



418 MHz Transmitter

FEATURES

- Analog input/Light level transmission
- 12-bit Analog to Digital Conversion
- Transmits unique ID and analog value
- Up to 600 foot transmission range
- Transmission rates from 10 to 17 seconds random
- Up to 100 transmitters can coexist
- Battery lasts from 2 to 5 years
- Very small (1.3" X 2.1" X .6") ABS Enclosure
- Water resistant coating on PCB
- CRC-16 checked Status, ID, and analog data
- Internal Loop antenna
- Low Cost



DESCRIPTION

The Point Sensor Analog wireless transmitter is a battery operated 12 bit analog-to-digital converter with a microprocessor controlled 418 MHz. FCC certified radio transmitter. The Sensor has an on board time of day clock that allows it to spend most of the time in a low power quiescent state. At predetermined time intervals the clock will wake up the onboard microprocessor. Unique serial number information is read from a Dallas Semiconductor 1-wire digital device and analog data is read from a 12-bit analog to digital converter. This information is combined with a CRC-16 error check and transmitted in a very short data packet that results in a transmitter on time of only 15 milliseconds. This architecture allows the Sensor to consume very low energy resulting in a battery life of up to 5 years.

The electronics are coated with a conformal material that provides a moisture barrier against condensation. Submersion in water is not recommended. A hole in the top ABS cover permits a special tool to be inserted to activate the service switch. The Sensor is shipped with the transmitter turned off (anytime the Sensor is to be shipped the transmitter should be turned off or must be placed in a shielded container to prevent interference that might cause shipping problems). Start the Sensor by momentarily pushing the service switch (you will feel the button click). When the service switch is pushed a data transmission occurs immediately and a special mark is introduced in the ID field of the transmitted data packet to indicate which sensor is in service or installation. The service switch is also used to put the Sensor in a quiescent mode (no transmissions and very low power consumption). This is the state the Sensor is in when you receive it from the manufacturer. Push and hold the service switch for 5 seconds or more to enter this powered down state.

Transmission rate	10-17 seconds random
Shelf life with battery installed	5 Years in quiescent mode (10 years with optional battery)
Dimensions (enclosure)	1.5 W X 2.1 H X .6 D (inches)
Weight	1.5 oz.
Operating Temperature	-40° to 85° C
Input (0-20mA) – Model Analog20mA	120 Ohms, 0-20.83 milliamp. 12-bit resolution, 20 mA=3932
Input (0-5v) – Model Analog5v	100k ohms, 0-5 volt, 12-bit resolution, 4.99v=4095
Input (0-10v) – Model Analog10v	62k ohms, 0-10volt, 12-bit resolution, 9.99v=4095
Humidity	0% to 90% non-condensing
Battery life with transmissions	2-5 years with tx period of 10-17 seconds
Battery	3.6 volt Lithium
FCC Certified	FCC ID: M5ZWOWANA

Point Sensor Analog/Light Wireless 0-10 Volt Transmitter Installation and Operation Instructions

The Point Sensor Analog/Light wireless analog to digital converter transmits a digital 12bit converted 0-20.83 mA input and unique serial number to a 418 MHz receiver. The Point Sensor Analog/Light is enclosed in a high impact ABS enclosure for direct surface mounting in the environment to be measured. Point Sensor Analog/Light is battery operated. Transmission times of from 10 to 17 seconds random are available, specify when ordering.

Application: Connect the transmitter + terminal to the positive current source and the - terminal to the return. Make sure that the side with the access screw is away from any metal surfaces.

Start/Stop Function: The transmitter has an installation mode switch (accessed through a small hole in the front cover, use a blunt object like a toothpick). A momentary push of this switch will start the convert/transmit cycles. When new the device is in a quiescent mode and will not transmit. The device will transmit a special installation status mark in the data packet immediately after the start/stop switch is released. The immediate transmission of converted analog, ID and installation status mark will occur anytime this switch is activated for less than 5 seconds. The Point Sensor Analog/Light may be placed in a quiescent state (no transmission and battery life greater than 5 years) by holding the installation switch for more than 5 seconds.

Battery: A 3.6 Volt lithium battery powers the Point Sensor Analog/Light. The battery will last for more than 5 years in the quiescent state (as shipped from the manufacturer). The device will transmit data for as long as 3 years at a rate of once each minute once started. The electronic components are completely covered with a water resistant rubber coating to protect from condensation. The user cannot replace the battery.

**FCC ID: M5ZWOWANA
MADE IN USA**

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 AND (2) THIS DEVICE MUST ACCEPT ANY INTERFERENCE RECEIVED, INCLUDING INTERFERENCE THAT MAY CAUSE UNDESERED OPERATION

The Point Six, Inc. 418 MHz wireless analog transmitters require a compatible receiver with the ability to receive, error check and provide RS232 and RS422/485 interface. This document describes the data format provided by the **Point Host** 418 MHz. Receiver.

The transmit packet from a receiver is approximately 15 milliseconds in duration and consists of 13 bytes of data:

- 1-byte ID/Mode field
- 8-byte serial number
- 12-bit analog in a 16 bit word
- 2-byte CRC-16 error check

The Point Host receiver and processes this packet. The receiver performs a CRC16 error check on the packet. If the data is not accurate it is discarded. When a packet is received that is error free it is converted to a 29-character packet and transmitted out the serial port at **19,200 Baud**. The data is transmitted serially in ASCII Hex format and terminated with a CR character. This format requires two bytes for each byte of data; 14 data bytes x 2=28 plus the CR is 29 characters

The resulting binary data format of the packet is:

- 1-byte ID field this field will contain a byte whose LSBit indicates the service state of the transmitter, 0=normal, 1=service mode. **Note** that the CRC-16 is calculated with the MSBit of the ID field set low, the data is received with the MSBit of the ID field set high. Proper CRC-16 calculation requires that the MSBit be assumed to be low even though it is received set high.
- 8-byte serial# this field contains the serial number of the 1Wire sensor.
- 16-bit data field this field contains 12-bit analog data stored in stored MSByte first in 12bit form this field is unsigned and has a range of 0 to 4095 (0000-0FFF) hex.
- 2-byte CRC-16 this is the originally received data packet CRG16 as described above.
- 1-byte checksum the checksum is a mod 256 sum of all the ASCII character values in the response but does not include the CR; the checksum is added by the HA8 and is not a part of the transmitted data.

Example:

C1286C750B0000008B0A2519CA95<CR>

This field is the device type and mode indicator, the **C1** or **C0** indicates that this is a WOWANA analog transmitter. **C0** indicates the service state of the transmitter.

C1286C750B0000008B0A2519CA95<CR>

This field is the unique serial number of the WOWANA sensor.

C1286C750B0000008B0A2519CA95<CR>

This is the analog data field. This field is 16 bits stored MSB first (bits 158) and LSB last (bits 7-0) from left to right. The MSBits (bit 15-12) will always be zero, this is a unsigned value of 0-3932 for 0-20 milliamp. The value shown is calculated by: 0A25=2597, so the current represented is $(2597/3932)*20\text{mA}=13.21$ milliamp.

C1286C750B0000008B0A2519CA95<CR>

This field is the CRC-16 error check as was originally received and checked. This CRC is over the first 11 bytes of the packet starting with the type/mode byte and ending with inclusion of the analog data. For proper calculation of the CRC the MSBit of the first byte should be assumed to be zero instead of the 1 value that is actually transmitted.

C1286C750B0000008B0A2519CA95<CR>

This field is the mod 256 sum of all the ASCII character values in the response but does not include the <CR>.

C1286C750B0000008B0A2519CA95<CR>

This is the CR terminator, 0Dhex.

See the HA8 receiver specification for detailed operations of the receiver.

FCC Radio Frequency Interference Statement

Wireless 0-10 Volt Transmitter

FCC ID: M5ZWOWANA

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15, Subpart B, of the FCC Rules. This equipment generates, uses, and can radiate radio frequency energy. If not installed and used in accordance with the instructions, it may cause interference to radio communications.

The limits are designed to provide reasonable protection against such interference in a residential situation. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try and correct the interference by one or more of the following measures:

- *Reorient or relocate the receiving antenna of the affected radio or television*
- *Increase the separation between the equipment and the affected receiver.*
- *Connect the equipment and the affected receiver to power outlets on separate circuits.*
- *Consult the dealer or an experienced radio/TV technician for help.*

MODIFICATIONS

Changes or modifications not expressly approved by **Point Six Inc.** could void the user's authority to operate the equipment.



FEATURES

- High performance 418 MHz receiver
- Compatible with OneSix DDE Server and OPCSe
- PointView PC Software optional
- Serial connection directly to a PC
- Powered by RS232 port or external source
- ASCII radio packet data output
- Decodes CRC-16 error encoded radio packets
- DB-9 connector for RS232 interface
- Up to 480 ft. range



DESCRIPTION

The Point View is a 418 MHz radio receiver designed to receive and decode packet data from all Point Six Transmitters. The Point View decodes the CRC-16 encoded packets and translates them to ASCII strings that are sent out the RS232 serial port at 19200 Baud. No hardware handshaking or command protocol is required; all data packets are decoded and transmitted serially as they are received. The Point View is very low power; most RS232 ports provide enough power to operate the receiver. External power input is provided for host serial ports that cannot provide the necessary current. A simple design approach results in a low cost receiver that provides error checked ASCII data for all Point Sensors.

The Point View is supported by the Point Six OneSix™ DDE Server Software Drivers. This makes connecting Point Six, Inc. wireless products to your PC easy.

Connector Pin Out

SIGNAL 9-Pin	CONNECTOR	RS232 DB9 Signal	DESCRIPTION FUNCTION
NC	1	NC	No connection
TXD	2	Transmit Data	output
RXD	3	Receive Data	input
DTR	4	PWRIN1	input power (optional)
RTS	7	PWRIN2	input power (optional)
GND	5	Ground	(reference)
NC	6	NC	No connection
NC	8	NC	No connection
NC	9	NC	No connection

General Specifications

PARAMETER	SYMBOL	MIN	TYP	MAX	UNITS
Supply Voltage	V _{CC}	5.0	12	16	Volts
Supply Current	I _s	18	20	25	mA
Range (WOW transmitters)		-	480	-	Ft.
Baud Rate		-	19200	-	Baud

Compact

Low Cost

DIN Rail Mountable

Measurement range fits most applications

24V alarm output with adjustable trip point

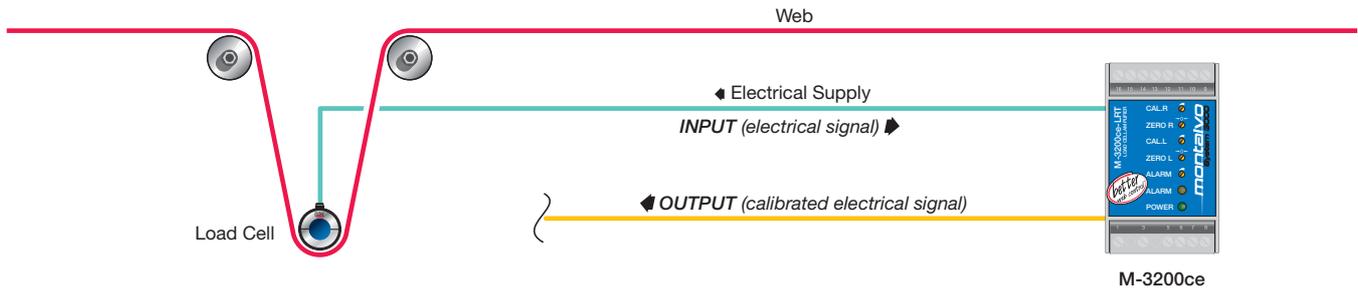


System 3000™

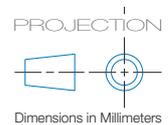
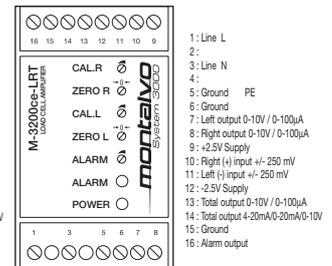
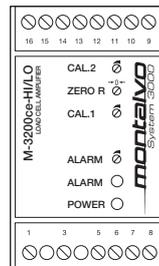
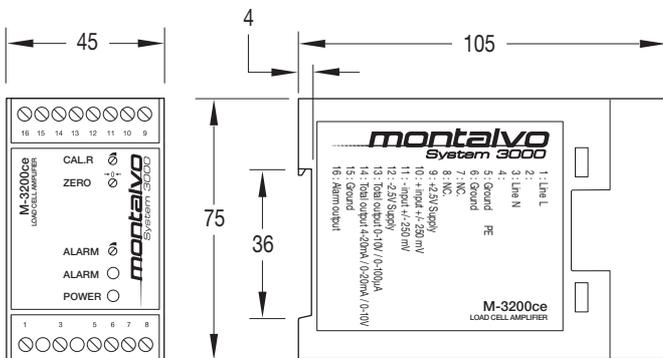
M-3200ce Load Cell Amplifier

M-3200ce modules indicate and monitor web tension by amplifying load cell signals. They provide the excitation voltage as well as zero and calibration circuitry. The output can be used to drive a digital or analog tension meter. For further processing the output can also be interfaced to a PLC, a PC, or a DC, AC or servo drive. The M-3200ce modules work with Montalvo's N, T, and UPB Series semiconductor strain gauge load cells as well as with other brands. Three different amplifier modules are available. The basic model, M-3200ce, indicates and monitors total web tension with adjustments for calibration and zero level. The M-3200ce-LTR provides one additional set of calibration and zero level adjustments for monitoring left, right and total tension simultaneously. The M-3200ce-HI/LO features dual range capability with two calibration adjustments for high and low gain setting.

Typical Application



Specifications



Model

M-3200ce Total Tension Indication
M-3200ce-HI/LO Total Tension Indication with Dual Range Capability
M-3200ce-LTR Left, Total & Right Tension Indication

Electrical

Supply Voltage, Selectable 115 or 230VAC \pm 10% (IEC 204-1)
Supply Frequency 48-62 Hz
Overvoltage Category III (IEC 664)
Testing Voltage - Primary to Secondary 3.75kV for 1 minute
Maximum Internal Fuse Size 5x20 mm 115V/80mA(T) / 230V/50mA(T)
Maximum Supply Fuse Size 10 A
Maximum Power Consumption 3.5 VA
Load Cell Input \pm 250 mVDC
Input Impedance 100 k Ω
Load Cell Supply \pm 2.50 VDC \pm 1%
Zero Range Adjustment 100% of Load Cell Rating (\pm 250 mVDC)
Gain Adjustment 11 to 510
Accuracy Better than 1%
Alarm Output Voltage 24 VDC \pm 15%
Maximum Alarm Output Load > 650 Ω
Meter Output, Selectable 0 to 100 μ A / 0 to 10V, Max. Load 5 mA
Process Output, Selectable 0 to 20mA / 4 to 20 mA / 0 to 10V
Process Output Maximum Load (Current) \leq 500 Ω
Process Output Maximum Load (Voltage) \geq 5000 Ω

Other

Connections Removable Terminal Blocks
Mounting DIN Rail 35mm
Mounting Orientation Not Critical
Ambient Temperature Range: Operating -10°C to 50°C
Ambient Temperature Range: Storage -10°C to 80°C
Humidity < 95% Non-Condensing
Degree of Protection IP20 (IEC 529)
EMC-Immunity EN 50082-2 Industry
EMC-Emission EN 50081-1 Trade and Light Industry
Material Degree of Inflammability Meets UL 94
Installation Environment (Pollution Degree) 2
Weight (approx.) 0.3 kg
Size (WxDxH) 45mm x 105mm x 75mm
Dimensions mm

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```
<one line to give the program's name and a brief idea of what it does.>
Copyright (C) 19yy <name of author>
```

```
This program is free software; you can redistribute it and/or modify
it under the terms of the GNU General Public License as published by
the Free Software Foundation; either version 2 of the License, or
(at your option) any later version.
```

```
This program is distributed in the hope that it will be useful,
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MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
GNU General Public License for more details.
```

```
You should have received a copy of the GNU General Public License
along with this program; if not, write to the Free Software
Foundation, Inc., 675 Mass Ave, Cambridge, MA 02139, USA.
```

Also add information on how to contact you by electronic and paper mail.

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```
Gnomovision version 69, Copyright (C) 19yy name of author
Gnomovision comes with ABSOLUTELY NO WARRANTY; for details type `show w'.
This is free software, and you are welcome to redistribute it
under certain conditions; type `show c' for details.
```

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```
Yoyodyne, Inc., hereby disclaims all copyright interest in the program
`Gnomovision' (which makes passes at compilers) written by James Hacker.
```

```
<signature of Ty Coon>, 1 April 1989
Ty Coon, President of Vice
```

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