UC-RF
(GN 9150)

Control unit for DD52R-E-RF (GN 9153)

PROFINET IO INTERFACE CONNECTION MANUAL

Release 0F3E1018

elesa®

UC-RF (GN 9150) - PLC data transfer

Control unit for
DD52R-E-RF (GN 9153)

The UC-RF module connects the ELESA UC-RF wireless network (up to 36 DD52R-E-RF at present) to PROFINET IO network.

Power supply - 24VDC +/- 5%

Current consumption - 50mA@24VDC

Reverse polarity - protected.

Voltage transitions - protected.

The IP address of the module has been preset to 192.168.1.10, subnet 255.255.255.0. DHCP off.

A different IP/subnet can be assigned by the PLC, or using IPConfig utility - downloadable from:

https://www.anybus.com/support/file-doc-downloads/compactcom-30-series-specific/?orderco-de=AB6221

The antenna must be fixed on the cabinet's wall or ceiling with its dome outside the cabinet, possi-bly facing the DD52R-E-RFs on the machine or in highest possible position.

The module handles 100 (0 to 99) network IDs, so up to 100 networks can coexist in the same space. Each module can handle up to 36 DD52R-E-RF; the 36 indicators are part of the networking with the same ID. The parameter **Net_id** in the **rAdio** submenu of DD52R-E-RF (default 0, range 0-99) must be programmed to match the ID of the network to which it is associated.

PROFINET IO
The GSD file is available as well. Use DAP V2.0 option.
56 slots used. Each slot contains 8 bytes.
Slot 0 to Slot 28 - output (PLC to UC)
Slot 29 to Slot 56 - input (UC to PLC)

UC-RF (GN 9150) - PLC data transfer

Communication protocol

The data block length is 224 bytes:

INPUT UC-RF → PLC - 224 bytes transfer organized as follows:

- offset 0x00 - channel 1 - 4 bytes actual quote, followed by 2 bytes status word
- offset 0x06 - channel 2 - 4 bytes actual quote, followed by 2 bytes status word
- ...
- offset 0xD2 - channel 36 - 4 bytes actual quote, followed by 2 bytes status word
- offset 0xD9 - UC-RF status
  =0 - UC-RF waiting for networkID
  =1 - networkID initialized, scanning enabled channels in progress
  =2 to 255 reserved
- offset 0xDA - reserved
- offset 0xDB - reserved
- offset 0xDC - 4 bytes software release - this manual refers to the release 0F3E1018

OUTPUT PLC → UC-RF - 224 bytes transfer organized as follows:

- offset 0x00 - channel 1 - 4 bytes target, followed by 2 bytes command word
- offset 0x06 - channel 2 - 4 bytes target, followed by 2 bytes command word
- ...
- offset 0xD2 - channel 36 - 4 bytes target, followed by 2 bytes command word
- offset 0xD8 - config byte
- offset 0xD9 - config code
  - 0x00 - invalid config byte
  - 0x01 - config byte contains network ID
  - 0x02 to 0xff reserved

Attention!

UC-RF will accept only values 0 to 99 (0x00 to 0x63) for the networkID. All others will be rejected.

The UC-RF will not start the network scan until it receives a valid networkID from the PLC after power-on. The parameter config code can be left =1 - the UC-RF will check continuously the networkID coming from the PLC and will change it immediately.

- offset 0xDA - reserved
- offset 0xDB - reserved
- offset 0xDC - reserved
- offset 0xDD - reserved
- offset 0xDE - reserved
- offset 0xDF - reserved

The byte order is little endian, the actual quote/target is four bytes signed binary presenting ALLWAYS 0.01 mm counts.
Ex. 64 00 00 00 == 1.00 mm
1.00 mm = 100 ▪ 0.01 mm

100 → (hex) 00 00 00 64 → (little endian) 64 00 00 00

Status word:

bit0-bit5 - reserved

bit6-bit9 - units. These bits indicate the actual unit of measurement of the channel.

Source - DD52R-E-RF.

0000 - 0.01mm	0101 - 0.1 inch
0001 - 0.1mm	0110 - 1 inch
0010 - 1mm	0111 - 0.01 deg
0011 - 0.001 inch	1000 - 0.1 deg
0100 - 0.01 inch	1001 - 1 deg

bit10 - speed error. Indicates rotation speed superior to the programmed. The error is displayed on DD52R-E-RF. **Must** be cleared pressing the F key, then the origin setup **must** be done.
Source - DD52R-E-RF.

bit11 - in position. Set when target reached within the programmed tolerance. Cleared when outside.

Source - DD52R-E-RF.

bit12 - positioning. Set when outside target. Cleared when target reached within programmed tolerance.
Source - DD52R-E-RF.

bit13 - reserved

bit14 - battery low. Set when battery voltage low.
Source - DD52R-E-RF.

bit15 - channel off-air. If set, this bit indicates that the connection with the corresponding channel has been lost. Possible reasons:

- DD52R-E-RF is off
- Channel disabled
- Net_id parameter not set correctly
- Excessive distance to UC-RF

Source - UC-RF.

Command word:

bit0 - enable channel. Set to enable the corresponding channel. Clear to disable. When disabled, the UC-RF will ignore it, and channel off-air flag will be set.
In case a quick connection with a single channel is needed, it is recommended to disable momentarily the other channels - then the UC-RF will communicate only with the channel enabled.

bit1-bit14 - reserved

bit15 - Set to indicate the target field contains a valid target. If cleared, no target will be transmitted to the channel.

Once a valid target is sent to UC-RF, this bit can be left set - the target received from the PLC is transmitted continuously to the DD52R-E-RF.

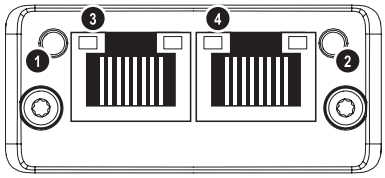
Attention!

After the first time connection, the UC-RF will wait for a Station Name to be assigned by the PLC. Without this, the data transfer will not be started - see the module LED description.

Status LED:

Front View Connector

#	Item
1	Network Status LED
2	Module Status LED
3	Link/Activity LED (port 1)
4	Link/Activity LED (port 2)



Network Status LED

LED State	Description	Comments
Off	Offline	• No power • No connection with IO Controller
Green	Online (RUN)	• Connection with IO Controller established • IO Controller in RUN state
Green, 1 flash	Online (STOP)	• Connection with IO Controller established • IO Controller in STOP state or IO data bad • IRT synchronization not finished
Green, blinking	Blink	Used by engineering tools to identify the node on the network
Red	Fatal event	Major internal error (this indication is combined with a red module status LED)
Red, 1 flash	Station Name error	Station Name not set
Red, 2 flashes	IP address error	IP address not set
Red, 3 flashes	Configuration error	Expected Identification differs from Real Identification

Module Status LED

LED State	Description	Comments
Off	Not Initialized	No power OR Module in SETUP or NW_INIT state.
Green	Normal Operation	Module has shifted from the NW_INIT state.
Green, 1 flash	Diagnostic Event(s)	Diagnostic event(s) present
Red	Exception error	Device in state EXCEPTION.
	Fatal event	Major internal error (this indication is combined with a red network status LED)
Alternating Red/ Greed	Firmware update	Do NOT power off the module. Turning the module off during this phase could cause permanent damage.

LINK/Activity LED

LED State	Description	Comments
Off	No Link	No link, no communication present
Green	Link	Ethernet link established, no communication present
Green, flickering	Activity	Ethernet link established, communication present

The Ethernet interface operates at 100 Mbit, full duplex, as required by PROFINET.

Pin no	Description
1, 2, 4, 5	Connected to chassis ground over serial RC circuit
3	RD-
6	RD+
7	TD-
8	TD+
Housing	Cable Shield