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Quick Startup Guide

uaGate SI

Version: EN-092018-1.60

Disclaimer of liability

Scan the QR code to find the latest documentation on the product web page under Downloads.

Table of Contents

1 About this guide

1.1 Read me first

Please read this guide carefully before using the device to ensure safe and proper use. Softing does not assume any liability for damages due to improper installation or operation of this product.

1.2 Target audience

This guide is intended for experienced operation personnel and network specialists responsible for configuring and maintaining field devices in process automation networks. Any person using a uaGate SI must have read and fully understood the safety requirements and working instructions in this guide.

1.3 Typographic conventions

The following conventions are used throughout Softing customer documentation:

Keys, buttons, menu items, commands and other elements involving user interaction are set in bold font and menu sequences are separated by an arrow	Open **Start → Control Panel → Programs**
Buttons from the user interface are enclosed in brackets and set to bold typeface	Press **[Start]** to start the application
Coding samples, file extracts and screen output is set in Courier font type	`MaxDlsapAddressSupported=23`
Filenames and directories are written in italic	Device description files are located in *C:\<Application name>\delivery\software\Device Description files*

CAUTION

This symbol indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury

Note

This symbol is used to call attention to notable information that should be followed during installation, use, or servicing of this device.

Hint

This symbol is used when providing you with helpful user hints.

1.4 Document feedback

We would like to encourage you to provide feedback and comments to help us improve the documentation. If you have a PDF copy of this document simply write your comments and suggestions to the PDF file using the editing tool in Adobe Reader and email your feedback to info.idi@softing.com.

If you prefer to write your feedback directly as an email, please include the following information with your comments:

- document name
- document version (as shown on cover page)
- page number

2 About uaGate SI

2.1 Intended use

The uaGate SI is a gateway for Siemens controllers. It has been designed to integrate OPC UA server functionality in new and existing plants for easy and secure data connectivity with higher-level management systems, such as ERP, MES or SCADA. With the MQTT Publisher functionality integrating controller data into IoT cloud applications, the compact gateway offers future-oriented software solutions with industry-proven hardware. Any other use is not intended. Follow the instructions in this guide on how to use the uaGate SI.

> **Note**
>
> Faultless and safe operation of the product requires proper transport, proper storage and installation, and expert operation and maintenance in accordance with the manual.

> **Note**
>
> If the notes stated in this document are not observed or in case of inappropriate handling of the device, our liability is waived. In addition, the warranty on devices and spare parts does no longer apply.
>
> For information about safety aspects refer to Safety precautions.

2.2 Scope of delivery

The delivery of the uaGate SI includes the following parts:

- uaGate SI device (order number GAA-DX-145111)
- Quick Startup Guide (this document)

2.3 Safety precautions

⚠️ **CAUTION**

This product contains a lithium backup battery. The lithium content is less than 1 g. The battery has been successfully tested by the manufacturer in accordance with the "Manual of Tests and Criteria" of the United Nations (UN), Part III: Classification procedures, test methods and criteria, sub-section 38.3.

If the product is handled properly, this battery does not need to be replaced during the lifetime of the product. Therefore, opening the product is unnecessary and not permitted. The product must only be operated within the specified temperature range. Do not expose to heat above this temperature range and keep away from open fire. Store in a dry place. Improper handling of lithium batteries can cause the batteries to ignite or explode and pose a burn hazard to users.

⚠️ **CAUTION**

During operation, the device's surface will be heated up. Avoid direct contact. When servicing, turn off the power supply and wait until surface has cooled down.

ℹ️ **Note**

Do not open the housing of the uaGate SI. It does not contain any parts that need to be maintained or repaired. In the event of a fault or defect, remove the device and return it to the vendor. Opening the device will void the warranty!

3   Hardware installation

3.1   Mounting and dismounting

Note

Make sure the uaGate SI is mounted in a manner that the power supply disconnecting device or interrupt facility can always be reached easily.

Note

Depending on the installation position, the maximum ambient operating temperature may differ. Refer to Technical Data for detailed information.
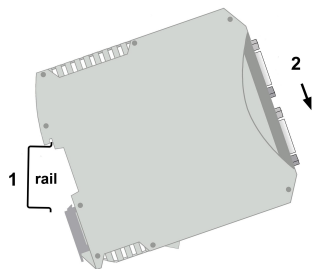
Installation and inspection

Installation and inspection must be carried out by qualified personnel only (personnel qualified according to the German standard TRBS 1203 or similar (Technical Regulations for Operational Safety). The definition of terms can be found in IEC 60079-17.

Mounting

1. Hook the upper notch of the cut-out on the back of the uaGate SI into a 35 mm DIN rail.

2. Press the uaGate SI down towards the rail until it slides into place over the lip of the locking bar.
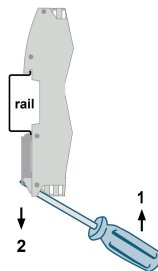

> **Note**
> Do not put stress on the device by bending or torsion.
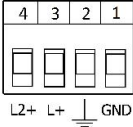
Dismounting

1. Slide a screwdriver diagonally under the housing into the locking bar.

2. Lever the screwdriver upwards, pull the locking bar downwards - without tilting the screwdriver - and move the gateway upwards off the rail.
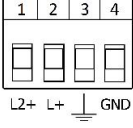
3.2 Connecting the power supply

The supply voltage (18 VDC .... 32 VDC) is connected by a 4-pole terminal block. The power supply is connected to the plug connector via flexible wires with a cross section of 0.75 to 1.5 mm². The ground connection wire must have a cross section of 1.5 mm².

Wiring diagram for hardware 1.01 and lower

	Pol	Signal	Description
4 3 2 1 L2+ L+ ⏚ GND	4	L2+	Redundant positive supply voltage
	3	L+	Positive supply voltage
	2	⏚	Functional Earth
	1	GND	Ground

Wiring diagram for hardware 1.02 and higher

	Pin	Signal	Description
1 2 3 4 L2+ L+ ⏚ GND	1	L2+	Redundant positive supply voltage
	2	L+	Positive supply voltage
	3	⏚	Functional Earth
	4	GND	Ground

⚠️ **CAUTION**

The Functional Earth (FE) connection of the device has to be connected at low inductance with the Protective Earth (PE) of the system.

3.3 Connecting to the network

The uaGate SI is equipped with two 10/100 Base-T Ethernet interface receptacle (RJ45). The ports correspond to the IEEE 802.3:

- **IT** for connecting to the it network (the upper part in the diagram)
- **MACHINE** for connecting to the machine network

> **Note**
>
> Both network connections (ports) have their own network segment. Therefore make sure that the IP addresses used are different for each segment. Example:

Subnet mask:	IP address 1:	IP address 2:
255.255.255.0	192.168.**1**.1	192.168.**2**.1

Using a single common network

If there is only one (logical) network, it is recommended to connect the uaGate SI only via the Ethernet interface of the IT side with the network. In this case, the Ethernet interface of the machine side should be disabled by setting the IP address to 0.0.0.0 and the subnet mask to 0.0.0.0.

3.4 Powering up the device

Turn on the power supply. The boot process takes a few seconds. For indication of proper operation of a uaGate SI refer to Status indicators - LEDs.

3.5   Inserting an SD card

On the bottom of the device you find a slot for a micro SD card. You can save your gateway configuration data to a storage card and reload it from here in case your device settings have been accidentally corrupted.

Note

The micro SD card is not included in the delivery. When selecting an SD card bear in mind the range of the operating temperature of the uaGate SI. The storage capacity of the micro SD card may not exceed 32GB.

1. Remove the card slot cover on the bottom of the device.

2. Insert the SD card carefully into the slot until the card clicks into place.

3. Place the cover back on the housing.

4. Open the user interface of the gateway and check if the SD card is recognized by the device (see IP connection to web server and Login).

5. Start **Information → Gateway Status → Hardware Status**.
   The page will show you if the SD card is recognized in the file system and how much of the storage memory is available.

3.6 Resetting the device

If the uaGate SI cannot be reached in the event of a configuration error, the device can be reset to default factory settings by pressing the reset button at the bottom of the front panel.

This is how to reset the uaGate SI:

1. Disconnect the device from the power supply.

2. Reconnect the device with the power supply and press the reset button until the LEDs SYS, RUN and ERR light up for about one second.

Note

The reset button is only active for a few seconds during the restart to make sure that the configuration is not accidentally reset.

4 Configuration and login

4.1 IP address information

- The default IP address for the Ethernet interface in the Machine Floor LAN is 192.168.1.111 (see device label).

- The IP address of the web server in the common LAN is configured per default via DHCP. Depending on the configuration of your local DHCP- and DNS-servers it is possible to reach the device by this host name in your network.

- The uaGate SI supports the network connection protocol UPnP (*Universal Plug And Play)* for Windows. MAC, Linux und Android use Avahi/Zeroconf, the *Zero Configuration* network implementation protocol which identifies the gateway as an HTTPs server.

4.2 IP connection to web server

Your network has a DHCP and DNS server	Your network has no DHCP and DNS server
1. Connect the upper Ethernet socket (**IT**) to your network. 2. Read the last 4 digits/letters of the uaGate SI MAC address (in the lower left part of the label). The host name of the device is **uagate** followed by the last 4 digits/letters of the MAC address. For example, if the MAC address is 123456789ab, the host name is **uagate89ab**.	1. Connect the lower Ethernet socket (**MACHINE**) directly to a laptop. 2. Set the laptop IP address to 192.168.1.1/24. 3. Open your browser and enter the address http://192.168.1.111 or https://192.168.1.111 **(*)**

Your network has a DHCP and DNS server	Your network has **no** DHCP and DNS server
3. Open your browser and enter the address http://<hostname> or https://<hostname>. **(*)** 4. The login window appears	4. The login window appears.

(*) The uaGate SI support the HTTPs protocol, which provide a secure and encrypted transfer of sensitive data such as passwords so the data cannot be read by another network user. In addition, HTTPs uses a certificate to identify the server. At Softing we use the OPC UA server certificate that has been generated before the last reboot.

4.3 Login

Log in with the respective login name and password. The following standard logins and passwords are available:

Role	Login name	Password
Administrator	administrator	administrator
IT administrator	itadmin	itadmin
Service or maintenance engineer	mfadmin	mfadmin

Note

We highly recommend changing the standard password(s) with a secure password after you logged in for the first time.

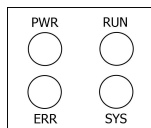### 4.4 Completing your configuration

To complete your configuration, you need to configure:

- time settings
- IT settings
- machine settings including symbol import

For detailed information see the online help in the web server application.

5   LED status indicators

The uaGate SI is equipped with four LEDs on its front side:

PWR	RUN
ERR	SYS

PWR   **power supply** (permanently green if the 24V DC power supply is ok)

RUN   **running** (in operation)

ERR   **error**

SYS   **system**

The LEDs may be on permanently or flash in different colors and frequencies. We use the following symbols:

Symbol	Color	Lighting
⊗	none	off
🔴	red	permanent
🟢	green	permanent
⊗ red	red	flashing
⊗ green	green	flashing

Meaning of the LEDs

RUN	🟢	Permanently green while the OPC UA endpoint has been opened and the device is fully functional and the web server is available.
	✖🟢	Flashing green while the OPC UA namespace is built up (evaluating symbols etc.)
SYS	🟢	Permanently green while the firmware image is unzipped.
	✖🟢	Flashing green while the consistency of the image is checked and the kernel is exchanged.
	✖🔴	Flashing red while the firmware is replaced with the firmware image content. (During this time the device is not fully operational.)
ERR	🔴	Permanently red if the OPC UA endpoint could not be opened or an error during firmware update occurred.
	✖🟢	Flashing green while the configuration has pending changes.

LEDs are shortly switched off during reboot

If you reset the device using the reset button on the front plate or by clicking **[Reboot]** in **Service Settings** - **Reset** - **Gateway restart** in the web server interface, the LEDs are shortly switched off.

6   Technical data

Power supply	18 VDC...32 VDC; SELV/PELV supply mandatory
	Typical input current is 200 mA; maximum is 1 A (considering the rush-in current at switch-on).
Ethernet	2x IEEE 802.3 100BASE-TX/10BASE-T (independent interfaces)
Operating temperature, horizontal DIN rail installation	-40 °C .. +50 °C (0 mm minimum distance)
	-40 °C .. +55 °C (22.5 mm minimum distance)
Operating temperature, vertical DIN rail installation	-40 °C .. +35 °C (0 mm minimum distance)
	-40 °C .. +55 °C (22.5 mm minimum distance)
Storage temperature	-40 °C...+85 °C
Relative humidity	10 %...95 % (non-condensing)
Altitude	Must not exceed 2,000 m
Location	Indoor use only; no direct sunlight
Dimensions (H x W x D)	100 mm x 22.5 mm x 105 mm
Mounting	35 mm DIN Rail
Ingress protection	IP20
Weight	about 0.2 kg
IT Network / Cloud Connectivity	OPC UA (Server, 20,000 items in total), MQTT (Publisher, up to 1,000 topics)
Industrial Network Connectivity	OPC UA, Siemens S7-300, S7-400, S7-1200, S7-1500
Supported Engineering Tools	SIMATIC Step 7, TIA Portal

7   Declaration of the manufacturer

This device is compliant with EC directive 2014/30/EG for "Electromagnetic Compatibility" (EMC) and meets the following harmonized standards:

- EN 55011   Industrial, scientific and medical (ISM) devices - radio disturbance - limits and methods of measurement
- EN 55032   Electromagnetic compatibility of multimedia equipment (MME) and interference emission
- EN 61000-6-4   Electromagnetic compatibility (EMC); Part 6-4: generic standard – emission for industrial environments
- EN 61000-6-2   Electromagnetic compatibility (EMC); Part 6-2: generic standard - immunity for industrial environments

Note
To fulfill the EMC requirements, the other components of your installation (DC adapter, Industrial Ethernet devices, etc.) also have to meet the EMC requirements. A shielded cable must be used. In addition, the cable shield must be grounded properly.

CAUTION
This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures!

CE
A Declaration of Conformity in compliance with the above standards has been made and can be requested from Softing Industrial Automation.

ROHS

This product is ROHS compliant.

FCC

This equipment has been tested and found to comply with the limits for a Class A digital device, under part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications.

VCCI

This Class A product conforms to the regulations of Voluntary Control Council for Interference (VCCI) by Information Technology Equipment.

WEEE

Electrical and electronic equipment must be disposed of separately from normal waste at the end of its operational lifetime. Packaging material and worn components shall be disposed of according to the regulations applicable in the country of installation.