TeleR2 / TeleR4 / S7-Firewall

TeleR²-Router PPPoE | Art.Nr. 9374-PPPOE
TeleR⁴-Router PPPoE | Art.Nr. 9374-4-PPPOE
S7-Firewall | Art.Nr. 9374-S7-Firewall

Introduction

The TeleR are scalable routers. Over the integrated web interface you can configure and operate the TeleR² / TELER⁴.

Applications for TeleR² / TELER⁴ are as Gateway / Connect / remote maintenance of:

- Automation networks
- ProfiNet networks
- Standard Ethernet networks.

Specifically TeleR² / TeleR⁴ supports Simatic S7 systems from Siemens. With few handles the TeleR² / TeleR⁴ is running in the desired mode.

For TeleR² / TeleR⁴, depending on the mode expansion modules available.

Device variants

In the standard version TeleR² is fitted with a WAN port and a LAN port and the TeleR ⁴ is with a WAN port and 3 LAN ports with switch fitted.
The following operating modes are possible.

Modes	Ethernetgateway (bridge) IP-Router Following DSL / cable modem (PPPoE)

Services	DHCP Client/Server PPPoE-Client NTP Client/Server OpenVPN Client/Server (VPN@Office) DynDNS Client Firewall
Connections	1 x WAN 1 / 3 x LAN-Port as Switch

First Start

You need to configure a PC with web browser

- power supply on POW
- Connect PC and TeleR-Router via Ethernet cable
- set IP-Adresse in the IP-area of TeleR2 / TeleR4
  - for WAN-side 192.168.1.x
  - for LAN-side 192.168.2.x
- Call in the browser the IP address of the router
  - for WAN-side 192.168.1.57
  - for LAN-side 192.168.2.1
- Confirm the login window with "OK"
- Add under WEB-User a SuperUser (su)
- Depending on the application you need to make different settings
  - Routing between two networks
  - OVPN-Server
  - OVPN-Client
  - PPPoE
  - Profinet-Router
  - IP-Address-Changer
- Establish connection to TeleR
  - OVPN-Software for PC
  - Connect 2 TeleR
  - Set routing

Usage

Routing between two networks

That TeleR² / TeleR⁴ can route between two networks, you need to make the following settings:

1. configuration
   1. set routing mode
      - <u>Office</u>, for routing from LAN to the routing interface
      - <u>Machine</u>, for routing from the routing interface to the LAN
   2. Routing interface[1]: WAN/IP
   3. set up WAN/LAN IP-Address(es)
2. User
   - WEB-User

- create Superuser (su)
    (prevents unwanted access)

For the connection between the networks see Set Routing

OVPN-Server

In TeleR² / TeleR⁴, we have implemented the popular, released under open source OpenVPN. For detailed information, see http://www.openvpn.net. With OpenVPN we provide in TeleR² / TeleR⁴ a new network interface. This interface is connected via a quasi line (virtual line) with the OpenVPN interface of the partner device. The line is realized with software. Hereby all protocols for this interface, will be exchanged by its own UDP / TCP channel. One can say there is a telephone connection between the devices via UDP / TCP prepared. Of course, the connection is encrypted. The keys are stored in TeleR² / TeleR⁴.

Proceed as follows:

1. configuration
    1. Routing Mode: Mashine
        (Routing from Routing interface to LAN)
    2. Routing Interface[2]: WAN/OVPN
2. Open VPN
    1. OVPN-Mode: Server (UDP) or Server (TCP)
    2. if necessary, change the default port
    3. IP-Pool: IP-Address range for the OVPN-Connection
    4. Interface: This sets the to-reach interfaces
    5. optionally activate services on the interface (web interface, ping, SSH (for developers only))
    6. create VPN-User

OVPN-Client

In TeleR² / TeleR⁴, we have implemented the popular, released under open source OpenVPN. For detailed information, see http://www.openvpn.net. TeleR² / TeleR⁴ can be operated as OVPN client.
When this mode is activated automatically a OVPN connection to OVPN server is established.
You can use this mode when e.g. the TeleR² / TeleR⁴ should not take on the WAN port routing for LAN.

Proceed as follows:

1. configuration
    1. Routing Mode: Office[3]
    2. Routing Interface[4]: WAN/OVPN
2. Open VPN
    1. OVPN-Mode: Client (UDP) or Client (TCP)
    2. adapt if necessary Port
    3. Under Server address (Client only) set the IP address or DNS of the OVPN-server
    4. set user and password

OVPN-Software for PC

On our website you will find OpenVPN Installer for Windows 32/64-bit as download. This package is preconfigured for our TeleR² / TeleR⁴.

Open VPN connections can also be built from Linux or Mac operating systems.

1. install Open VPN Client Software
2. install configurations data
3. under C:\Program Files\OpenVPN\config you can usually find the configuration
   - open "TProf2config.ovpn" and insert the OVPN-Server data
     1. remote "Server-IP-Address"
     2. Port "Server Port", default 1194
     3. proto udp (default) or tcp (like OVPN-Server settings)
4. Start the OVPN-Client Software as **Admin**
   1. On the taskbar at the bottom right you can find the application
   2. Right click select desired profile
      1. click "Connect"
      2. then enter the user name and password
      3. while connecting all settings are set

Connect 2 TeleR

There may be two TeleR be interconnected. Here, the tunnel between the two devices is set up and all the users of the company network can thus access the remote network.
The user can use this connection by setting the routing on the PC or the router.

Sample:
TeleR IP-Address LAN in house: 192.168.0.100
TeleR IP-Address LAN on Machine site: 192.168.3.50
IP-Address PLC: 192.168.3.10

To connect two TeleR, proceed as follows:

1. set the TeleR on the machine side as an OpenVPN server
   1. Open VPN
      1. Set OVPN-Mode "Server (UDP)" or "Server (TCP)"
      2. Set Interface Permissions (PING, Web Interface)
      3. Set up VPN users
2. Configuration
   1. Routing Mode: "Machine"
   2. Routing interface [5]: "WAN / OVPN"
   3. Set the WAN / LAN address (s)
   4. if necessary, set PPPoE
   5. if necessary, set DynDNS
3. set up the TeleR on the own house as an OpenVPN client
   1. Open VPN
      1. Set OVPN-Mode "Client (UDP)" or "Client (TCP)"
      2. Enter the VPN server address, user and password
   2. Configuration
   3. Routing Mode: "Office"
   4. Routing Interface [6]: "WAN / OVPN"
   5. Set the WAN/LAN address(es)
   6. if necessary, set PPPoE

For the connection between the networks set routing

You can test the configuration by sending a ping to the network port of the target network (allow "Ping" interface must be set)

PPPoE

TeleR² / TeleR^4 supports the PPPoE protocol. Set the parameters for operation on a DSL/cable modem here. For the overview and for the easier configuration, the settings for standard gateway and DNS can be done here. As a rule, this should be set to "auto from PPPoE".

1. Configuration
    1. Set the routing mode
        - <u>Office</u>, for routing from the LAN to the routing interface
        - <u>Machine</u>, for routing from the routing interface to the LAN
    2. Routing Interface [7]: WAN/PPPoE or WAN/OVPN
    3. PPPoE: activate
        - Enter user data from the provider
        - If necessary, set the gateway e.g. to "auto from PPPoE"

Profinet-Router

TeleR² / TeleR^4 can optionally be operated as a Profinet router (Profinet option).
For this, you need 2 TeleR² / TeleR^4.
The Profibus connection is implemented via a secure OVPN connection. The VPN connection can be established via WAN/IP or via WAN/PPPoE. The router configured as an OVPN client automatically connects to the OVPN server.
Attention : No real-time data exchange is possible

To set up a ProfiNet connection with 2 x TeleR² / TeleR^4, proceed as follows:
To connect two TeleR, proceed as follows:

1. Set up TeleR on the machine side as an OpenVPN server
    1. Open VPN
        1. OVPN-Mode: "Server (UDP)" or "Server (TCP)"
        2. Set Interface Permissions (PING, Web Interface)
        3. Set up VPN users
    2. Configuration
        1. Routing Mode: "Machine"
        2. Routing interface [8] "WAN/IP" or "WAN/PPPoE"
        3. possibly activate DynDNS / PPPoE
2. TeleR in your own house set as an OpenVPN client (Open VPN menu)
    1. Open VPN
        1. OVPN-Mode: "Client (UDP)" or "Client (TCP)"
        2. Enter the VPN server, user and password
    2. Configuration
        1. Routing Mode: "Office"
        2. Routing Interface [9]: "WAN/IP" Or "WAN/PPPoE"

For the connection between the networks set routing
You can test the configuration by sending a ping to the network port of the target network (allow "Ping" must be set on the interface)

IP-Address-Changer

If you have machinery with the same IP address and want to connect them together, but the IP addresses can not be changed, use our TeleR² / TeleR⁴.

Example:
Shared assets IP address: 192.168.1.10
Plant 1: 192.168.3.15
Plant 2: 192.168.3.16

You only need to make the following settings for the connection:

- Routing Mode: Machine [10]
- Routing Interface [11]: WAN/IP
- Adjust WAN / LAN settings
    - WAN-IP first teleR: 192.168.3.20
    - LAN IP: 192.168.1.20
    - WAN-IP second TeleR: 192.168.3.30
    - LAN IP: 192.168.1.30
- Enable IP Address Changer
    - First TeleR
        - New address (WAN) 192.168.3.15
        - Old address (LAN) 192.168.1.10
    - Second TeleR
        - New address (WAN) 192.168.3.16
        - Old address (LAN) 192.168.1.10

Now the machinery are reachable under the new IP addresses and can communicate with each other.

Set routing

In order to reach the plant network via the PC, there are several possibilities:

1. Start the prompt / console as an administrator
    - Add local routing:
      route add "Destination IP" "Gateway"
      e.g. route add 192.168.3.10 192.168.3.50
    - Or total IP range:
      route add "Target IP range" mask "Netmask" "Gateway"
      e.g. route add 192.168.3.0 mask 255.255.255.0 192.168.3.50
    - Route print command prints the currently set routes
    - Test the routing e.g. with a ping to the destination network
2. In your router / switch, enter routing to the TeleR² / TeleR⁴ WAN-IP
    - Test the routing e.g. with a ping to the destination network

Configuration over Webinterface

T e l e R 2

Konfiguration

» **Konfiguration**

» **WAN/LAN-Einstellungen**

» **Statische Routen**

» **Proxy Einstellungen**

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» **Datum/Uhrzeit**

» **NTP-Client**

» **Systemtaster**

» **IP Verbindungen**

In the "configuration" main menu you will find all necessary settings, for the operation of the TeleR² / TeleR[4]. The input forms are usually self-explanatory. However, we are happy to accept suggestions from users to make the operation even easier.

In the delivery state, the following IP addresses are set:

WAN: 192.168.1.57

LAN: 192.168.2.1 without DHCP server

You have the following options to access via WEB Browser the TeleR² / TeleR[4]:

- On the PC, assign an IP address from the corresponding network segment (for example, 192.168.1.100 or 192.168.2.100) and connect the PC to LAN or WAN over Ethernet.
- Enter the browser at http://192.168.1.57 or http://192.168.2.1

Configuration

Parameter	Possible setting	Routing direction / function
Device name	„at will"	
ProfiNet	yes /no	Determines whether the TeleR² / TeleR[4] is to be used as a ProfiNet router. **set WAN/OVPN as the routing interface**
Standard Gateway	fix (as specified) From WAN over DHCP From WAN over PPPoE from LAN via DHCP from modem via PPP	
1. DNS		
2. DNS		
Routing Mode	Office	From the LAN to the routing interface
	Machine	Routing interface to the LAN

Parameter	Possible setting	Routing direction / function
Routing interface	WAN/IP	IP-Routing over WAN
	WAN/PPPOE	IP-Routing over PPPoE on WAN-Port
	WAN/OVPN	only Routing over OVPN on WAN-Port

WAN/LAN settings

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

The port can also be operated as a DHCP server or client. The necessary data for the IP assignment is entered here.

For the operation as DHCP/server, fixed assignments MAC- to IP-address can be defined (see below, "DHCP fixed addresses").

Next, specify which services are available on the port: Web Config, Ping, SSH (for developer only)

DHCP-Server operation

DHCP-settings:

1. DHCP: Server
2. enter Start-IP e.g. 192.168.2.100
3. enter End-IP e.g. 192.168.2.150

4. enter Subnet e.g. 255.255.255.0
5. Router-IP: z.B. LAN-IP 192.168.2.1
6. 1.DNS: enter DNS-Server-IP

Modem

 A USB modem can be plugged into the USB interface, which makes the dial-in to the Internet.
A modem connection is implemented as a PPP connection. Thus, TeleR²/TeleR^4 can also be used with other dial-up routers. Thus, TeleR 2/TeleR^4 is an ideal substitute e.g. for Teleservice IE from Siemens.

Parameter	Possible settings	Description
Dial-up mode	Sound Impulse	Selection procedures for the Internet. Standard is sound, only old telephone systems require impulse
Substation	Yes No	Indicates whether the operation is on a PBX. If yes, the dial-up number should be stopped
Dial-up number	Number	Only required for telephone systems requiring dial-up to the external telephone network
Number of rings	0-5	Number of rings. Before the modem receives a call. **0 = Modem does not answer**
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. baud rate	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
locale IP-Address	IPv4 IP-Addresses	AUTO setting, no settings required
Partner IP-Address	IPv4 IP-Addresses	AUTO setting, no settings required
Services at the interface	Web-Config Ping SSH	Services to be available at the interface

ProfiNET-Router (Only possible with ProfiNET option)

If ProfiNet is activated, TeleR² / TelleR^4</ sup> is used to connect / remote control Profibus networks. Here is a schematic example:

The ProfiNet connection is implemented via a secure VPN connection. The VPN connection can be established via WAN (TCP / IP) or via WAN / PPPoE. To set up a ProfiNet connection with 2 x

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

Settings configuration:

Parameter	Possible setting	Routing direction / Purpose
Device name	„at will"	
ProfiNet	yes	Determines whether the TeleR² / TelleR[4] should be used as a ProfiNet router. **Routing interface: WAN / OVPN fixed**
Standard Gateway	- Fixed (as specified) -From WAN to DHCP - from WAN to PPPoE - from LAN to DHCP	
1. DNS		
2. DNS		
Routing Mode	Office	Allows routing from LAN to routing interface, router in-house router
	Machine	Allows routing from the routing interface to the LAN, TelleR router on the PLC side
Routing interface	WAN/OVPN	Routing via VPN to the WAN port

The devices connect automatically. If the connection is successful, it can be communicated between the two ProfiNet networks.

Attention!
No real-time data exchange is possible.

Static Routes

Parameter	Possible setting	Function
✕		delete record
◆		edit record
💾		save record
Name	"at will"	Used e.g. as identification
Target	192.168.3.1	Target IP-Address or area, in which is to be routed
Adr.-Type	net	Entire IP range is routed
	host	Only this IP address is routed
Netmask	z.B. 255.255.255.0	Netmask of the IP address or the IP range
Gateway	z.B. 192.168.1.1	Gateway for Routing

Proxy settings

Parameter	Possible setting	Function
Used Proxy	yes/no	Proxy On or off
Address/Name	z.B. 192.168.1.253	IP-Address or DNS of the Proxy-Servers
Port	z.B. 25000	Port of the Proxy-Servers

Parameter	Possible setting	Function
Auth-Mode	None BASIC DIGEST GSSNEGOTIATE NTLM	

IP-Address-Changer

Bring same participants with the same IP address into a different network.

Enter the desired destination IP address in the left column and the known IP address in the right column. If you set the hacker to active, this IP address is now available under the new one.

Example:

Name	IP-Address	Change of IP-Address possible	new IP-Address
PLC 1	192.168.0.100	no	192.168.3.15
PLC 2	192.168.0.100	yes	192.168.3.16

Configuration looks like following:

PPPOE-settings

PPPoE/DSL		
PPPoE an WAN:	Nein ∨	
PPPoE-Servicename (optional:		
Benutzername:		
Kennwort:		
Standard Gateway:	0.0.0.0	fest ∨
1. DNS:	0.0.0.0	fest ∨
2. DNS:	0.0.0.0	fest ∨
Dienste am Interface		
Web-Config(80,443)	Ping	SSH
☑	☑	☑

Set the parameters for operation on a DSL/cable modem here. For the overview and for the easier configuration, the settings for standard gateway and DNS can be set here. As a rule, this should be set to "auto from PPPoE".

Again, you can select which services are available at the interface.

Parameter	Possible setting	Purpose
PPPoE on WAN	yes/no	Determines whether PPPoE should be active on the WAN port
PPPoE-Servicename	optional	Will be communicated to you by your Internet service provider. Usually free
username	As transmitted by the provider	
password	As transmitted by the provider	

Phone book

Parameter	Possible setting	Purpose
Name	Name of entry	at will
Phone number	Number of the participant	The connection is established by clicking on the number
Baudrate (not at ISDN)	1200- 56kBit	Maximum connection speed with the partner
User	Users from the dial-up user list	User for dial-up access, is managed under dial-up users

All systems with modem connection are managed in the telephone book. The connection is established with a partner simply by clicking on the telephone number.

User and password are maintained in the dial-up user database. It is therefore possible to use a user for several plants.

TeleR² / TeleR<up> 4 </sup> can also be used for other dial-up PPP accesses

Insert the modem before starting.
If you still can not see the phone book, empty the cache of your browser

DynDNS Config

If TeleR^2/TeleR^4 should be available via the Internet, e.g. via OpenVPN, the Internet IP address of the device must be known.
In this case it is useful not to work with a fixed IP address, since the provider may change the IP-address after a new establishing a connection (for example by PPPoE).
It is more useful here to address the device with the same domain name.

The service provider DynDNS offers a service on the Internet (http://www.dyndns.org). DynDNS = Dynamic DomainNameSever. You must log on to DynDNS to operate the service. For more information, see the DynDNS homepage. Up to 5 Dynamic IP addresses are free. If you need more than one, you can book a corresponding number of domain names at DynDNS. The price is very reasonable about 30, - US$ a year.

On the whole, this works like this:
You register the desired hostname with DynDNS. (E.g. Myplant.dynalias.com).
You will receive your user and password for your access.
Enter this data in the DynDNS Config setting and set "Use DynDNS" to Yes.

The DynDNS refreshes the data at DynDNS in the specified time interval. If the provider assigns a new IP address, this is corrected again within this interval, thanks to DynDNS. Your TeleR^2 / TeleR^4 can then be reached by the registered name e.g. testgeraet.dyndns.org
You enter this domain name in your office device at the VPN participant.

Parameter	Possible setting	Purpose
used DynDNS	yes/no	Enable or disable service
DynDNS Hostname	z.B. tesgeraet.dyndns.org	registered Hostname
Update-Intervall	30	IP-Address Adjustment in the set minute interval

DHCP fix MAC / IP address assignment

If the built-in DHCP server (on the WAN or LAN) is operating, it can be useful to always allocate the same IP address to certain IP devices. Here you can specify which MAC address, which IP address is assigned.

Date/Time/NTP-Client

Here you can change date and time.

In order for TeleR² / TeleR⁴ to always work with the current time, we have implemented an NTP client. This allows TeleR² / TeleR⁴ to synchronize itself automatically over a time server, date and time available on the Internet or with another network.

Parameter	Possible setting	Purpose
NTP-Client-operation	yes/no	Turns NTP client on or off
Servicename	IP-Address / Domain name of the NTP-Servers	Enter the IP address or domain name of the desired NTP server. Make sure that this server is reachable over the specified routing path
Zeitzone	Time zone in which and TeleR⁴ is operated	Necessary for TeleR² / TelleR⁴ to have the correct local time

System button, Reset system

The configuration button can be found on the back of the unit

Under the item "System button" you have two possibilities, which is allowed when the button is pressed.

At least one option must be selected!

Systemtaster	
Der Systemtasters befindet sich zwischen LAN und WAN	
erlaube Werkseinstellung:	☑
erlaube Start in der Standardeinstellung:	☑
Änderungen übernehmen:	💾
Daten neu laden:	🔁

allow factory settings ☑	The device can be set to the delivery condition
Allow start by default ☑	The device boots with network / IP addresses of the delivery state

Attention!

Use one of the switch ports to configure it.

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 not be connected to the corporate network.

No worries, we still have **no** factory reset.

Only the **activated** options are available.

Basic setting / Factory setting

Basic setting:

- The device boots with network / IP addresses of the delivery state (see configuration)
- Settings can be changed
- Network settings are activated after restart

Factory setting:

- All settings will be deleted
- Device starts in the delivery state

Flow:

1. Office clerk or similar ready
2. Make the device de-energized
3. turn back on
4. Power LED is lit.
5. If the LED S1 lights up, press and hold down the button with the office clip until LED S1 goes out, then release the button [12]
6. Press the button in the desired mode

LED S1 Blink Modes:

Very slow flashing approx	Carry out basic adjustment
Very fast flashing (in 50ms clock)	Perform factory setting

Routing Firewall rules

		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		☐

Routing FW-Regeln

Normally routing is allowed to all network users. As soon as an entry in this table exists, access is only possible via the above rules. In the standard forwarding, the routing is only possible to LAN or LAN. See operating mode. The "Advanced mode" allows rules in both directions.

Open-VPN
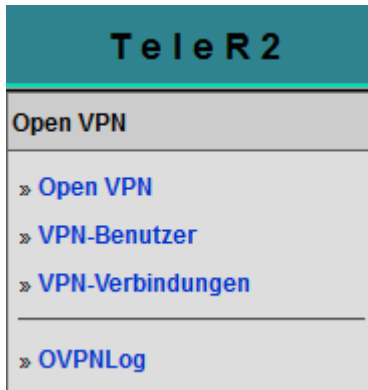
In TeleR^2 / TeleR^4 we have implemented the popular OpenVPN published under Opensource. For detailed information, see http://www.openvpn.net.

Here I would briefly explain the function of the OpenVPN, as implemented in the TeleR^2 / TeleR^4
Basically there are two operating modes of the OpenVPN: server or client.
The device is normally configured as a server on the plant (machines).

With OpenVPN, we are providing a new network interface in the TeleR^2 / TeleR <4> / . This interface is connected via a line (virtual line) to the OpenVPN interface of the partner device. The line is implemented with software. All protocols for this interface are exchanged via a separate UPD / TCP channel. One can say it is a telephone connection between the devices by UDP / TCP manufactured. The connection is, of course, encrypted. The keys are stored in the TeleR²/TeleR⁴.

Configuration of the OVPN-operation

Parameter	Possible setting	Purpose
OVPN-Mode	no OVPN Server (UDP) Client (UDP) Server (TCP) Client (TCP)	Sets the OVPN mode of the device. In the server operation, TeleR² / TeleR⁴ is waiting for a connection; in the client mode, TeleR² / TeleR⁴ itself takes over the connection setup to the partner
Port	1024 - 65535	Port number on which the VPN service should run, Standard 1194
IP-Pool (only Server)	default: 10.111.111.0	The IP address is assigned to the partner (client) from this pool
IP-Pool Netmask	default: 255.255.255.0	Netmask for the IP pool
Server Address (only in Client operation)	IP-Address or Url of the Server	The address of the server. Can be in the notation xxx.xxx.xxx.xxx or in the plain text (as Url). Used only in client mode
User	username	Name of the user with which he authenticates himself on the server
Password		user password

The options **Services at the interface** define which services are available with an existing VPN connection

Service	Description
Web-Config	Enable / disable access to the web interface via port 80 or 8080
Ping	Deactivate / enable response to ping requests
SSH	Deactivate / enable SSH-access

Open VPN-Routing (Option)

Here, it is determined, in which form to the WAN / LAN port over VPN is routed.
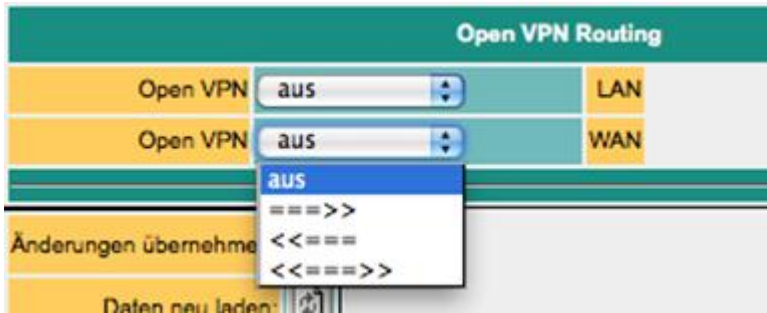
off: Routing to the interface is not possible
===>: Routing from VPN to the interface
⇐==: Routing from the interface to the VPN
⇐=⇒: Routing in both directions

Access authorization

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

ATTENTION: In principle, anyone with the certificate and the IP address of the TeleR can establish a VPN connection and access the device. You can use your own certificates in the "Advanced Router" extension. This gives you more security

VPN-User

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

VPN-connections

In the VPN connections, like a phone book, your machines can be managed. The server address, the protocol, the port, and a reference to a VPN user are entered (see above).

User administration
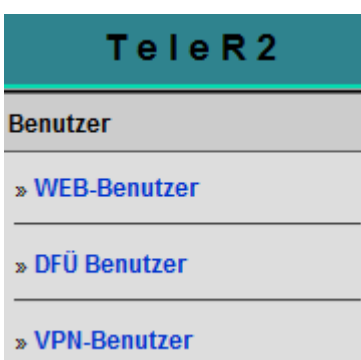
In the user administration, you manage the users, which are allowed to use the WEB interface. The access data for users who are allowed to establish a dial-up connection (modem) are also maintained here.

WEB-user

Here is the form for entering the WEB-Interface users. Per user, different authorizations can be assigned. In principle, only one user with "SU" changes can make changes. U1 - U5 may only operate the interface. In the TeleR² / TeleR <4> extension modules, "U1" - "U5" have more precisely specified operating rights.

		Nr.	vollständiger Name	Benutzer	Passwort	Passwort (wiederholen)	SU	U1	U2	U3	U4	U5
✕		1	Mustermann	b	●●●●●●●●	●●●●●●●●	x					
✕	💾	2					☐	☐	☐	☐	☐	☐

User level:
SU = Super User,can use all settings
U1-5 May only display or change certain settings

DFÜ-user

Here is the form for entering the dial-up interface users. The user only gets access if active is set to "yes". Further, the addition "Dial in & out" or only "Dial out" is available.

If a user chooses, all entries that are set to "Dial in & out" are checked. Other users do not have access. In the telephone book the assignment is made

		Nr.	vollständiger Name	Benutzer	aktiv	Passwort	Passwort (wiederholen)	Dial-In/Out
✕		1	Adam Test	Adam	x	●●●●●●●	●●●●●●●	Dial in & out
✕	💾	2	Johann Jodler	Johann	☑	●●●●●●	●●●●●●	Dial in & out
✕		3				●●●●●●●	●●●●●●●	nur Dialout

Maintenance

Here you will find all the settings required for the maintenance of the TeleR.
New Firmware

1. Unzip the downloaded file
2. Disconnect the TeleR² / TeleR⁴ from the mains and connect it to the PC
3. If necessary, set the IP address on the PC
4. Call WEB interface

5. Firmware Upload: Select file *.bin
6. Save
7. confirm with "yes"
8. LED S1 flashes very quickly
9. wait until LED S1 is in steady light

System status

Display of the device status. Here, e.g. with built-in VPN connection.

Systemstatus		
Modemstatus:		
PPP:		
letzter Grund Auflegen Analogmodem:		
VPN:	Client:verbunden:CONNECTED ,SUCCESS,10.111.111.6	Verbindung trennen
PPPoE/DSL:	nicht verbunden	
DynDNS:		

Network status

Netzwerkstatus			
WAN Status			
Link Status ✔			
	IP-Adresse	Netmask	MAC-Adresse
1.	192.168.1.57	255.255.255.0	00:0B:F4:0F:45:F6
2.			00:0B:F4:0F:45:F6
3.			00:0B:F4:0F:45:F6
LAN Status			
	Port 1	Port 2	Port 3 Port 4
Link Status	✔	☐	☐ ☐
	IP-Adresse	Netmask	MAC-Adresse
1.	192.168.2.1	255.255.255.0	00:0B:F4:0F:45:F7
2.			00:0B:F4:0F:45:F7
3.			00:0B:F4:0F:45:F7

Routingtabelle							

```
Routing Table
Destination     Gateway         Genmask          Flags Metric Ref    Use Iface
10.111.111.1    10.111.111.5    255.255.255.255  UGH   0      0        0 tun0
10.111.111.5    0.0.0.0         255.255.255.255  UH    0      0        0 tun0
192.168.0.0     0.0.0.0         255.255.255.0    U     0      0        0 WAN
192.168.5.0     10.111.111.5    255.255.255.0    UG    0      0        0 tun0
192.168.6.0     0.0.0.0         255.255.255.0    U     0      0        0 LAN
```

Displays all currently assigned IP addresses and link states of the individual ports.
You can also find the current routes.

Optional Function

HMI-Notification Module

With the HMI-Notification Module SMS and email messages (error and maintenance messages) can be, depending on the event, sent automatically to practically any number of recipients. 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 e-mail messages, additional costs arise (telephone fees, 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 recipient
- Emailserver
- Email recipient
- PLC connections
- PLC variables
- 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.

Set 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 Gerätesdasdasdas -

		Nr.	Name	Adresse	EMail	Benutzer	Passwort
✗	🔧	1	ServiceServer	mail.muster.de	technik@muster.de	user_technik	--------
✗	🔧	2					--------

» HMI/Meldemodul

» Pagerprovider

» Pager-Empfänger

In order for the TeleR² / TeleR⁴ to send an e-mail, an e-mail account or a server is required, which 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, TeleR² / TeleR⁴ first tries 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 configurations 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 by this way, after 2 minutes of idle (no email is present) or at least after 10 minutes the connection will be closed.

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

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

Set up the e-mail recipients

TeleRouter | HMI/Meldemodul | Telefonbuch | Konfiguration | Open VPN | Benutzer | Wartung | Systemstatus | Info | Login/Logout

HMI/Meldemodul

Email-Empfänger
Mein Gerätesdasdasdas -

		Nr.	Name	EMail	Server	G0	G1	G2	G3	G4	G5	G6	G7	G8	G9
✗	🔧	1	Franz Technik	technik@servicefirma-1.de	ServiceServer	x									
✗	💾	2	Anlagenbetreiber	...@anlagenbetreiber.de	1 ServiceServer ⌄	☑	☑	☐	☐	☐	☐	☐	☐	☐	☐

» HMI/Meldemodul

» Pagerprovider

» Pager-Empfänger

» Email Server

» Email-Empfänger

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

Field	Description
Name	Free selectable display name
Email	Recipient's e-mail address
Server	Select the desired mail server for sending to this recipient
G0 – G9	Reporting groups. 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.

Create message

Connections are required for access to 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 the PLC connections

Field	Description
Name	Own name of the PLC
Connection	Connection type to the PLC (here TCP/IP)
active	Communication to the PLC
cycle	Specifies the time period according to which the PLC is to exchange data
Addr. SMS-Status	Is intended for feedback of the state 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. TeleR² / TeleR⁴ 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. Now it should also be monitored whether TeleR² / TeleR⁴ 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 when communication problems occur with other controllers. The high-order byte is reserved for later extensions. This is currently overwritten with "0". Example: If you are using MW 200, the MB201 is set to the counter reading, and in MB200 the value is 0

Configuring the variables

Now create the desired variables to be displayed or processed.

Column	Usage				
Name	For free use				
Connection	Assign the variable to a PLC connection				
Address	The actual address in the PLC according to the following rules:				
	data area				**Data type**
	Input	**Output**	**Flag**	**Data blocks**	
	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-signed unsigned) 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.

Column	Description
Name	Freely given name
Standardization	Currently two types of normalization are supported, either "linear" or "texts" **linear** means that the value has to be converted by the PLC. In this case, the fields "PLC value1", "HMI value1", "PLC value2", "HMI value2" are to be filled. **Texts** means you want the values from the PLC status texts assign. This may be e.g. The state of a multi-stage drive

Column	Description
Unit / State	For standardization "Text", 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 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 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"
Conversion	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)
	PLC-value 1 — PLC value, which corresponds to the HMI value of 1. (0)
	HMI-value 1 — HMI value corresponding to PLC value 1 (0)
	PLC-value 2 — PLC value corresponding to the HMI value 2 (1000)
	HMI-value 2 — HMI value corresponding to PLC value 2 (100)

Configure messages

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	Usage
Row	Specify the order
Text	For free use and information to the user / plant operator
melden	Process the Row and forward it to group(s)
Variable	Here you 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 a limit violation 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, that is, only display
G0 – G9	The assignment to the individual detector groups, the respective message is assigned to a group of receivers

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

The importance of each Row:

Row	Usage
Plant name	This text is sent to the receiver in the SMS header so that the sender can identify the sender
Send the broadcasting time	If "yes", the transmission time is entered in the SMS header. Important: Set the time correctly
Enter the reporting time	If "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 time of occurrence can be reproduced for each message
Enable SMS Server	yes/no
Max. Number of send attempts SMS	This allows the number of maximum send attempts per SMS recipient to be set. Thus, it is possible to minimize excessive costs for unsuccessful SMS shipments in case of shipping problems
SMS sender identification for UCP	In the case of the UCP protocol, the sender's telephone number must be provided to the SMS server
Enable email service	yes/no

Row	Usage
Max. Number of send attempts Email	This allows the number of maximum send attempts per e-mail recipient to be set

SMS-Message buffer / Email-Message buffer

On the SMS Message Buffer page, the messages that are currently pending and not yet sent are displayed. The Column "Tx Trials" shows the number of attempts that have already been made to drop 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!
To testPurposeen remove the telephone cable, you can test the function of the system first without generating costs for sending SMS.

View messages

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.

S7-Firewall

Documentation for the Version 1.19

Introduction

S7 firewall is a scalable "PLC firewall", which not only filters IP / MAC addresses, but also allows access to arbitrary data areas of the PLC to be restricted / defined. S7 firewall can be installed arbitrarily between PLC and operating / programming level. S7-firewall detects the installation direction automatically. Only configured connections are allowed.

☒

Hardware version

Our S7 firewall is based on our TeleR[4]

Network settings

Parameter	mögliche Einstellung	Zweck
Nr.	automatisch	fortlaufende Nummer
Name	frei vom Benutzer einzugeben	Name der Station
aktiv	ja (x)	Verbindungen mit dieser Station werden von der Firewall verarbeitet
	nein ()	Verbindungen mit dieser Station werden nicht verarbeitet, d.h sie werden geblockt
IP-Adresse	IP-Adresse der SPS-Station	Identifikation des Absenders Eingabe unbedingt notwendig

Parameter	Possible setting	Purpose
Standard Gateway	fix (as defined), over DHCP	
1. DNS		
2. DNS		
1-3. IP address with Netmask	IP address / Netmask	Netmask 0.0.0.0 automatically calculates netmask, depending on A, B, C-B network. e.g. 192.168.0.x → 255.255.255.0 10.x.x.x → 255.0.0.0 When using fixed IP addresses, at least the 1st IP address must be configured. Otherwise the device starts with the factory setting
DHCP	no	Do not use DHCP The remaining DHCP parameters are not used
	Client	The network interface is called a DHCP client and obtains the IP address automatically from a DHCP server. The remaining DHCP parameters are not used
	Server	The network interface operates a DHCP server. The remaining DHCP parameters must be parameterized.
Start-IP	Start-IP-Address	Start IP address when operating as a DHCP server
End-IP	End-IP-Address	End IP address when operating as a DHCP server
Subnet	Subnetaddress	Address of the subnet for assigning the IP addresses as a DHCP server
Domain	Free	Name of the domain when used as a DHCP server
Router-IP	IP-Address	Is the IP address, which is passed as a DHCP server as a gateway during operation

The WAN / LAN port has shared IP addresses

Up to 3 different IP addresses and subnets can be configured. The port can also be operated as a DHCP server or client. The necessary data for the IP assignment is entered here. For the operation as DHCP / server fixed assignments MAC-IP address can be fixed. (See "DHCP fixed addresses). It also determines which services are available at the port (Web Config), Ping, SSH (for developers only)

Web-User

Here is the form for the input of the WEB-Interface users. Per user, different authorizations can be assigned. In principle, only one user can make changes with "SU". U1 - U5 is only allowed to operate the interface. In the S7 firewall expansion modules, "U1" - "U5" have more precisely specified operating rights.
❌

S7-Firewall-settings

The PLC firewall connections result from the combination of HMI / PG station and PLC station
❌

S7-Firewall operation
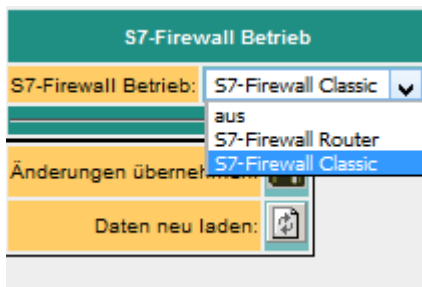
Modi	Description
off	no active Firewall
S7-Firewall Router	WAN port and LAN ports have separate IP networks. All functions and purchased options of the TeleR <4> / sup> can be used
S7-Firewall Classic	WAN port and LAN ports are an IP network. Only IP address ranges entered in the **WAN** page are handled. for example IP WAN 192.168.2.15 IP LAN: 192.168.3.3 If a device with the IP 192.168.3.6 is connected, this is not treated until a 192.168.3.xxx address is entered in the WAN

Enter the HMI / PG stations

		Nr.	Name	aktiv	IP-Adr-Bereich	MAC-Adresse	Verbindungskanal	lokaler TSAP	entfernter TSAP
❌	🖼	1	A		192.168.0.1-192.168.0.255	00:00:00:00:00:00	S7 over TSAP	\x04\x01	\x04\x01
❌	🖼	2	OP		192.168.0.1-192.168.0.255	00:00:00:00:00:00	OP/HMI		
❌	🖼	3	TSAP 02 00	x	192.168.0.1-192.168.0.255	00:00:00:00:00:00	RFC 1006 with TSAP	%02%00	%02%00
❌	🖼	4		x	0.0.0.0	00:00:00:00:00:00	OP/HMI		

Firewall HMI/PG stations	
no.:	3
name:	TSAP 02 00
active:	☑
IP-Addr-Range:	192.168.0.1-192.168.0.255
MAC-Address:	00:00:00:00:00:00
Connection Channel:	RFC 1006 with TSAP ⌄
local TSAP:	%02%00
remote TSAP:	%02%00

Submit changes: 💾

Firewall HMI/PG stations	
no.:	3
name:	TSAP 02 00
active:	☑
IP-Addr-Range:	192.168.0.1-192.168.0.255
MAC-Address:	00:00:00:00:00:00
Connection Channel:	RFC 1006 with TSAP ⌄
local TSAP:	
remote TSAP:	

Dropdown options:
- OP/HMI
- PG
- PLC
- PG | OP/HMI
- PG | PLC
- OP | PLC
- PG | OP | PLC
- S7 over TSAP
- RFC 1006 with TSAP

Submit changes: 💾

Parameter	Possible setting	Purpose
Nr.	Automatic	consecutive number
Name	Free from the user	station name
active	yes (x)	Connections to this station are handled by the firewall
	no ()	Connections to this station are not processed, i.e. they are blocked
IP-Address	IP address of the HMI / PG device	Identification of the sender Input is essential
MAC-Address	MAC address of the HMI / PG device	Identifies the HMI / PG additionally via the MAC address. 00: 00: 00: 00: 00: 00 means that the MAC address is not checked. If the value is not equal to 0, the MAC address of the station must match the input
Connection channel		used channel of the connection: PG and OP channels are available in Simatic S7. This channel is used as an additional feature to identify the sender. Both PG and OP functions are possible on each of the two channels.
	OP / HMI	HMI devices / WinCC etc. generally use OP channels. This channel is also the recommended one for HMI devices.
	PG	The Siemens PG software always uses the PG channel. Unfortunately, various software is in use on the market, which does not have the know-how to set this channel. This can be found out in the LOG file. Reasonable HMI software or the associated software driver provides the adjustability of this channel.
	PLC	The PLC channel corresponds to the "other" channel in the PLC
	PG	OP / HMI	run from the same computer PG and HMI (IP / MAC PG / HMI identical) remains only the PG / OP channel to identify the sender.
	PG	PLC	allow PG or PLC channel
	OP	PLC	allow OP or PLC channel
	PG	OP	PLC	allow PG or OP or PLC channel
	S7 over TSAP	S7 connection defined via TSAP
	RFC 1006 with TSAP	pure RFC 1006 Connection via TSAP. **Note** : no firewall rule applicable. All RFC 1006 traffic is passed through unfiltered!

Parameter	Possible setting	Purpose
local TSAP	String	only for S7 over TSAP and RFC 1006 with TSAP. Tipp: Enter a byte / hexadecimal value: e.g. HEX-TSAP 02.00 →% 02% 00 Note: even a space is considered as a character
remote TSAP	String	only for S7 over TSAP and RFC 1006 with TSAP. Enter a byte / hexadecimal value: e.g. HEX-TSAP 02.00 →% 02% 00 Note: even a space is considered as a character

Input the PLC stations

Parameter	Possible setting		Purpose
Nr.	automatic		consecutive number
Name	Free of the user		Name of the Station
active	yes (x)		Connections to this station are handled by the firewall
	no()		Connections to this station are not processed, i. They are blocked
IP-Address	IP address of the PLC station		Identification of the sender Entry required

Enter the S7 firewall connections

The connections are made up of the combination HMI / PG station and PLC station. Each HMI / PLC station can be used several times. If the Mac or IP address is changed, this must only be changed centrally in the HMI / PG station or PLC station. Each connection is assigned a connection rule.
If "PG full function" is selected, this connection is a full access. In the future, this access can be divided more closely (Read / write defined blocks, PLC start / stop, reset, system data (read / write)).

Parameter	Possible setting	Purpose
Nr.	automatic	consecutive number
Name	Free of the user	Connection name Also serves as a "link" to open and edit the rule script.
active	yes (x)	This connection is processed by the firewall
	no ()	This connection is not processed, i. It is blocked
Allow PG Full Function	(x)	This connection is a PG connection and can carry out all functions
	no ()	This connection is a Restricted Connection. Only accesses to the shared function and data areas, as defined in the associated rule script, are permitted.

The rule script

In the rule script, the data areas or possible accesses for the respective connection are defined. The script can be reached via the link of the name of the connection.

Syntax of the control script

first Character	Function	Rest of the line
#	The line is a comment	free Text
Double slash		
(No character, it equals operand / range)	The following section is only for reading (readonly)	Operand / Range see below
r:		
w:	The following area is only for writing (writeonly)	
rw:	The following area is readable and writable (read / write)	

In a RuleRow, a single operand, or I can enter a range.

Example for entering individual operands: (source from Siemens STEP-S7 PG software)

Allowed operand	Data type	Example(Mnemonik German)	Example (Mnemonik English)
Input I Output I Flag	BYTE	EB 1 I AB 10 I MB 10	IB 1 I QB 10 I MB 10
Input I Output I Flag	WORD	EW 1 I AW 10 I MW 10	IW 1 I QW 10 I MW 10
Input I Output I Flag	DWORD	ED 1 I AD 10 I MD 10	ID 1 I QD 10 I MD 10
Periphery (Input I Output)	BYTE	PB 0 I PEB 0 I PAB 1	PB 0 I PIB 0 I PQB 1
Periphery (Input I Output)	WORD	PW 0 I PEW 0 I PAW 1	PW 0 I PIW 0 I PQW 1
Periphery (Input I Output)	DWORD	PW 0 I PED 0 I PAD 1	PD 0 I PID 0 I PQD 1
Timer	TIMER	T 1	T 1
Counter	COUNTER	Z 1	C 1
Data block	BOOL	DB1.DBX 1.0	DB1.DBX 1.0
Data block	BYTE	DB1.DBB 1	DB1.DBB 1
Data block	WORD	DB1.DBW 1	DB1.DBW 1
Data block	DWORD	DB1.DBD 1	DB1.DBD 1

Note: The entry of "DB0 …" is not allowed due to internal use.

Example for entering ranges, with number of units:

since Flag 60, 10 Byte: MB60, 10

since DB10, Data word 2, 5 words: DB10.DW2, 5

After the comma, the number of units required (depending on the address type, BOOL, BYTE, WORD, DWORD)

Example for entering ranges from "from" to ":"

Flag Byte 70 bis Flag Byte 200: MB 70 – MB 200

Output A 10.2 bis Output 14.7: A 10.2 – A14.7

Just after start operands with, -, specify the end operand (end address). The end address is included!

Mointing

On the back are four screw holes. Mount the supplied DIN rail bracket so that the spring faces downwards.

Assembly:

First hook into the DIN rail and then push / pull the TeleR2 / TeleR4 into the holder.

Dismantling:

To disassemble, lift the TeleR2 / TeleR4 and tilt it slightly forward.

Technical Data

port	Data
LAN/WAN	TeleR²: 1 x WAN + 1 x LAN Ethernet 10/100 Mbit TeleR⁴: 1 x WAN + 3 x LAN 10/100 Mbits Switch
Power supply	10V - 30V DC
DIN/DOUT	**Input Low:** An input voltage of less than 5-6V is detected as a low signal. **Input High:** An input voltage greater than 5-6V is detected as a high signal. The maximum input voltage is 30V. The input current is limited to a maximum of 4mA. **Output Low:** The output is high-impedance. **Output High:** The operating voltage (10-30V) minus approx. 0.5V is switched to the outside. This can be loaded with a maximum of 180mA, then the current limiter starts and the voltage drops.
USB	2.0
Others	
Dimensions	55mm x 70mm x 120mm (B xH x L)
Delivery	DIN Rail Mounting Gummifüße for operation as a desktop device Including IP-Address-Changer: Brings participants with the same IP-address into another common network
Case	Aluminum housing
Temperature range	-25°C - +75°C

Power supply

Pin Nr.	Short form	Designation	Direction
1	POW +	10-30V DC voltage	Input
2	POW -	Ground	Input

For the voltage supply of the device, either the supplied plug-in power supply or an on-site voltage supply of 10-30V / DC With min. 350mA current connected to the green 2-pin connector. The voltage poles are marked with colored wire end ferrules for the supplied plug-in power supply.

The PLUS pole with the color "red", the MINUS pole with the color "blue". Connect the PLUS pole to the upper screw terminal and the MINUS terminal to the lower (outer) screw terminal.
The "Power" LED is lit. After a short initialization phase, the "S1" LED is lit in steady light and the device is ready for operation.

Commercial data

Item number	Designation	Additional text
9374-PPPoE Customs tariff number: 85176200	TeleR^2	1 x WAN, 1 x LAN incl. DIN Rail Mounting 1 x DOUT, 1 x DIN incl. IP-Address-Changer origin: DE
9374-4-PPPoE Customs tariff number: 85176200	TeleR^4	1 x WAN, 3 x LAN incl. DIN Rail Mounting 1 x DOUT, 1 x DIN incl. IP-Address-Changer origin: DE
9374-S7-Firewall Customs tariff number: 85176200	S7-Firewall	1 x WAN, 3 x LAN incl. DIN Rail Mounting 1 x DOUT, 1 x DIN origin: DE
Options		
9374-O-CVPN	VPN-User Control	VPN-User via HTTP-command Enable / Disable
9374-O-EMAIL	E-Mail	Configurable message system on WEB basis for sending messages and reports by e-mail
9374-O-NOTIFY	m2mNotify via CoDaBix	Configurable message system on WEB basis for sending messages via the CoDaBix to mobile apps
9374-O-PN-ROUTER	ProfiNet-Router	Connect selected ProfiNet stations via modem / DSL / Internet with VPN - Remote maintenance Simatic S7 Profibus via Internet with VPN / Modem - Profibus telegrams Routing
9374-O-S7FW	S7-Firewall	Scalable "PLC firewall" far beyond IP / MAC address filtering, complete or individual process data areas can be protected, even up to individual bits of the control
9374-O-Userroute	Userroute	User-specific routing: For each individual user, specify which devices (IP addresses) and with which port may be accessed
Equipment		
9374-SW	5 Port Industrial Switch	10/100MBit DIN Rail Mounting 12-48V DC

[1] , [2] WAN/IP: IP-Routing over WAN

WAN/PPPoE: IP-Routing over PPPoE am WAN-Port

WAN/OVPN: routing only over OVPN on WAN-Port

[3] Routing from LAN to routing interface

[4] WAN/IP: IP-Routing over WAN

WAN/PPPoE: IP-Routing over PPPoE am WAN-Port

WAN/OVPN: Routing only over OVPN to WAN-Port

[5] , [9] WAN/IP: IP routing over WAN

WAN/PPPoE: IP routing via PPPoE on the WAN port

WAN/OVPN: only routing via OVPN on the WAN port

[6] WAN/IP: IP routing over WAN

WAN/PPPoE: IP routing via PPPoE at the WAN port

WAN/OVPN: only routing via OVPN at the WAN port

[7] WAN/PPPoE: IP routing over PPPoE at the WAN port

WAN/OVPN: only routing over OVPN at the WAN port

[8] WAN/IP: IP routing over WAN / WAN/PPPoE: IP routing via PPPoE at the WAN port) WAN/OVPN: only routing via OVPN at the WAN port

10) routing from the routing interface to the LAN

11) WAN/IP: IP routing over WAN / WAN/PPPoE: IP routing via PPPoE at the WAN port

WAN/OVPN: only routing over OVPN at the WAN port

12) The LED S1 flashes alternately in two different modes

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