

TeleRouter user manual



Art.Nr. 9373-ANALOG

Art.Nr. 9373-ISDN

Art.Nr. 9373-PPPOE

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1 Description

For remote maintenance via the analog or ISDN network select at TELE-Router spot a Take TELERouter as a secure VPN gateway between the automation network and the corporate network, connect the network nodes via the 4 switched network ports routes between two networks using the WAN ports the TELE-router holds as an NTP server S7 Time is always up to date ProfiNet also supported

!Attention!

At the analog or ISDN jack **ONLY** must the device type according to a cable are plugged! Nevertheless, if a non-device type appropriate cable plugged in, it can lead to **damage** at **Hardware** . The device type identified by the ticked box and the label on the sleeve.

2 Installation

2.1 Power connection

For the power supply to the device is either the included AC adapter or an existing local power supply with min. 24V DC 350mA power connected to the 3-pin green plug. In the included AC plug adapter the power poles are marked with colored sleeves.

The PLUS-pole with the color "red", the MINUS pole with the color "blue". Connect the POSITIVE pole of the left screw terminal and the NEGATIVE pole on the right (outer) screw terminal. The middle connector is used to ground and must be connected to PE.

2.2 LAN-connector

This connector is an autosensing 10/100 Mbit/s connector. For the connection to a Hub or a network connector, you should use a so-called patch-cable (both sided RJ-45, 1to1, shielded).

2.3 Analogue-modem connector

When connecting the telephone, the cable with the black (TAE-)plug is plugged in the telephone socket (N-contact). Please note that with some plugs a locking device has to be removed with a screwdriver in order to extract the plug from the TAE-socket. The other side, a so-called western-plug, has to be plugged, with the ejector up, in the small hole of the modem. You will hear how the locking device latches. In order to extract the western-plug, simply press down the locking lug and extract the plug.

3 Introduction

TeleRouter is a scalable router with 4 x LAN - switch port and 1 x WAN port. Optionally can be installed an analog or ISDN modem

Via the integrated web interface, you can configure and operate TeleRouter. Applications for TeleRouter are e.g. Gateway / Connect / remote maintenance of

automation networks profinet networks or standard Ethernet networks

Especially TeleRouter supports Simatic S7 systems from Siemens. With a few simple steps TeleRouter is ready for the desired mode. The optional analog or ISDN modem also enables operation as a dial-up (dial-in) router. For TeleRouter are available extension modules depending on the mode.



4 Hardware performance

4.1 Standard hardware performance

In the standard version TeleRouter is configured with a WAN port and 4 LAN ports equipped as a switch. The following operating modes are possible.



4.2 Modem upgrade

Equipped with a modem (analog or ISDN), in addition to the standard features the TELE-ROUTER can be used as dial (dial-in) router. .



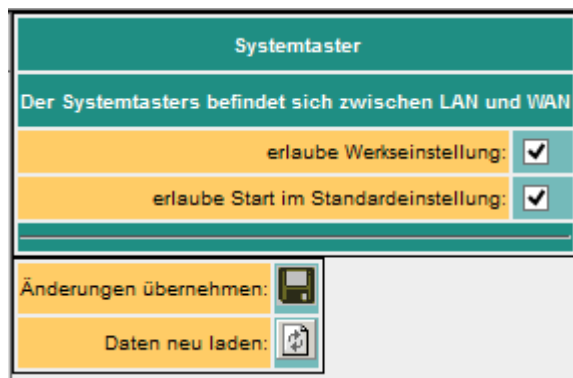
4.3 Configuration



In the configuration can be set the network, routing mode, etc. The data entry forms are self-explanatory as a rule. We are glad to accept suggestions from users to make operation even easier.

4.3.1 System button, Reset system

Under the item System button, you have two options which are allowed when the button is pressed, at least one option must be selected:



allow factory settings	<input checked="" type="checkbox"/>	The device can be set to the delivery condition
Allow start by default	<input checked="" type="checkbox"/>	The device is set to the already stored basic settings

Attention!

Use one of the 4 switch ports to configure it because it may happen that the WAN port is no longer accessible

Do not leave the unit in operation. Disconnect the device from the production network and perform the reset in an autarkic environment. The configuration computer and the device should While not connected to the company network

No worries we do not take any work rest.

The button hides between WAN and LAN ports (small hole). Only the **activated** options are available.

Proceed as follows:

- E.g. Office clamps
- Make the device de-energized!
- Insert the clasp in the hole
- turn back on
- When the four LED's go out and only the power LED is on, hold down the button with the office clip until all four LEDs flash fast
- Release the button
- Now appears a sort of selection. When the button is pressed in the desired state, the desired action is performed
 - Basic setting
 - LED S3 (bottom right) flashes
 - The device boots in the basic setting (network / IP addresses of the delivery state are used). Now you can make the desired changes to the network settings. However, these settings are not activated until the device is restarted.
 - Factory setting
 - LED Power **and** S3 flash
 - All settings are deleted

4.3.2 Settings

The screenshot shows the 'Konfiguration' (Configuration) window of the TeleRouter. It is divided into three main sections: 'Gerätename' (Device Name), 'Routing Mode', and 'Netzwerk' (Network).
 - 'Gerätename': Set to 'Anlage 1'.
 - 'Routing Mode': 'ProfiNet' is checked. 'Routing Mode' is set to 'Büro' (Office) and 'Routing Weg' (Routing Path) is set to 'WAN/IP'.
 - 'Netzwerk': 'Standard Gateway' is '192.168.0.254' with a 'fest' (fixed) dropdown. '1. DNS' is '192.168.0.254' with a 'fest' dropdown. '2. DNS' is '0.0.0.0' with a 'fest' dropdown.
 At the bottom, there are buttons for 'Änderungen übernehmen' (Save changes) and 'Daten neu laden' (Reload data).

parameter	possible setting	routing direction / purpose
device name	"as desired"	
ProfiNet	yes /no	determines whether the TeleRouter as ProfiNet routers are used, define you as a routing interface: WAN / OVPN
standard gateway	fixed (as specified) WAN viaDHCP WAN via PPPoE LAN via DHCP Modem via PPP	
1. DNS		
2. DNS		
routing mode	office	LAN → routing interface
machine	routing interface → LAN	
routing interface	WAN/IP	IP routing via WAN
modem	IP routing via Modem	
WAN/PPPOE	IP routing via PPPoE at the WAN port	
WAN/OVPN	routing via OVPN at the WAN port	
WAN/bridge	Ethernet routing at the WAN port	

4.4 ProfiNET router (only possible with ProfiNET option)

If ProfiNet is enabled the TeleRouter is used to connect / remote maintenance of Profinet networks. Here is a schematic example.



The Profinet connection is implemented via a secure VPN connection. VPN connection can be established via WAN (TCP / IP) or WAN / PPPoE. To set a Profinet connection with 2 x message router: When ProfiNet is activated, telephone routers used to connect / remote maintenance of Profinet networks. Here is a schematic example.

- Activate ProfiNet option on both devices.
- Setting up a page as OpenVPN server and the other as OpenVPN client (see below)
- Possibly activate DynDNS / PPPoE

The devices will connect automatically. Upon successful connection between the two can Profinet networks to communicate.

Attention!

It is no real-time data exchange possible.

Parameter	Possible setting	routing direction/ purpose
name of device	"as desired"	
ProfiNet	yes /no	determines whether the TeleRouter is used as ProfiNet router Do set its routing interface: fix WAN / OVPN
standard gateway	fixed (as specified) of WAN via DHCP	
1. DNS	of WAN via PPPoE	
2. DNS	of LAN via DHCP	
routing mode	office	LAN → routing interface
	machine	routing interface → LAN
routing interface	WAN/IP	IP routing via WAN
	modem	IP-Routing via modem
	WAN/PPPOE	IP routing via PPPoE at the WAN-port
	WAN/OVPN	routing via OVPN at the WAN port
	WAN/Bridge	ethernet routing at the WAN port

4.5 WAN-settings / LAN-settings

The screenshot displays the 'WAN/LAN-Einstellungen' (WAN/LAN Settings) screen. It is divided into two main sections: 'WAN-Einstellungen' and 'LAN-Einstellungen'. Each section contains fields for IP addresses, netmasks, DHCP settings, and DNS servers. Below these are checkboxes for 'Dienst am Interface' (Service on Interface) for Web-Config, Ping, and SSH. The WAN settings are currently active, showing a fixed IP of 192.168.0.42 and netmask 255.255.255.0. The LAN settings show a fixed IP of 192.168.77.42 and netmask 255.255.255.0. Both sections have DHCP set to 'nein' (no) and DNS servers set to 0.0.0.0.

The WAN / LAN port can each receive up to 3 different IP addresses and subnets.

The port can also be used as a DHCP server or client. Here are entered the necessary data for the IP assignment.

For the operations of a DHCP / Server can be set fixed assignments MAC-IP-adress.

(See below, "DHCP fixed addresses"). Next is to define which services are available at the port (web config), ping, ssh (only for developers)

4.6 Modem settings

Here the modem parameters are defined. A modem connection is realized as a PPP connection. This allows also be used with TeleRouter alia dial routers. An ideal replacement for example is TeleService IE from Siemens. In the bottom line can be determined which services are available at the interface.

Parameter	Possible setting	Purpose
Type	auto GPRS/UMTS	Sets the modem type, auto = ISDN or analog
Port	on board LAN	Connecting the modem
LAN TCP/IP-Port	IP-Port of the LAN-Modems	Only for LAN modem
LAN IP-Adr	IP address of the WLAN modem	Only for LAN modem
SIM-Pin	Pin of the SIM card	Only for GPRS / UMTS Enter the SIM-pin before connecting the modem, otherwise the SIM-card could fall into the PUK-state by sending an incorrect pin
Dial-up mode	Ton Impulse	Sets the election procedure. Sound or pulse. Standard is sound, only old telephone systems require impulse.
Substation	Yes No	Indicates whether the operation is on a PBX. If yes, the exchange should be stopped
Number of rings	0 - 5	Number of rings before the modem receives a call 0 = modem does not cancel
Country	Select the country in which the device is operated	The modem adapts to the technical characteristics of the telephone line in the respective country. As a rule, a choice is available between Europe / Germany and the USA
max Baudrate \\(Only analog modem)	Maximum connection speed that the modem uses.	With varying line quality, it may be more effective to operate the modem at a lower speed. This saves automatic negotiation of new modulation.
MSN/EAZ	(only ISDN) Device number	This is used to determine the terminal number that the ISDN modem responds to when calling. No input means the modem is always responding. You can call this number from your telephone provider or telephone system administrator

4.6.1 Using the LAN modem

As of version 1.65, the GPRS LAN modem LAN HT is supported.

Please note the following:

- Connect the modem directly, to LAN or LAN port. For a LAN connection to be guaranteed
- Enter the corresponding parameters for port and IP addresses
- **Enter the SIM-pin before connecting the modem, otherwise the SIM-card could fall into the PUK-state by sending an incorrect pin**

Settings on LAN Modem. The following pictures show the settings of the LAN modem.

Use the modem's built-in WEB browser.

Important:

- Set KeepAlive to max 10 seconds
- Disable Telnet Cntrl
- Remote Port = 0
- IP address and port as configured in the TeleRouter

XPort **LANTRONIX**

Server Settings

Server Configuration

Enhanced Password: ☐ Enable ☒ Disable

Telnet/Web Manager Password:

Retype Password:

Advanced

ARP Cache Timeout (secs):

TCP Keepalive (secs):

Monitor Mode @ Bootup: ☒ Enable ☐ Disable

CPU Performance Mode: ☐ Low ☒ Regular ☐ High

HTTP Server Port:

Config Server Port:

MTU Size:

TCP Re-transmission timeout (ms):

XPortTM

LANTRONIX[®]

Serial Settings

Channel 1

☐ Disable Serial Port

Port Settings

Protocol:

RS232

Flow Control:

CTS/RTS (Hardware)

Baud Rate:

38400

Data Bits:

8

Parity:

None

Stop Bits:

1

Pack Control

☐ Enable Packing

Idle Gap Time:

12 msec

Match 2 Byte Sequence:

☐ Yes

☒ No

Send Frame Immediate:

☐ Yes

☒ No

Match Bytes:

0x 00

0x 00

 (Hex)

Send Trailing Bytes:

☒ None

☐ One

☐ Two

Flush Mode

Flush Input Buffer

With Active Connect:

☐ Yes

☒ No

With Passive Connect:

☐ Yes

☒ No

At Time of Disconnect:

☐ Yes

☒ No

Flush Output Buffer

With Active Connect:

☐ Yes

☒ No

With Passive Connect:

☐ Yes

☒ No

At Time of Disconnect:

☐ Yes

☒ No

OK

TeleRouter user manual

9 / 26

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XPort **LANTRONIX**

Connection Settings

Channel 1

Connect Protocol
Protocol: TCP

Connect Mode

Passive Connection:
Accept Incoming: Yes
Password Required: Yes No
Password:
Modem Escape Sequence Pass Through: Yes No

Active Connection:
Active Connect: None
Start Character: 0x 0D (in Hex)
Modem Mode: Without Echo
Show IP Address After RING: Yes No

Endpoint Configuration:
Local Port: 10001
Remote Port: 0
Auto increment for active connect: ☐
Remote Host: 0.0.0.0

Common Options:
Telnet Com Port Cntrl: Disable
Connect Response: None
Terminal Name:
Use Hostlist: Yes No
LED: Blink

Disconnect Mode
On Mdm_Ctrl_In Drop: Yes No
Hard Disconnect: Yes No
Check EOT(Ctrl-D): Yes No
Inactivity Timeout: 0 : 0 (mins : secs)

OK

The connection status of the LAN modem is displayed in the system status:

- TCP / IP connection
- Logged-in network (e.g., T-Mobile)
- Signal level

4.7 PPPOE settings



Define here the parameters for operation at a fixed DSL / cable modem. To overview and easier configuration are possible also the default gateway and DNS settings. As a rule, here are to set “auto PPPoE”.

Here can also be selected which services are available at the interface.

Parameter	possible setting	Purpose
PPPoE at the WAN	yes no	Determines whether the PPPoE WAN port should be active.
PPPoE-name of service	optional	is provided by your ISP. Usually free
user name	as submitted by the provider	

Parameter	possible setting	Purpose
password	as submitted by the provider	

4.8 Phone book



Parameter	Possible setting	Purpose
name	name of the entry	as desired
phone number	number of the user	By clicking on the number, the connection established
baud rate (not at ISDN)	1200- 56kBit	maximum connection speed with the partners
user	user from the user list	For the dial-up user access is be managed dial-up user managed

In the phone book are managed all facilities with a modem connection. The connection with a partner is simply done by clicking on the phone number. User and password are maintained in the dial-in user database. Thus it possible to use a multi-user systems. TeleRouter can also be used for other dial-up PPP access.

4.9 Routing firewall rules

Routing FW-Regeln						
	Nr.	Name	Protokoll	Port	IP-Adresse	erlaubt
	1	ARP erlauben	ARP		0 0.0.0.0	x
	2	S7-Wartung	tcp		102 0.0.0.0	x
	3	Ping erlauben	tcp		0 0.0.0.0	x
	4		tcp	0		

Normally the routing is allowed on all network subscribers. As soon as there is an entry in this table, an access will be possible only via the rules above. In the standard edition the routing is only possible for LAN or from LAN. See operating mode. The "operation of the Advanced" allows rules in both directions.

4.10 DynDNS Konfig

DynDNS Konfig	
verwende DynDNS:	Nein
DynDNS Hostname:	
DynDNS Username:	
DynDNS Passwort:	
Update-Intervalls (min):	10

If TeleRouter to be reached by OpenVPN as via the Internet, the Internet IP address of the device must be known. Meaningful here is not to work with a fixed IP address because the provider possibly allocate a new IP address here after new connection establishment (eg via PPPoE). It makes more sense here to access the device always with the same domain name.

The service provider DynDNS offers this service on the Internet. (<http://www.dyndns.org>). DynDNS = Dynamic DomainNameSever. For operating the service, you must sign in to DynDNS. For more information visit the website of DynDNS. Up to 5 dynamic IP addresses are free. If you need several, you can book at DynDNS for a fee a corresponding number of domain names. The price is very low, about 30, - U.S. \$ per

year.




Roughly speaking, this means:

You register at DynDNS the desired host name. e.g. meineanlage.dynalias.com. For your access you will receive an username and password. Enter this data in the setting of a DynDNS config and set "use DynDNS" to yes. The DynDNS refreshes in the selected time interval the data in DynDNS. If the Provider assign a new IP address that will be corrected again within this interval, thanks DynDNS. You reach your TeleRouter under the registered name, eg: meineanlage.dynalias.com.

Enter this domain name in your office device at the VPN users.

parameter	possible setting	purpose
name	any desired text	serves for info
protocol	TCP UDP TCP/UDP ARP	The protocol which is to be routed
port	1 - 65565	port or port area, which is to be routed z.B 1 - 1024, 2002 - 2048, 8080, 0 means all ports
IP address	IP	

4.11 DHCP fixed MAC /IP address mapping

DHCP feste Adressen				
	Nr.	Name	MAC-Adresse	IP-Adresse
	1	Station1	08:01:02:04:05:02	192.168.22.1
	2	Station2	08:01:02:04:FF:09	192.168.22.10
	3			

If the built-in DHCP server (at the WAN or LAN) is operated, it can be useful, to allocate specific IP stations always the same IP address. Here you can specify which MAC address is replaced by which IP address.

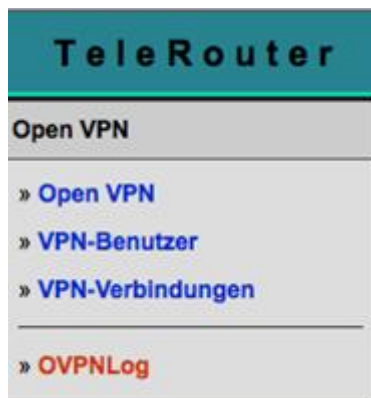
4.12 NTP client



So that TeleRouter always runs with current time, we have implemented an NTP client. This allows TeleRouter automatically synchronize over the Internet or by any other available in the network time server date and time.

Parameter	Possible setting	Purpose
NTP client mode	yes \ no	switch NTP client on or off
name of service	IP adress / domain name of the NTP Server	Enter the IP address or the domain name of the desired NTP server. Be sure that this Server via the specified routed away accessible.
time zone	timezone in which the TeleRouter operated	necessary so TeleRouter has the correct local time

4.13 Open VPN settings



In TeleRouter we have implemented the popular OpenVPN released under open source. Detailed information can be found at <http://www.openvpn.net>.

Here I would like to briefly explain the function of OpenVPN, as implemented in TeleRouter.

Basically there are two modes of the OpenVPN: Server or client.

A server normally configures the device to the system (machine).

With OpenVPN we present TeleRouter in a new network interface. This interface is connected via a line (virtual circuit) with the OpenVPN interface of the partner device. The line is implemented by software. Here are exchanged all protocols for this interface on its own UDP / TCP channel. One can say it is made a telephone connection between the devices via UDP / TCP. Of course, the connection is encrypted. The keys are stored in the message router.

Configuration OVPN operation:

 The image is a screenshot of the 'Open VPN' configuration window. It has several sections:

- Open VPN**: OVPN-Mode: 'kein OVPN', Port: '1194'.
- OVPN Einstellungen für Betrieb als Server**: IP-Pool: '10.111.111.0', IP-Pool Netmask: '255.255.255.0'. Interface: 'LAN' (checked), 'WAN Modem' (checked), 'PPPoE/DSL' (checked).
- OVPN Einstellungen für Betrieb als Client**: Server-Adr (nur Client): empty, Benutzer: empty, Passwort: empty.
- Dienste am Interface**: Web-Config(80,8080) (checked), Ping (checked), SSH (checked).
- Open VPN Routing**: Open VPN: 'aus' (checked), LAN (checked), WAN (checked).

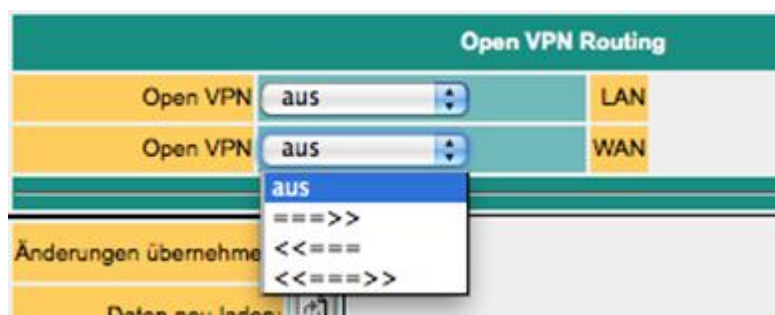
parameter	possible setting	purpose
OVPN mode	no OVPN server (UDP) client (UDP) server (TCP) client (UDP)	sets the OVPN operating mode of the device. In the server mode TeleRouter waits for a connection, In the client operating TeleRouter takes even before the connection to the partner.
port	1024 - 65535	port number on which the OVPN service will run, standard 1194.
IP pool (only for server)	default: 10.111.111.0	out this pool, the partner (client) will be allocated the IP address.

parameter	possible setting	purpose
IP pool netmask	default: 255.255.255.0	associated netmask for the IP pool
server adress (only in client operating)	IP adresse or URL of the servers	the address of the server. Can take place in the notation xxx.xxx.xxx.xxx or in plain text (as a URL). Is only used in client mode.
user	user name	name of the user with which the server will be logged
password		user password

The options “services on the interface” determine what services are available at present VPN connection.

Open VPN routing

This determines, in what form should be routed to the WAN / LAN port via VPN.



from: Routing is not possible to interface

==>: Routing from the VPN interface

<==: Routing from the Interface to the VPN

<==>: Routing in both directions

admission

Who is now allowed to build an OpenVPN connection? How can access be controlled?

CAUTION! In principle, each of the certificate and the IP address of the TeleProf has and establish a VPN connection to access the device. It is to compare when you connect the device to the telephone line and assign a password for the dial-up modem.

You can use the extension “Advanced Router” for your own certificates. This provides more security.

4.14 VPN user

VPN-Benutzer						
		Nr.	vollständiger Name	Benutzer	Passwort	Passwort (wiederholen)
		1	Adam Test	Adam	****	***


Here you can manage the users who are allowed to connect via OVPN.

4.15 VPN connections

VPN-Verbindungen							
		Nr.	Name	Server-Adr (nur Client)	Protokoll	Port	Benutzer
		1	Anlage 1	testa.dyndns.org	TCP	1194	Adam Test
		2	Anlage Wasserwerk2	wasser.dyndns.net	UDP	3322	1 Adam Test





In the VPN connections which are similar to a phonebook to manage your machine. If the time server address, protocol and port are entered, it will enter a reference to a VPN user (see previous).

4.16 VPN-user

VPN-Benutzer					
	Nr.	vollständiger Name	Benutzer	Passwort	Passwort (wiederholen)
		1 Adam Test	Adam	****	***

Here you can manage the users who are allowed to connect via OVPN.

4.17 VPN-connections

VPN-Verbindungen						
	Nr.	Name	Server-Adr (nur Client)	Protokoll	Port	Benutzer
		1 Anlage 1	testa.dyndns.org	TCP	1194	Adam Test
		2 Anlage Wasserwerk2	wasser.dyndns.net	UDP	3322	1 Adam Test

In the VPN connections may be similar to a phonebook machines to be managed. It becomes server address, protocol and port is entered. It will be a reference to a VPN user entered.

4.18 User management



In the user management you manage the users, with what right the WEB interface is allowed to be operated.

Moreover, the access data for user to be maintained, which is a dial-up connection (modem).

4.19 WEB-User

Here is the mask for entering the web interface user. Per users can be assigned various permissions. Generally, only a user with "SU" is allowed to make changes. U1 - U5 may only use the interface. In TeleRouter expansion modules have "U1" - "U5" more precisely specified servicing rights.

WEB-Benutzer												
		Nr.	vollständiger Name	Benutzer	Passwort	Passwort (wiederholen)	SU	U1	U2	U3	U4	U5
		1	<input type="text" value="Master"/>	<input type="text" value="Master"/>	<input type="password" value="*"/>	<input type="password" value="*"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		2	<input type="text"/>	<input type="text"/>	<input type="password" value="*****"/>	<input type="password" value="*****"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

4.20 DFU Users

Here is the mask for entering the dial-up user interface. The user receives only the access when active is on "yes". Further is only available the addition of "dial in & out" or "dial out".

When a user dials in, all entries are reviewed to "dial in & out". Other users are denied the access. The assignment take place in the phone book.

DFÜ Benutzer							
	Nr.	vollständiger Name	Benutzer	aktiv	Passwort	Passwort (wiederholen)	Dial-In/Out
	1	Adam Test	Adam	<input type="checkbox"/>	*****	*****	Dial in & out
	2	Johann Jodler	Johann	<input checked="" type="checkbox"/>	*****	*****	Dial in & out
	3			<input type="checkbox"/>	*****	*****	nur Dialout

4.21 System status

Display the device status

Systemstatus		
Modemstatus:		
PPP:		
letzter Grund Aufliegen Analogmodem:		
VPN:	---:gestoppt	Verbindung trennen
PPPoE/DSL:	nicht verbunden	
IP-Verbindung:	nicht verbunden	Verbindung trennen
DynDNS:		

5 Optional functions

5.1 HMI message module

TeleRouter		HMI/Meldemodul	Telefonbuch	Konfiguration	Open VPN	Benutzer	Wartung	Systemstatus	Info	Login/Logout
HMI/Meldemodul		HMI/Meldemodul								
» HMI/Meldemodul		Anlagenname: <input type="text"/>								
		Sendezeit eintragen: <input type="text"/> <input type="button" value="Nein"/>								
		Meldezeit eintragen: <input type="text"/> <input type="button" value="Nein"/>								
		SMS Einstellungen								
		SMS Server aktivieren: <input type="text"/> <input type="button" value="Nein"/>								
		max. Anzahl Sendeveruche SMS: <input type="text"/>								
		SMS-Absenderkennung für UCP: <input type="text"/>								
		Email Einstellungen								
		Email Service aktivieren: <input type="text"/> <input type="button" value="Ja"/>								
		max. Anzahl Sendeveruche (Email): <input type="text"/>								
» SMS-Meldepufer		Änderungen übernehmen:								
» Email-Meldepufer		Daten neu laden:								
		Meldungen betrachten								
		Test-SMS senden								
		Test Email senden								
TeleRouter										
Version 1.83										
© Copyright 2011 - 2015										
by TIS & PI										

With the HMI message module, SMS and email messages (fault messages and maintenance messages) can be sent automatically to virtually any number of recipients, depending on the event, in the PLC, without any programming effort. The system automatically assigns the messages to the respective recipients and sends the message via the correct provider.

Please note:

By sending SMS messages and email messages arise Additional costs (telephone charges, charges for Internet access, etc.). Please check with your provider for the amount of the respective fees. For the HMI module to work properly, some basic settings must be made. The following items must be set up:

- Pagerprovider
- Pager receivers
- Emailserver
- Email recipient
- PLC connections
- PLC Varials
- Standardization (optional)
- Notifications
- Initial setting Activate the HMI option
- Activate SMS dispatch or activate email delivery

The HMI module is also secured by access protection via WEB browser. The necessary rights are indicated for the corresponding points.

Setting up the email server or email account

TeleRouter							
HMI/Meldemodul Telefonbuch Konfiguration Open VPN Benutzer Wartung Systemstatus Info Login/Logout							
HMI/Meldemodul	Email Server Mein Gerätesdassdasdas -						
» HMI/Meldemodul		Nr.	Name	Adresse	E-Mail	Benutzer	Passwort
» Pagerprovider		1	ServiceServer	mail.muster.de	technik@muster.de	user_technik	*****
» Pager-Empfänger		2					*****

In order for the TeleRouter to send an email, we need an email account or a server that receives and forwards the messages.

Under Name, enter a meaningful expression for you.

The "Address" field contains the host address of the e-mail server. You can either use a local server (on the local network) or a public on the Internet. The input can be a name (for example, mail.gmx.de) or a fixed IP address.

However, ensure that the corresponding entries are set for the DNS server, gateway or routes, in order to ensure a smooth e-mail transmission.

If an email is sent for shipping, TeleRouter first attempts to reach the appropriate server via the current options (set DNS and gateway). If this is not the case, an Internet connection is established under the setting Configuration → PPPoE / DSL or Configuration view → Internet → Provider and then tries to find the server. This connection is also used when the Internet connection is set to manual. If the connection to the Internet was established, This is separated after 2 minutes of idle (no email is present) or after 10 minutes at the latest.







For the Internet via modem, you can use so-called Internet by Call providers.

ATTENTION: Additional costs arise. Please inform yourself.

Example: Arcor InternetbyCall: Phone number: 01920793, User: arcor Password: internet (analog and ISDN)

In the "Email message buffer" menu item, you can track the status of the email and find any errors. 'Email' is the mail address that the recipient sees as the sender. This address should be as far as possible, as otherwise anti-spam filters might eliminate these messages. User and password refer to the email account.

Setting up email recipients

TeleRouter		HMI/Meldemodul	Telefonbuch	Konfiguration	Open VPN	Benutzer	Wartung	Systemstatus	Info	Login/Logout								
HMI/Meldemodul			Email-Empfänger Mein Gerätestatus:															
» HMI/Meldemodul					Nr.	Name	Email	Server	G0	G1	G2	G3	G4	G5	G6	G7	G8	G9
» Pagerprovider					1	Franz Technik	ftechnik@servicefirma-1.de	ServiceServer	x									
» Pager-Empfänger					2	Anlagenbetreiber	a@anlagenbetreiber.de	1 ServiceServer	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
» Email Server																		
» Email-Empfänger																		

In the next step, you define the recipients of the e-mail messages.

Field	Description
Name	selectable display name
Email	address of the recipient
Server	select the desired email server for sending to this recipient
G0 - G9	<p>Message Groups.</p> <p>Each recipient can not belong to one or more message groups. Below, you can assign different message groups for each message, similar to this one. Thus, a message can be distributed easily to the relevant recipients.</p>

Create message

Connections are required to access the PLC. Connections are currently supported for the SIMATIC S7 over TCP / IP.

Then configure the desired variables.

You can now specify scaling for output.

Then, you create your desired messages.

Configuring PLC connections



Field	Description
Name	own name of the PLC
Connection	connection type to the PLC (here TCP / IP)
active	Communication with PLC
Cycle	defines the time period according to which the PLC is to exchange data
Adr. SMS status	<p>is intended for feedback of the status of the HMI module. If you want to monitor the communication status and the SMS dispatch in the PLC, enter the address of a “word on” there. E.g. Data block or flag. TeleRouter then writes the maximum number of send attempts for pending messages for each communication cycle in the low-order byte. If the number exceeds 254, 254 is always used here. The background for this procedure is explained later. If the number of send attempts is > 0, the sending of a message has failed. This allows the PLC to monitor the SMS dispatch.</p> <p>Now, you should also monitor whether TeleRouter is communicating with the PLC. This can be done easily. Describe the counter byte in your PLC regularly with 0xFF. After the specified cycle time, a value other than 0xFF must be set there. However, you should measure this time generously as the cycle can shift if communication problems occur with other controllers.</p> <p>The high-order byte is reserved for later extensions. This is currently overwritten with “0”. Example: If you are using MW 200, the MB201 has the counter reading and in MB200 the value is 0</p>

Configuring variables



Now create the desired variables to be displayed or processed.

Column	Usage				
Name	Name for free use				
Connection	you assign the variable of a PLC connection to				
Address	the actual address in the PLC according to the following rules:				
	Data area				Data type
	Input	Output	Flag	Data block	
	E 1.0, I 1.0	A 1.0, Q 1.0	M10.1	DB1.DBX 1.0	Bit (Boolean)
	EB 1, IB 1	AB 4, QB 4	MB 20	DB2.DBB 20	BYTE
	EW 4, IW 4	AW 6, QW 6	MW 100	DB4.DBW 0	WORD
	ED 4, ID 4	AD 6, QD 6	MD 100	DB4.DBD 10	DWORD
	Timer	Counter			
	T1	---			Timer
---	Z1, C1			Counter	
Data type	Select the data type for the correct conversion: Boolean (bit) unsigned int (signed-to-unsigned) signed int (signed-byte) DWORD (double-word without sign) signed DWORD) real (flow point number)				



















For correct display and processing of the variables, a conversion may have to be carried out. This conversion can be done with standardization. You can define the necessary conversions here and assign them later to the messages. Since standardization is usually more common, it is useful to manage it centrally.

TeleRouter																	
HMI/Meldemodul		Telefonbuch		Konfiguration		Open VPN		Benutzer		Wartung		Systemstatus		Info		Login/Logout	
HMI/Meldemodul		Normierung Mein Gerätesystem															
» HMI/Meldemodul				Nr.	Name	Normierung	Eingabe	Einheit/Zustand	SPS-Wert 1		HMI Wert 1		SPS-Wert 2		HMI Wert 2		
» Pagerprovider				1	Linear	linear	AlphaNum		0.00		0.00		0.00		0.00		
» Pager-Empfänger				2	ON/OFF	Stufentexte	Taster	0:off 1:on	0.00		0.00		0.00		0.00		
» Email Server				3	Grad C	linear	AlphaNum	°C	0.00		0.00		1000.00		100.00		
» Email-Empfänger				4		linear	real		0.00		0.00		0.00		0.00		
» Verbindungen																	
» Variablen																	

Column	Description
Name	freely forbidden name
Normalisation	<p>Normally, two normalization modes are supported, either “linear” or “text”.</p> <p>linear means that the value must be converted by the PLC. In this case, the fields “PLC value1”, “HMI value1”, “PLC value2”, “HMI value2” are to be filled.</p> <p>Texts means you want the values from the PLC status texts assign. This may be e.g. The state of a multi-stage drive</p>

Column	Description								
Unit / State	<p>For standardization "linear", the text for the unit designation is shown here (For example, °C, %, piece ...)</p> <p>For standardization "Texts", the states are listed here according to the following syntax: <Comparison> <value >: <Text> For each state, enter a new line. <comparison> is optional. If <comparison> is not specified, this means checking equality. Example for drive: 0: OFF 1: Level1 2: Level2</p> <p>For comparisons, you can also define the following states: A temperature is to be monitored. It is to output only a text, whether the value is in the limit or whether a border violation is present. The value is in the limit if it is between 20 and 30. This is as follows: > = 20: normal <= 30: normal <20: too low > 30: too high > 60: much too high</p> <p>Enter the number here as the number Values that result from the conversion of the fields "PLC value1", "HMI value 1", "PLC value 2", "HMI value 2"</p>								
Conversion	<p>For the conversion of the numerical value of the PLC for the representation as a physical variable in the HMI module, an assignment of the PLC value and the HMI value is necessary. The displayed value is calculated as: $w = m * x + t$; w = the displayed value $m = (HMI\ value2 - HMIWert1) / (PLC\ value2 - PLCWert1)$ $t = (HMI\ value1 - m * PLC\ value1)$ x = the current PLC value for example, the PLC values 0 - 1000 should correspond to the display 0 to 100 (sh line 3 in the picture)</p> <table> <tr> <td>PLC value 1</td><td>PLC value that corresponds to the HMI value1. (0)</td></tr> <tr> <td>HMI value 1</td><td>HMI value that corresponds to the PLC value1 (0)</td></tr> <tr> <td>PLC value 2</td><td>PLC value corresponding to the HMI value2 (1000)</td></tr> <tr> <td>HMI value 2</td><td>HMI value corresponding to PLC value2 (100)</td></tr> </table>	PLC value 1	PLC value that corresponds to the HMI value1. (0)	HMI value 1	HMI value that corresponds to the PLC value1 (0)	PLC value 2	PLC value corresponding to the HMI value2 (1000)	HMI value 2	HMI value corresponding to PLC value2 (100)
PLC value 1	PLC value that corresponds to the HMI value1. (0)								
HMI value 1	HMI value that corresponds to the PLC value1 (0)								
PLC value 2	PLC value corresponding to the HMI value2 (1000)								
HMI value 2	HMI value corresponding to PLC value2 (100)								

Configure messages

TeleRouter		HMI/Meldemodul	Telefonbuch	Konfiguration	Open VPN	Benutzer	Wartung	Systemstatus	Info	Login/Logout													
HMI/Meldemodul			 		Konfig Meldungen Mein Gerätsdassdas -																		
» HMI/Meldemodul				Nr.	Zeile	Text	melden	Variable	Delay (sec.)	wenn	Limit	Normierung	G0	G1	G2	G3	G4	G5	G6	G7	G8	G9	
» Pagerprovider					1	1	MB200	x	MB 200	0	**	0.00	Linear	x									
» Pager-Empfänger					2	2	MB119		MB 119	0	**	0.00	Linear										
» Email Server					3	3	Störung Heizung	x	Störung Heizung	10	==	1.00	Linear	x	x								
» Email-Empfänger					4	4	Störung Extruder1 Einfüllung	x	Störung Extruder1 Einfüllung	0	==	1.00	Linear	x	x								
» Verbindungen																							
» Variablen																							
» Konfig Meldungen					5	5	Störung Extruder1 Abfüllung	x	Störung Extruder1 Abfüllung	0	==	1.00	Linear	x	x								
» Normierung					6	6	Temperatur Exdr.1 Einfüllung	x	Extruder1 Einfüllung	0	>	30.00	Grad C	x	x								
» SMS-Meldepuffer					7	7	Temperatur Exdr.1 Abfüllung	x	Extruder1 Abfüllung	0	<	15.00	Grad C	x	x								
» Email-Meldepuffer					8	8				0	**	0.00											

The actual messages are configured separately. The relationship between the variable, the standardization

and the reporting group is made. What the actual message is. The sequence of the messages is made after entering the line number.

Column	Use
Row	For the free use and information of the user / plant operator
Report	process the line and forward to message group (s)
Variable	Here you can assign one of the configured variables to the message. If no variable is assigned, only the text is displayed
Delay	The time in seconds for which an infringement must be applied at least until it is reported. Thus, a measured value can be debounced. If the condition / comparison operation is used to determine a limit value violation or to determine the reporting conditions. Possible comparisons: == , > , < , <> and * * means no limit monitoring, thus only representation
G0 - G9	The assignment to the individual message groups, the respective message is assigned to a group of recipients

The screenshot displays the 'HMI/Meldemodul' configuration window. It features a sidebar on the left with a tree view containing items like 'HMI/Meldemodul', 'Pagerprovider', 'Pager-Empfänger', 'Email Server', 'Email-Empfänger', 'Verbindungen', 'Variablen', 'Konfig Meldungen', 'Normierung', 'SMS-Meldepuffer', 'Email-Meldepuffer', 'Meldungen betrachten', 'Test-SMS senden', and 'Test Email senden'. The main configuration area includes sections for 'HMI/Meldemodul' (Anlagenname, Sendezeit eintragen, Meldezeit eintragen), 'SMS Einstellungen' (SMS Server aktivieren, max. Anzahl Sendeveruche SMS, SMS-Absenderkennung für UDP), and 'Email Einstellungen' (Email Service aktivieren, max. Anzahl Sendeveruche (Email)). At the bottom, there are buttons for 'Änderungen übernehmen' and 'Daten neu laden'.

To activate the message processing at all, basic settings must be made. Before you activate these settings, the mediations should be projected.

The meaning of each line:

Line	Use
Attachment name	This text is sent to the recipient in the SMS header so that the sender can identify the sender
Sending the send time	If "yes", the send time is entered in the SMS header, Important: Set the time correctly
Enter message time	At "yes", the time at which the message occurred was entered for each message. This makes the SMS / Email text longer and more extensive. However, the date of occurrence can be compiled for each message
Activate SMS server	yes / no
Max. Number of transmission attempts SMS	This allows the number of maximum transmission attempts per SMS recipient to be set. Thus, it is possible to minimize excessive costs for unsuccessful text messages in case of shipping problems

Line	Use
SMS sender identification for UCP	For the UCP protocol, the sender's telephone number must be given to the SMS server
Enable Email Service	yes / no
Max. Number of sending attempts	This allows the number of maximum send attempts per e-mail recipient to be specified

SMS message buffer / Email message buffer

SMS-Meldepuffer Mein Gerätsdasdasdas -					
Zeit	Pager-Empfänger	Provider	Text	Tx-Versuch	Fehler!

Email-Meldepuffer Mein Gerätsdasdasdas -					
Zeit	Email-Empfänger	Server	Text	Tx-Versuch	Fehler!
16.11.2015 12:26	Franz.Technik@technik@servicefirma-1.de	ServiceServer	Komm.-Fehler: Maschine 2 (192.168.0.81)	4	Mail: kann Sockel nicht verbinden.
16.11.2015 12:26	Franz.Technik@technik@servicefirma-1.de	ServiceServer	Temperatur Extr.1 Abfüllung: 0.00°C	4	Mail: kann Sockel nicht verbinden.
16.11.2015 12:26	Franz.Technik@technik@servicefirma-1.de	ServiceServer	Störung Extruder1 Abfüllung: 1.00	9	Mail: kann Sockel nicht verbinden.

On the SMS Message Buffer page, the messages that are currently pending and not yet sent are displayed. The "Tx Trials" column shows the number of attempts already made to send the SMS. This is greater than 0, e.g. Telephone line not available, busy or service settings (telephone number) are not correct. The largest number of attempts is reported to the PLC (see above).

Clicking on the symbol  deletes all messages in the list. The messages are not sent!

For test purposes you remove the telephone cable, you can test the function of the system first, without generating costs for sending SMS.

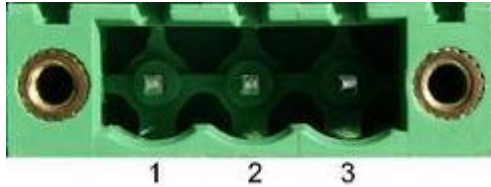
View messages

Meldungen betrachten Mein Gerätsdasdasdas -	
MB200	0.00
MB119	0.00
Störung Heizung	Komm.-Fehler
Störung Extruder1 Einfüllung	0.00
Störung Extruder1 Abfüllung	1.00
Temperatur Extr.1 Einfüllung	0.00°C
Temperatur Extr.1 Abfüllung	0.00°C

In the menu item **View messages** you can view the current status of the messages. All message states of the configured messages are displayed there. So also these, which can not generate SMS. As a result, a state can be obtained via the system without PLC programming software. The message window is updated every 3 seconds. Red fields indicate that there is a violation of the limit value. Google Übersetzer für Unternehmen:Translator ToolkitWebsite-Übersetzer

6 Technical data

6.1 pin assignment power supply



Pin number Short form Designation Direction 1 P24V 24V DC voltage input 2 PE earthing input 3 M24V mass input

6.2 Pinning Ethernet

Pin no.	Short name	Notation	Direction
1	TX +	receive line +	Out +
2	TX -	receive line -	Out -
3	RX +	send line +	In +
6	RX -	send line -	In -

6.3 Pin assignment RJ12

Pin number	Short form	Designation
1	NC	not connected
2	NC	not connected
3	A	A-line
4	B	B-line
5	NC	not connected
6	NC	not connected

6.4 pin assignment ISDN

Pin no.	Short Form	Name	Direction
1	NC	Not connected	
2	NC	Not connected	
3	TX +	Send line +	Out +
4	RX +	received line +	In +
5	RX -	received line -	In -
6	TX -	Send line -	Out -
7	NC	Not connected	
8	NC	Not connected	

6.5 Special Assignment ISDN socket

for the RS232 Device Type

Pin no.	Short form	Name	Direction
1	CTS	Clear to send	Input
2	DSR	transmission device ready	Input
3	RxD	Receiving line input	
4	GND	Signal ground	
5	DCD	receive line signal detect	Input

Pin no.	Short form	Name	Direction
6	TxD	transmission line	Output
7	DTR	Data device ready starting	
8	RTS	Request	Output

Table of Contents

2.1 Power connection	2
2.2 LAN-connector	2
2.3 Analogue-modem connector	2
4.1 Standard hardware performance	3
4.2 Modem upgrade	3
4.3 Configuration	3
4.3.1 System button, Reset system	3
4.3.2 Settings	4
4.4 ProfiNET router (only possible with ProfiNET option)	5
4.5 WAN-settings / LAN-settings	6
4.6 Modem settings	7
4.6.1 Using the LAN modem	8
4.7 PPPOE settings	10
4.8 Phone book	11
4.9 Routing firewall rules	11
4.10 DynDNS Konfig	11
4.11 DHCP fixed MAC /IP address mapping	12
4.12 NTP client	12
4.13 Open VPN settings	12
4.14 VPN user	14
4.15 VPN connections	14
4.16 VPN-user	15
4.17 VPN-connections	15
4.18 User management	15
4.19 WEB-User	15
4.20 DFU Users	15
4.21 System status	16
5.1 HMI message module	16
Setting up the email server or email account	17
Setting up email recipients	18
Create message	18
Configuring PLC connections	18
Configuring variables	19
Configure messages	20
SMS message buffer / Email message buffer	22
View messages	22
6.1 pin assignment power supply	22
6.2 Pinning Ethernet	23
6.3 Pin assignment RJ12	23
6.4 pin assignment ISDN	23
6.5 Special Assignment ISDN socket	23

