W&T

www.WuT.de

Manual

Installation, Startup and Application

SIP Ring Switch

valid for:

#57753   SIP Ring Switch 4xOut

Release 1.71 MAY 2024

Content

1. Legal notices

Warning notice system

This manual contains notices that must be observed for your personal safety as well as to prevent damage to equipment. The notices are emphasized using a warning sign. Depending on the hazard level the warning notices are shown in decreasing severity as follows.

⚠DANGER

Indicates a hazard which results in death or severe injury if no appropriate preventive actions are taken.

⚠WARNING

Indicates a hazard which can result in death or severe injury if no appropriate preventive actions are taken.

⚠CAUTION

Indicates a hazard that can result in slight injury if no appropriate preventive actions are taken.

⚠NOTE

Indicates a hazard which can result in equipment damage if no appropriate preventive actions are taken.

If more than one hazard level pertains, the highest level of warning is always used. If the warning sign is used in a warning notice to warn of personal injury, the same warning notice may have an additional warning of equipment damage appended.

Qualified personnel

The product described in this manual may be installed and placed in operation only by personnel who are qualified for the respective task.

The documentation associated with the respective task must be followed, especi-

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ally the safety and warning notices contained therein.

Qualified personnel are defined as those who are qualified by their training and experience to recognize risks when handling the described products and to avoid possible hazards.

Disposal

Electronic equipment may not be disposed of with normal waste, but rather must be brought to a proper electrical scrap processing facility.

Symbols on the product

Symbol	Explanation
C E	CE Mark The product conforms to the requirements of the relevant EU Directives.
UK CA	UKCA marking The product complies with the requirements of the United Kingdom (GB)
(WEEE symbol)	WEEE Mark The product may not be disposed of with normal waste, but rather in accordance with local disposal regulations for electrical scrap.

2. Safety notices

General notices

This manual is intended for the installer of the SIP Ring Switch described in the manual and must be read and understood before starting work. The devices are to be installed and put in operation only by qualified personnel.

Intended use
⚠DANGER

The SIP Ring Switch manufactured by Wiesemann & Theis are network remote switches with integrated web server and digital in- and outputs. They are used as a remote switching and monitoring unit, accessible via TCP/IP-Ethernet using various web and network protocols in accordance with the present manual.

Non-intended use is any other use or any modification to the described devices.

Electrical safety
⚠WARNING

Before beginning any kind of work on the SIP Ring Switch you must completely disconnect it from power. Be sure that the device cannot be inadvertently turned on again!

The SIP Ring Switch may be used only in enclosed and dry rooms.

The device should not be subjected to high ambient temperatures or direct sunlight, and it should be kept away from heat sources. Please observe the limits with respect to maximum ambient temperature.

Ventilation openings must be clear of any obstacles. A distance of 10-15 cm between the SIP Ring Switch and nearby heat sources must be maintained.

Input voltage and output currents must not exceed the rated values in the specification.

When installing be sure that no stray wires stick out through the ventilation slit of the SIP Ring Switch into the housing. Ensure that no individual wires stand off from leads, that the lead is fully contained in the clamp and that the screws are tightly fastened. Fully tighten screws on unused terminals.

The power supply used for the SIP Ring Switch must absolutely ensure safe isolation of the low-voltage side from the supply mains according to EN60950-1 and must have "LPS" designation.

EMC

⚠NOTE

Only shielded network cables may be used for connecting the SIP Ring Switch to the network.

In this case the SIP Ring Switch meet the noise immunity limits for industrial applications and the stricter emissions limits for households and small businesses. Therefore there are no EMC-related limitations with respect to the usability of the devices in such environments.

The complete Declarations of Conformity for the devices described in the manual can be found on the corresponding Internet page at the W&T homepage: http://www.wut.de.

Batteries

The SIP Ring Switch contains a 3V lithium-manganese dioxide button battery type CR1632 for backing up the internal clock. This battery has an expected lifetime of 10 years and must be replaced only by a battery of the same type.

When using the SIP Ring Switch in a network environment with access to a time server, the battery is not essential for correct function of the device and can be removed.

⚠ CAUTION
The battery may be removed or replaced by an electrotechnical specialist, only.

To remove the battery, open the housing as follows:

#57753
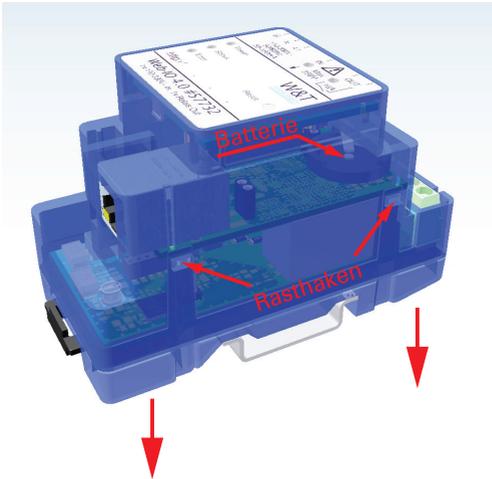
Use a pointed object to press on the latching hooks on the side of the housing and at the same time pull the bottom of the housing out of the top shell.

Then remove the stack of PCBs downwards from the housing.

The buffer battery for the clock module is located in a holder on the upper PCB. After removing/replacing the battery, reassemble in reverse order.

Batteries and rechargeables must not be disposed of with normal waste, recycling of used batteries and rechargeables is required by law. Used batteries may contain harmful substances which can damage the environment or your health if not disposed of properly.

Batteries also contain important raw materials such iron, zinc, manganese or nickel and are recycled.

3. Quick Startup

Network connection

Supply voltage

#57753
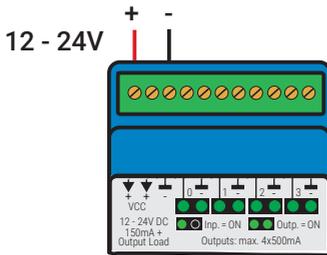
For the first test leave the outputs unwired.

IP address assignment

Install Wutility-Tool (Download: http://wut.de/wutility)

After starting Wutility your SIP Ring Switch appears in the device list. If multiple devices are shown, please identify your device by the Mac address, that is printed on a white sticker at the device: "EN = 00c0:3d......" . If there is a DHCP server in your network, you can use the assigned IP address for a first test. Using the IP address icon in WuTility you can assign a free static IP address instead to the SIP Ring Switch.

Function test

Open the Web page of the SIP Ring Switch in a web browser using the address *http://<IP-address of the* SIP Ring Switch>.

4. Product introduction

Hardware

#57753 - SIP Ring Switch 4xOut

Network interface:	RJ45 10/100BaseT / PoE
Power:	Screw terminal 12 ... 24V DC
Outputs:	4 output channels
	Output 12 ... 24V DC current driving max. 500mA

Network security

All available network services are configurable and must first be enabled by the administrator. By default only browser access, inventorying via Wutility, and the port for initializing firmware updates are enabled. DHCP is also enabled.

You can explicitly specify for all communication paths whether the outputs may be accessible. A list of the currently open TCP and UDP ports can be found in the navigation tree under *Port list.*

Access rights

The SIP Ring Switch is configured and operated by using a web browser. There are three authorization levels for access:

Guest
The guest has read-access to the status of outputs or counters without logging in.

User
A user can switch the outputs after logging in with a password if it is enabled for access via the browser.

Administrator
After logging in with a password the administrator has unrestricted configuration and access rights.

By default no passwords are assigned for the SIP Ring Switch*. Simply click on the Login button.*

After login the navigation tree on the left side can be used to open the enabled configuration areas. For help and information about the respective configuration possibilities click the *Info* buttons on the right side.

Clicking the *Apply* button makes the settings immediately effective.

For all other descriptions affecting the configuration, access with administrator login is required.

Application and access possibilities

SIP
The core function of the SIP ring switch is to switch outputs by dialing extension numbers in an IP PBX. The communication with the telephone system based on SIP (Session Initiation Protocol).

Browser access
Using password protected access, you can also switch the outputs with the required access rights.

Email sending
The SIP Ring Switch offers the option of sending email messages depending on output states or at fixed intervals. The SIP Ring Switch also supports authentication procedures prescribed by public providers.

Web-API - HTTP requests / AJAX
The status of the outputs can be queried using HTTP requests. In addition the outputs can be directly controlled using HTTP requests.

Individual applications

The SIP Ring Switch offers TCP socket access from your own applications.

The SIP Ring Switch supports addressing using command strings. With the support of HTTP requests your own web applications (e.g. with PHP or JavaScript) can also access the SIP Ring Switch.

Actions

Which output is to be switched to which state when a certain extension is called is determined by creating corresponding actions.

In addition, actions can be created that are triggered by changes to the outputs or at certain times, e.g. the sending of an e-mail message. Further actions are writing to a file via FTP, sending data via TCP or an HTTP request, up to switching the outputs of a SIP ring switch accessible via the network.

5. Installation and wiring

The described SIP Ring Switch may be installed and wired by qualified personnel only. The generally applicable state of the art and corresponding prevailing regulations and standards must be observed.

Montage #57753

The SIP Ring Switch 4xOut is intended for installation in the control cabinet or sub-distribution. For mechanical fixation, the SIP Ring Switch should be snapped onto a 35mm top-hat rail according to DIN EN 50022. In doing so, the Web IO takes up 45mm in width.

Terminal assignment 57753

Terminal	Description / Function
1	+ Vcc - Device supply 12-24V 150mA@24V
2	+ Vcc - Device supply 12-24V 150mA@24V
3	GND / Device supply
4	Output 0 *24V max. 500mA*
5	GND - Output 0
6	Output 1 *24V max. 500mA*
7	GND - Output 1
8	Output 2 *24V max. 500mA*
9	GND - Output 2
10	Output 3 *24V max. 500mA*
11	GND - Output 3

Wiring #57753

Connection of the supply voltage V$_{DD}$

Connection of the supply voltageThe Web IO is supplied with a DC voltage between 12 and 24V.
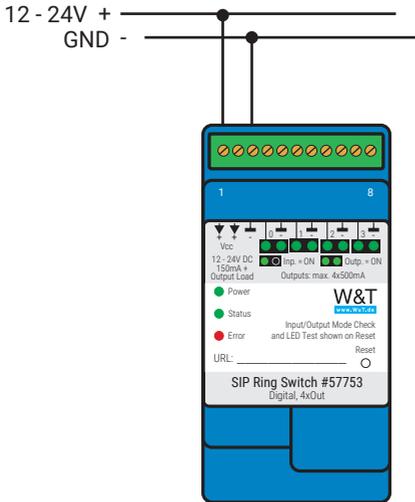
With a typical industrial power supply of 24V, the SIP Ring Switch draws approximately 100mA of current.

⚠NOTE

IO channels that are configured as outputs are also supplied via VDD. The loads to be switched must also be taken into account in the current consumption.

Output wiring

IO channels that are configured as outputs operate as current drivers and can be loaded with max. 500mA each. The positive voltage applied to VDD .is switched to the positive terminal of the IO channel, whereby the negative terminal is used as reference ground.

Here is an example of the wiring of output 1.

.
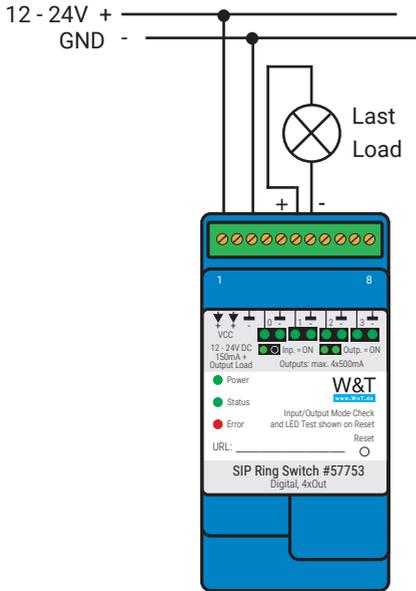
Network connection

A shielded standard ethernet patch cable (min. CAT5) with RJ45 plugs can be used for the network connection.
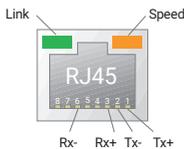
6. Initial start-up

After the SIP Ring Switch has been properly installed and wired, the power supply can be switched on. All three status LEDs should light up briefly. After approx. 5 seconds only the Power LED should remain on. The Status LED may flash.

If the network connection is working, the green LED in the network socket signals an active link. The orange LED indicates the network speed:

On = 100MBit/s
Off = 10MBit/s

Assigning the IP address

At delivery, the SIP Ring Switch is set to IP address 0.0.0.0.0 and DHCP is activated.

Networks with DHCP
If a DHCP server is active in the network to which the SIP Ring Switch is connected, an IP address should be automatically assigned to the SIP Ring Switch. To be able to specifically access the SIP Ring Switch, you should configure a reservation in the DHCP server so that the SIP Ring Switch is always accessible under the same address. The required Ethernet address can be found on the white sticker on the device.

```
57xxx        [Model]
EN=00c03d003fa0 ——— Ethernet address
OK xxxxxx
```
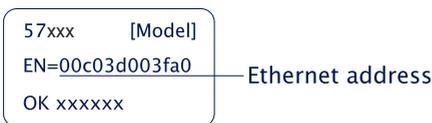
(If in doubt ask your network administrator)

Networks without DHCP
Install the WuTility program on a Windows PC (download from *http://www.WuT.de*). If you do not have a Windows PC, read the subchapter *Alternatives for IP address assignment* in the appendix.

When WuTility is started, the local subnet is scanned and all detected W&T network components are listed. Select your SIP Ring Switch and click the *IP address* icon.

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WuTility suggests the network parameters (subnet mask, gateway, DNS server) that also apply to the PC. If you want the SIP Ring Switch to work in the same subnet as the PC, you only need to adjust the IP address.

If you select *Address range > any network*, you can also enter parameters which are different from your local network, for example to pre-configure the SIP Ring Switch for a different network.

Changing the set IP parameters

To change the IP address, subnet mask, gateway or DNS server later, you can either use Wutility again or adjust the parameters using the browser under *Basic settings » Network*.

7. Basic settings

The further configuration of the SIP Ring Switch is done using a web browser. Enter the IP address of the Web IO in the browser command line. In the navigation tree, click *Login* and choose *Administrator* as user. By default, no password is assigned and a click on the login button is sufficient to configure the SIP Ring Switch with administrator rights.

Configuring the Outputs

In *Basic settings » Outputs* you can give individual names to the outputs. These names replace the factory default names *Output n* in the visualization and any message texts.

Expanded output settings
For special applications some output properties can be modified:

Inverted output characteristics
Normally the outputs are switched off in OFF state (i.e. without signal) and switched on in ON state. By activating the inversion, the output configured in this way acts exactly reversed.

Pulse mode
By activating the *Pulse Mode*, the output automatically returns to the OFF state after the selected pulse duration when it is switched to the ON state. When switched on again during the pulse, the pulse duration starts counting again. *Reset Allowed* specifies that the output may also be switched to the OFF state during a current pulse.

Pulse mode (flashing signal)
For some signaling applications it is helpful if the signal is not switched permanently to ON or OFF state, but changes continuously between ON and OFF.

If a negative value is entered as pulse duration, the output falls back to OFF after the specified time and automatically switches back to ON after four times the pulse duration. If a pulse duration of e.g. -1000 is entered, the output remains switched on for one second and then switches off for four seconds.

This is repeated as long as the output is active.

Date / Time

In the *Date / Time* section you can define whether a periodical adjustment with a time server should take place. In addition, date and time can also be set manually. The configuration of a time zone and the daylight saving time can also be done here.

Language / Info

In addition to the language selection German or English, further display elements, including the logo, can be modified here.

Password

The passwords for administrator and user can be set in this section.

Please note that the same password should not be used for Administrators and Operators.

If the administrator password is no longer known, physical access to the Web IO is required to reset the passwords. See the chapter *Emergency Access* in the appendix of this manual.

Certificates

Protocols such as HTTPS are based on the TLS protocol. The encryption of the communication and the authentication of the communication partners is realized via certificates.

The Web IO identifies itself ex works with a self-signed certificate. Many applications consider such certificates to be a security risk. If the application requires secure authentication, the Web IO must be equipped with an individual certificate signed by a trusted certification authority.

Certificate Signing Request (CSR)
Here it is possible to generate a CSR with a new key pair and individual content.

By clicking the *Verify* button, the entered values are formally checked and the new key is generated. The new CSR can be downloaded via the *Download CSR* button.

Self signed certificate
A previously generated inidividual CSR can be self-signed by the device with the private key belonging to the CSR.

Upload certificate/upload certificate chain
A previously generated and downloaded CSR can be loaded into the device as a certificate after signature by an external certification authority. If a certificate chain belonging to the certificate is not already part of the certificate file, it can be uploaded separately afterwards. The files can be in PEM or DER format.

Install certificate/certificate chain
A previously uploaded certificate incl. associated certificate chain is installed in the device and used as a certificate within TLS connections after saving.

8. Basic applications

The SIP Ring Switch has several communication paths and supports some standard protocols. We recommend that you only enable the communication paths that are actually required in your application. In this way, you limit the possibility of unwanted third-party access and manipulation.

First of all, we would like to present the three most commonly used communication paths:

SIP - Dialing via IP telephony

Registration in the telephone system
The basic requirement for using the SIP Ring Switch is a connection to at least one (primary) IP telephone system. Optionally, a secondary IP telephone system can be configured for redundancy reasons. If the primary system fails, the SIP Ring Switch automatically registers with the secondary system. SIP access must first be activated under Communication channels >> SIP. To register in the system, the following access data must be configured in the SIP basic settings area:

Telephone system IP (Host 1)
IP address or host name of the telephone system

Alternative telephone system IP (Host 2)
Configuring the IP address or host name of a second telephone system is optional and allows to set up redundant systems.

PJSIP server port
If the telephone system uses the PJSIP protocol (chan_pjsip), the UDP port configured in the telephone system (default 5060) must be entered here.

SIP server port
If the PBX uses the SIP protocol (chan_sip), the UDP port configured in the PBX (default 5160) must be entered here.

SIP lokaler Port
UDP port on which the SIP ring switch receives datagrams from the PBX.

Extension inventory

This is where you define which extensions or phone numbers the SIP Ring Switch represents. New extensions are created via the Add button.

Afterwards the following parameters have to be specified:

Extension
Enter here an extension number which represent the SIP Ring Switch

Alias
Context-sensitive name for the extension, e.g. „Barrier 1".

User ID
Enter the user ID belonging to the extension here. With some telephone systems such as FreePBX, the user ID corresponds to the extension number.

Password
Enter the password that is stored in the telephone system for the extensions represented by the SIP ring switch.

SIP type
Choose here between PJSIP and SIP.

The added extensions are listed in the inventory. The *Connected* column shows whether the login to the PBX was successful:

Host 1, Host 2
✓ registered
✗ registration failed
   (appears on host 2 if Host 1 is connected or no alternative PBX has been configured)

The display does not update automatically. To see a status change, the Communication paths >> SIP menu path may have to be called up again.

Extension inventory

To prevent unauthorized switching, a list of authorized subscribers is created in the SIP Ring Switch. There are two ways to add new subscribers:

Add
After clicking the Add button, a new participant can be created via the mask that appears.

Caller
Enter the extension or number of an accepted caller here.

To include entire phone number ranges in the list, „*" can be used as a wildcard.

Examples:
*	every caller is accepted
21*	extensions 210 - 219 are accepted
2*	extensions 200 - 299 are accepted

Alias
Contextual name for the participant, e.g. „Max Muster".

Scan
By clicking on the Scan button and then on the Start button, the learning mode is activated. All calls entered on one of the configured extensions are added to a list and the desired phone numbers or connection IDs can then be marked and added to the subscriber inventory by clicking on the Save button.

Output access
To determine which output is to be switched by dialing which extension, a corresponding action must be created. A description of this can be found in the Actions chapter.

Browser access

Access via the browser has the special feature that, in addition to monitoring and operating the outputs, the configuration of the SIP ring switch is also handled in this way with the appropriate login.

The administrator is authorized to access the entire configuration. All settings and actions concerning the outputs can be adjusted via the password-protected user access.

Without login only the states of outputs and counters can be observed.

HTTP or HTTPS

Ex works, the browser access is enabled for HTTP via port 80. To switch access to HTTPS or change the port, select Basic Settings „ Network in the navigation tree and then Protocol in the Access for web services area. All other settings concerning the display in the browser can be made under Web pages.

Hide navigation tree

Wenn die Konfiguration abgeschlossen ist, kann die Anzeige im Browser auf den Output-Zugriff reduziert werden. Dazu muss unter *Webseiten >> Browser-Zugang* die Option *Menübaum ausblenden* aktiviert werden. Über: *http://<URL/IP des SIP Ring Switch>/index* kann der Menübaum vorübergehend eingeblendet und dann über o.g. Option auch wieder dauerhaft zugeschaltet werden.

Output access

For the access to the outputs the SIP Ring Switch offers two prepared web pages:

Home

The *Home* page provides an overview of the outputs and the configured actions. With the appropriate login, the outputs can be switched. Both must first be enabled under *Web sites » Home*. By default this is disabled.

The menu point *Web sites » Home* offers several other display options for the *Home* page.

Direct access to the *Home* page without displaying the navigation tree is via *http://<URL/IP of the* SIP Ring Switch>/home.

If *Hide menu tree* is enabled, a password entry field appears on the *Home* page. After clicking the *Apply* button, outputs and counters can be operated until you leave the *Home* page again. Enabling *Web sites » Home » Save password for switching in browser* saves the password in the browser as a cookie and operation is immediately enabled again after opening the *Home* page in the same browser.

My Web page

The preloaded Web page in the SIP Ring Switch provides a compact overview of the IO states.

Under *Web sites » My Web page* the original website can be replaced by a self-

designed one.

For this web page to dynamically update the states of outputs and counters the option *Allow HTTP requests* must be activated under *Communication Channels » Web API*. You also specify here whether the outputs can be switched using HTTP requests.

Direct access to your own webpage without displaying the navigation tree is via *http://<URL/IP of the SIP Ring Switch>/user*

More details on programming your own Web pages can be found in the programming manual for the SIP Ring Switch. The manual for your SIP Ring Switch can be found on the respective Web data sheet page at www.WuT.de/article number, e.g. www.wut.de/57753

Sending email

A few basic settings are necessary in order to send email messages.

Network parameters

If you want to send via a mail server on the Internet, it is important that the basic network settings are correct. Check under *Basic settings » Network* especially whether *Gateway* and *DNS server* are specified correctly.

Mail server access

All mail server-specific settings can be made under *Communication paths » Mail*. The authentication method commonly used today is SSL/TLS. Further tips on the specific settings for the most common e-mail providers can be found in the info area under *Mail*.

Creating an email message

To create an email message, click the *Add* button under *Actions*. An input screen will appear for a new action.

Here you can determine the name for the action and what the trigger should be (e.g. the *ON* state of the output). A detailed description of the possibilities can be found in the *Actions* section.

Select *E-mail message* as the action. In the corresponding input mask you have the possibility to write an individual e-mail message. Use the placeholders described below, which are replaced by the current IO states, counter values, etc. when the e-mail is sent.

Placeholder	Description
<ox>	State of the outputs No. x (ON/OFF)
<cx>	Counter state No. x
<o>	State of all outputs as hex. bit pattern
<dn>	Device Name
<onx>	Name of the output No. x
<t>	Time stamp with date and time
<$y>	Year in format „YYYY"
<$m>	Month in format „MM"
<$d>	Day in format „DD"
<$h>	Hour in format „hh"
<$i>	Minutes in format "mm"
<$s>	Seconds in format „ss"

9. Actions

With the action principle, the SIP Ring Switch offers the possibility to react individually to certain events such as incoming calls, changes in the switching state of the outputs or device restarts. As a reaction, the SIP Ring Switch can switch outputs, send e-mails, HTTP requests or TCP messages and write log data to a file via FTP.

Up to 30 actions can be created and managed, and an individual name can be defined for each action.

Trigger

SIP
Select here one or more of the extensions created in the inventory. Incoming calls from a shared subscriber trigger the action.

Output
Any output can be specified as an initiator. For the output you can specify whether a change from OFF to ON, a change from ON to OFF, or any state change should initiate an action.

Counter
Any counter can be specified as the initiator. For the counter you must specify for which count value an action should be initiated. You also need to determine whether the counter is reset to zero after the action is initiated.

Output combination
A combination of outputs can also initiate an action. Here you can specify whether the individual states should have an AND or OR operation performed.

Interval Timer
The SIP Ring Switch can be configured to perform actions at specified times. The times are entered in *Cron* format.

Valid characters:

* represents all valid values in the respective input field (e.g. every minute or every hour)
- specifies a range of from…to (e.g. weekday "2-4" stands for Tuesday to Thursday, whereas entering "*" triggers the timer on all weekdays).
/ Interval within the specified range (e.g. minute "0-45/2" triggers the timer in a range between the 0th and 45th minute every two minutes (0, 2, 4, 6 ,8, 10, ... , 44)).
, specifies an absolute value (e.g.: minute „0, 15 ,30" triggers the timer every full hour, every 15th minute and every 30th minute).

For example:
An action should be performed in the months of April to October every Monday at 8:00 a.m.

Minute:	0
Hour:	8
Date:	*
Month:	4-10
Day of week:	1

Device restart

The SIP Ring Switch distinguishes between two types when a restart is supposed to initiate an action:

• Cold start
If the restart is initiated by hardware (applying/interrupting supply voltage or pressing the reset key) the SIP Ring Switch treats this as a cold start.

• Warm start
A warm start can be initiated from the Web page under *Maintenance* by clicking the *Restart* button. Connecting to Port 8888 and using the administrator password will also cause a reset if the reset port is enabled.

Actions

Switching outputs
When switching outputs the SIP Ring Switch differentiates between switching its own outputs or switching the outputs on another SIP Ring Switch.

Switching the own outputs
The outputs can be switched to ON or OFF. Another possibility is to toggle the existing state.

Alternatively, several outputs can be switched simultaneously. For each selected output, you can specify whether it is to be set to ON or OFF.

Switching the outputs of another SIP Ring Switch or Web-IO Digital
Also in this case, either one specific output or several outputs can be switched.

Specify the IP address of the Device at which the outputs are to be switched. Specify the TCP port set as the browser access port for the destination Device. If the target SIP Ring Switch or Web-IO is protected with a password, this must also be entered.

*For the destination Device **Allow HTTP requests** must be enabled (**Communication paths » Web-API**) and the controlled outputs for switching from the browser and HTTP must be enabled.*

The outputs of the older Web-IOs models #57630, #57631, #57634 und #57637 can also be switched. In this case the HTTP port of the Web-IO must be specified as the

TCP port. The outputs must be set in *Output Mode* Menu.

Actions with text messages

For the actions that allow the sending of alarm, message and other texts, placeholders can be used within the text that are replaced with actual contents, such as IO states, time, etc., when an action is executed.

Placeholder	Description
<ox>	State of the outputs No. x (ON/OFF)
<cx>	Counter state No. x
<o>	State of all outputs as hex. bit pattern
<dn>	Device Name
<onx>	Name of the output No. x
<t>	Time stamp with date and time
<$y>	Year in format „YYYY"
<$m>	Month in format „MM"
<$d>	Day in format „DD"
<$h>	Hour in format „hh"
<$i>	Minutes in format "mm"
<$s>	Seconds in format „ss"

In addition to the actual message that is sent when the action is triggered, a clear message can also be stored in the text messages. The clear message is sent when the trigger for the action is no longer present - i.e. the normal state returns. Sending messages takes different amounts of time depending on the protocol. If the triggering state is only present for such a short time that the corresponding message could not yet be sent, only the Clear message is sent.

Email message

Recipient, subject and contents of the e-mail can be configured freely. To be able to send e-mail messages, access to the mail server must be configured and mail must be activated as a communication channel. All necessary settings can be made under Communication channels „ Mail. In the info area you will find the general access data of the most common e-mail providers.

HTTP request

Another possible action is to send an HTTP request as required by some devices, such as cameras, to trigger certain functions.

Enter the complete URL with all parameters expected by the receiving device as the HTTP request.

Format:
`http://<Ip/Hostname>/<request>?Parameter1&Parameter2&ParameterN`

For those devices that require authentication with username and password, enable Use authentication and fill in the appropriate fields.

TCP messages

When sending TCP messages the SIP Ring Switch operates as a TCP client. When initiating the action it opens a TCP connection to the specified TCP server address on the specified port, transmits the message or clear text, and then immediately closes the connection. Any replies from the server are ignored and discarded.

FTP messages

The SIP Ring Switch can save message texts per FTP to a file.

To do this, FTP support must first be enabled under *Communication paths » FTP* and access to the FTP server must be configured.

The file name, message and clear texts can be freely formulated.

The options are used to distinguish whether *STOR* is used for each initiated action to completely overwrite the file or whether *APPEND* is used to append the message and clear texts continuously to the file.

10. Access from own applications

In addition to the SIP access, the SIP Ring Switch also offers the option of accessing from your own application.

This can be done via TCP/IP sockets from the common high-level languages. However, it is also possible to use common web techniques such as AJAX or PHP to communicate with the web IO.

The SIP Ring Switch offers two ways to access using TCP/IP sockets:

- Command strings   ASCII
- HTTP requests AJAX

Command strings ASCII

The counters can be read and the outputs can be set by exchanging simple command strings.

The SIP Ring Switch operates in this mode as a TCP server.

A list of the supported commands and additional details on access via ASCII sockets can be found in the Web-IO programming manual. (download at http:www. WuT.de). Follow the manual link on the data sheet page of Web-IO.

TCP server

To access the SIP Ring Switch as a TCP server using ASCII sockets, enable *TCP ASCII-Sockets* under *Communication paths » Socket-API*. Specify on which server port the SIP Ring Switch should accept connections. The SIP Ring Switch can provide up to four TCP connections on the specified port at the same time. Any additional connection attempt is rejected.

If the SIP Ring Switch does not receive a valid command within 10 seconds, it closes the connection and is then free for a new connection. The SIP Ring Switch behaves in the same way if an incorrect or unknown command is received.

The outputs are usually read using a polling procedure.

HTTP request

In addition to socket access the SIP Ring Switch can be addressed directly via HTTP using HTTP requests.

By default this access is blocked and must first be enabled using *Communication paths » Web-API*.

A detailed description of the supported HTTP requests and more details about access using Web techniques such as AJAX and PHP can be found in the Web-IO programming manual (download at http://www.WuT.de). Follow the nanual link on the data sheet page of your SIP Ring Switch.*.*

11. Appendix

Alternatives for IP address assignment

In case IP addresses cannot be assigned using DHCP or the Wutility Tool, the Web IO offers two further options:

Assigning the IP address using the ARP command
This method can be used when the SIP Ring Switch *does not yet have an IP address and the entry is 0.0.0.0. Another prerequisite is that the* SIP Ring Switch *and computer are in the same network segment.*

Read the Ethernet address of the SIP Ring Switch from the label at the side of the housing:

```
57 xxx      [Model]
EN=00c03d003fa0 ──── Ethernet address
OK xxxxxx
```
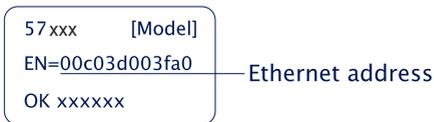
Now use the following command line from the ARP table of the computer to enter a static entry:

```
arp -s [IP address]  [MAC address]
```

Example under Windows:
```
arp -s 10.40.72.15 00-C0-3-00-3F-A0
```

Example under SCO UNIX:
```
arp -s 10.40.72.15 00:C0:3D:00:3F:A0
```

Then start the Web browser and enter

```
http://<IP address>
```

⚠️ *In Windows environments IP addresses may only be entered without leading zeros.*

The SIP Ring Switch accepts the IP address of the first network packet sent to its

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Ethernet address as its own and saves it in non-volatile memory. All other settings can now be made conveniently using web-based Management.

Firmware update

The firmware of the SIP Ring Switch is continuously being improved to meet the constantly changing requirements of growing networks.

The current firmware for your SIP Ring Switch can be found on the respective Web data sheet page at www.WuT.de/article number, e.g. www.wut.de/57753. You will find the required utility tool under the Tools link.

To install the firmware update, you need a Windows PC with the WuTility tool installed and unrestricted network access to the SIP Ring Switch.

Start WuTility, highlight your SIP Ring Switch in the inventory list and click on *Firmware* in the icon bar. Select the corresponding UHD file. WuTility will guide you through the update process.

Do not interrupt either power or the network connection during the update.

All the settings in the SIP Ring Switch are retained and the SIP Ring Switch should be immediately ready to use following the update.

Emergency access

In case you have forgotten the passwords for the SIP Ring Switch or simply want to reset the device to its factory defaults, there are model-dependent emergency accesses. In any case, you need physical access to the device.

Delete passwords
Emergency access can be activated by a long press (time window 3 - 7 seconds, the LEDs below the reset button flash slowly) of the recessed reset button. For about 5 minutes, an emergency page can be opened via the browser when the SIP Ring Switchs IP address is called. Here all passwords can be deleted via a button.

Reset to factory settings
If the reset button is pressed for a long time (more than 7 seconds), the LEDs below the button start to flash quickly. The delivery state is restored. After approx. 30 seconds, the reset button must then be pressed short again to restart the SIP Ring Switch

12. Technical data

Connections, displays and control elements:

Digital outputs:	4 channels as output:
	12-24V DC / 500mA per channel
	Total fuse protection for all outputs 3A
	Integrated 32-bit pulse counter
Network:	10/100BaseT autosensing
Power supply:	12 … 24V DC (approx. 100mA@24V)
Output supply	12 … 24V DC
Galvanische Trennung:	Digital Outputs - network: min. 1000 V
Conections:	1 x 11x screw terminal block
	for outputs and power
	1 x RJ45 for network
Displays:	Status LEDs for network
	Error LEDs for system and application
	8 LEDs for digital status

Data transfer

Protocols:	SIP, TCP-Sockets, Email, FTP, HTTP, HTTPS
Response times:	Datatrafic: typ. 40 - 80ms

Housing and other data:

Housing:	Plastic housing 90 x 45 x 56 mm (lxbxh)
Enclosure rating:	IP20
Weight:	ca. 140 g
Storage temperature:	-25°C .. 70°C
Operating temperature:	0°C .. 50°C
Permissible rel. humidity:	5..95% RH (non-condensing)

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