Embedded Communications Systems
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QUICK START GUIDE

MTC - MINI TELEMETRY CONTROLLER ANALOGUE INPUT/OUTPUT

LOW POWER, LICENCE EXEMPT WIRELESS REMOTE CONTROL

The MTC Series is a range of low cost Telemetry Controllers providing a unidirectional FM wireless link capable of simple control and monitoring tasks. Their ease of use and numerous features make them ideal for adding wireless control and monitoring to any application requiring wire free operation.

MTC-2AI : Transmitter
Dual Analogue Input Module

Features:

- User configurable update rates.
- Pluggable screw terminal connectors.
- Analog input: 0~20mA, 0~5V, 0~1V.
- SMA Antenna connector.
- Rugged extruded enclosure. 85mm x 55mm x 25mm
- 151MHz/173MHz/433MHz/868MHz/914MHz/918MHz.

Technical Specifications:

- Operating current: 10mA@12VDC.
- Wide operating voltage: 7 to 28VDC.
- User configurable operating modes.
- Pluggable screw terminal connectors.

MTC-2AO : Receiver
Dual Analogue Output Module

Features:

- Pluggable screw terminal connectors.
- Two 0~20mA analogue outputs source circuit.
- SMA Antenna connector.
- Visual indication of output value, operation & pairing.
- Link fail operation. Clear output on link fail.
- Rugged extruded enclosure. 85mm x 55mm x 25mm
- Can learn up to 50 transmitters per receiver.
- 151MHz/173MHz/433MHz/868MHz/914MHz/918MHz

Technical Specifications:

- Operating current: 40mA @ 12VDC, +20mA per full scale output.
- Wide operating voltage: 7 to 28VDC.
- Pluggable screw terminal connectors.
- Voltage output for sensor power on IO terminals.

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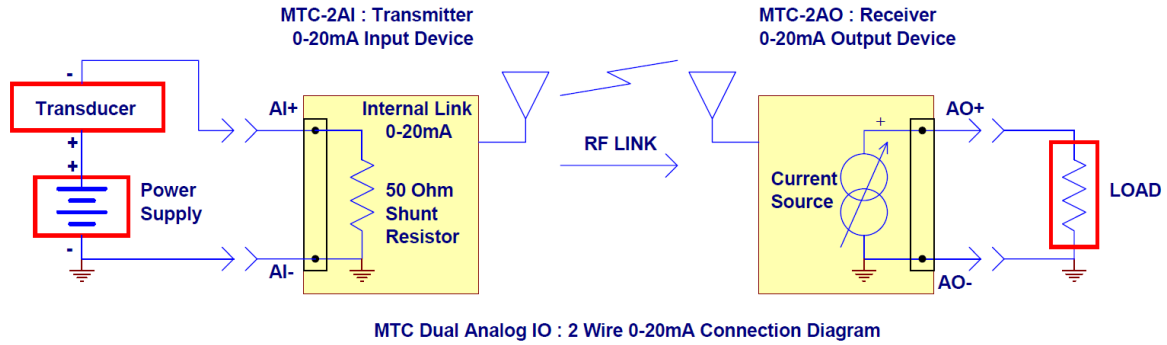
MTC – Wireless Telemetry Controllers

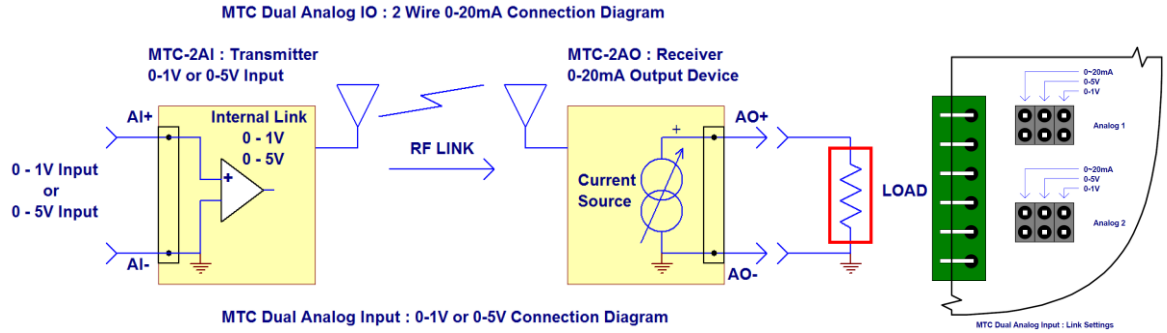
MTC Connection Diagram for 0~20mA Input to Output



MTC Dual Analog IO : 2 Wire 0-20mA Connection Diagram

Note: MTC-2AI Internal Link Settings must be in the 0~20mA position
MTC-2AI 0~20mA input circuit has an input resistance of 50 ohms.

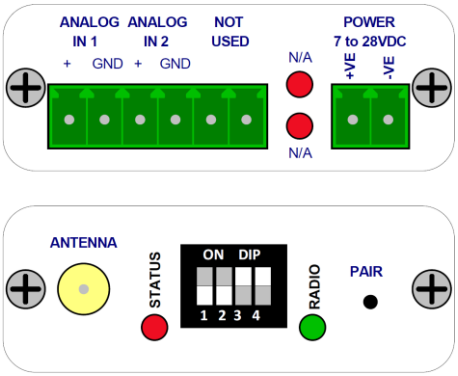
MTC Connection Diagram for 0-1V, 0-5V Input and 0~20mA Output



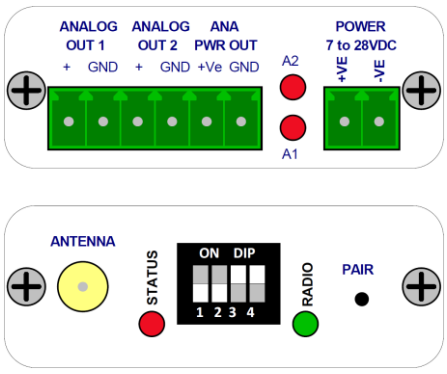
Note: MTC-2AI Internal Link Settings must be in the 0-1V or 0-5V position

End Panel Layout and Connections

MTC-2AI : Transmitter



MTC-2AO : Receiver



Indicator LEDs

MTC-2AI : Transmitter				MTC-2AO : Receiver			
Status	*Radio*	*A1/A2*	*Description*	*Status*	*Radio*	*A1/A2*	*Description*
OFF			No power applied	OFF			No power applied
ON			Learn button presses	ON			Waiting for a pairing packet
				1 pulse			No packets received
2 pulse			Normal operation	2 pulse			Receiving valid packet data
	Red		Sending data		Red		Receiving a signal
		Variable	Brightness represents the incoming analog level.			Not used	

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Pairing Transmitter to Receivers

All transmitters and receivers are factory programmed with a unique serial number. Once a transmitter is paired to a receiver, the unique serial number is used by a receiver to identify the transmitter, thus preventing any other transmitter from causing an output change on the receiver unit.

The same transmitter can be paired with any number of receivers. A paired receiver (MTC-2AO) can be confirmed as receiving valid data by a short double flash on the STATUS LED. A single flash indicates that no valid packet has been received, or the paired link to a remote transmitter has timed out (link fail).

Creating New Pairings

Using a paperclip press the Learn button on the *receiver*. The status LED will light.

1. Press the Learn button on the *transmitter* once. The status LED on the *receiver* will turn off.
2. Press the Learn button on the *transmitter* again. The status LED on then *receiver* will flash.
3. Wait for the receiver status LED to stop flashing. The transmitter will now work with the receiver.

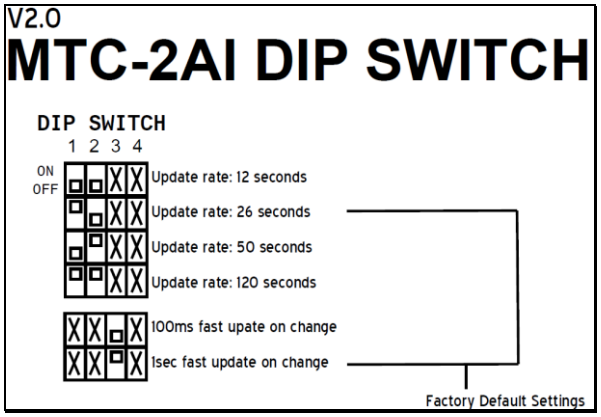
Note: Each receiver can learn up to 50 unique transmitters.

Erase Receiver Pairings

On the MTC-2DO (*receiver*), press and hold the LEARN button for 10 seconds.

The signal LED will turn off after 10 seconds indicating all registered transmitters has been erased.
Note: Individual transmitter pairings cannot be erased.

DIP Switch Options

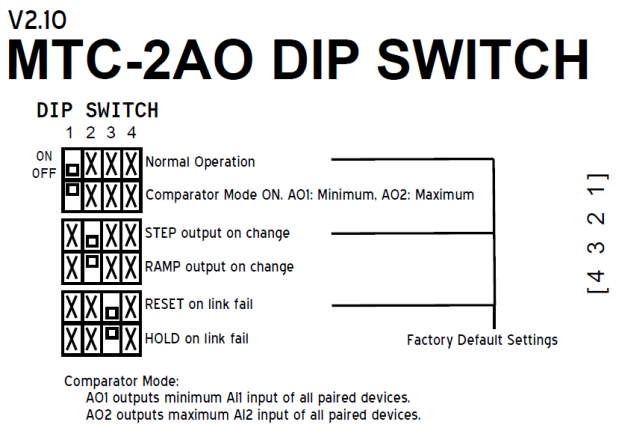


Transmitter Modes of operation:

- Transmit at a rate of 12 seconds
- Transmit at a rate of 26 seconds
- Transmit at a rate of 50 seconds
- Transmit at a rate of 120 seconds

Transmitter update rates on change:

- Upon 5% input change, transmit rate goes to 100ms before backing out to configured rate.
- Upon 5% input change, the transmit rate goes to 1 second before backing out to configured rate. Suitable for noisy or fast changing input.



Receiver Modes of operation:

- Ramp or step the change of output upon receiving new analogue values.

Receiver Link Fail operation:

- Reset or hold the output value upon detecting link fail. Link fail timeout is 3.5x the update rate of the transmitter.

➢ **It's strongly recommend to bench test a wireless link prior to installation to ensure your chosen links settings give the desired output results for all combinations of input states/transitions.**

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MTC – Wireless Telemetry Controllers

Available Frequencies & Operating Range

Freq (MHz)	TX Power	Country of use	Range (upto): MTC-2AI to MTC-2AO (small antenna)	Range (upto): MTC-2AI to MTC-2AO (external antenna)
151.275	100mW	AUS	1km (Helical)	5km+ (1/2 wave)
151.300	100mW	AUS	1km (Helical)	5km+ (1/2 wave)
151.600	100mW	AUS	1km (Helical)	5km+ (1/2 wave)
173.225	100mW	NZ	1km (Helical)	5km+ (1/2 wave)
173.250	10mW	Europe	300m (Helical)	2km+ (1/2 wave)
173.250	100mW	NZ	1km (Helical)	5km+ (1/2 wave)
433.920	10mW	Many	200m (whip)	500m+ (GI dipole)
433.920P	25mW	AUS/NZ	500m (whip)	800m+ (GI dipole)
434.650NB	10mW	AUS/NZ/EU	n/a	1km+ (GI dipole)
869.85	3mW	Europe	80m (whip)	200m (GI whip)
918.525	3mW	AUS	80m (whip)	200m (GI whip)

Ordering Information

The MTC Controller Series is available in a number of operating frequencies to suit specific requirements and countries. Other frequencies are available if required but may be dependant on local regulations for the country of use and/or MOQ's. The MTC Controllers do not include any accessories or antenna. A number of antenna and power supply options are available; please contact your supplier for further information.

Example Product Code: **MTC-** **2AI-** **151.300** **R**

Product Code

MTC - Mini Telemetry Controller

Model

2AI - Dual Analogue Input Transmitter

2AO - Dual Analogue Output Receiver

Operating frequency

Eg; 151.300MHz

Repeater Option

R = Fitted with a transceiver

Options for the MTC-2AO & MTC-2AI

Antennas

- VHF – Wire wound helical mounted on an SMA
- VHF – Helical, end-fed ground independent with 4m low loss coax + SMA
- VHF – ½ wave dipole, end-fed ground independent with 4m low loss coax + SMA
- UHF – Helical wire wound stubby mounted on an SMA
- UHF – ¼ wave whip mounted on an SMA
- UHF – Dipole, end-fed ground independent with 2m low loss coax
- UHF – 6 Element Yagi - 6dBi.
- Lightning arrestor – SMA mount

*Note, mounting hardware is not provided with the external antennas.

Cables, Adapters and Accessories

- DIN Rail Power Supply. 12V or 24V
- TS32 DIN Rail Mounting Bracket

←DIN mount bracket

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