IXM Installation Guide

Table of Contents

Glossary

Definitions

|	
ACP	Access Control Panel
COM	Common
DAC	Door Access Control
DOS	Door Open Schedule
EGND	Earth Ground
ESD	Electrostatic Discharge
GND	Ground
IXM	INVIXIUM
LED	Light Emitting Diode
NC	Normally Closed
NO	Normally Open
OTG	On-the-Go
RLY	Relay
RX	Receiver
SGND	Signal Ground
SPI	Specific Purpose Input
SPO	Specific Purpose Output
TX	Transmitter
WDATA	Wiegand Data
WGND	Wiegand Ground
VIN+	Power (12-24 VDC)
VIN-	Power Ground
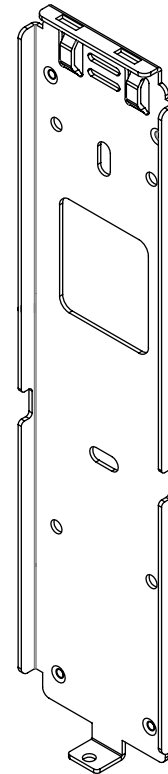
Metal Mounting
Plate
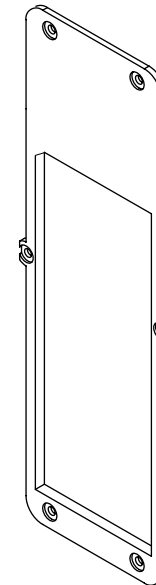
Temporary Back
Cover
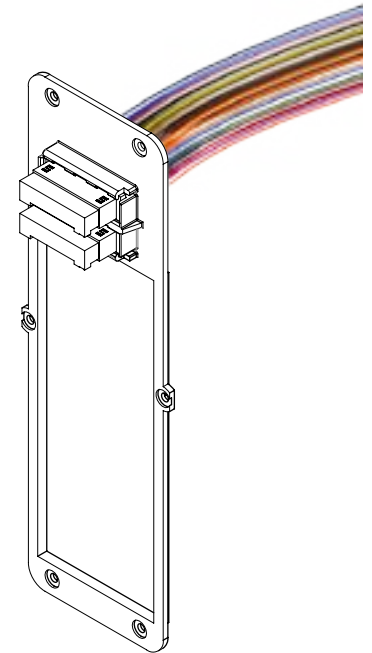
Wired Back
Cover

Electrostatic Discharge and Earth Ground

For protection against Electro Static Discharge (ESD), which may cause damage or malfunction to the **IXM** device, **INVIXIUM** recommends the use of the ground connections between each **IXM** device and a high quality Earth Ground available at the install site. Installation of any **IXM** device should be performed by licensed electricians and installers should always use an antistatic wrist strap during the set up process.

An Earth Ground wire with lug is provided in the **IXM INSTALL KIT**. The lug of the Earth Ground wire should be fastened with a screw to the front of the mounting plate. The other end of the Earth Ground wire should be connected to the high quality Earth Ground connection on site. When the **IXM** device is installed onto the mounting plate, this Earth Ground lug will make direct contact with the Metal Back plate of the **IXM** device, thus allowing for proper grounding.

Please refer to Hardware Install Steps on page 15 for step-by-step instructions for mounting plate, device and Earth Ground wire installation.

Device Handling Do's

- Handle with care, ensure not to drop or step on the device.
- Perform regular cleaning to eliminate a build-up of dust, dirt, oil and residual grime.

Device Handling Don'ts

- Do not install in areas where devices are exposed to direct sunlight, high levels of humidity, extreme dust or flammable vapours.
- Do not allow magnetics or magnetic objects to come in close contact to any device.
- Do not install near any heating elements or equipment.
- Do not let any liquids spill onto the device, specifically the sensor.
- Do not attempt to open or disassemble the device, as this will void the product warranty.
- Do not deploy for any use other than its intended purpose.
- Do not insert anything other than the correct fitting USB plug into the USB port, located at the bottom of the device.

Device Cleaning

The component that will require regular cleaning is the sensor, as it experiences the most contact. The cleaning should be performed with care and attention, as improper cleaning may damage the sensor or surrounding components.

Follow the steps below for proper sensor cleaning procedure:

1. Power off device prior to any routine cleaning.
2. Lightly moisten a new cotton swab or lint free polishing cloth with water or isopropyl alcohol.
3. Gently wipe the surface of the sensor with the moistened cotton swab or cloth, ensuring that no excess liquid is squeezed out and runs into the device.
4. Finish the wiping the sensor again with a dry cotton swab or cloth.
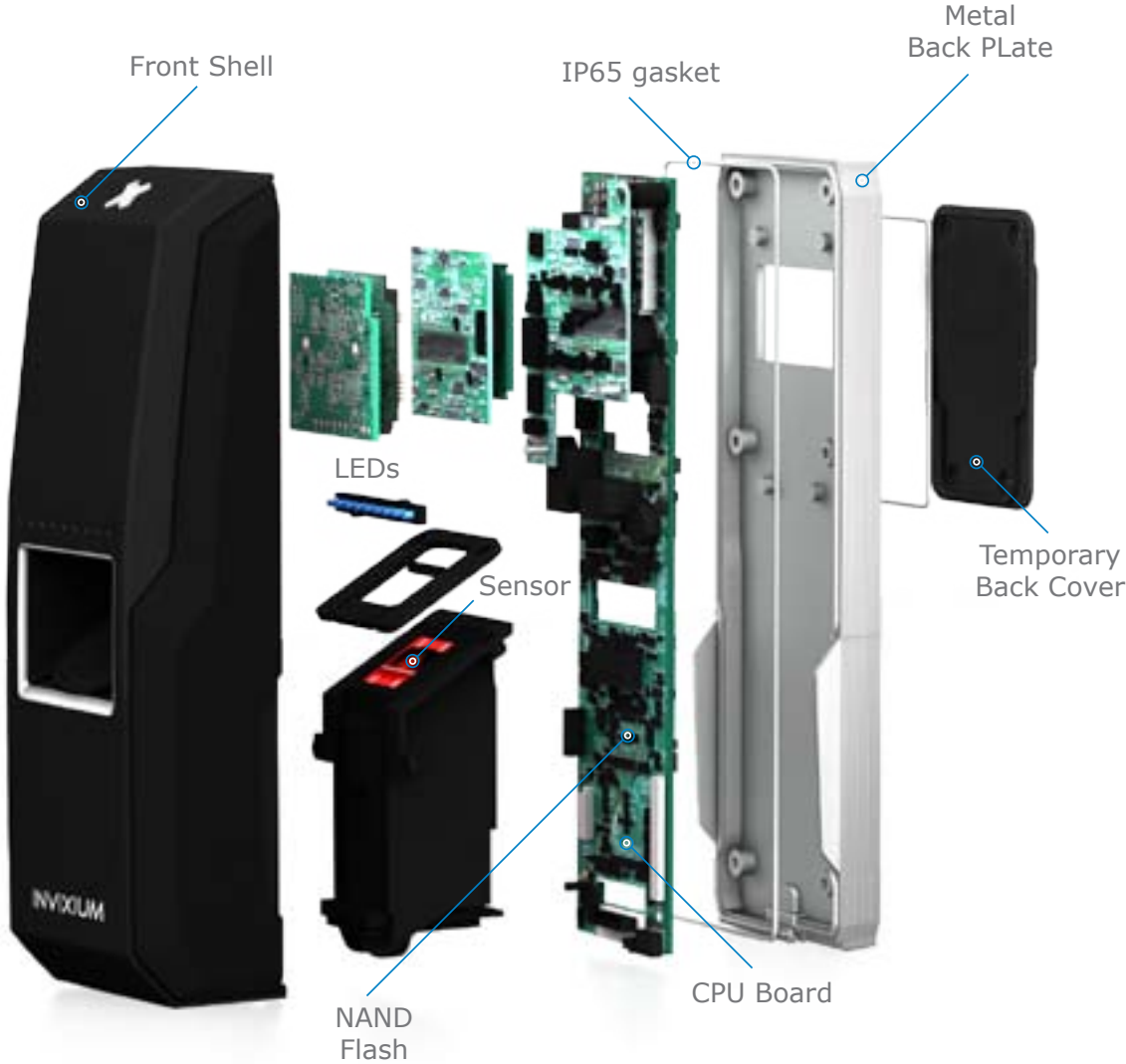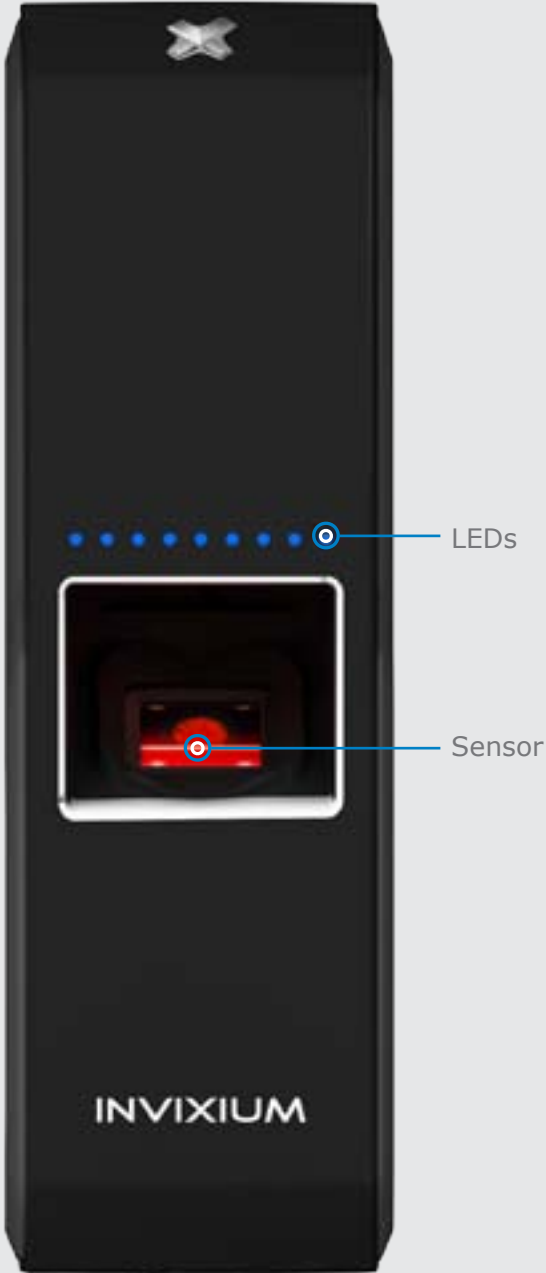5. Reapply power.

Do not use harsh or abrasive chemicals to clean the surface of the sensor, as this may cause permanent damage to the device.
Do not use sandpaper, steel wool, scouring pads, chlorinated, ammonia, bleach, or any inappropriate products for cleaning.

WARNING

The **IXM INSTALL KIT** includes:

- Dolphin Crimps (qty 24)
- Earth Ground Wire
- Lithum Battery (**IXM TOUCH** only)
- Metal Mounting Plate
- Metal Mounting plate screw (qty 1)

- Micro USB-on-the-Go cable
- Micro USB Extension cable (4 ft/1.2m)
- Wall Mount Screws (qty 6)
- Wired Back Cover with colour-coded wires
- USB KeyBattery (**IXM TOUCH** only)

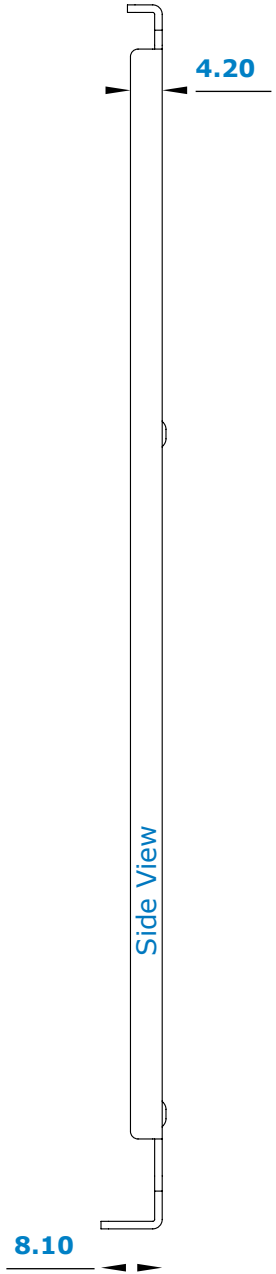## IXM MYCRO Device & Exploded views

Front Shell

IP65 gasket

Metal Back PLate

LEDs

Sensor

Temporary Back Cover

Sensor

NAND Flash

CPU Board

LEDs

INVIXIUM

48

38.5

41.70

4.20

168

162

82.1

110

30

46.3

8.10

Front View

Side View

Front View

Side View

Angled
Front View
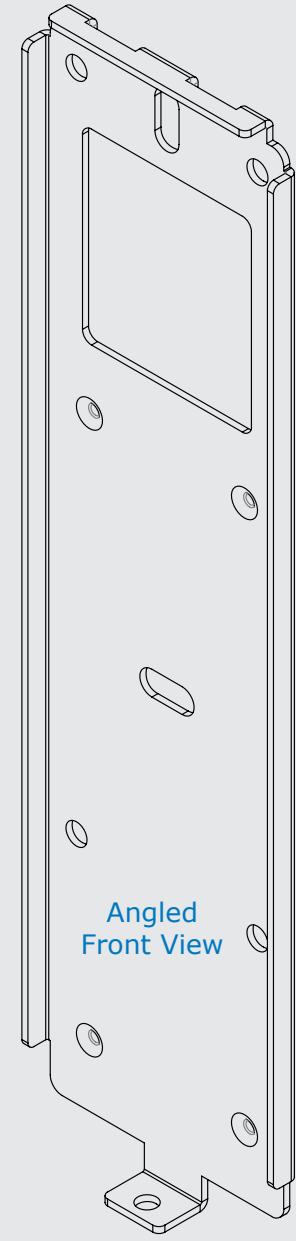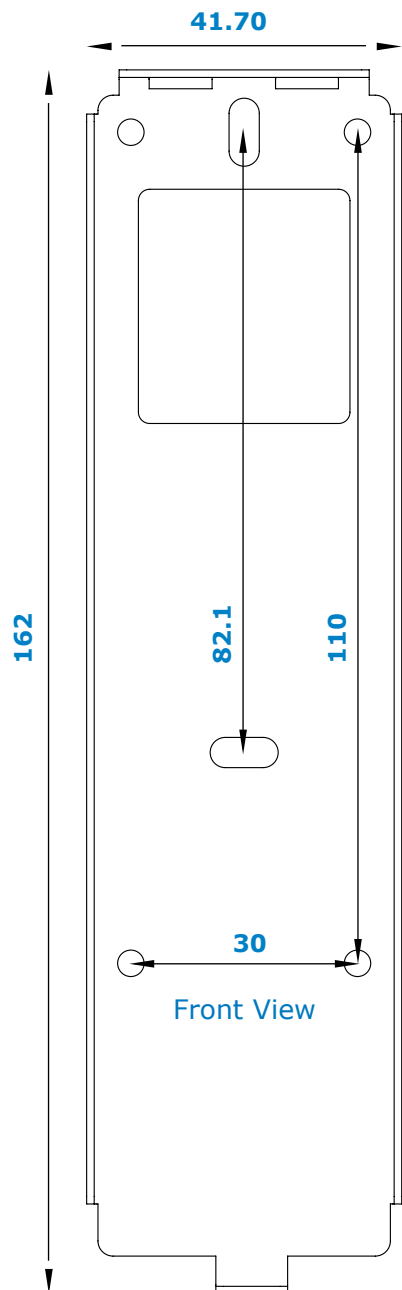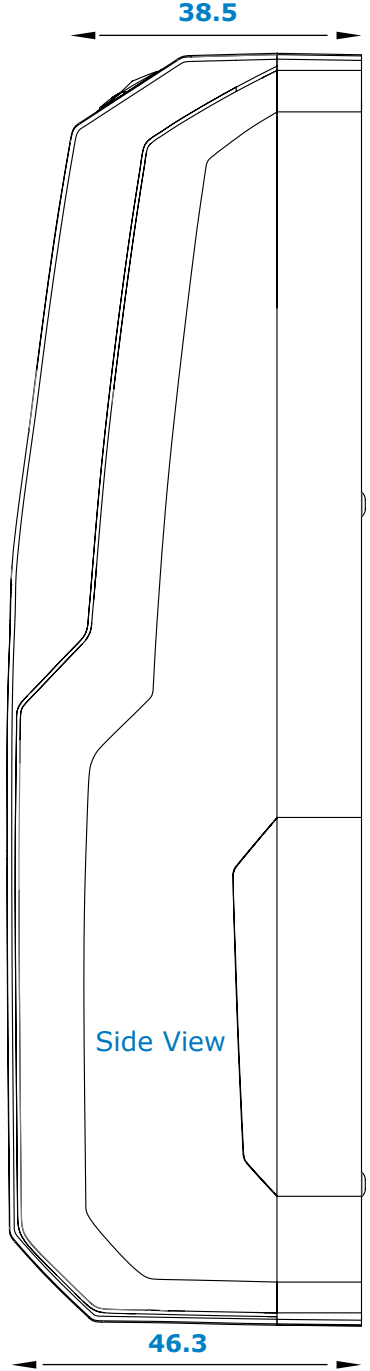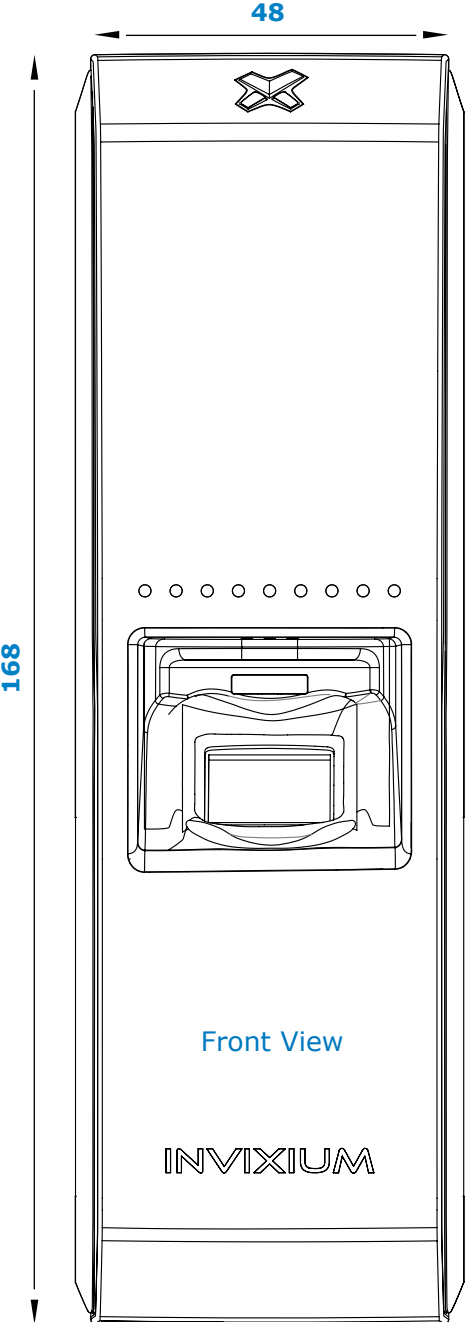
INVIXIUM

IXM MYCRO Product & Mounting Plate Actual Dimensions in mm
INVIXIUM recommends printing this page in Actual Size

IXM SENSE Device & Exploded views

Front Shell

Proximity Sensor

IP65 gasket

Metal Back PLate

LEDs

Lumidigm Sensor

LEDs

Lumidigm Sensor

Wi-Fi Board

512MB DDR3L RAM

CPU Board

Temporary Back Cover

INVIXIUM

49

199.7

Front View

INVIXIUM

46.08

Side View

51.85

45.20

194.9

82.1

110

30

Front View

5.40

Side View
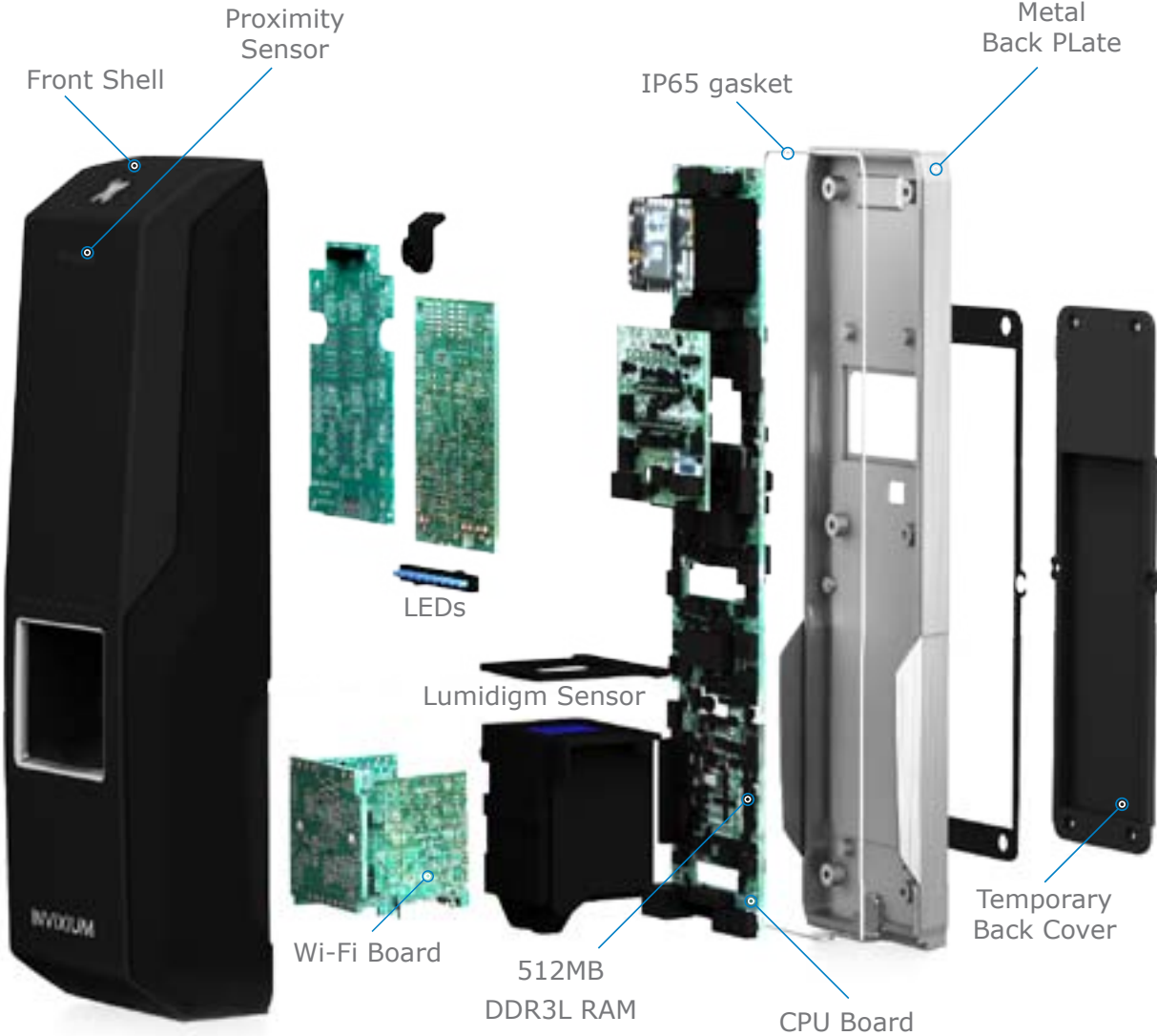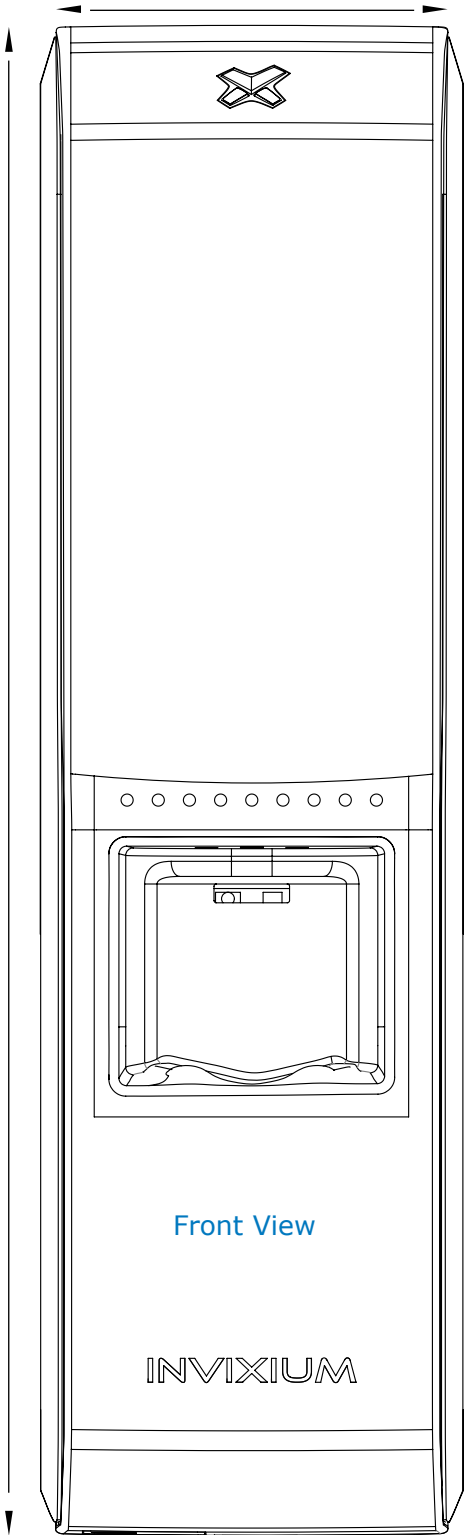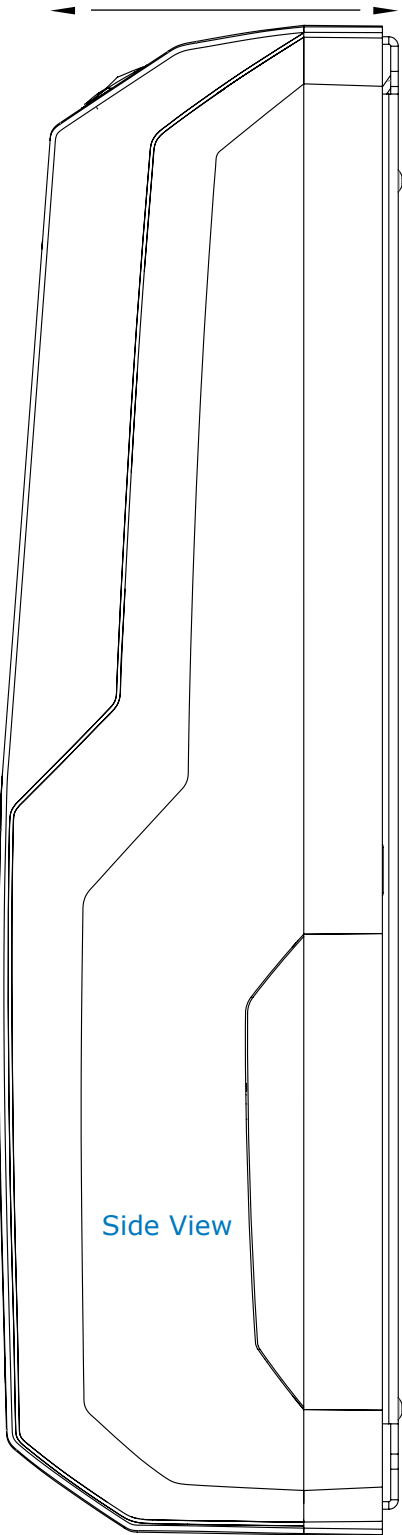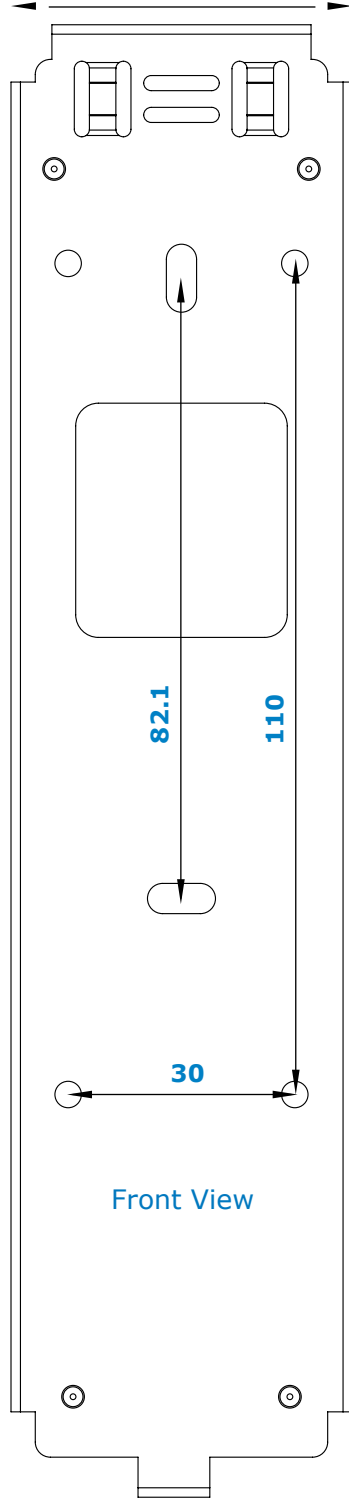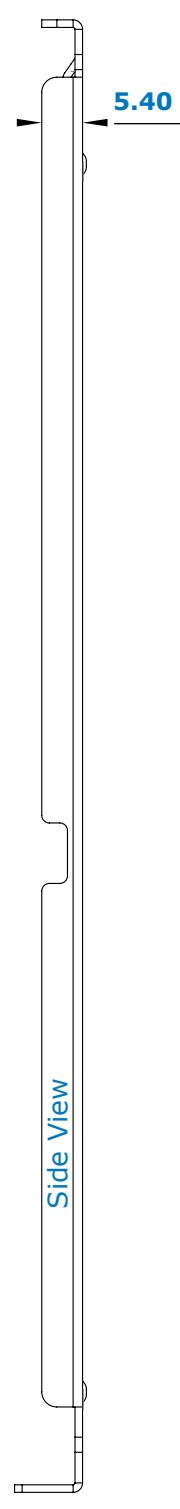
9
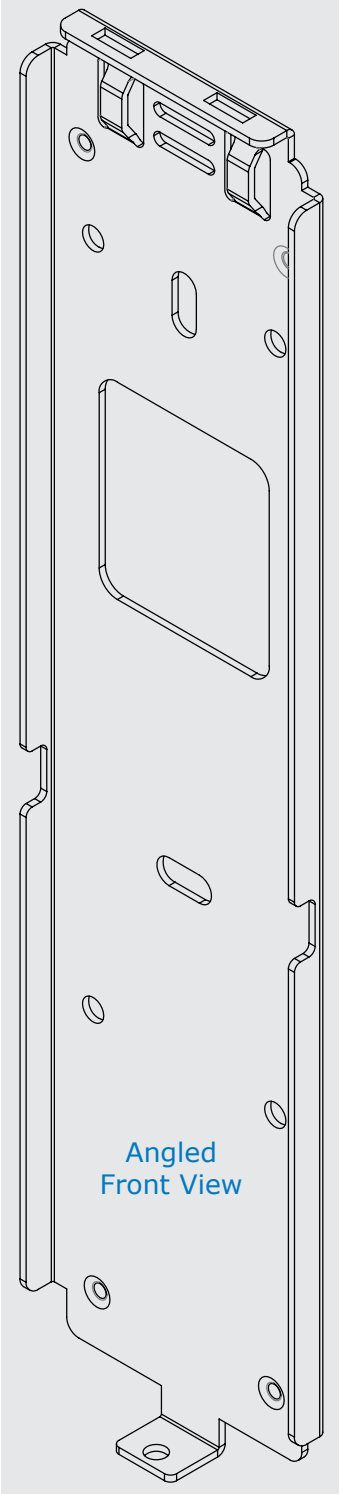
Angled
Front View

IXM TOUCH Device & Exploded views

Capacitive Touch Screen LCD

LEDs

Sensor

INVIXIUM

Corning® Gorilla® Glass

Proximity Sensor

Front Shell

Capacitive Touch Screen LCD

LEDs

Sensor

Wi-Fi Board

CPU Board

IP65 gasket

Metal Back PLate

Temporary Back Cover

Battery

49

46.08

45.20

5.40

199.7

194.9

82.1

110

30

Front View

Side View

Front View

Side View

Angled
Front View

51.85

9

IXM TOUCH Product & Mounting Plate Actual Dimensions in mm
NVIXIUM recommends printing this page in Actual Size

INVIXIUM

I/O Cable: Top Connector Pin Out

Wired Back Cover

RLY_NO
RLY_COM
RLY_NC

ACP_LED1
ACP_LED2
ACP_LED_GND

DAC_IN1
DAC_IN2
DAC_IN3
DAC_GND

NC
DAC_OUT

SPI_GND
SPI_3
SPI_2
SPI_1

SPO_1
SPO_2
SPO_3
SPO_GND

Front View   Back View

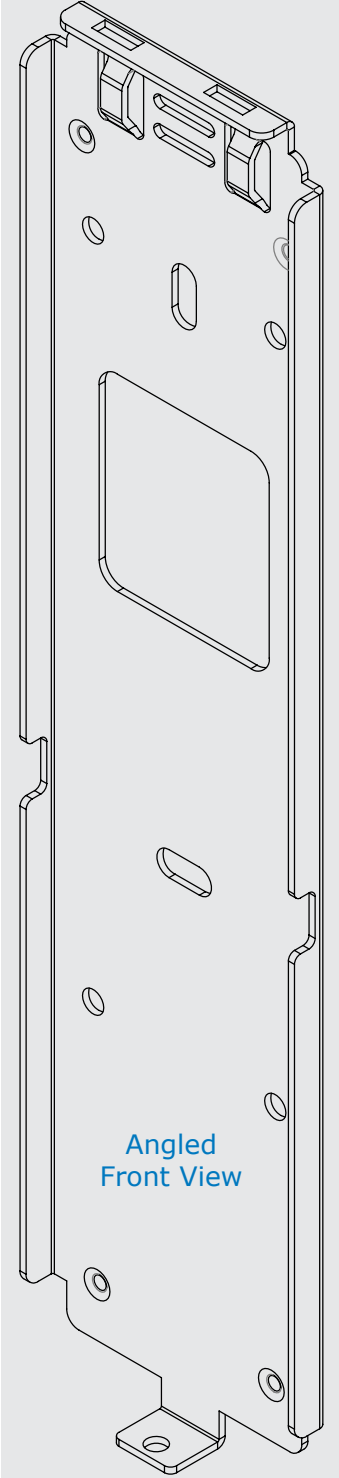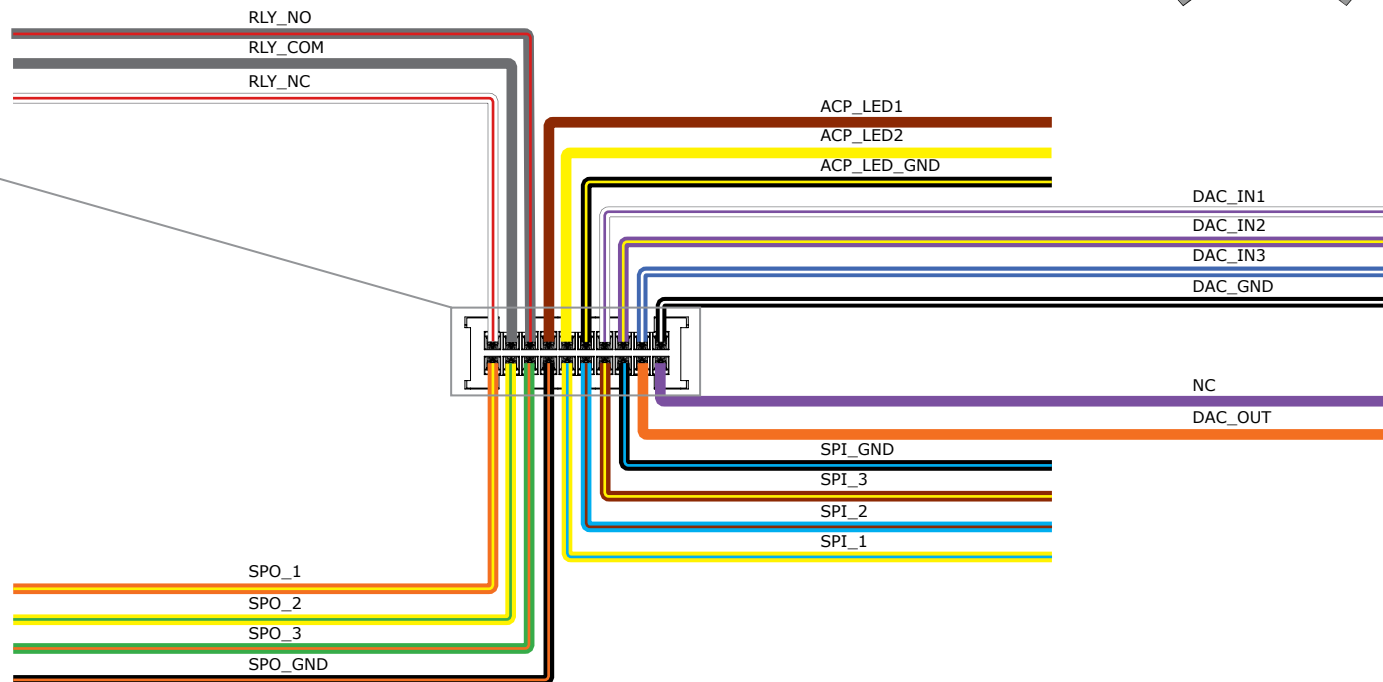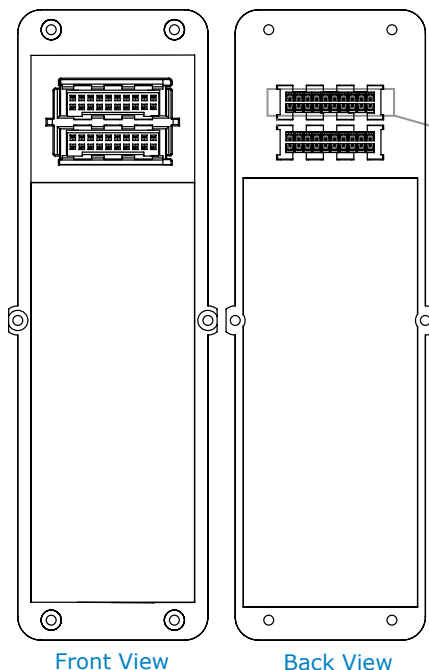| Wire Color	Application	Label	Pin	Wire Color	Application	Label	Pin
	Relay Normally Closed	RLY_NC	1		Specific Purpose Output Line 1	SPO_1	2
	Relay Common	RLY_COM	3		Specific Purpose Output Line 2	SPO_2	4
	Relay Normally Open	RLY_NO	5		Specific Purpose Output Line 3	SPO_3	6
	Access Control Panel LED 1 Feedback	ACP_LED1	7		Ground for Specific Purpose Outputs	SPO_GND	8
	Access Control Panel LED 2 Feedback	ACP_LED2	9		Specific Purpose Input Line 1	SPI_1	10
	Ground for Access Control Panel LED Feedback	ACP_LED_GND	11		Specific Purpose Input Line 2	SPI_2	12
	Door Access Control Input 1	DAC_IN1	13		Specific Purpose Input Line 3	SPI_3	14
	Door Access Control Input 2	DAC_IN2	15		Ground for Specific Purpose Inputs	SPI_GND	16
	Door Access Control Input 3	DAC_IN3	17		Door Access Control Output	DAC_OUT	18
	Ground for Door Access Control Inputs	DAC_GND	19		Reserved for Future (No Connect)	N/C	20

I/O Cable: Bottom Connector Pin Out

Wired Back Cover

Front View   Back View

EGND
VIN-
VIN+

RS-485_T
TCP/IP

RJ45 Receptacle

WGND
WDATA_OUT1
WDATA_OUT0
WDATA_IN1
WDATA_IN0

RS232_RX
RS232_TX
SGND
RS-485+ (B)
RS-485- (A)
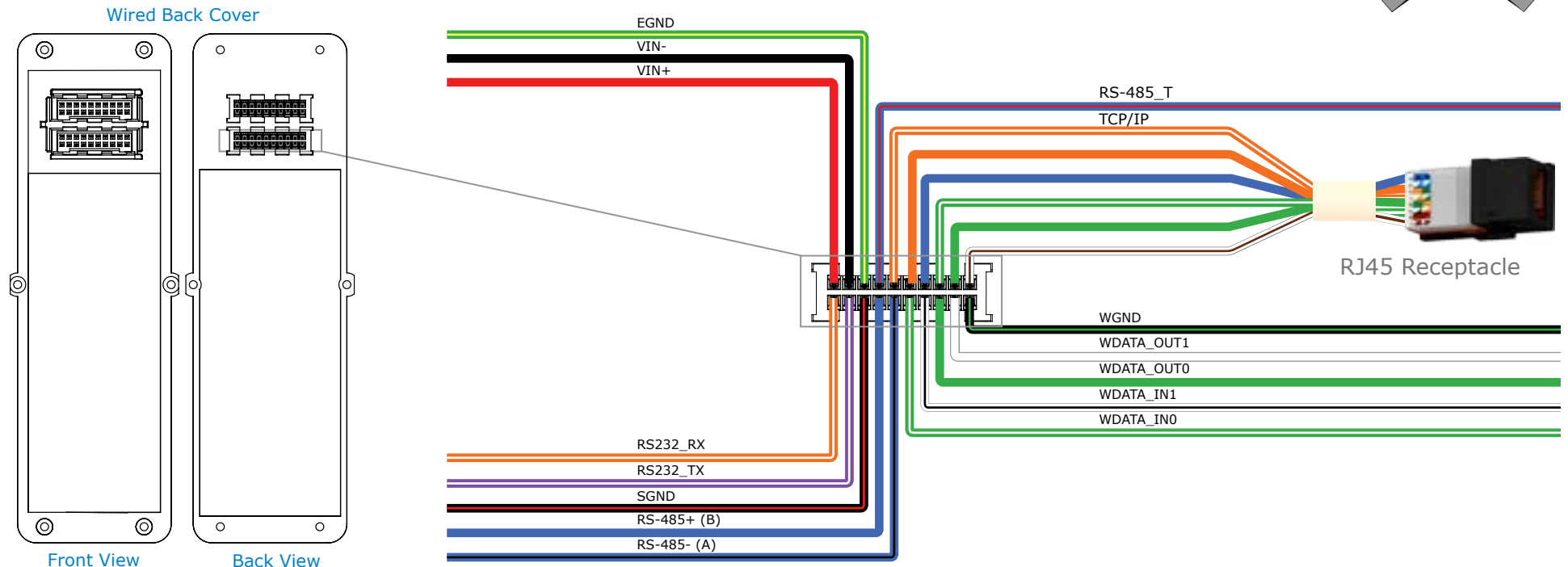
Wire Color	Application	Label	Pin	Wire Color	Application	Label	Pin
	Power (+12-24 VDC)	VIN+	1		RS-232 Data Receive	RS-232_RX	2
	Power Ground	VIN-	3		RS-232 Data Transmit	RS-232_TX	4
	Earth Ground	EGND	5		Signal Ground	SGND	6
	RS-485 Terminated (Optional)*	RS-485_T	7		RS-485 Non-Inverting Line	RS-485+ (B)	8
	Ethernet or PoE†	TCP/IP	9,11,13, 15,17,19		RS-485 Inverting Line	RS-485- (A)	10
					Wiegand Data Input Line 0	WDATA_IN0	12
					Wiegand Data Input Line 1	WDATA_IN1	14
					Wiegand Data Output Line 0	WDATA_OUT0	16
					Wiegand Data Output Line 1	WDATA_OUT1	18
					Ground for Wiegand	WGND	20

NOTE

*This pin is optional and should be used in place of the RS-485+ terminal if 120Ω termination is required.

†PoE only available for IXM SENSE and IXM TOUCH

Hardware Tools Required

- Power Drill
- Electric or Battery-powered Screw driver
- Wire Stripper
- Hammer
- Ratchet style Crimping tool
- Pencil for marking
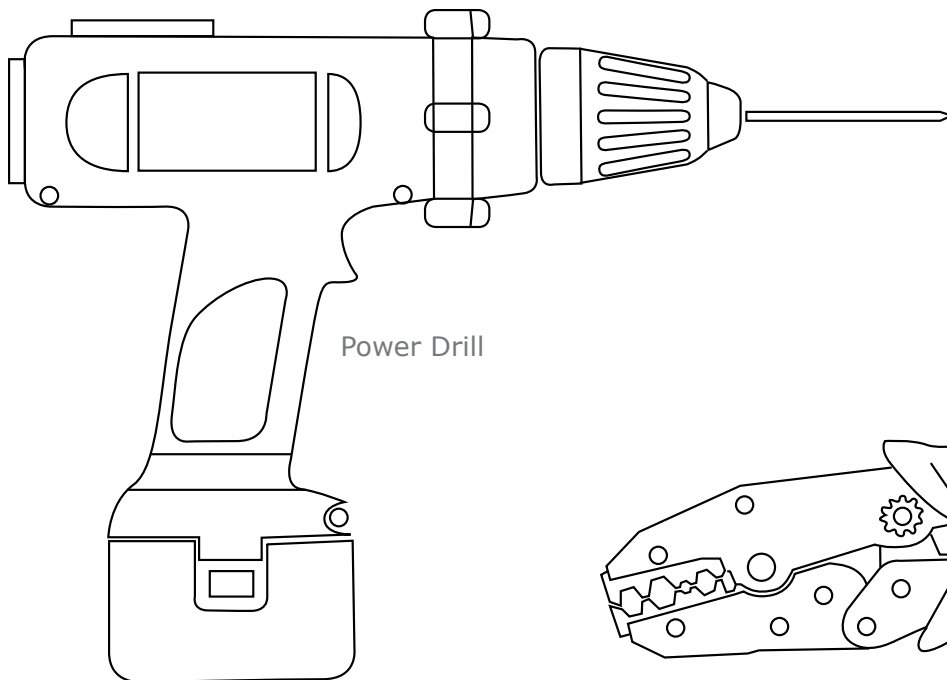
Wire Stripper

Hammer

Pencil

Power Drill
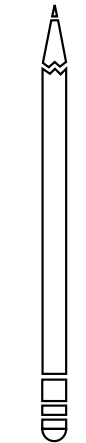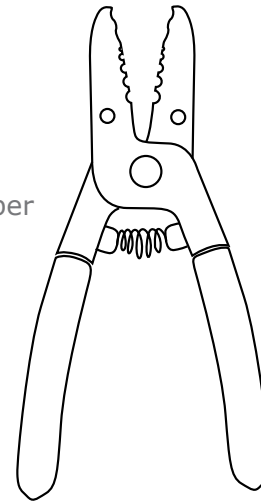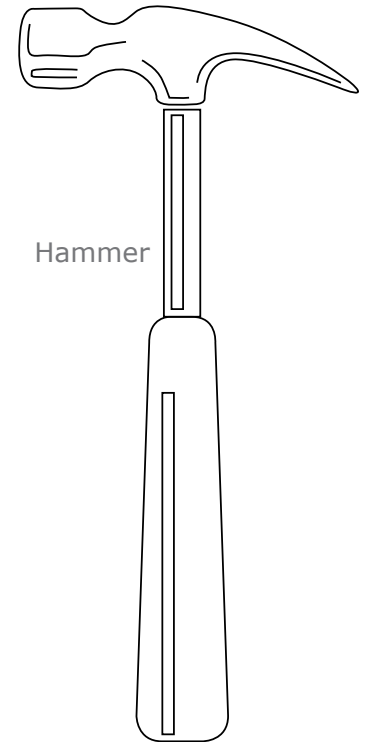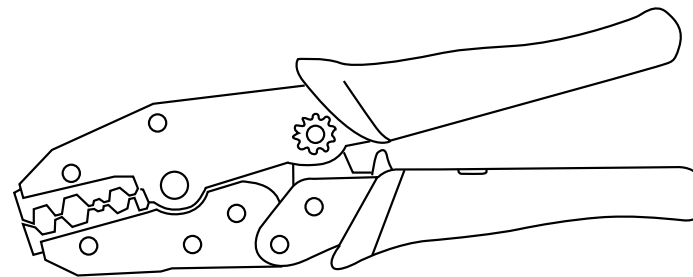
Crimping tool
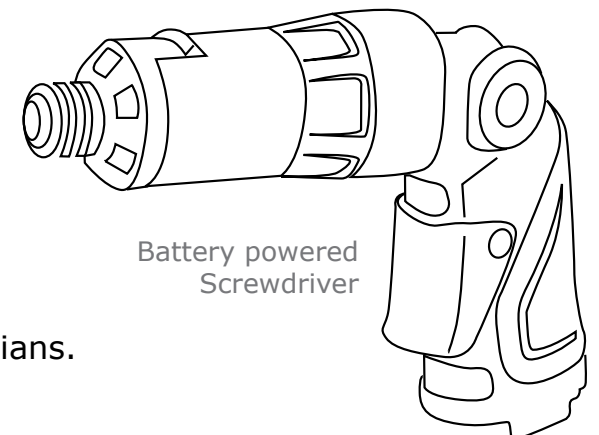
Battery powered
Screwdriver

NOTE

Installation of any IXM device should be performed by licensed electricians.

1 Turn Off Power

This protects the device being installed.
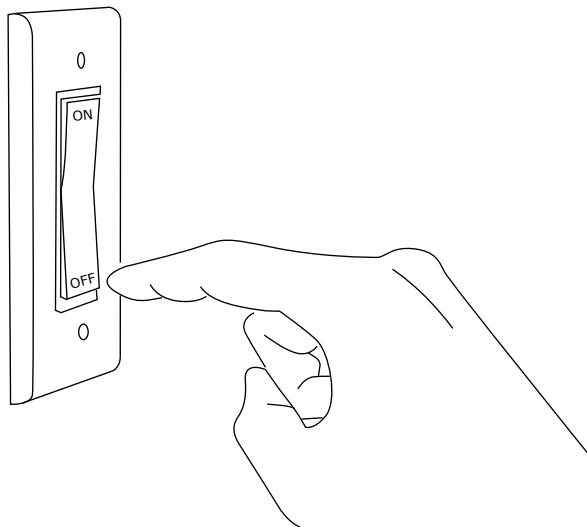
2 IXM INSTALL KIT

Remove the Metal Mounting Plate,
Wired Back Cover and Screws.

IXM INSTALL KIT
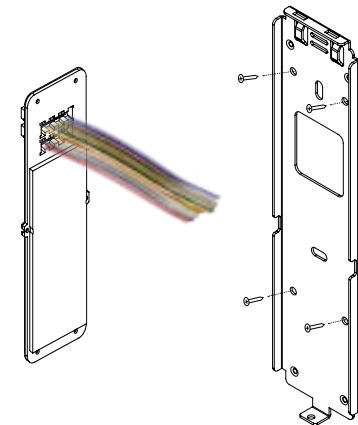
3 Mark the Screws Holes

INVIXIUM recommends the
use of the 4 circular holes for
mounting. Refer to diagrams on
page 8, 10 or 12 for actual
dimensions.

Ideal mounting height is 120 -
140 cm from the ground to
the top of the device. But
also be sure to align the
device in case of multiple
installations.

120-140 cms
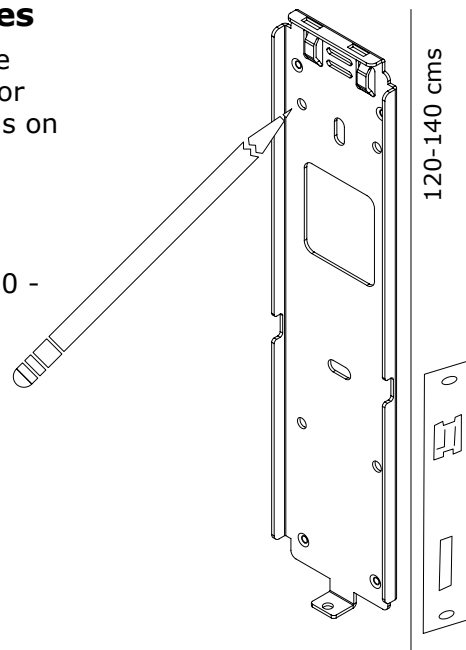
4 Drill Holes

Drill holes where marked and install the appropriate wall anchors
(not included).
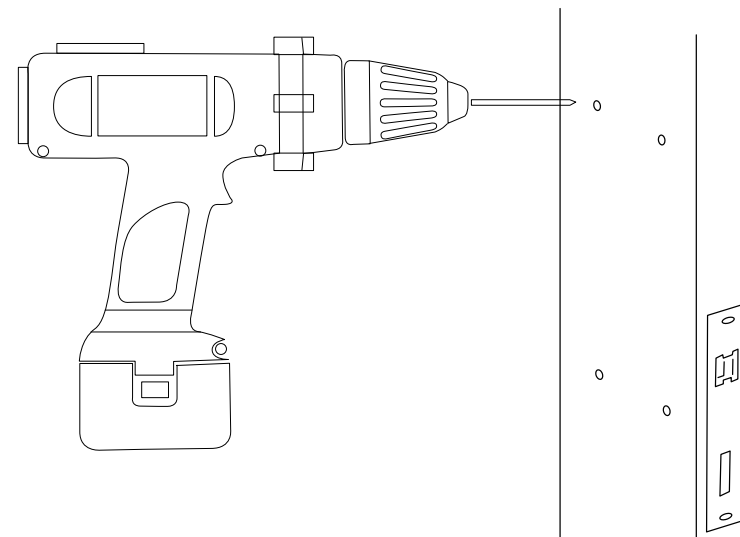
5 Get Wires

Get access to the installation wires either from behind the wall or from the wiring conduit. Feed wires through the square hole of the mounting plate.
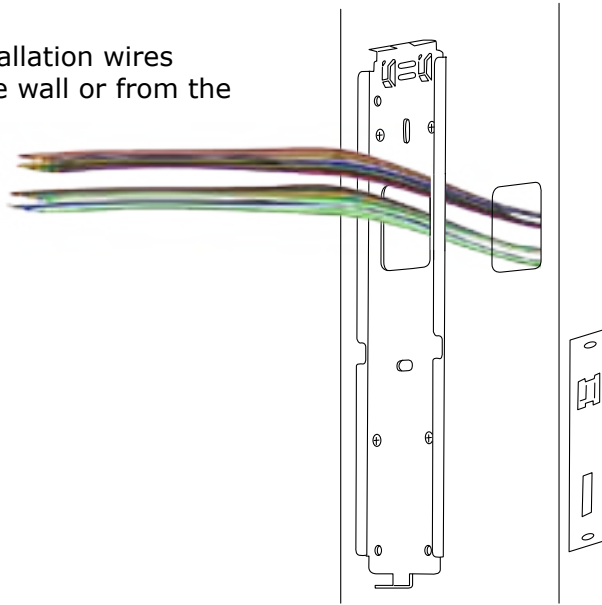
6 Insert Screws

Align the holes of the mounting plate with the wall anchors and attach the mounting plate with the screws provided in the IXM INSTALL KIT. INVIXIUM recommends the use of an electric or battery-powered screwdriver for this step.
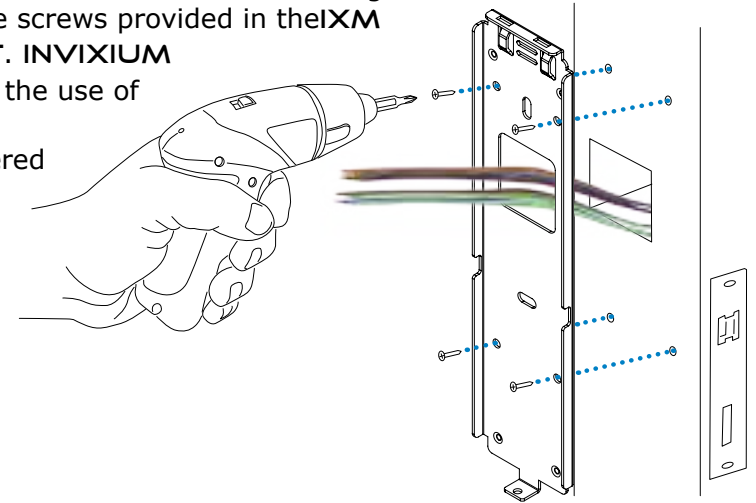
7 Identify the Connections:

1 Power & Grounding

DC Power	
VIN+	
VIN-	
EGND	

OR

PoE	
RJ-45 Receptacle	
EGND	

2 Communications

RS-485	
SGND	
RS-485+	
RS-485-	

OR

Ethernet	
RJ-45 Receptacle	

OR

RS-232	
RS-232_RX	
RS-232_TX	
SGND	

OR

USB

3 Operations

ACP	
ACP_LED1	
ACP_LED2	
ACP_LED_GND	
WDATA_OUT0	
WDATA_OUT1	
WGND	

OR

DAC	
RLY_COM	
RLY_NO	
DAC_IN1	
DAC_IN2	
DAC_OUT	

Refer to pages 20 & 21 for Power connections, pages 22-25 for Network or Serial Communication connections and pages 26 & 27 for Operation connections.

8A Make the Connections

Connect the required wires using the Dolphin® crimps provided in the IXM INSTALL KIT and a ratchet style crimping tool. Insert the two wires (no stripping required) into the open end of the crimp and then using the crimping tool, clamp down on the middle of the Dolphin® crimp.

Earth Ground Wire

Lug
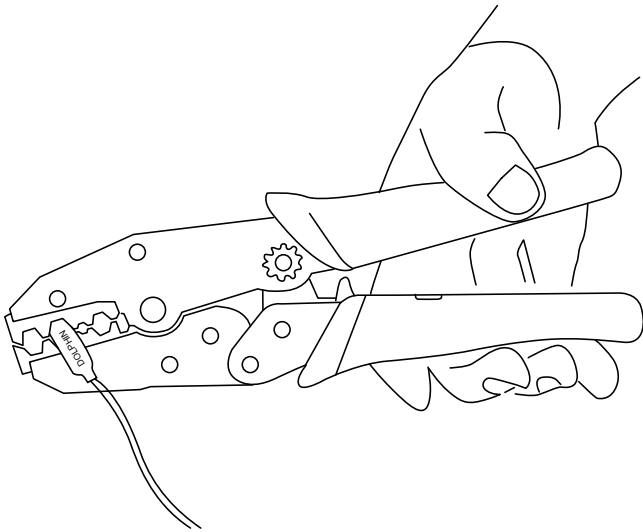
8B Connect Earth Ground

An Earth Ground wire with lug is also provided in the IXM INSTALL KIT. Connect the lug of the Earth Ground wire directly to the front of the mounting plate using one of the provided screws. Ensure that the lug is secured tightly as to make the necessary contact between the device and the mounting plate. Connect the other end of the Earth Ground wire to the Earth Ground connection of the install site using one of the Dolphin® crimps provided in the IXM INSTALL KIT.

Ensure all required connections are made to each device in the setup prior to turning on the power.

Checklist: ☐ Connections for Power & Grounds (DC or PoE)

☐ Connections for Communications (Ethernet, Wi-Fi, RS-485, RS-232 or USB)

☐ Connections for Operation (ACP or DAC)

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Copyright© 2013
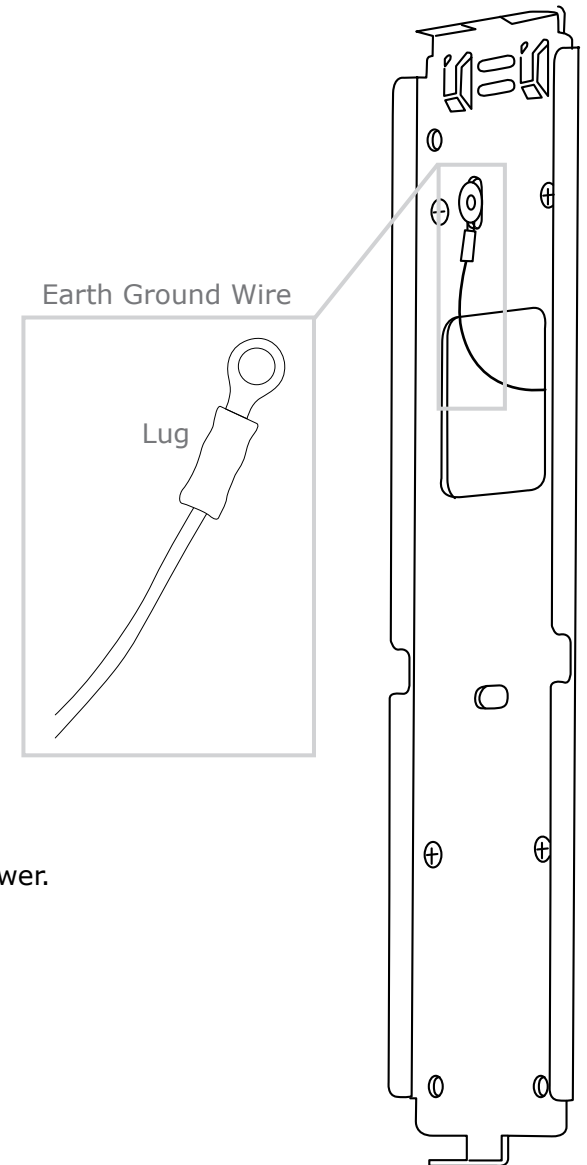
9 Attach the Device

Take the IXM device and unscrew the Temporary Back Cover, keeping the screws handy. Connect the Wired Back Cover to the back of the device by lining up the connectors. Secure the Wired Back Cover with the same screws. Next, hang the IXM device onto the mounting plate as shown in the series of diagrams below.
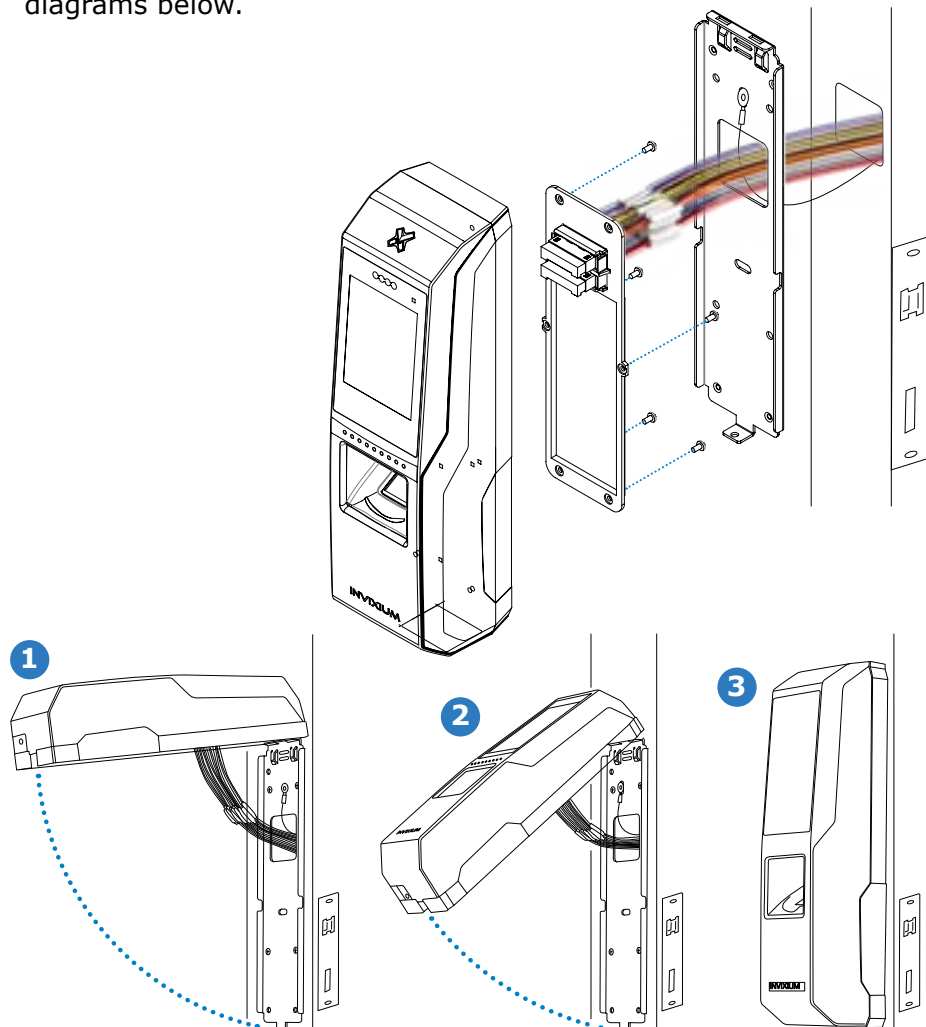
10 Secure the Device

Finally, secure the device on the bottom to the mounting plate with the Metal Mounting Plate screw provided in the IXM INSTALL KIT.

IXM TOUCH

UPS

DC Power Supply

VIN+

VIN-

EGND
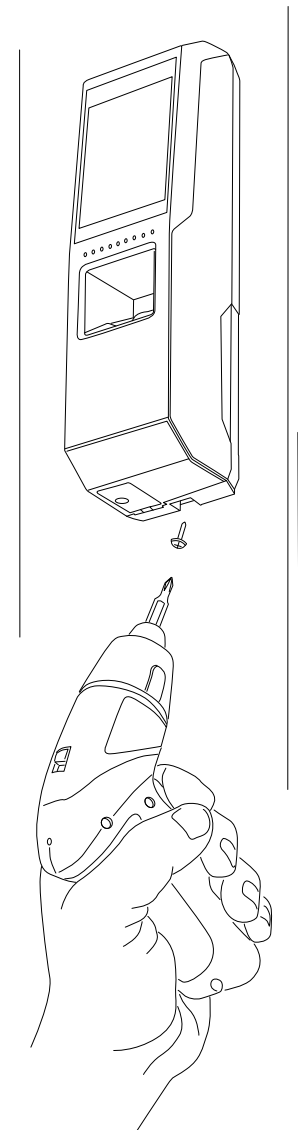
INVIXIUM recommends:

- 12-24 VDC regulated power supply
- Dedicated Power Supply for each **IXM** device (minimum 1 A)
- Use of a battery back-up or UPS with built-in surge protection
- If sharing power supplies, ensure that each device is supplied with minimum 1 A per device
  (ie. Powering two devices will require a supply with output current of 2 A)

Product Warranty is void if improper power (under or over) is supplied to the device.

WARNING

DC Power Supply

VIN+

VIN-

EGND

Connections for Power Over Ethernet (PoE)

Only available on **IXM SENSE** and **IXM TOUCH**

IXM TOUCH

Host PC

Router
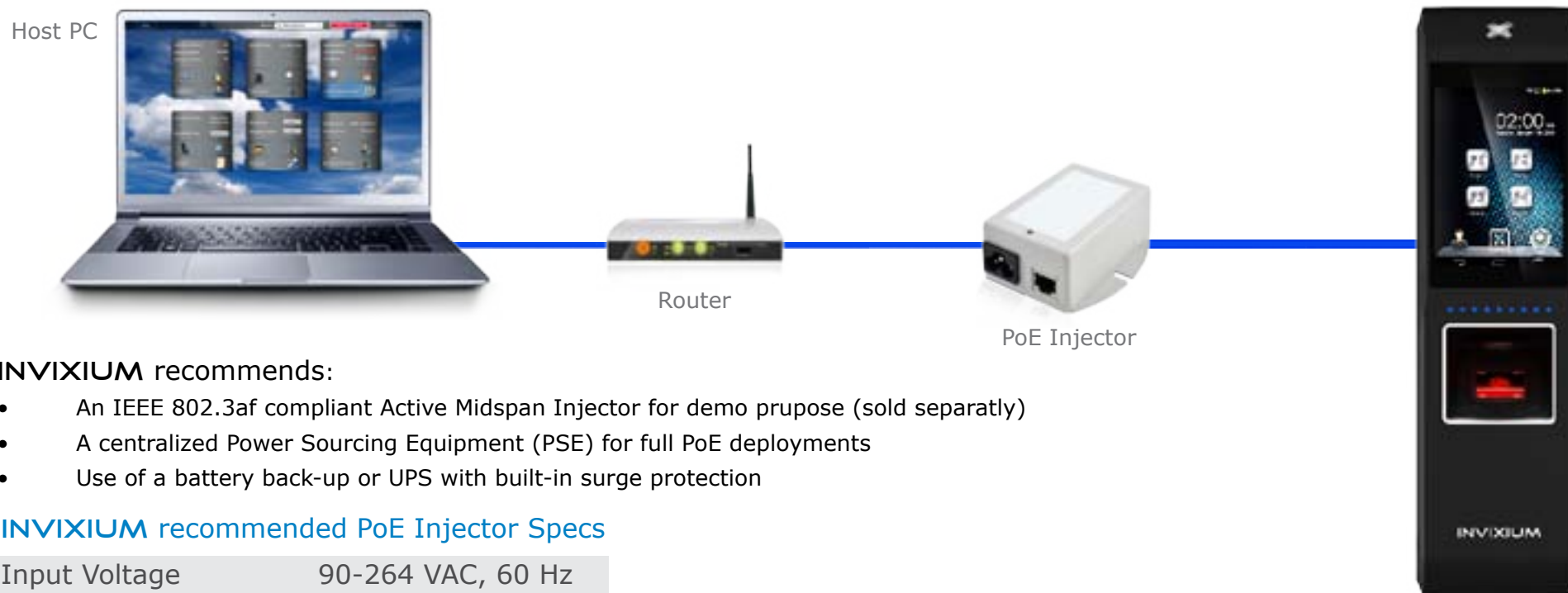
PoE Injector

INVIXIUM recommends:

*   An IEEE 802.3af compliant Active Midspan Injector for demo prupose (sold separatly)
*   A centralized Power Sourcing Equipment (PSE) for full PoE deployments
*   Use of a battery back-up or UPS with built-in surge protection

INVIXIUM recommended PoE Injector Specs

Input Voltage	90-264 VAC, 60 Hz
Input Current	0.4 A @ 100 VAC
Out Voltage	48 VDC
Output Current	0.32 A
Power	15.36 Watt

NOTE

Both IEEE 802.3af power transmission modes (A and B) are supported.

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Ethernet and Wi-Fi Communication

Ethernet:

- Hub/Router required
- CAT 5 cabling or better

WiFi:

- Wireless router to LAN/WAN
- 802.11b/g/n protocol
- WEP, WPA and WPA2 encryptions supported
- DHCP enabled by default

IXM WEB

Router connected to
LAN/WAN

IXM MYCRO

IXM SENSE

IXM TOUCH

RS-485 Network Communication

INVIXIUM recommends:

- Daisy chain configuration
- Maximum 31 devices in the network
- Last device in the chain network should be terminated (not included, refer to NOTE below for correct Resistor values)
- Connect the **IXM** device to PC via RS-485-to-Serial (RS-232 or USB) Converter
- Maximum cable length of 1200 m (4000 ft.) at 9600 bps baud rate

IXM WEB

RS-485 to USB
Converter

IXM TOUCH

IXM SENSE

IXM MYCRO
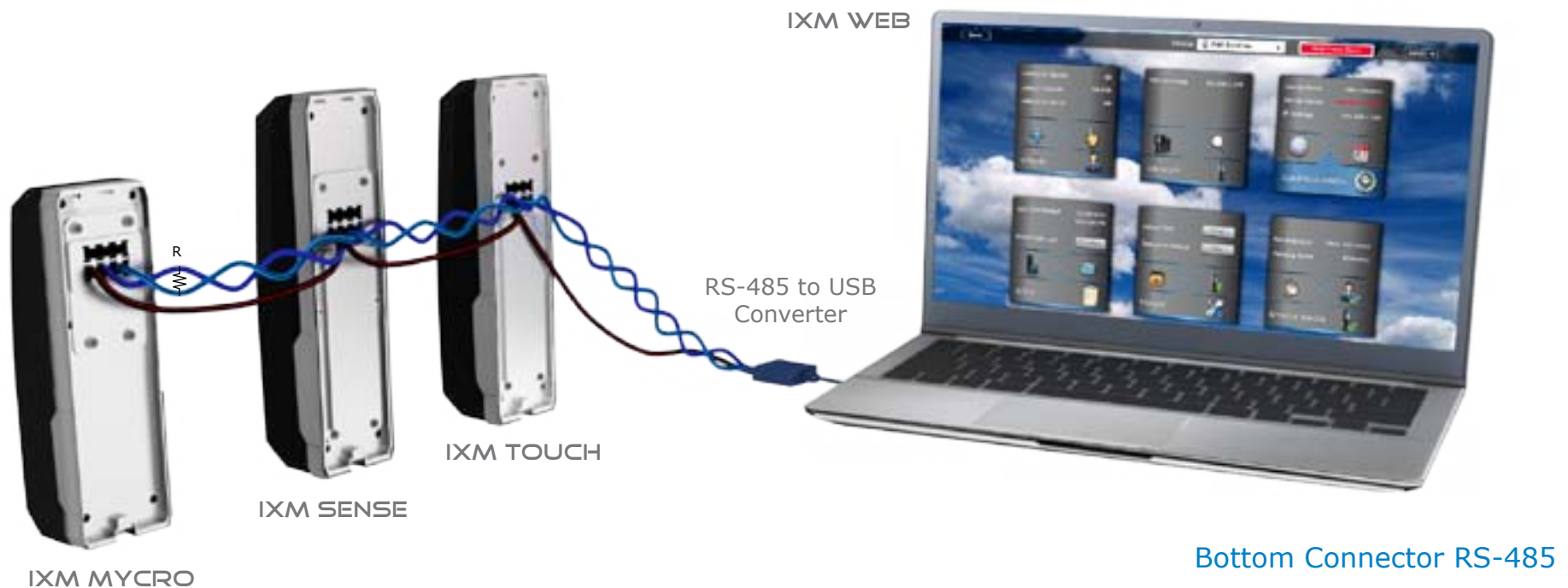
R = 120 ohms for Standard RS-485 Cabling
R = 100 ohms for CAT5/6 Cabling

NOTE

Bottom Connector RS-485

SGND	(6)
RS-485+	(8)
RS-485-	(10)

Serial Communication

IXM WEB

IXM TOUCH

SGND
RS232_RX
RS232_TX

1 2 3 4 5
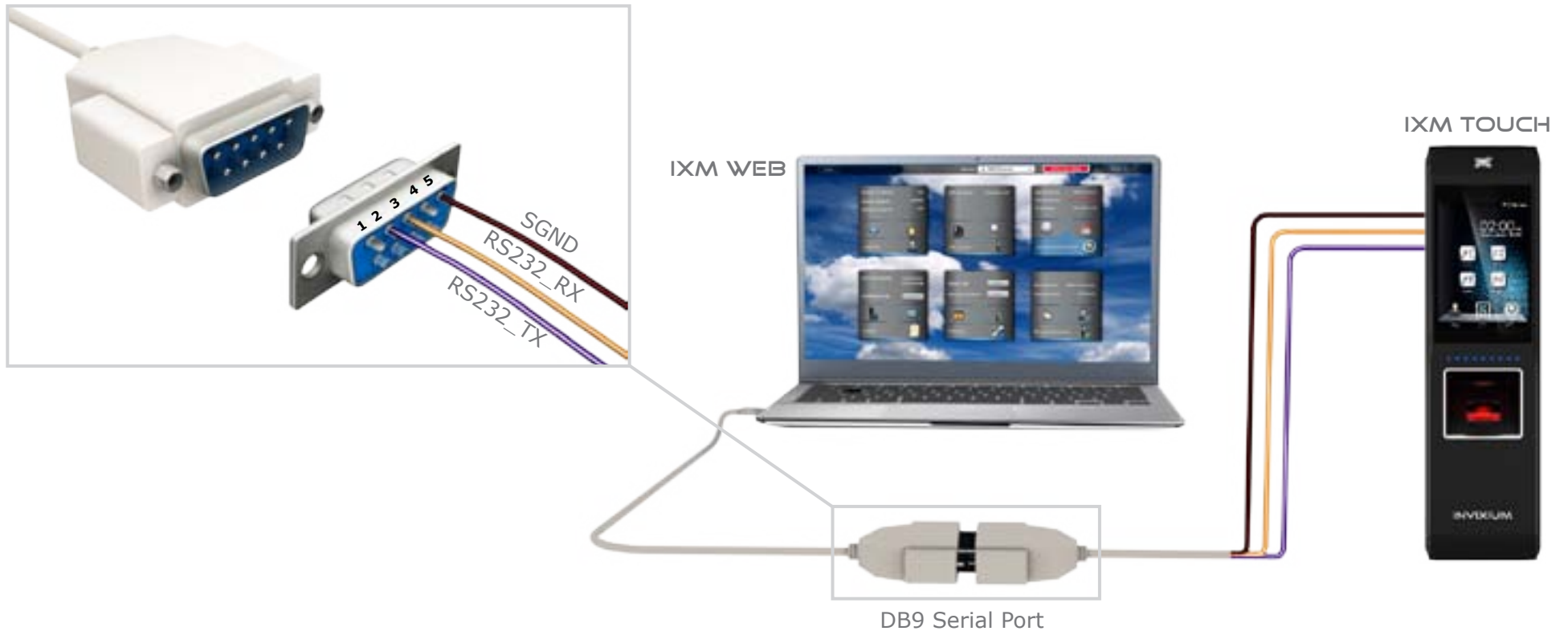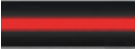
DB9 Serial Port

RS-232:

- Connect **IXM** device directly to the DB9 Serial port of the PC (if available)
- DB9 connectors and cables are not included

Bottom Connector RS-232

RS-232_RX   (2)

RS-232_TX   (4)

SGND   (6)

USB Communication

IXM SENSE

Host PC

Micro USB cable
(Provided in IXM
INSTALL KIT)

USB:

- Connect a Flash Drive via Micro USB OTG cable and perform functions like upgrading firmware, downloading transaction logs and configuration files

- USB port can also be used to connect to a PC running IXM WEB via Micro USB cable

- Driver installation is required and will automatically initiate once the device is connected

INVIXIUM

Access Control Panel Connections

IXM TOUCH

ACP

ACP_LED1

ACP_LED2

ACP_LED_GND

WDATA_OUT0

WDATA_OUT1

WGND

Top Connector LED

ACP_LED1	(2)	
ACP_LED2	(4)	
ACP_LED_GND	(6)	

Bottom Connector Wiegand

WDATA_OUT0	(2)	
WDATA_OUT1	(4)	
WGND	(6)	

ACP:

- LED and Wiegand connections available for ACP operation
- **INVIXIUM** recommends the use of Wiegand Output Data 0, 1 and GND connection

ACP_LED signals can be used if available on the Access Control Panel.

IXM devices support up to 2 wires + GND for LED status.

NOTE

Door Access Control Connections

IXM TOUCH

RLY_NO

RLY_COM

Snubber Diode

Door Strike

Door Strike Power Supply

DAC_IN1

DAC_OUT

Door Contact

DAC_OUT

DAC_IN2

Request to exit

*Max Relay rating=1 Amp @ 30 VDC
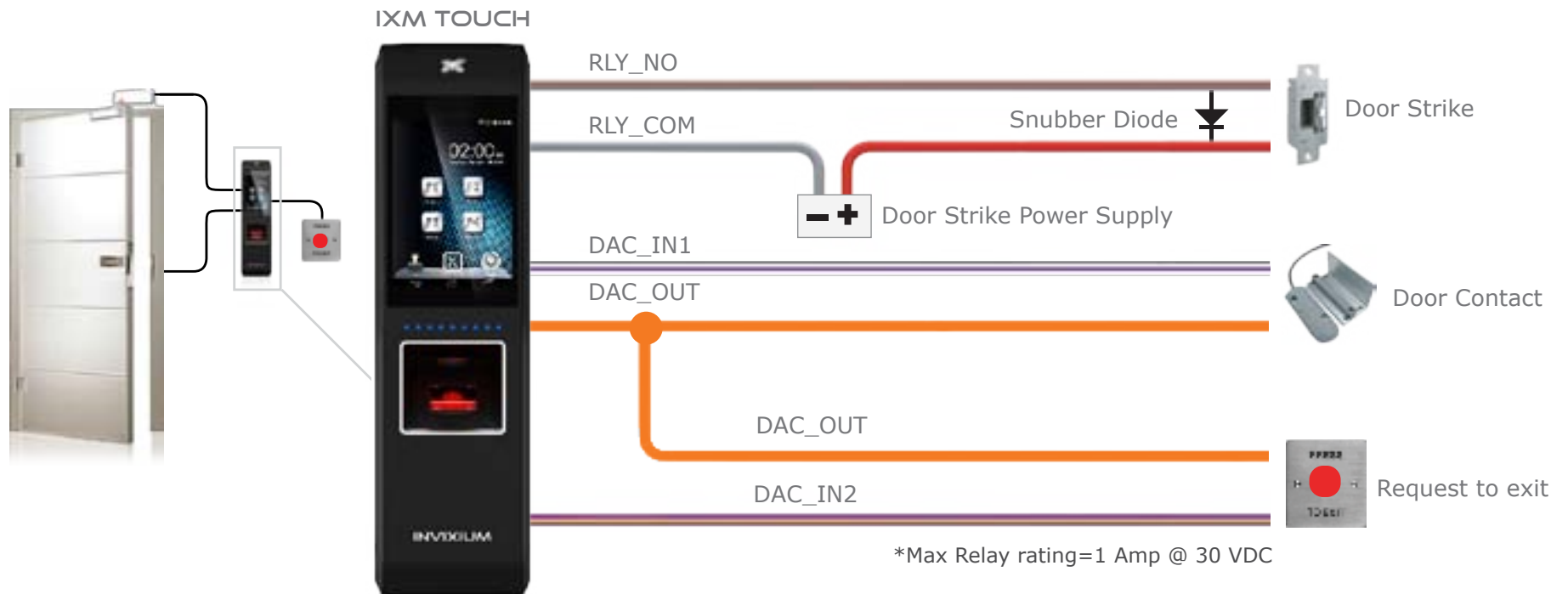
DAC:

- **INVIXIUM** recommends a separate power supply for Door Strike (not included)
- Snubber Diode required for Door Strike (not included)
- Internal Relay rated upto max of 1 A @ 30 VDC, external relay required if Door Strike draws more than 1A
- For motion detector instead of Request-to-Exit-button, connect the following signals:
  (1) DAC_OUT to the COM and (2) DAC_IN2 to the Relay NO of the motion detector

Bottom Connector DAC

RLY_COM

RLY_NO

DAC_IN1

DAC_IN2

DAC_OUT

Electrical Specifications

	Min. Value	Target Value	Max. Value	Recommendations
Power				
Voltage (V)	9.6	12	24	Use regulated DC power
Current (A)	0.7		1.2	
SPI's				
V_{IN_H} (V)	4	-	-	
V_{IN_L} (V)	-	-	1	
Pull-down Resistance (Ω)	-	10K	-	Internal 10K Ω pull-down resistor is present on SPI-1, SPI-2 & SPI-3 lines
Wiegand Inputs				
V_{IN_H} (V)	2	-	-	
V_{IN_L} (V)	-	-	0.8	
Pull-down Resistance (Ω)	-	10K	-	Internal 10K Ω pull-up is present on Wiegand input lines
SPO's				
V_{OUT_H} (V)	4.2	-	-	@IOH = -24mA
V_{OUT_L} (V)	-	-	0.44	@IOL = +24mA
Wiegand Outputs				
V_{OUT_H} (V)	4.5	-	-	
V_{OUT_L} (V)	-	-	0.8	
Pull-up Resistance (Ω)	-	4.7K	-	Wiegand Output is an open drain output. Internal 4.7K Ω pull-up is present on these lines
Internal Relay				
Current Rating (A)	-	-	1	@ 30VDC
			0.3	@125VAC
Switching Power (Resistive)	-	-	30Watt	DC
			30VA	AC
Switching Voltage (V)	-	-	110	DC

Software Installation System Requirements

To successfully install and run **INVIXIUM** software, the system must meet the following minimum requirements:

PC Workstation

- 1 GHz Intel® Pentium® 4 or equivalent
  (**INVIXIUM** *recommends 2.0 GHz or higher*)
- 1 GB RAM (**INVIXIUM** *recommends 2 GB RAM or higher*)
- Available COM or USB port
- Ethernet Card (*10/100 Mb Ethernet connections*)
- Monitor capable of displaying at least 1024 x 786 high colour resolution

Operating Systems

- Windows® 8 and 7 both 32-Bit and 64-Bit versions
- Windows® XP Service Pack 3 or higher
- Windows® Server 2012
- Windows® 2008 R2
- Windows® 2008
- Windows® 2003 R2

IXM WEB™

- 50 MB Free Hard disk space

Web Browsers (Client)

- Internet Explorer® version 8.0 or higher
- Google Chrome™ version 26.0 or higher
- Mozilla Firefox® version 20.0 or higher
- Apple Safari® version 5.1.7 or higher

Microsoft® .NET Framework

- Version 4.0 Minimum 850 MB Hard Disk for x86 systems and 2 GB Hard Disk x64
- Version 2.0 (500 MB) – only required for Windows® XP & Windows® 2003 R2

SQL Server™ 2008 Express Edition Service Pack 1

- 1 GB Hard Disk (**INVIXIUM** *recommends*)

Microsoft® Internet Information Services

- Version 7.5 or higher

Windows® Installer (Installs Automatically)

- Version 4.5 or higher

Software Installation Steps

Step 1 Plug the USB drive (found in **IXM INSTALL KIT**) into an available port on PC.

Step 2 Open the USB drive folder. Run **IXMWEB**.exe file. The **IXM WEB** Install Menu will initiate.

Step 3 **INVIXIUM** recommends selecting **INSTALL** option for rapid installation (< 3 minutes).

A Windows dialog may pop up to provide a warning about installing from an unreliable source.
Click "Yes" to proceed with the install.

NOTE

Step 4 During the installation process, the status of the install will be shown.

Step 5 When the installation is complete, click **EXIT**. IXM WEB icon is now on the desktop.

Step 6 Run IXM WEB to launch the application in the default web browser.

FCC Information to Users (English)

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

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

	Notice
	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

Informations de la FCC aux Utilisateurs (en Français)

Cet appareil est conforme à la partie 15 des règles de la FCC. Son fonctionnement est soumis aux deux conditions suivantes:

1. Cet appareil ne doit pas provoquer d'interférences nuisibles
2. Cet appareil doit accepter toute interférence reçue, incluant toute interférence pouvant causer un fonctionnement indésirable

	Notification
	Cet équipement a été testé et s'est avéré conforme aux limites pour un appareil numérique de Classe B, conformément à la partie 15 des règles de la FCC. Ces limites sont conçues pour fournir une protection raisonnable contre les interférences nuisibles dans une installation résidentielle. Cet équipement génère, utilise et peut émettre des fréquences radio et, s'il n'est pas installé et utilisé conformément aux instructions, il peut causer des interférences nuisibles pour les communications radio. Cependant, il n'existe aucune garantie que des interférences ne se produiront pas dans une installation particulière. Si cet équipement provoque des interférences nuisibles à la réception radio ou de télévision, ce qui peut être déterminé en l'éteignant et rallumant, l'utilisateur est encouragé à essayer de corriger l'interférence par une ou plusieurs des mesures suivantes: • Réorienter ou déplacer l'antenne de reception • Augmentez la distance entre l'équipement et le récepteur • Connecter l'équipement à une sortie sur un circuit différent de celui sur lequel le récepteur est branché • Pour obtenir de l'aide, consulter le revendeur ou un technicien radio / TV expérimenté

CE Information to Users (English)

All INVIXIUM devices have the CE mark for conformance with EMC Directive 89/336/EEC, and Low Voltage Safety Directive 73/23/EEC. Device with RFID components are compliant with R&TTE Directive 1999/5/EC, and are Class 1 Devices.

Informations de la CE aux Utilisateurs (en Français)

Tous les dispositifs de INVIXIUM ont le marquage CE de conformité à la directive CEM 89/336/CEE et basse tension de sécurité Directive 73/23/CEE. Les appareils avec composants RFID sont conformes aux Directive R & TTE 1999/5/CE. et sont des appareils de classe 1.

INVIXIUM

Industry Canada Information to Users (English)

This device complies with Industry Canada license-exempt RSS standard(s). Operation is subject to the following two conditions:

1.   This device may not cause interference

2.   This device must accept any interference, including interference that may cause undesired operation of the device

Industrie Canada Information pour les Utilisateurs (en Français)

Cet appareil est conforme avec Industrie Canada exempts de licence standard RSS (s). Son fonctionnement est soumis aux deux conditions suivantes:

1.   Cet appareil ne doit pas provoquer d'interférences

2.   Cet appareil doit accepter toute interférence, y compris celles pouvant causer un mauvais fonctionnement de l'appareil

Warning to Users (English)

	Warning
⚠️	Changes or modifications not expressly approved by **INVIXIUM** could void the user's authority to operate the equipment.

For Technical or Customer Support issues, please contact your Local Authorized Reseller.

For all other inquiries, please contact us at Experience@invixium.com

For more detailed information, please visit the links below:

INSTALLATION GUIDE
www.invixium.com/installation

INGUIDE (online copy)
www.invixium.com/inguide

USER'S GUIDE
www.invixium.com/userguide

INVIXIUM ACCESS

Enjoy the Experience.

Some features may vary based on device models.
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