

MICROBEE

Systems



The PCFW-104 OEM module, manufactured by [MicroBee Systems](#), incorporates the [FreeWave M-series](#) radio. Designed for compact embedded systems requiring high quality data transmission, this module is ideal for remote process monitoring, vehicle and aircraft tracking.



- 3.6W X 3.8L X 0.6H inches.
- Radio may be powered from either the 12 VDC from the PC/104 bus, or externally (6-30 VDC).
- Radio setup menu invoked either with on board switch or through a 2 pin connector.
- Uses 16C550 UART and supports baud rates up to a maximum of 115,200.
- Uses full 16 bit bus address decoding to eliminate address aliasing.
- Supports IRQ interrupt levels 3, 4, 5, 7, 10, 11, 14 and 15.
- May use virtually any bus address from 0x008 to 0x7FF.
- Tested under DOS, Win 98, Win NT, Win 2000, Win XP and Red Hat Linux.
- 8 or 16-bit bus installation. 8 bit bus installation limits the user to IRQ's 3,4,5 and 7.

- Separate diagnostic port - real time remote diagnostics and setup, transparent to network communications.
- Improved diagnostics - including RSSI levels in dBm, antenna VSWR and transmit current.
- Wide input voltage range - 6 to 30 Volt DC.
- The lowest current draw of any radio - at 12 Volts:
- Improved low signal performance - RISC-based signal demodulation with matched filter.
- Improved strong signal performance - New RF front end gives a 10dB improvement. A new optional setting is available for strong signal applications in which the radio's overload level improves an additional 8dB (18dB over DGR series radios) while still maintaining a -106dBm sensitivity level.
- Synthesized waveform transmit data - reduces out of band modulation products.
- With 4 times the Flash, twice the RAM, and 20 times the processing speed, along with a 2nd processor handling the low level duties, the FGR series has plenty of horsepower for new enhancements in network and diagnostic management software.
- Backward compatible - 100% compatible with all existing 900 MHz FreeWave radios.
- Versatile - A single radio can operate simultaneously as a Slave and as a Repeater.
- High Noise Immunity - Superior Performance in noise congested environments.
- Secure - Proprietary spread spectrum technology prevents detection and unauthorized access.
- Long Range - 60+ mile line of sight range.
- Error Free Communications - 32 bit CRC with automatic retransmission.
- Industrial Grade Specifications - 100% tested for full performance from -40 C - +75 C (Radio)

Preliminary Specifications

Radio link:				
Frequency Range	902-928 MHz			
Method	Frequency hopping spread spectrum			
Hopping Patterns	15 per band, 105 total, user selectable			
Hopping Channels	50 to 112, user selectable			
Hopping bands	7, user selectable			
Range, Line-of-sight	60 miles			
Occupied Bandwidth	230 KHz			
Modulation	GFSK, 144 ~ 188 Kbps			
RF Connector	MCX female			
System Gain	140 dB			
Transmitter:				
Output Power	100 mW to 1 Watt (+30 dBm)			
Receiver:				
Sensitivity	-106 dBm for 10^{-6} BER -108 dBm for 10^{-4} BER			
Selectivity	20 dB at $f_c \pm \pm 115$ KHz 60 dB at $f_c \pm 145$ KHz			
Data Transmission:				
Error Detection	32 bit CRC, retransmit on error			
Data Encryption	Substitution, dynamic key			
Link Throughput**	115.2 Kbps standard speed, 38.4 Kbps low speed			
** Uncompressed , measured assuming 75% frequency availability				
Data Interface:				
Protocol	RS-232, 1200 Baud to 115.2 KBaud, DCE			
Connector	104 Pin PC/104 Interface			
Diagnostics Interface:				
Connector	Separate 3-pin PCB header			
Power Requirements:				
Voltage	Interface, 5V +/- 5%. Radio, 6 to 30 Vdc			
Interface Current [mA]	55mA max at 5.5 VDC			
Radio Current [mA]		6 Vdc	12 Vdc	30 Vdc
	Transmit	1000	500	200
	Receive	110	60	40
	Idle	30	16	9
	Sleep	8	5	2
Environment and mechanical:				
Operating temperature	-40 °C - +85 °C(Preliminary for PC/104 Module)			
Dimensions	97 L x 91 W x 15 H [mm] 3.8 L x 3.6 W x 0.59 H ["]			
Weight	84 gm 3 oz			

To order or request a quote:

Part Number: **PCFW-104**

Order from:

MicroBee Systems, Inc
9414 Danese Lane SE
Huntsville, AL 35803
256.426.2431 (VOICE)
256.883.9201 (FAX)
info@microbee-systems.com
www.microbee-systems.com

UNITRONIX Pty Ltd

PO Box 486, Morisset NSW 2264

NSW: Tel: 61 2 4977 3511 Fax: 61 2 4977 3522

WA: Tel: 61 8 9455 2424 Fax: 61 8 9455 2458

unitsyd@unitronix.com.au www.unitronix.com.au

MicroBee Systems:

“Innovative Solutions for an Embedded World”