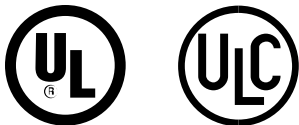




HSM3105 Expansion Module Installation Guide

HSM3105



29011148R002



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MX expander

HSM3105 is an expansion module intended to provide MX addressable device expansion to IQ Pro and IQ Pro P Panel. The module connects to the panel using the Corbus interface and provides connectivity for two 2 wire MX addressable buses that devices are connected to. The two MX buses which are left and right can be configured to operate as a single loop or as separate left and right spurs.

Note: The reference in this manual to model IQ Pro is also representative for model IQ Pro P unless stated differently.

Compatible devices

The following wired devices and modules are compatible with the HSM3105.

Table 1: HSM3105 compatible devices

Model	Name	Standby current (mA)	Alarm current (mA) (including LED as applicable)
MX945	Addressable universal input devices	0.46	4.50
MX916	Addressable smoke heat detector with base	0.35	4.00
MX862	Addressable ceiling mount PIR	0.30	3.50
MX920	Line isolator module	0.09	16.00
MX922	Addressable glassbreak	0.30	6.00
MX926	Addressable smoke detector with base	0.35	4.00
MX936	Addressable heat detector with base	0.35	4.00
MX975	Addressable door/window contact sensor	0.20	3.00
MX974	Addressable PIR with animal immunity	0.30	3.50
MXBASE	Addressable 4" continuity fire base	N/A	N/A

Note: For the MX920 device, the alarm current (16mA) is due to a loop fault. This fault occurs when the isolator is triggered. (loop in short condition)

Specifications

- Temperature range: -10°C to + 55°C
- Relative Humidity: 5% to 93% RH non-condensing
- Input rating: 11.3 to 12.5 VDC / 350 mA to 325 mA (provided by the alarm controller)
- **Note:** Higher loading is possible when using a separate power supply, refer to further instructions in this manual. For details of the maximum loading of the MX loop refer to the MX loop maximum loading table below.
- Board current draw: 100 mA (with no devices on the MX loop) + MX Loop current draw (depending on the connected loop devices)

- Board dimensions: 83 mm x 145 mm (3.25 in x 5.7 in)
- Corbus wire distance: 3 ft Max between the panel and the module
- The ROHS compliant hardware.
- This equipment must be installed by skilled service persons in non-hazardous, indoor locations.
- You can add a maximum of 126 devices to the HSM3105. Refer to the spreadsheet linked in the [Current Loading on the MX Loop](#) section of this document for the accurate number of devices that can be enrolled based on current availability.

Table 2: MX Loop maximum loading @ 40V

Application	Standby time + alarm	4Ah	7Ah	17Ah
Resi fire/ULC Com burg	24 h + 5 min	-	50 mA	170 mA
Resi/Com burg	4 h + 15 min	230 mA	400 mA	400 mA

Note: For applications where the MX loop current loading exceeds 67 mA @ 40 V, use approved external power supply models HSM2300 or HSM2204. See the [System configuration](#) section for details.

Familiarization with the HSM3105 module

This section provides details about the HSM3105 in relation to terminal descriptions, module compatibility, system configuration, and MX addressable loop wiring configurations.

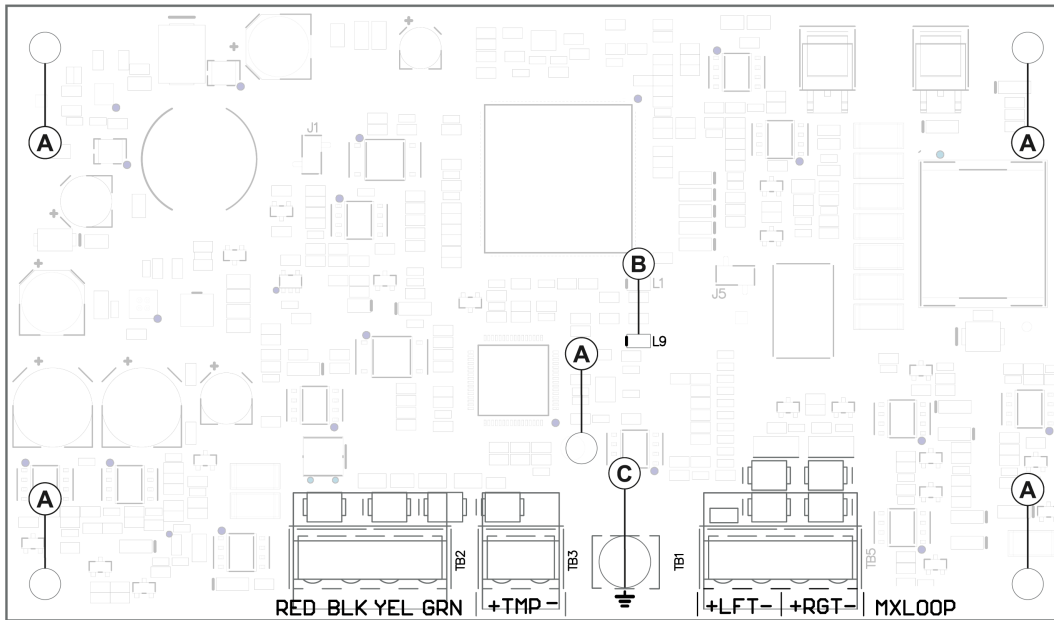
Terminal descriptions

TMP- Used to connect to the tamper switch that protects against the unauthorized opening of the enclosure the HSM3105 is mounted in. Connect a normally closed (NC) switch across +TMP and -TMP. If the tamper is not being used, connect a piece of wire across +TMP and -TMP to remove the trouble condition.

Note: Tamper protection is required for UL/ULC commercial/residential burglary installations.

There are LFT and RGT terminals for the MX Loop connection that are used to connect the compatible MX Devices. Each Loop has + and - terminals. Refer to [MX addressable loop wiring configuration](#) for further information.

CORBUS - The panel uses the 4-wire Corbus to communicate with the module. Connect the RED, BLK, YEL and GRN terminals to the Corbus terminals on the IQ Pro main control.



Callout	Component
A	Mounting hole
B	Status LED
C	Earth Ground connection. The IQ Pro panel and HSM3105 module shall both be connected to the same earth ground.

Compatibility

The table below outlines the HSM3105 module compatibility.

Table 3: Compatibility

Component	Compatibility details
Panel Compatibility	IQ Pro and IQ Pro P
Enclosure Compatibility	The module can be installed in the same enclosure with IQ Pro (if it is a metal configuration enclosure) or by itself in any of the following, separately listed compatible enclosures: HSC3010C, HSC3010CR, HSC3030CAR, HSC3020C, HSC3001C, HSC3001CP, PC4050CAR, PC4050CR, PC5003C.
Connectivity Compatibility	Corbus
Auxiliary Power Supply	HSM2300, HSM2204

System configuration

Low power mode

You can mount the HSM3105 in an IQ Pro enclosure (metal configuration only) or in a separate enclosure (See [Enclosures](#)) from the control panel, as shown in Figure 1 and 2 respectively. The Corbus wire runs between the control panel and the HSM3105 and shall not exceed 3ft using 22AWG wire.

The MX loop is powered from the Corbus supply power, and can have a maximum MX loop current draw of 67 mA @ 40 V (equivalent to 360 mA @ 11.3 V or 325 mA @ 12.5 V)

Figure 1: Low power mode - internal mount

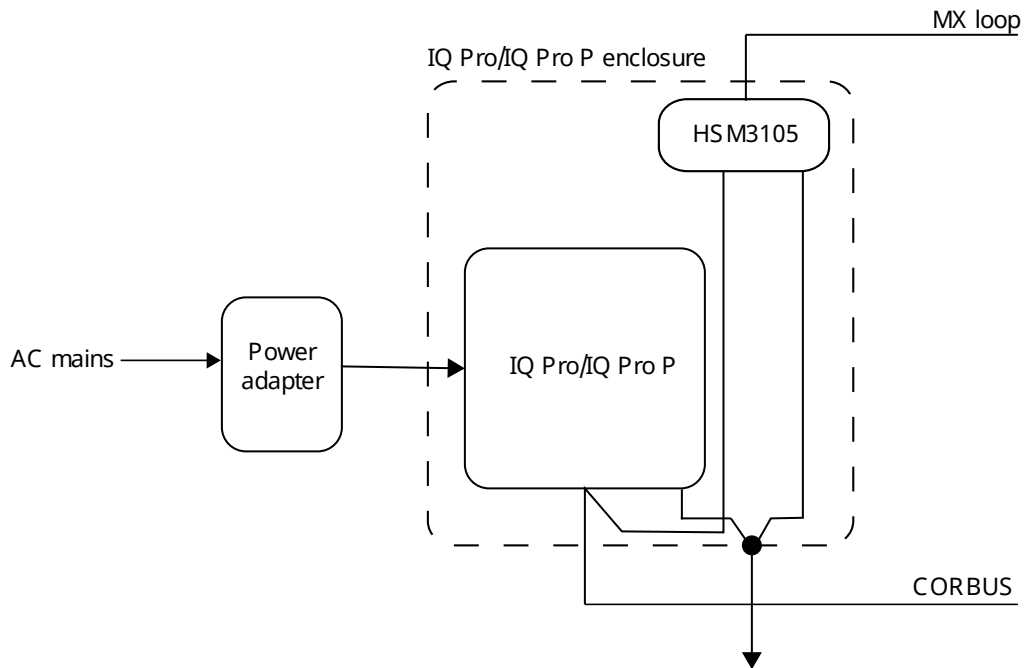
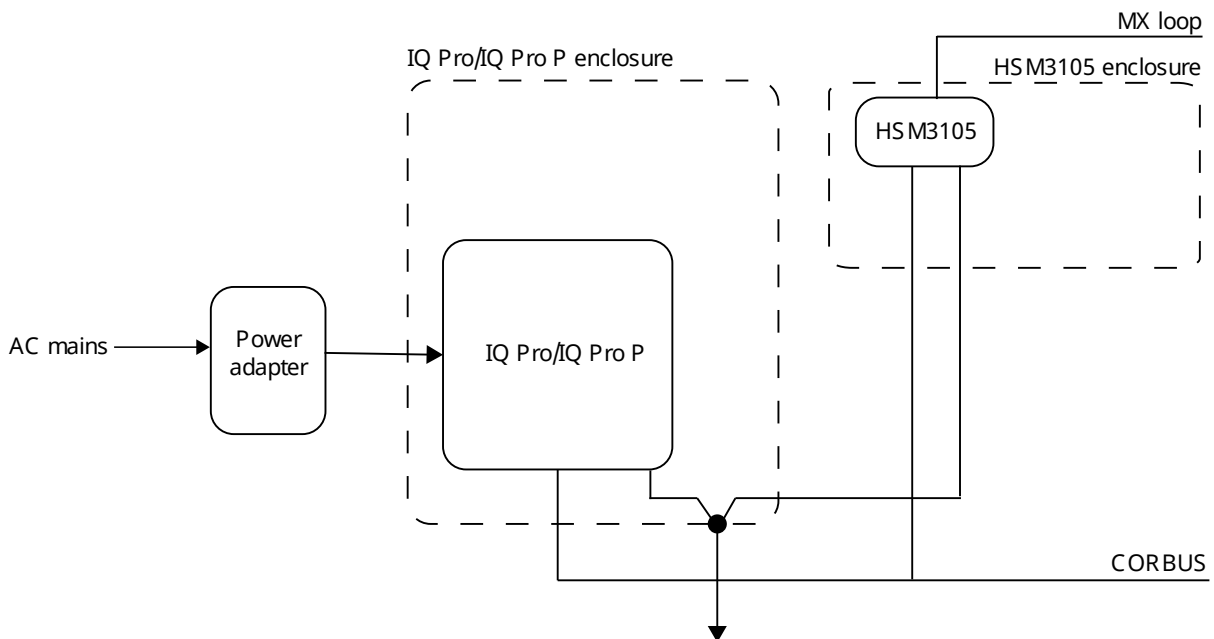


Figure 2: Low Power Mode - External Mount



High power mode – external mount

Only mount the HSM3105 module in an external enclosure (See [Enclosures](#)) along with one of the following approved auxiliary power supply units: HSM2204, HSM2300. The power supply unit provides power to the HSM3105 module and the MX loop. The Corbus wire runs between the control panel and the HSM3105 must not exceed 3ft using 22AWG wire.

The HSM3105 is designed to handle a maximum allowable MX loop current draw of 400 mA @ 40 V (equivalent to 1600 mA @ 11.3 V or 1500 mA @ 12.5 V). Check the manual for the chosen power supply unit to understand how much current would be available for the MX loop.

Note: HSM2300 and HSM2204 can only provide up to 228 mA @ 40 V (1000 mA @ 12.5 V) or 260 mA @ 40 V (1000 mA @ 11.3 V)

Figure 3: High Power Mode – External Mount

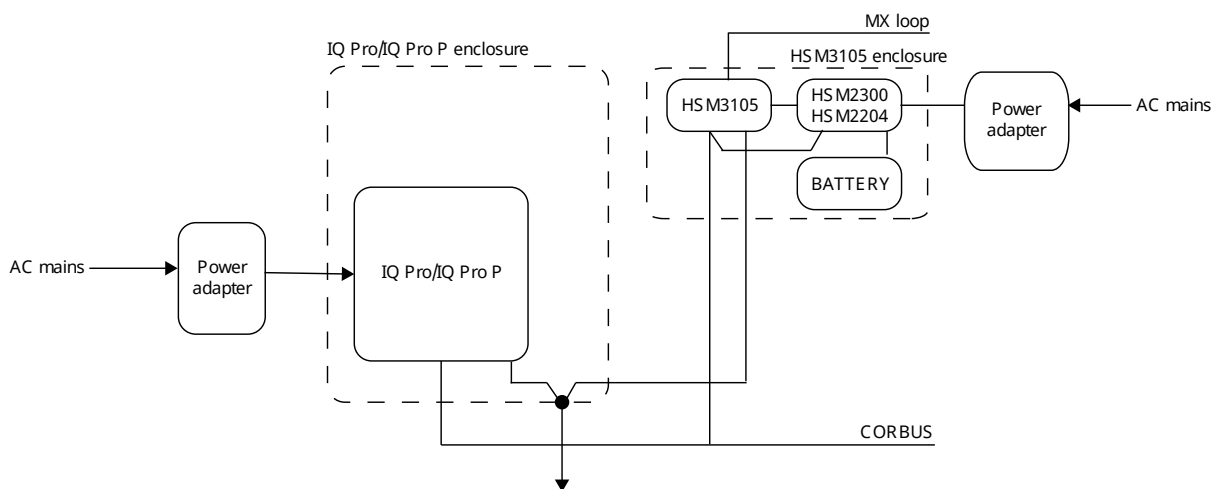
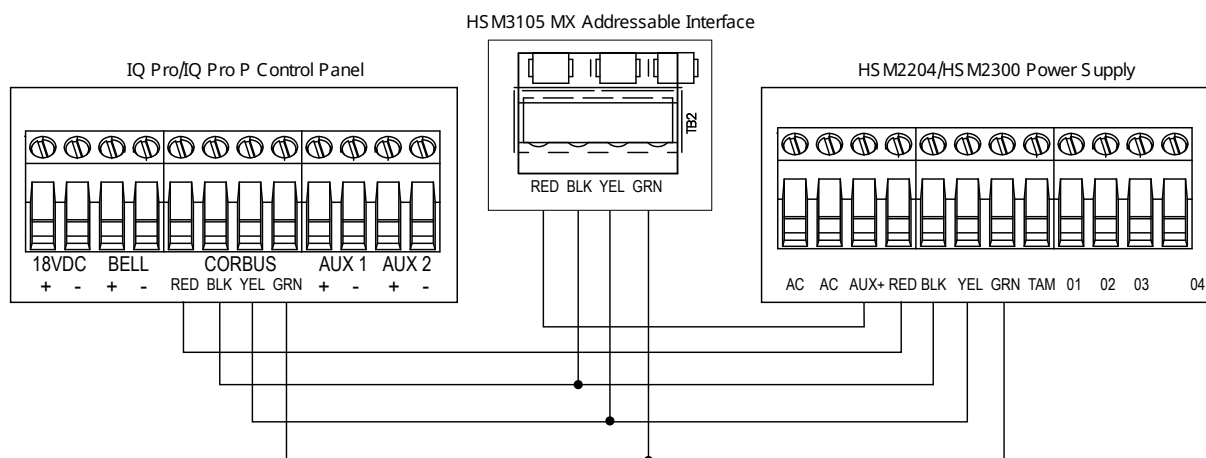


Figure 4: High Power Mode - wiring diagram



MX addressable loop wiring configuration

The HSM3105 supports two wire and four wire wiring configurations. You can configure the HSM3105 to manage a spur or two wire wiring scheme. See Figure 5.

Figure 5: Two wire wiring

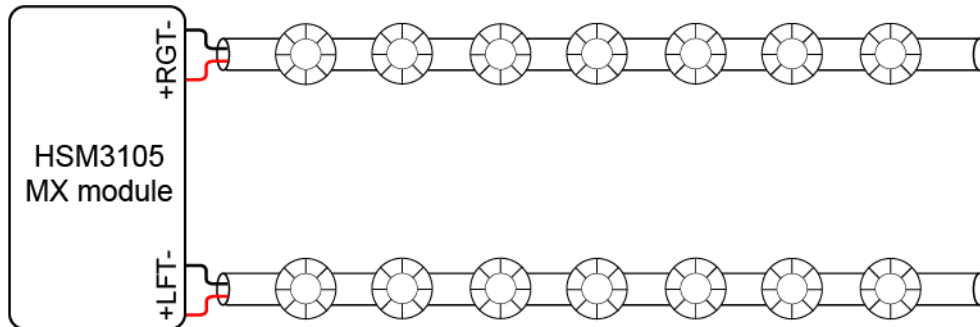
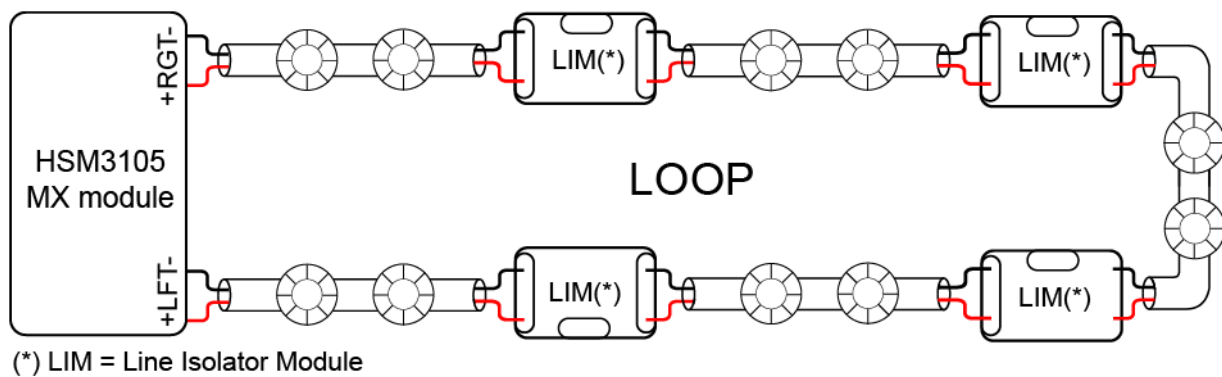


Figure 6: Four wire wiring

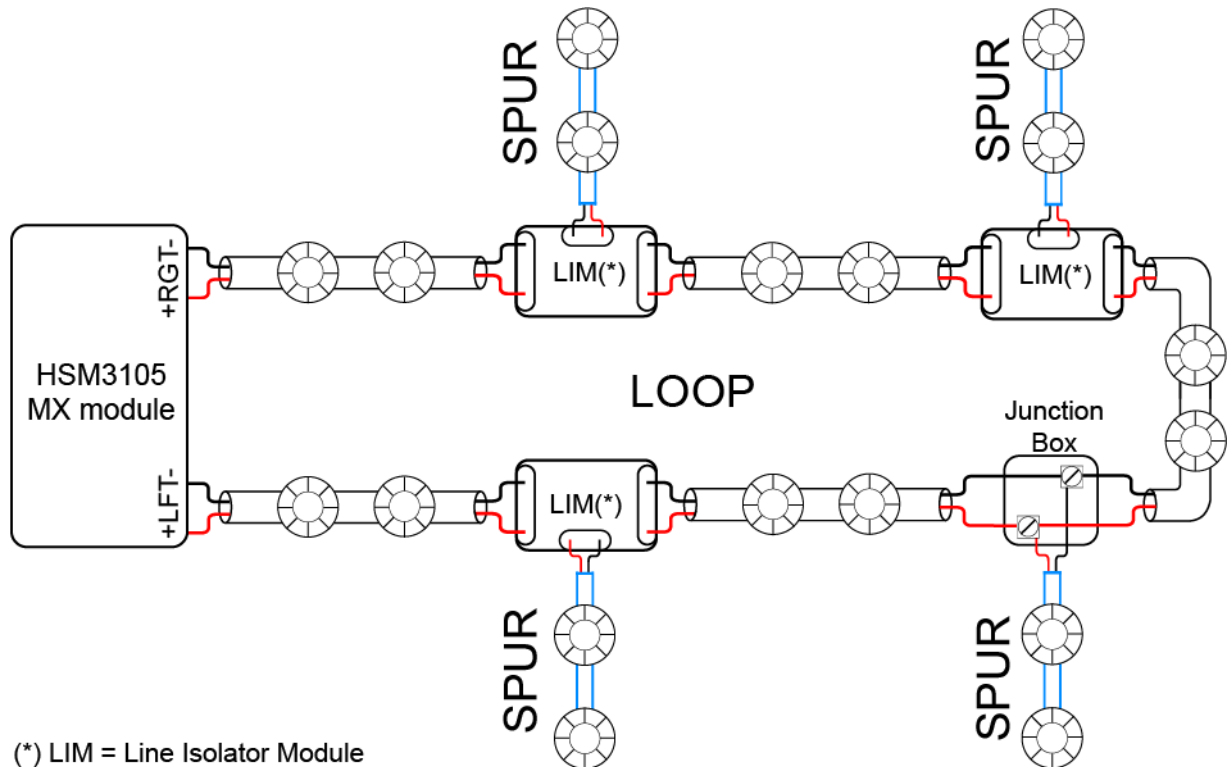


You can configure a HSM3105 module using a loop configuration or four wire wiring. See Figure 6. In the case of a single wiring trouble, for example a cable break or short circuit trouble, all the devices can still be managed, depending on the isolators that are present on the loop.

Configure the MX loop by selecting the spur for two wire configuration and loop for a four wire configuration with the IQ Pro installer app.

1. Open the IQ Pro installer app.
2. Select **Installation > Devices > Security Sensors > MX Module**.
3. Click **Configuration**.
4. Click **Bus Configuration** and select the required Spur or Loop configuration based on the site requirement.

Figure 7: Line T- Tapping



If multiple spurs are required for the installation, then you can use multiple MX920 Isolator modules. These spurs can be applied to either two wire or four wire MX loop configurations. Refer to the MX920 manual for more details on the isolator modules. See Figure 7.

You can now wire the MX devices to the HSM3105 based on the chosen configuration.

Current Loading on the MX Loop

The following information describes the HSM3105 MX Loop Current Load Calculator tool provided to calculate the current loading on the MX loop.

Note: To use this tool, the installer will require access to Microsoft Excel or an equivalent spreadsheet reader.

The linked spreadsheet must be used as a tool by the installer to properly calculate the current load on the MX loop and avoid overloading the system. Further details and instructions can be found on the spreadsheet at: www.dsc.com/m/29011178

The spreadsheet allows the installer to:

1. input the MX devices that will be installed
2. define the system configuration (low power or high power mode) as well as the auxiliary power supply unit used (for high power mode only)
3. specify the expected maximum percentage of devices that can turn ON the Alarm LED at the same time.

The output would be the current loading on the MX loop and the percentage of max load used. The installer can pick and choose which MX devices to be added/removed on the MX loop to avoid overloading the system.

For the MX920 device, the loop fault current (16mA) occurs when the isolator is triggered (loop in short condition). As a result, the MX loop Current Load Calculator tool does not account for this value during alarm current calculation. The installer must account for this fault separately.

MX Bus Wire Length

The following table outlines the maximum MX bus wire length that can be used depending on the maximum load on the MX loop (obtained from the load calculation spreadsheet, using the maximum value between inrush current or alarm current) and the wire gauge used in the installation.

Table 4: Max. MX Bus Wire Length

LOOP maximum loads (mA)	Max. allowable wire pair length					
	Cable 2.5 square mm	14AWG (2.08 mm ²)	16AWG (1.31 mm ²)	18AWG (0.823 mm ²)	20AWG (0.518 mm ²)	22AWG (0.324 mm ²)
10	6562 FT 2000 m	6562 FT 2000 m	6562 FT 2000 m	6562 FT 2000 m	6562 FT 2000 m	6562 FT 2000 m
20	6562 FT 2000 m	6562 FT 2000 m	6562 FT 2000 m	6562 FT 2000 m	6562 FT 2000 m	6562 FT 2000 m
30	6562 FT 2000 m	6562 FT 2000 m	6562 FT 2000 m	6562 FT 2000 m	6562 FT 2000 m	6562 FT 2000 m
40	6562 FT 2000 m	6562 FT 2000 m	6562 FT 2000 m	6562 FT 2000 m	6562 FT 2000 m	6562 FT 2000 m
50	6562 FT 2000 m	6562 FT 2000 m	6562 FT 2000 m	6562 FT 2000 m	6562 FT 2000 m	6562 FT 2000 m
60	6562 FT 2000 m	6562 FT 2000 m	6562 FT 2000 m	6562 FT 2000 m	6562 FT 2000 m	6562 FT 2000 m
70	6562 FT 2000 m	6562 FT 2000 m	6562 FT 2000 m	6562 FT 2000 m	6562 FT 2000 m	5732 FT 1745 m
80	6562 FT 2000 m	6562 FT 2000 m	6562 FT 2000 m	6562 FT 2000 m	6562 FT 2000 m	5015 FT 1527 m
90	6562 FT 2000 m	6562 FT 2000 m	6562 FT 2000 m	6562 FT 2000 m	6562 FT 2000 m	4458 FT 1358 m
100	6562 FT 2000 m	6562 FT 2000 m	6562 FT 2000 m	6562 FT 2000 m	6404 FT 1952 m	4012 FT 1222 m
110	6562 FT 2000 m	6562 FT 2000 m	6562 FT 2000 m	6562 FT 2000 m	5822 FT 1772 m	3648 FT 1111 m
120	6562 FT 2000 m	6562 FT 2000 m	6562 FT 2000 m	6562 FT 2000 m	5337 FT 1627 m	3344 FT 1018 m
130	6562 FT 2000 m	6562 FT 2000 m	6562 FT 2000 m	6435 FT 1961 m	4926 FT 1502 m	3086 FT 940 m
140	6562 FT 2000 m	6562 FT 2000 m	6562 FT 2000 m	5975 FT 1821 m	4574 FT 1394 m	2866 FT 873 m

Table 4: Max. MX Bus Wire Length

	Max. allowable wire pair length					
150	6562 FT 2000 m	6562 FT 2000 m	6562 FT 2000 m	5577 FT 1699 m	4269 FT 1301 m	2675 FT 815 m
160	6562 FT 2000 m	6562 FT 2000 m	6562 FT 2000 m	5228 FT 1593 m	4002 FT 1220 m	2508 FT 764 m
170	6562 FT 2000 m	6562 FT 2000 m	6562 FT 2000 m	4921 FT 1499 m	3767 FT 1148 m	2360 FT 719 m
200	6562 FT 2000 m	6562 FT 2000 m	6562 FT 2000 m	4183 FT 1275 m	3202 FT 976 m	2006 FT 611 m
250	6562 FT 2000 m	6562 FT 2000 m	5317 FT 1625 m	3346 FT 1020 m	2562 FT 781 m	1605 FT 489 m
300	6562 FT 2000 m	6562 FT 2000 m	4431 FT 1354 m	2789 FT 850 m	2135 FT 651 m	1337 FT 407 m
350	6562 FT 2000 m	6049 FT 1839 m	3798 FT 1161 m	2390 FT 728 m	1830 FT 558 m	1146 FT 349 m
400	6562 FT 2000 m	5293 FT 1609 m	3323 FT 1026 m	2091 FT 637 m	1601 FT 488 m	1003 FT 305 m

① **Note:** The table above was calculated considering a maximum voltage drop on the loop of 13 V. The burglary devices can house a maximum cable section of 16AWG.

Enclosures

The HSM3105 must be installed within 3ft of the panel. For high power mode, a separate enclosure (listed below) must be used. For low power mode, there is an option to use an internal mount (inside the IQ Pro metal enclosure) or a external mount (using one of the enclosures listed below). The plastic enclosure configuration for the IQ Pro P does not support the installation of HSM3105 inside the cabinet and a separate enclosure must be used. Internal and/or external wiring for this module must be routed, supported, clamped or secured in a manner that reduces the likelihood of excessive strain on wire and terminal connections, loosening of terminal connections, and damage of conductor insulation.

The HSM3105 can be installed in the enclosures listed below. Tamper protection switches can be installed on all enclosures, including door opening protection or removal from the mounting position. Doors can be secured using screws or keylock.

- Model HSC3010C (hinged door) made of 18 Ga steel, painted white, dimensions 372 mm x 412 mm x 114 mm , weight: 9.75 lb or 4.2 Kg
- Model HSC3010CR (hinged door) made of 18 Ga steel, painted red, dimensions 372 mm x 412 mm x 114 mm, weight: 10.0 lb or 4.5 Kg
- Model HSC3030CAR (hinged door) made of 18 Ga steel (base) and 16 Ga (door), painted white, dimensions 375 mm x 412 mm x 114 mm, weight 11.45 lb or 5.2 Kg
- Model HSC3020C (removable door) made of 18 Ga steel, painted white, dimensions 459 mm x 414 mm x 103 mm, weight: 11.5 lb or 4.3 Kg
- Model HSC3001C (hinged door) made of 22Ga steel, dimension 260mm x 237 mm x 69 mm, weight 1.2kg

- Model HSC3001CP (removable cover) made of ABS, color white, dimensions 254 mm x 177.8 mm x 62 mm, weight: 350g
- Model HSC3020CP (removable door) made of PC-ABS, color white, dimensions 368 mm x 489 mm x 108 mm, weight: 4.7 lb or 2.1 Kg
- Model PC4050CAR - Made of 18Ga steel, painted. 376 mm x 305 mm x 125mm
- Model PC4050CR - Made of 18Ga steel, painted. 376 mm x 305 mm x 128mm
- Model PC5003C - Made of 22Ga steel, painted. 288 mm x 298mm x 78mm

Automatically enrolling on the alarm panel

To enroll the HSM3105, complete the following steps:

1. Ensure that the system is not powered.
2. Connect the HSM3105 to the Corbus.
3. Power up the system.
4. Open the IQ installer app.
5. Tap **Installation > Devices > Security Sensors > Add Device > Autolearn > Start Autolearn.**

Result

This HSM3105 module is enrolled on the panel.

What to do next:

After the MX module is enrolled and the loop configuration settings are complete, see [MX addressable loop wiring configuration](#), open the installer app, go to **Installation > Devices > Security Sensors > Add Device "+" > Autolearn + MX > Start Autolearn** . This enrolls all of the MX devices connected to the HSM3105. When enrollment of all the MX devices connected has completed, the IQ Installer app shows this message: **MX Autoenrollment completed**.

Status LED

The HSM3105 is equipped with a status LED to indicate the current condition of the module. If the HSM3105 is operating correctly, the status LED flashes 120 ms ON and 10 seconds OFF. When a trouble condition is present, the status LED displays a series of flashes then remains blank for 1.7 seconds. The number of flashes indicates the trouble condition as outlined below.

Number of Flashes	Trouble Condition
1	Module not enrolled
2	Alarm Panel supervision trouble
3	Corbus low voltage
7	MX bus fault
8	Device trouble (this status is indicated if there are troubles with an MX Device.

Firmware update indications

During a firmware upgrade process the Status LED flash: 800 ms on / 800 ms off This cadence shall clear at the end of the firmware upgrade process. If the firmware upgrade fails, the status LED flash: 200 ms on / 200 ms off. This cadence shall clear when the firmware upgrade process is reattempted

MX diagnostics

Access MX diagnostics in the installer app.

1. Open the IQ installer app.
2. Tap **Installation > Devices > Security Sensors > MX module > Diagnostics**.
3. For a device count, tap **Run**.
4. For noise level in the MX Loop, tap **Run**.
5. For smoke and heat diagnostics, tap **Run**.

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This information applies to model HSM3105.

Modification statement

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This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

ISED Canada

CAN ICES-3(B)/NMB-3(B)