

### New Generation Telemetry Fast Strain Gauge Acquisition Module

#### Features



- 2KHz data acquisition
- Very small size - 18 x 40 x 7mm including signal conditioning module
- Worldwide licence exempt 2.4 GHz radio
- 2 way radio system for data integrity
- Remote power on/off (sleep/wake)
- 120 metre (400 feet) range maximum
- Simple configuration and calibrated via PC using base station with Telemetry Toolkit software provided
- Internal or external antenna options



#### Introduction

For high speed application provides measurements at 2KHz with 200 packets per second containing 10 x 32 bit values representing nano volts/volt. The T24-SA is a high performance strain gauge to radio telemetry converter module, offering precision measurement with high performance two-way telemetry. Usable around the globe on licence-free 2.4GHz frequency, the T24 range avoids local radio interference to ensure data integrity and security. For use in any measuring applications, from torque to weight, vibration to flow, the T24 offers users a complete solution to your measurement requirements.

The modules form part of a simple measurement system that offers the opportunity to collect measurements from a variety of sources, enabling accurate and immediate data collection without the requirement for extensive and labour intensive cabling operations.

The wide temperature operating range and the robust technology ensures that the module it is not susceptible to harsh physical or electrical environments. Options include internal or external antenna.

#### Specifications

##### General Radio

	Min	Typical	Max	Units
Licence		Licence Exempt		
Modulation method		MS (QPSK)		
Radio type		Transceiver (2 way)		
Data rate		250		K bits/sec
Radio Frequency	2.4000		2.4835	GHz
Power		1		mw
Range RAD24i (Integrated antenna)			60 (200)	Metres (feet)
Range RAD24e (External antenna)			100 (325)	Metres (feet)
Channels (DSSS)		16		

##### T24-SAf

Specification with 1000R bridge, 2.5mV/V, at 3V supply at 25 Deg C

Measurement	Min	Typical	Max	Units
Strain Gauge Excitation System			4 Wire	
Strain Gauge Excitation Voltage	4.5	5	5.25	VDC
Strain Gauge Drive Capability	85	-	5000	Ohms
Maximum Gauge Sensitivity (FR)			3.2	+/-mV/V
Offset Temperature Stability		1	4	ppm/C
Gain Temperature Stability		3	5	ppm/C
Offset Stability with Time		20	80	ppm of FR (1)
Gain Stability with Time			30	ppm of FR (2)
Non Linearity before Linearization		5	25	ppm of FR
Internal Resolution		16,000,000/ 24		Resolution/Bits

Noise free resolution is 8000/13 Bytes 10 second sample

Electrical	Min	Typical	Max	Units
Power Supply voltage	2.1	3.0	3.6	V dc
Power Supply ripple			50	mV ac pk-pk

Power Supply current	Min	Typical	Max	Units
Normal Mode (1K Bridge)		60	65	mA
Standby / Low power mode		5	20	uA

Environmental	Min	Typical	Max	Units
Operating temperature range	-40		+85	C
Storage temperature	-40		+85	C
Humidity	0		95	%RH

Power Supply	Min	Typical	Max	Units
Active		35	40	mA
Sleep Mode (1K Bridge)		5		uA
Estimated Battery life using 2Ahr batteries:				
Standby mode (Powered off)		1.5		Years
Continuous operation		40		Hours

Environmental	Min	Typical	Max	Units
IP rating		IP65		
Operating temperature range	-10		+50	C
Storage temperature	-40		+85	C
Humidity	0		95	%RH

#### Module Transmits & Receives giving:

1. Full error detection and correction
2. Calibration & configuration via radio telemetry
3. Ability to be switched from sleep to operating mode via radio
4. mV/V Calibration stored within the module
5. Remote battery check
6. Data Encryption for complete security (128 bit AES)

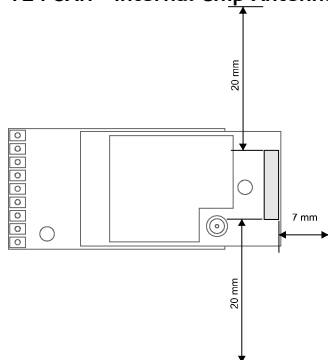
#### Product Order Codes

T24-ACM	Wireless Radio Telemetry Acquisition Enclosure	T24-HR	Wireless Radio Telemetry Handheld Display Unlimited Inputs
T24-ACMi	Wireless Radio Telemetry Acquisition Enclosure	T24-HS	Wireless Radio Telemetry Handheld Display Single Inputs
T24-ANTA	Wireless Radio Telemetry Antenna	T24-IA	Wireless Radio Telemetry Current (4-20mA) Acquisition Module
T24-ANTB	Wireless Radio Telemetry Antenna	T24-PR1	Wireless Radio Telemetry Printer
T24-ANTC	Wireless Radio Telemetry Antenna	T24-RM1	Wireless Radio Telemetry Data to Relay output
T24-AO1	Wireless Radio Telemetry Desktop Analogue Output Module	T24-SA	Wireless Radio Telemetry Strain Gauge /Load Cell Acquisition Module
T24-AO1i	Wireless Radio Telemetry Industrial Analogue Output Module	T24-Saf	Wireless Radio Telemetry 2KHz Strain Gauge Acquisition Module
T24-BC1	Battery Charger for T24 Acquisition Modules	T24-SO	Wireless Radio Telemetry Printer and Display Driver
T24-BSi	Wireless Radio Telemetry Industrial Base Station	T24-TK	Wireless Radio Telemetry Toolkit Software
T24-BSu	Wireless Radio Telemetry Base Station USB	T24-VA	Wireless Radio Telemetry Voltage (0-10V) Acquisition Module
T24-DPV	Wireless Radio Telemetry T24 Data Provider Viewer and Logger		
T24-HA	Wireless Radio Telemetry Handheld Display Multiple Inputs		

For more up to date information visit our website [www.mantracourt.co.uk/products/wireless-telemetry](http://www.mantracourt.co.uk/products/wireless-telemetry)

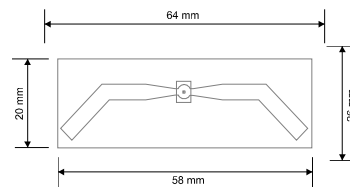
#### Mechanical Dimensions

##### T24-SAFi - Internal Chip Antenna PCB Module



There must be no metal objects within 7mm of the antennas long edge and 20mm from the short edges.

##### T24-SAFe - External Antenna PCB Module



The external antennas come in two styles. The flat PCB antenna can be mounted inside a plastic housing or to the outside of a metal housing. The PCB requires 3mm Clearance on all edges, this also applies to the RF window.

#### Approvals

**CE**, Complies with EMC directive. 2004/108/EC  
The Radio Equipment and Telecommunications Terminal Equipment (R&TTE) Directive, 1999/5/EC.



In the interests of continued product development, Mantracourt Electronics Limited reserves the right to alter product specifications without prior notice.



Designed, Manufactured & Supported in the UK