

FM TELEMETRY DIVERSITY RECEIVER

RDW

APPLICATIONS

- Telemetry and Data Links
- Avionics and Marine applications

KEY FEATURES

- wide frequency range: VHF, P-Band & UHF versions available
- high sensitivity / high dynamic range
- 10 to 36 Vdc isolated power supply
- fully programmable via serial interface
- baseband response includes DC (Version D)
- industrial temperature range / altitude unlimited
- ruggedized / shock proof design for harsh environments
- 10th order baseband filter programmable from 500Hz to 500kHz [up to 1MBit/s NRZ]
- data output: analog single ended / analog differential / TTL / RS232 / RS422
- software controlled 'smart' diversity combiner generates a soft transition between the two channels and improves the S/N up to 2.5dB



Dimensions
140mm x 80mm x 20mm

SPECIFICATIONS

GENERAL

Description	FM Telemetry Diversity Receiver
Device Type	RDW

RF SECTION

Frequency Range	(version U) 380 to 480MHz
	(version V) 220 to 400MHz
	(version K) 100 to 200MHz
Synthesizer Step Width	25kHz
Antenna Input Impedance	50Ω (max. VSWR = 2:1)
Reference Oscillator Stability	5ppm (1ppm typ.)
	(version N) 2ppm (0.5ppm typ.)
Noise Figure	≤ 6dB (4dB typ.)
Maximum Input Level	13dBm (1Vrms)
Image & Spurious Rejection	≥70 dB
Local Oscillator Radiation	-57dBm (max.)@ 0-1GHz
	-47dBm (max.)@ >1-4GHz

MODULATION

Modulation Type	true FM
FM Deviation	(version H) ±50kHz to ±500kHz
	(version M) ±10kHz to ±100kHz
	(version N) ±2kHz to ±5kHz
Freq. Response	(version H) 500kHz (-0.5dB) [1Mbit/s NRZ]
	(version M) 100kHz (-0.5dB) [200kbit/s NRZ]
	(version N) 10kHz (-0.5dB) [20kbit/s NRZ]
low-end Freq. Response (vers. A)	1 Hz (-1dB)
	(version D) DC

SYSTEM CHARACTERISTICS

Tuning Method	PLL Synthesizer
Temperature Compensation	digital / software
Isolation	isolated power supply input (RF ground & signal return connected to case)
Isolation Voltage	max. 100Vdc (ESD protected)

INPUTS

Multi Function I/O	default = ON / STANDBY
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OUTPUTS

Status Output	H=O.K. / L=warning/error
Fieldstrength Output (RSSI)	50mV/dB (-100dBm=1.5V)
Digital Modulation Output	TTL / RS422 / RS232
Digital Output Impedance	50Ω (100Ω differential)
Analog Output (differential)	1-10Vpp (programmable)
Analog Output (single ended)	0.5-5Vpp (programmable)
Analog Output Impedance	50Ω (100Ω differential)
Modulation Sense	polarity programmable
Deviation Sensitivity	programmable

POWER SUPPLY

Supply Voltage Range	10 to 36 Vdc (isolated)
Supply Current	400mA @ 12V / 190mA @ 28V
Reverse Polarity Protection	max. 47 Vdc (no time limit)

ESD PROTECTION

Peak Voltage (IEC 1000-4-2)	± 8kV (contact discharge)
Peak Voltage (MIL 883-3015.7)	±15kV
Peak Current (Supply Voltage)	100A (8/20μs)
Peak Current (all other I/O pins)	20A (8/20μs)

ENVIRONMENTAL

Operational Temperature	-40°C to +85°C (case temp.)
Humidity	≤ 95% RH
Altitude	unlimited
Vibration (random)	0.1g ² /Hz (20Hz-2kHz)
Vibration (sine)	20g (20Hz-2kHz)
Shock (½ sine)	100g peak (11ms)

PHYSICAL CHARACTERISTICS

Dimensions (excluding connectors)	140 x 80 x 20 mm
Weight	280g
Supply/Signal Connector (J1)	DSUB-15-HighDensity male
Antenna Connectors (J2 & J3)	AMP/TYCO AMPLIMITE HD-20 2xSMA femal optional 2xBNC or 2xTNC

Ordering Code Example: RDW-U-M-D = Diversity Receiver 380..480MHz / FM Deviation up to ±100kHz / Modulation from DC to 100kHz

INTERFACE CONNECTIONS

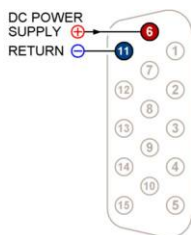


Fig.1
Power Supply
Connection

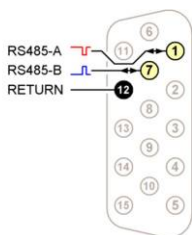


Fig.2
Control Interface
using RS485

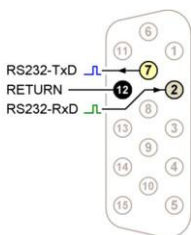


Fig.3
Control Interface
using RS232

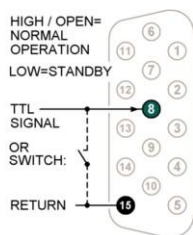


Fig.4
Standby Input
(internal Pullup)

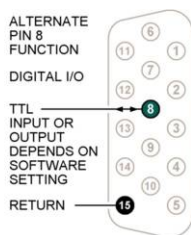


Fig.5
optional
Digital I/O Port

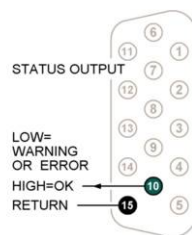


Fig.6
Status Output
(HIGH = O.K.)

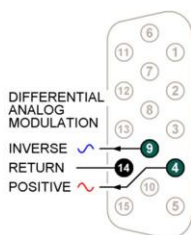


Fig.7
Analog Baseband
Differential Output

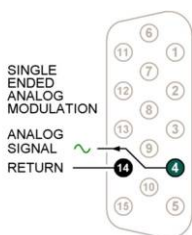


Fig.8
Analog Baseband
Single Ended Output

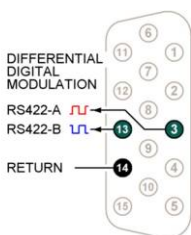


Fig.9
Baseband Data
RS422 Output

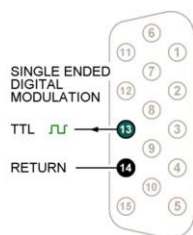


Fig.10
Baseband Data
TTL Output

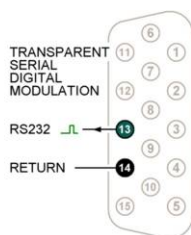


Fig.11
Baseband Data
RS232 Output

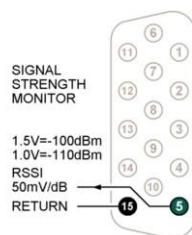
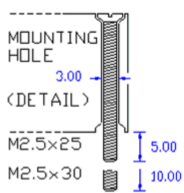
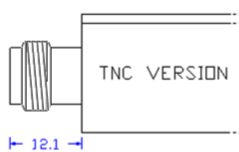
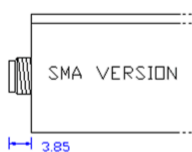
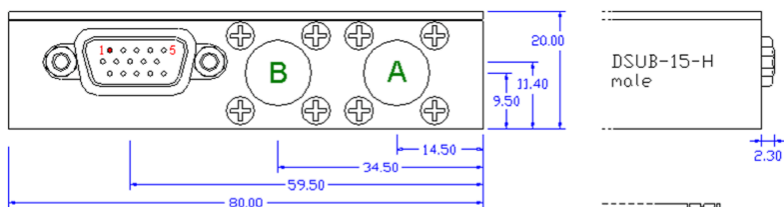


Fig.12
Signal Strength
Monitor Output

OUTLINE DRAWING

Sizes in mm



DSUB Connector Pin Description

SIGNAL	PIN	FUNCTION
PINP	06	DC Power Input (+)
PRET	11	DC Power Return
SERA	01	Serial Port RS485-A
SERB	07	Serial Port RS485-B & Serial Port TxD
SRET	12	Serial Port Return
R232	02	Serial Port RxD
MFIO	08	Multi Function I/O Default=Standby
422B	13	Digital Data (inverse) & TTL/RS232 Output
422A	03	Digital Data Output
ANAB	09	Analog Data (inverse)
DRET	14	Data Signal Return
ANAA	04	Analog Data Output
XSTA	10	Status Output
XRET	15	Pin10/05 Return
XSIG	05	Fieldstrength Output