

IE-SR-2TX-WL / IE SR-2TX-WL-4G-EU/ IE SR-2TX-WL-4G-US

Sending E-Mail Notifications from connected devices via IE-SR-2TX routers

Abstract:

With Weidmueller's IE-SR-2TX router series, individual e-mails can be sent by request from a TCP/IP or Serial connected device. The recipient, subject and body text can be dynamically defined by transmitting one single string to the router. This Application Note demonstrates the usage of this feature including a configuration guideline for setting up this feature.

Sending E-Mail notifications from connected devices via IE-SR-2TX routers

Hardware reference

No.	Component name	Article No.	Firmware version
1	IE-SR-2TX-WL-4G-EU	2682560000	FW V1.73
2	IE-SR-2TX-WL-4G-US-V	2682580000	FW V1.73
3	IE-SR-2TX-WL	2682590000	FW V1.56

Contact

Weidmüller Interface GmbH & Co. KG
Klingenbergstraße 26
32758 Detmold, Germany
www.weidmueller.com

For any further support please contact your
local sales representative:
<https://www.weidmueller.com/countries>

Content

1	Warning and Disclaimer.....	4
2	Introduction.....	5
3	Application Examples	6
4	Prerequisites.....	7
5	Router-side configuration.....	8
6	Establishing a connection to the router	10
6.1	String Syntax	10
6.2	Router response codes.....	11
6.3	Limitations	11
6.4	Communication Example.....	11
7	Summary	12

1 Warning and Disclaimer

Warning

Controls may fail in unsafe operating conditions, causing uncontrolled operation of the controlled devices. Such hazardous events can result in death and / or serious injury and / or property damage. Therefore, there must be safety equipment provided / electrical safety design or other redundant safety features that are independent from the automation system.

Disclaimer

This Application Note / Quick Start Guide / Example Program does not relieve you of the obligation to handle it safely during use, installation, operation and maintenance. Each user is responsible for the correct operation of his control system. By using this Application Note / Quick Start Guide / Example Program prepared by Weidmüller, you accept that Weidmüller cannot be held liable for any damage to property and / or personal injury that may occur because of the use.

Note

The given descriptions and examples do not represent any customer-specific solutions, they are simply intended to help for typical tasks. The user is responsible for the proper operation of the described products. Application notes / Quick Start Guides / Example Programs are not binding and do not claim to be complete in terms of configuration as well as any contingencies. By using this Application Note / Quick Start Guide / Example Program, you acknowledge that we cannot be held liable for any damages beyond the described liability regime. We reserve the right to make changes to this application note / quick start guide / example at any time without notice. In case of discrepancies between the proposals Application Notes / Quick Start Guides / Program Examples and other Weidmüller publications, like manuals, such contents have always more priority to the examples. We assume no liability for the information contained in this document. Our liability, for whatever legal reason, for damages caused using the examples, instructions, programs, project planning and performance data, etc. described in this Application Note / Quick Start Guide / Example is excluded.

Security notes

In order to protect equipment, systems, machines and networks against cyber threats, it is necessary to implement (and maintain) a complete state-of-the-art industrial security concept. The customer is responsible for preventing unauthorized access to his equipment, systems, machines and networks. Systems, machines and components should only be connected to the corporate network or the Internet if necessary and appropriate safeguards (such as firewalls and network segmentation) have been taken.

Sending E-Mail notifications from connected devices via IE-SR-2TX routers

2 Introduction

With Weidmueller's IE-SR-2TX Router Series, individual e-mails can be sent by request from a TCP/IP or Serial connected device. The recipient, subject and body text can be dynamically defined by transmitting one single string to the router.

3 Application Examples

The following examples/use cases show situations in which an industrial device may need to send an e-mail notification to different parties:

1. A PLC detects a machine alarm
 - The machine operator needs to be informed
2. A machine needs to be maintained
 - The maintenance department needs to be informed
3. Material is running out
 - Supply chain management needs to be informed
4. A process has been completed
 - The machine operator needs to be informed

4 Prerequisites

Before configuring individual e-mail forwarding, make sure that one of the routers listed in the hardware reference table is installed and accessible via its web interface. The router must be connected to a network that provides access to the required SMTP mail server. Please obtain the following information from your IT department or e-mail service provider:

1. SMTP Server Address
2. SMTP Server Port
3. Supported Secure Mode (None, SSL, TLS, STARTTLS)
4. Username
5. Password
6. Sender e-mail address
7. Recipient e-mail address

The device that triggers the e-mail notification/warning must be connected to the router either via Ethernet or via the serial interface.

5 Router-side configuration

The SMTP settings noted in chapter 4 need to be configured in the router web interface by performing the following steps:

1. Open the router's web interface using a web browser
(For example: "https://192.168.1.110")
2. Open the menu "Event Settings"
3. Go to "E-mail"
4. Set "Mail Event /Forwarding Service" to "Enabled"
5. Enter the SMTP details from chapter 4
 - a. SMTP server address
 - b. SMTP server port
 - c. Secure mode
 - d. User name
 - e. Password
 - f. Sender e-mail address
6. Enable checkbox "Enable message forwarding via Mail"
7. Configure the required connection type under "Remote Device Connection via"
 - a. TCP Server Mode
 - i. Adjust TCP Server Port and idle Timeout if necessary
 - b. Serial Interface
8. Click on "Apply"

Industrial Ethernet Router Configuration
IE-SR-2TX-WL-4G-EU

Login name: admin

Expand Tree Menu

- System Information
- Interface Configuration
- Network Configuration
- Network Services
- Firewall Settings
- NAT Settings
- VPN
- Serial Port Settings
- Event Settings **2**
- Digital I/O
- E-mail **3**
- SNMP Traps
- SMS
- Administration
- Diagnostics
- Save Configuration
- Logout (admin) **9**
- License Information

Event Settings → Mail **Help**

Mail Event / Forwarding Service: Enabled **4**

Mail Server Settings

SMTP Server Address: **5**

SMTP Server Port:

Secure Mode:

User Name:

Password:

Sender E-Mail Address:

Event Receiver:

E-Mail Address 1:

E-Mail Address 2:

E-Mail Address 3:

Send Testmail

Mail Alert Service based on local device events:

	Send E-Mail		Send E-Mail
Hardware Reset (Cold Start):	☐	OpenVPN Client connected (Online):	☐
Software Reset (Warm Start):	☐	OpenVPN Client disconnected (Offline):	☐
LAN Port Link Status Changed:	☐	Digital Input changed from OFF to ON:	☐ Message Text:
WAN Port Link Status Changed:	☐	Digital Input changed from ON to OFF:	☐ Message Text:
Login Failed:	☐	Digital Output changed from OFF to ON:	☐ Message Text:
Wireless Client Associated:	☐	Digital Output changed from ON to OFF:	☐ Message Text:
Wireless Client Disassociated:	☐		
Associated to AP (Client Mode):	☐		
Disassociated from AP (Client Mode):	☐		

Send individual Mails based on received content from remote device

Enable message forwarding via Mail: ☒ **6** **Log**

Connectivity Settings:

Remote Device Connection via: TCP Server Mode **7**

TCP Server Port: 4101

Idle Timeout: 0 ~ 3600 secs

8 **Apply** **Reset**

Figure 1: Router-side configuration

Sending E-Mail notifications from connected devices via IE-SR-2TX routers

Next, make sure to save the configuration to the device by performing the following steps.

9. In the menu tree, click on “*Save configuration*”
10. Click on “*Save Configuration to Device*”

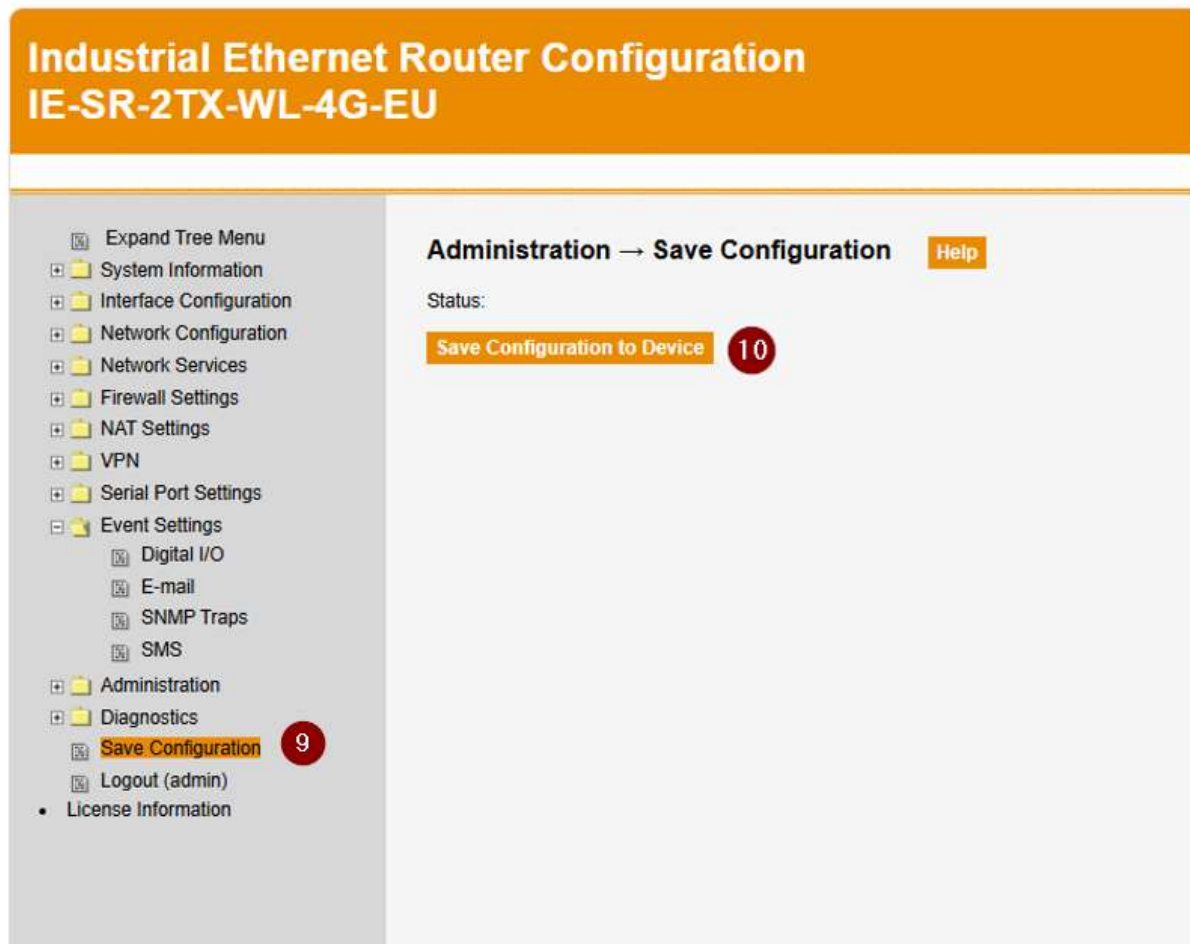


Figure 2: Save configuration

6 Establishing a connection to the router

After the router-side configuration has been completed, the connected device can send an e-mail command to the router. The command can be transmitted either via TCP/IP or via the serial interface, depending on the connection type selected in chapter 5.

When TCP Server Mode is used, the router acts as a TCP server and waits for an incoming connection from the connected device. The connected device must operate as a TCP client. After the TCP connection has been established, the device must send the e-mail command as plain ASCII text.

To send an e-mail command via TCP/IP, perform the following steps on the connected device:

1. Open a TCP connection to the router IP address.
2. Connect to the configured TCP server port.
3. Send one mail command string terminated by <CR><LF>.
4. Wait for the response code.
5. Close the TCP connection or send another command string.

6.1 String Syntax

The mail command string contains the recipient's address, the subject and the body text of the e-mail. The individual parts of the command string are separated by semicolons.

Syntax:

Mail;<recipient>;<subject>;<body><CR><LF>

Example string:

Mail;Recipient1@weidmueller.com;Example Subject;This is the body text, only one line possible.<CR><LF>

Table 1: String syntax

Part of the String	Modification needed?	Modification Details
Mail	No	
;	No	
<recipient>	Yes	E-mail address of the recipient.
;	No	
<Subject>	Yes	The subject of the e-mail.
;	No	
<body>	Yes	The body text which will be in the e-mail. <i>Note: The e-mail body must not contain line breaks.</i>
<CR><LF>	No	

The router sends the e-mail as soon as the complete command string including <CR><LF> has been received.

6.2 Router response codes

After receiving and processing the mail command string, the router returns a response code to the connected device to confirm:

- 0 -> The e-mail was sent successfully.
- 1 -> The e-mail could not be transmitted successfully.

Possible reasons for error code 1 are:

- SMTP server unreachable
- Wrong user credentials
- Wrong security mode
- DNS resolution failure
- Invalid recipient address

6.3 Limitations

The following limitations apply to the mail command string:

- Semicolons are only permitted as separators between the command fields.
- Character set: ASCII
- An "Enter" (<CR><LF>) is only allowed and needed at the end of the communication string.
- The command string must contain all required fields.
- Only one recipient can be specified.
- Distribution lists are not supported directly. If multiple recipients are required, use a distribution group on the mail server.

6.4 Communication Example

The following example shows a TCP/IP communication between a connected device and the router.

Router IP address: 192.168.1.110
TCP Server Port: 4101

Sent command string:
Mail;maintenance@company.com;Machine Alarm;Motor overload detected<CR><LF>

Router response:
0

In this example, the router confirms that the e-mail has been sent successfully. After receiving the response code, the connected device can close the TCP connection or send another e-mail command string within the same TCP session.

7 Summary

The router is now configured to forward information from a connected device via e-mail. The connected device only needs to send the defined command string to the router via TCP/IP or the serial interface. The router handles SMTP communication and sends the e-mail to the configured recipient. This allows devices without native e-mail functionality to generate simple e-mail notifications for alarms, maintenance events or process status updates.