

ZPoint OEM Modules

The TM-ZP05X is the 8th generation of advanced wireless communication modules from Temperature@lert and the first module on the market to feature Temperature@lert's patented private sensor network management system that enables secure turn-key wireless sensor network deployment.

As with all Temperature@lert ZPoint devices, the TM-ZP05X series devices are designed to be easily integrated into designs without the need for RF or embedded expertise. Using the latest version of Temperature@lert's ZPoint wireless communications platform, the TM-ZP05X family of modules allows designers to add wireless remote monitoring and sensor network management technology without complex software engineering.

Modules send data via cellular or Ethernet gateways back to Temperature@lert's cloud-based sensor management and analytics system.



Overview

The Temperature@lert TM-ZP05X modules are low power 2.4GHz wireless transceivers based on the ARM Cortex M3 SoC.

Available both in PCB trace antenna and external antenna via U.FL connector form, Temperature@lert modules have been designed to be integrated into any devices without the need for RF experience and expertise. The TM-ZP05X enables one to add powerful wireless networking and private sensor network management to any product and quickly bring it to market.

The Temperature@lert unique serial command interface allows designers to quickly integrate wireless technology without complex engineering. For custom application development, the TM-ZP05X series integrates with ease into Temperature@lert's proven remote monitoring cloud platform.

Suggested Applications

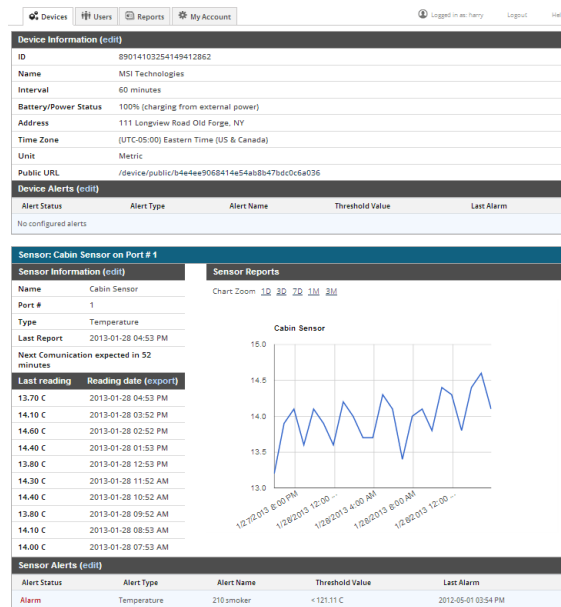
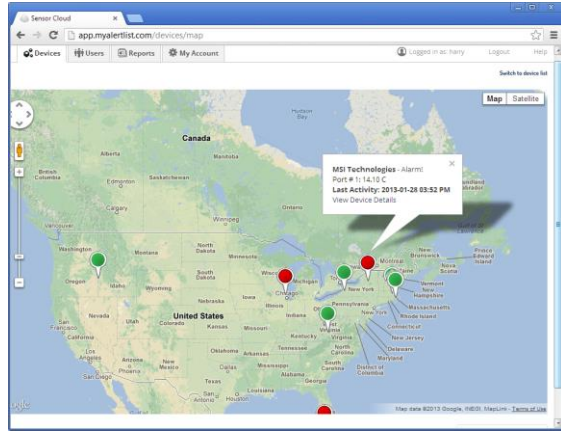
- Connected Gauges
- Private Sensor Networks
- Industrial Monitoring Solutions
- M2M Wireless Solutions
- Data Center Monitoring
- Energy Monitoring
- Facility and Business Monitoring
- Production and Manufacturing Solutions
- Supply Chain

Enterprise Solutions

- White Label Solutions
- API Integration Services
- Custom Hardware & Software
- Analytics Solutions

Sensor Cloud

Data collected resides in Temperature@lert's Sensor Cloud web-based management system and includes native iPhone and Android apps as well as a rich API for interoperability and enterprise integration. Optional white labeling of software and support options are available.



Integration

The ZP-05X modules require less than 2500mAh of charge to operate for up to 5 years. Modules are easily integrated into existing systems via TTL serial, I2C, SPI, 1-Wire, or other customer-defined serial interfaces. Please contact sales for additional information.

Module Features

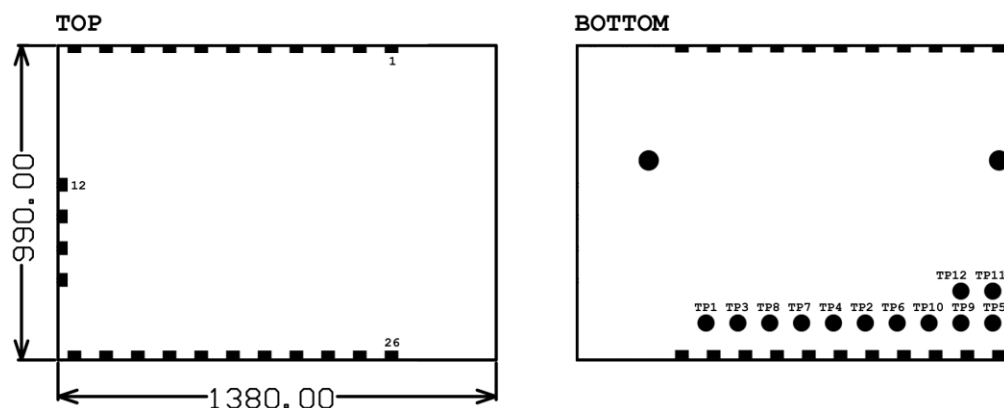
Small form factor, SMT module 35mm x 25mm	2 antenna options: integrated PCB trace antenna or U.FL. coaxial connector
Variable report frequency	Wide supply voltage range (2.1 to 3.6V)
Integrated high accuracy temperature sensor	Operating temperature range: -40°C to +85°C
Additional external sensor inputs	Radio approvals – CE, IC, FCC
Works with Temperature@lert cellular and Ethernet gateways	Store and Forward data loss prevention
5 year battery life	1000' range (line of sight)
128-bit AES encryption	Optional certificate based security

Module Variants

The module is available in two variants, depending on which antenna configuration is desired:

- TM-ZP050 – on-board trace antenna
- TM-ZP051 – u.fl connector for external antenna

Pin Out



Castellated Pads

Castellated Pin No.	Name	Type	Description
1	GND	Power	Ground
2	GND	Power	Ground
3	T@DIG1	I/O	Digital line for T@ sensor / GPIO
4	T@ANA1	Analog In	Analog line for T@ sensor / GPIO / Analog input
5	T@DIG2	I/O	Digital line for T@ sensor / GPIO
6	T@ANA2	Analog In	Analog line for T@ sensor / GPIO / Analog input
7	T@PWR	Output	T@ sensor power
8	T@PWR	Output	T@ sensor power
9	SOUT1	I/O	SPI Master MOSI / I2C Master SDA / UART TXD / GPIO
10	SIN1	I/O	SPI Master MISO / I2C Master SCL / UART RXD / GPIO
11	SCLK1	I/O	SPI Master SCLK / GPIO
12	SIN2	I/O	Internal SPI (NC) / SPI Master MISO / I2C Master SDA / GPIO
13	SOUT2	I/O	Internal SPI (NC) / SPI Master MOSI / GPIO
14	SCLK1	I/O	Internal SPI (NC) / SPI Master SCLK / I2C Master SCL / GPIO
15	VCC	I/O	Positive supply, 2.1 – 3.6V
16	TRACEDATA2	Output	JTAG trace data
17	TRACEDATA3	Output	JTAG trace data
18	JCLK	Input	JTAG clock
19	JTDO	Output	JTAG data out
20	JTDI	Input	JTAG data in
21	JTMS	Input	JTAG test mode select
22	GND	Power	Ground
23	nRESET	Input	Active-low reset
24	TRACEDATA1	Output	JTAG trace data
25	GND	Power	Ground
26	VCC	Power	Positive supply, 2.1 – 3.6V

Bottom Test Points

Bottom Test Point	Name	Type	Description
TP1	VCC	Power	Positive supply, 2.1 – 3.6V
TP2	JTDO	Output	JTAG data out
TP3	TRACEDATA1	Output	JTAG trace data
TP4	JTDI	Input	JTAG data in
TP5	GND	Power	Ground
TP6	JCLK	Input	JTAG clock
TP7	JTMS	Input	JTAG test mode select
TP8	nRESET	Input	Active-low reset
TP9	TRACEDATA2	Output	JTAG trace data
TP10	TRACEDATA3	Output	JTAG trace data
TP11	SOUT1	I/O	SPI Master MOSI / I2C Master SDA / UART TXD / GPIO
TP12	SIN1	I/O	SPI Master MISO / I2C Master SCL / UART RXD / GPIO

Regulator Notices

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 undesired operation.

Changes or modifications not expressly approved by Temperature@lert could void the user's authority to operate the equipment.

The final end product must be labeled in a visible area with the following: Contains Transmitter Module FCC ID: XYZ (IC: XYZ)" or "Contains FCC ID: SZ9TM-ZP05X IC: 10940A- TMZP05X" or similar wording. Label must also contain brand/trade name and model number of the product.

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 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.

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 undesired operation.

FCC Caution: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

To comply with FCC's and Industry Canada's RF radiation exposure limits for general population/uncontrolled exposure, the antenna(s) used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons and must not be collocated or operating in conjunction with any other antenna or transmitter.

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, and (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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This radio transmitter has been approved by Industry Canada to operate with the antenna types listed below with the maximum permissible gain and required antenna impedance for each antenna type indicated. Antenna types not included in this list, having a gain greater than the maximum gain indicated for that type, are strictly prohibited for use with this device.

Le présent émetteur radio a été approuvé par Industrie Canada pour fonctionner avec les types d'antenne énumérés ci-dessous et ayant un gain admissible maximal et l'impédance requise pour chaque type d'antenne. Les types d'antenne non inclus dans cette liste, ou dont le gain est supérieur au gain maximal indiqué, sont strictement interdits pour l'exploitation de l'émetteur.

The device is approved to work with the following antennas:

- External 1/2 wavelength dipole SMA-RP antenna with maximum gain of 2.45dbi
- On-board inverted F trace antenna with maximum gain of 1dBi
- External isolated magnetic dipole antenna with maximum gain of 2.5dBi

Under Industry Canada regulations, this radio transmitter may only operate using an antenna of a type and maximum (or lesser) gain approved for the transmitter by Industry Canada. To reduce potential radio interference to other users, the antenna type and its gain should be so chosen that the equivalent isotropically radiated power (e.i.r.p.) is not more than that necessary for successful communication.

Conformément à la réglementation d'Industrie Canada, le présent émetteur radio peut fonctionner avec une antenne d'un type et d'un gain maximal (ou inférieur) approuvé pour l'émetteur par Industrie Canada. Dans le but de réduire les risques de brouillage radioélectrique à l'intention des autres utilisateurs, il faut choisir le type d'antenne et son gain de sorte que la puissance isotrope rayonnée équivalente (p.i.r.e.) ne dépasse pas l'intensité nécessaire à l'établissement d'une communication satisfaisante.