YOCTO NET D4 2DI 2DO

INSTALLATION INSTRUCTIONS

COPYRIGHT

WARRANTY

This product is covered by a warranty against material and manufacturing defects for a 24 months period from the manufacturing date.
The warranty does not cover the defects that are due to:
- Negligent and improper use
- Failures caused by atmospheric hazards
- Acts of vandalism
- Wear out of materials
- Firmware upgrades

Akse reserves the right, at its discretion, to repair or substitute the faulty products
The warranty is not applicable to the products that will result defective in consequence of a negligent and improper use or an operating procedure not contemplated in this manual.

RETURN AND REPAIR FORMALITIES

Akse accepts the return of instruments for repair only when authorized in advance. The transport costs are at customer charge.

RE-SHIPPING OF REPAIRED PRODUCT

The terms for re-shipment of repaired products are ex-works, i.e. the transport costs are at customer charge.
Products returned as detective but found to be perfectly working by our laboratories, will be charged a flat fee to account for checking and testing time irrespective of the warranty terms.

SAFETY

This instrument was manufactured and tested in compliance with IEC 61010-1 CAT III - 300V class 2 standards for operating voltages up to 300 VAC rms phase to neutral.
In order to maintain this condition and to ensure safe operation, the user must comply with the indications and markings contained in the following instructions:

- When the instrument is received, before starting its installation, check that it is intact and no damage occurred during transport.
- Maintenance and/or repair must be carried out only by qualified, authorized personnel
- If there is ever the suspicion that safe operation is no longer possible, the instrument must be taken out of service and precautions taken against its accidental use.

Operation is no longer safe when:
1) There is clearly visible damage.
2) The instrument no longer functions.
3) After lengthy storage in unfavorable conditions.
4) After serious damage occurred during transport
The instruments must be installed in respect of all the local regulations.

OPERATOR SAFETY

Warning: Failure to observe the following instructions may lead to a serious danger of death.

- The outputs and the options operate at low voltage level; they cannot be powered by any unspecified external voltage.

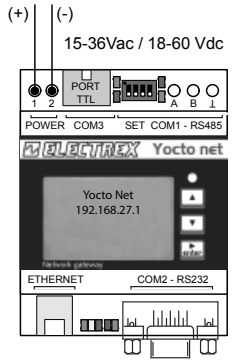
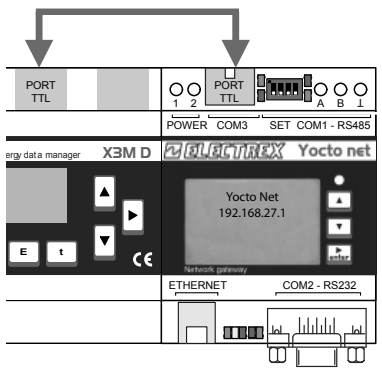
Further documentation may be downloaded from our web site www.electrex.it.

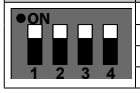
DECLARATION OF CONFORMITY

Akse hereby declares that its range of products complies with the following directives EMC 89/336/EEC 73/23CE 93/68 CE and complies with the following product's standard CEI CEI EN 61326 – IEC 61326 CEI EN 61010 – IEC 61010
The product has been tested in the typical wiring configuration and with peripherals conforming to the EMC directive and the LV directive.

POWER SUPPLY

The instrument is equipped with a separate power supply. The terminals for power are numbered (1 and 2). The max cross section of cables is 1,5 mm2 if strended, 2,5 mm2 if rigid. (Does not require power when connected directly to the instruments X3M D, Flash D, Fast, X3M 96 e Flash 96 with adapter, through the TTL port.).
Note: The external power is required for the operation of the port 485 (port 485 is not active if powered only by port TTL).

EXTERNAL POWER SUPPLY	TTL Port POWER SUPPLY
	

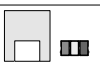
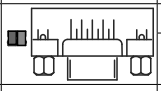
DIP-SWITCH CONFIGURATION			
	DIP	ENABLING	DEFAULT
	1	Line termination resistance (120 Ohm)	ON
	2	Fail safe resistance (-)	ON
	3	Fail safe resistance (+)	ON
	4	Not used	ON

LAN PORT 10/100 ETHERNET

The instrument is equipped with Ethernet Lan 10/100 Auto-MDI/MDIX port.
To connect the port you can use a data cable, straight or crossover.
NB: The port is not a PoE (Power over Ethernet = powering the device through the LAN port). Connecting the device to a PoE port is however acceptable. Power must always be supplied through external power supplier or TTL port.

LED INDICATIONS

Function descriptions of the Yocto net's LED indications:

TTL PORT		GREEN	RX
		RED	TX
RS485		GREEN	RX
		RED	TX
ETHERNET		GREEN	Link/Act (Link=ON; Activity=Blink)
		YELLOW	Full duplex/collision Full duplex = ON Hal duplex = OFF Collision = Blink
		RED	Speed 100 BASE - T = ON 10 BASE - T = OFF
RS232		GREEN	RX
		RED	TX
FRONTAL LED		GREEN	Disk activity
		YELLOW	Act E-Wi; Activity wireless Interface
		RED	Status

VOLTAGE INPUT	
Power supply	15-36Vac / 18-60 Vdc
Self consumption	<3VA
WORKING CONDITION	
Working temperature	-10/+50 °C
Relative humidity	95% non condensing

MECHANICAL CHARATERISTICS	
Case	Self-extinguishing plastic material
Protection degree	IP40 on front panel, IP20 terminals side
Size	70 x 90 x 58 mm (4 DIN modules)
MODELS	
PFA94D3-99	YOCTO NET LOG 8 D4 FULL 15÷36V 2DI 2DO NETWORK BRIDGE
PFA94D4-99	YOCTO NET MASTER LOG 8 D4 FULL 15÷36V 2DI 2D NETWORK BRIDGE
PFA94DH-99	YOCTO NET WEB COOR. LOG 8 MAIL CALENDAR CHARTS D4 E-WI HI 15÷36V 2DI 2DO
PFA94DA-07	YOCTO NET WEB COORDINATOR D4 E-WI EDA 15÷36V 2DI 2DO NETWORK BRIDGE
PFA94DH-97	YOCTO NET WEB COORDINATOR D4 E-WI HI 15÷36V 2DI 2DO NETWORK BRIDGE
PFA94D3-97	YOCTO NET WEB D4 15÷36V 2DI 2DO NETWORK BRIDGE
PFA94D4-57	YOCTO NET WEB LOG 40 D4 15÷36V 2DI 2DO NETWORK BRIDGE DATA LOGGER
PFA94D4-97	YOCTO NET WEB MASTER D4 15÷36V 2DI 2DO NETWORK BRIDGE
PFA94DA-17	YOCTO NET WEB ROUTER D4 E-WI EDA 15÷36V 2DI 2DO
PFA94DH-17	YOCTO NET WEB ROUTER D4 E-WI HI 15÷36V 2DI 2DO NETWORK BRIDGE

CONFIGURATION

The configuration of the device can be made via a WEB browser (Internet Explorer, Firefox, Opera, Safari, etc..) for the entries:

Setup / Italiano	
Location	Configuring Device Name
Channels	Configuring Modbus Channels
Clock	Setting the date, time and time zone of the internal clock
COM ports	Configuring serial ports RS485, RS232 and TTL
Ethernet	Configuring network parameters (IP, Subnet, Gateway, etc.).
Measures	Configuring Channels of the measures WEB pages
Modbus/TCP server	Modbus router configuration
Modbus/TCP devices	Master Network Configuration
Wireless network	E-Wi Network Configuration
Datalogger and charts	Charts Configuration
Events and automation	Configuring e-mail alarms and SMS
Outgoing e-mail server	Configuring e-mail server
Users and passwords	Configuring users and passwords
Firmware options (PUK)	Activation PUK (eg Alarm, routers, WEB, 4you, Open WEB)
Restart system	Rebooting the device

The entries (Measures, Modbus/TCP Devices, Wireless network, Datalogger and charts, Events and automation and Outgoing e-mail server) are present only if its PUK has been activated. Refer to the "Firmware options" menu entry to see which software options were activated. For their configuration refer to the manual of each software option.

Note: Options Log1, Log2, Log3, Log4, Log5 (storing registers of other instruments) are configured through software Energy Brain 5.5.5. and above.

WEB PAGES DISPLAY

The way in which to display the web page of the device changes depending on the type of Ethernet connection and hardware on the network (DHCP server, WINS server, etc.).

Yocto Net connected the company network and WINS servers present.

In this case, you can view the web page by typing the name assigned to the device. The default name of the device is "yoctonetxxxx. Where "xxxx" is the last 4 digits of the mac address.
The mac address of the device is recoverable on the product's package and the product itself.

To view the web page you can type the following address: http://yoctonetxxxx

If the webpage does not appear, it may not be a WINS server, or the rules of network protection prevents recognition by Netbios name.

Yocto Net connected the company network and DHCP server present.

In this case, the IP address, Subnet Mask and Gateway are assigned by the DHCP server. To identify which IP address was assigned refer to your IT manager, or refer to the part of this manual on how to use the software Yocto Net Locator.

Yocto Net directly connected to the PC.

In this case, as there is no DHCP server, the IP address is by default 192.168.27.1 (if not changed during a previous configuration).
To view the web page you can type the following address: http://192.168.27.1

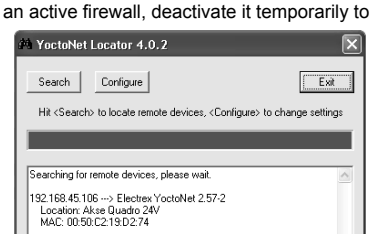
Note: the IP address and Subnet Mask of PC must be of the same class of Yocto net, therefore IP address between 192.168.27.2 and 192.168.27.254 and Subnet Mask 255.255.255.0.

If it is not possible to see the web page of Yocto net, you can use the direct connection to the PC, or you can use the Yocto Net Locator software to detect the device.

YOCTO NET LOCATOR

You can use this application to detect the Yocto Net devices in the network and to identify theirs IP addresses and MAC addresses. It does not need to modify the IP address of your Personal Computer because the application use the UDP protocol to search the devices. You can download the "yoctonetlocator.exe" software from the reserved area of www.electrex.it,

Note: if it is installed an active firewall, deactivate it temporarily to allow the search.



YOCTO NET USERS

You can use two account types (setting up by "Setup" menu - "User & passwords") to manage the Yocto net devices:

Administrator	The administrator can setup the device, display the web pages, read and save files through the FTP server
WEB User	The WEB user can display only the web pages

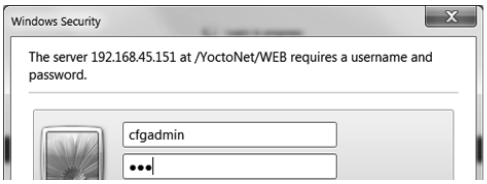
ACCOUNT	WEB user	Administrator
UTENTE	webuser	cfgadmin
PASSWORD	web	cfg
Server Web	YES	YES
Server FTP	NO	YES
Configuration	NO	YES
Upd. Firmware	NO	YES
Datalog 1	NO	Read/Write *
Datalog 2	NO	Read/Write *
Datalog 3	NO	Read/Write *
Datalog 4	NO	Read/Write *
Datalog 5	NO	Read/Write *
Alarm log	NO	Read/Write **
Web pages	NO	Read/Write ***

* It is possible upload the surway service only if the "4YOU" option is active
** It is possible manage the sevice only if the "Alarm" option is active
*** It is possible upload the customized web pages only if the "OpenWEB" option is active

Note:
1) It is not possible to add other account types (user types)
2) Each user can modify its own 'user name' and 'password'
3) The administrator can modify the 'user name' and 'password' of other accounts (users)
4) The WEB user can be deactivated to ensure the free access to the web pages. Default setting: WEB user deactivated.

YOCTO NET SETUP

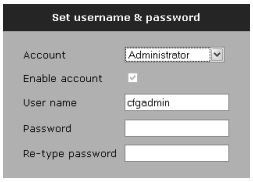
To modify the setup parameters you have to "Login" as Administrator (cfgadmin).
Just for viewing the setup parameters you do not have to "Login".



PAGE	ITEM	PARAMETERS	DEFAULT
Location name			
	Location name	max 39 characters	Default location
Clock			
	Time (hh:mm:ss)		
	Date (dd/mm/yyyy)		
	Timezone		Europe/Rome
Serial ports			
		Serial ports configuration	
		COM 1 RS-485 Modbus master: Speed 38400, Parity None, Timeout (ms) 1000, Retries 2, Silent time (ms) 100	
		COM 2 RS-232: Mode Modbus slave, Speed 38400, Parity None, Timeout (ms) 1000, Retries 1, Silent time (ms) 100	
		COM 3 TTL Modbus master: Slave address 245, Speed 38400, Parity None, Timeout (ms) 1000, Retries 2, Silent time (ms) 100	
COM 1 RS-485 Modbus master			
	Speed	4800, 9600, 19200, 38400, 57600	38400
	Parity	none, odd, even	none
	Timeout (ms)	500-15000	3000
	Retries	1-10	3
	Silent Time (ms)	10-5000	10
COM 2 RS-232 Modbus slave			
	Mode		none
	Speed	4800, 9600, 19200, 38400, 57600	38400
	Parity	none, odd, even	None
	Timeout (ms)	500-15000	1000
	Retries	1-10	3
	Silent Time (ms)	10-5000	10
COM 3 TTL Modbus master			
	Slave addr	1 - 247	245
	Speed	4800, 9600, 19200, 38400, 57600	38400
	Parity	none, odd, even	none
	Timeout (ms)	500-15000	1000
	Retries	1-10	3
	Silent Time (ms)	10-5000	10
Ethernet			
		Network configuration	
		Device identification: Enable NetBIOS, NetBIOS name YOCTONETD231, Domain name WORKGROUP, MAC address 00:50:C2:19:D2:31	
		IP address: Enable DHCP, IP address 192.168.27.1, Subnet mask 255.255.255.0, Gateway 127.0.0.1, DNS 192.168.27.3	
		Other options: Enable Modbus/TCP, Modbus/TCP port 502, Slave address 255, HTTP port 80	

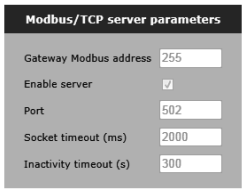
Device identification			
	Enable NetBIOS	on, off	on
	NetBIOS name	max 15 characters	YOCTONETXXXX
	Domain name	max 15 characters	WORKGROUP
	MAC address		XX:XX:XX:XX:XX:XX
IP address			
	Enable DHCP	on, off	on
	IP address		192.168.27.1
	Subnet mask		255.255.255.0
	Gateway		127.0.0.1
	DNS		192.168.27.3
Other options			
	HTTP port		80
	FTP port		21

Users & password



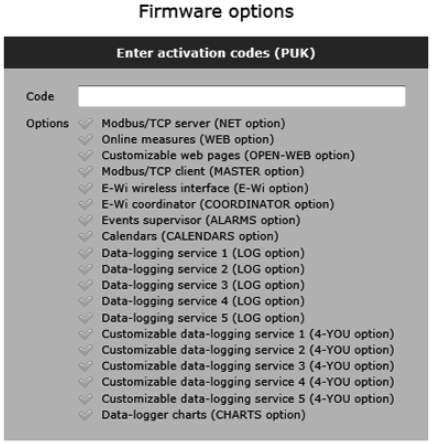
Users & password settings			
	Account	Administrator, WEB user	
	Enable account	disabled, enabled	
	User name	max 32 characters	
	Password	max 32 characters	
	Re-type password		

Server Modbus/TCP



Server Modbus/TCP configuration			
	Gateway Modbus address		255
	Enable server	disabled, enabled	
	Port		502
	Socket timeout (ms)	max 32 characters	2000
	Inactivity Timeout (s)		300

FIRMWARE OPTIONS (PUK)



To enable an option you have to login as Administrator (cfgadmin), then enter the PUK code received by mail or e-mail within the “Code“ field and click on Enable option button. The active options are flagged ✔.

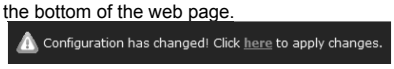
SAVING SETUP CHANGES

The changes in parameters are saved in the setup files when you click the ‘Save’ button.

Some parameters require the reboot of Yocto net to be totally active and this requirement is indicated in the bottom of the web page.
The reboot of Yocto net can be realized in the following way:

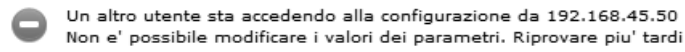
- turn OFF and ON the power supply;
- from “Setup” menu, selecting “Restart system” (requires the Administrator login)

- clicking on “here” in the bottom of the web page.



NOTE

The following message:



may appear for the following reasons:

1) An other user is changing the setup of the device and in the message you can see his IP Address. In this case you have to wait until the other user disconnects.

2)The browser was closed without logging out from the Yocto net. You have to wait 10 minutes (default logout time) or turn OFF and ON the device before changing the configuration.

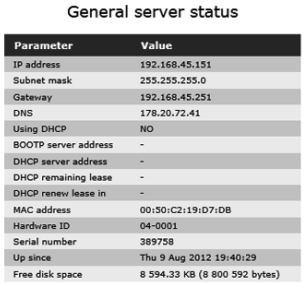
STATUS MENU

General status	Gives information on network parameters (IP, DHCP, etc.)
Modbus/TCP server	Modbus communication: information and statistics
Datalogger	Status information about log services
Events supervisor	Status information about e-mail sending and alarm monitoring
Notifications log	List of the e-mail/SMS sent recently
Calendars	Calendars list
Wireless network topology	E-Wi network structure
Clock	Date, time and time zone settings of the device

The entries Datalogger, Events supervisor, Notifications log, Calendars and Wireless network topology will be displayed only if the relative PUK code is active (see ‘Firmware options’ to verify what options are active).

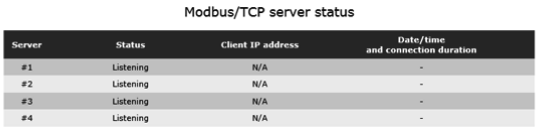
General server status

The window shows the network parameters of the device.



Modbus/TCP Server

The window shows the 4 Modbus/TCP server status, which IP address is connected and since when.



The server status can be:

NOT_AVAILABLE	Server not available
SOCKET_CLOSED	Server with a closed socket
LISTENING	Server is free
CONNECTED	Server is busy

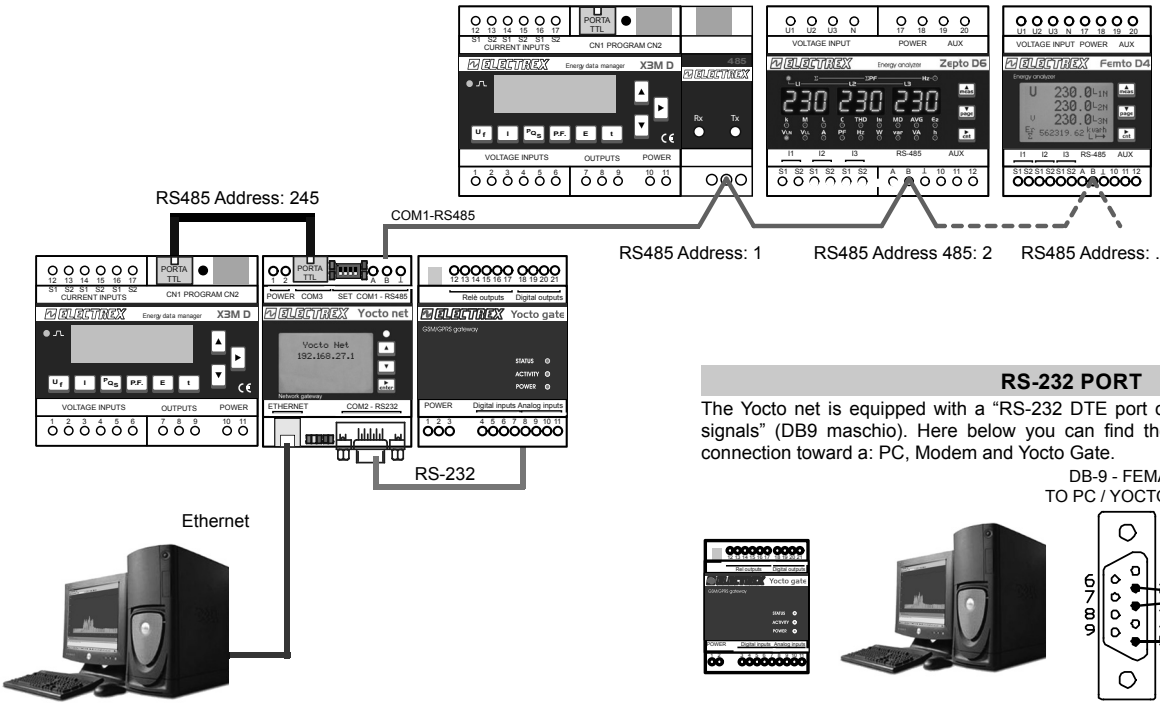
Clock

The section’s window shows the date, time and time zone of the instrument.

UTC time	Greenwich time
Local time	UTC + Offset GMT + Offset DST time
Timezone	
GMT offset	
DST offset	
Next offset change	Next change of the legal / solar time
Easter day	Easter day calculation
Day begin	Sunrise time calculation
Day end	Sunset time calculation
Day duration	Difference between Sunrise and Sunset in h/min
Solar noon	
NTP synchronization status	Sync status with an NTP server
Next NTP sync	Date and time of the next sync
Backup battery level	

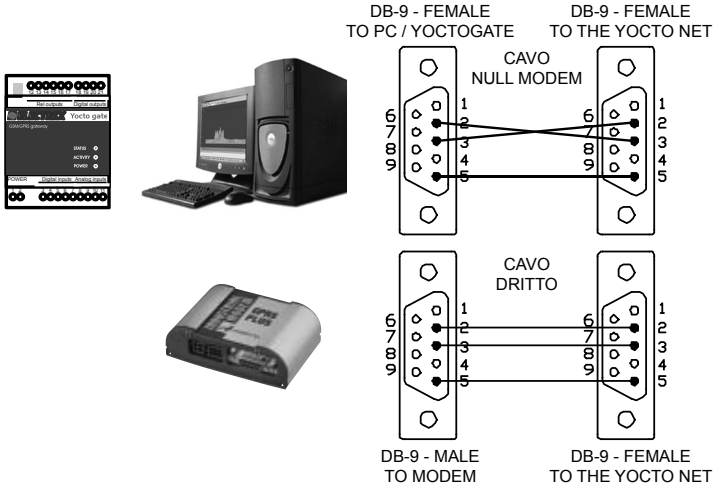
YOCTO NET NETWORK EXAMPLE

With the default setup all the modbus telegram with Modbus address equal to 245 are sent to the TTL port while all the others are sent to the RS485 port. Yocto net functions as an arbiter between the Ethernet port and the RS232 port requests. In the example here below the connection involves the Ethernet and the GSM networks.

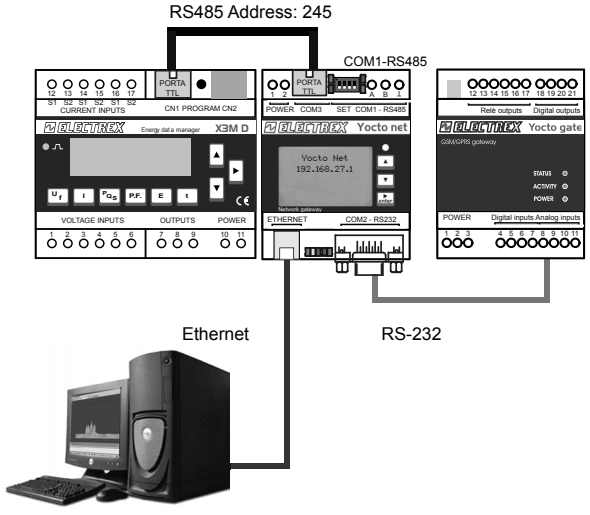


RS-232 PORT

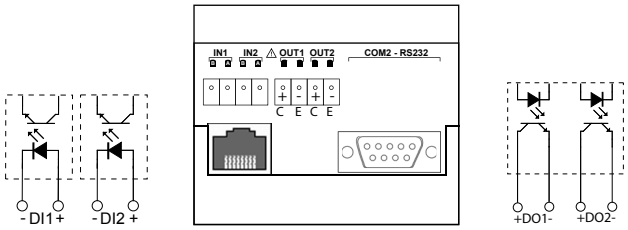
The Yocto net is equipped with a “RS-232 DTE port completed with all the handshake signals” (DB9 maschio). Here below you can find the Pin Out of the 232 wire for a connection toward a: PC, Modem and Yocto Gate.



X3M DATA COLLECTING USING A YOCTO NET AND YOCTO GATE



INPUT OUTPUT CONNECTIONS



Digital inputs	
Power supply voltage (external):	from 10 to 30 Vdc
Current absorbed:	from 2 to 10mA

Digital outputs (optocoupled NPN transistor type for DIN 43864)	
Max voltage applicable:	27 Vdc
Max current commutable:	27 mA

DIGITAL INPUT

Address	n°Registers	Type *	Description	Symbol	Unit
0	1	B	Digital input 1		
1	1	B	Digital input 2		

COIL

Address	n°Registers	Type *	Description	Symbol	Unit
0	1	B	Digital out 1		
1	1	B	Digital out 2		
2	1	B			
3	1	B			
4	1	B			
5	1	B			
6	1	B			
7	1	B			
8	1	B	Reboot Yocto NET		

*

F	Float IEEE754
I	Integer
B	Bitmapped

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