UC-RF
(GN 9150)

Control unit for D52R-E-RF (GN 9153)

OPERATING INSTRUCTION

elesa®

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1. General information

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General remarks

The equipment is designed and assembled according to the latest existing regulations. The equipment is delivered to the customer in perfect working order and in line with all safety-relevant conditions. To maintain this status of the equipment, it is imperative to consider the following when installing and using the device:

- use only according to the intended purpose;
- apply all measures regarding safety and hazards;
- observe the present manual and especially the relevant safety precautions!

Make sure that the operating manual and especially the chapter describing the safety precautions is read and well understood by the staff in charge. Supplementary to the operating instructions, other generally or legally relevant regulations regarding accident prevention and environmental care are to be considered and observed. This manual is a supplement to already existing documentation (product information, mounting instructions, catalogues).

Intended purpose of the equipment

Intended purpose of the equipment is industrial process monitoring and control in packaging, wood, plastic, paper, glass and textile, etc. industry.

It is imperative that the equipment is applied only:

- in properly installed condition;

- in line with the relevant technical data!

Any use beyond the instructions/parameters described in this manual may lead to:

- fatal personal injuries;
- fatal health injuries;
- material damages or
- damage to equipment and property

The device must not be used:
- in explosion hazard areas;
- in medical/life support areas and equipment.

Do not open the equipment and do not apply any modifications! Modifying the equipment might have a negative impact on reliability of the device and might result in danger!
Do not attempt any repairs, but return any defective equipment to the manufacturer!
Any violation of the integrity of the device as delivered will null the warranty.

Setup/Commissioning

In case of any abnormal behaviour (including change in operating conditions), the device must be switched off immediately.
It is imperative to switch off power supply during any installation work at the equipment. Installation and commissioning by correspondingly trained and authorised staff only. After correct mounting and commissioning the device is ready for operation.

Maintenance/repair

Switch off the power supply of the equipment before any action. Maintenance should be performed by trained and authorised persons only.

1.2 Description

The control unit (UC-RF) is a standard DIN rail module. The unit is provided with plug and socket for connection to a power source and to a PLC. The antenna allows the data exchange with the DD52R-E-RF electronic position indicators (to be ordered separately).
The control unit is used to connect the DD52R-E-RF electronic position indicators to a PLC in order to allow the reading of the actual position of each indicators directly on the PLC and to allow the transmission of the target position from the PLC to the indicators. With this device it is possible to set a target position for each indicator connected to the UC-RF directly from the PLC. The control unit will constantly transmit the target position to each indicator and will receive back the actual position, providing to the PLC and so to the operator the exact situation and position of the command shafts and components of the machine.

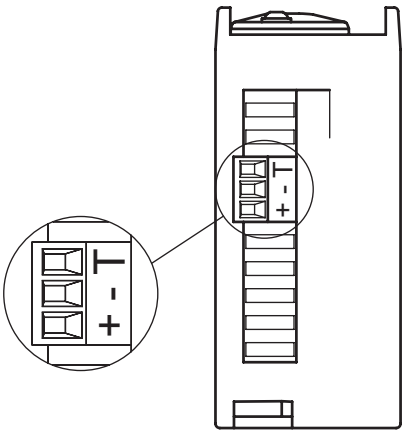
1.3 Connections and mounting

The UC-RF must be connected to 24VDC +/-5% power source.
The connection between the PLC and the UC-RF is to be made using Ethernet cable RJ45
The UC-RF is to be mounted on a DIN Rail thanks to the claws positioned on the back of the device.
The antenna is supplied with the control unit. The antenna must not be mounted inside the cabinet. It is possible to use an extension cable to mount the antenna in a more suitable position. RG 174/U coaxial cable, fitted with SMA male/female connectors must be used. The length of the extension cable will have only a small influence on the quality of the connection.

2. Instructions

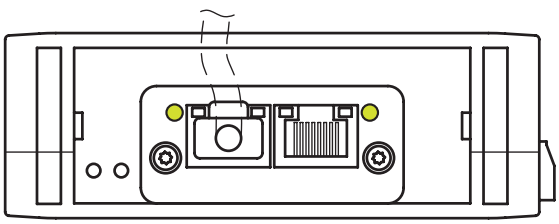
2.1 Connection to power supply

The UC-RF control unit must be connected to a 24VDC +/-5%. See the drawing below for positive, negative and protective earth configuration.



2.2 Connection to the PLC

The UC-RF must be connected to the PLC via an Ethernet cable to one of the two ports, see drawing below. Both ports are equivalent. In case two PLCs, or PLC+PC are connected, make sure conflicts are avoided.



2.3 Interface configuration

The standard interfaces available for the UC-RF are:

- Ethernet/IP
- Profinet IO
- Modbus/TCP

Other interfaces (Profibus, Canbus, RS 232, RS 485 etc.) can be evaluated on request. For each standard interface it is available the corresponding Interface Connection Manual on the Elesa website. Other useful files to help the programmer to configure the communication between the PLC and the UC-RF are:

- EDS for the Ethernet interface.
- GSDML for the Profinet interface.

For a correct installation of the UC-RF, the programmer must follow the indications and the information on the Interface Connection Manuals.

Once the UC-RF has been correctly installed, it is possible to make the following settings:

- Change the IP Address.
- Change the Net ID from 0 to 1…99 - this allows up to 100 networks to coexist in the same space without interferences.

2.4 Data exchange between the UC-RF and the DD52R-E-RF

The UC-RF communicates only with Elesa DD52R-E-RF indicators. The data exchange uses ISM SRD range of 2.400-2.480GHz. The communication between the indicators and the UC-RF follows a proprietary ELESA protocol. The connection is established immediately after the channel of the indicator is enabled and the indicator is switched on. The indicators' parameter NetID must be set to the same NetID programmed on the UC-RF. For more information on the setting of the Net ID and Net CH parameters, refer to the DD52R-E-RF instructions manual.

The range of the radio link is up to 100m in line of sight. However, in industrial ambients the real range depends on many factors - presence of walls, machine parts, metal obstacles, ecc. - thus, the reasonable value to be considered is up to 30m. The antenna must be placed outside the cabinet in the highest possible position. If necessary, extension cable can be used.

Each control unit can handle up to 36 position indicators.

2.5 Warning LED

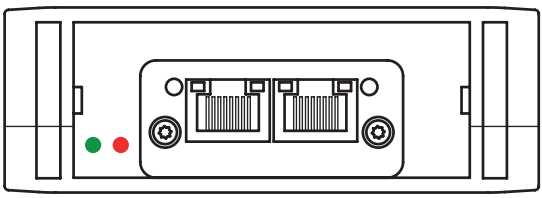
Network module status LEDs - see the network manuals.

UC-RF status LEDs

On successful connection to a channel, the GREEN LED is flashed.

If the connection is lost/transmission packet discarded, the RED LED is flashed. During normal operation, occasional RED LED flash can be observed. This is not an indication of failure.

If the control unit does not establish a connection to a channel after several consecutive connection attempts, it will set the “off-air” flag for that channel.



2.6 Security

Since the communication between the indicators and the UC-RF follows a proprietary ELESA protocol and the control unit cannot process anything different from the expected data, it is not possible to have direct access to the PLC via the UC-RF. For this reason, the radiofrequency connection is protected against system alteration or industrial espionage.

The presence of interferences (various WI-FIs, BLUETOOTHs, etc.) will not affect the correct functioning of the system but could increase slightly the scan time due to discarded transmission packages.

Placing the UC-RF close to power elements (contactors, inverters, motors, etc.) should be avoided or, if impossible, a minimum safety distance of 200mm should be provided.

3. Technical data

Electrical data	
Supply voltage	24 VDC ±5 %
Power consumption	50 mA
Reverse polarity	Protected
Voltage transitions	Protected
Frequency range	2.400-2.480GHz
Interface options	Ethernet/IP Profinet IO Modbus/TCP
Antenna connector	SMA female
Power supply	3-way terminal block 3.81 mm pitch

Mechanical data	
Mounting	DIN RAIL
Weight	≅ 50 g
Housing material	white-gray ABS reinforced polycarbonate, self-extinguishing

Ambient conditions	
Operating temperature	0 ÷ +50 °C
Storage temperature	-20 ÷ +70 °C
Relative humidity	max. 80 %, not condensing
Environment	indoor use
Altitude	up to 2000 m
General	EN 61010 part 1
ratings	protection class II overvoltage category II pollution degree 2
Interference immunity	EN 61000-6-2
Interference emission	EN 61000-6-3
Approvals	UL/CU