# ViewPoint Professional Series

# VPx Sensor User Manual

Document No. DV3412

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Rev. Draft

# Contents

## 1.0   Figures

## 2.0  Introduction

The VPx sensor integrates with Mesa's ViewPoint 1.1 or above software solution. The VPx 900 MHz sensor operates in a 902 to 928 MHz range.

This device complies with Part 15 of the FCC Rules. Sensor 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.

Ex.
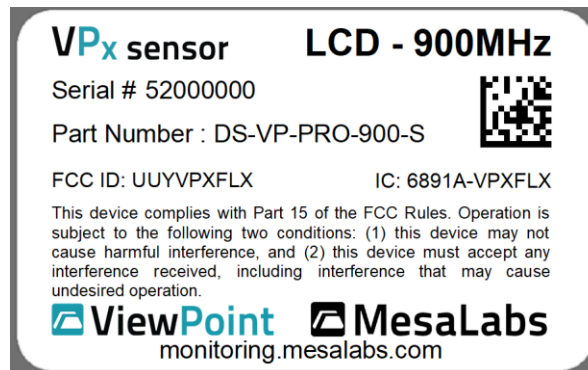


Warning: This unit is not explosion proof and is not rated for intrinsically safe installations.

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## 2.1   FCC NOTICE

**WARNING**

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.

In order to maintain compliance with FCC regulations, shielded cables must be used with this equipment. Operation with non-approved equipment or unshielded cables is likely to result in interference to radio and TV reception. The user is cautioned that changes and modifications made to the equipment without the approval of manufacturer could void the user's authority to operate this equipment.

**RF Exposure Notice:** To satisfy RF exposure requirements, this device and its antennas must operate with a separation distance of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter.
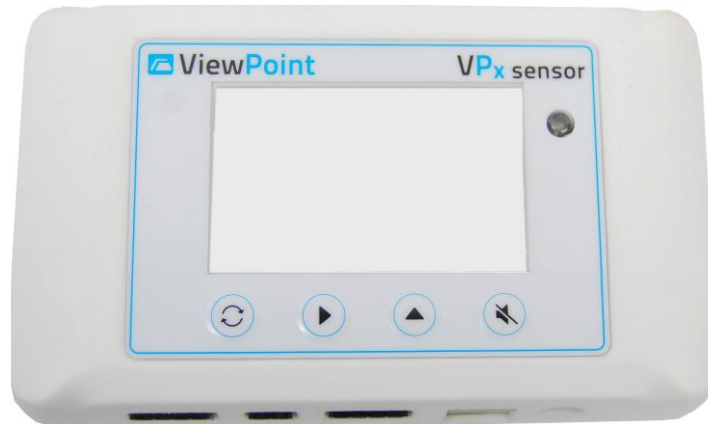
## 2.2   Industry Canada

This device contains licence-exempt transmitter(s)/receiver(s) that comply with Innovation, Science and Economic Development Canada's licence-exempt RSS(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.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes:  (1) l'appareil ne doit pas produire de brouillage, et   (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

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# 3.0   Features

## 3.1   Buttons
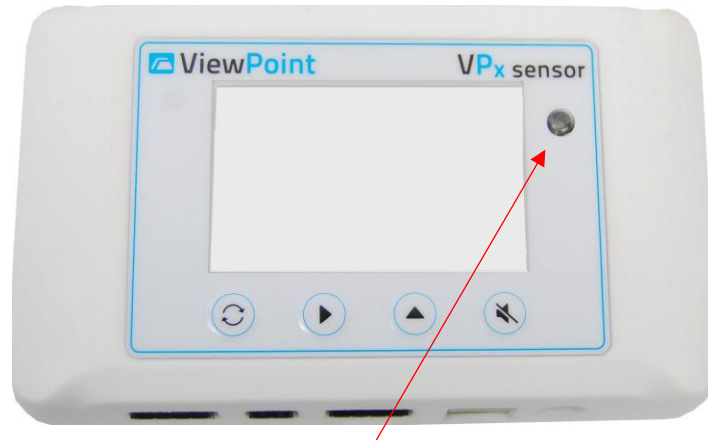


**3-1 VPx Sensor with LCD**

| | | |
|---|---|---|
|  | Cycle | Used for cycling through screens or menu options |
|  | Select | Select menu option |
|  | Previous / Next | Return to previous screen or Next option |
|  | Mute | Mute local Audio Visual Alarms |

**3-2 VPx Sensor with LCD Buttons**

## 3.2   Audio Visual Alarm

VPx Sensor has local Audible Visual alarms to notify individuals of sensor alarm states even with no access to the Viewpoint software.

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LED for Visual Alarm

To mute local Audible and/or visual alarms, press the [icon] button to silence the local alarm **ONLY.*** To perform corrective action for alarm states, do so in the ViewPoint software.

*Note: This is only possible when the sensor is in an alarm state. It cannot be used to mute future alarms.

Muting the sensor with the [icon] button on the device will only mute that alarm. If, after muting the local alarm, the sensor comes back into and then goes back out of range again, then the local alarm will be triggered again and will need to be muted again if desired.
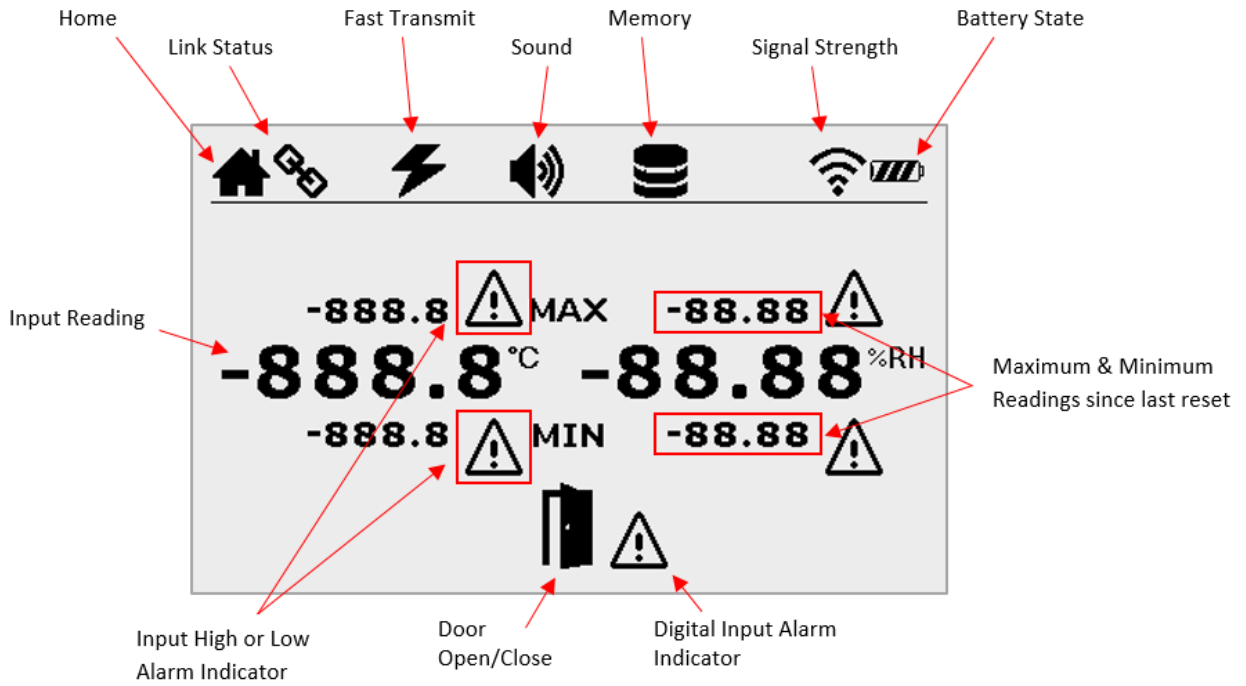
## 3.3  Input Types

| Parameter | Application |
|---|---|
| **Temperature** | -200 °C to + 250 °C (Type K thermocouple, up to +538 °C) |
| **Humidity** | 0% to 100% (Temp 5 °C to +40 °C) |
| **CO₂** | 0% to 20% |
| **O₂** | 0% to 25% (use 4-20 mA sensor and third-party sensor) |
| **Door Status** | Open / Closed Door |
| **Horizontal Motion** | Platelet Incubator |
| **Dry Contact** | Normal v. Alarm State (Normally Closed or Open) |
| **Power** | 100 to 240 V (Detect Power Outages) |
| **DC Voltage** | 0 to 5 V, 0 to 10 V, 0 to 20 V, 0 to 30 V |
| **4-20 mA** | Various sensors with powered 4-20 mA interface |
| **Differential Pressure** | -1.0 to + 1.0 inches H20 /-.25 to +.25 / -.5 to +.5 |
| **Particle Count** | Utilizes 4-20 mA Sensor Output |
| **Leak Detection** | Detect water in critical areas |

Table 3-1 Input Types

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# 4.0  Menus

## 4.1  Home



**4-1 Home Screen**

## 4.2  Min Max

To get to the Min-Max screen, start at the Home screen,

|  | **Press** | **Result** |
|---|---|---|
| **Step 1** | ↻ x1 | Min Max Screen |

**Table 4-1 Access Min Max Menu Procedure**

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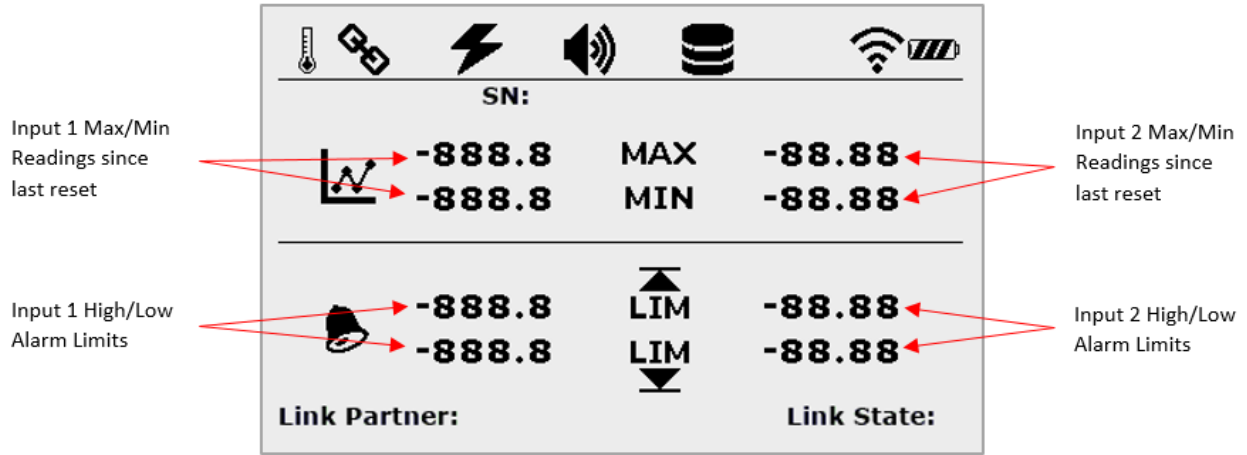
**4-2 Min Max Screen**

## 4.3  Clear Min Max

| | Press | Result |
|---|---|---|
| **Step 1** | ↻ x2 | Option Screen |
| **Step 2** | ▶ x1 | Select Clear Min Max |
| **Step 3** | ▶ x1 | Confirm Clear Min Max |

**Table 4-2 Clear Min Max Procedure**

## 4.4  Diagnostics Menu

The VPx sensor has onboard diagnostic capabilities that can assist in a variety of setup or troubleshooting scenarios.

To access the "Diagnostics" screen, start at the Home screen:

| | Press | Result |
|---|---|---|
| **Step 1** | ↻ x2 | Option Screen |
| **Step 2** | ▲ x1 | Move ➡ up to "Diagnostics" |
| **Step 3** | ▶ x1 | Diagnostics Screen |

**Table 4-3 Access Diagnostics Screen Procedure**

**4-3 900 MHz Diagnostics Screen**

900 MHz — Radio Type: — NET ID: — 900 MHz Network Identification
RTD, Voltage, Current — CH1 Type: — HOP Table: — 900 MHz, Mobile Access, SpectraLink
RTD, Voltage, Current — CH2 Type: — LP: — Link Partner
Transmit Rate — TX Rate: — RSSI: — Received Signal Strength Indicator
Last Transmission — Last TX: — HOP CNT: — Hop Count to reach destination
Next Transmission — Next TX: — Link State: — Is Sensor Connected to Access Point
Read-only Memory Writes — EEPROM Wr: — Link Loss: — Lost Link count
Flash Memory Writes — FLASH Wr: — NO ACK: — No Acknowledgement from Access Point
Data Packets Logged — Logged Pkts: — Retry: — Connection Retries
Free Memory — Free Mem:
Sensor Serial Number — SN:                FW v. — Firmware Version



**4-4 Wi-Fi Diagnostics Screen**

Wi-Fi — Radio Type: — MAC: — Sensor's MAC Address
RTD, Voltage, Current — CH1 Type: — LP: — Link Partner
RTD, Voltage, Current — CH2 Type: — RSSI: — Received Signal Strength Indicator
Transmit Rate — TX Rate: — AP Auth ERRs: — No. of Errors Communicating with AP
Last Transmission — Last TX: — DHCP Mode: — Dedicated IP or DHCP Mode
Next Transmission — Next TX: — DHCP RSP: — Reserved IP Address on the Network
Read-only Memory Writes — EEPROM Wr: — Link State: — Is Sensor Connected to Access Point
Flash Memory Writes — FLASH Wr: — Link Loss: — Lost Link count
Data Packets Logged — Logged Pkts: — NO ACK: — No Acknowledgement from Access Point
Free Memory — Free Mem: — Retry: — Connection Retries
Sensor Serial Number — SN:                FW v. — Firmware Version

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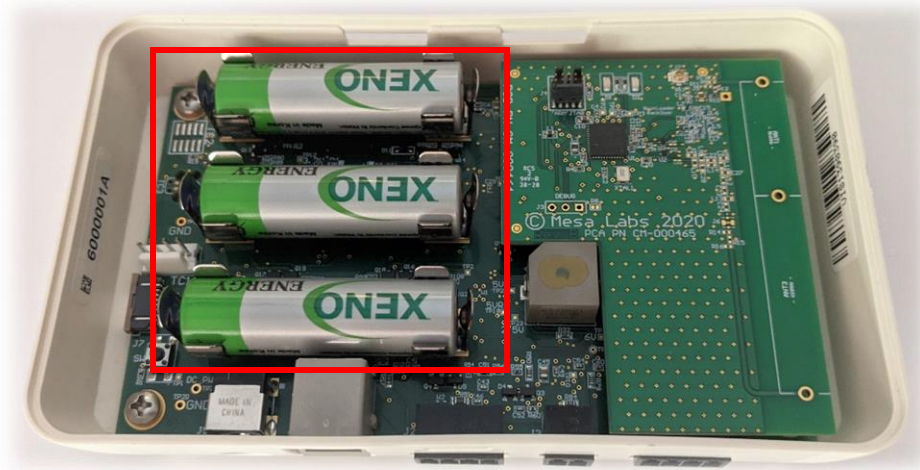
## 5.0   New Battery

Note: Use only 3 3.6 V Lithium-Ion Batteries (P/N 166112).

### 5.1   Battery Replacement

To replace the (3) 3.6V lithium batteries in the VPx sensor, press down on the two recessed areas on the rear plate of the sensor and pull back the back cover to open the unit.



5-1 VPx Sensor Top and Back View

5-2 VPx Sensor Internal View (Back Cover Removed)

After replacing the batteries, it is necessary to reset the battery level indicator. To reset the battery level indicator, start from the Home screen:

|  | **Press** | **Result** |
|---|---|---|
| **Step 1** | ⟳ x2 | Option Screen |
| **Step 2** | ▲ x2 | Move ➡ up to "New Battery" |
| **Step 3** | ▶ x1 | New Battery Confirmation |
| **Step 4** | ▶ x1 | "Confirm" New Battery |

Table 5-1 Reset Battery Level Display Procedure (LCD)

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## 6.0   Ports

The VPx Sensor has 4 I/O ports that can accept 2 channels of RTD temperature probes, 2 channels of general-purpose analog probes: 4-20 ma, 5v, 10v, 20v and 30v, a discrete switch/contact input, and one I2C input for a Humidity/Temperature probe.
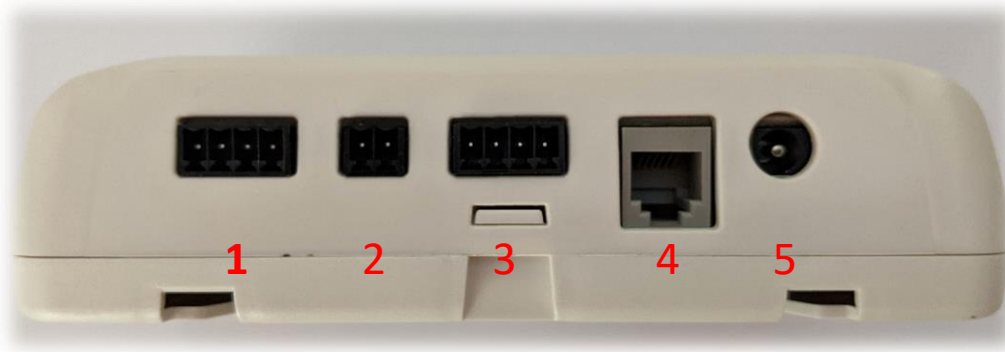


6-0 VPx Sensor Bottom Side View Showing Ports

VPx Sensor Ports Defined:

| Port | Channel | Description |
|---|---|---|
| 1 | 1 | 4-Wire RTD<br>4-Wire Cryo RTD<br>DC Voltage - 0 to 5 V, 0 to 10 V, 0 to 20 V, 0 to 30 V<br>DC 4-20 ma - Various sensors |
| 2 | Discrete | Door Status - Open / Closed Door<br>Dry Contact - Normally Closed or Open |
| 3 | 2 | 4-Wire RTD<br>4-Wire Cryo RTD<br>DC Voltage - 0 to 5 V, 0 to 10 V, 0 to 20 V, 0 to 30 V<br>DC 4-20 ma - Various sensors |
| 4 | 1 and/or 2 | Humidity/Temperature |
| 5 | N/A | External Power - 5V 1A AC/DC Wall Mount Adapter (TWA22 – Power Supply) |

Table 6-1 VPx Sensor Bottom Side View Showing Ports

Connections for RTD Probes:

| Channel | Pin | Description |
|---|---|---|
| 1 & 2 | 1 | RTD – black wire |
| | 2 | RTD – black wire |
| | 3 | RTD – white wire |
| | 4 | RTD – white wire |

Table 6-2 VPx Sensor RTD Probe Pin Assignments

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Connections for 4-20 ma, 5v, 10v and 30v Inputs:

| Channel | Pin | Description |
|---------|-----|-------------|
| 1 & 2 | 1 | Not connected |
| | 2 | 4-20 ma in; 5,10,20,30v in |
| | 3 | Ground |
| | 4 | Not connected |

<div align="center">Table 6-3 VPx Sensor 4-20 ma, 5v, 10v and 30v Inputs</div>

# 7.0   Specs

All specs below are estimated ranges for the particular inputs. Please refer to the probe specific documentation for the exact ranges and tolerances.

## 7.1   RTD

The VPx sensor utilizes (2) 1,000 Ohm RTDs to cover -200°C to +140°C

**4-Wire RTD – (P/N CM-000188)**

Range: -90°C to +140°C

Tolerance: ±0.5°C @ -25°C to +45°C (±1.0°C @ -90°C to -26°C and +46°C to +140°C)

**4-Wire Cryo RTD – (P/N CM-000189)**

Range: -200°C to +70°C

Tolerance: ±1.0°C over full operating range

## 7.2   Temperature and Humidity

VPx monitors temperature and humidity with an external probe.

**Temperature and Humidity Probe – (P/N 72112)**

Range: +5°C to 40°C and 10% RH to 90% RH

Accuracy: ±0.5°C and ±3% RH

## 7.3   Power

VPx sensor makes use of a 5V 1A AC/DC Wall Mount Adapter (TWA22 – Power Supply)

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## 8.0   LCD Icon Legend

| Icon | Description |
|---|---|
| ⚠ | Alarm, above/below alarm limits |
| 🔔 | Alarm, limits (Min-Max screen) |
| 🔋 | Battery Full |
| 🔋 | Battery 2/3 |
| 🔋 | Battery 1/3 |
| LOW | Battery Low |
| 🔌 | A/C Power connected |
| 🏠 | Home |
| ⚙ | Settings |
| 🔗 | Link broken |
| 🔗 | Link connected |
| 〽 | Min Max |
| ⚡ | Fast Transmit |
| ▬ | Memory 1/3 full |
| ▤ | Memory 2/3 full |
| 🗄 | Memory full |

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| | |
|---|---|
| | Sound On |
| | Sound Muted |
| | Icon for Min/Max screen |
| | Motion (not moving) |
| | Motion (Moving) |
| | Contact |
| | No Contact |
| | Door Open |
| | Door Closed |
| | Signal Quality (no signal) |
| | Signal Quality – Poor |
| | Signal Quality – Fair |
| | Signal Quality – Good |
| | Signal Quality – Best |

**Table 8-1 LCD Icon Legend**

# 9.0   Operation Compatibility
## 9.1   DS-VP-PRO-900-S Radio Network Compatibility

The DS-VP-PRO-900-S supports two radio networks: "ViewPoint G5 Compatibility" and "CheckPoint G4 Compatibility".  The sensor can be configured for either mode using the VPx Configuration Utility.  To use the utility to set the mode, first click the "Read All" button, navigate to the Wi / Radio tab and select an option in the "Compatibility Mode" field.



Click the "Apply Radio + Flexband Config" button.

### 9.1.1   ViewPoint G5 Compatibility

Select "ViewPoint G5 Compatibility" mode when using the sensor with a ViewPoint radio network and when the sensor will be communicating with a ViewPoint AP.

For "ViewPoint G5 Compatibility " (G5/G6 Mode)    (902.62 to 927.62 MHz):

| Hop Table | Frequency Range MHz |
|---|---|
| Main (0) | 906.12 to 924.12 |
| Low (1) | 902.62 to 914.87 |
| High (2) | 914.87 to 927.62 |

Make sure to select the hop table that the radio network is using.  The default hop table used is 0 – Main.  Use the other hop tables in case there is interference issues or to segregate between radio networks.

### 9.1.2   CheckPoint G4 Compatibility

Select "CheckPoint G4 Compatibility" mode when using the sensor with a CheckPoint radio network and when the sensor will be communicating with a CheckPoint AP.

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For "CheckPoint G4 Compatibility " (G4 Compatibility Mode)     (903.000 to 926.000 MHz):

| Hop Table | Frequency Range MHz | Num Transmitting Channels |
|---|---|---|
| Standard (0) | 906.000 to 924.000 | 58 |
| Full (1) | 903.000 to 926.000 | 58 |
| Low (2) | 903.000 to 913.325 | 58 |
| High (3) | 914.773 to 926.000 | 58 |

Make sure to select the hop table that the radio network is using.  The default hop table used is 0 – Standard.  Use the other hop tables in case there is interference issues or to segregate between radio networks.

## 10.0 Accessory and Probe List

| Input/Accessory Type | Part Number |
|---|---|
| Standard RTD | CM-000188 |
| Cryo RTD | CM-000189 |
| Temp/Humidity (Snap) | 72112 (requires CM-000164) |
| Analog Cable | CM-000284 |
| Door Switch, Motion, Alarm Contact | CM-000183 |
| 3.6V Li Batteries | 166113 |
| AC Adapter | TWA26 |

Table 10-1 Input and Accessory Type Part Numbers

## 11.0 VPx Sensor Models

| VPx Sensor Model | Part Number |
|---|---|
| ViewPoint Professional 900MHz Sensor | DS-VP-PRO-900-S |

Table 10-1 VPx Models

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