



QUASAR

Contents

Page

A.M. Radio Remote Control Systems	1202
A.M./F.M. Remote Control Systems	1203
Antennas	1212
DIN Rail Remote Control	1204
FM Transmitter & Receiver Modules	1206
GSM Telemetry	1202
QM (Quasi A.M./F.M.) Radio Remote Control Systems	1206
RF Development	1202



Make Farnell-Newark InOne your first choice - search over 300,000 products at www.farnell-newarkinone.com.sg

Can't find the product you are looking for?

35

RF Control Systems

RF Development

RF Encoder Chipset



- Dual in line or surface mount packages
- Highly secure Keeloq protocol
- RF encoder and decoder I/Cs
- Simple to use, stand alone operation
- Achieves maximum range from RF modules
- 1-4 switch options (15 states)
- Decoder Digital and Serial outputs
- LED indication of transmission
- Easy Learn feature allows up to 50 transmitters to be learned
- Directly compatible with Keeloq keyfob encoders

Typical Applications

- General purpose remote control
- Automotive alarm systems
- Gate and garage openers
- Electronic door locks
- Burglar alarm systems

RF600E Encoder

- 2.0-6.6V operation
- Automatic battery level monitor
- Manchester encoding protocol
- 8 pin DIP package

RF600D Decoder

- 4.5V-5.5V operation
- 18 pin DIP package
- 4 digital outputs (15 states)
- Asynchronous serial interface
- Low transmitter battery output

The RF Solutions RF600E and RF600D are encoder and decoder I/Cs. They have been designed to achieve the maximum possible range from any radio/infrared transmitter receiver set.

Unlike other encoder/decoder devices, the RF600E and RF600D provide an unprecedented level of security which prevents copying or grabbing, whilst also obtaining the optimum range from the transmitter and receiver.

The devices are very easy to use and can be inserted directly into a circuit. The RF600D has an Easy Learn feature enabling it to learn up to 50 unique transmitter encoders.

These devices enable a simple but secure remote telemetry application whilst obtaining the maximum range from the radio set.

The Decoder I/C RF600D may be used with transmitter keyfobs AM-110C1-433 (Order Code 428-0842), AM-110C2-433 (Order Code 428-0854) and AM-110C3-433 (Order Code 428-0866) as well as FM transmitters 102C1-433F (Order Code 308-1096) and 102C4-433F (Order Code 308-1102).

248273

Mfrs. List No.	Order Code	1+	5+	10+	25+
Dual In Line					
RF600E	120-0972	6.74	--	--	--
RF600D	120-0973	10.00	--	--	--
Surface Mount					
RF600E-SO	873-3805	8.17	7.71	7.32	6.97
RF600D-SO	873-3813	15.23	14.42	13.70	13.09

GSM Telemetry

GSM Telemetry System

250R1



- Standalone GSM telemetry controller
- Automatically sends SMS message (to any telephone) when input activated
- Outputs controlled by SMS text message (from any telephone)
- 2 digital inputs
- 2 relay outputs operated by SMS (from any telephone)
- Accepts all major SIM Cards
- Optional Modules: GPS tracking, camera input - sends images via SMS
- Easy installation via screw terminals
- IP65 rated enclosure
- Easy to install and configure
- Dual Band Wavecom GSM modem

Applications

- Remote control by GSM hand-held phone
- Remote warnings / Alarms
- Asset tracking
- Remote system monitoring
- Remote gates
- Remote cameras

The '250' controller is a complete remote telemetry unit. It is operated by the user sending SMS text messages from any standard GSM network/mobile phone. The user can directly control the two output relays from a simple text message, and can also be notified when the inputs on the '250' have been operated.

It contains a GSM modem with control circuitry, 2 relays outputs and 2 digital inputs. It has the facility to incorporate GPS and can accept an external camera input. This complete control system is supplied ready to operate. Installation requires a standard SIM card, connections to power supply screw terminals and the output relay contacts.

339490.345366

Mfrs. List No.	Order Code	1+	5+	10+
250R1	790-1283	895.12	870.88	842.72

A.M. Radio Remote Control Systems

AM Remote Control - Systems A2 & B2

118 Series



- Complete remote control system
- Easy installation via screw terminals
- 12V or 24V dc supply
- Momentary or latching outputs
- 1 relay output 5A @ 230V ac
- 2 relay outputs 2A @ 12V dc
- Requires no radio licence
- Range up to 100 metres
- High security protocol
- IP65 rated enclosure

The RF solutions 118 series Remote Control System is supplied as a complete system ready to operate.

Available as either a one or three channel system, it provides a remote switching of up to 2.5A (5A peak) at 230V ac. The outputs can be set to latching or momentary operation by a user selectable link in the receiver unit.

The system uses a high security 'Keeloq' protocol and has an easy learn feature for up to 50 unique Keeloq transmitter keyfobs.

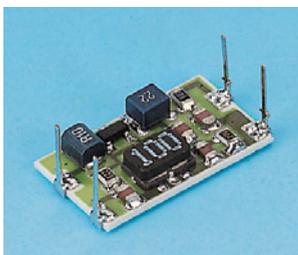
The receiver unit is rated IP65 and is supplied with wall mounting brackets and cable gland for easy installation. The system range is up to 100m in direct line of sight.

Encoder		Decoder	
Keyfob dimensions	66 x 34 x 16mm	Supply voltage	9-16Vdc
Supply voltage	12V or 24V dc	Relays related	230VAC@5A
Operating frequency	433.92MHz	Supply current	25mA (quiescent)
Output power	10mW	Supply current	100mA (relay operating)
		Outputs	Momentary or latching
		Relay contacts	COM, NO, NC
		Physical Dimensions	110 x 85 x 35mm

227664

Remote Control System	Order Code	1+	5+	10+
1 Channel (System A2)	352-4309	137.70	125.31	122.10
3 Channel (System B2)	352-4310	143.82	128.28	125.01
Additional Transmitter/Encoder				
1 Channel Keyfob	428-0842	30.30	29.13	27.81
3 Channel Keyfob	428-0866	30.30	29.13	27.81

A.M. Transmitter Hybrid



- Complete radio transmitter
- Transmit range up to 100m
- CMOS/TTL input
- No adjustable components
- Very stable operating frequency
- Wide operating voltage, 2-14V
- Applications include:- short range wireless datacomms, wireless security systems, vehicle alarms, remote gates, remote sensing, etc.

H=3 (exc Pins), W=10.2, D=18.5
PCB mounting 5.08x17.78, 0.8 dia.

Hybrid transmitter module which provides a complete RF transmitter that can be used to transmit data at up to 4kHz, from any standard CMOS/TTL source. Simple to integrate into any system. It may be connected directly from a microprocessor or encoding device, keeping component count down.

Supply voltage	2-14V dc	Operating temperature	-25°C to +80°C
Current consumption	4mA (V ^{cc} 5V)	Maximum data rate	4kHz
Frequency	433MHz		

212992

Operating Frequency	Order Code	1+	5+	10+	25+
433MHz	120-1014	16.83	15.57	15.15	14.16

Prices are in Singapore Dollars and exclusive of GST. Due to the volatile nature of certain products, prices are subject to change without notice.

A.M. Transmitters - QAMT2



- Miniature two pin package
- SAW resonator technology
- CMOS/TTL compatible input
- Data rate up to 2400bits/sec.
- Compatible with receiver module QMR1, Order Code 309-6609,
- Applications include:- Vehicle alarm systems, remote controls, garage door openers, domestic and commercial security

H=14 (excluding pins), W=10, D=3.5, Lead pitch=5.08

A miniaturised UHF A.M. transmitter module requiring only two connections.

Supply voltage	1.5-13V dc	Frequency Range	433.92/868.35MHz
Current consumption	6-9mA	Operating temperature	100m (max.) -20°C to +55°C
Output Power	10mW		

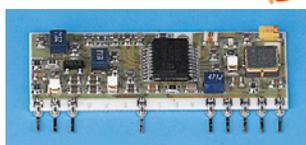
222270

Operating Frequency	Order Code	1+	10+	25+
433.92MHz	309-6580 ▲	18.21	16.38	15.45
868.35MHz	416-8902 ▲	27.54	26.70	25.92

A.M. Receiver Modules



Super Regenerative
H=14, W=38, D=2



- Miniature hybrid R.F. receivers to capture data from 433MHz A.M. transmitters
- Low current consumption
- Laser trimmed inductor gives extremely high frequency sensitivity and stability
- Front end pre-amplifier reduces EMC emissions from the antenna
- CMOS/TTL compatible output
- Receiving range:- Super Regenerative 45m Super Heterodyne 75m
- Requires no radio license to operate
- ETSI300-220 Compliance (Super Heterodyne)

Miniature hybrid RF receivers. Can be used to capture any undecoded data from any 433MHz AM Transmitter.

The modules contain no adjustable components for ultimate reliability. The manufacturing process employs laser trimmed components for increased sensitivity and reliability. Hence these modules show a very high frequency stability over a wide operating temperature even when subjected to mechanical vibrations or manual handling.

The super-heterodyne receiver manufactured on a ceramic substrate incorporates a SAW Filter front end for reduced EMC emissions, and uses an IF stage at 500kHz.

	Super Regenerative	Super Heterodyne
Supply voltage	5V dc	5V dc
Current consumption	2.5mA	3.7mA
Frequency	433MHz	433MHz
Operating temperature	-25°C to +85°C	-25°C to +85°C
Max data rate	2000bps	3000bps
RF Sensitivity	-105dBm (typically)	-107dBm

212912

Operating Frequency	Order Code	1+	5+	10+	25+
Regenerative 433MHz	120-1008	25.88	23.57	21.65	20.05
Heterodyne 433MHz	120-0959	38.90	36.29	34.08	32.09

A.M./F.M. Remote Control Systems

AM Remote Control system



A versatile general purpose remote control, which can be used for controlling many different applications. The system utilises a highly secure Code Hopping protocol to ensure reliable operation.

NEW

- Complete Remote Control System
- 12 or 24Vdc Supply
- Up to 70m Range
- Easy learn Transmitter Feature
- Easy installation via screw terminals
- Relay Outputs 12Apk @ 230Vac
- Momentary or Latching Outputs
- Ideal for Garden Lighting, Garage Doors,

Gates and Door Control, Window openers etc.

- A further 6 transmitters can be learnt by the receiver for multiple users to operate
- System supplied ready to plug and play

Receiver voltage 12V or 24V ±10% Receiver current 14/140mA (no/all relays)

419153

Remote Control System	Order Code	1+	5+	10+
1 Switch	109-6116	107.74	103.31	97.88
2 Switch	109-6117	111.00	107.25	102.01
3 Switch	109-6118	114.25	109.99	104.39
Additional Transmitter				
1 Switch	428-0842	30.30	29.13	27.81
2 Switch	428-0854	30.30	29.13	27.81
3 Switch	428-0866	30.30	29.13	27.81

Selection



Keyfob Pocket Industrial Type 008 Type 105 Type 115 (Expander)

KEELOQ is highly secure code hopping technology. Manufactured by Microchip Technology Inc., this protocol is specifically designed for remote control applications and provides an ideal dedicated solution for any type of wireless telemetry.

The KEELOQ algorithm is a highly secure electronic data protocol. It is based on a transmission stream of 67 data bits.

The key length and hopping code combination reduces the possibility of unwanted access, due to code grabbing and code scanning, to essentially zero. Such CIA-like levels of security are desirable, but many manufacturers would expect them to be cost-prohibitive. An outsider who does not have the electronic key can glean no information at all from the transmissions.

213020

Modul ation	Range (Metres) Approx.	No. of Chnls	Encoder/Type	Decoder Type	PSU	Relay	System	Order Code
A.M.	100	1	Keyfob	118	12-30V dc	230Vac 5A	A2	352-4309
A.M.	100	3	Keyfob	118	12-30V dc	230Vac 5A	B2	352-4310
A.M.	100	1	Keyfob	105	230V ac or 12-30V dc	230Vac 5A	C2	431-7634
A.M.	100	3	Keyfob	105	230V ac or 12-30V dc	230Vac 5A	D2	431-7646
F.M.	200	1	102	008	12-30V dc	230Vac 5A	E2	431-7658
F.M.	200	4	102	008	12-30V dc	230Vac 5A	F2	431-7660
F.M.	200	1	102	105	230V ac or 12-30V dc	230Vac 5A	G2	431-7671
F.M.	200	4	102	105	230V ac or 12-30V dc	230Vac 5A	H2	431-7683
F.M.	200	14	Industrial	105+115	230V ac or 12-30V dc	230Vac 5A	J2	431-7695
F.M.	3000	4	Industrial	105	230V ac or 12-30V dc	230Vac 5A	K	308-1000

A.M. Radio Remote Control - Systems A & B

1 or 2 Channel 12V dc



- A.M. remote control system
- Range up to 45 metres
- High security KEELOQ protocol
- Receiver and decoder unit with relay output
- 'Easy learn' Tx encoder feature
- Momentary or latching relay outputs
- Relay rated 2A @ 12V dc
- LED indication of data reception
- Rx decoder can learn up to 50 Tx encoders
- European 433MHz operation
- Requires no radio license

Transmitter: L=65, W=35, D=17
Receiver/Enclosure: L=143, W=82.5, D=23

A remote control system is supplied ready to operate. The system consists of a miniature pocket keyfob and compact receiver decoder unit.

The keyfob is complete with battery, the receiver decoder requires a 12-30V dc power supply. All connections to the systems are via screw terminals.

Operation of the transmitter key switch causes the relay in the receiver/decoder to operate. The relay may be set to latching or momentary operation by an on-board jumper link on the PCB.

The system uses the highly secure KEELOQ protocol providing unprecedented security yet has an easy self learn feature to enable up to 50 transmitters to be added to a system. Full instructions are supplied.

RF Control Systems

35

Compliant
Non-compliant
RoHS
Limited stock - RoHS replacement available



Transmitter
 Supply voltage 9V dc (GP23A battery supplied)
 Current consumption 8.5mA when transmitting
 Output power 10mW (max.)
 Frequency 433.92MHz
 Range Up to 45m
 Operating temp. 0 to 60°C
 EMC Compliance ETSI300-683

Receiver/Decoder
 Supply voltage 9-16V dc
 Current consumption 8mA quiescent
 Frequency 433.92MHz
 Operating temperature 0 to 60°C
 Relay connections NO, NC, COMM
 Relay rating 2A @ 12V

213040

Remote Control System	Order Code	Price Each			
		1+	5+	10+	25+
1 Channel (System A)	308-0912	198.90	183.96	179.01	167.40
2 Channel (System B)	308-0924	206.55	191.04	185.88	173.82
Additional Transmitter/Encoder					
1 Channel Keyfob	308-1035	42.84	39.63	38.55	36.97
2 Channel Keyfob	308-1047	47.43	43.86	42.69	39.90

A.M. / F.M. Pocket Keyfob Remote Control Systems



This versatile range of Remote controls use a highly secure 'Keeloq' protocol to provide reliable Remote switch at a competitive price.

Supplied ready to operate as either a 1, 2 or 3 channel system, installation requires connection to the power supply and the output relay contacts. Screw terminals are provided for this. The system can switch upto 12A at 230V ac (max), 5A continuous. Each relay can be set to latch or operate momentary operation via user changeable links.

Further Transmitters may be added to the system using the Keeloq Easy learn feature, (a max of 50 transmitters can be used per Rx unit). Supplied in tough ABS, both transmitter and receiver units provide a waterproof enclosure, the transmitter is IP40 rated whilst the receiver unit is IP65. The receiver unit is supplied with wall mounting lugs.

- Complete remote control systems
- High security Keeloq protocol
- Easy Learn Tx encoder feature
- Range AM version upto 100 metres FM version upto 150 metres
- Easy installation via screw terminals
- 230V ac or 12/24V dc supply
- Output relay rated 12A_{pk} (5A_{cont}) @ 230V ac
- Momentary or latching outputs
- Optional serial output
- IP65 rated enclosure with wall mount brackets
- Up to 50 transmitters per system
- EMC compliant for use in Europe

Optimum Range	Modulation	No. of Channels	Receiver Supply	Mftrs. List No.	Order Code
100m	AM	1	12 / 24V dc	118C1R1	352-4309
		3		118C3R1	352-4310
		1	230V ac	110009-1-AR1	431-7774
		2		110009-2-AR1	431-7786
150m	FM	1	12 / 24V dc	128S1-433FR1	571-4370
		3		128S3-433FR1	856-8154
		1	230V ac	129S1-433FR1	856-8162
		2		129S2-433FR1	856-8170

Keyfob Transmitter
 Standard 110 Series supplied ready to operate
 Battery type GP23A

Keyfob Transmitter
 Dimensions 66x34x16mm
 Operating frequency 433.92MHz

Rx Decoder
 Supply voltage 12 or 24V dc
 AC Version 230V ac

Rx Decoder
 Relays Rated 12A @ 230V ac pk (5A cont)
 1A @ 12V dc
 Dimensions 110x85x35mm
 IP65 Rated Enclosure with wall mount lugs

386897

	Mftrs. List No.	Order Code	Price Each		
			1+	5+	10+
A.M. Remote Control Systems					
1 Channel, 100m, 12/24V dc	118C1R1	352-4309	137.70	125.31	122.10
3 Channel, 100m, 12/24V dc	118C3R1	352-4310	143.82	128.28	125.01
1 Channel, 100m, 230V ac	110009-1-AR1	431-7774	212.67	204.00	203.25
2 Channel, 100m, 230V ac	110009-2-AR1	431-7786	217.11	207.57	198.75
Additional A.M. Transmitter Keyfobs					
1 Channel Keyfob	AM-110C1-433	428-0842	30.30	29.13	27.81
2 Channel Keyfob	AM-110C2-433	428-0854	30.30	29.13	27.81
3 Channel Keyfob	AM-110C3-433	428-0866	30.30	29.13	27.81
F.M. Remote Control Systems					
1 Channel, 150m, 12/24V dc	128S1-433FR1	571-4370	274.20	--	--
3 Channel, 150m, 12/24V dc	128S3-433FR1	856-8154	280.74	270.13	260.92
1 Channel, 150m, 230V ac	129S1-433FR1	856-8162	274.20	264.37	252.10
2 Channel, 150m, 230V ac	129S2-433FR1	856-8170	280.74	270.13	260.92
Additional F.M. Transmitter Encoders					
1 Channel Keyfob	120T1-433F	856-8189	52.24	50.35	48.60
2 Channel Keyfob	120T2-433F	856-8197	55.50	53.58	51.79
3 Channel Keyfob	120T3-433F	856-8200	62.04	59.79	57.68

F.M. Radio Remote Control
 1 or 4 Channel 230V ac or 12V dc



Transmitter: L: 100, W: 65, D: 24
 Receiver: L: 190, W: 120, D: 60

This F.M. remote control system is supplied ready to operate. The system uses the KEELOQ encryption algorithm providing the world's most advanced high security protocol and comprises of a hand-held encoder with receiver decoder unit.

The receiver decoder is supplied in an IP65 rated enclosure and may be powered from either 230V ac or 12-30V dc. Operation of the transmitter key switch causes the relay in the receiver/decoder to operate. The relay may be set to latching or momentary operation by an on-board jumper link on the PCB. A further output channel indicates that the transmitter keyfob battery is low and should be replaced.

All connections to the system are via screw terminals.

Up to 50 transmitter encoders may be programmed to the decoder using the easy learn facility. Full instructions are supplied.

Optimum Range	Modulation	No. of Channels	Receiver Supply	Mftrs. List No.	Order Code
200m	F.M.	1	12 / 30V dc	102105C1-433F	431-7671
		4	or 230V ac	102105C4-433F	431-7683

Transmitter
 Supply voltage 9V dc (PP3 battery) supplied
 Current consumption 1mA quiescent
 20mA when transmitting
 Output power 10mW (max.)
 Frequency 433.92MHz
 Range Up to 200m
 Operating temp. 0 to 60°C
 EMC Compliance ETSI300-220

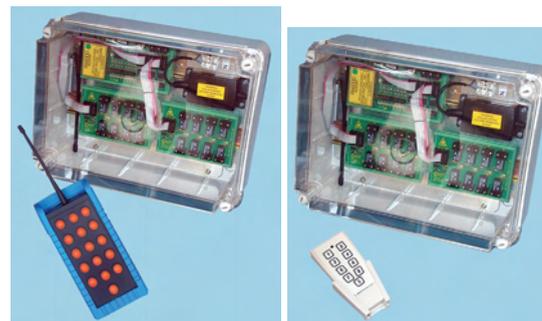
Receiver/Decoder
 Supply voltage 230V ac or 12-30V dc
 Current consumption 8mA quiescent
 Frequency 433.92MHz
 Operating temp. 0 to 60°C
 Relay connections NO, NC, COMM
 Relay rating 12A peak, 5A continuous @ 230V ac

248382

Remote Control System	Order Code	Price Each			
		1+	5+	10+	25+
1 Channel	431-7671	367.20	353.07	340.02	324.63
4 Channel	431-7683	382.50	368.34	355.17	339.57
Additional Transmitter/Encoder					
1 Channel	431-7816	103.89	94.95	89.49	--
4 Channel	433-6549	113.07	102.27	96.42	--

DIN Rail Remote Control

Pro Series Remote Control System



204 and 205 Series

Available as 4-16 channels the professional range are ready to operate general purpose remote control systems using a highly secure transmission protocol for reliable operation.

The receiver unit consists of IP65 enclosure with power supply. All circuitry is industrial standard DIN Rail Modules (Interchangeable). The relay outputs may be user set to operate as latching or momentary. Output 1 may be set to timed from 1-15 minutes.

Additional transmitters are easily added using the easy learn procedure. Any transmitter switch(s) can be mapped to any individual or combination of receiver output(s)

- Ready to use remote control
- Range:- Upto 200 metres at 433MHz
- Range:- Upto 1000 metres at 433MHz (NB)
- Relay Outputs:- Momentary, Latching, Timed
- Receiver IP65
- Suitable for Lighting Control, General purpose Remote Switching, Door Control, Industrial Remote Switching, Access Control etc.

NEW

Mfrs. Number	Description	Range (M)	Freq (MHz)	Relay Outputs (230Vac)
204PRO4-433F	4 channel RC System	100	433.92	4 x 12A
204PRO16-433F	16 channel RC System	100	433.92	16 x 12A
205PRO4-433F	4 Channel RC System	250	434.525	4 x 12A
205PRO8-525N	8 Channel RC System	1000	434.525	8 x 12A

419158

Remote Control System	Order Code	1+	5+	10+
204PRO4-433F	109-6119	1,041.37	1,000.29	972.63
204PRO16-433F	109-6120	1,165.42	1,128.12	1,095.93
205PRO4-433F	109-6121	1,087.07	1,050.97	1,021.29
205PRO8-525N	109-6122	1,452.67	1,392.20	1,352.39

205 Series Hand Held Transmitters



A range of rugged radio transmitters for use with any of the 200 series receivers. Each transmitter is supplied with a rugged outer rubber boot and is IP65.

NEW

- Battery Type 2 x AAA (not supplied)

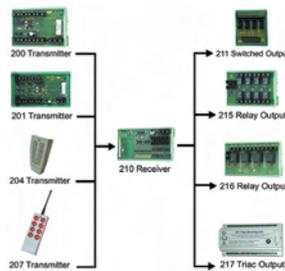
Mfrs. Number	Description	Range (M)	Freq (MHz)	Compatible Decoders
205C8-433F	FM Transmitter 4 Switch	100	433.92	210-433F
205C8-525N	FM Narrowband (NB) Transmitter 8 Switch	600	434.525	210-525N
205C16-525N	FM NB Transmitter 8/16 Switch	600	434.525	210-525N

419162

Transmitters	Order Code	1+	5+	10+
205C8-433F	109-6123	257.89	244.84	236.67
205C8-525N	109-6124	319.90	305.06	293.73
205C16-525N	109-6125	943.43	903.98	870.45

Remote Control System

DIN Rail Mounted



This DIN Rail remote telemetry system provides simple building block modules to generate many different remote telemetry/controls. Transmitters are either hand-held (204, 207) or DIN Rail mounting (200, 201) modules with screw terminal inputs. Receivers can be outputted via digital signals (211), relay outputs (215, 216, 230) or dimming outputs (217). This range provides the most comprehensive general purpose remote controls for a huge range of applications from Industrial Long Range telemetry (up to 6km) to garden lighting control.

- Simple to use modular remote control
- 1, 4, 8 or 16 channel transmitters
- Outputs can be momentary, latching, timed (up to 15 minutes) or dimming
- Outputs rated: up to 12A@230V ac, up to 250W dimming @230V ac
- LED indication of each channel
- Transmitter switch to any output channel
- Range: up to 200m (433MHz), up to 1,000m (433MHz Narrow Band), up to 6,000m (458MHz)
- Up to 48 unique transmitter encoders may be learned by the system
- Requires no radio license

337205

Product Watch

- FREE to all account holders
- Notification of obsolete, end of line and end of stock items
- Replacement or upgrade recommendations

Advanced warning of obsolete components

DIN Rail Transmitter Encoder 200 Series



This is an easy-to-use, radio transmitter module, which can accept 8 pairs of 'Volt free' contacts as inputs via screw terminals. When a contact closure occurs, the 200Tx transmitter will transmit a data packet over the RF link to an associated 210Rx receiver (that has been learnt by the 200Tx). The 200Tx module continually monitors the status of its 'inputs'. Whenever a change of state is seen on any input, the 200Tx will transmit the status of all inputs. Full configuration instructions are given in the user manual.

The transmitter encoder uses EMC compliant radio transmitter modules and complies with ETSI330-220.

- Up to 8 input channels
- Volt free contact inputs via screw terminals
- 12/24V dc supply
- Range: Up to 200m (433MHz), 1,000m (433MHz Narrow Band), 6,000m (458MHz)
- High security RF protocol
- Auto transmit mode
- Automatic 'Watchdog' transmission
- Supplied with ¼ wave antenna

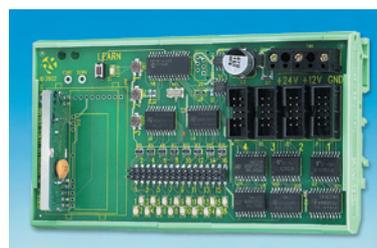
Dimensions	112x82mm (within DIN Rail) 109x72mm (PCB)	Operating Temperature	0° to +55°C
Storage Temperature	-10° to +70°C		

Electrical Characteristics	Min	Typical	Max
Supply Voltage: 12V Supply	10V	12V	16V
Supply Voltage: 24V Supply	21V	24V	30V
Antenna Output Lead Impedance		50Ω	
433MHz/433MHz Narrow Band Version			
Supply Current: Quiescent		10mA	
Supply Current: Transmitting Data	150mA	170mA	200mA
458MHz Version			
Supply Current: Quiescent		10mA	
Supply Current: Transmitting Data	240mA	250mA	270mA

336729

Operating Frequency	Order Code	1+	5+	10+
433.92MHz	416-8823	211.14	204.81	198.66
434.525MHz Narrow Band	491-5604	322.25	313.26	300.63
458.85MHz	416-8835	914.94	887.49	860.88
Power Supply Unit	120-0969	59.67	57.90	56.16

DIN Rail Receiver Decoder 210 Series



This DIN rail module performs the radio reception and decoding. It has four output connectors, each with four digital outputs, and displays the output status on LEDs 1-16. DIN rail output modules, such as the 211, 215, 216 and 217 plug into connectors marked 1-4 (connecting cable supplied with output module).

NOTE: The 210Rx can only be configured to work with either a handheld 204 transmitter or a DIN rail 200 transmitter.

- RF receiver and decoder
- 16 digital outputs
- 3 timed outputs
- Easy Learn function
- 230V ac PSU available
- Supplied with ¼ wave antenna

Dimensions	157x82mm (within DIN Rail) 155x72mm (PCB)
Storage Temperature	-10° to +70°C
Operating Temperature	0° to +55°C

Electrical Characteristics	Min	Typical	Max
Supply Voltage: 12V Supply	10V	12V	16V
Supply Voltage: 24V Supply	21V	24V	30V
Supply Current: Quiescent		25mA	
Time from Tx Switch depressed to 210Rx output			100mSecs
Time from Tx Switch release to Decoder output			200mSecs
Switched Output Voltage (I _{out} = 1mA)			
Logic Low	0V	0.2V	0.8V
Logic High	3.5V	3.8V	5V

336730

Operating Frequency	Order Code	1+	5+	10+
433MHz	416-8859	243.96	233.68	224.07
433MHz Narrow Band	491-5616	345.03	332.95	321.63
458MHz	416-8860	914.94	906.75	--
Power Supply Unit	120-0969	59.67	57.90	56.16

RF Control Systems

35

Compliant
Non-compliant
RoHS
Limited stock - RoHS replacement available

DIN Rail Enclosure with PSU
200 Series



- IP65 rated enclosure
- Sealable hinged lid screws
- DIN Rails mounted on steel plate
- Integrated 12V dc moulded power supply
- 5 Amp fused terminal block
- Cable gland supplied
- Accommodates up to 4x 200 Series DIN Rail Modules

The 200 Series DIN rail enclosures are supplied pre-configured with DIN Rails mounted on a metal back plate. A 12V dc power supply is incorporated. 12V dc is presented on a fused terminal block. A gland is supplied to enable power to enter the enclosure.

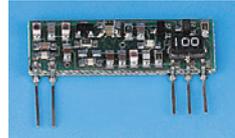
Dimensions		Dimensions	
External	315 x 235 x 130mm	DIN Rail length 2	180mm
Internal	300 x 220 x 120mm	Material	GW PLAST 120°C
DIN Rail length 1	285mm		GW PLAST 120°C

PSU Technical Specifications		PSU Technical Specifications	
Input voltage	110-240V ac	Output Current	1A
Output Voltage	12V dc ±5%		

Mfrs. List No.	Order Code	1+	5+	10+	Price Each
DIN Rail Enclosure	ENC-DA3R1	856-8308	362.35	350.86	340.25

QM (Quasi A.M./F.M.) Radio Remote Control Systems

Q.M. Transmitter Module - QFMT1
433 MHz



H=11 (excl. pins), W=30, D=4, Pin spacing=2.54

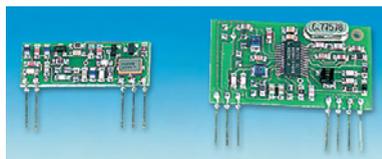
- Miniature SIL package
- Unique Q.M. (Quasi A.M./F.M.) design
- Data rates up to 20Kbits/s
- Optional range 200m
- Industry pin compatible
- Unique modulation scheme (high interference rejection)
- Compatible receiver modules QMR1 Order Code 309-6609 and QFMR2 Order Code 309-6610

Miniature UHF radio transmitter PCB mounting module capable of transmitting data at distances of up to 1km in direct line of sight.

Supply voltage	3-9V dc	Frequency	433MHz
Current consumption	12mA (max.) V _{cc} 5V	Range	Up to 200m
Radiated power	V _{cc} =5V - 0dBm typical 5V	Operating Temperature	-20°C to +55°C

Order Code	1+	5+	10+	25+	Price Each
120-0964	42.69	39.48	38.16	35.91	

Q.M. Receiver Modules - QMR1/QFMR2
433 MHz



- Unique Q.M. (Quasi A.M./F.M.) design
- Data rates up to 20Kbits/s
- Range up to 1km
- 5V supply voltage
- Industry pin compatible version(QFMR2, Order Code 309-6610)

Miniature high performance UHF receiver modules with Quasi A.M./F.M. modulation when used with a compatible Quasar transmitter module will yield a highly efficient wireless link at data rates of up to 20Kbits.

Supply voltage	5V dc	Frequency	433MHz
Current consumption	2mA	Operating Temperature	-40°C to +85°C
Radiated power	QMR1 -110dBm; QFMR2 -104dBm		

Compatibility	Receivers		
	Transmitters	QMR1 (120-0965)	QFMR2 (309-6610)
QAMT2 (309-6580)	YES	NO	
QAMT1 (120-0964)	YES	YES	

213032

Type	Order Code	1+	5+	10+	25+	Price Each
QMR1	120-0965	74.97	69.33	67.47	63.12	
QFMR2 (Industry Pin Compatible)	309-6610▲	74.97	69.33	67.47	63.12	

868MHz FM Radio Transmitter and Receiver



- Miniature SIL package
- Data rates up to 10Kbits/s
- Optimal range 150m
- SAW Stabilised quasi AM/FM transmission
- 3 - 9 volt supply voltage
- Industry pin compatible
- Very high sensitivity (-110 dBm)
- Very low current consumption
- Immune to FM threshold effect

Applications

- Vehicle alarm systems
- Remote gate controls
- Garage door openers
- Domestic and commercial security

This single in line (SIL) miniature UHF radio transmitter and receiver pair provide low cost PCB mounting module capable of transmitting data at distances of up to 150m in direct line of sight. The modules operate at 868MHz which is the European wide licence free radio frequency.

The Quasar transmitter module implements a unique quasi AM/FM modulation scheme that puts the baseband data signal in frequency (typically 20KHz). This generates the normal FSK spectrum, but simultaneously the RF carrier is also amplified thus yielding the ASK spectrum.

Because of its small size and low power requirement, this module is ideal for use in portable battery powered wireless applications.

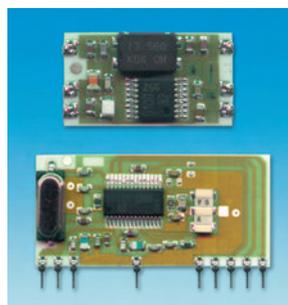
Transmitter		Receiver	
Supply voltage	3-9V	Supply voltage	5V
Bit Rate	10Kbps	Bit rate	10Kbps
Overall frequency accuracy	+/-100kHz	Data output high	4.5 V
Supply current (V _{cc} 5V)	12mA(V _{cc} =5V)	RF sensitivity	-110dBm
Frequency	869.35MHz		

213042

Mfrs. List No.	Order Code	1+	5+	10+	Price Each
QFMT1-868	352-4395▲	35.19	34.29	33.42	
QMR1-868	352-4401▲	53.55	52.20	50.88	

F.M. Transmitter & Receiver Modules

FM Telecontrolli Hybrid Tx/Rx Modules
433MHz or 868MHz



- FM Radio transmitters & receivers
- Available as 433MHz or 868MHz
- Transmit range up to 250m
- Miniature packages
- Data rate up to 9.6Kbps
- No adjustable components
- Very stable operating frequency
- Operates from -20° to +85°C

Transmitter

- 3-12V supply voltage
- SIL or DIL package

Receiver

- PLL XTAL design
- CMOS/TTL output
- RSSI output

- Standby mode (max 100nA)
- 5V supply voltage

Applications

- Wireless security systems
- Car alarms
- Remote gate controls

- Remote sensing
- Data capture
- Sensor reporting

These miniature RF modules provide a cost effective high performance FM Radio data link, at either 433MHz or 868MHz. Manufactured using laser trimmed Thick Film Ceramic Hybrid, the modules exhibit extremely stable electronic characteristics over an Industrial Temperature range. The hybrid technology uses no adjustable components and ensures very reliable operation.

Prices are in Singapore Dollars and exclusive of GST. Due to the volatile nature of certain products, prices are subject to change without notice.

This transmitter and receiver pair enables the simple implementation of a data link at distances up to 75 metres in-building and 250 metres open ground. These modules will suit one-to-one and multi-node wireless links in applications including car and building security, EPOS and inventory tracking, remote industrial process monitoring and computer networking. Because of their small size and low power requirements, these modules are ideal for use in portable, battery-powered applications such as hand-held terminals.

Transmitters

There are two versions of transmitter:
 RTFQ1: A Dual-in-Line package operating at 3.3V. This provides the most rugged mechanical fixing to the host PCB. Power Down mode is also available.
 RTFQ2: A Single-in-Line package incorporating a voltage regulator for 3-12V operation. (Compatible with many other RF transmitter modules)

Receivers

There are two versions of receiver:
 RRFQ1: A Single-in-Line package with sleep/Power Down mode.
 RRFQ2: A Single-in-Line package, pin compatible with many other receivers.

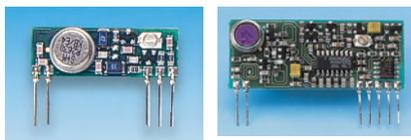
	Transmitter	Receiver
Supply Voltage:		
RTFQ1	2.1-4V	5V
RTFQ2	2.5-12V	5V
Supply Current (typical)	7mA	5.5mA
Supply Current (standby)		<100nA
Frequency	433.92MHz or 868.35MHz	433.92MHz or 868.35MHz
Temperature	-25° to 80°C	-25° to 80°C
Dimensions	23x11.5x4mm	38x15x4mm
Sensitivity	N/A	-102 dBm typ
Max Data Rate	9.6KHz	9.6KHz

336507

Mfrs. List No.	Order Code	1+	5+	10+
Transmitter				
FM-RTFQ1-433	120-0970	19.89	19.32	18.72
FM-RTFQ1-868	120-1000	21.58	20.96	20.31
FM-RTFQ2-433R	120-0990	21.58	20.96	20.31
FM-RTFQ2-868R	120-1006	21.58	20.96	20.31
Receiver				
FM-RRFQ1-433	120-0971	32.55	--	--
FM-RRFQ1-868	120-1003	34.86	33.82	32.81
FM-RRFQ2-433	120-0991	34.86	33.82	32.81
FM-RRFQ2-868	120-1007	34.86	33.82	32.81

Transmitter and Receiver Modules

'Radiometrix'



Transmitter Receiver
 Pin spacing=2.54, PCB hole dia.=0.7

- Transmission distance up to 200 metres
- Analogue and digital input/outputs
- 418MHz or 433MHz SAW controlled-wide band FM transmission
- 10Kbps data bandwidth
- Small size, PCB mounting SIL package
- Range up to 200 metres(300 metres 433MHz)

The Radiometrix radio transmitter and receiver modules are self contained, PCB mounting and capable of transferring analogue and digital data up to a distance of 200 metres. The modules are suitable for general purpose telemetry and remote control applications where small size and high data rates are required. Typical applications include domestic and commercial security, lighting control, garage door openers, remote control and access control.

Transmitter	Receiver
Supply voltage	6 to 9V dc
Current consumption	6mA @ 6V, 14 mA @ 12V
Abgestrahlte Leistung (ERP)	Vcc = 6V - 10dBm typical
	Vcc = 9V - 8dBm typical
	Vcc = 12V - 6dBm typical
Frequency	433MHz
Range	Up to 200m
Operating temperature	-10 to +55°C
License	DTI approved to MPT 1340

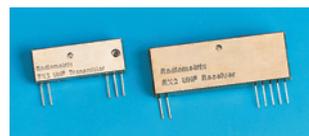
Note: 433MHz Frequency is now open to any telemetry application in the UK and Europe

212833

	Operating Frequency	Order Code	1+	5+	10+	25+
Transmitter	433MHz	120-1009	44.03	40.74	39.63	37.05
Receiver	433MHz	120-1010	90.85	84.06	81.78	76.47

Transmitter and Receiver Modules

2nd Generation Radiometrix



Transmitter Receiver
 L=32, W=12, D=4 L=48, W=22, D=4

- Plug-in compatible with 676-597 and 676-603
- Usable range to 300 metres
- Data rates to 14Kbps
- Conforms to ETS300-339
- Fully screened
- Applications include:- OEM remote control systems, radio data communications, Alarm system and access control

Second generation Radiometrix transmitters and receivers. They are a direct plug-in replacement for the existing transmitter modules. The benefits include, higher data rate, improved EMC characteristics, and thinner mechanical package.

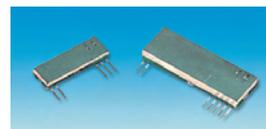
	Transmitter	Receiver
Supply voltage	5V dc	5V dc
Current consumption	10mA	13mA
Frequency/Power	433MHz @ 10mW	433MHz
Max. data rate	14Kbps	14Kbps
RF Sensitivity	-	-105dBm (typically)
Operating temperature	-25°C to +85°C	-25°C to +85°C

Note: 433MHz frequency is now open to any telemetry application in the UK and Europe

212989

	Operating Frequency	Order Code	1+	5+	10+	25+
Transmitter	433MHz	120-1011	48.81	46.35	44.37	39.39
Receiver	433MHz	120-1012	100.83	98.82	95.61	87.87

433MHz FM Radio Transmitter and Receiver T5/R5



The QFMT5 and QFMR5 data link modules are miniature UHF radio modules which enable the implementation of a simple telemetry link up to 300 metres, and at data rates of up to 20Kbits/s.

The QFMT5 and QFMR5 modules will suit one-to-one and multi-node wireless links in applications including building and car security, remote industrial process monitoring and computer networking. Because of its small size and low power requirements, these modules are ideal for use in portable battery powered wireless applications.

- Miniature SIL package
 - Fully shielded
 - Data rates up to 15Kbits/s
 - Range up to 400 metres
 - Single supply voltage
 - Industry pin compatible
- | | |
|----------------------------|----------------------------------|
| QFMT5-434 | QFMR5-434 |
| ● Temp range -20°C-+80°C | ● High sensitivity |
| ● No adjustable components | ● Analogue, digital outputs |
| ● Good shock resistance | ● Signal strength output (RSSI) |
| | ● Single conversion FM super-het |

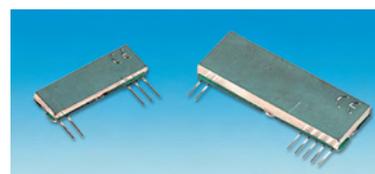
These modules are compatible with:

	120-1009	120-1010	120-1011	120-1012
FM-X1-433		FM-X1-433A	FM-TX2-433	FM-RX2-433A-5V
		Transmitter	Receiver	
Supply voltage		5V	5V	
Current consumption		12mA (max)	5mA	
Frequency/Power		433.92MHz	433.92MHz	
Radiated power		10mW	N/A	
Temperature		-25°C - +80°C	-25°C - +80°C	
Dimensions		31 x 10 x 4mm	48 x 17 x 4.6mm	
Sensitivity		N/A	typ -107dBm	
Max. Data Rate		20Kbps	20Kbps	

227667

Mfrs. List No.	Order Code	1+	5+	10+
QFMT5-434 SIL	120-0966	42.69	41.61	40.53
QFMR5-434	120-0967	85.53	83.37	81.24

Long Range F.M. Narrow Band Transmitters/Receivers



- Miniature SIL package
- FM Narrow Band (12.5kHz)
- 1,000 metres optimum range
- Crystal controlled
- Data rates up to 20Kbps

Transmitter T7G

- Digital inputs
- Narrow Band crystal stabilised

Receiver R7G

- Small form factor
- Data & AF out
- CD implemented on data output
- RSSI output
- Selective ceramic IF filters

Applications

- Telemetry systems
- Wireless networking
- Domestic and commercial wireless security systems
- Panic attack facility
- Remote control for cranes etc

The T7G and R7G are miniature narrow band transmitter and receiver UHF radio modules, which enable the implementation of a simple telemetry link at data rates up to 20Kbps. The transmitter is based on the classical phase locked loop using a crystal oscillator. This results in an accurately controlled RF output in the frequency domain. A significant advantage of this is that narrow filtering can then be used in the receiver, which results in high interference immunity. In addition, the module is fitted with a voltage regulator which gives better supply filtering and a constant RF output level. The receiver is based on the single conversion super-het principle using phased lock loop technology. Because of their small size and low power requirements, the modules are ideal for use in battery powered wireless applications.

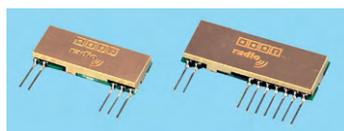


	Transmitter	Receiver
Supply Voltage	5V	5V
Supply Current	25mA typical	1.1mA typical
Temperature	-25° to 70°C	-25° to 70°C
Dimensions	31x10x3.5mm	49x17x4.65mm
Sensitivity	N/A	-117dBm typical
Max Data Rate	20Kbps	20Kbps

336513.345819

Operating Frequency	Order Code	Price Each		
		1+	5+	10+
Transmitter				
434.075MHz	120-0992	63.47	61.16	58.95
434.225MHz	120-0994	63.47	61.16	58.95
434.525MHz	120-0996	63.47	61.16	58.95
Receiver				
434.075MHz	120-0993	105.79	102.04	98.50
434.225MHz	120-0995	105.79	102.04	98.50
434.525MHz	120-0997	105.79	102.04	98.50

433MHz FM Transmitter & Receiver
ER400TS/ER400RS



- Easy Radio technology allows frequency, data rate and power output to be optimised for customer specific applications
- Crystal controlled synthesiser for frequency accuracy
- User programmable: frequency of operation, data rate, output power

- Low operating voltage and power consumption

Applications:

- Hand-held terminals
- Environmental sense & control
- Vehicle to base station data transfer
- Remote data acquisition
- Electronic point of sale equipment

The Easy Radio ER400TS transmitter and ER400RS receiver incorporate 'Easy Radio' technology to provide high performance, simple to use radio devices that can transfer data over a range of 250m line of sight. They are ideal for general purpose remote control and data telemetry applications within the European 433MHz ISM band.

The receiver is equipped with a Received Signal Strength Indicator (RSSI) output that can be optionally used to measure received signal levels.

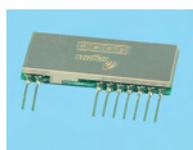
The modules connect to any 50Ω antenna such as a whip, helical or PCB loop.

Transmit power	10mW	Power consumption	23mA (transmitter)
Operating voltage	3.6V single Lithium cell		13mA (receiver)
Frequency	433.92MHz	Range	250m
Operating temperature	-20°C to +65°C	Dimensions	32x12.5x3.8mm (transmitter)
Receiver sensitivity	-105dBm @19.2Kbps typical		37x14x4mm (receiver)

338906

	Order Code	1+	5+	10+
ER400TS Transmitter	509-6510	33.14	32.06	31.05
ER400RS Receiver	509-6522	50.06	48.47	46.94

FM Transceiver
ER400TRS/ER900TRS



- Easy Radio technology allows frequency, data rate and power output to be optimised for customer specific applications
- Crystal controlled synthesiser for frequency accuracy
- User programmable: frequency of operation, data rate, output power
- Serial Input and Output for transparent data transmission

- Software includes all encoding/decoding functions
- Low operating voltage and power consumption

Applications:

- Hand-held terminals
- Environmental sense & control
- Vehicle to base station data transfer
- Remote data acquisition
- Electronic point of sale equipment

The Easy Radio ER400TRS and ER900TRS transceivers incorporate 'Easy Radio' technology to provide a high performance, simple to use radio device that can bi-directionally transfer data over a range of up to 250m and 120m line of sight respectively.

The ER400TRS transceiver operates on the Pan-European 433MHz frequency band, while the ER800TRS transceiver operates on either the 902-928MHz frequency band for US markets or the 868-870MHz European allocations. The transceivers can be operated from a 3.6V supply and are housed in a space saving Single-in-Line (SIL) package. Serial input and output simplify interface to host systems and the embedded software reduces design and development time significantly.

The transceivers connect to any 50Ω antenna such as a whip, helical or PCB loop.

	ER400TRS	ER900TRS
Transmit power	10mW	1mW to 5mW
Operating voltage	3.6V single Lithium cell	3.6V single Lithium cell
Frequency	433.92MHz	868-920MHz
Operating temperature	-20°C to +65°C	-20°C to +65°C
Receiver sensitivity	-105dBm @19.2Kbps typical	-100dBm typical
Power consumption	23mA (transmitter)	23mA (transmitter)
	12.5mA (receiver)	17mA (receiver)
Range	250m	120m
Dimensions	37x14x4mm	37x14x4mm

338908

	Order Code	1+	5+	10+
ER400TRS Transceiver	509-6558	60.48	58.66	56.80
ER900TRS Transceiver	509-6560	60.48	58.66	56.80

F.M. Radio Transceiver & Packet Controller



- FM radio Dual Band 'Smart' transceiver
- Available as basic or smart RF transceiver
- Data rates to 20K baud
- 2 selectable RF channels
- Narrowband crystal controlled
- 200m optimal range
- Supply voltage 3-5V
- Very stable operating frequency
- Low profile ceramic DIL package
- Operates from -20 to +85°C

RXQ1 Version

- RF Transceiver version only

TRXQ1 Version

- Transceiver with Flash Controller incorporated
- Serial Data Interface with Handshake
- Selectable Dumb or Intelligent Modem Modes

Applications

- Wireless security systems
- EPOS terminals
- Sensor Data logging
- Remote telemetry & telecommand
- Remote meter reading

The RXQ1/TRXQ1 radio transceiver modules provide reliable wireless communications for the transfer of data at rates of up to 20K baud. Operating within the 433.92MHz frequency band, the modules can operate in two narrow band channels, 433.92MHz and 433.33MHz.

FM-RXQ1-433F is an RF transceiver.

TRXQ1-433FR1 Smart Transceiver contains an RF transceiver with integrated controller. This provides all the necessary data packetising, encrypting and error correction for automatic reliable data communication, whilst providing a simple CMOS/TTL data interface to the user.

	FM-RXQ1-433F	TRXQ1-433FR1
Supply Voltage	2.75 - 5.25V	3.0 - 5.25V
Supply Current:		
Standby	8µA typical	8µA typical
Tx	26mA typical	26mA typical
Rx	26mA typical	26mA typical
Interface Connections	Tx, Rx	Data In/Out, CTS, RTS
Temperature	-20° to +80°C	-20° to +80°C
Dimensions	31x23x4.5mm	31x23x4.5mm
Max Data Rate	20Kbps	9600Baud

387249

Mftrs. List No.	Order Code	1+	5+	10+
FM-RXQ1-433F	492-2621	55.34	53.54	51.88
TRXQ1-433FR1	120-0998	96.02	92.64	89.15

Smart Radio Evaluation Kit



The Smart Radio Evaluation Kit provides a hardware platform to enable fast development of radio applications.

NEW

Supplied as a pair of boards, each can accept a variety of RF modules including transmitters, receivers and transceivers, an RS232 port is incorporated for direct connection to a PC.

The boards may be used for a wide range of tasks from simple RS232 data transmission to integrated system development and is the ideal platform for exploring the advantages of using the 'Smart Comms' range of ISSs and radio modules.

This eliminates the need to construct hand-wired prototype boards, which are rarely successful in creating a valid environment for the development of radio system. (prototyping board also contains large stray capacitance values which has a detrimental effect on the RF connections).

- Hardware platform for radio comms development
- Accepts various RF modules
- RS232 interface to PC
- Supplied with RF600T Smart Comms controller
- Performs all Data Encryption for reliable data comms
- Two telemetry I/O lines (addressed mode only)
- Range testing
- Target environment testing
- Antenna evaluation

Contents

- Two Eval boards
- Two RF600T Comms controllers
- Circuit diagrams
- Two RS232 PC cables
- Radio Modules and Antenna available separately

387250.406455

Mftrs. List No.	Order Code	1+	5+	10+
RF600T-EVAL	856-8367	391.74	378.00	365.15

Prices are in Singapore Dollars and exclusive of GST. Due to the volatile nature of certain products, prices are subject to change without notice.

Easy Radio Evaluation Kit



The Easy Radio Demonstration Board provides a platform for the evaluation and test of all Easy Radio modules. Transmitters, receivers and transceivers can be plugged into the boards and are provided with an interface to allow communication with a PC serial port. The boards can be powered by either a 9V PP3 battery (supplied) or a 9V AC mains adaptor (not supplied). LEDs provide status indication for transmitted data (TXD), received data (RXD), and VALID data. On board jumpers enable the use of the 'handshaking' control lines and allow LED indicators to be connected to data or control lines.

The user will need to supply two cables for connection to PC Serial ports. These should be 9 way 'D' type Male to Female, 1:1 (not cross-over type). Matched antennae are included to provide the optimum range performance. The software supplied on CD-ROM takes the user through the process of setting up frequency, power output and data rate. It is strongly recommended that the modules be evaluated in this kit rather than stand-alone to allow the fastest possible method of ascertaining the suitability of the chosen module for the intended application.



Order Code	1+	+	+
509-6571	253.66	--	--

F.M. Transceiver

'Radiometrix'



H=23, W=34, D=12 (with pins)
pins spacing 2.54
recommended PCB hole dia. 1.2

- Half duplex data transmission at speeds up to 40 Kbit/s
- Fast power up enable (1ms) for duty cycle power saving
- CMOS/TTL user interface
- On board data slicer, supply switches and antenna changeover
- ETS300-339 (CE) tested
- For European use on 433.92MHz
- Applications include: computer networks, laptop - PC - Printer links, high integrity wirefree fire/security alarms, building environment control/monitoring, remote meter-reading

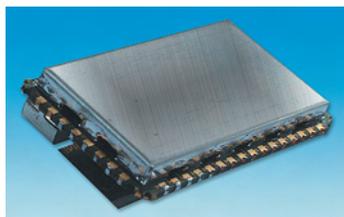
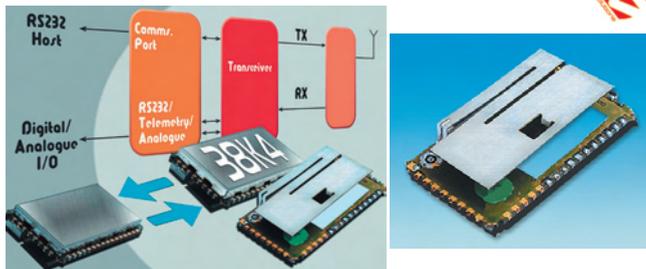
Supplied in a miniature PCB mounting module this FM Radiometrix Transceiver implements a Bi-directional short range radio data link. The transceiver integrates a low power UHF FM transmitter and matching superhet receiver together with data recovery and TX/RX changeover, which makes the transceiver ideal for high integrity one-to-one links or multi-node patch switch networks.

Operating voltage	5V dc ±0.5V
Current consumption	12mA (typical)
Radiated power (transmitting)	-6dB (typical)
Frequency	433MHz
Range	Up to 30 within buildings
Operating temperature	-20 to +55°C
License	DTI approved to MPT 1340

Note: 433MHz Frequency is now open to any telemetry application in the UK or Europe

Operating Frequency	Order Code	1+	5+	10+	25+
433MHz	676-615▲	177.48	164.16	159.72	149.37

ADDLINK RF Transceiver/RS232 Modem Module



The ADDLINK RF Module is a miniature PCB mounting radio module with on-board microcontroller and integral antenna. It is a complete European licence exempt RS232 radio modem.

The module contains the 'Hayes' AT command set and provides an RF modem in a 'chip'.

The on-board microcontroller (Atmel AVR) may be user customised to perform

other functions or protocols and has several peripheral I/O, thus enabling the minimum components on any application.

- Miniature RF transceiver/RS232 Modem
- Miniature SMD 'Chip' package
- 868MHz European wide use
- 3-5V power supply
- Standby mode current <15µA
- Up to 600m range
- Dimensions (WxHxD): 21x6.5x38mm
- EMC compliant ETSI300-683, ETSI300-220
- RS232 modem incorporated

Applications

- EPOS terminals
- Remote telemetry & telecommand
- Remote meter reading
- Domestic & commercial security

Digital telemetry

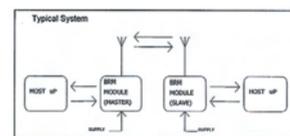
- Host interface up to 38K4 Baud rate
- Operational Modes:

Hayes Mode
Transparent Mode (Null-Modem emulation) Input/Output Mode
Secured Mode Digital Telemetry: 4 Inputs or Outputs

Power supply (Vcc)	3-5V
Power consumption	Stand-by current <15µA Tx = 13mA typical for 3V supply voltage Rx = 16mA typical for 3V supply voltage
EMC compliance	ETSI 300-220 ETSI 300-683 (CE approved)
Frequency	869.7 to 870MHz
Channel number	1 at 869.85MHz with an isolation of 36dB at ±150kHz
Modulation	FSK
Baud rate	Up to 15kbits/s
RF transmit power	0-7dBm
Range	300m with internal antenna Up to 800m with external antenna (line of sight)
Serial link	Complete Full Duplex UART, RS232 with TTL level 1200 up to 38400 bauds

	Order Code	1+	5+	10+
ADDLINK112 RS232 Modem FM 868MHz, 38Kbaud in- tegral antenna	431-7932▲	106.95	100.14	94.80
ADDLINK115 RS232 Modem FM 868MHz, 38Kbaud	431-7944▲	103.89	97.38	92.31

2.4GHz (Bluetooth) Radio Module



- Plug and Play 'transparent' radio link
- Uses a Class 1 Bluetooth™ radio module
- Simultaneous data and full-duplex voice (with external CODEC)
- 1Mb/s symbol rate
- 100mW transceiver
- Transparent wireless link
- Authentication and encryption
- 2.4GHz spread spectrum
- Simple 4-wire serial interface
- Built-in or approved external antenna
- On-board 10-bit ADCs/GPIO ports
- Simple 'press to connect' facility
- On-board status LEDs

Applications:

- Serial cable replacement
- Telemetry
- Process control
- Robotics
- Internet access
- File transfer
- Remote terminal
- Remote control

The BRMR1 is a 2.4GHz frequency hopping, PCB-mountable radio module, which requires only a 5V supply and a serial data source. The radio protocol is Bluetooth™-based which provides all the low-level radio link management and error correction functions that are transparent to the user. The maximum transmit data rate is 460.8kb/sec which can be achieved in both directions.

The BRMR1 has been designed to be integrated into industrial controllers, wireless modems, security systems and other wireless equipment. Using a Bluetooth™ qualified Class 1 radio module, the carrier frequency hops at 1600 hops/sec and thus ensures excellent resistance to jamming from interferers.

With the addition of an external CODEC, the unit can simultaneously provide a data channel and a full-duplex 64kb/s voice link. The modules are designed to withstand the harsh environments of both factory and outdoor applications. The modules can be operated in point-to-point, point-to-multipoint and multipoint-to-multipoint architectures. Range is up to 200m (line-of-sight) using the built-in antenna. For extended range, an external antenna can be fitted.

Physical Dimensions	45 x 28 x 3mm with internal antenna 40 x 28 x 3mm without internal antenna
Connections	Direct to PCB via solder wells on 2.54mm pitch (SMT) Optional SMA, SMB, SMC or MCX RF connector
Radio Maximum output power	100mW (+20dBm)
RF frequency range	2.400GHz to 2.480GHz
RF channels	79, 1MHz channel spacing
Frequency hopping	1600 hops/sec (625µs dwell time)
Over air data rate	1Mb/s
Achievable range	200m line of sight, using internal antenna
Interfacing	

Power supply 4V to 5.5V
 Supply current 250mA peak, 20mA idle
 Serial interface CMOS logic or optional RS232 levels
 Control lines CMOS compatible
 Antenna Integrated F type or approved external (via optional SMA RF connector)

248334.344275

Mfrs. List No.	Order Code	1+	5+	10+
BRMR1	431-7830▲	305.85	293.25	281.82

RS232 F.M. Radio Modem



- RS232 compatible
- Selectable baud rate 1200bps-38.4Kbps
- Up to 600 metres range
- European wide operation at 868MHz
- RF power 0-7dBm
- Network configurable
- Transparent or data verified communications modes
- 4 user configurable digital I/O channels
- Standard Hayes AT command set
- Internal LED indication of PWR, TX, RX, CTS, RTS
- 12Vdc power supply
- Conforms to ETSI 300-220 (CE compliant)
- Requires no radio licence to operate
- Tough ABS enclosure

The RF Solutions 232C-868FR1 radio modem provides fast and reliable RF data communications at an exceptionally competitive price. Whilst the RF modem is simple to use, it is also highly adaptable and can be used in a wide variety of applications.

The modems can be configured for various operating modes to provide:

1. A 'transparent' RS232 point to point link, reproducing the function of a half duplex RS232 cable.
2. An RS232 point to point link with data flow control to provide data verification.
3. A functionality similar to that of a client/server network, where each modem is assigned an address with a maximum of 255 clients per network and a maximum of 65,535 networks.
4. Point to point data transfer for up to four digital I/O signals with continuous resend and automatic data acknowledgement.

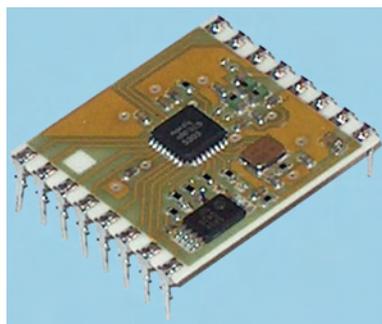
The modem is supplied in a tough ABS enclosure with wall mounting lugs. The external 868MHz antenna offers a range of up to 600 metres line of sight. The modem is supplied with an RS232 cable and requires only a 9-12Vdc power supply.

Channel Center Frequency	869.850MHz
Aggregate Air Data Rate	10Kbps
Range	600m line of sight
Conformity Testing/Standard	ETSI 300-220
Standard Current Consumption	0.020mA (max)
Receiver	
Sensitivity	-101dBm
Channels	1
Selectivity	36dB
Current Consumption	33mA (max)
Transmitting	
Output Power@Vcc = 12V	7dBm
Current Consumption	33mA

336517.345820

Mfrs. List No.	Order Code	1+	5+	10+
232C-868R1	491-5586	322.25	311.34	300.89

Smart Radio Narrow Band Transceiver RF650



The RF650 radio transceiver module provides a reliable wireless communication for the transfer of data. With RF data rates of up to 100kbps, their unique features of narrow band operation and user channel selection combined with excellent interference rejection make them an ideal choice for next generation applications. The transceivers have the functions of a complete radio modem and simply require CMOS/TTL data at the transmit input and the corresponding transceiver(s) output the same data.

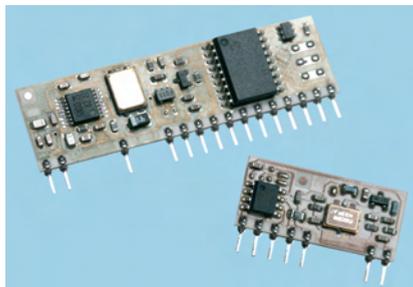
Operating in the 433MHz band the modules operate in user selectable channels. The RF650 can use any channel in 100kHz steps.

- Intelligent Modem RF Transceiver
- RF Data Rates to 100 kbps
- Up to 250M range
- Selectable Narrowband RF Channels
- Crystal Controlled RF Design
- Supply Voltage 3.3V
- Serial Data Interface with Handshake
- Host Data Rates up to 38,400 Baud
- Very Stable Operating Frequency
- Low Profile Ceramic DIL Package
- Operates from -20 to +70°C
- Operating Modes: Point to Point, broadcast, One to Many Network and Many to One Network
- Applications: Wireless Security Systems, EPOS Terminals, Sensor Data logging, Remote Telemetry & Telecommand, Remote Meter Reading

419175

Mfrs. List No.	Order Code	1+	5+	10+
RF650	109-6134	111.00	105.04	97.91

Smart Radio Transmitter and Receiver



NEW



The RF620 Smart Radio modules provide low cost reliable wireless data communications.

They contain an integrated microprocessor which performs the necessary encryption to optimise the data for transmission by radio. This ensures the maximum range and reliability.

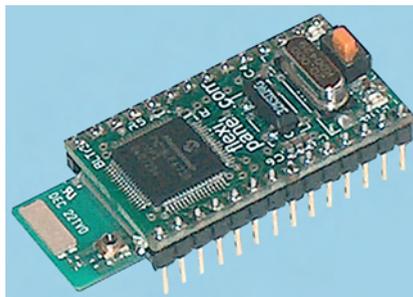
If a secure point to point link is required then the RF620R receiver can be matched to the RF620T transmitter by a simple learn procedure. This also allows several separate point to point links to communicate consecutively in the same area.

- Easy to use Radio AM Transmitter & Receiver
- AM or FM Radio Hybrid Technology
- Supports Data and Telemetry communications
- Simple CMOS/TTL Data Interface
- Automatic data encryption/decryption
- Host Interface upto 19200 Baud
- Optional host Flow Control
- On Board Buffer
- Transmit Range Up To 250m
- 4 Telemetry Lines
- Operates from -20 to +85°C
- Applications: Wireless Security Systems, EPOS Terminal and meter Reading, Wireless RS232, Sensor Data Logging, Remote Telemetry & Telecommand etc.

419179

Mfrs. List No.	Description	Order Code	1+	5+	10+
RF620TA	Transmitter	109-6135	25.78	24.97	23.99
RF620RA	Receiver	109-6136	56.47	53.94	51.72

ToothPIC Bluetooth Radio Module



NEW



ToothPIC is a PIC18LF6720 PIC microcontroller and Bluetooth radio combination, pre-loaded with ToothPIC services firmware user interface server, wireless field programming and ToothPIC Slave for optional external host control.

- Pairs with Bluetooth devices (eg PDA's, PC's, Phone)s as master or slave
- FCC/CE/IC compliant. Does not need re-certification if integral antenna used
- Integral antenna
- 128Kbyte Flash, 3.5K RAM, 1K Eprom up to 512Kbyte I2C external memory
- 12 x 10-bit A to D converter
- 5 x 10-bit PWM outputs
- Serial UART, I2C and SPI communications
- 2 interrupts
- 20MHz and 32KHz oscillators
- Low dropout 400mA power regulator
- 45 x 22mm through-hole mount, suitable for breadboards

Operating Modes

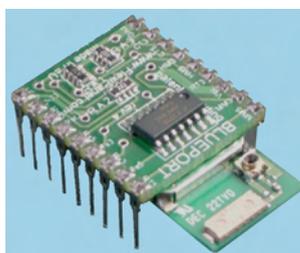
Pre-tested Firmware Solutions ready for immediate standalone operation:

- OpenToothTM Bluetooth device sensor
- DARC-ITM Data acquisition and remote control managed via Bluetooth
- DARC-IITM Data acquisition and remote control with FlexiPanel User Interface
- ToothPIC Slave where ToothPIC is controlled by a host processor via a serial link.
- Standalone ToothPIC programmable in C for low-cost, customized standalone operation

419166

Mfrs. List No.	Order Code	1+	5+	10+
TOOTHPIC	109-6128	378.69	368.56	353.53

Bluetooth Radio Modules



These modules are fully transparent serial to Bluetooth data links. They enable designers to easily add a Bluetooth wireless feature to their product without the need for RF and Antenna design expertise. The modules contain all RF circuitry including integral antenna and controller providing a simple-to-use, plug-in module with digital interface to the host application.

NEW

Linkmatik and Bluematik

- Easy to use Serial data interface TX / RX or no AT commands
- Pairs with Bluetooth devices (e.g. PDA's, PC's, Phones) as master or slave
- Maximum data rate approx 50K full duplex
- FCC / CE / IC compliant. Does not need recertification if integral antenna used
- Baud rates 1200 to 115K baud
- Hardware flow control or no flow control
- Bluetooth PIN code and encryption
- Bluetooth error correction layer
- Class I Bluetooth radio, 100m range
- 3-5V supply
- Integral antenna
- Direct access to PDA's, Laptops, Mobile Phones
- Enables Bluetooth device control

Bluematik

Uses AT Commands to interface.

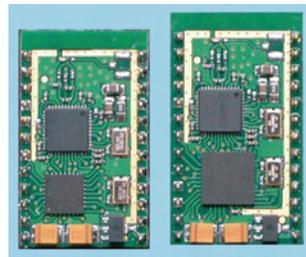
Linkmatik

Standard serial data, (no AT commands).

419169

Mfrs. List No.	Order Code	1+	5+	10+
BLUEMATIK	109-6129	192.60	184.49	176.81
LINKMATIK	109-6130	225.25	214.02	204.02

Zigbee Radio Modules



NEW

Zigbee is the next generation wireless protocol, providing low cost, low power and powerful protocol. These OEM modules provide an easy Zigbee solution for many applications.

- 2.4GHz IEEE 802.15.4/ZigBee
- Raw data rate 250kbps
- Based on ChipCon CC2420 RF controller
- 4-wire SPI interface
- Separate 128-byte Rx & Tx FIFO buffers
- Controller Options: PIC (Microchip stack), or ATMEL (Figure-8 stack)
- Output power 1mW/0dBm
- Consumes just 20mA (Rx), 18mA (Tx)
- 2.1V - 3.6V supply
- Wide temperature range -40°C to +85°C

Applications

- IEEE 802.15.4 & ZigBee networks
- Cable replacement
- Home / building automation
- Industrial control & networking
- Wireless sensor networks

EZBEE

EZBee enables designers to easily add ZigBee / IEEE 802.15.4 wireless capability to their products without the need for RF or antenna design expertise.

The module contains all RF circuitry, including integral antenna and controller in a simple-to-use, plug-in or surface mount module.

- 4-wire SPI port interfaces to a baseband microcontroller
- PHY (Physical) layer includes an impedance matched balun and integral antenna
- MAC (Media Access Control) layer includes CRC-16 generation, clear channel assessment, signal energy detection, security, encryption and authentication
- eZBee is a fully capable device and a ZigBee networking layer is not required for point-to-point communication

PIXZee

PIXZee and PIXZee lite provide a complete ZigBee solution for OEM applications, integrating IEEE802.15.4 2.4GHz PHY/MAC layers with Microchip Technology's NWK/APL/ZDO layers. It provides a path for rapid migration from Microchip's PICDEM Z ZigBee development environment to market-ready product.

The Modules are capable of full function device (FFD) operation and suitable for router and coordinator nodes. The lower cost PIXZee Lite version is used for reduced function devices, eg. endpoints, with 2 fewer I/O lines and being 3mm more compact.

- MAC address provided
- Integral antenna
- Output power 1mW/0dBm, 100m range
- 15 general I/O lines, featuring 8-channel 10-bit A/D, serial UART, 4 interrupts, counter

input

- Master SPI

Firmware Features

PIXZee is electrically virtually identical to the PICDEM Z ZigBee development environment and is fully compatible with Microchip Technology's free ZigBee stack, featuring: Compatibility with ZigBee 1.0 specification

- Up to 254 end devices per network
- Support for Home Control, Lighting Profiles, switching, serial data communications, UI servers, displays and sensors etc.

419171

Mfrs. List No.	Order Code	1+	5+	10+
EZBEE	109-6131	79.98	75.52	72.52
PICZEEELITE	109-6132	118.12	112.69	108.36
PICZEE	109-6133	129.97	123.98	119.17

GSM Telemetry System 250R1



- Standalone GSM telemetry controller
- Automatically sends SMS message (to any telephone) when input activated
- Outputs controlled by SMS text message (from any telephone)
- 2 digital inputs
- 2 relay outputs operated by SMS (from any telephone)
- Accepts all major SIM Cards
- Optional Modules: GPS tracking, camera input - sends images via SMS
- Easy installation via screw terminals
- IP65 rated enclosure
- Easy to install and configure
- Dual Band Wavecom GSM modem

Applications

- Remote control by GSM hand-held phone
- Remote warnings / Alarms
- Asset tracking
- Remote system monitoring
- Remote gates
- Remote cameras

The '250' controller is a complete remote telemetry unit. It is operated by the user sending SMS text messages from any standard GSM network/mobile phone. The user can directly control the two output relays from a simple text message, and can also be notified when the inputs on the '250' have been operated.

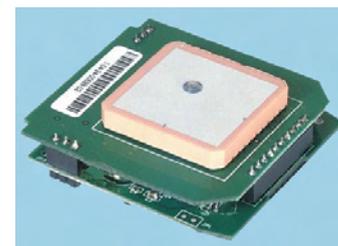
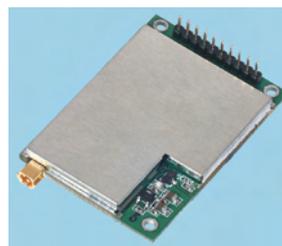
It contains a GSM modem with control circuitry, 2 relays outputs and 2 digital inputs. It has the facility to incorporate GPS and can accept an external camera input.

This complete control system is supplied ready to operate. Installation requires a standard SIM card, connections to power supply screw terminals and the output relay contacts.

339490.345366

Mfrs. List No.	Order Code	1+	5+	10+
250R1	790-1283	895.12	870.88	842.72

GPS Modules Low Profile



RF Control Systems

35

Compliant
Non-compliant
Limited stock - RoHS replacement available

RoHS



The LS range of GPS modules are compact solutions intended for a broad range of products, where fast easy system integration and minimal development risk is required. The receiver continuously tracks all satellites in view and provides accurate satellite positioning data. They are suitable for a wide range of OEM configurations including handhelds, sensors, asset tracking, PDA-centric personal navigation system, and vehicle navigation products.

NEW

The modules provide 12 parallel channels and 4000 search bins giving fast satellite signal acquisition and short startup time. Acquisition sensitivity of -137dBm and tracking sensitivity of -145dBm offers good navigation performance even in urban canyons having limited sky view. Satellite-based augmentation systems, such as WASS and EGNOS, are supported to yield improved accuracy.

Both the LVTTTL-level and RS232-level serial interface are provided on the interface connector. Supply voltage of 3.3V, or 3.8V-12V are supported.

The LS-40EVAL provides a hardware and software evaluation platform for development of the LS GPS modules. This module provides position, velocity and time information in a standard NMEA string format that is compatible with a range of GPS driven navigation packages including Microsoft AUTOROUTE.

The evaluation board provides a completed design utilising the GPS module. This provides a direct PC interface via 9 way 'D' type connector and a row of pin headers to enable configuration and monitoring of the GPS signals. Power may be from and dc supply from 3.5-15V. Two LEDs provide additional information relating to the signal lock status and the validity of the onboard almanac.

- Miniature low profile GPS modules
- Data out standard NMEA format
- RS232 or USB versions
- 12 parallel channel GPS receiver
- 4000 simultaneous time-frequency search bins
- SBAS (WAAS, EGNOS) support
- -137dBm acquisition sensitivity
- -145dBm tracking sensitivity
- <10 second hot start
- <45 second cold start
- 5m CEP accuracy
- Onboard antenna option
- 3 or 5V versions

GPS Evaluation Kit

- Standard RS232 data output via 9way D type connector
 - Supplied with: GPS Antenna Supporting software RS232 cable (for PC connection) PSU
 - LED indicators for valid Almanac and signal lock
 - Onboard regulator allows 3.5V to 15V supply
 - Compatible with popular routing software
- Applications**
- Development for embedded GPS
 - Asset management
 - Vehicle Tracking/Navaigation
 - Add on for PDA's

386504.406447

Mftrs. List No.	Order Code	1+	5+	10+	
GPS Module 3V	LS-40EB-3V	856-8316	127.30	122.91	118.74
GPS Module 5V	LS-40EB-5V	856-8324	127.30	122.91	118.74
GPS Eval Kit	LS-40EVALR1	856-8332	362.35	350.86	337.51
GPS Onboard Antenna	LS-40MM	856-8340	143.64	138.63	133.94
GPS Onboard Antenna - USB	LS-40UM	873-3791	149.34	140.71	131.63
Easy Adaptor Cable (LS-40MM, LS-40UM)	CBA-LS-40M	876-3160	15.66	15.07	14.55
GPS Antenna	GPSANT-MM CX	856-8359	55.50	53.54	51.79
MMCX Connector					
GPS External Antenna	LS-41SMD-R	109-6137	127.30	122.10	116.95
MMCX 3V					

Antennas

Direct Mount



A range of direct mount antennas designed for operation with low power, short range telemetry systems. Each antenna has 50 ohm impedance and is manufactured from moulded flexible plastic.

The antennas are supplied with either BNC connector or 4mm (M4) screw fixing (connection link to the RF module is generally via a solder tag washer).

1/4 Wave Whip Antenna

- Standard 1/4 wavelength whip antenna
- Provides maximum range performance
- Rugged plastic finish with flexible body
- Available with M4 or BNC mount
- Available in 315MHz, 433MHz and 868MHz versions

Helical Antenna

- 1/4 wavelength helical antenna
- Helical coil antenna for space saving performance
- Rugged plastic finish
- Available with M4 or BNC mount
- Available in 315MHz and 433MHz versions

Compressed Helical Antenna

- 1/4 wavelength helical antenna
- Compressed helical miniature coil antenna
- Rugged plastic finish
- Available with M4 mount
- 433MHz only

Frequency	1/4 Wave Whip		Dimensions (L x Dia.)		Compressed Helical	
	231x13mm	162x13mm	Helical	Helical	N/A	N/A
315MHz			72x13mm	72x13mm	N/A	N/A
433MHz			55x14mm	55x14mm	35x14mm	N/A
868MHz			N/A	N/A	N/A	N/A

248422

Type	Fitting	Order Code	1+	5+	10+	25+
315MHz	1/4 Wave Whip	M4 431-7841	13.77	12.75	12.15	11.46
	Helical	M4 120-0974	13.77	12.75	12.15	11.46
433MHz	1/4 Wave Whip	M4 120-0976	12.09	11.07	10.68	10.23
	Helical	M4 120-0977	12.09	11.07	10.68	9.93
	Compressed Helical	M4 120-0978	12.09	11.07	10.68	9.93
	1/4 Wave Whip	BNC 120-0979	21.27	19.47	18.45	17.43
868MHz	1/4 Wave Whip	M4 120-0980	13.77	12.75	12.15	11.46
	1/4 Wave Whip	BNC 120-0981	24.33	22.26	21.12	19.53

Whip, Flying Lead



- +3dB gain
- For use with any receiver
- Supplied with wall mounting bracket
- 2 metre flying lead with BNC plug

L=440mm (antenna to base), 190 bracket

Note: In order to comply with DTI regulations, any gain antenna MUST NOT be used on a transmitter module



213012

Type	Order Code	1+	5+	10+	25+
433 MHz	120-0960	125.55	--	--	--

Antenna



- Standard 1/4 Wavelength whip antenna
- Provides Maximum Range Performance
- Rugged Plastic finish with Flexible body
- BNC 90° connection
- 433MHz Version

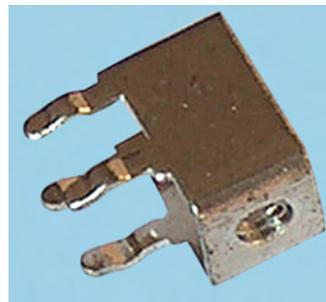
NEW



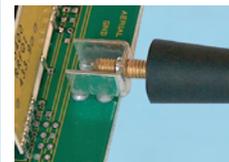
419187

Mftrs. List No.	Order Code	1+	5+	10+
FLEXI-BNC90-433	109-6141	32.32	31.15	29.82

Antenna PCB Mount Terminal



NEW



The SCRTM4RA is a PCB mounting terminal providing a simple method of attaching a low cost 4mm Screw thread antenna to a PCB.

419188

Mftrs. List No.	Order Code	1+	5+	10+
SCRTM4RA	109-6142	2.25	2.15	2.05