

# | IWTT Series

## INDUSTRIAL WIRELESS TEMPERATURE TRANSMITTER



Whilst every effort has been taken to ensure the accuracy of this document, we accept no responsibility for damage, injury, loss, or expense resulting from errors or omissions, and reserve the right of amendment without notice.

### *Information for users*

This equipment has been tested and found to comply with the limits for a Class B 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 which the receiver is connected
- Consult the dealer or an experienced radio/TV technician for help

Caution: To satisfy FCC RF Exposure requirements for mobile and base station transmission devices, a separation distance of 20 cm or more should be maintained between the antenna of this device and persons during operation. To ensure compliance operation at closer than this distance is not recommended. The antenna used for this transmitter must not be co-located or operating in conjunction with any other antenna or transmitter. No other antenna may be used with this equipment other than the antenna supplied with this equipment.

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## 1. INTRODUCTION

### 1.1 Safety Information

This manual contains information that must be observed in the interest of your safety and to avoid damage to assets. Please read this manual before installing and commissioning the device and keep the manual in an accessible location for all users.

Contains FCC ID: W70MRF24J40MDME

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Please see the Certifications section for more information on RF Exposure Compliance

### 1.2 Hardware Features

The IWTT range of Wireless Temperature Transmitters has been designed to measure the temperature of the medium connected and transmit the value to one of the IWR range of receivers where the value can be outputted as either a 4-20 mA or 1-5 V dc signal.

The IWR-1 has a single output and the IWR-5 has five outputs, each of which can be linked to an IWTT transmitter.

The IWTT temperature transmitter works on the license-free 2.4 GHz band.

Ranges of up to 500 m are possible using the standard transmitter and receiver unit with the optional 3dBi antenna giving a range of up to 750 m.

The transmitter is powered by a 3.6 V lithium cell and care must be taken to insert the battery in the correct polarity.

## 2. UNPACKING

The instrument should be carefully inspected for signs of damage that may have occurred in transit. In the unlikely case that damage has been sustained, DO NOT use the instrument, but please retain all packaging for our inspection and contact your supplier immediately.

### 3. PRODUCT IDENTIFICATION LABEL

The unit delivered should be carefully inspected to ensure it is suitable for the application required. Detailed information on the product is included in the identification label and the user manual.

Please ensure, that the temperature range of the IWTT is suitable for the intended application and that the IWTT unit will not be subjected to temperatures and/or temperatures greater than those specified in this manual.

### 4. INSTALLING/CHANGING THE BATTERY

A Lithium 3.6 V battery is included inside the IWTT transmitter. The battery may be changed at any time, but the correct polarity must be observed at all times! After the battery has been changed, the unit should be switched on using the SW3 push button and then SW1 should be pushed for 5 s. This is to ensure the battery life count is reset correctly when a new battery is installed.

The internal LED will flash 5 times to indicate this procedure has been carried out successfully.

The battery life is determined by the rate the transmitter sends the Temperature value to the receiver, this update rate can be selected using Dip Switch 1 and the default value is 10s.

Please dispose of all batteries as specified by the legislator according to the Closed Substance Cycle and Waste Management Act or country regulations.



**! WARNING !  
MAKE SURE THE CORRECT  
BATTERY POLARITY IS OBSERVED!**

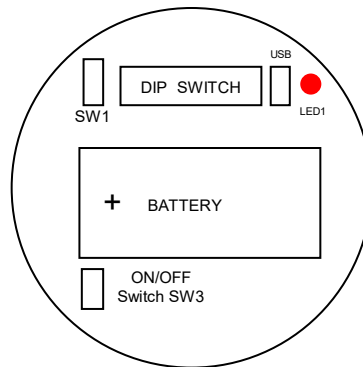


**! WARNING !  
INCORRECT BATTERIES MAY DAMAGE THE UNIT  
USE ONLY 3.6V LITHIUM C CELL BATTERIES**

## 5. SETTING UP THE IWTT WIRELESS TEMPERATURE TRANSMITTER

The IWTT instrument is shipped in a default configuration which allows the unit to connect with any default IWR receiver unit and transmit the measured temperature every 10s simply by switching the unit on using SW3 on the internal circuit board.

If a different update rate is required, or a different network frequency channel is required these parameters can be selected using DIP Switch 1 as detailed below:



Switches 1, 2, 3 & 4 select the RF Network the IWTT will transmit on. The default network for both the IWTT transmitter and IWR receiver is network 1.

RF NETWORK	1	2	3	4
1	0	0	0	0
2	0	0	0	1
3	0	0	1	0
4	0	0	1	1
5	0	1	0	0
6	0	1	0	1
7	0	1	1	0
8	0	1	1	1
9	1	0	0	0
10	1	0	0	1
11	1	0	1	0
12	1	0	1	1
13	1	1	0	0
14	1	1	0	1
15	1	1	1	0
16	1	1	1	1

Switches 5, 6 & 7 select the Transmission rate of the unit. This effectively sets how often the temperature value is sent to the receiver.

Transmit time	5	6	7
10 seconds	0	0	0
20 seconds	0	0	1
30 seconds	0	1	0
60 seconds	0	1	1
120 seconds	1	0	0
600 seconds	1	0	1
1 second	1	1	0
5 seconds	1	1	1

Switches 8, 9, and 10 set the Channel Number of the transmitter. This is used with the 5-channel receiver unit (IWR-5) to select which Temperature transmitter is linked to which 4-20 mA or 1-5 V dc output channel.

Tx Channel Number	8	9	10
1	0	0	0
2	0	0	1
3	0	1	0
4	0	1	1
5	1	0	0

The IWTT transmitter is now set up and ready to be used. Install the unit into the pipework as required and switch the unit ON using SW3. Pushbutton switch SW1 can be pushed to force the unit to transmit its current temperature and LED 1 will flash twice if the transmission has been received and acknowledged by an IWR receiver unit.

If the unit has transmitted successfully the 4-20 mA or 1-5 V dc output of the connected receiver unit will output a value reflecting the temperature level being measured.

## 6. TROUBLE-SHOOTING GUIDE

Problem encountered	Possible Causes
LED1 doesn't flash when pushbutton SW1 is pressed	Unit not switched on, switch on using SW3. The battery is not installed correctly. The battery needs replacing.
LED1 only flashes once when SW1 is pressed	IWR receiver not switched on. IWR receiver is not set up for the same RF network. IWR receiver not within range of the transmitter. If an IWR-1 receiver is used, ensure that the transmitter is set to Tx Channel 1
Output from the IWR receiver isn't equivalent to the Temperature being monitored	IWR receiver set up incorrectly, see IWR user manual for further details. Check that the green external LED on the receiver is flashing when the transmitter push button is pressed as the receiver may be out of range.

## 7. SYSTEM PART NUMBERS

Part Number	Temperature Range	Probe Type
IWTTP100A	-200 - +800 PT100	100mm 1/4" BSP
IWTTP150A	-200 - +800 PT100	150mm 1/4" BSP
IWTTP200A	-200 - +800 PT100	200mm 1/4" BSP
IWTTP250A	-200 - +800 PT100	250mm 1/4" BSP
IWTTP300A	-200 - +800 PT100	300mm 1/4" BSP
IWTTP400A	-200 - +800 PT100	400mm 1/4" BSP
IWTTJ200A	0- 1200 J Type t/c	200mm 1/4" BSP
IWTTJ300A	0- 1200 J Type t/c	300mm 1/4" BSP
IWTTJ400A	0- 1200 J Type t/c	400mm 1/4" BSP
IWTTK150A	0- 1200 K Type t/c	150mm 1/4" BSP
IWTTK200A	0- 1200 K Type t/c	200mm 1/4" BSP
IWTTK300A	0- 1200 K Type t/c	300mm 1/4" BSP
IWTTK400A	0- 1200 K Type t/c	400mm 1/4" BSP
IWTTUP100A	-200 - +800 PT100	100mm 1/4" NPT
IWTTUP150A	-200 - +800 PT100	150mm 1/4" NPT
IWTTUP200A	-200 - +800 PT100	200mm 1/4" NPT
IWTTUP250A	-200 - +800 PT100	250mm 1/4" NPT
IWTTUP300A	-200 - +800 PT100	300mm 1/4" NPT
IWTTUP400A	-200 - +800 PT100	400mm 1/4" NPT
IWTTUJ200A	0- 1200 J Type t/c	200mm 1/4" NPT
IWTTUJ300A	0- 1200 J Type t/c	300mm 1/4" NPT
IWTTUJ400A	0- 1200 J Type t/c	400mm 1/4" NPT
IWTTUK150A	0- 1200 K Type t/c	150mm 1/4" NPT
IWTTUK200A	0- 1200 K Type t/c	200mm 1/4" NPT
IWTTUK300A	0- 1200 K Type t/c	300mm 1/4" NPT
IWTTUK400A	0- 1200 K Type t/c	400mm 1/4" NPT

Part Number	Number of Output Channels
IWR-1	One
IWR-5	Five
IANT-3	3 dBi Antenna

## 8. SPECIFICATIONS

### United States FCC

System Performance	
Accuracy (non-linearity & hysteresis)	<±0.5 °C
Setting Errors	Zero & Full Scale, <±0.5°C
Thermal Zero Shift	<±0.04% / FS / °C
Thermal Span Shift	<±0.02% / °C typical
Media Temperature	-200 to +1200 °C (depending on sensor type)
Ambient Temperature	-20 to +80 °C
Storage Temperature	-20 to +80 °C
Temperature Probe	Stainless Steel
O Ring Seals	Viton
Probe type	Mineral Insulated
Enclosure Material	Acetal
Weight	310 g
RF Transmitter	Contains FCC W70MRF24J40MDME
Power Requirements	Lithium Ion C 3.6V Cell
Battery Life	5 Years (10s transmission rate)
Dimensions	132 to 432mm x 79 x 52mm (L x W x D) (length depends on sensor ordered)
Mounting	Any Orientation

This equipment has been tested and found to comply with the limits for a Class B 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 which the receiver is connected
- Consult the dealer or an experienced radio/TV technician for help

Warning: Changes or modifications not expressly approved by Cynergy3 could void the user's authority to operate the equipment.





## | IWTT SERIES

### WIRELESS TEMPERATURE TRANSMITTER OPERATING MANUAL

#### RF Exposure

Contains FCC ID: W70MRF24J40MDME

In this equipment, the antenna supplied is a PCB antenna and an alternative antenna must not be used.

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## Canada (IC)

#### 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, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Under Industry Canada regulations, this radio transmitter may only operate using an antenna of the 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.

#### French

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, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

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 fait 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.

## Europe

The MRF24J40MD/ME wireless module used in this equipment has been tested to R&TTE Directive 1995/5/EC Essential Requirements for Health and Safety (Article 3.1(a)), Electromagnetic Compatibility (EMC) Article 3.1(b)) and Radio (Article 3.2) and are summarized in the table below. A Notified Body Opinion has also been issued for this module.

Certification	Standards	Article
Safety	EN60950-2006+A11+A1:2010	(3.1(a))
Health	EN50371:2002-03	(3.1(a))
EMC	EN301 489-1 V1...8.1 (2008-04_	(3.1(b))
EMC	EN301-489-17 V2.1.1(2009-05)	(3.1(b))
Radio	EN 300 328 V1.7.1(2006-10)	(3.2)

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