style-type: none"> <li>• 32 bit dual core processor</li> <li>• Scheduler and 3 integrated programmable logic controllers</li> <li>• 18 hardware input/output points</li> <li>• 3 RS-485 field bus connections,</li> <li>• USB, SPI and I<sup>2</sup>C buses</li> <li>• Operator interface with graphical LCD, keyboard, and secondary USB for data storage</li> </ul>
OpenBAS-HV-RF433R (OpenBAS-NWK-ETH3 only)	<p>Wireless 433 MHz RF receiver that integrates up to 16 wireless transmitters and thermostats into OpenBAS-NWK-ETH3 controllers</p> <p>Mounts in a DIN rail-mounted box</p>



## 3.0 Installation



**Attention:** Installation of OpenBAS devices should be in accordance with the Canadian Electrical Code or the National Electrical Code, and comply with all local regulations. Final acceptance subject to the Local Authority Having Jurisdiction (AHJ).

If this equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.

The safety of any system incorporating this equipment is the responsibility of the assembler of the system.



**Note:** In case of malfunction or damage, do not make any attempts at repair.

Do not dismantle this product.

This product does not require cleaning and should not be cleaned.

### 3.1 Parts of the Enclosure

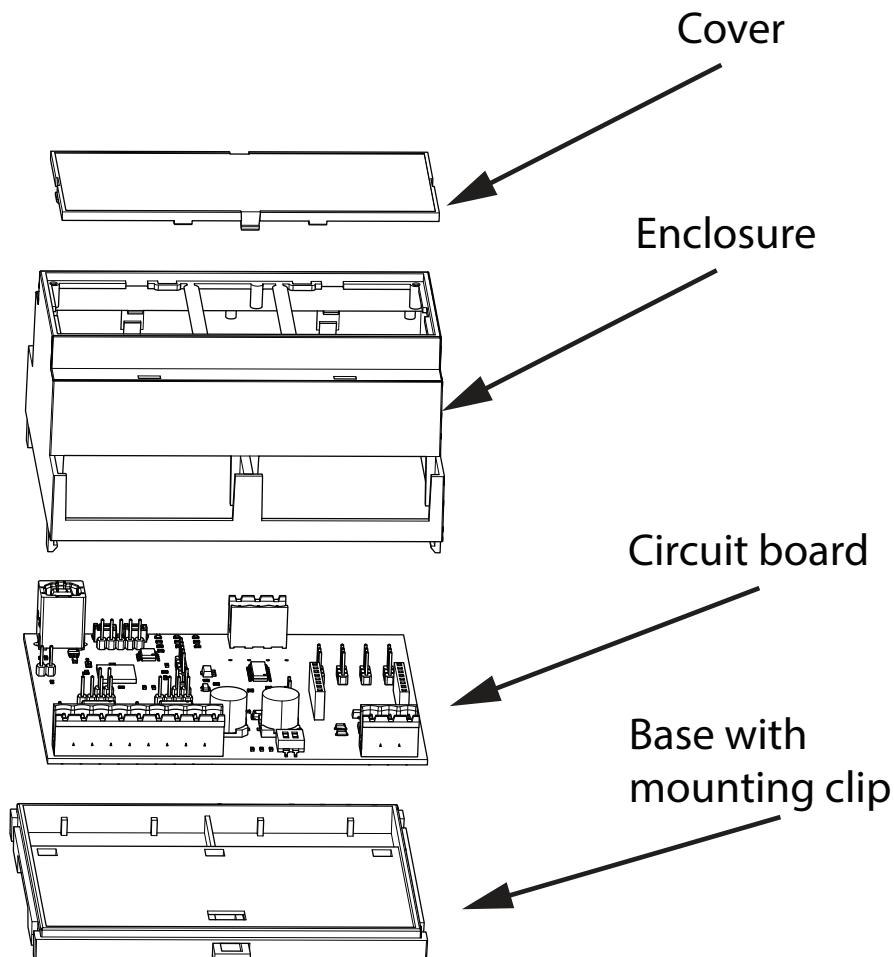


Figure 1 Parts of the enclosure

## To remove the circuit board from the enclosure

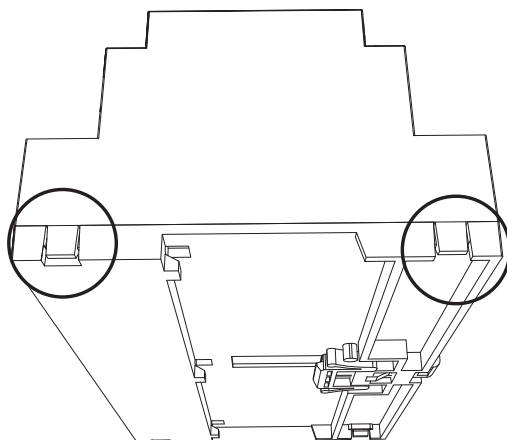


**Caution:** **Risk of Electric Shock.** Disconnect the mains power and disconnect the device from all wiring before opening the enclosure.



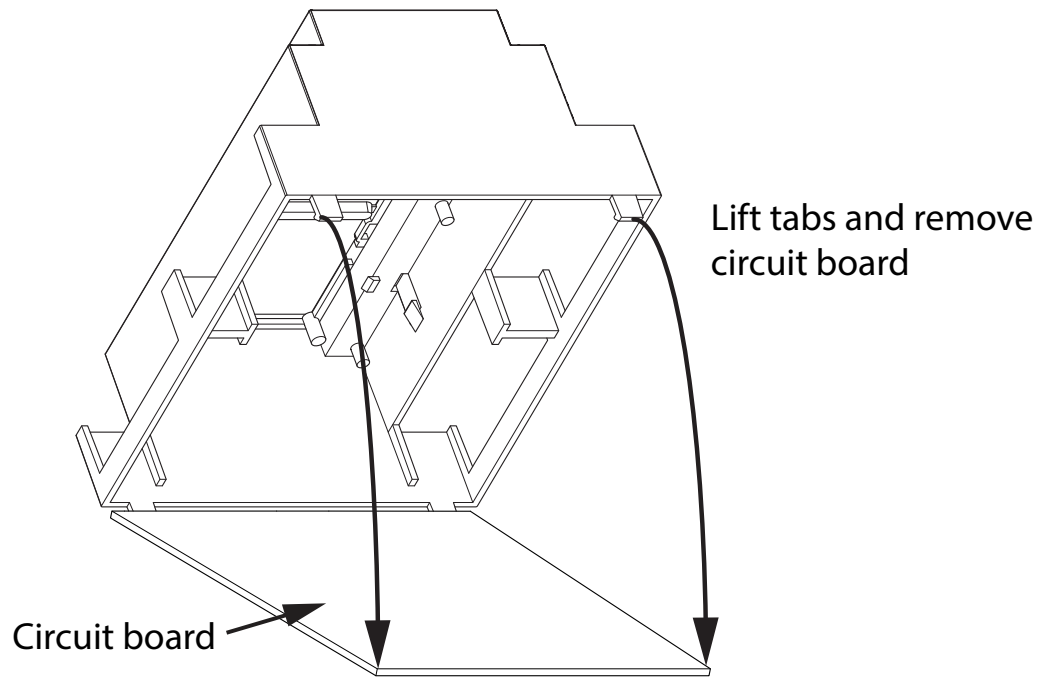
**Attention:** Always hold circuit boards by the edges to prevent damage from static electricity. Always wear an anti-static bracelet when handling circuit boards.

1. Insert a flathead screwdriver under the tabs on the enclosure, shown in Figure 2, in order to lift the tabs and remove the base.



**Figure 2** Tabs on enclosure

2. Hold the circuit board with one hand, and with the other hand lift the tabs so that you can remove the circuit board from the enclosure. See Figure 3.



**Figure 3 Lift tabs and remove circuit board**



**Attention: Be careful not to break the tabs. Do not apply excessive force.**

## 3.2 Controller Board Connections



**Attention:** This job must be performed only by a certified technician as dangerous voltages might be present inside of the enclosure.  
Always disconnect the power before installing accessories.

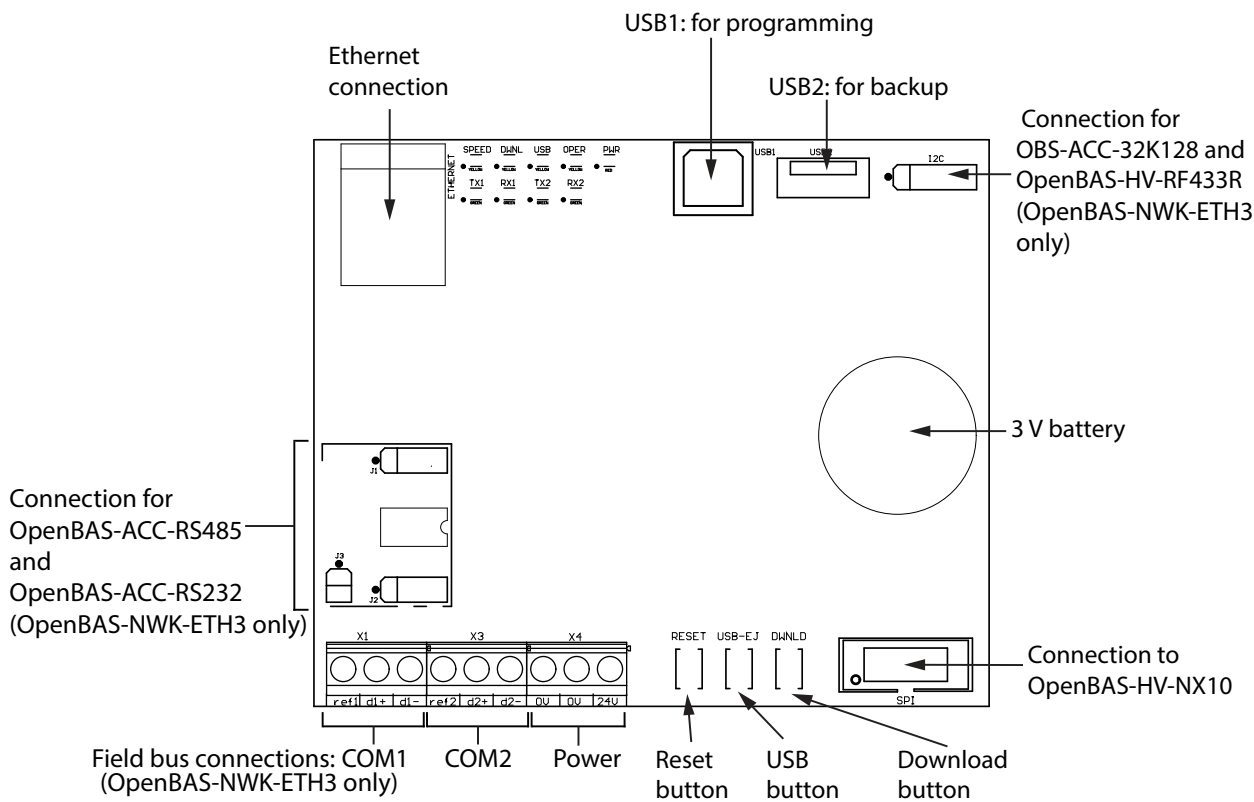


Figure 4 Controller board connections and buttons

## 3.3 Installing Accessories



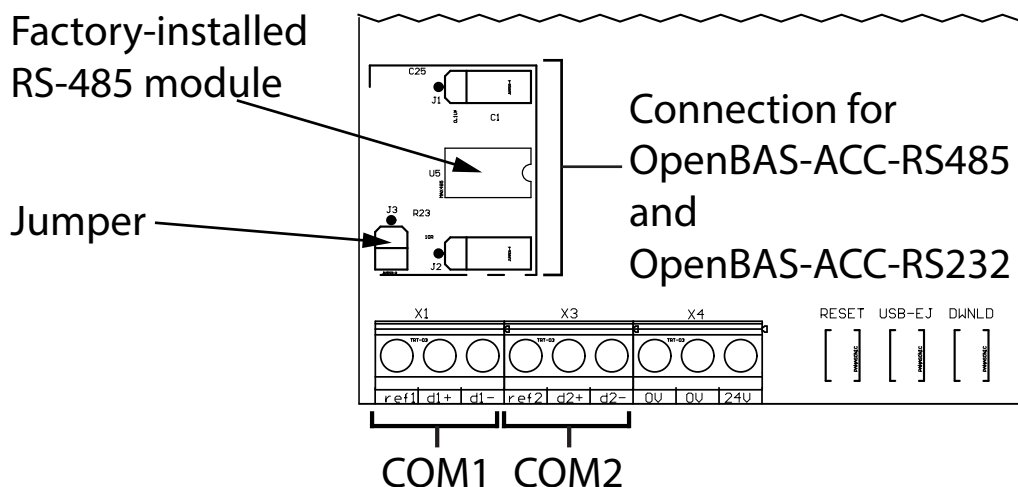
**Attention:** This job must be performed only by a certified technician as dangerous voltages might be present inside of the enclosure.  
Always disconnect the power before installing accessories.

### 3.3.1 Communication Converters (OpenBAS-ACC-RS485, OpenBAS-ACC-RS232)

This option is available on the OpenBAS-NWK-ETH3 only.

By default, COM1 and COM2 shown in Figure 5 are configured as RS-485. COM1 can be changed to RS-232 or optically isolated RS-485 by installing the OpenBAS-ACC-RS232 or

OpenBAS-ACC-RS485 converter in the connection shown in Figure 5. COM2 cannot be changed.

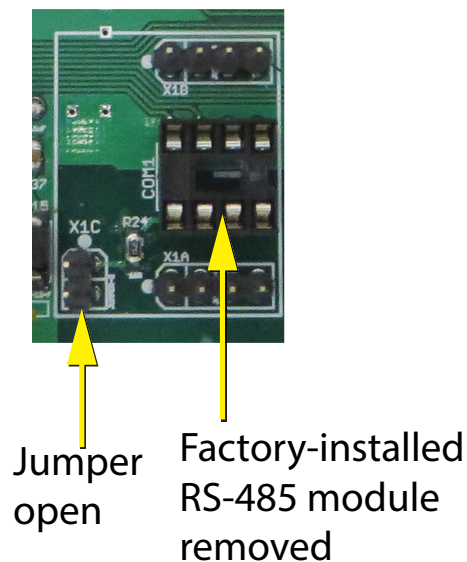


**Figure 5 Communication converter connection and field bus ports**

For example, if OpenBAS-ACC-RS232 is installed, then COM1 functions as RS-232.

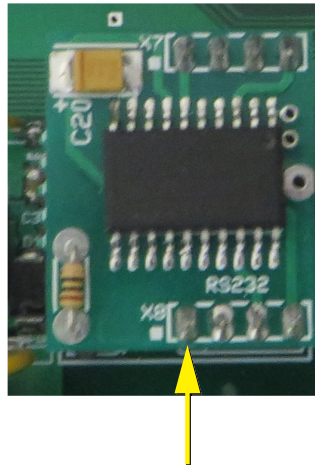
#### To install a communication converter

1. Open the jumper.
2. Remove the factory-installed RS-485 module.



**Figure 6 The jumper and RS-485 module are removed**

3. Install the communication converter.



OpenBAS-ACC-RS232

Figure 7 OpenBAS-ACC-RS232 is installed

### 3.3.2 Memory Expansion Card (OBS-ACC-32K128) and Wireless Receiver (OpenBAS-HV-RF433R)

This option is available on the OpenBAS-NWK-ETH3 only.

Connect the memory expansion card and the OpenBAS-HV-RF433R wireless receiver to the I2C port shown in Figure 4.



**Note:** When connecting the I2C ports on 2 devices, make sure to connect pin 1 on the first device to pin 1 on the second device. Pin 1 is marked by a dot. This option is available on the OpenBAS-NWK-ETH3 only.

## 3.4 USB1: Connection for Programming

Connect a computer to this port in order to configure the device. Refer to the OpenBAS Programming Manual for more information.

## 3.5 USB2: Connection for Backup

Connect a USB stick to this port in order to create backups for data trending.

## 3.6 Reset and Download Buttons

Press the **RESET** button to restart the device.

The **DWNLD** button is used for loading firmware on to the device.

Press the **USB** button to eject a USB stick that is connected to USB2.

Refer to the OpenBAS Programming Manual for information on upgrading devices.

### 3.7 Battery



**Caution:** **Risk of Electric Shock.** Disconnect the mains power and disconnect the device from all wiring before opening the enclosure.

The 3 V CR2032 battery is used only during power outages for real time clock and data retention. The Mircom part number for the battery is BT-007.

Install the battery before mounting the device.



**Attention:** **Caution – The battery used in this device may present a risk of fire or chemical burn if mistreated. Do not disassemble, heat above 60°C (140°F), or incinerate. Replace battery with 3-3.3 V CR2032 10 mA maximum abnormal charging current only. Use of another battery may present a risk of fire or explosion.**

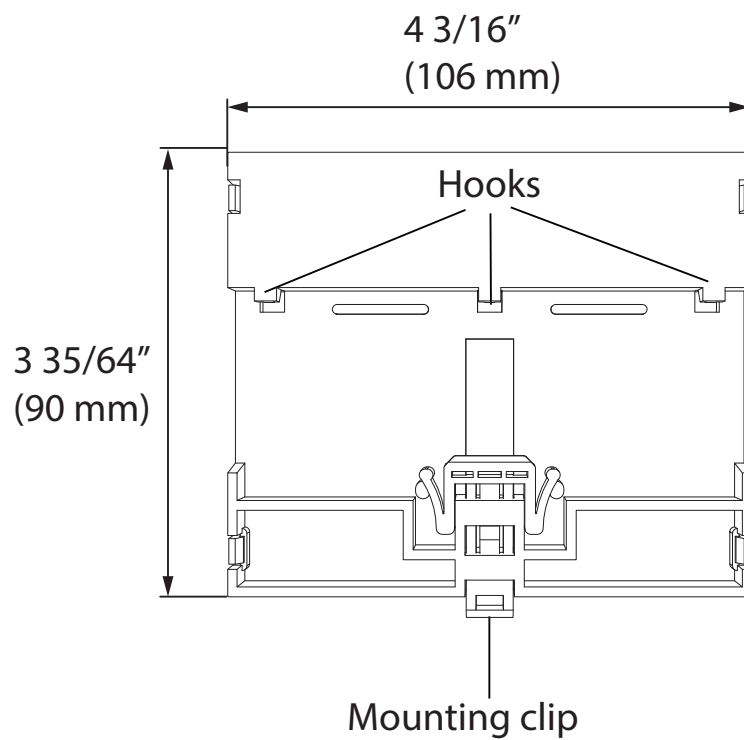
#### To install or replace the battery

1. Disconnect the mains power and open the mains breaker.
2. Disconnect all wiring from the unit.
3. Remove the top cover as described on page 10.
4. Disconnect the old battery.
5. Dispose of the used battery promptly. Keep away from children. Do not disassemble and do not dispose of in fire.
6. Connect the new battery to the connector shown in Figure 4.



**Note:** Pay attention to polarity. The positive side is on top.

### 3.8 Enclosure Dimensions



**Figure 8** Enclosure (back view)



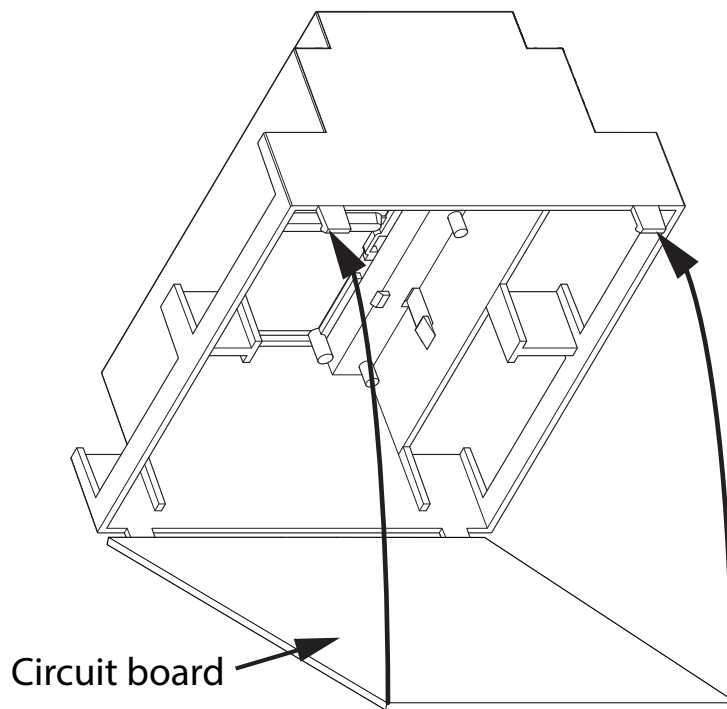
## 3.9 Assembly

### To put the circuit board in the enclosure

1. Hold the circuit board with one hand, and with the other hand lift the tabs so that you can fit the circuit board into the enclosure as shown below.

*i*

**Note:** Make sure that the board is the right way up: the terminal labels on the enclosure must match the terminal labels on the circuit board.



**Figure 9 Fit the circuit board in the enclosure**

2. Snap the base onto the enclosure. Make sure that the mounting clip is on the bottom.
3. Snap the cover onto the enclosure. Make sure that the Mircom logo is the right way up.

**!**

**Attention:** Always hold circuit boards by the edges to prevent damage from static electricity. Always wear an anti-static bracelet when handling circuit boards.

### 3.10 Mounting the Enclosure

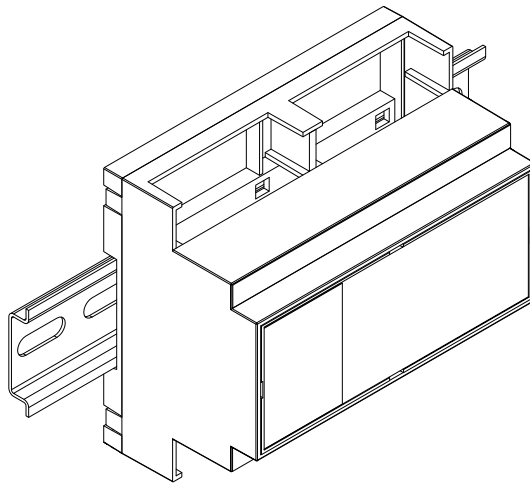


**Attention:** Mount the enclosure on a DIN rail in a National Recognized Test Laboratory certified enclosure. Do not drill holes in the enclosure or modify the enclosure in any way.

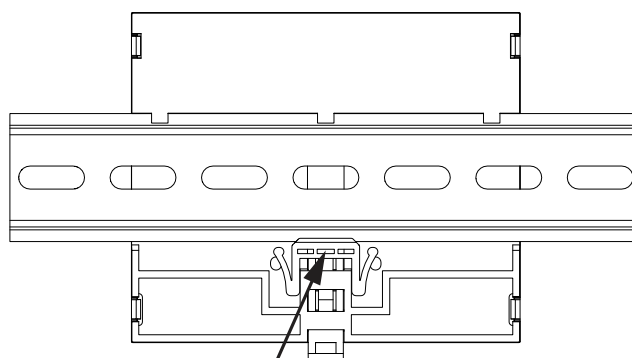
#### To mount the enclosure on a DIN rail

Mount the enclosure with the terminal labels the right way up, and the mounting clip on the bottom.

1. Mount a section of DIN rail vertically so that there is enough space for the enclosure to be mounted.
2. Slide the hooks under the rail and push the enclosure to secure it on the DIN rail. The mounting clip locks it in place.



**Figure 10** Enclosure mounted on DIN rail (circuit board not shown)



Mount with the  
mounting clip on the bottom

**Figure 11** Enclosure mounted on DIN rail (back view)

#### To remove the enclosure from the DIN rail

- Pull the mounting clip to release the enclosure from the DIN rail, and carefully pull the enclosure off the DIN rail.

## 4.0 Field Wiring and LEDs



**Caution:** **Risk of Electric Shock.** Disconnect the mains power before making connections to the OpenBAS device.



**Caution:** Installation of OpenBAS devices must be in accordance with the Canadian Electrical Code or the National Electrical Code, and comply with all local regulations. Appropriate wiring and conduit should be used in compliance with local regulations. Final acceptance is subject to the Local Authority Having Jurisdiction (AHJ).

Due to the high voltages present only certified technicians should install and service the power meter.

An appropriate UL listed Class 2 or LPS power supply or transformer with necessary protection devices such as fuses or breakers should be used to limit the risk of fire.



**Attention:** If this equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.

### 4.1 Wiring Requirements

Use twisted pair copper wire, 12-24AWG, stripped to 7-8mm and torqued to 0.5 Nm max.

#### 4.1.1 Required Tools

Tools needed:

- Precision or jeweler's screwdriver set
- Wire cutter
- Wire stripper

#### 4.1.2 Installation Tips

- Perform visual inspection of circuit board and parts for obvious issues.
- Use a wire tie to group wires for easy identification and neatness.

### 4.2 Power Supply Connection

- 12-24 Vac 50/60Hz, or 12-24 Vdc, 250mA max.



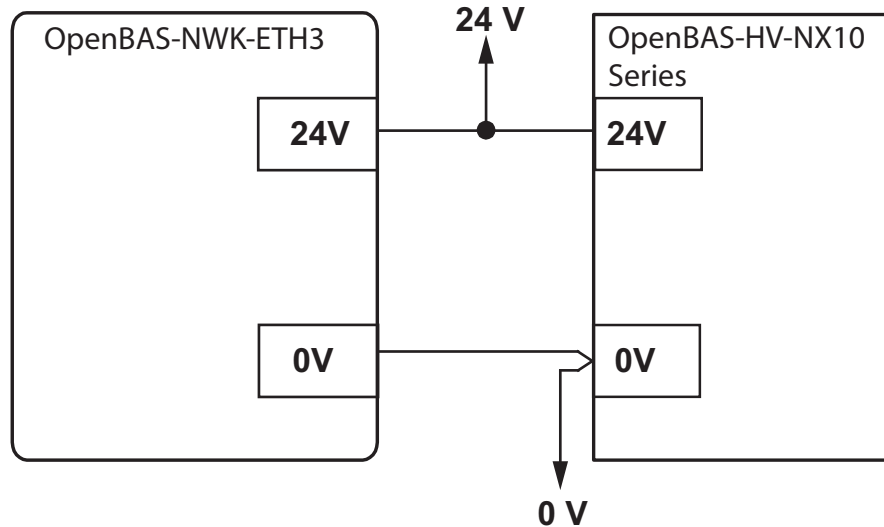
**Caution:** **Risk of Electric Shock.** Disconnect the mains power before making connections to the OpenBAS device.

- Use either of the 0V terminals to connect the negative side of the power supply.

### 4.2.1 Powering Devices in Parallel

When powering OpenBAS-NWK-ETH3 or OpenBAS-NWK-ETHXP and an OpenBAS-HV-NX10 series controller in parallel, connect the negative or common of both power supplies to one of the **0V** terminals of the controller.

The devices should be no more than 50 cm (20") apart.



**Figure 12 Powering Devices in Parallel**

## 4.3 Ethernet Port

Connect a category 5 or better cable to the Ethernet port in order to add the OpenBAS system to an IP network.

## 4.4 Field Bus Connections and OpenBAS-ACC-DB9 (OpenBAS-NWK-ETH3 only)

COM1 allows the field replacement of the RS-485 module with the OpenBAS-ACC-RS485 optically isolated RS-485 module or OpenBAS-ACC-RS232 conversion module. See section 3.3.1 on page 12.

To avoid intermittent communication blackouts, the isolation provided by the OpenBAS-ACC-RS485 module is highly recommended for noisy environments, and to prevent damage to the boards in extreme cases, especially if the OpenBAS-NWK-ETH3 device is inside an enclosure containing high voltage wiring.

### 4.4.1 OpenBAS-ACC-DB9

OpenBAS-ACC-DB9 is a DB9 adapter which is installed in COM1 or COM2.

## 4.5 Connecting OpenBAS-NWK-ETH3 or OpenBAS-NWK-ETHXP to an OpenBAS-HV-NX10 Series Controller

Network the OpenBAS-NWK-ETH3 or OpenBAS-NWK-ETHXP to an OpenBAS-HV-NX10 series controller in one of two ways:

- SPI port as shown in section 4.5.1
- RS-485 as shown in section 4.5.2 (OpenBAS-NWK-ETH3 only)

### 4.5.1 SPI Port

Connect the SPI port of OpenBAS-NWK-ETH3 or OpenBAS-NWK-ETHXP to the SPI port of the OpenBAS-HV-NX10 series controller with the included cable.

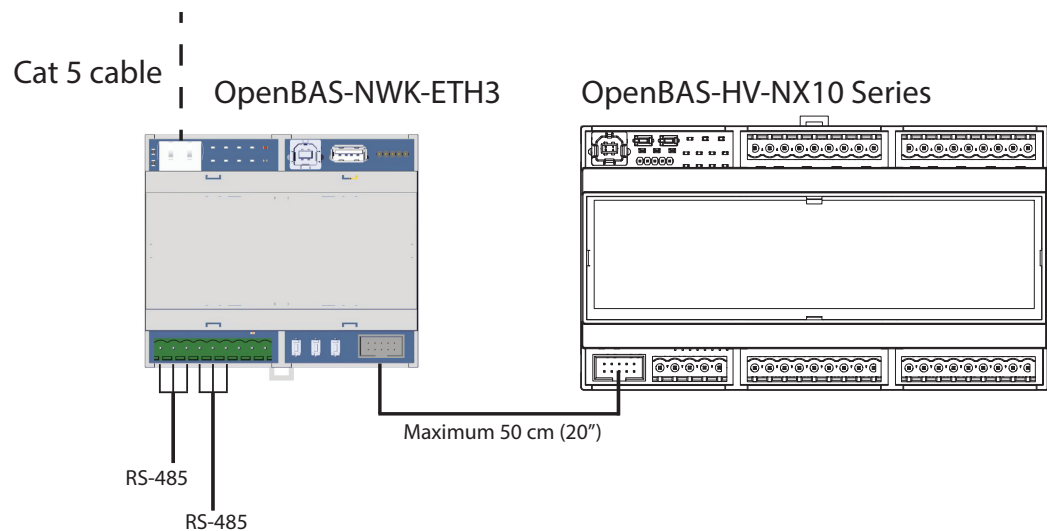


Figure 13 Networking with SPI

### 4.5.2 RS-485 (OpenBAS-NWK-ETH3 only)

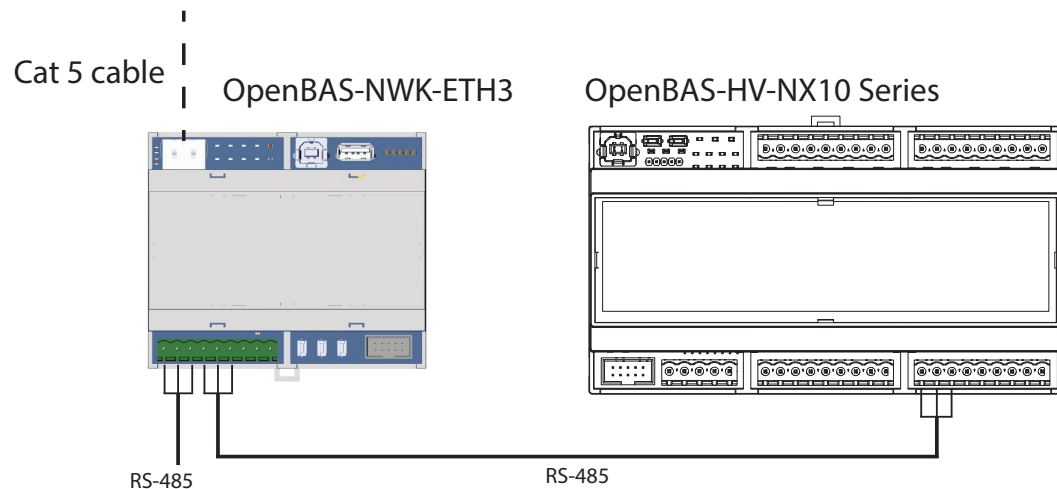
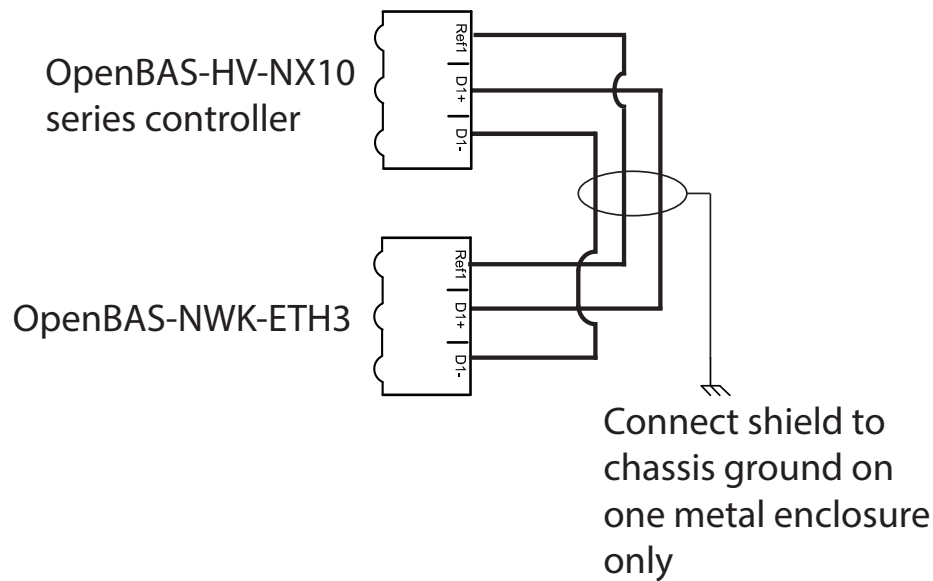


Figure 14 Networking with RS-485

The list of supported protocols is in chapter 5.

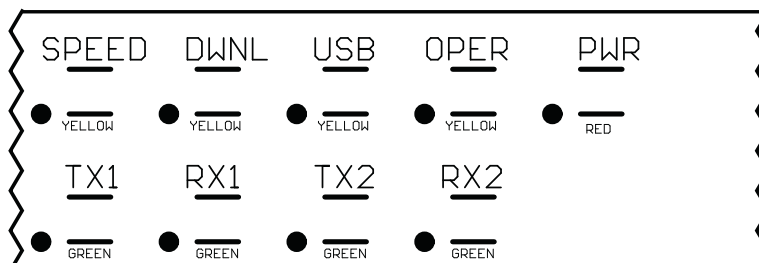
- 22 AWG twisted pair
- Maximum length: 1219.2 m (4000 feet)
- Mircom recommends shielded cable



**Figure 15 Details of RS-485 Networking**


## 4.6 LEDs

- SPEED: Flashes yellow when the Ethernet connection is operating at 100 Mbps
- DWNL: Flashes yellow when the Web server is being accessed
- USB: Flashes when a USB stick is connected to USB2
- OPER: Flashes when the device is communicating with an OpenBAS-HV-NX10 series controller
- PWR: Is red when the unit is powered
- TX1 and RX1 (OpenBAS-NWK-ETH3 only): Flash green to indicate communication through the COM1 port
- TX2 and RX2 (OpenBAS-NWK-ETH3 only): Flash green to indicate communication through the COM2 port



**Figure 16 LEDs**

## 5.0 Specifications

<b>Standards:</b>	UL/CSA-C22.2 No. 61010-1 3rd Ed. UL/CSA-C22.2 No. 61010-2-201 1st Ed. FCC Part 15 / ICES-003, Class "A"
<b>Input:</b>	 12-24 Vac 50/60Hz, or 12-24 Vdc, 250mA max.
<b>Power Supply Protection:</b>	Resettable fuse 1.1 A
<b>Battery:</b>	Type: CR2032 3 V - 3.3 V, maximum abnormal charging current: 10 mA Mircom part number: BT-007
<b>Wiring Requirements:</b>	Twisted pair copper wire, 12-24AWG, stripped to 7-8mm and torqued to 0.5 Nm max.
<b>Communication Ports:</b>	1 Ethernet port supporting the following protocols: <ul style="list-style-type: none"> <li>• BACnet/IP</li> <li>• Modbus/TCP</li> <li>• HTTP</li> <li>• SMTP</li> <li>• FTP</li> <li>• JavaScript</li> <li>• Ajax</li> </ul> 2 RS-485 ports supporting the following protocols (OpenBAS-NWKETH3 only) <ul style="list-style-type: none"> <li>• BACnet/MSTP</li> <li>• Modbus/RTU-Master</li> <li>• N2/O22-master</li> <li>• ASCII</li> </ul> BAUD Rate: 2400, 4800, 9600, 19200, 38400, 76800 COM1 can be changed to RS-232 or optically isolated RS-485 2 USB 2.0 ports for programming and backup 1 I <sup>2</sup> C port for memory expansion and OpenBAS-HV-RF433R (OpenBAS-NWK-ETH3 only) 1 SPI port
<b>Physical Characteristics:</b>	Weight: 140 g (4.9 oz) Enclosure dimensions: 106 mm x 90 mm x 58 mm (4 3/16" x 3 35/64" x 2 17/64")
<b>Ambient Conditions:</b>	Operating Temperature: 0° to 40°C (32° to 104°F) Maximum Relative Humidity: 80 percent for temperatures up to 31°C decreasing linearly to 50 percent relative humidity at 40°C Indoor Use Only
<b>Mounting:</b>	Mount in a National Recognized Test Laboratory certified enclosure
<b>Cleaning:</b>	This product does not require cleaning and should not be cleaned

## 6.0 Master Warranty and Warning Information

### Terms & Interpretation

In this document the term **MGC System** refers to all fire alarm, nurse call, and building automation products manufactured by Mircom Group of Companies, Mircom Technologies Ltd., MGC Systems Corp or subsidiaries and affiliates and includes specific systems such as MiCare™, OpenBAS™, and FlexNet™. Moreover, the term **MGC System** extends to cover all component parts and software used within such products.

### Warning Please Read Carefully

All **MGC Systems** are subject to terms and conditions of sale as follows:

### Note to Installers

This warning contains vital information. As the only individual in contact with system users, it is your responsibility to bring each item in this warning to the attention of the users of this MGC System. Failure to properly inform system end-users of the circumstances in which the system might fail may result in over-reliance upon the system. As a result, it is imperative that you properly inform each customer for whom you install the system of the possible forms of failure.

### System Failures

All **MGC Systems** have been carefully designed to be as effective as possible. However, there are circumstances where they may not provide protection. Some reasons for system failure include:

#### *Inadequate Installation*

All **MGC Systems** must be installed in accordance with all the applicable codes and standards in order to provide adequate protection. National standards require an inspection and approval to be conducted by the Local Authority Having Jurisdiction following the initial installation of the system and following any changes to the system. Such inspections ensure installation has been carried out properly.

#### *Inadequate Testing*

Most problems that would prevent an alarm a **MGC System** from operating as intended can be discovered by regular testing and maintenance. The complete system should be tested by the Local Authority Having Jurisdiction immediately after a fire, storm, earthquake, accident, or any kind of construction activity inside or outside the premises. The testing should include all sensing devices, keypads, consoles, alarm indicating devices and any other operational devices that are part of the system.

**IMPORTANT NOTE:** End-users of the system must take care to ensure that the system, batteries, telephone lines, etc. are tested and examined on a regular basis to minimize system failure.



### ***System Users***

It is important that all system users be trained in the correct operation of the alarm system and that they know how to respond when the system indicates an alarm.

A **MGC System** may not function as intended during an emergency situation where the user is unable to operate a panic or emergency switch by reason of permanent or temporary physical disability, inability to reach the device in time, unfamiliarity with the correct operation, or related circumstances.

### ***Insufficient Time***

There may be circumstances when a **MGC System** will operate as intended, yet the occupants will not be protected from the emergency due to their inability to respond to the warnings in a timely manner. If the system is monitored, the response may not occur in time enough to protect the occupants or their belongings.

Moreover, smoke detectors may not provide timely warning of fires caused by carelessness or safety hazards such as smoking in bed, violent explosions, escaping gas, improper storage of flammable materials, overloaded electrical circuits, children playing with matches or arson.

### ***Power Failure***

Some **MGC System** components require adequate electrical power supply to operate. Examples include: smoke detectors, beacons, HVAC, and lighting controllers. If a device operates only by AC power, any interruption, however brief, will render that device inoperative while it does not have power. Power interruptions of any length are often accompanied by voltage fluctuations which may damage **MGC Systems** or other electronic equipment. After a power interruption has occurred, immediately conduct a complete system test to ensure that the system operates as intended.

### ***Battery Failure***

If the **MGC System** or any device connected to the system operates from batteries it is possible for the batteries to fail. Even if the batteries have not failed, they must be fully charged, in good condition, and installed correctly.

**MGC Systems** with wireless transmitters use replaceable batteries. The system is designed to provide several years of battery life under normal conditions. The expected battery life is a function of the device environment, usage and type. Ambient conditions such as high humidity, high or low temperatures, or large temperature fluctuations may reduce the expected battery life. While each transmitting device has a low battery monitor which identifies when the batteries need to be replaced, this monitor may fail to operate as expected. Regular testing and maintenance will keep the system in good operating condition.

### ***Physical Obstructions***

Motion sensors that are part of a **MGC System** must be kept clear of any obstacles which impede the sensors' ability to detect movement. Signals being communicated by a **MGC System** may not reach the receiver if an item (such as metal, water, or concrete) is placed on or near the radio path. Deliberate jamming or other inadvertent radio signal interference can also negatively affect system operation.

Moreover, **MGC Systems** may fail to operate as intended if motion, heat, or smoke sensors are not triggered. Sensors in a fire system may fail to be triggered when the fire is in a chimney, walls, roof, or on the other side of closed doors; and, smoke and heat detectors may

not detect smoke or heat from fires on another level of the residence or building. In this situation the control panel may not alert occupants of a fire.

Sensors in a nurse call system may fail to be triggered when movement is occurring outside of the motion sensors' range. For example, if movement is occurring on the other side of closed doors or on another level of the residence or building the motion detector may not be triggered. In this situation the central controller may not register an alarm signal.

### ***Other Impairments***

Similarly, Alarm Notification Appliances such as sirens, bells, horns, or strobes may not warn or waken a sleeping occupant if there is an intervening wall or door. It is less likely that the occupants will be alerted or awakened when notification appliances are located on a different level of the residence or premise.

Audible notification appliances may be interfered with by other noise sources such as stereos, radios, televisions, air conditioners, appliances, or passing traffic. Audible notification appliances, however loud, may not be heard by a hearing-impaired person.

### ***Software***

Most **MGC Systems** contain software. With respect to those products, MGC does not warrant that the operation of the software will be uninterrupted or error-free or that the software will meet any other standard of performance, or that the functions or performance of the software will meet the user's requirements. MGC shall not be liable for any delays, breakdowns, interruptions, loss, destruction, alteration or other problems in the use of a product arising out of, or caused by, the software.

### ***Telephone Lines***

Telephone service can cause system failure where telephone lines are relied upon by a **MGC System**. Alarms and information coming from an **MGC System** may not be transmitted if a phone line is out of service or busy for a certain period of time. Alarms and information may not be transmitted where telephone lines have been compromised by criminal tampering, local construction, storms or earthquakes.

### ***Component Failure***

Although every effort has been made to make this **MGC System** as reliable as possible, the system may fail to function as intended due to the failure of a component.

### ***Security and Insurance***

Regardless of its capabilities, no **MGC System** is a substitute for property or life insurance. Nor is the system a substitute for property owners, renters, or other occupants to act prudently to prevent or minimize the harmful effects of an emergency situation.

Moreover, building automation systems produced by MGC are not to be used as a fire, alarm, or life safety systems.

## Warranty

### Limited Warranty

Mircom Technologies Ltd., MGC Systems Corp. and MGC System International Ltd. together with their subsidiaries and affiliates (collectively, MGC) warrants the original purchaser that for a period of three years from the date of manufacture, proprietary manufactured product shall be free of defects in materials and workmanship, under normal use. During the warranty period, MGC shall, at its option, repair or replace any defective product upon return of the product to its factory, at no charge for labor and materials. **Non-proprietary, third party or OEM product shall be warranted in accordance with the warranty period of the manufacturer. Any replacement and/or repaired parts are warranted for the remainder of the original warranty or ninety (90) days, whichever is longer.** The original owner must promptly notify MGC in writing that there is defect in material or workmanship, such written notice to be received in all events prior to expiration of the warranty period.

### International Warranty

The warranty for international customers is the same as for any customer within Canada and the United States, MGC shall not be responsible for any customs fees, taxes, or VAT that may be due.

### Conditions to Void Warranty

This warranty applies only to defects in parts and workmanship relating to normal use. It does not cover:

- damage incurred in shipping or handling;
- damage caused by disaster such as fire, flood, wind, earthquake or lightning;
- damage due to causes beyond the control of MGC such as excessive voltage, mechanical shock or water damage;
- damage caused by unauthorized attachment, alterations, modifications or foreign objects;
- damage caused by peripherals (unless such peripherals were supplied by MGC);
- defects caused by failure to provide a suitable installation environment for the products;
- damage caused by use of the products for purposes other than those for which it was designed;
- damage from improper maintenance;
- damage arising out of any other abuse, mishandling or improper application of the products.

### Warranty Procedure

To obtain service under this warranty, please return the item(s) in question to the point of purchase. All authorized distributors and dealers have a warranty program. Anyone returning goods to MGC must first obtain an authorization number. MGC will not accept any shipment whatsoever for which prior authorization has not been obtained. NOTE: Unless specific pre-authorization in writing is obtained from MGC management, no credits will be issued for custom fabricated products or parts or for complete fire alarm system. MGC will at its sole option, repair or replace parts under warranty. Advance replacements for such items must be purchased.

Note: MGC's liability for failure to repair the product under this warranty after a reasonable number of attempts will be limited to a replacement of the product, as the exclusive remedy for breach of warranty.

## Disclaimer of Warranties

This warranty contains the entire warranty and shall be in lieu of any and all other warranties, whether expressed or implied (including all implied warranties of merchantability or fitness for a particular purpose) and of all other obligations or liabilities. MGC neither assumes nor authorizes any other person purporting to act on its behalf to modify or to change this warranty, or to assume for it any other warranty or liability concerning this product.

This disclaimer of warranties and limited warranty are governed by the laws of the province of Ontario, Canada.

## Out of Warranty Repairs

MGC will at its option repair or replace out-of-warranty products which are returned to its factory according to the following conditions. Anyone returning goods to MGC must first obtain an authorization number. MGC will not accept any shipment whatsoever for which prior authorization has not been obtained.

Products which MGC determines to be repairable will be repaired and returned. A set fee which MGC has predetermined and which may be revised from time to time, will be charged for each unit repaired.

Products which MGC determines not to be repairable will be replaced by the nearest equivalent product available at that time. The current market price of the replacement product will be charged for each replacement unit.

The foregoing information is accurate as of the date of publishing and is subject to change or revision without prior notice at the sole discretion of the Company.

WARNING: MGC recommends that the entire system be completely tested on a regular basis. However, despite frequent testing, and due to, but not limited to, criminal tampering or electrical disruption, it is possible for this product to fail to perform as expected.

**NOTE: UNDER NO CIRCUMSTANCES SHALL MGC BE LIABLE FOR ANY SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES BASED UPON BREACH OF WARRANTY, BREACH OF CONTRACT, NEGLIGENCE, STRICT LIABILITY, OR ANY OTHER LEGAL THEORY. SUCH DAMAGES INCLUDE, BUT ARE NOT LIMITED TO, LOSS OF PROFITS, LOSS OF THE PRODUCT OR ANY ASSOCIATED EQUIPMENT, COST OF CAPITAL, COST OF SUBSTITUTE OR REPLACEMENT EQUIPMENT, FACILITIES OR SERVICES, DOWN TIME, PURCHASER'S TIME, THE CLAIMS OF THIRD PARTIES, INCLUDING CUSTOMERS, AND INJURY TO PROPERTY.**

MGC MAKES NO WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE WITH RESPECT TO ITS GOODS DELIVERED, NOR IS THERE ANY OTHER WARRANTY, EXPRESSED OR IMPLIED, EXCEPT FOR THE WARRANTY CONTAINED HEREIN.

## 7.0 Special Notices

This device complies with Part 15 / ICES-003 of the FCC / Industry Canada Rules.

Operation is subject to the following two conditions:

- (1) This device may not cause harmful interference, and
- (2) This device must accept any interference received, including interference that may cause undesired operation.

Cet appareil est conforme à la partie 15 du FCC et à la norme NMB-003 /ICES-003 d'Industrie Canada.

Son fonctionnement est sujet aux deux conditions suivantes:

- (1) le dispositif ne doit pas produire de brouillage préjudiciable, et
- (2) ce dispositif doit accepter tout brouillage reçu, y compris un brouillage susceptible de provoquer un fonctionnement indésirable.



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