


# Data Sheet

## RemoteCOM (C20 - C25)

RemoteCOM is a complete hardware and software solution for creating remote communication ports. The software part can be uploaded to any of the Redisage C20 - C25 Ethernet Converters. It provides a communication between a LAN host and a device equipped with RS232/RS485 serial interfaces. A dedicated app makes it easy and fast to configure and deploy. There is a possibility to create virtual COM ports with the Redisage Configurator to minimize number of cables.

C20 C21 C22 C23 C24 C25	Features
	<ul style="list-style-type: none"><li>• Ethernet converter to RS232/RS485</li><li>• ESD protection for the RS485 data line</li><li>• Power supply: +12 to +30 VDC</li><li>• Transmission speed up to 115200 bps</li><li>• Tx, Rx and power LED indicators</li><li>• RS485 embedded termination 120 ohm</li><li>• Operating temperatures: -40°C to +75°C</li><li>• DIN rail mounting</li><li>• Dimensions: 90x56.4x22.5 mm</li><li>• 3 years warranty</li><li>• Customization of OEM is welcomed</li></ul>

## Introduction

C20 - C22 are a products family of reliable converters based on the **ESP32 Xtensa LX6** microcontroller, extending the capabilities of industrial devices.

C23 - C25 are a products family of reliable converters based on the **STM32F4** microcontroller, extending the capabilities of industrial devices.

The addition of a network interface allows remote access and full control over communication via a computer.

The user performs the basic configuration of transmission parameters in a browser or via a Telnet/serial console.

Dedicated EMC integrated circuits guarantee improved connection quality by limiting the impact of the interferences typical for an industrial environment.

# Specifications

Redisage PN		C20	C21	C22	C23	C24	C25
Ports	RS232	2x	-	-	4x	-	2x
	RS485	-	1x	-	-	4x	2x
	RS232/RS485	-	-	2x	-	-	-
Microcontroller		ESP32			STM32F4		
WiFi		N/A					
Power	Voltage	12-30 VDC					
	Power	< 1 W					
Frame ground connection		yes					
Baud rate		up to 115200 bps					
LED indicators		communication Tx, Rx and power					
RS485 termination		120 ohm manually enabled					
Connector	RS232/RS485	8-pin terminal block max. 2.5 mm <sup>2</sup> wire					
	Power	3-pin terminal block max. 2.5 mm <sup>2</sup> wire					
	Ethernet	RJ45					
Transmission distance	RS485	max. 1,200 m at 9.6 kbps; max. 400 m at 115.2 kbps (Belden 9841 2P twisted-pair cable, if different cables are used, the transmission distance may change)					
	RS232	max. 15 m at 115.2 kbps					

Redisage PN	C20	C21	C22	C23	C24	C25
Mounting and enclosure	DIN rail, plastic PA - UL 94 V0, black/green					
Temperatures	-40°C to +75°C operating and storage					
Humidity	10 - 90% RH, non-condensing					
ESD protection	±4 kV contact discharge / ±8 kV air discharge					
Certification	CE, RoHS					

## Variants

### C20 - Ethernet Converter 2 x RS232



### C21 - Ethernet Converter 1 x RS485



### C22 - Ethernet Converter 2 x RS232/RS485

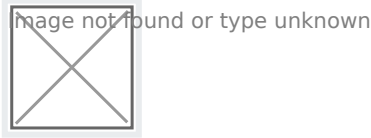


In the C22 converter user should use only RS232 or only RS485 interface of one port as they occupy the same internal bus of the device.

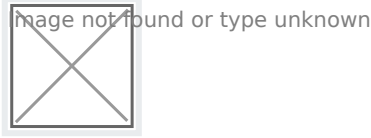
### C23 - Ethernet Converter 4 x RS232



## C24 - Ethernet Converter 4 x RS485



## C25 - Ethernet Converter 2 x RS232 & 2 x RS485



## Frame ground FG

Electronic circuits are constantly prone to electrostatic discharge ESD. Redisage Electronics modules feature a design for the frame ground terminal block FG. The frame ground provides a path for bypassing ESD, which provides enhanced static protection ESD abilities and ensures the module is more reliable. Connecting FG terminal block to the earth ground will bypass the ESD disturbances outside the device so will provide a better level of protection against ESD.

Frame Ground FG connection reference drawing is provided below.



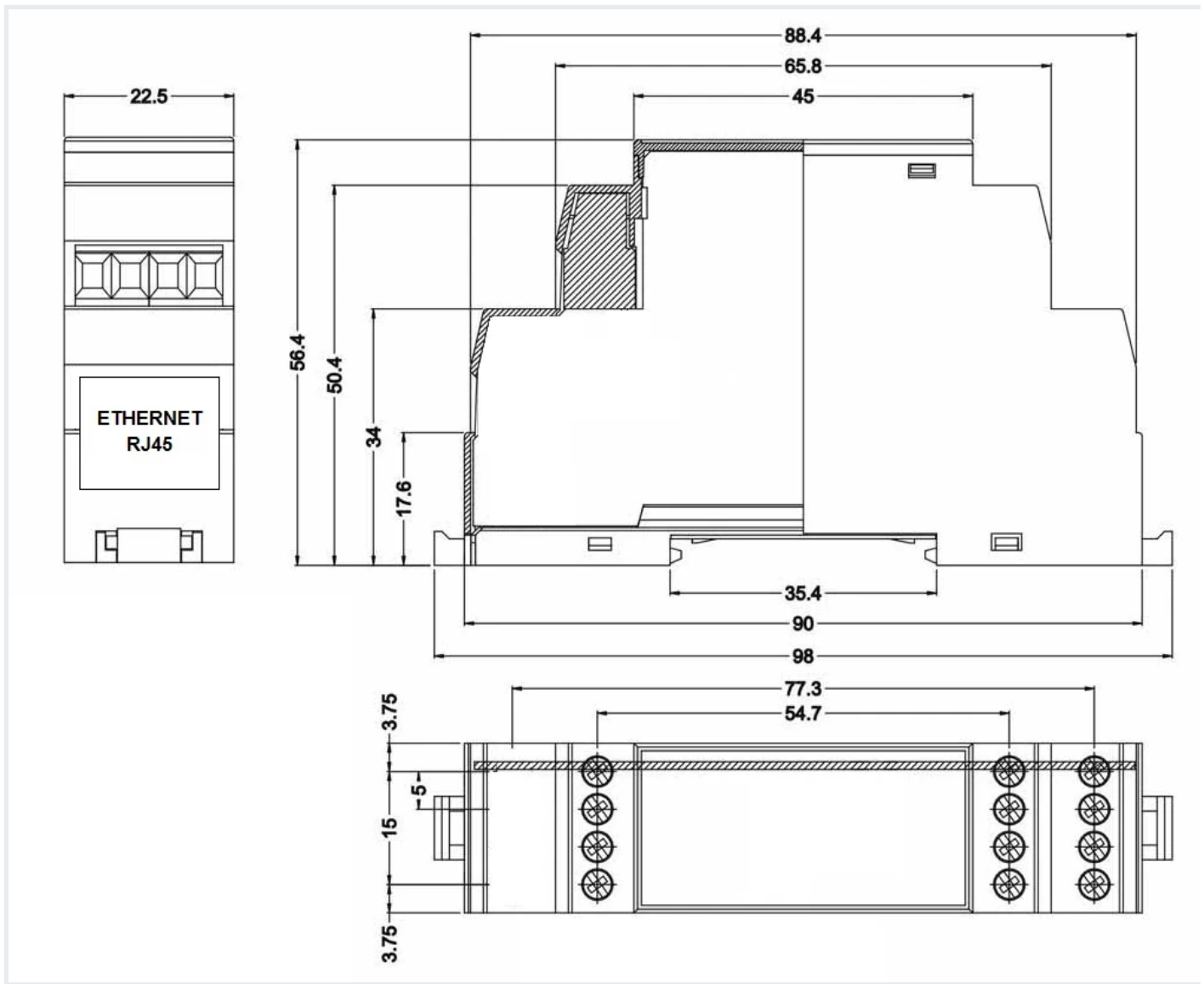
If earth ground is not available FG can be left floating or it can be connected with the power supply GND.

## Pin assignments

<div>C20</div> <div></div>	<div>C21</div> <div></div>
<div>C22</div> <div></div>	<div>C23</div> <div></div>
<div>C24</div> <div></div>	<div>C25</div> <div></div>

# Enclosure dimensions

2U Module Enclosure  
98 x 22.5 x 56.4  
Units: mm



# Getting started

## Power supply

Ethernet converters C20 - C25 have wide voltage power input (12-30 VDC) and the power consumption is less than 1 W.

## LED indicators

Ethernet converters C20 - C22 have 3 LED indicators:

- PW LED Blue - Power
- ETH LED Green - Network activity
- ST LED Orange - USB-UART serial console mode

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Ethernet converters C23 - C25 have 5 LED indicators:

- PW LED Blue - Power
- ER LED Yellow - Error
- ETH LED Green - Network activity
- COM LED Green - RS232/RS485 activity
- CN LED Yellow - Console mode
- SR LED Red - Service mode



## Configuration by the Web Page

Default configuration of the Ethernet Converters:

- IP address: **192.168.100.100**
- Subnet mask: **255.255.255.0**
- Gateway: **192.168.100.1**
- DNS 1: **192.168.100.1**
- DNS 2: **8.8.8.8**

Default login details:

- User name: **admin**
- Password: **admin123**

To access to the web page open the web browser, type the IP address in the address bar and log in using the default user name and password. The device and a PC must be connected to the same Local Area Network.



After a successful login, the status page will show the current status of the ports.



To change the user name and password click on the user icon and select “Edit user”.

Ports configuration is available on the “Ports” page.



Item	Description
------	-------------

Service	RemoteCOM	The RemoteCOM option lets to attach the port to a computer running the <a href="#">Redisage Configurator</a> as if it would be physically present in the computer.
	TCP Socket	TCP/UDP Socket exposes this port as a regular network socket - connect to this socket with own software and write/read data to send/receive data over the serial port without any additional software or serial port handling.
	UDP Socket	
Port		The service number - the device has an "IP Address" by which it is identified and a couple of services running on it. It's required to tell the device which service should be in use by entering this device's IP address and the port number in the RemoteCOM client or user's software.
Connection Timeout [s]		The time specifying how often (every how many seconds) the "keep alive" packet will be sent to check if the client is still connected. Value 0 means that the connection is kept permanently without any timeout.
Inactivity Time [ms]		The maximum allowed time in milliseconds during which there is no data transfer. When connection is inactive for the time longer or equal to the entered value, then it will be closed. Value 0 means there is no measure of the inactivity time at all.
Encryption		Determine how the data is protected 'in flight' over a network. It is available only with the RemoteCOM service. Once enabled, it is necessary to set the password.
Password		Protect the communication between the device and various clients - keep it secret! Same settings have to appear in clients - without the correct passwords, a client will not be able to connect at all.
Termination		Enable/disable termination on the RS line.
Baud Rate		Determine the port's transmission speed over the data channel.
Data Bits		Determine the number of data bits in the port's message frame.



Parity	Enable/disable parity check in the port's message frame.
Stop Bits	Determine the number of stop bits in the port's message frame.
Notes	These notes are for information only - feel free to write down anything related to this port (device it connects to, etc.). They're also shown in the Configurator during the device discovery - in the other words, they're public.

Changing port's service closes all sockets connected to the ports.

In the UDP mode, port number 15051 is reserved for UDP broadcast service.

Network settings can be changed on the “Network” page.

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Item	Description
Configuration Method	Enable/disable the DHCP server. If the DHCP server is disabled, the IP address of the device has to be set manually.
IP Address	IP address of the device.
Netmask	Netmask associated with the IP address.
Gateway	Gateway address currently used by the device.
MAC Settings	Allow setting the default MAC address or typing it manually.
MAC Address	Allow changing the physical address of the device.

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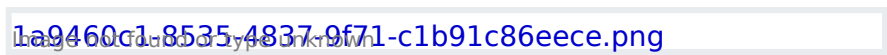
Item	Description
HTTP Port	Determine the port of the control panel.

Item	Description
Telnet Port	Allow connection with the device via Telnet.
Broadcasts	Notify RemoteCOM clients in the same network about this device's existence. With this enabled, the Configurator will automatically set most of the settings correctly after picking the correct port.
Hostname	Label that is assigned to the device.
DNS Address 1 (Primary)	Primary Domain Name System used by the device.
DNS Address 2	Domain Name System used by the device.

On the “Device” page there are tools used to a firmware update, a factory reset and a device reboot.



On the “Info” page there is information about firmware, model, serial number and frontend version.



## Configuration by the Serial Console

The device has the ability to be reconfigured via a serial console. C20 - C22 require a dedicated USB/UART converter connected to the USB micro-B connector on the front of the device. C23 - C25 can be directly connected to a PC through a USB cable.

### Procedure to enter serial console mode on C20 - C22

- Turn off the power of the device.
- Connect the PC to the C1 micro-USB port of Ethernet converter using the dedicated USB/UART converter.
- Open the serial console (default baud rate is 115200 bps).
- Press and hold the S1 button (or connect Din pin to GND pin if the button is not mounted).
- Turn on the power and wait a few seconds until the orange LED lights up.
- Release the button (or disconnect Din pin from GND pin).

### Procedure to enter serial console mode on C23 - C25

- Install STM32 Virtual COM Port Driver.
- Turn off the power of the device.
- Connect the PC to the C1 micro-USB port using the USB cable (or use the dedicated USB/UART converter).
- Open the serial console (default baud rate is 115200 bps).
- Press and hold the S1 button.
- Turn on the power and wait a few seconds until the yellow CN LED lights up.

- Release the button (or disconnect Din pin from GND pin).

Once this is done, log in using the default username and password, then change the network settings using "ipconfig" command.

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## List of all commands

Command	Description
help	Print the help.
conn	Print active TCP connections.
eth_mac	Print or change MAC address.
exit	Close current CLI session.
http_port	Print or change default http port.
ipconfig	Print or change the network configuration.
net_stat	Print lwIP statistics.
ping	Check internet connection with the desired host.
restart	Restart the system.
reboot	Same as restart.
sys_heap_usage	Print current heap usage.
telnet_port	Print or change default telnet port.
uart	Print or change uart configuration.
uart_service	Print or change uart_service configuration.
user	Print or change user configuration.

## Ports configuration commands

In terms of ports configuration it is possible to change parameters like: service, baud rate, data bits, parity, stop bits and so on. UART commands are provided below.

- **uart**
  - **uart help**  
Print the help message.
  - **uart list**  
List available uarts in the system.

Example:  
uart list

0: baud: 9600 bits: 8 stop\_bits: 1 parity: none (service console)  
1: baud: 115200 bits: 8 stop\_bits: 2 parity: odd (covered by cons.)  
2: baud: 9600 bits: 8 stop\_bits: 1 parity: none  
3: baud: 1200 bits: 8 stop\_bits: 2 parity: even termination: ON (R-COM)  
3: baud: 38400 bits: 8 stop\_bits: 2 parity: none termination: OFF

- **uart PORT\_NUMBER baud BAUD**

Set PORT\_NUMBER baudrate to BAUD. BAUD value can be one of the following:  
2400, 4800, 9600, 14400, 19200, 38400, 57600, 115200.

Example:

uart 1 baud 9600

WARNING: UART covered by console. Changes will take place after the reset.

- **uart PORT\_NUMBER bits BITS**

Set bit length to BITS. BITS value can be one only 8.

Example:

uart 2 bits 8

- **uart PORT\_NUMBER stop\_bits STOP\_BITS**

Set stop\_bits length to STOP\_BITS. STOP\_BITS value can be only 1 or 2.

Example:

uart 2 stop\_bits 1

- **uart PORT\_NUMBER parity PARITY**

Set uart parity to PARITY. PARITY value can be one of the following: none, odd, even.

Example:

uart 3 parity even

- **uart PORT\_NUMBER termination STATE**

Set uart termination to new STATE. STATE can be only ON or OFF.

Example:

uart 3 termination ON

- **uart\_service**

- **uart\_service help**

- Print the help message.

- **uart\_service list**

- List of uarts services status.

Example:

```
uart_service list
```

```
1 state: ON service: Remote COM port: 1504 enc: YES
```

```
2 state: OFF service: TCP Socket port: 1510
```

```
3 state: OFF service: UDP Socket port: 1510
```

- **uart\_service UART\_NUMBER state STATE**

Set UART\_NUMBER state to STATE. STATE value can be only ON or OFF.

Example:

```
uart_service 1 state ON
```

- **uart\_service UART\_NUMBER service SERVICE**

Set UART\_NUMBER service to SERVICE. SERVICE value can be one of the following: Remote COM, TCP Socket, UDP Socket.

Example:

```
uart_service 1 service TCP Socket
```

- **uart\_service UART\_NUMBER port PORT\_NUMBER**

Set UART\_NUMBER port to PORT\_NUMBER. PORT\_NUMBER value can be any in the range: 1-65535.

Example:

```
uart_service 1 port 1501
```

- **uart\_service UART\_NUMBER enc ENC\_STATE**

Set UART\_NUMBER encryption to ENC\_STATE. ENC\_STATE can be only YES or NO.

Example:

```
uart_service 1 enc YES
```

If ENC\_STATE is YES then it will ask for a new password for encryption.

## Network settings

The following commands might be helpful to change network settings according to target LAN parameters.

- **ipconfig**

- **ipconfig addr ADDRESS**

Set IP address to ADDRESS.

Example:

```
ipconfig addr 192.168.0.10
```

- **ipconfig mask NETMASK**

Set subnet mask to NETMASK (in dot-decimal format).

Example:

```
ipconfig mask 255.255.255.0
```

- **ipconfig mask BIT\_COUNT**

Set subnet mask to BIT\_COUNT bits.

Example:

```
ipconfig mask 24
```

- **ipconfig gateway GATEWAY\_IP**

Set network gateway to GATEWAY\_IP.

Example:

```
ipconfig gateway 192.168.0.1
```

- **ipconfig dhcp enable/disable**

Enable or disable DHCP client.

Example:

```
ipconfig dhcp enable
```

- **ipconfig dns1 ADDRESS**

Set primary DNS to ADDRESS, disable getting DNS from DHCP if enabled.

Example:

```
ipconfig dns1 192.168.100.1
```

- **ipconfig dns2 ADDRESS**

Set secondary DNS to ADDRESS, disable getting DNS from DHCP if enabled.

Example:

```
ipconfig dns2 1.1.1.1
```

- **eth\_mac**

- **eth\_mac help**

Print the help message.

- **eth\_mac default**

Set device's MAC address to factory-default one.

- **eth\_mac set MAC\_ADDR**

Set device's MAC address to MAC\_ADDR. Accepts both dash and colon-separated formats.

Example:

```
eth_mac set 01-02-03-04-05-06
```

Example:

```
eth_mac set 01:02:03:04:05:06
```

- **http\_port**

- **http\_port help**

Print the help message.

- **http\_port PORT\_NUMBER**

Set http port to PORT\_NUMBER. A PORT\_NUMBER value must be in range: 1-65535.

Example:

```
http_port 80
```

- **http\_port status**

Print current http port.

Example:

```
http_port status
```

A current http port is 80

- **telnet\_port**

- **telnet\_port help**

Print the help message.

- **telnet\_port PORT\_NUMBER**

Set Telnet port to PORT\_NUMBER. A PORT\_NUMBER value must be in range: 1-65535.

Example:

```
telnet_port 23
```

- **telnet\_port status**

Print current Telnet port.

Example:

```
telnet_port status
```

A current telnet port is 23

## Changing username or password

To change username or password, use user command. Available commands:

- **user help**

Print the help message.

- **user mod\_name USER\_NAME NEW\_NAME**

Change the user name to NEW\_NAME. It fails if the name is used by another user.

Example:

```
user mod_name admin john
```

- **user passwd USER\_NAME**

Change USER\_NAME's password.

Example:

```
user passwd admin
```

```
***** <- here is entered password, but '*' appears instead
```

Note: Everyone can change the password for themselves.

## Configuration by the Telnet Console

Access to the Telnet console can be obtained using a serial terminal program. Configure the connection type to Telnet, enter the IP address and Telnet port number (**23** by default).

Telnet console commands are the same as ones described in the serial console section.



## Redisage Configurator

To configure the RemoteCOM ports use the Redisage Configurator program. Redisage Configurator is an app used to emulate a connection between the converter and a PC as if it would be connected directly to the COM port.

### Configuration procedure

- Change the device port service to the RemoteCOM.
- Set up a port number.
- Enable or disable encryption.
- If encryption is enabled create a password.
- In the Redisage Configurator click add the device and then set the COM number and the service port.
- If encryption is enabled enter a password.
- Click save changes.
- Connect to the configured serial COM port via terminal software.



If any change is made to the port configuration, make sure to apply it with the “Save Changes” button.

## Reset to factory defaults

Reset to factory defaults is possible on the web page in the device section or using the service mode.

## Service mode

### Procedure to enter service mode for C20 - C22 converters

- Turn off the power of the device.
- Connect Ethernet converter to the dedicated USB/UART converter via the microUSB port.
- Connect the USB/UART converter to the PC.
- Open the serial console (default baud rate is 115200 bps).
- Press and hold the S1 button.
- Turn on the power.
- Wait until the ST indicator (red LED) lights up.
- Release the S1 button.
- If the process is successful, service commands can be typed into the terminal.

### Procedure to enter service mode for C23 - C25 converters

- Install STM32 Virtual COM Port Driver (if it was not done before).
- Turn off the power of the device.
- Connect Ethernet converter directly to the PC (the dedicated USB/UART converter is not obligatory).
- Open the serial console (default baud rate is 115200 bps).
- Press and hold the S1 button.
- Turn on the power.
- Wait until the ST indicator (red LED) lights up.
- Release the S1 button.
- If the process is successful, service commands can be typed into the terminal.

## List of commands in the service mode

Command	Description
help	Print the help.
credits	Print current credits value for this device.
dev_ident	Print the device identification value.

Command	Description
restart	Restart the system.
serial_num	Print the serial number of this device.
version	Display the bootloader version.
xmodem	Download image to the internal flash using xmodem.
defaults	Reset application variables to defaults.
ipconfig	Print or change the network configuration.
flash_read	Read bytes from flash memory.
md	Read bytes from memory address.

In the service mode, the “ipconfig” command can only show a last static IP address.

## Additional notes

Related information and links		
<a href="#">Ordering information</a>	<a href="#">Accessories</a>	<a href="#">Similar products</a>

## Products family sample photo



<https://redisage.com>

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