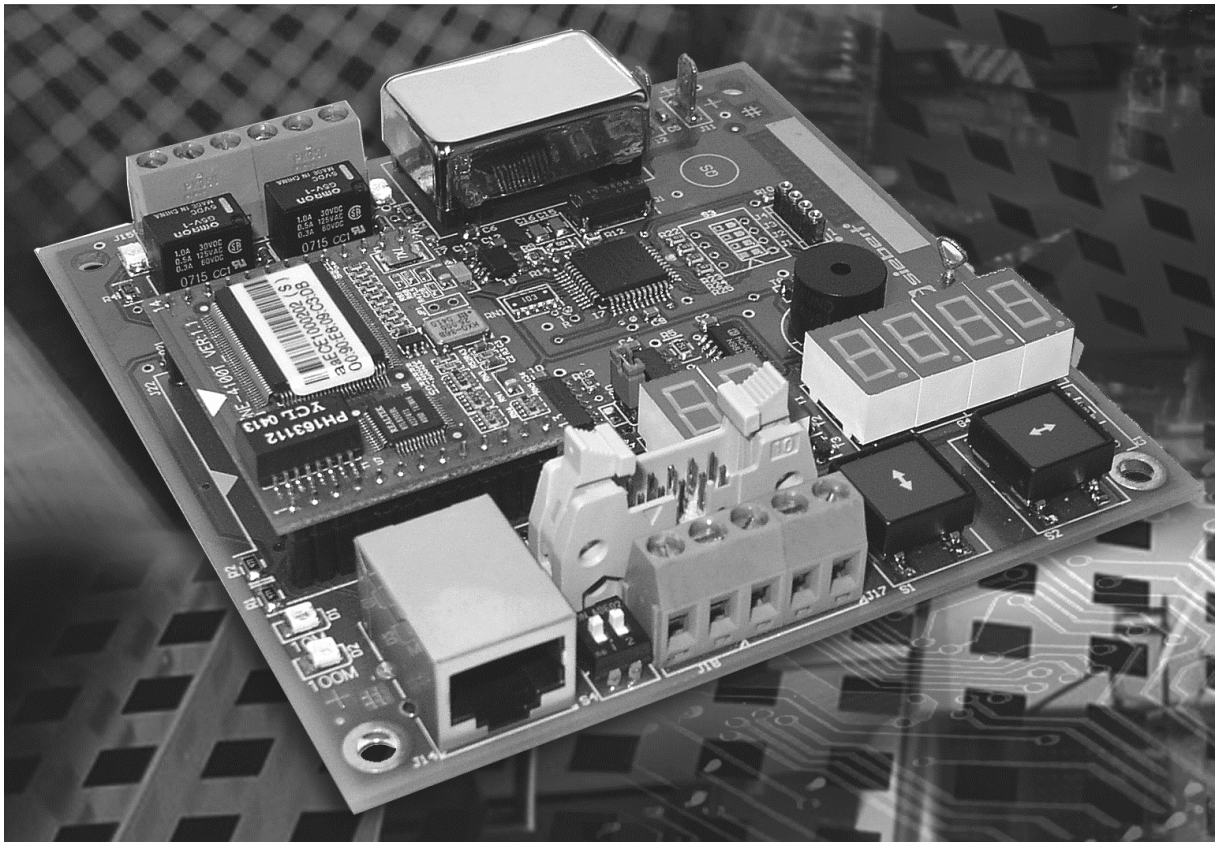

C9010

Gateway for Ethernet

Operating instructions

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2 Legal note

This operation manual has been prepared with the utmost care. However, we do not accept any liability for possible errors. We always appreciate your suggestions for improvement, corrections, comments and proposals. Please contact us: editing@siebert-group.com

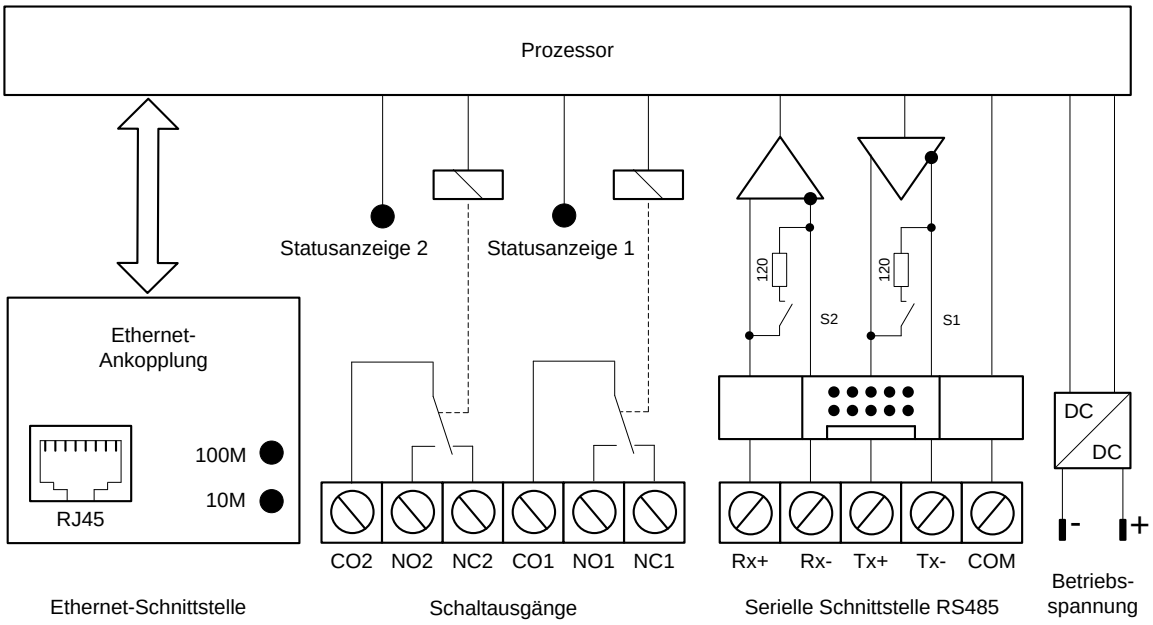
Table of contents

3 Unit description

Function

The gateway C9010 is used for controlling of large size displays and XC-Boards® with serial interface via the Ethernet. It has the function of a protocol converter and is factory-installed in the devices.

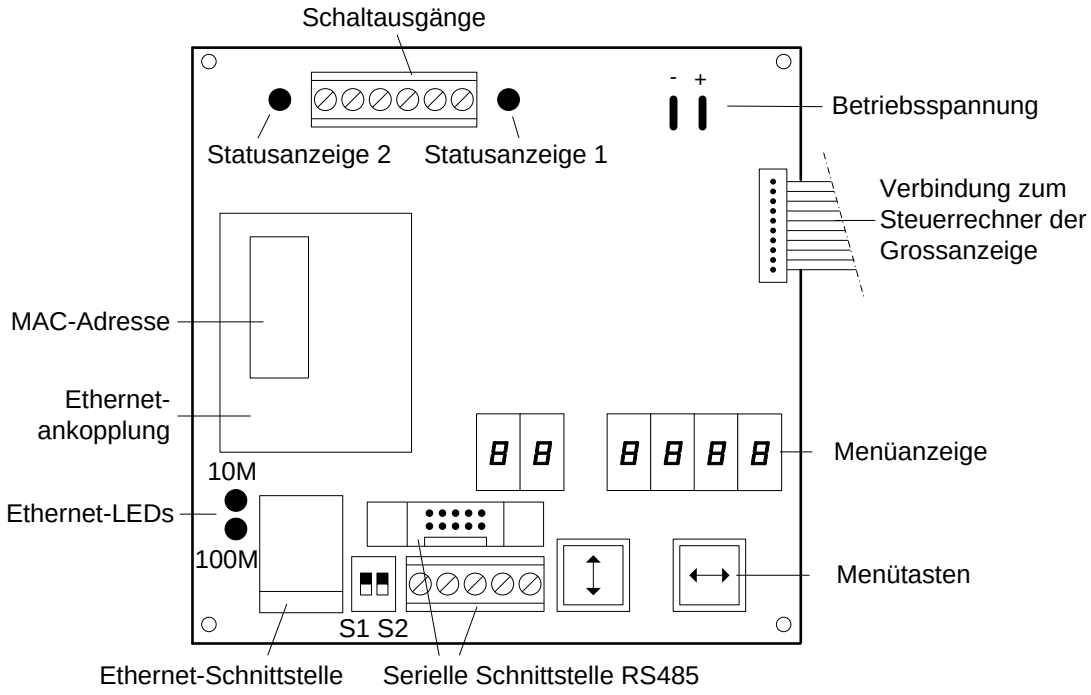
Principle circuit diagram



Prozessor	Processor
Statusanzeige	Status indicator
Ethernet-Ankopplung	Ethernet coupling
Ethernet-Schnittstelle	Ethernet interface
Schaltausgänge	Switching outputs
Serielle Schnittstelle RS485	Serial interface RS485
Betriebsspannung	Power supply

Unit construction

The following figure shows the structure of the gateway:



Schaltausgänge	Switching outputs
Statusanzeige	Status indicator
Betriebsspannung	Power supply
MAC-Adresse	MAC address
Ethernet Ankopplung	Ethernet coupling
Ethernet-LEDs	Ethernet LEDs
Etherent-Schnittstelle	Ethernet interface
Serielle Schnittstelle RS485	Serial interface RS485
Menütasten	Menu buttons
Menüanzeige	Menu display
Verbindung zum Steuerrrechner der Grossanzeige	Connction to the central processing unit of the large size display

Ethernet interface

The Ethernet interface is located on a standard RJ45 socket. It has the following specifications:

Data rate	10/100 Mbps, automatic detection
Galvanic isolation	1.5 kV
Supported protocols	ICMP, ARP, IP, TCP, UDP, DHCP, HTTP, SNMP, SMTP
Operation modes	TCP Server, TCP Client and UDP)
Configuration	The basic configuration can be set without the help of external tools (see chapter 5). Other settings can be done via web browser or Telnet console (see chapter 6).

The protocols Telnet and HTTP are only for configuration and not for data transfer.

Ethernet-LEDs

The speed of data transmission is automatically detected and displayed with the Ethernet LEDs 100M and 10M. Permanent illumination of a LED indicates a connection with the appropriate speed. Flickering means additional data exchange.

Serial interface

The serial interface is located on a screw-type terminal strip and with a parallel-connected flat cable connector. It is factory-connected to the central processing unit of the large size display.

The serial interface has the format RS485 4-wire. The data transmission is done with a XON/XOFF handshake and a stop bit. The interface parameters are set up in a menu (see chapter 5).

The switches S1 and S2 are used for locking the data lines.

The factory settings are noted in the documentation supplied, so that they can be restored after an eventual any loss.

Menu display

The menu display is a menu for parameterization of the gateway (see chapter 5).

On the right side of the menu a decimal point lights up when the gateway is ready for communication via the Ethernet.

In normal operation, the following status messages can appear in the menu display:

-- ----	The operating status is unknown
dHCP	DHCP, configuration received from the DHCP server
no dHCP	DHCP, no DHCP-Server
IP StAt	Static IP address, no address conflict
IP bAd	Static IP address, address conflict

Switching outputs

The gateway has 2 switching outputs (relays) with potential-free changeover (Output 1: CO1, NO1, NC1; output 2: CO2, NO2, NC2).

The outputs can be switched via a socket connection, Telnet or HTTP.

The status indicators (LEDs) illuminate as soon as the relays are on power.

In the menu mode the switching functions are not defined.

4 Control

Ethernet interface

By default the gateway is set up as a TCP server. The data is transmitted via a socket connection on port 8000 (default). Other ports can be set in menu item P between 2000 and 9999 (see chapter 5).

In the menu item P the decimal points of the port number light up in sequence. The digit, whose decimal point is alight, can be set to the desired value with the menu button [⇔].

The port numbers for the data and the switching outputs must be different.

Network parameters

The network parameters can be set in the menu without external tools. Then the gateway is reachable over the network. Other settings can then be made over the network (see chapter 6).

In menu item IP you select between DHCP and static IP address.

In the menu items I1 ... I4 the four bytes of the IP address for static address assignment are set.

In the menu items S1 ... S4, the four bytes of the subnet mask are set for static address assignment.

In the menu items G1 ... G4 the four bytes of the address of the standard gateway are set for static address assignment.

When restoring to factory settings in menu item U DHCP is activated.

After switching to static address assignment the following addresses are factory set:

IP address	192.168.127.254
Subnet mask	255.255.255.000
Standard gateway	192.168.127.001

Switching outputs

The control commands for the switching outputs (relays) are transmitted via a socket connection on port 8001 (default). Other ports can be set in the menu item r between 2000 and 9999 (see chapter 6).

In the menu item r the decimal points of the port number light up in sequence. The digit, whose decimal point lights up, can be set to the desired value with the menu button [⇔].

The port numbers for the data and the switching outputs must be different.

The control commands consist of 7 bytes each. They are listed below in hexadecimal format:

Relay 1 power on 02, 02, 00, 03, 02, 01, 01

Relay 1 power off 02, 02, 00, 03, 02, 01, 00

Relay 2 power on 02, 02, 00, 03, 03, 01, 01

Relay 2 power off 02, 02, 00, 03, 03, 01, 00

Test mode

The gateway has a test function to check the correct connection of the large size display. To activate the test mode press the menu button [⇕] for approx. 5 seconds.

In the test mode the gateway generates changing character strings of the form **1111111111<CR><LF>** at one second intervals and shows them on the menu display. Thereby the digits 0 -9 are run through. The output takes place with the interface parameters set in the menu.

For technical reasons the settings 57600 and 115200 baud can not be realized in the test mode. They are replaced by 9600 baud.

By switching the gateway off and on the test mode is closed.

The network interface is active during the test mode.

In the test mode the control of the large size display is not possible.

5 Parameterization

Menu

The parameterization of the devices is carried out in a menu in the menu display.

In normal operation, status messages appear in the menu display (see chapter 3).

Menu operation

To start the menu, press both menu buttons simultaneously (approx. 1 sec.) until the first menu item appears in the menu display. It is now possible to navigate in the menu as follows:

Next menu items forward	Press key [↕] long
Page menu items forward	Shortly press key [↕]
Previous menu item	Double-click on key [↕]
Page menu items backward	Double-click on key [↕] and keep it pressed
Next setting	Shortly press key [↔]
Page settings forward	Press key [↔] long
Previous setting	Double-click on key[↔]
Page setting backward	Double-click on key [↔] and keep it pressed

To exit the menu shortly press the key [↕] in menu item 99. Depending on the setting in menu item 99 the settings made are either saved (set) or not saved (escape) or the factory settings are reset (default).

Canceling the menu without saving the settings made is possible by pressing both menu buttons simultaneously (approx. 1 sec.). It will occur automatically if 60 seconds pass without a menu button being pressed.

Once the menu is closed, the gateway behaves in the same manner as when the operating voltage was applied.

In the menu mode the control of the downstream terminals is not possible.

Menu items P and r

In the menu items P and r the decimal points of the port number light up in sequence. The digit, whose decimal point is alight, can be set to the desired value with the menu button [↔].

The port numbers for the data and the switching outputs must be different.

Menu table

The menu items are displayed in the following menu table. The factory settings are marked with an *. Individual menu items or settings can be suppressed in another menu item, depending on the unit version or setting.

Menu item		Settings		Menu display
01	Baud rate	1200		01 1200
		2400		01 2400
		4800		01 4800
		9600*		01 9600
		19200		01 192
		38400		01 384
		57600		01 576
		115200		01 1152
02	Data format	7 Bit		02 7bit
		8 Bit*		02 8bit
		↓		↓
03	Parity	Keine*		03 none
		Ungerade		03 odd
		Gerade		03 EvEn
IP	IP address	Statische IP-Adresse		IP StAt
		DHCP*		IP dHCP
I.1	IP address Byte 1 (xxx.- - -.- - -.- - -) 192.168.001.254*	0		I.1 000
		↓	192*	↓
		255		I.1 255
I.2	IP address Byte 2 (- - -.xxx.- - -.- - -)	0		I.2 000
		↓	168*	↓
		255		I.2 255
I.3	IP address Byte 3 (- - -.- - -.xxx.- - -)	0		I.3 000
		↓	127*	↓
		255		I.3 255
I.4	IP address Byte 4 (- - -.- - -.- - -.xxx)	1		I.4 001
		↓	254*	↓
		254		I.4 254
S.1	Subnet mask Byte 1 (xxx.- - -.- - -.- - -)	0		S.1 000
		↓	255*	↓
		255		S.1 255
S.2	Subnet mask Byte 2 (- - -.xxx.- - -.- - -)	0		S.2 000
		↓	255*	↓
		255		S.2 255
S.3	Subnet mask Byte 3 (- - -.- - -.xxx.- - -)	0		S.3 000
		↓	255*	↓
		255		S.3 255
S.4	Subnet mask Byte 4 (- - -.- - -.- - -.xxx)	0		S.4 000
		↓	0*	↓
		255		S.4 255
G.1	Standard-gateway	0		G.1 000

	Byte 1 (xxx.- - -.- - -.- - -) 192.168.127.001*	↓	192*	↓	
		255		G.1	255
G.2	Standard-gateway Byte 2 (- - -.xxx.- - -.- - -)	0		G.2	000
		↓	168*	↓	
		255		G.2	255
G.3	Standard-gateway Byte 3 (- - -.- - -.xxx.- - -)	0		G.3	000
		↓	127*	↓	
		255		G.3	255
G.4	Standard-gateway Byte 4 (- - -.- - -.- - -.xxx)	1		G.4	001
		↓	1*	↓	
		254		G.4	254
P	Port data	2000…8000*…9999		P	nnnn
r	Port Relays	2000…8001*…9999		r	nnnn
99	Save	Save parameters* (Set)		99	SEt
		Not saving parameters (Escape)		99	ESC
		Restore to factory settings (Default)		99	dEF

6 Configuration

MAC address

The MAC address of the gateway can be found on the Ethernet coupling of the control computer (see label). It is needed for commissioning and should be written down on this operating manual before the unit is mounted on an inaccessible location.

Basic configuration

The basic configuration of the units is done without any external tools via the menu (see chapter 7).

For the integration of the gateway in the network either DHCP must be activated, or the static IP address, the associated subnet mask and possibly the IP address of the default gateway must be set.

These values are set by the system administrator and should be known before commissioning the device.

Configuration via network

Once the gateways are available via TCP/IP further configurations can be made via Telnet and HTTP. The access can be password protected or be deactivated to prevent tampering. On delivery and after default in menu item U the access is open.

Further information

The configuration dialogs are self-explanatory. For detailed information, please refer to the included documentation of the Ethernet coupling (type Moxa NE-4100T) Further information can be found on www.moxa.com.

Reset to secure settings

Using Telnet and HTTP it is possible to parameterize the gateway in that way that it is no longer accessible via the network. In this case the gateway can be reset to a defined state via the menu by selecting default in menu item U (see chapter 5) and after resetting the network parameters the gateway is accessible again via the network.

7 Technical data

Power supply	C9010-01	3,3 V DC
	C9010-02	5 V DC
	C9010-03	12…24 V ±15% DC
Power consumption	max. 4 VA	
Ambient conditions	operating temperature	0…50 °C
	storage temperature	-30…85 °C
	relative humidity	95 % (non-condensing)
Switching outputs	max. switching voltage	30 V AC/DC
	max. switching current	500 mA (ohmic load)
Measurements	108.9 x 108 mm (W x H)	
Weight	approx. 125 g	
Network properties:		
Protocols	ICMP, ARP, IP, TCP, UDP, DHCP, HTTP,SNMP, SMTP	
Operating modes	TCP server (default), TCP client, UDP, real COM mode	
Configuration	menu, web browser, Telnet Console, Windows tool	