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APPLICATIONS OF SHORT
AND LONG DISTANCE

RADIOMODEMS T-MOD



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01

WIRELESS MODEMS T-MOD
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WIRELESS MODEMS T-MOD

WIRELESS MODEM FOR TELEMETRY AND SCADA SYSTEMS

T-MOD C48 Series wireless modem provides a data radio channel, transparent to the protocol (i.e. accepts all half-duplex protocols), with 4800 bps throughput through a RS-232 interface. It provides outstanding long-range point-to-multipoint radio communication for SCADA systems (PLC, RTU and application specific devices).

A single T-MOD C48 Series unit may act as terminal, base station or repeater. Thus, dramatically reducing maintenance and operation costs.

FIRST CHARACTER STORE & FORWARD REPEATER

The Store & forward function (stores and forwards each protocol frame) allows to set up a repeater by means of a single unit and a single frequency (no frequency change). That function is available for all protocols with the network address in the first character (as, for instance, Modbus RTU)



LICENSED OR LICENSE-FREE FREQUENCIES. LONG RANGE.

TMOD C48 is available in UHF and VHF bands, with or without license (433 MHz). Its output power is configurable between 0.1W and 5.0W. the receiver provides excellent sensibility allowing for links up to a range of 50 Km (depending on propagation conditions).

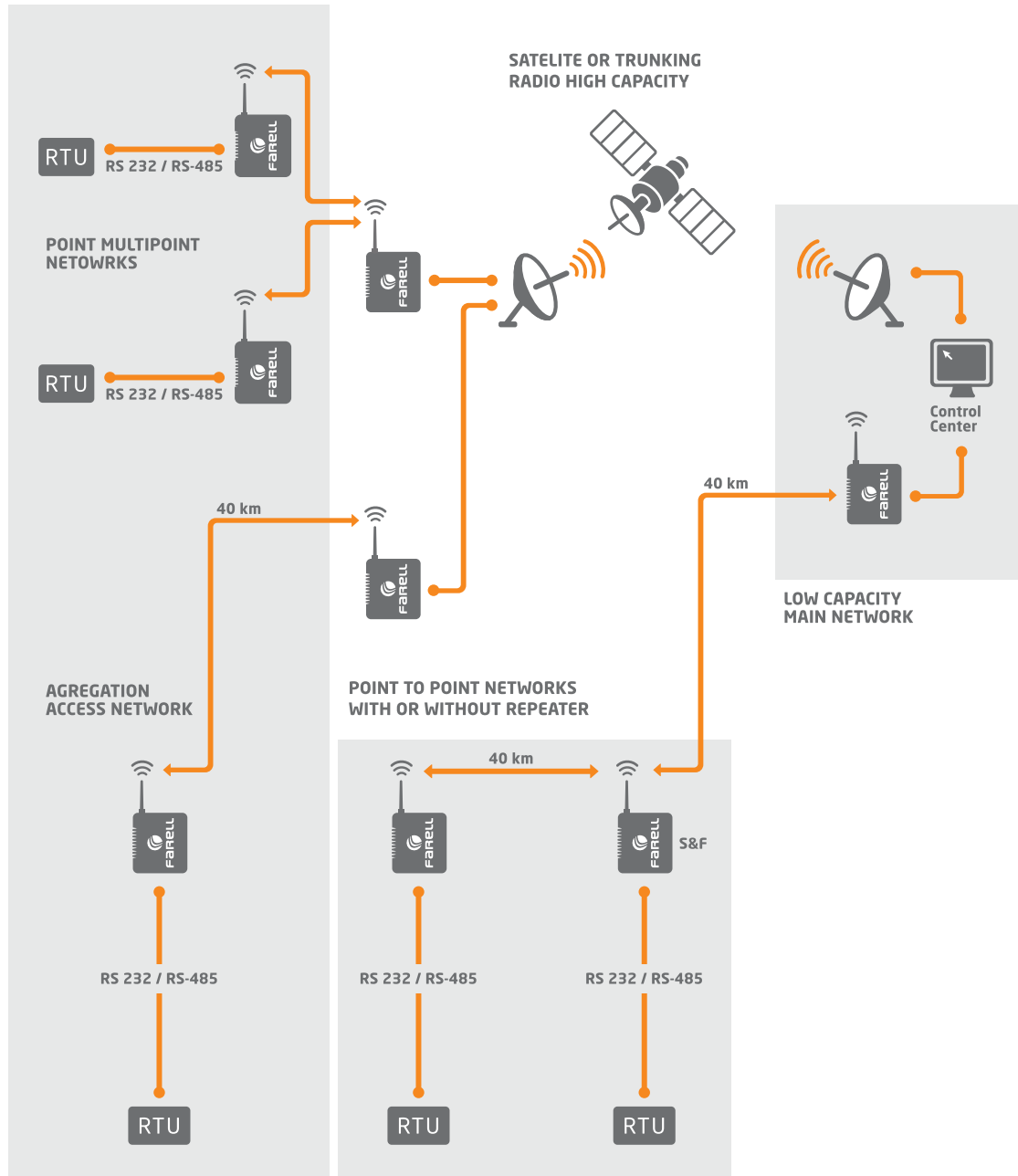
TOUGH AND EASY-TO-INSTALL UNITS

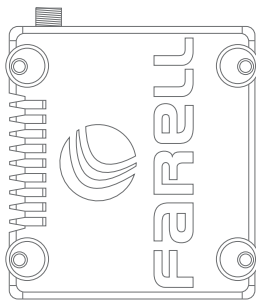
Configuration by using the intuitive TMOD Suite software. Simple set up requiring only basic software. Simple set up requiring only basic parameterization (frequency, power, address). No auxiliary radiofrequency tools required. The unit allows to easily test the radio link quality (emitted power, received power and frame error rate).

TMOD C-48 is manufactured under ISO 9001.



T-MOD RADIOMODEM TOPOLOGIES





KEY FEATURES:

- _4800 bps @ 12,5 KHz.
- _Transparent to protocol.
- _Modbus RTU Store & Forward repeater.
- _Point-to-multipoint or peer-to-peer network.
- _RSSI measure in dBm (digital or voltmeter).
- _Long range links in UHF and VHF.
- _Frequencies with or without license.

APPLICATIONS:

- _Water, gas and electric utilities.
- _Fresh and waste water plants.
- _Energy generation.
- _Gas and oil production.
- _Traffic control and railroads.
- _Irrigation.
- _Lotteries.

DIRECT TECHNICAL SUPPORT:

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ISO 9001
Certification EC-1218/03

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C48

DATA CHANNEL

Operation Modes	Simplex, Half-Duplex.
Data Interface (DATA COM)	RS-232 configurable character format. DB-25 connector. Data Keying (no control signals). Alternatively using RTS / CTS signals. Configurable CTS delay.
Date Rate	300 bps - 38400 bps.
Protocol	Transparent to the protocol.
Data Latency	< 20 ms since first bit in a Tx to first bit out at Rx (one-way link).
End of Frame Detection	User configurable Timeout.

RADIO CHANNEL

Date Rate	4.800 bps
Frequency	403 - 470 MHz (UHF) 12,5 KHz steps configurable in 18MHz bands.
Channel Spacing	12,5 KHz
Modulation	GMSK (BT = 0,5).

TRANSMITTER

Carrier Power	0,1 - 5 Watts configurable.
Carrier Power Accuracy	±1,5 dB
Frecuency Stability	±1,0 ppm
Antenna Connector	N-type, female.
Impedance	50 ohms
Duty Cycle	>90 %

RECEPTOR

Sensibility (BER = 10-6)	-114 dBm @25 KHz / -111 dBm @ 12,5 KHz.
Frequency Stability	±1,0 ppm
Adjacent Channel (EIA)	-60 dB @ 12,5 KHz / -70 dB @ 25 KHz.
RSSI Output	0-5 Volts output in the AUX COM (linear conversion to dBm).

POWER SUPPLY

Nominal	13,2 Vcc nominal / 10,8 Vcc - 15,0 Vcc.
Connector	2-ways polarized connector.
Tx Current	< 2000 mA @ 5 Watts (typical 1500 mA).
Rx Current	150 mA
Protection	Against inverse polarity. Internal self-reamed fuse.

PHYSICAL

Dimensions	200 x 175 x 58 mm (depth x width x height).
Weight	1210 gr.

ENVIRONMENTAL

Temperature range	-30°C a +60°C
Humidity	95% at 40°C without condensation.

NETWORK DIAGNOSTICS

Data and alarms	Carrier power, RSSI, WSWR, power supply voltage and temperature.
Diagnostics Interface (AUX COM)	RS-232 / 2 wires / Data keying (no control signals).
Operation	DB-15 female connection.

OPTIONS

Remote load	Remote firmware load over the radio network.
Store & Forward Repeater	Repeater/router without frequency change implement by one single unit. Compatible with Modbus RTU and all other protocols.
Back-to-Back Repeater	Whose first character contains the network address.
First Character (S&F-FC)	-

HOMOLOGATION

Radio	ETS EN 300 113-2
EMC	ETS EN 301 489-5
Electrical Security	UNE EN 60950

400

Simplex and Half-Duplex.

RS-232 / 2 wires + ground / without control signals (data keying).

RS-485 / 2 wires + ground. DB-15 Connector.

From 300 bps to 38400 bps.

Protocol transparent.

< 35 ms since first bit in a TX to first bit out at Rx (one-way link).

User configurable timeout.

9.600 bps

404 - 512 MHz / 6,25 KHz steps configurable in 18 MHz bands.

138 - 174 MHz / 6,25 KHz steps configurable in 16 MHz bands.

12,5 KHz or 25 KHz.

4-FSK digital.

0,1 - 5 configurable watts (25W optional in enrackable format).

±1,5 dB

±1,0 ppm

N female

50 ohms

>90 %

-112 dBm @ 25 KHz / -109 dBm @ 12,5 KHz

±1,0 ppm

-60 dB @ 12,5 KHz / -70 dB @ 25 KHz

0-5 Volts output in the AUX COM (linear conversion to dBm)

13,2 Vcc nominal / 10,8 Vcc - 15,0 Vcc.

2-ways polarized connector.

< 2000 mA @ 5 Watts (typical 1500 mA)

160 mA

Against inverse polarity. Internal self-rearmed fuse.

200 x 175 x 58 mm (depth x width x height)

1210 gr.

-30°C a +60°C

95% a 40°C without condensation.

Carrier supply (W), last frame received signal level (-dBm), Vcc supply (V), temperature (°C), ROE, alarm.

RS-232 / 2 wires + ground / Without control signals (data keying).

RS-485 / 2 wires + ground.

DB-25 Connector.

Remote firmware load over the radio network.

Repeater/router without frequency change implement by one single unit.

Compatible with Modbus RTU and all other protocols.

Whose first character contains the network address.

Centre, Terminal or repeater station (adding T-MOD and RSC redundancy controller module). Spatial diversity.

ETS EN 300 113-2

ETS EN 301 489-5

UNE EN 60950



_Services

_Farell Instruments gives priority to engineering services, training and technical support. This is because we want our customers, both installers and end-users, to take the best advantage of the equipment we supply.

_Sales Department

- Budgets estimates and orders.
- Querying delivery times or methods of payment.
- Contacting partners who complement your skills or product requirements.
- Learning about our distribution network.
- Getting local technical and sales support.

_Technical Support Service

- Architecture and project viability evaluation.
- Technical support for integration and development.
- Repairs and post-sales services.
- Getting approvals to specific regulations for your market.

_Legalisation Service

- Management of licensing processes for radio networks.
- Legal information on the use of radio spectrum.

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