

WaveNet

Wireless Gas Monitoring System

SenSmart 7000 Monitor



"WaveLink Receiver"



The "WaveNet" Wireless Monitoring System consists of 1-32 battery-powered **SenSmart 7000** "WaveCast Monitors" (WCM) and at least one 32 channel "WaveLink Receiver" (WLR). An optional module is available to add data logging, second wired and wireless Modbus port, plus a Wi-Fi port with web-server. The Wi-Fi allows remote HMI functionality via any web enabled device. This means WaveLink Receiver allows responders to view real time and historical data on smart phones and tablet devices prior to entering a hazardous area! This new generation WaveNet wireless system is designed for easy deployment of both fixed installation and temporary site monitoring.

FEATURES HIGHLIGHT - SenSmart 7000

- Supports single or dual and local or remote "Smart" temperature compensated sensor modules
- Alarms, gas range and other parameters are stored in the Smart Sensor module and may be edited by the user. Changes are periodically broadcast to the WaveLink Receivers to insure identical readings at all locations
- Allows restore of factory settings from Smart Sensor plus backup and subsequent restore of user settings if parameters are accidentally lost
- Password protected with LOW and HIGH security levels
- Easy to change lithium battery
- Compatible with low powered LEL infrared sensor
- Three adjustable independent alarm levels per sensor
- Readouts include Eunits, bar graphs, 1-hour trends
- "Legacy" setting makes **SenSmart 7000** devices compatible with all RC Systems controllers
- Magnetic mount option available
- License free 900MHz or 2.4 GHz FHSS client and server network
- 5 front panel LEDs indicate alarms and communication status
- Suitable for Division 2 hazardous locations

WaveLink Receiver (WLR)

- Displays monitored readings and alarms from 1 to 32 **SenSmart 7000** Monitors
- Requires little setup since all channel parameters are periodically received from **SenSmart 7000** Sensors via the wireless network
- Includes 8 programmable 5-amp relays to control lights, horns, fans etc
- "Acknowledge" feature allows audible devices to be silenced during alarms
- Graphic LCD displays large Eunits and bar graph for each active channels
- Clock / Calendar time and date stamps "Event Log" sensor items including Power-Up, Alarms, Calibration and Com Errors
- 10-30 VDC or 100-240 VAC standard power. Easy to solar power
- Offers both 900 MHz and 2.4 GHz FHSS models
- Touch and magnetic keypads are standard for non-intrusive operation
- Password protected with LOW and HIGH security levels

10-0410 MULTI-INTERFACE OPTION

- Wi-Fi access point for web enabled devices to view WaveLink embedded webpages including real time and historical sensor readings, channel parameters, and remote setup capability
- Data logger stores more than 1 year of readings and alarm history
- RS-485 and wireless Modbus Slave port for transmitting WaveNet data to our ViewSmart 1600+ and ViewSmart 6400 Controllers

ViewSmart 6400 Controller

"The Art of Gas Detection" - Built with our Proven ST-72 Controller



Rack/Panel Mount



Nema 4X Compact Fiberglass

The **ViewSmart 6400** controller provides simultaneous display and alarm functions for up to 64 input variables. 16-32-48-64 channel display modes, and I/O modules arranged in groups of 16 channels, allow economical configuration of systems. This easy-to-configure, user friendly controller is ideal for centralizing display and alarm functions in critical multipoint monitoring applications.

CSA certified for Division 2 potentially hazardous areas (Division 1 model = ST-72XP)

FEATURES

- 16-32-48-64 channel display modes accept inputs from many sensor types and signal ranges
- Ethernet with Modbus® TCP Master/Slave and web server for configuration and monitoring
- RS-485 serial ports allow simultaneous Modbus Master/Slave operation. Two Standard ports and two optional isolated ports
- Wireless Modbus interface available
- Three independent alarm levels per channel. "Relay Acknowledge" feature allows silencing of external audible devices during alarm conditions
- QVGA Color LCD displays monitored data as trends, bar graphs and engineering units. Readouts change colors to indicate alarms
- Five standard SPDT 5-amp alarm relays for HORN and FAULT, plus three programmable alarm relays
- Options such as Bridge Sensor Inputs, 4-20mA inputs, 4-20mA outputs, discrete and programmable alarm relays are supported via an I2C expansion bus
- Cal Mode offers push-button zero/span calibration for direct sensor interface applications
- Authorization Mode allows locking of critical config variables
- Data Logger onto SD card allows recording of minimum, maximum and average values for one year
- Power supply options 150, 600, and 1200 Watts
- Magnetic keypad standard for non-intrusive operation in potentially hazardous locations
- Enclosures include wall mount NEMA 4X - Non-Metallic - 316 SS, NEMA 7 and Rack/Panel Mount

SPECIFICATIONS

ANALOG INPUTS (OPTIONAL)

12bit 4-20mA into 150 ohms input impedance; includes +power supply terminals for each channel for routing power to two or three wire transmitters

SERIAL PORTS

Modbus Master and Slave RS-485 ports equipped with Tx / Rx LEDs

ETHERNET PORT

Modbus TCP Master/Slave port with web server

ALARM RELAYS

Five 5 amp 30VDC or 250VAC resistive Form C

ANALOG OUTPUTS (OPTIONAL)

10 bit 4-20mA output. Max load 800 ohms with nominal 24VDC power supply

DISPLAY

QVGA 320 x 240 pixel graphic LCD with backlight displays bar graphs, trends and engineering units in color

Five discrete LEDs indicate alarm status for five standard alarm relays

AMBIENT TEMPERATURE RANGE

-25 – +60 degrees C

POWER SUPPLY

10 – 30VDC (24VDC nominal) 12 Watts max required by ST-72

10-0172 option = 150 Watt

10-0307 option = 600 Watt

APPROVALS

CSA C22.2 No 1010.1 and C22.2 No.152 for combustibles and ISA S82.02

UL 1604 / C22.2 No 213 (NEMA 4X = Division 2 Groups A,B,C,D,)

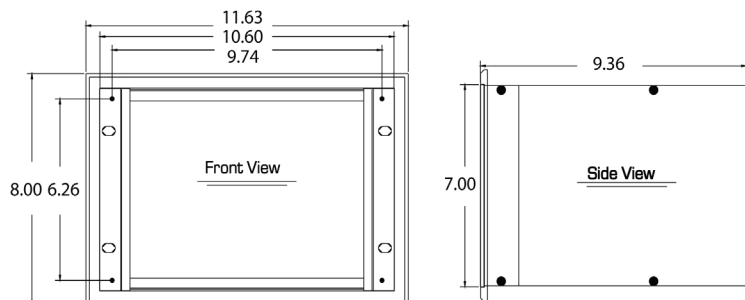
EN55011 and EN61000 (CE Mark)

Model ST-72XP 72-06 = NEMA 7 Division 1 Group B,C,D

MODELS

- 72-01 ViewSmart 6400 1/2 width 19 inch rack / panel mount (shown below)
- 72-02 ViewSmart 6400 Full width 19" rack mount (1, ST-72, 64 channels)
- 72-03 ViewSmart 6400 Full width 19" rack mount (2, ST-72's, 128 channels)
- 72-04 ViewSmart 6400 NEMA 4X large fiberglass wall mount (shown below)
- 72-05 ViewSmart 6400 NEMA 4X 316 SS wall mount
- 72-06 ViewSmart 6400 NEMA 7 explosion-proof wall mount
- 72-07 ViewSmart 6400 NEMA 4X compact fiberglass wall mount

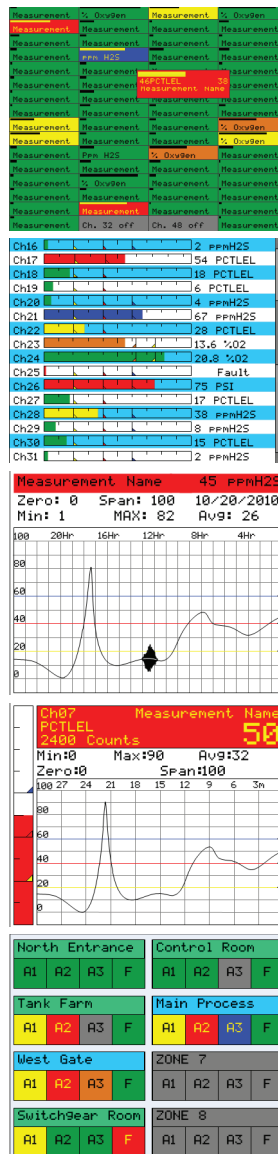
ViewSmart 6400 Rack/Panel Mount



Note: Panel cut-out = 7.1 X 9.3

ALL DIMENSIONS IN INCHES

RCS
SYSTEMS
"The Art of Gas Detection"



MAIN DATA SCREEN

Displays all active channels on the same screen. Channel configurations include 16,32,48 and 64 (shown) active channels. Cells indicate alarm status by color.

BAR GRAPH SCREEN

Displays 16 channels at a time. Side scroll bar controls which group of 16 channels are visible. Bar graphs change colors to indicate alarm status.

24 HOUR TREND SCREEN

Displays 1 channel at a time as most recent 24 hour trend. Top data fields include current reading, max – min – average readings over the 24 hours, range, channel ID and engineering units.

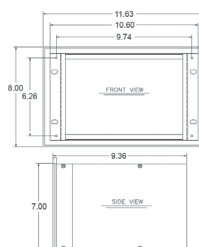
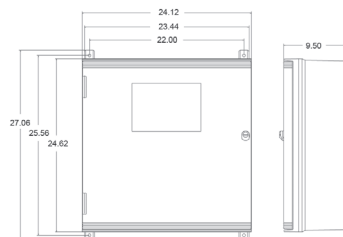
COMBINATION SCREEN

Displays 1 channel at a time as most recent 30-minute trend, bar graph and large engineering units. Top data fields include current reading, max - min -average readings over the 30-minutes, range, channel ID, and engineering units. Readings change color and flash on alarms. Flashing color becomes steady after acknowledge.

ZONE SCREEN

Displays all eight possible active zones. Alarm cells change colors and name field flashes indicating alarms. Allows user direct access to screen that shows which channels belong to each zone.

ViewSmart 6400 NEMA 4X Large Fiberglass Wall Mount



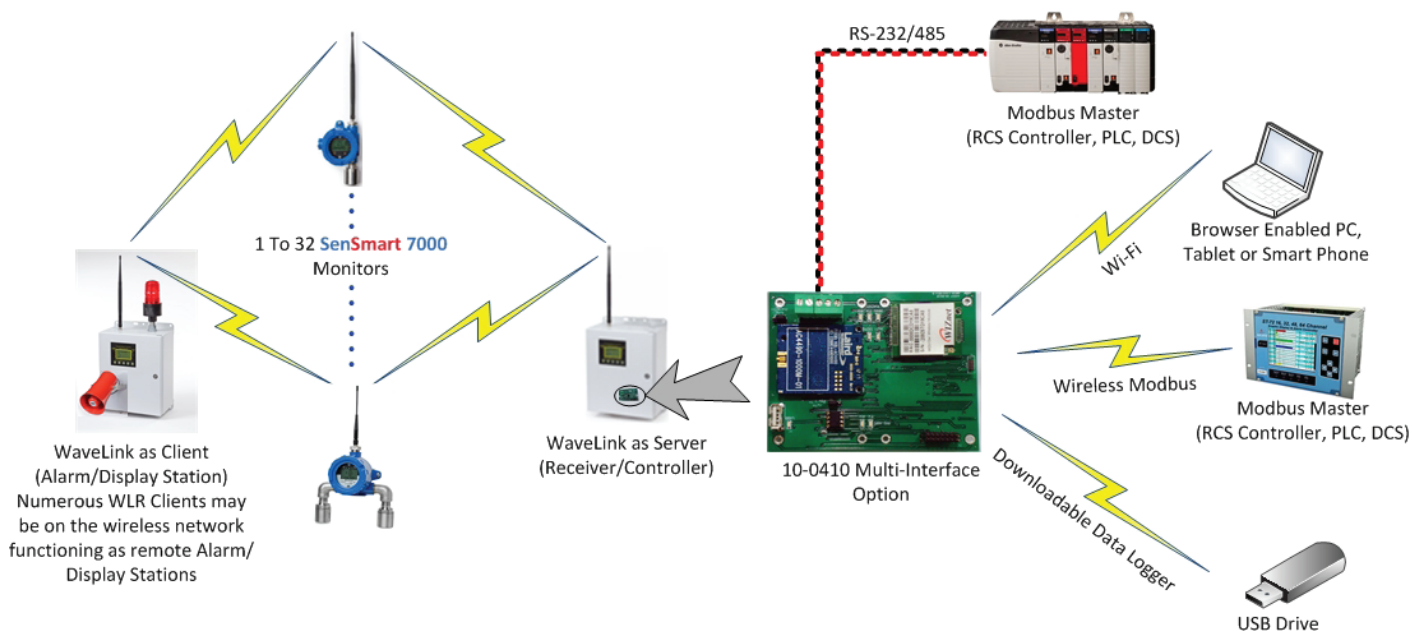
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MM-1011/Revision B

SYSTEMS SETUP



A typical WaveNet FHSS Client / Server wireless monitoring system consists of one WaveLink Receiver (WLR) configured as the network's Server, receiving wireless data from up to 32 Single Gas, or 16 Dual Gas, **SenSmart 7000** Monitors (**SenSmart 7000**'s). Additional WLR's may also receive the same **SenSmart 7000** data and act as remote alarm stations and displays, but must be configured as a Clients since only one Server is permitted per network. **SenSmart 7000**'s are powered by an internal lithium battery while WLR's require either 100-240 VAC or 10-30VDC and are very easy to solar power.

The 10-0410 Multi-Interface Module is a plug in PCB option which adds a tremendous amount of functionality and is easily added to WaveLink Receivers. Features added by the 10-0410 include Data Logging of > 1year of readings and alarms, a WiFi web server sending monitored data to browser enabled smart devices, and RS-485 / FHSS Wireless Modbus slave ports for transferring data to Modbus master devices such as RC Systems ViewSmart 6400 controller.

OPTIONS

- 10-0289 Antenna, 900MHz 8 dBi Fiberglass Omni Base Station
- 1000-2312 Antenna, 2.4GHz 9 dBi Fiberglass Omni Base Station
- 1000-2310 Antenna, 900MHz 9 dBi Yagi Directional
- 1000-2309 Antenna, 2.4GHz 12 dBi Yagi Directional
- 1000-2193 Antenna, 900MHz, Dipole, Division 1
- 1000-2301 Antenna, 2.4Ghz Dipole, Division 1
- 10-0334 30 Watt Solar Power Supply with 55AH Battery; Division 2

REMOTE SENSOR KIT



Shown with 10-0247 stainless steel sensor head

The 10-0411 Remote Sensor Kit allows smart sensors to be mounted up to 15 feet away from the **SenSmart 7000**. **SenSmart 7000**s may be configured as single or dual sensor monitors so either one or two 10-0411 Remote Sensor kits may be connected to each **SenSmart 7000**. When combined with the 10-0247 Stainless Steel sensor head, the 10-0411 is suitable for Division 1 hazardous locations.

ViewSmart 1600+ Controller

"The Art of Gas Detection" - Built with our Proven ST-72 Controller



Rack/Panel Mount

The **ViewSmart 1600+** controller combines the reliability of our proven Viewsmart 1600 controller with the advanced upgrades of our ViewSmart 6400 channel controller in one low cost package. The ViewSmart 1600+ provides simultaneous display and alarm functions for up to 16 input variables. 8 or 16 channel display modes, and I/O modules arranged in groups of 8 channels, allow economical configuration of systems. This easy-to-configure, user friendly controller is ideal for centralizing display and alarm functions in critical multipoint monitoring applications.



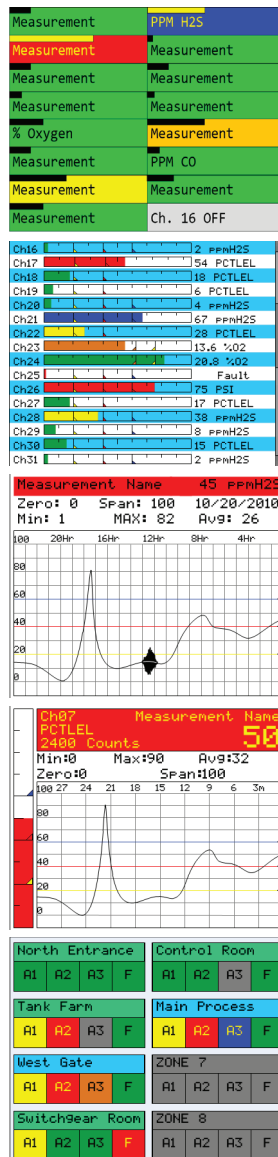
Nema 4X Fiberglass

FEATURES

- 8/16 channel display modes accept inputs from many sensor types and signal ranges. Input types include 4-20mA and Modbus.
- Ethernet with Modbus TCP serves/client and web server for configuration and monitoring
- Convenient off site e-mail notification included with daily, weekly summary.
- RS-485 serial ports allow simultaneous Modbus Master/Slave operation. Two standard ports and two optional isolated ports
- Wireless Modbus and RC Systems' WaveNet wireless interfaces available
- Three independent alarm levels per channel. "Relay Acknowledge" feature allows silencing of external audible devices during alarm conditions
- QVGA Color LCD displays monitored data as trends, bar graphs and engineering units. Readouts change colors to indicate alarms
- Five standard SPDT 5-amp alarm relays. HORN, FAULT and three programmable alarm relays
- Options cards such as 4-20mA inputs, 4-20mA outputs, discrete and programmable alarm relays
- Cal Mode offers push-button zero/span calibration for remote sensor applications
- Authorization Mode allows locking of critical settings
- Data Logger onto SD card allows recording of input values, and events for more than 10 years
- Power supply options include both 150 and 600 Watt
- Magnetic keypad standard for non-intrusive operation in potentially hazardous locations
- Enclosures include wall mount NEMA 4X - Non-Metallic, 316 SS, XP and Rack/Panel Mount

SPECIFICATIONS

Input	12 bit 4-20mA into 150 ohms input impedance; includes +power supply terminals for each channel for routing power to two or three wire transmitters
Serial Ports	Two standard RS485 ports Two additional isolated ports optional
Ethernet Port	Modbus TCP Master/Slave
Alarm Relays	5 amp 30VDC or 250VAC resistive Form C
Analog Outputs (Optional)	16 bit 4-20mA output. Max load 800 ohms with nominal 24VDC power supply
Digital Inputs	Two 10-60 VDC
Digital Output	400mA @ VDC
Display	QVGA 320 x 240 pixel TFT graphic LCD with LED backlight
Ambient Temperature Range	-25 - +60 degrees C
Power Supply	10 - 30VDC (24VDC nominal) 12 Watts max required 10-0172 option = 150 Watt 10-0307 option = 600 Watt
Approvals	CE Approved (Pending) CSA C22.2 No 1010.1 and C22.2 No.152 for combustibles and ISA S82.02 (Pending) CSA Class I Div 2 Grps A, B, C, D



MAIN DATA SCREEN

Displays all active channels on the same screen. Channel configurations include 16, active channels. Cells indicate alarm status by color.

BAR GRAPH SCREEN

Displays 16 channels at a time. Bar graphs change colors to indicate alarm status.

24 HOUR TREND SCREEN

Displays 1 channel at a time as most recent 24 hour trend. Top data fields include current reading, max - min - average readings over the 24 hours, range, channel ID and engineering units.

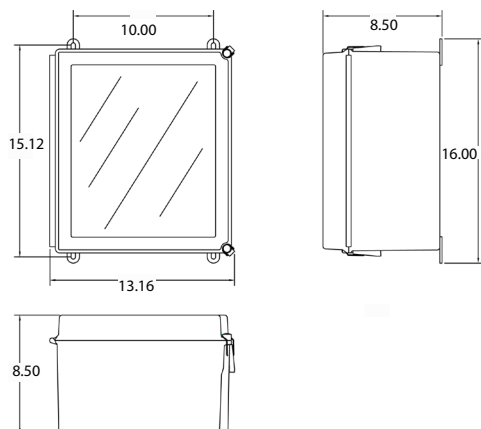
COMBINATION SCREEN

Displays 1 channel at a time as most recent 30-minute trend, bar graph and large engineering units. Top data fields include current reading, max - min - average readings for trouble shooting, range, channel ID, and engineering units. Readings change color and flash on alarms. Flashing color becomes steady after acknowledge.

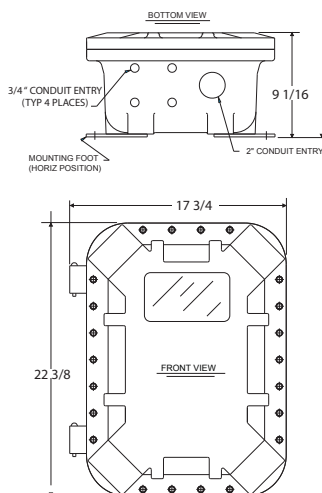
ZONE SCREEN

Displays all eight possible active zones. Alarm cells change colors and name field flashes indicating alarms. Allows user direct access to screen that shows which channels belong to each zone.

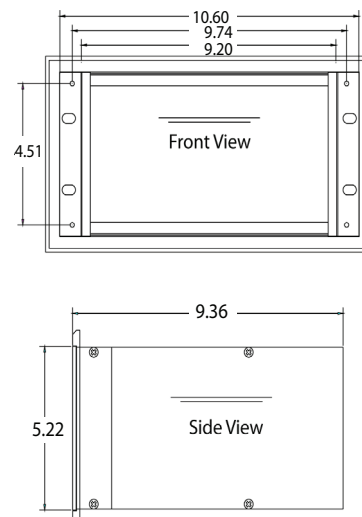
ViewSmart 1600+ Nema 4X Wall Mount



ViewSmart 1600+ Nema 7 Explosion Proof



ViewSmart 1600+ Rack/Panel Mount
(19" Rack Spreader Plates Not Shown)



ALL DIMENSIONS IN INCHES

ViewSmart 400 Controller

"The Art of Gas Detection" - Built with our Proven ST-90 Quad Controller



NEMA 4X Non-Metallic Enclosure

The **ViewSmart 400** 4 Channel Controller provides simultaneous display and alarm functions for four monitored variables. Easy to configure and user friendly, the **ViewSmart 400** can function as a critical alarm controller for toxic gases, combustible gases, vibration, tank levels and other process values.



Painted Carbon Steel Enclosure

CSA certified for *Division 2 potentially hazardous areas*

FEATURES

- Accepts inputs from up to four 4-20mA sensors transmitters for long distance interfacing. Generates 24VDC external device power for transmitters and other devices
- Three adjustable independent alarm levels per channel. "Relay Acknowledge" feature allows silencing of external audible devices during existing alarm conditions
- Graphic LCD readout displays monitored data as bar graphs, engineering units, and 30 minute trends. Alarm LED's flash when new and become steady after acknowledged
- Two standard programmable SPDT alarm relays are configurable for HORN, HIGH, WARN or FAULT alarm conditions
- Modbus® master/slave RS-485 serial port interfaces to Modbus® devices such as PCs, PLCs, DCS, and other RC Systems controllers
- Cal Mode offers pushbutton zero / span calibration for direct sensor interface applications
- Authorization mode allows locking of critical configuration variables
- Touch and magnetic keypad are standard for non-intrusive operation in potentially hazardous locations
- Enclosures Include: Non- Metallic, Epoxy Coated Steel, 316 SS, NEMA 4X, NEMA 7 Explosion-Proof wall mount packaging options available
- Certified to CSA C22.2 NO. 152 for combustible detection and Class I, Division 2, Groups A,B,C,D
- Non-volatile memory retains all configuration data indefinitely
- RS-485 Modbus® master/slave port for up to 128, devices to be multidropped on a single data highway for interrogation by another Modbus® master
- Six additional 5 amp SPDT discrete channel alarm relays available (two are standard)
- 4-20mA outputs, event log, strobe lights and audible annunciators also available
- 50 and 120 Watt 24VDC power supplies available

SPECIFICATIONS

INPUTS

Available inputs include 4-20mA with precision 100 ohm terminating resistor (0-2 Volt inputs may be accepted by removing the socketed terminating resistor) and bridge sensor inputs with adjustable sensor excitation and balance settings

STANDARD ALARM RELAYS (STANDARD)

Two programmable, 5 amp 30VDC or 250VAC resistive Form C

ANALOG OUTPUTS (OPTIONAL)

10 bit 4-20mA output. Max load 800 ohms with nominal 24VDC power supply

DISCRETE ALARM RELAYS (OPTIONAL)

Six programmable 5 amp 30VDC or 250VAC resistive Form C

SERIAL PORT (OPTIONAL)

Master/Slave RS-485 port equipped with Tx / Rx LED's

Protocol is Modbus® RTU

DISPLAY

128 x 64 pixel graphic LCD with backlight displays bar graphs, trends, and engineering units. Six discrete LED's indicate alarm status, CAL MODE, keypad activity

AMBIENT TEMPERATURE RANGE

-25 to +60 degrees C

POWER SUPPLY

100-240VAC / 10-30VDC are standard primary power supplies

APPROVALS

CSA C22.2 No 1010.1 and C22.2 No.152 for combustibles and ISA S82.02;

UL 1604 / C22.2 No 213 (NEMA 4X = Division 2 Groups A,B,C,D,

EN55011 and EN61000 (CE Mark)

90-12 = NEMA 7 Division 1 Group B,C,D

MODELS

90-50	ViewSmart 400 PY in Non Metallic
90-51	ViewSmart 400 PCS in NEMA 4 painted carbon steel
90-52	ViewSmart 400 SS in NEMA 4X, 316 stainless steel
90-12	ViewSmart 400 XP in bolt on lid NEMA 7 cast aluminum

ST-90 OPTIONS/ACCESSORIES

10-0221/4	4-20mA analog input PCB
10-0222	Optional relay board with six programmable 5 amp Form C relays
*10-0328	900MHz wireless kit with rubber dipole antenna
*10-0355	2.4GHz wireless kit with rubber collinear antenna
10-0308	Quad 4-20mA outputs
10-0309	Quad bridge sensor inputs
10-0253	RS-485 / RS-232 Modbus® RTU interface
*10-0337	100dB piezo audible option
*10-0284	Division 2 xenon red strobe light option
*10-0285	Division 2 xenon amber strobe light option
*10-0316	Division 2 xenon blue strobe light option
1000-2259	50 Watt AC/DC power supply module
1000-2373	120 Watt AC/DC power supply module
10-0314	NEMA 4X/7 Division 1, 50 Watt 24VDC external power supply
10-0315	NEMA 4X Division 2, 50 Watt 24VDC external power supply

*These items only available with NEMA 4 enclosure

ViewSmart 400 NEMA 4X Non-Metallic Wall Mount

ViewSmart 400 NEMA 4X 316 SS Wall Mount

ViewSmart 400 Explosion Proof Wall Mount

ViewSmart 400 NEMA4 Painted Steel

