

# D5 SERIES | ETHERNET



The D5 series includes a range of radio devices that operate in VHF and UHF European free-frequencies, which differ for the type of interfaces and that communicate with each other directly or through repeaters.

Thanks to the high transmission power, high sensitivity and a particular radio protocol, you can exceed the 10 Km away from point to point. Furthermore, through the use of repeaters it is possible to further increase this distance (the transmission distances may vary as a function of frequency, antenna type and environment in which the devices are installed).

Depending on the type of device, the available interfaces include: serial port, serial port and Ethernet port, serial port and various both analog and digital inputs and outputs.

Thanks to the presence of various types of inputs and outputs, the D5 series is ideal also in data acquisition and remote control application.

## OPERATING BAND

They operate in the frequency bands granted free use by the European Community: 169MHz (D510 series) and 868 MHz (D540 series) with output power up to 500mW.

The good sensitivity, combined with the high dynamics, and high power radio allow operational routes of up to several kilometers.

## OPERATING FUNCTION

Different operating profiles programmable via software as point-to-point, point to multi-point, broadcasting and Modbus in master/slave mode or Multimaster Low Energy make the D5 series a flexible product that can adapt to the most varied needs.

Routing tables make it totally transparent to address to the D5 units in a network even in the presence of complex paths, up to a maximum of 8 repeaters.

The Modbus profile makes the D5 series a real Modbus node to which up to eight external Modbus modules can be connected, via RS485, (sensors and/or actuators) thus expanding the number of available inputs and outputs (power supply of additional Modbus modules supplied directly from the device).

## DATA ENCRYPTION

128bit AES (Advanced Encryption Standard) ensures transmitted data security.

## LOW POWER

Power saving features configurable, thanks to the use of bistable relays for digital outputs and activation procedures of external sensors only for the necessary time, allow the D5 series to be used also with battery power for long periods.

## CONSTRUCTION

Available with different housings, it can be used in both indoor and outdoor applications (IP66/IP68) and explosion proof applications with Atex and IECEx certification.



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WIRELESS

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## NOMENCLATURE & ACCESSORIES D5 4 0 - E 1 1 E 00

a    b    c    d

### a Frequency

- 1 VHF 169 MHz
- 4 UHF 868 MHz

### b Interface

- E 1 digital input, 1 digital output, serial port RS485, Ethernet port RJ45

### c Enclosure

- 1 Alluminum IP44
- 2 Alluminum IP44 suitable for DIN rail
- A Alluminum IP66/68, 3 cable entries M20x1.5
- B Alluminum IP66/68, 3 cable entries M25x1.5

### d Antenna

- 00 without antenna
- 01  $\lambda/4$  169MHz (BNC)
- 02  $\lambda/4$  short 169MHz (BNC)
- 04  $\lambda/4$  868MHz (BNC)
- 20  $\lambda/2$  (dipole, vertical) 169MHz (5 mt, BNC)
- 22  $\lambda/2$  (dipole, vertical) 868MHz (5 mt, BNC)
- 40 Yagi 3 elements 169MHz (10 mt, BNC)
- 42 Yagi 6 elements 868MHz (10 mt, BNC)

## ETHERNET / INTERNET AND SERIAL CONNECTIVITY

You can have access to your wireless network both through an Ethernet/Internet connection via Ethernet port or via the RS485 port.

## MODBUS OVER TCP

In Modbus mode data availability is both on the serial port in MODBUS RTU format and on the Ethernet port (MODBUS over TCP).

The Bridge Modbus over TCP feature is also implemented, which allows, by means of two devices, to connect Modbus remote terminals through the Ethernet port.

## INTEGRATED WEB SERVER

Integrated web server for configuration via a web browser without the need for any special software. Ability to configure other equipment of the D5 series when connected via serial port.

## SOFTWARE NETWORK DIAGNOSTICS

Through the browser, thanks to the Ethernet connectivity, you can check the status of the radio network by displaying the intensity of single radio signals from devices on the network as well as the history of the radio signals being recorded to a log file stored on a micro SD included.

Alarms are managed via e-mail in the event of communication failure or radio signals below a critical threshold level.

## INTERFACES

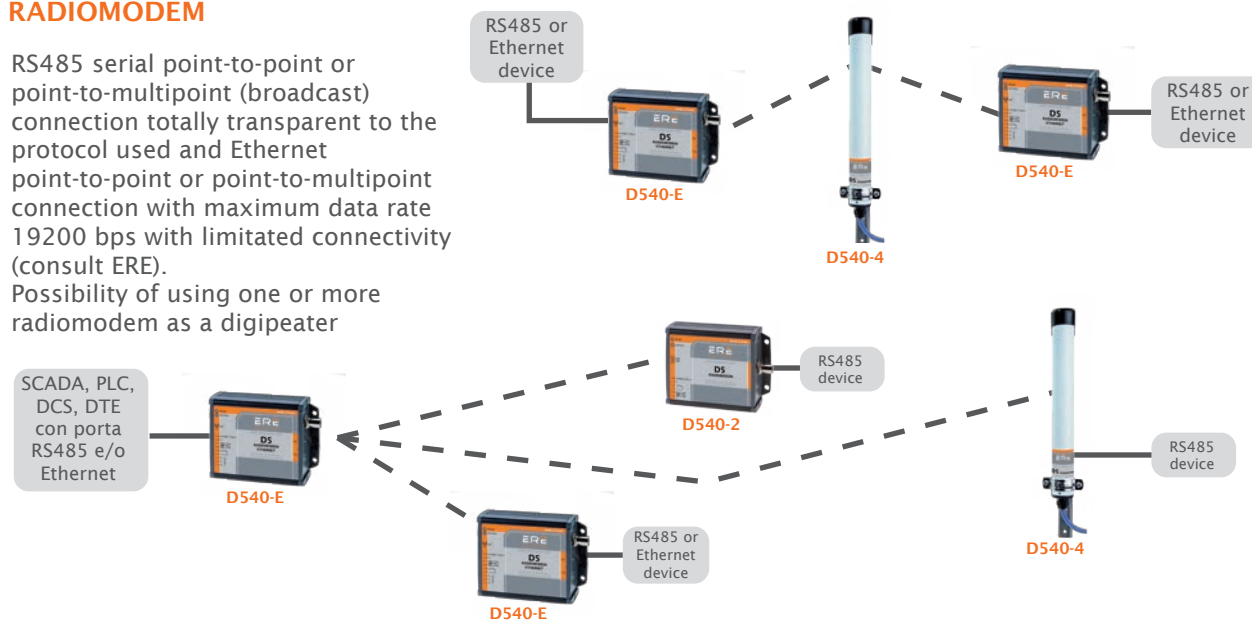
In addition to the Ethernet port, the devices belonging to the D5 Ethernet series are equipped with RS485 serial port and digital input and output.

## Configuration example

### RADIOMODEM

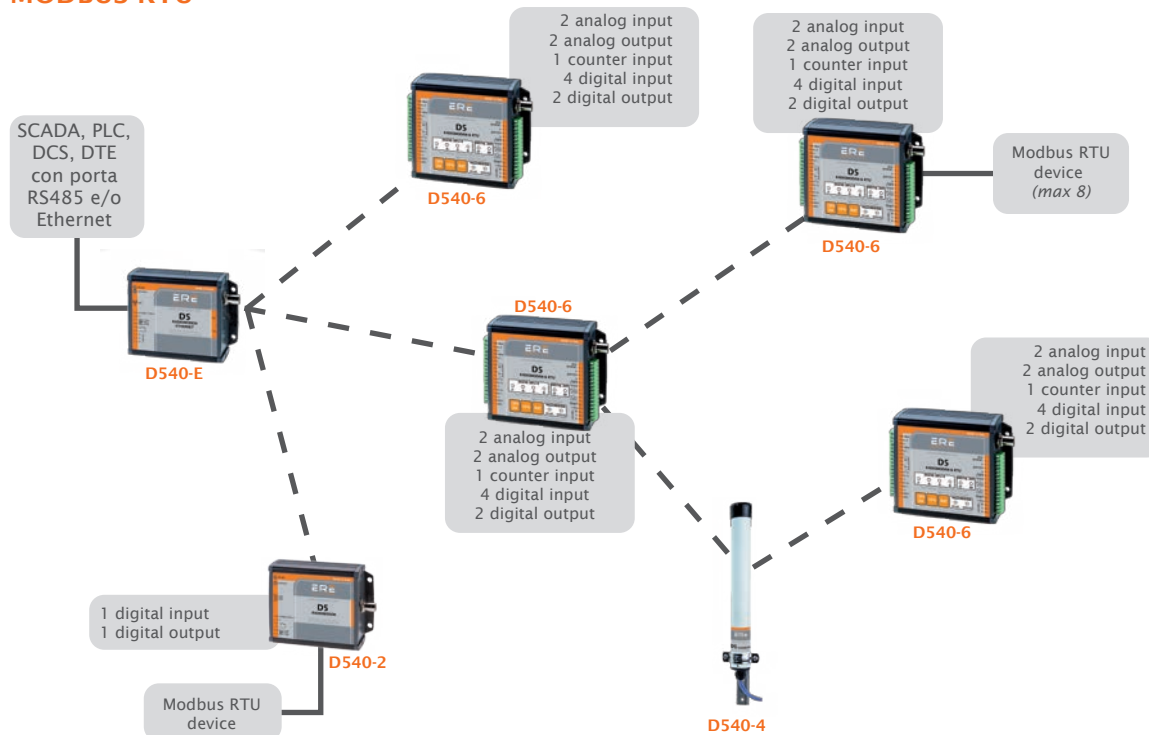
RS485 serial point-to-point or point-to-multipoint (broadcast) connection totally transparent to the protocol used and Ethernet point-to-point or point-to-multipoint connection with maximum data rate 19200 bps with limited connectivity (consult ERE).

Possibility of using one or more radiomodem as a digipeater



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## MODBUS RTU



Network Modbus RTU point-multi-point with serial or Ethernet protocol (Modbus over TCP). Possibility to use routing tables to reach distant devices from the master unit and possibility of connecting additional nodes and devices Modbus RTU of third parties.

## FEATURES

### GENERAL

	D510 Series	D540 Series
Operating band	169.400 - 169.475	868-868.6 868.7-869.2 869.4-869.65
Channel number	1 @ CH50 kHz 3 @ CH25 kHz 6 @ CH12.5 kHz	26 @ CH50 kHz 54 @ CH25 kHz
Canalization	12.5 - 25 - 50 kHz	25 - 50 kHz
Modulation	9K00F1D o 18K0F1D	
Frequency stability	± 2 ppm	± 1 ppm
Radio data rate (Tx/Rx)	4800 bps @ 12.5 kHz - 9600 bps @ 25 kHz - 19200 bps @ 50 kHz	
Supply voltage	9-32 VDC	
Consumption (@12VDC)	Rx ≈ 100 mA   Tx max 600 mA   SLEEP < 10 µA	
Memory buffer	1024 bytes	

### TRANSMITTER

Output power	25 - 150 - 500 mW
Frequency deviations	± 1.8 kHz @ 12.5 kHz ± 3.6 kHz @ 25 kHz ± 4.8 kHz @ 50 kHz
Output power stability	± 1.5 dB

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## RECEIVER

Type	CLASS 1 - LBT and AGILITY	CLASS 2 - LBT and AGILITY
Sensibility @ BER < 10 <sup>-2</sup>	< -105 dBm @ 50 kHz < -107 dBm @ 25 kHz < -110 dBm @ 12.5 kHz	< -105 dBm @ 50 kHz < -107 dBm @ 25 kHz

## SERIAL PORT

Type	RS485
Data rate	from 1200 to 57600 bps

## I/O INTERFACE

Digital output rating (n°1)	1A@24V AC/DC resistive load (normally open)
Ingresso digitale (n°1)	5-24VDC o 3.5-20VAC Z <sub>INP</sub> 2.2 kΩ (optoisolated)

## ETHERNET INTERFACE

Standard	IEEE802.3
Connection	RJ45
Data transmission	10/100 Mbps Auto-Detection
DHCP	Server, Client
Auto MDI/ MDI-X	Yes
Protocols	TCP/IP, Modbus RTU over TCP (server)
Configuration	WEB Server, Windows Utility

## DIMENSIONS

Overall dimensions	100x90x40 mm
Weight	230 gr
Operating temperature	-30°C +70°C



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