



CMM7920

5-Volt, 1.2 watt
(Ultra Compact form factor)

Cellular Modem Module

for

Cellemetry[®]

DATA SHEET

www.skybility.biz

Cellular Modem Module for Cellemetry®**CMM7920****DESCRIPTION**

The CMM7920 Cellular Modem Module for Cellemetry® Data Service is the third generation OEM radio modem module for use in telemetry and other wireless data applications using "Cellemetry" signaling technology. It is part of a series of modules from Skybility providing solutions for OEM customers requiring turnkey wireless solutions. The CMM7920 supports the subscriber unit transceiver requirements for the Cellemetry system.

The CMM7920 provides a flexible turnkey module solution that can be used to implement all of the functionality of a Cellemetry transceiver into a variety of imbedded applications.

The CMM7920 includes all of the necessary modem circuitry on-board, so no separate baseband data processor or modem is required to implement a complete solution. A simple serial data connection is all that is required.

The host interface of the CMM7920 is based on a simple control interface specification, which allows for easy integration of the module into a variety of applications.

For high volume OEM applications, the module can also be customized for specific customer applications.

The CMM7920 is a complete turnkey module solution. It is a high quality radio module that is shipped fully assembled and tested, ready to be installed into the customer's system.

FEATURES

- Automated service determination capability
- Complete turnkey module, fully assembled and tested
- Ultra compact size
- Full Class II (1.2 watt) RF output capability
- Single 5-volt power supply
- 3.6-volt compatible logic
- Low current consumption
- On-board microcontroller for control of radio and interface functions (Executable software included)
- Interface uses simple 60-pin header connector
- Easy interfacing to host controller

APPLICATIONS

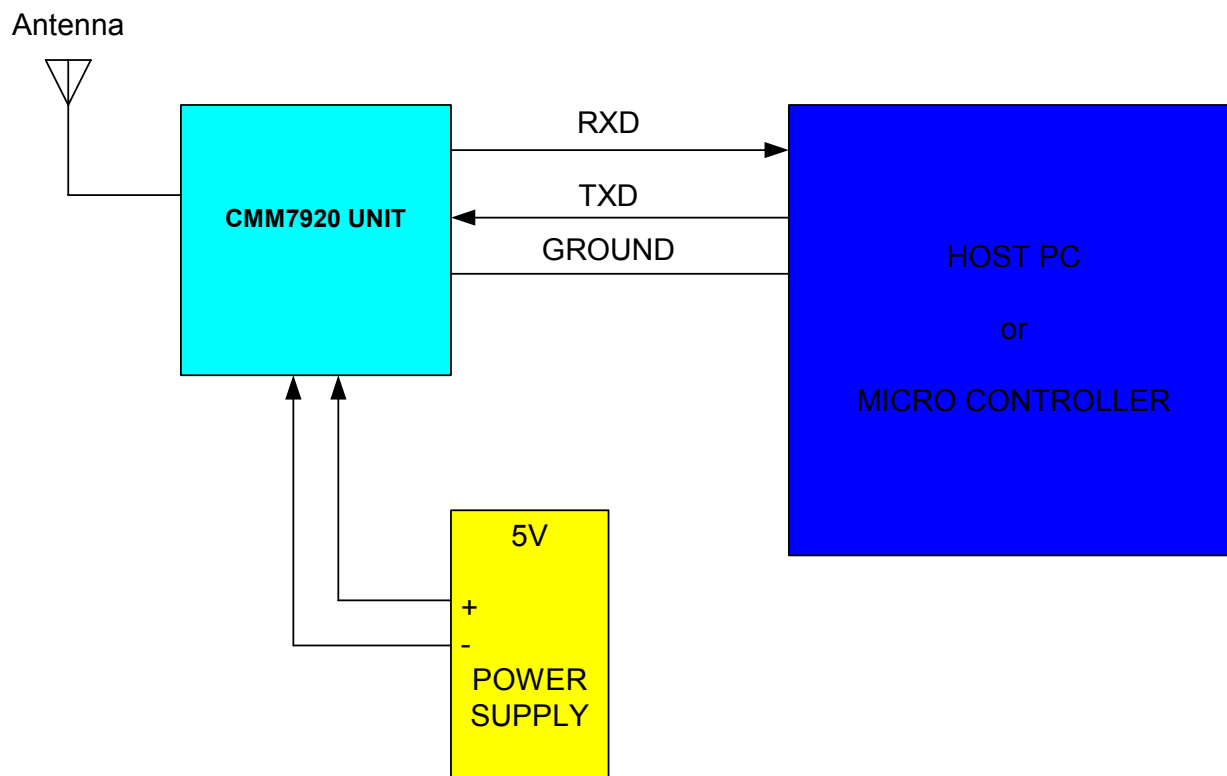
- Remote Utility Meter Reading
- Security / Alarm Notification
- Wireless Telemetry Links
- Vending Machine Monitoring
- Storage Container Tracking

ORDERING INFORMATION

DESCRIPTION	PART NUMBER
CMM7920 with SMA card edge connector (Standard configuration)	CMM7920-001

Cellular Modem Module for Cellemetry®**CMM7920****APPLICATIONS**

The following diagram illustrates a typical application. The CMM7920 acts as a slave to a host PC or embedded controller. The CMM7920's function is to send 32bit datagrams in the form of a registration and receive data as sent by the application operator.



The host device loads the CMM7920 with the 32 bit payload and sends the data to the cellular system. When the user pages the device with a device ID that matches the mask array the unit will indicate to the host that a message has been received. When the operator sends data the cellular system will deliver it to an individual or group of CMM7920 units as required. When data is received, a message to the host will be generated alerting it to the incoming data.

Cellular Modem Module for Cellemetry®**CMM7920****PIN DESCRIPTIONS**

PIN	SYMBOL	I/O	DESCRIPTION
1	GND	P	Ground (all 6 pins MUST be connected)
2	GND	P	Ground (all 6 pins MUST be connected)
3	GND	P	Ground (all 6 pins MUST be connected)
4	VCC	P	DC Power Input +5VDC (all 6 pins MUST be connected)
5	VCC	P	DC Power Input +5VDC (all 6 pins MUST be connected)
6	VCC	P	DC Power Input +5VDC (all 6 pins MUST be connected)
7	/TXD *	I	Serial Data to CMM (DCE) (Note 1)
8	/RXD *	O	Serial Data from CMM (DCE) (Note 1)
9-12	NC	-	Reserved. Do not connect.
13	/RST	I/O	Pull to ground with OC to Reset module.
14	NC	-	reserved
15	RSSI	O	Analog signal strength indicator output
16-35	NC	-	Reserved. Do not connect.
36	MP	O	Message Pending Flag
37	NC	-	Reserved. Do not connect.
38	SVC2	O	Multiple channels available flag (Note 2)
39	NC	-	Reserved. Do not connect.
40	SVC	O	Service Available Flag
41-51	NC	-	Reserved. Do not connect.
52	(RESERVED)	-	Reserved for future use. Connect to ground.
53	V_IF	O	Interface Logic Voltage. (Note 3)
54	(RESERVED)	-	Reserved for future use. Connect to ground.
55	VCC	P	DC Power Input +5VDC (all 6 pins MUST be connected)
56	VCC	P	DC Power Input +5VDC (all 6 pins MUST be connected)
57	VCC	P	DC Power Input +5VDC (all 6 pins MUST be connected)
58	GND	P	Ground (all 6 pins MUST be connected)
59	GND	P	Ground (all 6 pins MUST be connected)
60	GND	P	Ground (all 6 pins MUST be connected)

* Note 1: The naming convention for TXD and RXD has changed. The module is a DCE device, pin reference is now from the perspective of the application (DTE) device.

Note 2: Contact factory before using this interface signal.

Note 3: +3.6V output for use as reference or to drive (max 75mA) module side of level converters for interface logic.

P1 - Interface Connector. (2 x 60 position header, 0.50mm pin spacing).

Manufacturer: Hirose

Part number: DF12C-60DS-0.5V

The mating connector that goes on your application can be the following:

DF12E (3.5)-60DP-0.5V (to achieve board to board spacing of 3.5mm)

DF12E (5.0)-60DP-0.5V (to achieve board to board spacing of 5.0mm)

J1 - Antenna Connector

Standard configuration: SMA female, horizontal PCB card edge

INTERFACE SIGNAL DESCRIPTIONS

VCC - 5VDC power supply input to CMM7920. A minimum of 1500 mA of supply current must be available at this pin. AC ripple tolerance is 100mV_{p-p} maximum.

SVC - Service Available Flag is a status indicator, which is set high (1) when cellular service is determined by the CMM7920 to be available. This line is directly from the microprocessor and has no real current driving or sinking capability, therefore transistor or IC buffers must be used for proper interface.

SVC2 - Service Available Flag will be driven high when two or more cellular control channels of a usable signal strength are detected on the selected system. *Note: Only the primary (active) control channel is checked for valid data, no validation of data is done on the additional channel(s).* This line is directly from the microprocessor and has no real current driving or sinking capability, therefore transistor or IC buffers must be used for proper interface.

GND - Power supply ground connection. This connection must have a minimum current handling capacity of 1500 mA.

RXD - Received serial interface data. Output of the CMM8920 controller's UART which is used to send control messages and data to the host device. A 3.6-volt CMOS driver circuit is expected. For open collector interface a pull-up resistor to a 3.6-volt source is required.

RST - The Reset function is invoked by pulling this pin to ground for at least 200 mSec.

TXD - Transmit serial interface data. Input to the CMM8920 controller's UART through a 3.6-volt logic driver is used to receive control messages and data from the host device to the CMM8920. Voltage level conversion may be required for microprocessors running other than 3.6-volt logic.

MP - Message Pending used with Serial Query Interface. Hardware handshake used to indicate to the host the CMM7920 has pending data.

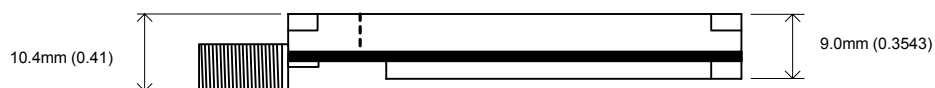
RSSI - Received Signal Strength Indicator. Analog DC signal indicating **relative** signal strength of received signal (un-calibrated).

CMM7920

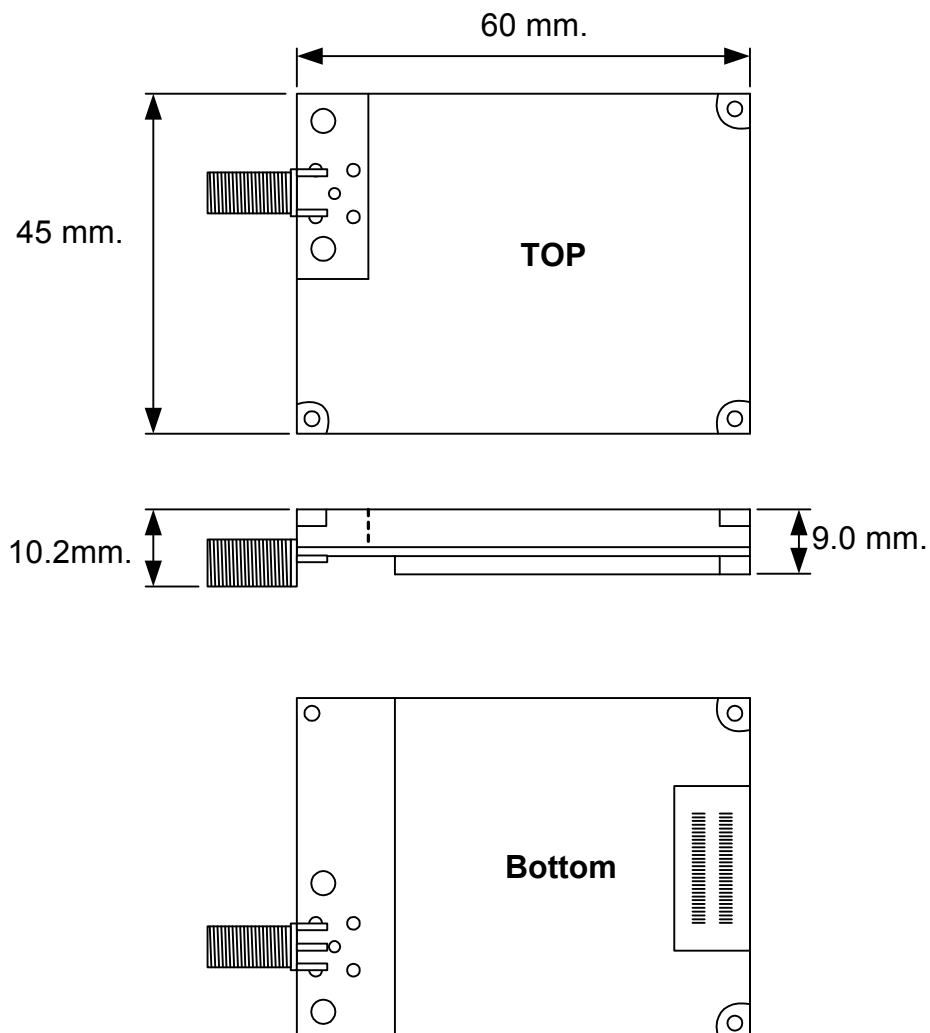
Top View

Dimensions and Component Locations:

- Overall Width: 56.50mm (2.2244)
- Overall Height: 41.50mm (1.6339)
- Top Edge Dimensions (from left):
 - 54.50mm (2.1457)
 - 51.25mm (2.0177)
 - 49.55mm (1.9508)
 - 3.5mm (0.1378)
 - 1.5mm (0.0590)
- Left Edge Dimensions (from top):
 - 39.50mm (1.5552)
 - 17.00mm (0.6693)
 - 10.00mm (0.3938)
 - 3.5mm (0.1378)
- Bottom Edge Dimensions (from left):
 - 1.5mm (0.0590)
 - 2.0mm (0.0787)
- Right Edge Dimensions (from top):
 - 2.0mm (0.0787)
 - 1.5mm (0.0590)
 - 19.00mm (0.7481)
 - 2.0mm (0.0787)
- Internal Features:
 - Top Left: 3.2mm (0.126) +/- 0.1mm (0.004) diameter x2
 - Bottom Left: 2.0mm (0.0787) +/- 0.1mm (0.004) diameter x3
 - Bottom Right: 26.25mm (1.0335) wide area with a dashed rectangle and a series of vertical lines.



Title: CMMx920	Date: 11/20/03	Revision: A
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Ultra Compact Form Factor CMMX920

Cellular Modem Module for Cellemetry®**CMM7920****ABSOLUTE MAXIMUM RATINGS**

PARAMETER	RATING	UNITS
Supply voltage	-0.3 to +5.5	V DC
Storage temperature range	-65 to +100	°C
Operating temperature	-30 to +70	°C
Voltage Standing Wave Ratio (VSWR)	3:1	-
Return Loss	6	dB

TECHNICAL SPECIFICATIONS

General $T_A = -30$ to $+60^{\circ}\text{C}$; $V_{CC} = 5\text{V} \pm 10\%$, per EIA/TIA-690 method unless otherwise noted

PARAMETER		RATING	UNITS
Frequency coverage	Transmit:	824.010 - 848.970	MHz
	Receive:	869.010 - 893.970	MHz
Channel spacing		30	KHz
Number of channels		832	
Supply voltage		5.0	volts DC
Supply ripple tolerance		100	mV (20-500 KHz)
Supply current	Receive:	40	mA (nom)
	Transmitting:	1200	mA (nom)
Operating temperature		-30 to +60	degrees C
Physical dimensions		1.75 x 2.36 x 0.395	inches (w/l/h)
		45.0 x 60.0 x 10.0	millimeters (w/l/h)
Antenna		SMA End Launch	
Antenna connection		50	ohm

Receiver $T_A = -30$ to $+60^{\circ}\text{C}$; $V_{CC} = 5\text{V} \pm 10\%$

Sensitivity		-110	dBm (min)
Adjacent channel rejection		13	dB (min)
Alternate channel rejection		42	dB (min)
Intermod rejection		62	dB (min)

Note: Receiver specifications above are derived from TIA/EIA-136-270 specifications for digital radios at 3% BER

Transmitter $T_A = -30$ to $+60^{\circ}\text{C}$; $V_{CC} = 5\text{V} \pm 10\%$

Power output (EIA Class II)		1.2	W (nom)
Peak deviation		± 8	KHz (nom)
Frequency stability		± 2.5	ppm

Cellular Modem Module for Cellemetry®**CMM7920****REGULATORY CERTIFICATIONS**

Skybility hereby certifies that the transceiver FCC ID: APV01030 complies with OET Bulletin No. 53 as referenced in Section 22.933 of the Commission's rules.

Part 15 Notice:

This device complies with Part 15 of the FCC rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Compliance was determined by testing appropriate parameters according to EIA IS-19B and EIA IS-553A.

FCC ID: APV01030
Industry Canada: 363A-CMM7989

NOTICE

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DEFINITIONS

Data Sheet Identification	Product Status	Definition
Objective Specification	Formative or in Design	This data sheet contains the design target or goal specifications for product development. Specifications may change in any manner without notice
Preliminary Specification	Preproduction Product	This data sheet contains preliminary data, and supplementary data will be published at a later date. Skybility reserves the right to make changes at any time without notice in order to improve design and supply the best possible product.
Product Specification	Full Production	This data sheet contains Final Specifications. Skybility reserves the right to make changes at any time without notice, in order to improve design and supply the best possible product.

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LIFE SUPPORT APPLICATIONS

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