ECOS-D MT100

UHF DMR MODEM

The **ECOS-D MT100** modem provides data and voice services for simple and fast integration in PMR professional DMR applications.

Designed to exceed the requirements of professional mobile radio systems, it introduces a new concept of Machine-to-Machine radio communication, with a compact design combining reliable, secure communications with new services that greatly enhance efficiency in operations and emergency situations.

The modem is applicable to markets including industrial, emergency, utilities, safety and transport. All are faced with increasingly demanding challenges requiring cost effective solutions focused on the PMR market. These evolving scenarios bring an increased reliance on data communications, requiring the removal of analogue systems and the deployment of new digital networks.

ECOS-D MT100 delivers the security and the robustness of a DMR radio with the features of a modem and a handheld, providing both mission critical digital data transmission capabilities and voice communication services.

APPLICATIONS

- Telemetry
- Public Announcement
- Traffic light control
- Metrological unit and Data Logger
- SCADA for distribution utilities
- SCADA for Oil & Gas utilities
- SCADA for control of irrigators.

FUNCTIONALITY

- Support of ETSI Standard DMR Protocols Tier II (Repeater Mode, Direct Mode) and Tier III
- Analog FM
- DMRA standard encryption (ARC4)
- ETSI DMR standard registration and authentication (128 bit)
- Industry standard AMBE+2 VOCODER
- Automatic switching between DMR Tier II and FM (dual mode)
- Transmit interrupt, ambient listening, DGNA
- Voice calls, talk group subscription, IP over DMR, enhanced data transmission and telemetry

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TECHNICAL SPECIFICATION

Radio protocol	DMR, FM
Frequency range	400 MHz to 470 MHz (UHF)
Channel capacity	512
Channel spacing	12.5 kHz
Operating voltage	12V or 24V DC nominal voltage
Antenna impedance	50 Ohm
Digital VOCODER	AMBE+2

Mechanical specifications

Dimensions WxHxD	169x36x110 mm [6,65x1,42x4,33 in]
Weight	500 g [1,1 lb]
Body material	Aluminum

Environmental conditions

Operation	-20°C to 55°C [-4°F to 131°F]
Storage	-40°C to 85°C [-40°F to 185°F]

Receiver

Analog sensitivity	-118 dBm
Digital sensitivity	-118 dBm (5% BER)
Intermodulation	65 dB
Adjacent channel selectivity	>60 dB
Spurious rejection	>70 dB
Blocking	>84 dB
Hum and noise	>40 dB
Audio response	300 Hz – 3 kHz +1/-3 dB
Conducted spurious emission	<-57dBm

Transmitter

RF output power	4W (UHF)
Modulation limiting	< ±2.5 kHz
FM hum and noise	40 dB
Conducted/radiated emisssion	<-36 dBm
Adjacent channel power 60dBc	<-60 dBc
FSK error	1.5% (typical)
Transient power suppression	> 50 dB
Frequency error	±1.5 ppm
Audio distortion	< 3%

LED SIGNALING

Lighting signaling is provided by four LEDs. The LEDs status is ON/ OFF and blinking with a duty-cycle based on a period of 500 ms where 20% is ON (100 ms) and 80% is OFF (400 ms). At startup as default all LEDs are blinking.

MAIN FEATURES

- Compliant with SCADA protocols on IP, RS232 and RS485:
  - IEC60870-5-101 and -104
  - MODBUS-485 MODBUS-TCP
- 3 digital pure contact Input
- 3 digital pure contact Output
- 4W+E&M Audio Interface
- DIN rail mounting and wall mounting
- Transparent IP data services with IPoverDMR
- DMRA standard encryption (ARC4)
- Wide input voltage range 9-36Vdc for 12Vdc and 24Vdc nominal voltage,
- Fully compliant with EU Directive RED Requirements.

Modem rear view - Connections and LEDs

LED's description

	Functions	Colour	ON	OFF	Blink
LED 1	Call setup and Call Voice or data	Red	TX	Idle	Blink for 5 seconds on channel Busy or party not reachable.
	Programming Status	Red	-	-	Blink during FW programming
LED 2	During Voice or data Call (RX)	Green	RX	Idle	After receiving Emergency voice call
	Programming Status	Green	-	-	Blinked during configuration programming
LED 3	Hunting	Red	(1)	(2)	Blink on hunting (Tier III)
	Generic Failure State	Red	-	-	General purpose error
	Programming Status	Red	-	-	Blink during FW programming
LED 4	Generic Warning State	Green	-	(3)	Not connected to the Control Center
	Programming Status	Green	-	-	Blink during configuration programming

(1) Unregistered (Tier III), (2) Registered (Tier III), (3) Connected to the Control Center

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