

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

- Ethernet converter to RS232/RS485
- ESD protection for the RS485 data line
- Power supply: +12 to +30 VDC
- Transmission speed up to 115200 bps
- Tx, Rx and power LED indicators
- RS485 embedded termination 120 ohm
- Operating temperatures: -40°C to +75°C
- DIN rail mounting
- Dimensions: 90x56.4x22.5 mm
- 3 years warranty
- Customization of OEM is welcomed

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.

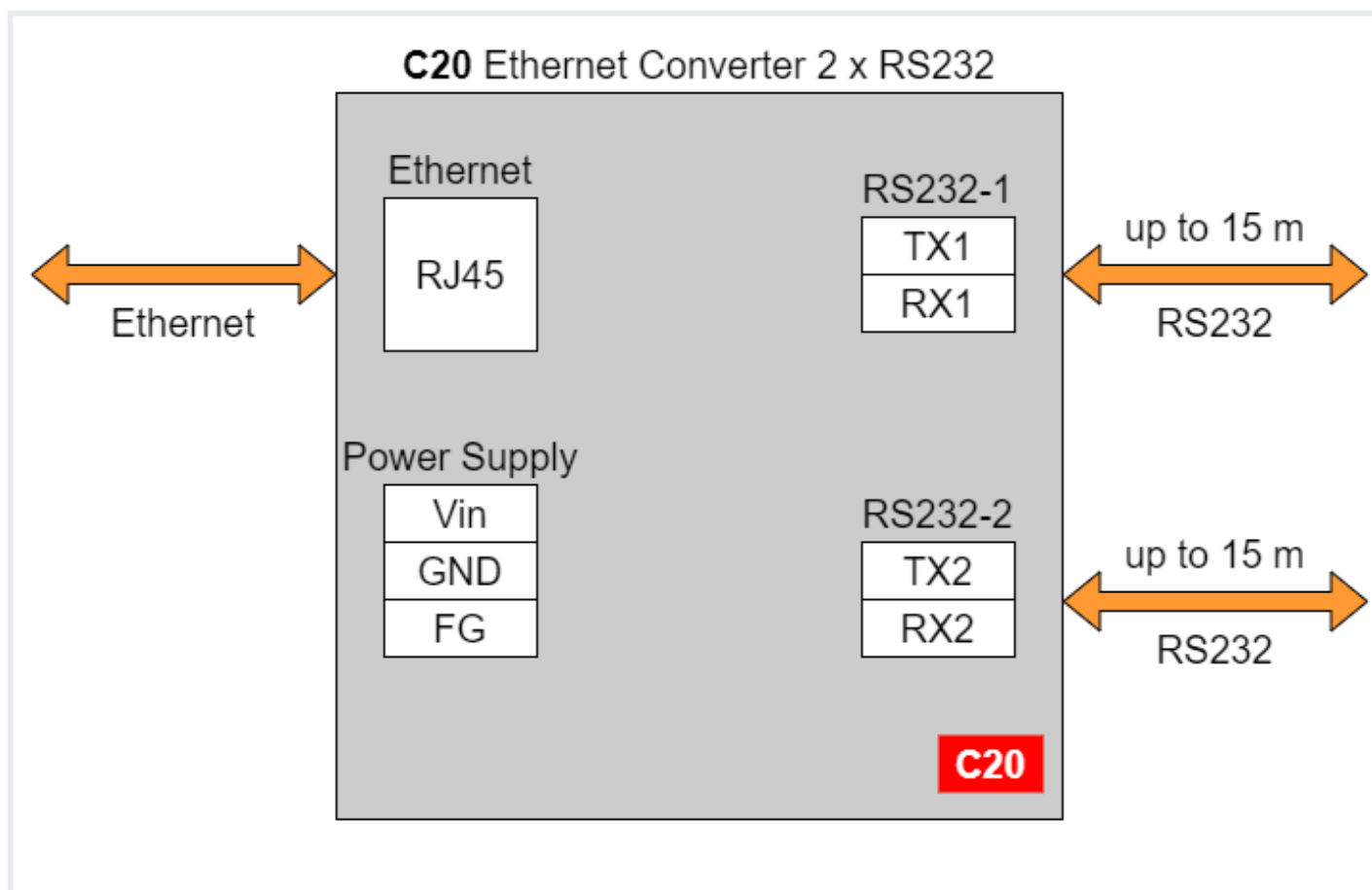
Specifications

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 ² wire					
	Power	3-pin terminal block max. 2.5 mm ² wire					
	Ethernet	RJ45					

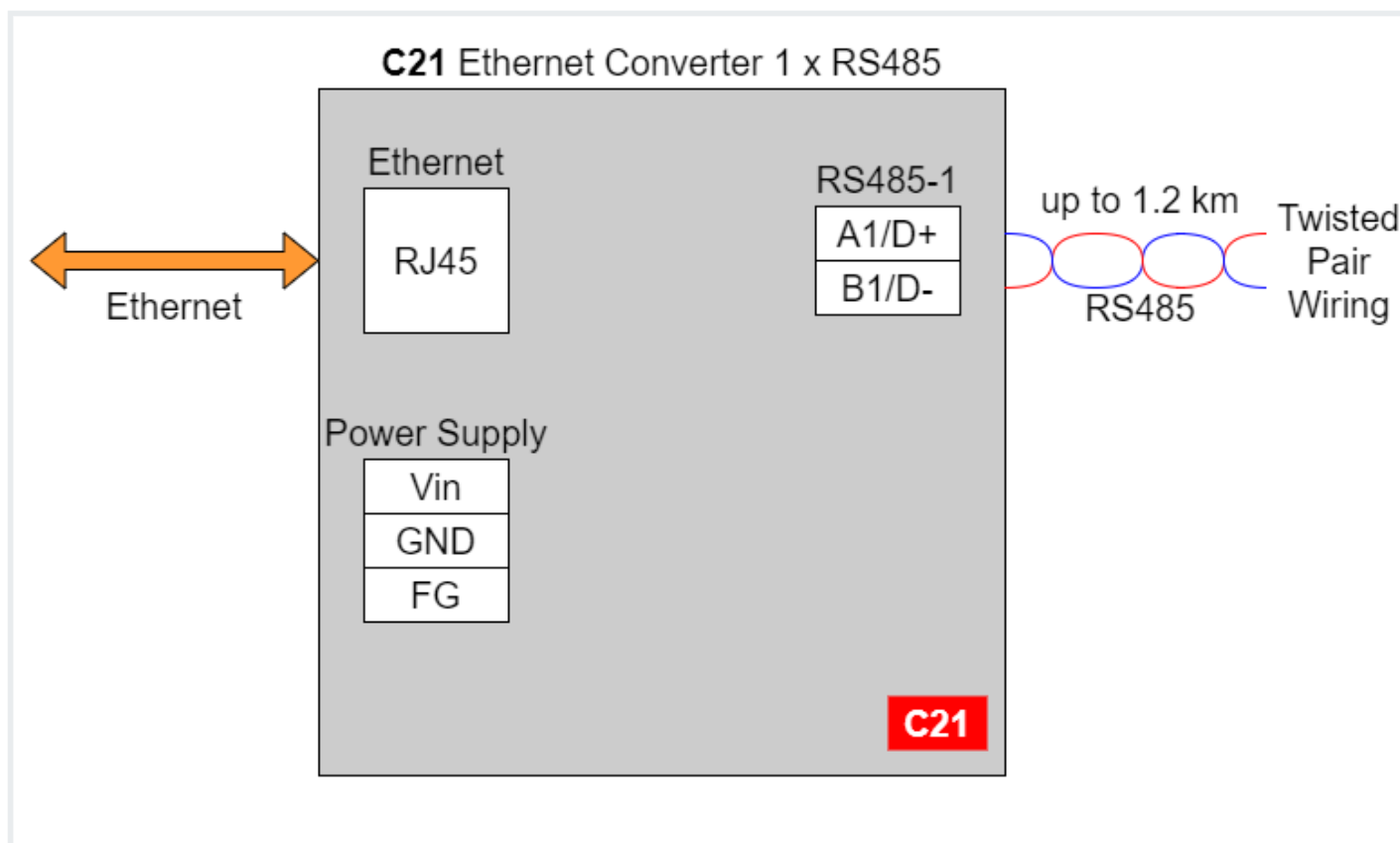
Redisage PN		C20	C21	C22	C23	C24	C25
Transmission distance	RS485	max. 1,200 m at 9.6 kbps; max. 400 m at 115.2 kbps (Belden 9841 2P twisted-pair cable, if different cables are used, the transmission distance may change)					
	RS232	max. 15 m at 115.2 kbps					
Mounting and enclosure		DIN rail, plastic 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, EMC, LVD					
Norms		61000-6-2 - Immunity standard for industrial environments 61000-6-4 - Emission standard for industrial environments					

Variants

C20 - Ethernet Converter 2 x RS232

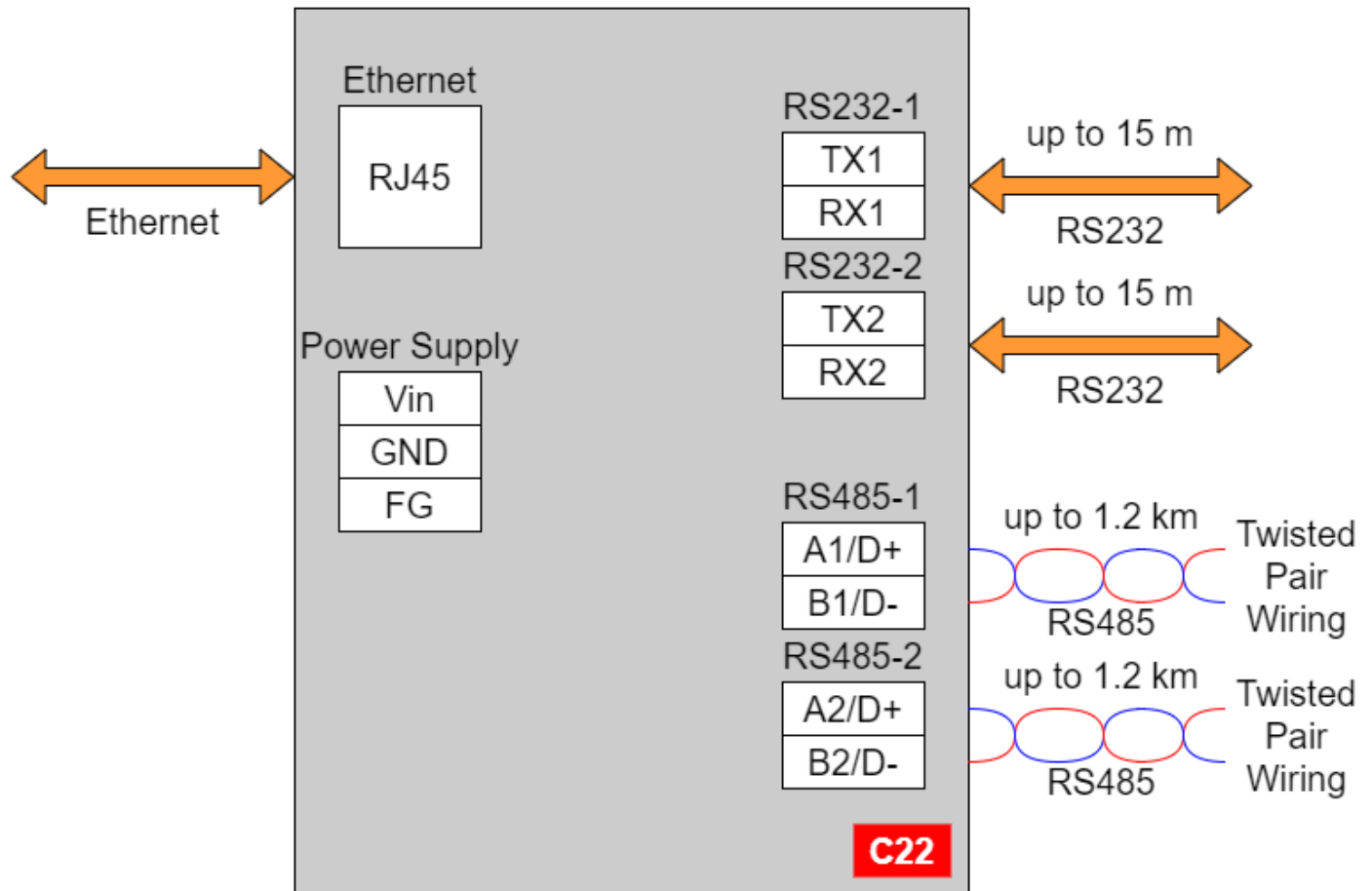


C21 - Ethernet Converter 1 x RS485



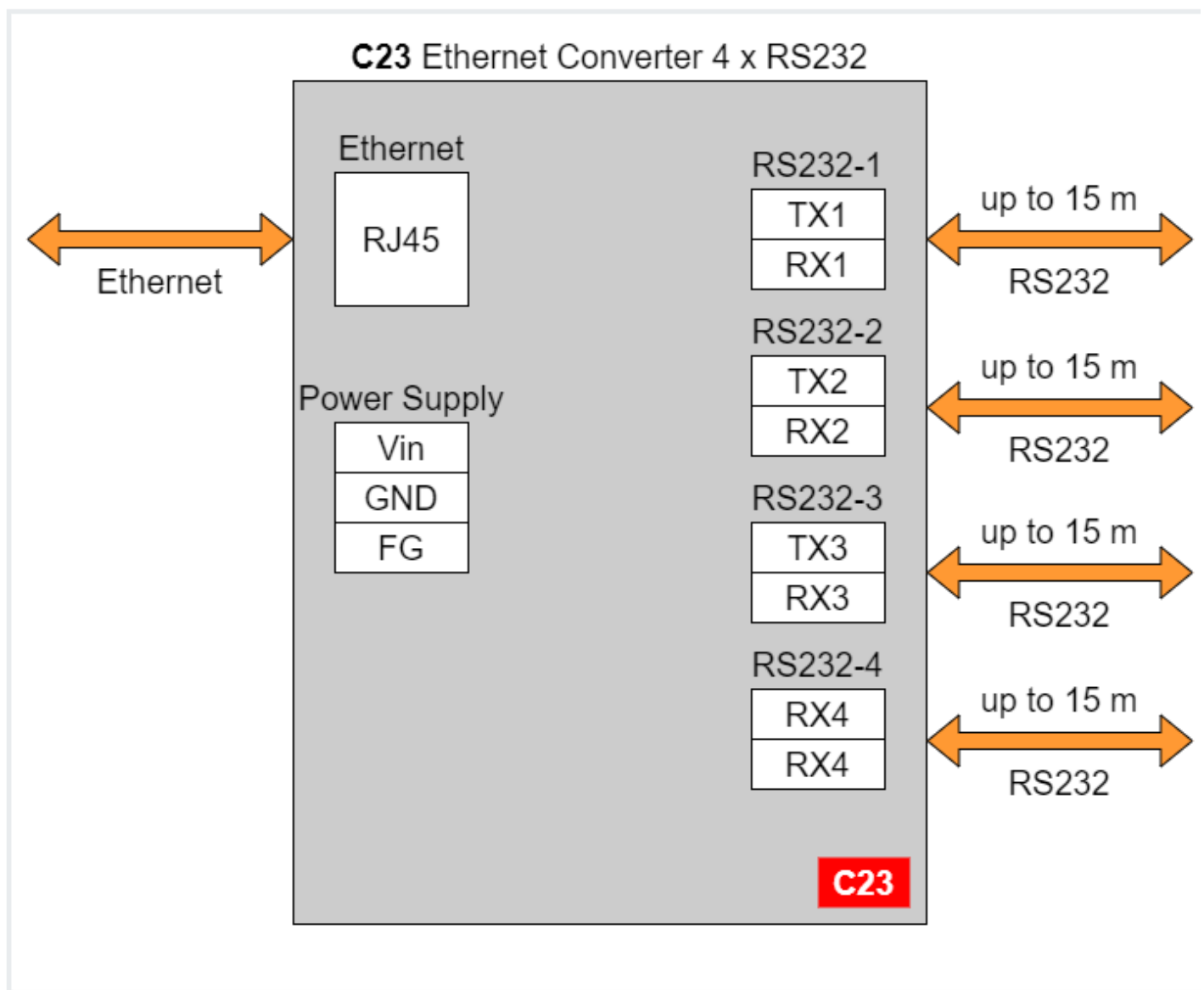
C22 - Ethernet Converter 2 x RS232/RS485

C22 Ethernet Converter 2 x RS232/RS485

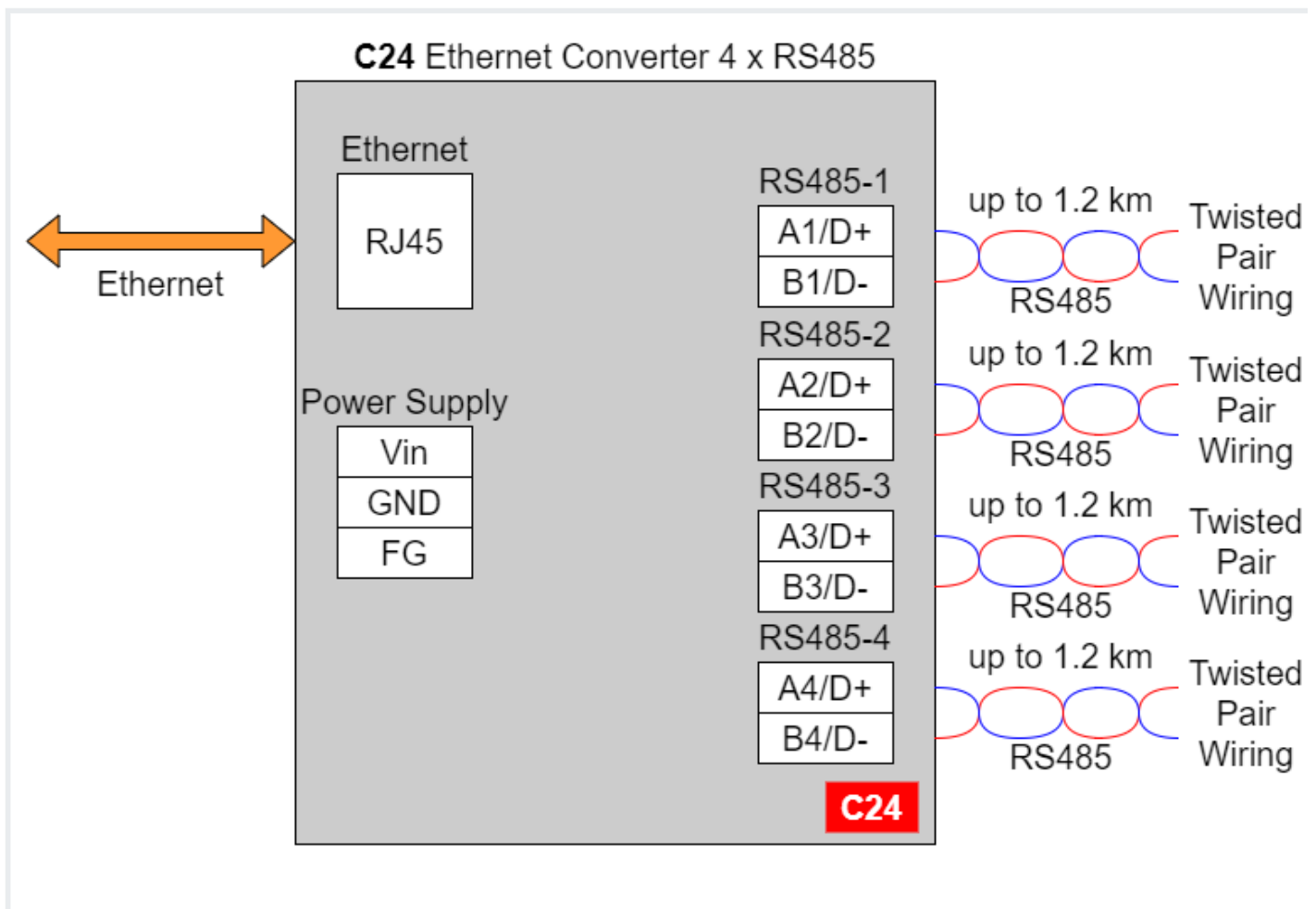


In the C22 converter user should use only RS232 or only RS485 interface of one port as they occupy the same internal bus of the device.

C23 - Ethernet Converter 4 x RS232

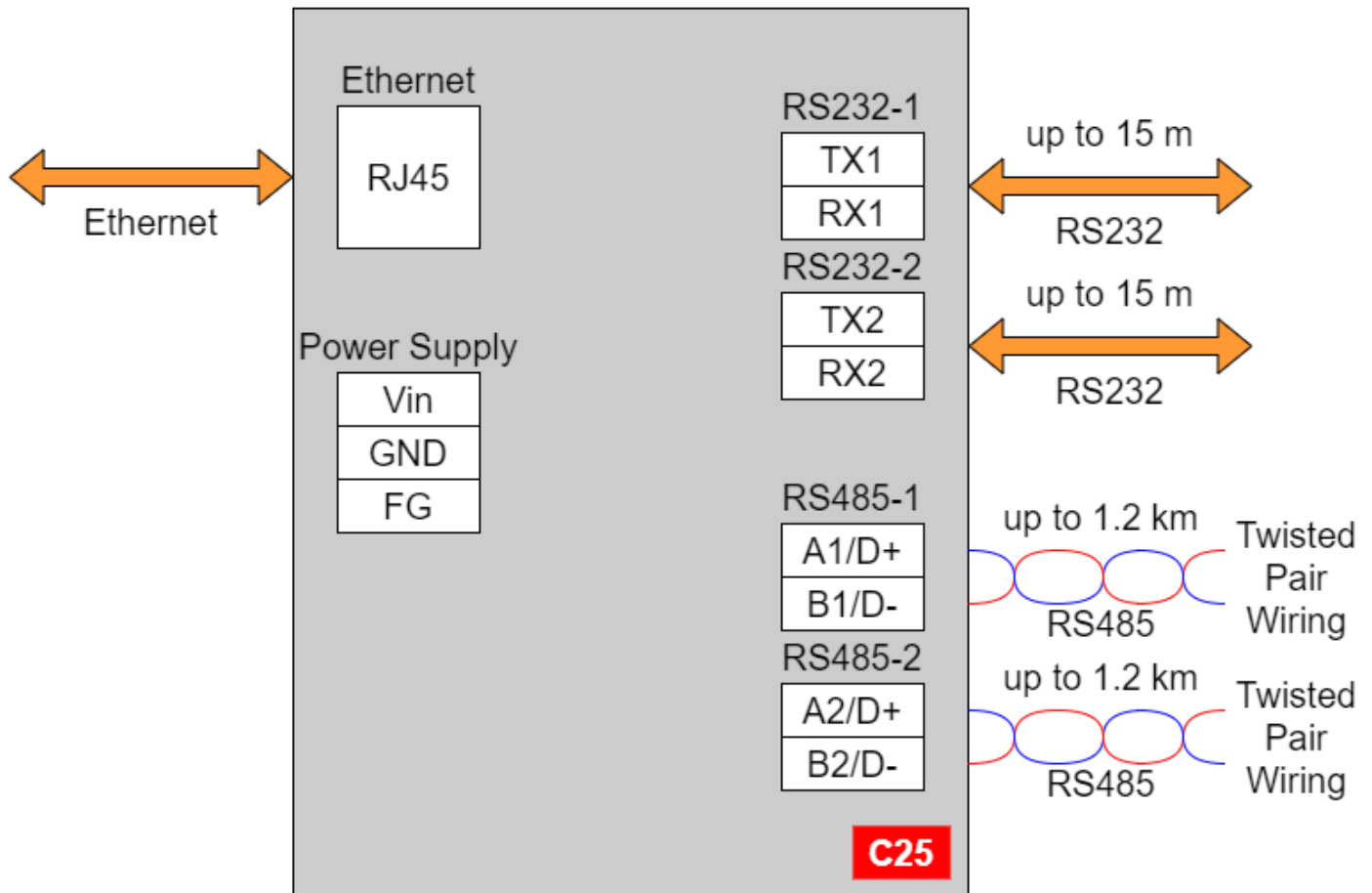


C24 - Ethernet Converter 4 x RS485



C25 - Ethernet Converter 2 x RS232 & 2 x RS485

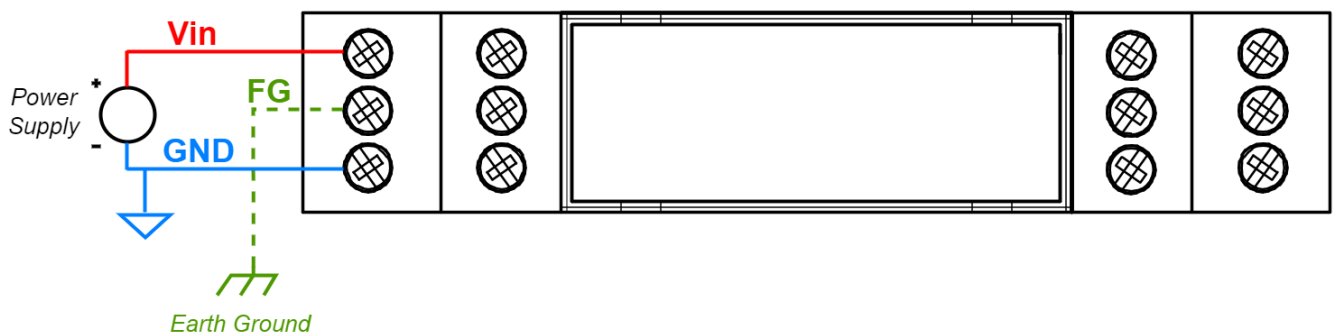
C25 Ethernet Converter 2 x RS232 & 2 x RS485



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


C20


C20 Ethernet Converter
2xRS232

123456789012345


Power: ---12-30V/DC <1W
Temperature: -40°C +75°C
Port: 2xRS232 ETH
Ethernet: 10/100BaseT
MAC: 1a2b3c4d5e6f
REV1 MADE IN EU

4 Vin	8 Tx2	NC	Ethernet RJ45
3 Gnd	7 Rx2		
2 Din	6 Tx1		
1 FG	5 Rx1		






RoHS
COMPLIANT



1a2b3c4d5e6f




C21


C21 Ethernet Converter
1xRS485

123456789012345


Power: --- 12-30V/DC <1W
Temperature: -40°C +75°C
Port: 1xRS485 ETHERNET
Ethernet: 10/100BaseT
MAC: 1a2b3c4d5e6f
REV1 MADE IN EU

4 Vin	12 NC	NC	Ethernet RJ45
3 Gnd	11 NC		
2 Din	10 A1		
1 FG	9 B1		




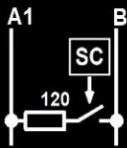


RoHS
COMPLIANT



1a2b3c4d5e6f





SC - Software Control


C22


C22 Ethernet Converter
2xRS232/RS485

123456789012345


Power: --- 12-30V/DC <1W
Temperature: -40°C +75°C
Port: 2xRS232/RS485 ETH
Ethernet: 10/100BaseT
MAC: 1a2b3c4d5e6f
REV1 MADE IN EU

4 Vin	8 Tx2	12 A2	Ethernet RJ45
3 Gnd	7 Rx2	11 B2	
2 Din	6 Tx1	10 A1	
1 FG	5 Rx1	9 B1	




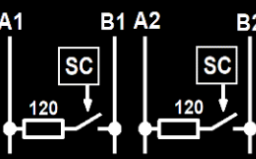


RoHS
COMPLIANT



1a2b3c4d5e6f





SC - Software Control


C23


C23 Ethernet Converter
4xRS232

123456789012345


Power: --- 12-30V/DC
Temperature: -40°C +75°C
Port: 4xRS232 ETHERNET
Ethernet: 10/100BaseT
MAC: 1a2b3c4d5f6g
REV1 MADE IN EU

4 Gnd	8 Tx2	12 Rx4	Ethernet RJ45
3 FG	7 Rx2	11 Tx4	
2 Vin2	6 Tx1	10 Tx3	
1 Vin1	5 Rx1	9 Rx3	






RoHS
COMPLIANT



1a2b3c4d5f6g




C24


C24 Ethernet Converter
4xRS485

123456789012345


Power: ---12-30V/DC <1W
Temperature: -40°C +75°C
Port: 4xRS485 ETHERNET
Ethernet: 10/100BaseT
MAC: 1a2b3c4d5f6g
REV1 MADE IN EU

4 Gnd	8 A2	12 B4	Ethernet RJ45
3 FG	7 B2	11 A4	
2 Vin2	6 A1	10 B3	
1 Vin1	5 B1	9 A3	




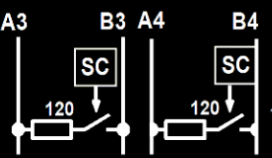


RoHS
COMPLIANT



1a2b3c4d5f6g





SC - Software Control


C25


C25 Ethernet Converter
2xRS232 2xRS485

123456789012345


Power: --- 12-30V/DC <1W
Temperature: -40°C +75°C
Port: 2xRS232 2xRS485 ETH
Ethernet: 10/100BaseT
MAC: 1a2b3c4d5e6f
REV1 MADE IN EU

4 Gnd	8 Tx2	12 B4	Ethernet RJ45
3 FG	7 Rx2	11 A4	
2 Vin2	6 Tx1	10 B3	
1 Vin1	5 Rx1	9 A3	




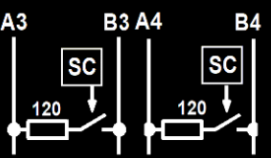


RoHS
COMPLIANT



1a2b3c4d5e6f





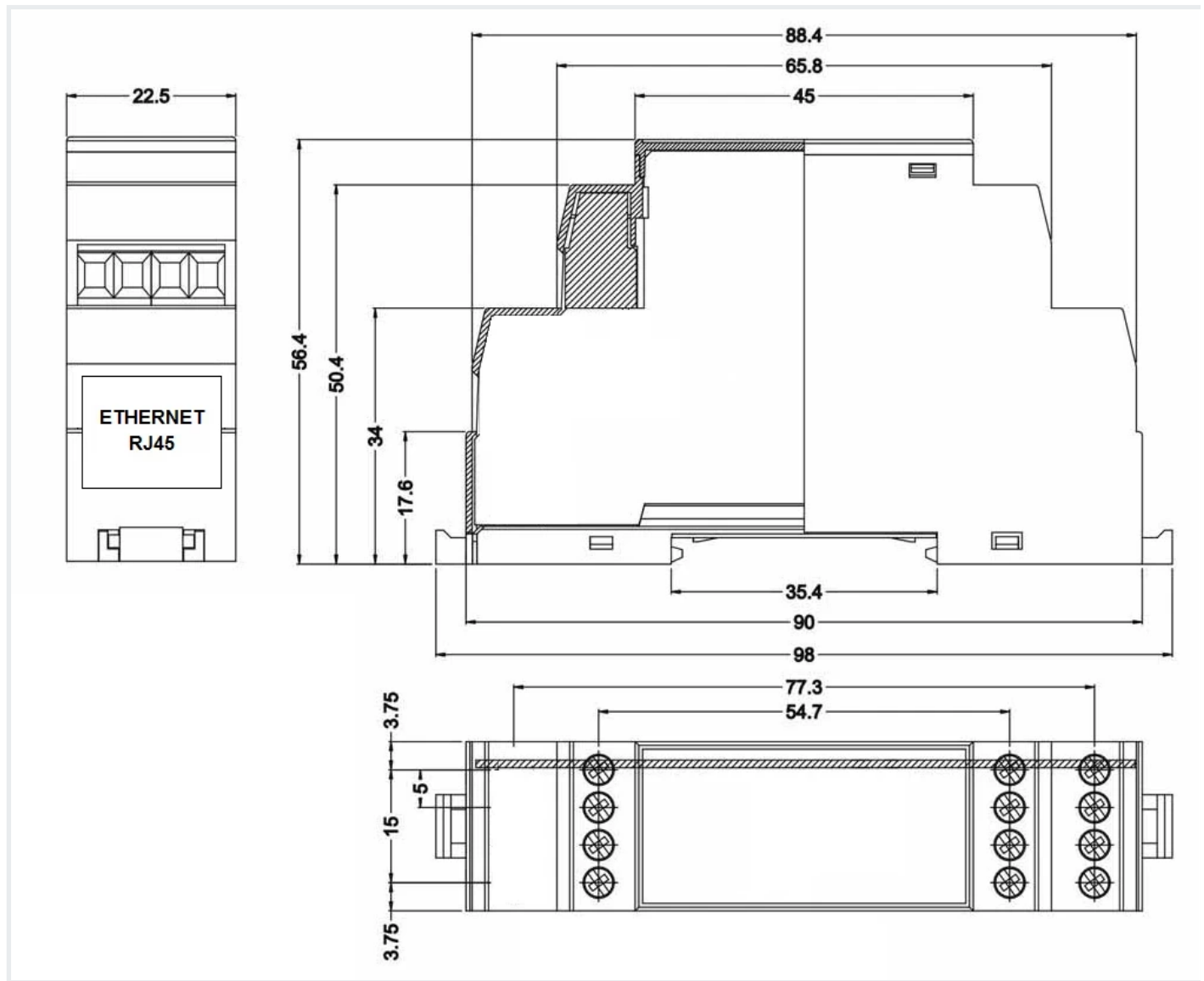
SC - Software Control

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

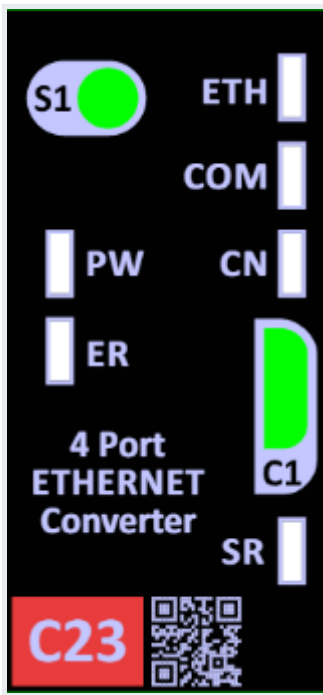
Ethernet converters C20 - C22 have 3 LED indicators:

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



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

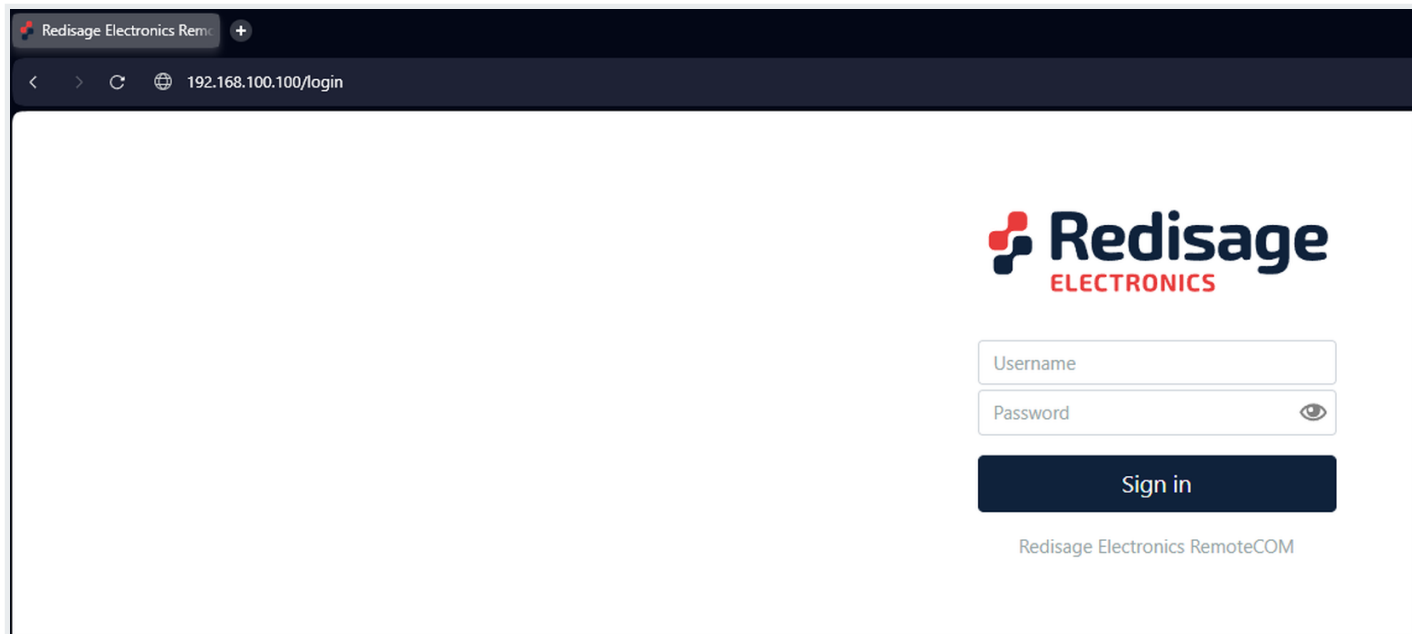
Default configuration of the Ethernet Converters:

- 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**

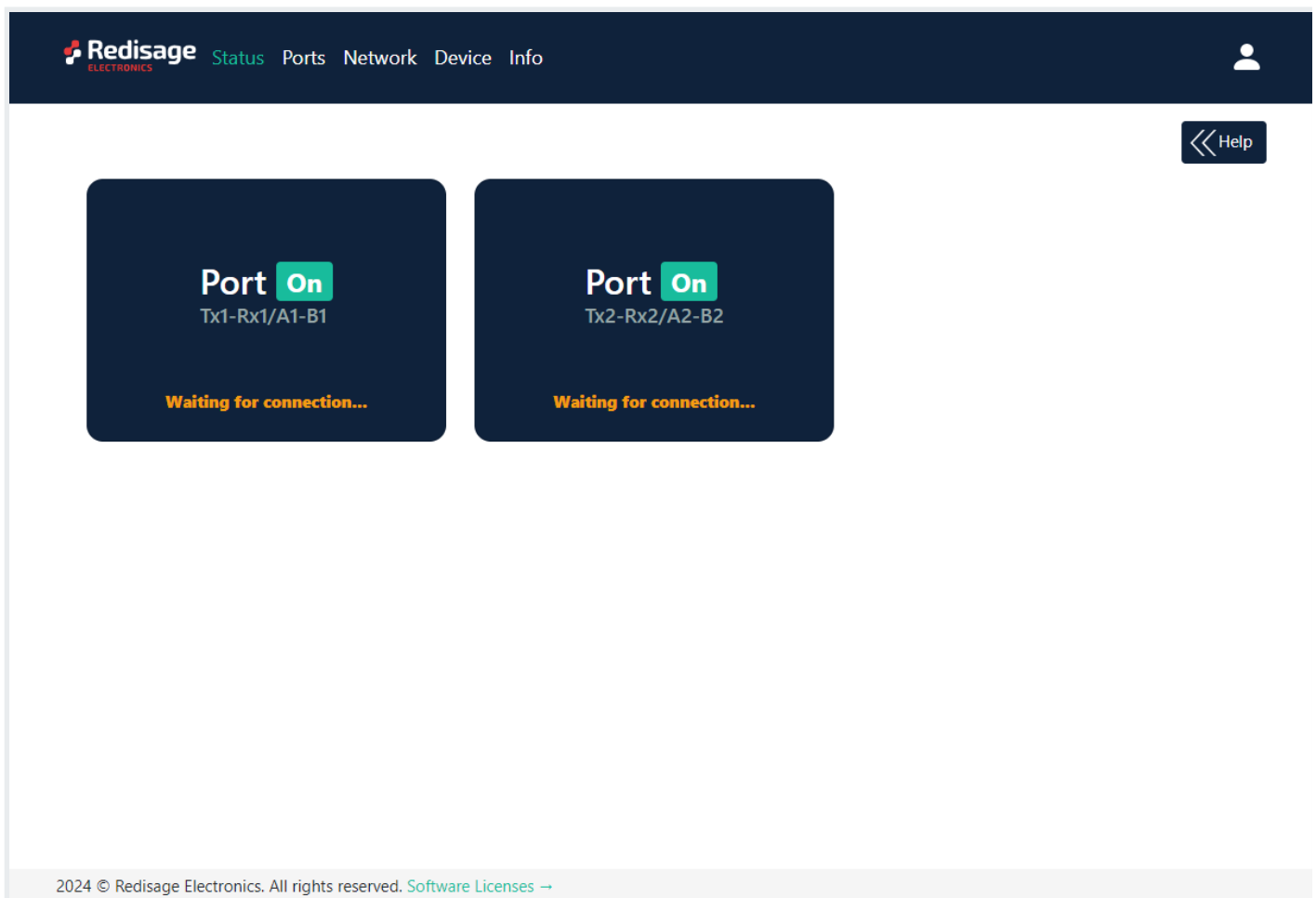
Default login details:

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

To access 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 the user icon and select “Edit user”.

Port configuration is available on the “Ports” page.

Port ☒

Tx1-Rx1/A1-B1

Service
TCP Socket

Port
1536

Connection Timeout [s]
0

Inactivity Time [ms]
0

Encryption
DISABLED

Password

Termination
DISABLED

Baud Rate
115200

Data Bits
8

Parity
NONE

Stop Bits
1

Notes

Port Configuration



Port ☒

Tx1-Rx1/A1-B1

Service

TCP Socket

Port

1536

Connection Timeout [s]

0

Inactivity Time [ms]

0

Encryption

Disabled

Password

When encryption enabled type password here

Termination

Disabled

Baud Rate

115200

Data Bits

8

Parity

None

Stop Bits

1

Notes

Cancel

OK


Item		Description
Service	RemoteCOM	The RemoteCOM option lets to attach the port to a computer running the <u>Redisage Configurator</u> 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.

Item	Description
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.



StatusPortsNetworkDeviceInfo







Interface: ETH

Configuration Method
DHCP (Automatic)


IP Address
192.168.102.117

Netmask
255.255.255.0

Gateway
192.168.102.1

MAC Settings
Default MAC Address

MAC Address
b4:e6:2d:fb:b8:88



Settings & Services

HTTP Port
80


Telnet Port
23

Broadcasts
Broadcast ports on this device


Hostname
remote-com


DNS Address
Primary: 192.168.0.10
Secondary: 1.1.1.1


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StatusPortsNetworkDeviceInfo



Help



Configuration Method

DHCP (Automatic)

▼

The network configuration below is ignored if DHCP is chosen

IP Address


192.168.102.117

Netmask

255.255.255.0

Gateway

192.168.102.1



MAC Settings

Default MAC Address

▼

MAC Address below is ignored if Default MAC Address is chosen.

MAC Address

b4:e6:2d:fb:b8:88

Save the interface

Configuration Method

DHCP (Automatic)

Gateway

192.168.102.1

HTTP Port

80

Hostname

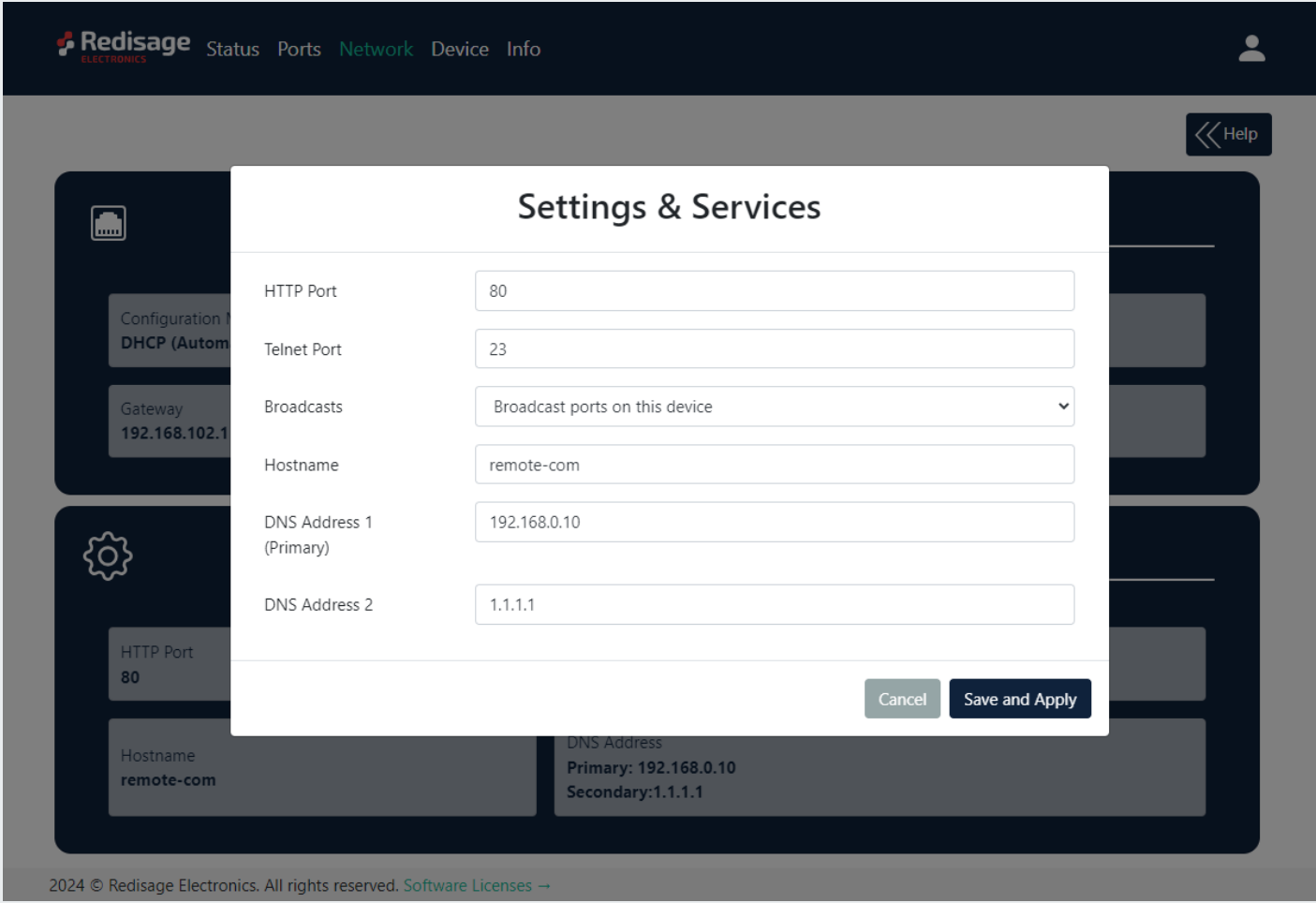
remote-com

Primary: 192.168.0.10

Secondary: 1.1.1.1

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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.



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



Firmware Update



Factory reset



Reboot

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

Firmware: 1.1.0
Model: C22
Serial Number: 000000000002032
Frontend: 1.12.1

Configuration by the Serial Console

The device can 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.

```
COM7 - PuTTY
Welcome
login: admin
Password:

Login correct
#>ipconfig

IP Configuration:
  IPv4 Address      192.168.102.121
  Subnet Mask       255.255.255.0
  Gateway           192.168.102.1
  DNS1 Address      192.168.0.10
  DNS2 Address      1.1.1.1
  DHCP Status       enabled

#>
```

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.

Command	Description
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
```

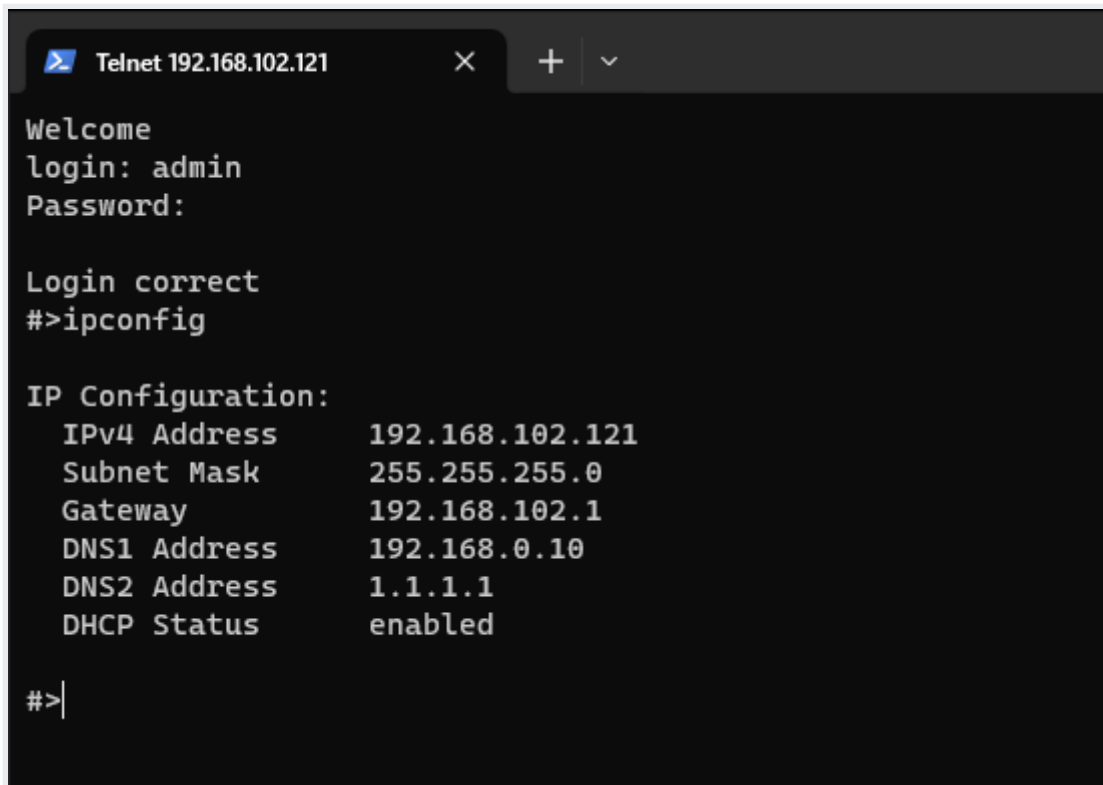
```
***** <- here is entered password, but '*' appears instead
```

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.

A screenshot of a Telnet terminal window. The title bar shows 'Telnet 192.168.102.121' with standard window controls. The terminal text is as follows:

```
Welcome
login: admin
Password:

Login correct
#>ipconfig

IP Configuration:
  IPv4 Address      192.168.102.121
  Subnet Mask       255.255.255.0
  Gateway           192.168.102.1
  DNS1 Address      192.168.0.10
  DNS2 Address      1.1.1.1
  DHCP Status       enabled

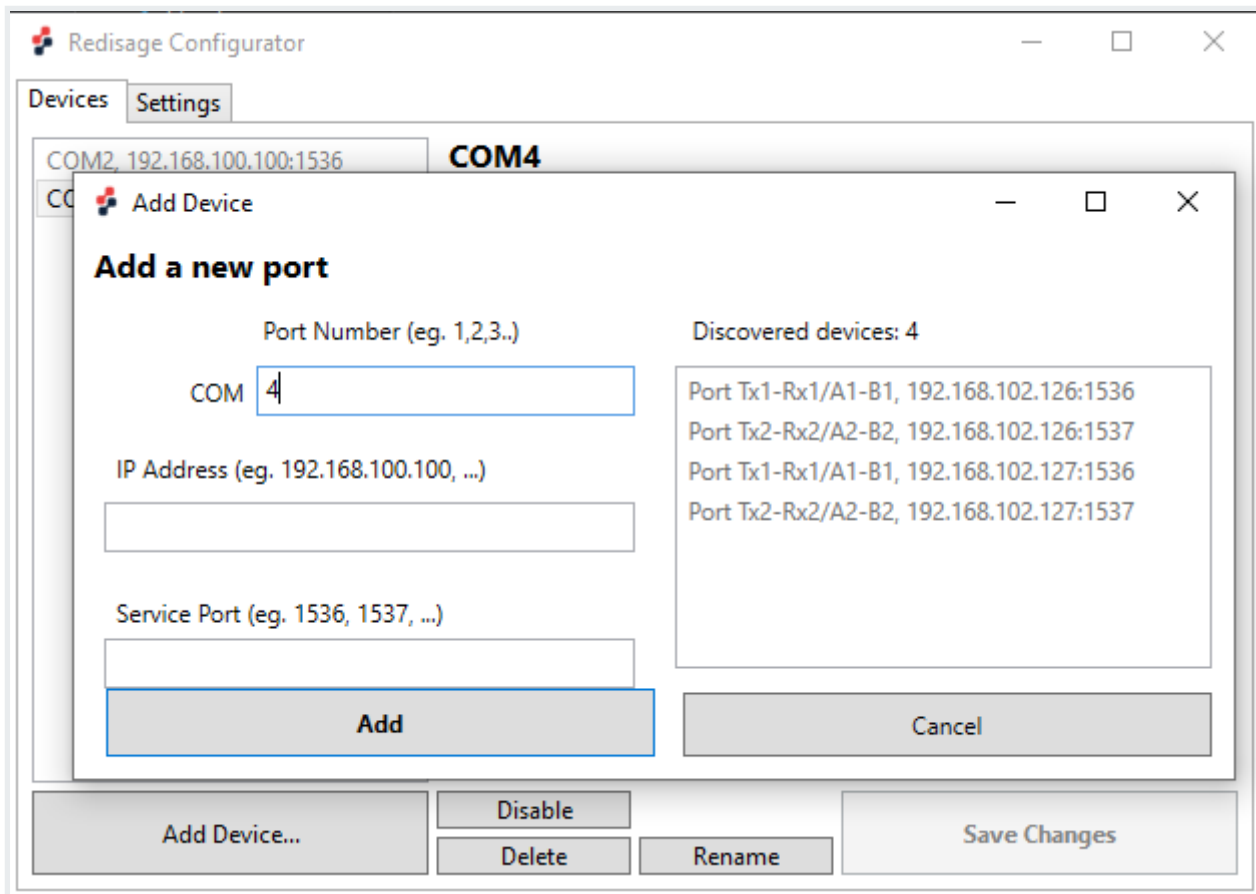
#>|
```

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.
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		
Ordering information	Accessories	Similar products

Products family sample photo



<https://redisage.com>

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