Read and understand these instructions and the relevant manual before installing, operating, or maintaining the device.

Check on our homepage whether a new firmware version is available and update your firmware if necessary.

You can find the manual and the firmware via the download area in the Internet under:
http://www.siemens.com/sicam

Disclaimer of Liability

Although we have carefully checked the contents of this publication for conformity with the hardware and software described, we cannot guarantee complete conformity since errors cannot be excluded.

The information provided in this document is checked at regular intervals and any corrections that might become necessary are included in the next releases. Any suggestions for improvement are welcome.

Subject to change without prior notice.

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Notes on Safety

This document contains notes that must be adhered to for your own personal safety and to avoid damage to property. However, it does not constitute a complete description of all safety measures required for installation, service, and maintenance of the equipment (module, device) in question. Details are to be taken from the device manual and those are mandatory.

WARNING

Danger of severe personal injury or substantial damage to property

Hazardous voltages may occur in devices and modules during operation depending on the design and application.

- Always observe the instructions given in “Qualified Electrical Engineering Personnel” below.

Qualified Electrical Engineering Personnel

Only qualified electrical engineering personnel may commission and operate the equipment (module, device) described in this document.

Qualified electrical engineering personnel in the sense of this document are people who can demonstrate technical qualifications as electrical technicians. These persons may commission, isolate, ground and label devices, systems and circuits according to the standards of safety engineering.

Use as Prescribed

The equipment (device, module) may only be used for such applications as set out in the catalogs and the technical description, and only in combination with third-party equipment recommended and approved by Siemens.

If the device is not used in accordance with this product information, the scheduled protection is impaired.

Correct and safe operation of the product requires adequate transportation, storage, installation, and assembly, appropriate use, and maintenance as well as the attention of the WARNINGs.

During the operation of electric equipment, it is unavoidable that certain parts of this equipment will carry hazardous voltages. Severe injury or material damage can occur if the appropriate **measures** are not taken.

The limiting values indicated in the product information and the manuals must not be exceeded; this also refers to testing and commissioning.

Further Support

For any questions concerning your system, please contact your Siemens representative.

The Siemens Customer Support Center provides around-the-clock support.

Phone: +49 (1805) 24-8437

Fax: +49 (1805) 24-2471

Internet: http://www.siemens.com/sicam

E-mail: support.ic@siemens.com

Statement of Conformity

CE

Low-voltage Directive: 2014/35/EU

EMC Directive: 2014/30/EU

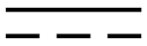
Radio Equipment Directive (RED): 2014/53/EU

This conformity is based on the compliance with the following harmonized standards:

EN 61326-1, EN 61010-1, EN 300 328, and EN 301 511

For latest declaration of conformity, refer to http://www.siemens.com/sicam

Used Symbols

No	Symbol	Description
1		Direct current IEC 60417-5031
2		Alternating current IEC 60417-5032
3		Direct and alternating current IEC 60417-5033
4		Three-phase alternating current
5		Earth (ground) terminal IEC 60417-5017
6		Protective conductor terminal IEC 60417-5019
7		Caution, risk of electric shock
8		Caution, risk of danger ISO 7000-0434

SICAM FCG Device
6MD2340

SIEMENS

Application

This product information refers to the SICAM FCG device provided for the various applications in power supply companies and at consumers:

- Transmits the load current values and distribution line faults status and events to the SCADA control center based on the IEC 60870-5-104 protocol.

SICAM FCG transmits the distribution line fault status and events to the cloud based fault location service "FLiC" based on the XMPP protocol. A mobile communication interface is provided.

Parameterization via HTML pages using a web browser is supported by a web server that is integrated in the device.

For parameterization via HTML pages, an Ethernet interface is provided. The mobile interface can be used alternatively once the mobile connection has been set up.

The respective device manual contains more detailed information, for example, on the following topics:

user information, device versions, ordering information, device design (mechanical, electrical), installation and commissioning, interfaces, connection types, parameterization and operation via HTML pages, operating parameters, time synchronization, maintenance, malfunctions, operational indications and error messages, detailed technical data.

Mounting, Commissioning, and Connection Types of the Device

WARNING

Danger of death, personal injury or substantial property damage

Non-observance of the following measures can result in death, personal injury or substantial property damage.

- Work may only be carried out by trained personnel who are familiar with and observe the safety requirements and precautions.
- When performing electrical installations, you have to observe the national and international regulations on the erection of electrical power installations.
- Work may never be carried out if there is any dangerous voltage present.
- De-energize the device.

  Connect the protective conductor terminals L and P to the protective conductor of the switch panel or of the control cabinet.
- All circuit components connected to the power supply may be subject to dangerous voltage.
- Hazardous voltages may be present in equipment even after the supply voltage has been disconnected (capacitors can still be charged).
- The limit values stated under “Technical Data” in the corresponding device manual may not be exceeded. This must also be considered during testing and commissioning.

Unpacking a Device

Devices are tested prior to delivery. Devices are packed on site in a way that meets the requirements of standard ISO 2248.

- Check the packing for external transport damage. Damaged packing may indicate that the devices inside have also sustained damage.
- Unpack devices carefully; do not use force.
- Visually check the devices to ensure that they are in perfect mechanical condition.
- Check the enclosed accessories against the delivery note to make sure that everything is complete.
- Keep the packing in case the devices must be stored or transported elsewhere.
- Return damaged devices to the manufacturer, stating the defect.

NOTE

Before commissioning the device, leave it in the final operating room for at least 2 hours. This allows it to reach room temperature and to prevent dampness and condensation.

Mounting

General Information

1. Before installing the device, insert the supplied Lithium battery (see below).
2. The device should be mounted in a dry, dirt free location.
3. Keep a minimum distance of 10.5 mm to adjacent devices.
4. Field Wires of Control Circuits shall be separated from other circuits with respect to the end use requirements!
5. The permitted ambient temperature must be observed (see technical data). Operating the device outside the permitted operating temperature range can lead to measuring errors and device failure.
6. The terminals are designed for conductor cross-sections of 2.5 mm² max. (AWG 14).
7. During operation, the device must not be exposed to condensation, direct sunlight, or extreme temperature changes.
8. The above mounting instructions must be performed correctly to provide sufficient protection against touching live parts.

Lithium Battery

CAUTION

Danger of fire or chemical burn hazard

The battery used in this device may present a fire or chemical burn hazard if mistreated.

- Batteries must only be replaced with the same type or the types recommended by Siemens, PANASONIC CR2032 or VARTA 6032 101 501.
- Do not reverse the polarity of the battery.
- Do not recharge, disassemble, heat above 100 °C (212 °F) or incinerate.
- Dispose the used battery promptly.
- Keep away from children!

First installation / replacement of the lithium battery

The delivery includes a lithium battery that powers the battery-buffered memory and the real-time clock. Upon delivery, the battery is insulated with a plastic foil in the battery compartment of the device.

Replace the battery if the battery charge is too low (operational indication "Battery Failure".

Proceed as follows for the first installation or for battery replacement:

1. Lever the cover of the battery compartment out of the socket with a suitable tool (e.g. precision engineer screwdriver 2.0 mm), see figure 3.
2. Take the battery out of the battery compartment and - in case of first installation remove the plastic foil.

NOTE

To avoid a short circuit on the battery contacts, the battery may only be removed with a non-conductive tool (for example plastic tweezers).

3. Insert the battery into the battery compartment with the polarity imprinted on the top side of the device.
4. Press the cover of the battery compartment back into the housing and make sure it is in the correct position.

NOTE

Battery disposal

For disposing the batteries it is necessary to observe the local national/international directives.

DIN-rail assembly

Mount the device on a DIN rail that is specified in the standard EN 60750.

1. Pull down the release handle at the snap-on clip and hold it in this position.
2. Slide the device with the guiding of the snap-on clip onto one side of the DIN rail and then to the desired position.
3. Release the release device. The device is now firmly mounted on the DIN rail.

NOTE

The snap-on clip is adjusted to a certain height setting by the manufacturer. You can change this position if necessary. To do so, lever the release device out of its guiding (no special tool required) and move the release device into the desired position. Subsequently, press the release device back into its guiding.

Communication Mobile

Danger

Risk of lightning strikes when installed outdoors

Non-observance leads to death or serious injury.

If you install an antenna outside, the antenna must be grounded to protect it from lightning strikes. This work must only be carried out by qualified personnel. Antennas installed outdoors must be within the area covered by a lightning protection system. Make sure that all conducting systems entering from outdoors can be protected by a lightning protection potential equalization system. When implementing your lightning protection concept, make sure you adhere to the VDE 0182 or IEC 62305 standard.

Commissioning

1. Check that the operational data match the rated data on the label and the technical data of the device. This applies in particular to the supply voltage and to the maximum values.
2. Connect the desired devices to the terminals and plug connectors (see figure 1).
3. Install the SIM card and connect the GSM antenna according to Device Manual.
4. Switch on the connected peripheral devices and the supply voltage of the device.

NOTE

The device does not have a power on/off switch. Switch on/off the supply voltage at the respective isolating device or at the external power supply.

The cable length between SICAM FCG and the external power supply must not exceed 0.5 m.

NOTE

Use copper conductors only.

NOTE

Field wires of control circuits shall be separated from other circuits with respect to the end use requirements.

Operation

Prerequisites

Most control functions require the input of passwords. This applies to all entries affecting the device functions.

No password is required to read out data, indications, and diagnostic data.

NOTE

The device comes delivered with the following default passwords:

- Activation password: **000000**
- Maintenance password: **311299**

Once commissioning has been completed, you should change the passwords to protect the device against unintentional changes and operation by unauthorized persons. How to change the passwords is described in the device manual.

The devices are operated via the connected PC using web browser.

Operation is described in detail in the respective device manual. In the following, the most important settings are described:

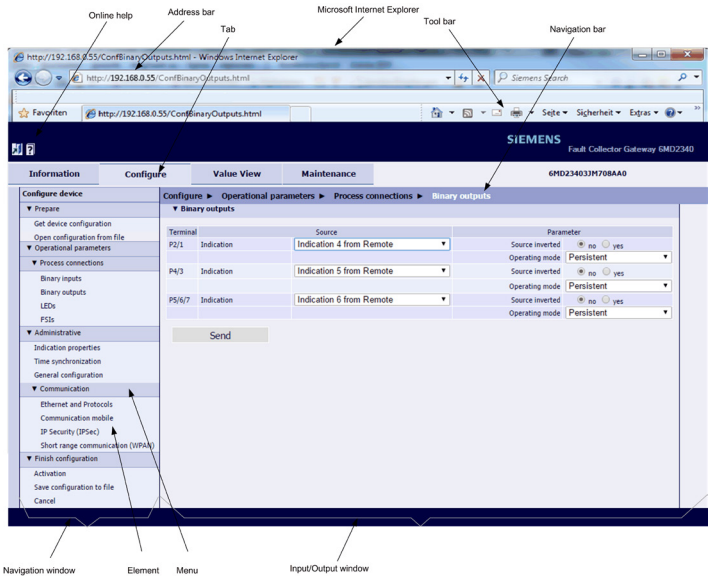
The graphical user interface is stored in the device. To display the user interface, start Microsoft Internet Explorer 8.0 (or higher) and enter the IP address (default IP address: 192.168.0.55; also see label on the side of the device) of the device.

You can navigate through browser (for example Microsoft Internet Explorer) using the icons on the toolbar, for example back, forward, print etc. The user interface itself does not contain any navigation icons.

The following table lists the control elements:

Control Element	Control Function
	Option button: selects one option
	List box: selects an item from a list
	Button: Executing an action by clicking the button, that is the current settings on the user interface are transmitted to the device.
	Active tab (light blue)
	Inactive tab (dark blue)
	Selects and opens the item to be activated, for example a tab

Structure of the HTML pages



NOTE

Request in accordance with EN 301511:

The Ethernet port must be switched off after putting into operation and as long as the Ethernet interface is not needed using the button "IP Addr". The communication then takes place only via mobile communication.

Repair

CAUTION

Danger of damage due to static electrical charges

The user is not authorized to repair the device when it is defective. This is because the device contains special electronic components that may only be handled by the manufacturer in compliance with the regulations for electrostatic sensitive devices (ESD).

Furthermore, hazardous voltages can lead to lethal injuries when the work is performed improperly.

If you suspect that the device has a defect, Siemens recommends to send the entire device back to the manufacturer.

Cleaning

Switch off the device. Wiped the device with a clean, dry and soft cloth. Do not use solvents.

Repacking a Device

- If you store devices after incoming inspection, pack them in suitable storage packaging.
- If devices are to be transported, pack them in transport packing.
- Put the accessories supplied and the test certificate in the packing with the device.

Storage

- Only store devices on which you have carried out an incoming inspection, thus ensuring that the warranty remains valid.
- Store the device in a dry and clean location.
- The relative air humidity must not lead to condensation or ice formation.
- To avoid premature aging of the electrolytic capacitors, store the device within the recommended temperature range of +10 °C to +35 °C (+50 °F to +95 °F)
- If the device is stored for an extended period of time, Siemens recommend to connect the device to the supply voltage for 1 or 2 days once a year to reform the electrolytic capacitors in the device. This procedure should also be carried out before operating the device.

Transport

SICAM FCG with 1 contained lithium metal cell (button cell with 0.07 g lithium content) meets the preconditions of Special Provision **188** of the UN Recommendations on the Transport of Dangerous Goods, 17th revised edition and is classified according to:

- ADR/RID/ADN/IMDG-Code: UN 3091 lithium metal batteries contained in equipment, 9, preconditions of SP **188**
- ICAO-TI/IATA-DGR: UN 3091 lithium metal batteries contained in equipment, 9, preconditions of **Section II of PI 970**

Technical Data

DC 12 or DC 24 V Power Supply

Rated input voltages	DC 12 V or DC 24 V SELV
Input-voltage range	DC 10 V to 28.8 V
Maximum input current	1 A
Power input typical (12 V)	3 W
Maximum power input	4.3 W (typical)
Safety	CAT III Fixed installation according to IEC 61010-1 ed. 3

Binary Inputs (Terminal Block P)

Number according to device	3
Rated input voltage range	DC 24 V to DC 250 V; AC not allowed
Threshold voltages (adjustable)	
Threshold voltage 19 V (at rated voltage 24 V)	V high ≥ 19 V V low ≤ 14 V
Threshold voltage 88 V (at rated voltage 110 V)	V high ≥ 88 V V low ≤ 66 V
Threshold voltage 176 V (at rated voltage 220 V)	V high ≥ 176 V V low ≤ 132 V
Maximum input voltage	DC 300 V

Binary Inputs (Terminal Block L)

Number according to device variant	3
Input voltage range	DC 9 V to DC 20 V; AC not allowed
Rated voltage	12 V
Threshold voltage 7 V (at rated voltage 12 V)	V high ≥ 10 V V low ≤ 4 V
Maximum input voltage	DC 20 V

Binary Outputs (Relay Outputs)

Type of relay	NO relay	CO relay
Number	2	1
Output values		
Switching capacity	On: 1000 W/VA Off: 30 VA; 40 W ohmic 25 W/VA at L/R ≤ 40 ms	
Contact voltage AC and DC	250 V	

Permissible current per contact	Continuous: 5 A Switching on and holding: 30 A for 1 s (make contact)
Short-time current across closed contact	250 A at 30 ms
Total permissible current for contacts connected to common potential	5 A
Switching time (OOT)	≤ 10 ms; (OOT = output operating time) more delay of the output medium used
Rated data of the output contacts	
AC 120 V	5.0 A, GP
AC 277 V	5.0 A, GP
AC 277 V	0.7 HP
NEMA B300, R300	
Anti-interference capacitor across the contacts	4.7 nF, ± 20 %, AC 250 V
Contact life	
Expected contact life (resistive load)	> 10^5, electric (AC) at 20 switching cycles/min

Communication Interfaces

Ethernet Interface

Ethernet, electrical	Connection	Device top side RJ45 connector socket 100BaseT acc. to IEEE802.3 LED yellow: 10/100 Mbit/s (off/on) LED green: connection/no connection (on/off)
	Voltage strength	DC 700 V
	Transmission rate	10/100 Mbit/s
	Cable for 100Base-T	100 Ω to 150 Ω STP, CAT5
	Maximum cable length 100Base-T	100 m, if installed

GSM Antenna and Antenna Interface

Requirements for Antenna Type	
Fixed antenna	For use in industrial environment acc. to EN/IEC 61010-1 Ed. 3 CAT III
Detached antenna	For remote installation in residential, commercial, and light industrial environments (EN/IEC 61010-1 Ed. 3 CAT III).
Antenna Data	
Antenna Gain	
GSM 850 MHz	≤ 6 dBi
GSM 900 MHz	No maximum value
GSM 1800 MHz	No maximum value
GSM 1900 MHz	≤ 2.25 dBi
Connection Values	
Impedance	50 Ω
VSWR	≤ 2:1
Antenna Interface at the Device	
Type of antenna socket	SMA

Short-Range Radio Antenna and Antenna Interface

Recommended Antenna Specifications	
Frequency band	2440 MHz ±100 MHz
Antenna Data	
Antenna Gain	≤ 0 dBi
Connection Values	
Impedance	50 Ω
VSWR	≤ 1.5:1
Antenna Interface at the Device	
Type of antenna socket	RP-SMA (RP = Reverse Polarity)

Mobile Communication

GSM frequency bands	GSM 850 GSM 900 GSM 1800 GSM 1900
Maximum transmission rate	Up to 80 kbit/s uplink Up to 40 kbit/s downlink
General data	GPRS multislot class 10, Coding schemes CS 1-4

Short-Range Radio Communication

Operating frequency band	2.4 GHz
Maximum transmission rate	250 kbit/s

Environmental Data

Temperature	Open type; surrounding air temperature	Maximum 63 °C (131 °F), normal operation
	Operating temperature	-20 °C to +70 °C or -4 °F to +158 °F
	Temperature during transport	-25 °C to +70 °C or -13 °F to +158 °F
	Temperature during storage recommendation	-25 °C to +70 °C or -13 °F to +158 °F +10 °C to +35 °C or +50 °F to +95 °F
	Maximum temperature gradient	20 K/h

Air humidity	Mean relative air humidity per year	≤ 75 %
	Maximum relative air humidity	95 % 30 days a year
	Condensation during operation	Not permitted
	Condensation during transport and storage	Permitted

General Data

Battery	Type	PANASONIC CR2032 or VARTA 6032 101 501
	Voltage	3 V
	Capacity	230 mAh
	Typical life	10 years In operation with continuous supply voltage
		2 months within 10 years in operation where supply voltage is not applied continuously
Protection class	DIN rail side	IP20
	Terminal side (terminals)	IP20
	Top side	IP20

Electrical Standards

Standards: R&TTE Standards: EN 301 511 V9.0.2 EN 300 328 V1.8.1 EN 301 489 V1.9.2	IEC 61010-1, ed. 3.0 IEEE standard C37.90, see individual functions VDE 0435 For more standard, see also individual functions

Insulation Test

Power supply	Rated voltage: DC 12 or DC 24 V, no insulation
Ethernet interface	Insulation: SELV Rated voltage: < DC 50 V, insulation test voltage: DC 700 V Rated voltage: < DC 50 V, insulation test voltage: AC 1500 V
Binary outputs	Insulation: reinforced, CAT III Rated voltage: 300 V Insulation test voltage: AC 3.51 kV
Binary inputs	Insulation: reinforced, CAT III Rated voltage (Block P): 300 V Rated voltage (Block L): 12 V Insulation test voltage: AC 3.51 kV

EMC Tests for Immunity (Type Tests)

Standards		IEC 61326-1 VDE 0435 For more standard, see also individual functions
Radio frequency electromagnetic field, amplitude-modulated Class III IEC 61326-1, IEC 61000-4-3		10 V/m; 80 MHz to 2.7 GHz; 80 % AM; 1 kHz
Radio frequency electromagnetic field, pulse-modulated IEC 61326-1, IEC 61000-4-3		Frequency: 900 MHz Modulation: PM 100 % Keying frequency: 200 Hz, 50 % Duty cycle: 50 % Field: 10 V/m
High energy surge voltages (SURGE), installation class III IEC 61326-1, IEC 61000-4-5		Impulse: 1.2 µs/50 µs
	Auxiliary voltage	Cable length between auxiliary voltage and SICAM FCG device: maximum 0.5 m
	Binary inputs and relay outputs	Common mode: 2 kV; 42 Ω; 0.5 µF
	Binary inputs	Diff. mode: 1 kV; 42 Ω; 0.5 µF
High frequency on line, amplitude-modulated, class III IEC 61326-1, IEC 61000-4-6		10 V; 150 kHz to 80 MHz; 80 % AM; 1 kHz
Power system frequency magnetic field IEC 61326-1, IEC 61000-4-8, class IV;		30 A/m continuous; 300 A/m for 3 s;
Damped oscillations IEC 61000-4-18		2.5 kV (peak value); 100 kHz; 40 pulses per s; test duration 2 s; Ri = 200 Ω

EMC Test for Noise Emission (Type Test)

Standard	IEC/EN 61000-6-4
Radio noise voltage to lines, only auxiliary voltage IEC-CISPR 11	150 kHz to 30 MHz limit class A

Mechanical Stress Tests

Vibration and Shock Stress during Stationary Operation

Standards	IEC 62586-1 and IEC 60068
Oscillation IEC 62586-1, class II; IEC 60068-2-6 test Fc	Sinusoidal 10 Hz to 60 Hz: ± 0.075 mm amplitude; 60 Hz to 150 Hz: 1 g acceleration Frequency sweep rate 1 octave/min 20 cycles in 3 orthogonal axes.
Shock IEC 62586-1, class II; IEC 60068-2-27 test Ea	Semi-sinusoidal 5 g acceleration, duration 11 ms, each 3 shocks in both directions of the 3 axes
Seismic vibration IEC 62586-1, class II; IEC 60068-3-3 test Fc	Sinusoidal 1 Hz to 8 Hz: ± 7.5 mm amplitude (horizontal axis) 1 Hz to 8 Hz: ± 3.5 mm amplitude (vertical axis) 8 Hz to 35 Hz: 2 g acceleration (horizontal axis) 8 Hz to 35 Hz: 1 g acceleration (vertical axis) Frequency sweep 1 octave/min 1 cycle in 3 orthogonal axes

Vibration and Shock Stress during Transport

Standards	IEC 62586-1 and IEC 60068
Oscillation IEC 62586-1, class 2; IEC 60068-2-6 test Fc	Sinusoidal 5 Hz to 8 Hz: ± 7.5 mm amplitude; 8 Hz to 150 Hz: 2 g acceleration Frequency sweep 1 octave/min 20 cycles in 3 orthogonal axes
Shock IEC 62586-1, class 1; IEC 60068-2-27 test Ea	Semi-sinusoidal 15 g acceleration, duration 11 ms, Each 3 shocks (in both directions of the 3 axes)
Shock IEC 62586-1, class 1; IEC 60068-2-29 test Eb	Semi-sinusoidal 10 g acceleration, duration 16 ms, Each 1000 shocks (in both directions of the 3 axes)

Climatic Stress Tests

Temperatures

Standards	IEC 60068
Type test (in acc. with IEC 60068-2-1 and IEC 60068-2-2, Test bed for 16 h)	-20 °C to +70 °C or -4 °F to +158 °F
Permissible temporary operating temperature (tested for 96 h)	-20 °C to +70 °C or -4 °F to +158 °F
Recommended for permanent operation (in acc. with IEC 60255-6)	-20 °C to +70 °C or +14 °F to +131 °F
Limit temperatures for storage	-25 °C to +70 °C or -13 °F to +158 °F
Limit temperatures for transport	-25 °C to +70 °C or -13 °F to +158 °F
Storage and transport with factory packaging	

Humidity

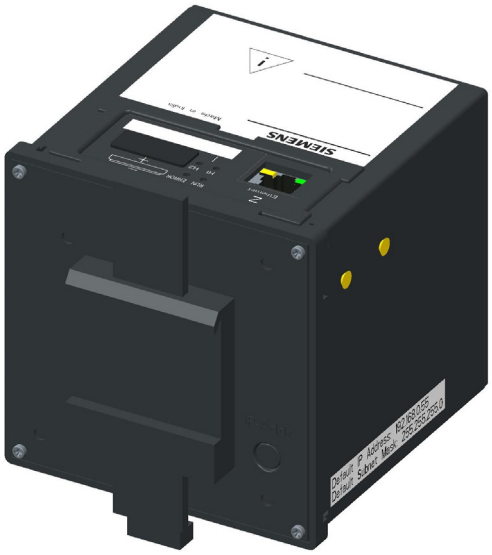
Standards	IEC 62586-1 and IEC 60068
Permissible humidity	Mean value per year ≤ 75 % relative humidity; on 10 days and 40 °C of the year up to 93 % relative humidity; condensation is not allowed.
Arrange the devices so that they are not exposed to direct sunlight or extreme temperature changes. This will prevent condensation in the device.	

Dimensions

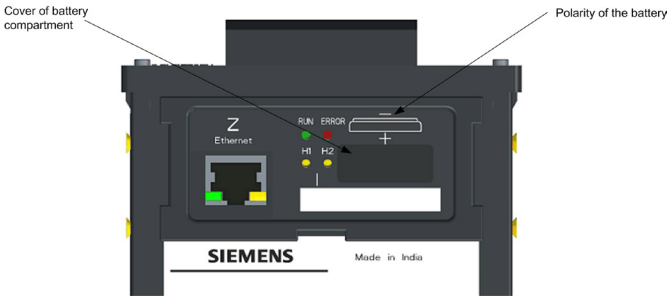
Mass	approx. 0.550 kg
Dimension (W x H x D)	96 mm x 96 mm x 100 mm 3.78 in x 3.78 in x 3.94 in

1 SICAM FCG Terminal Side

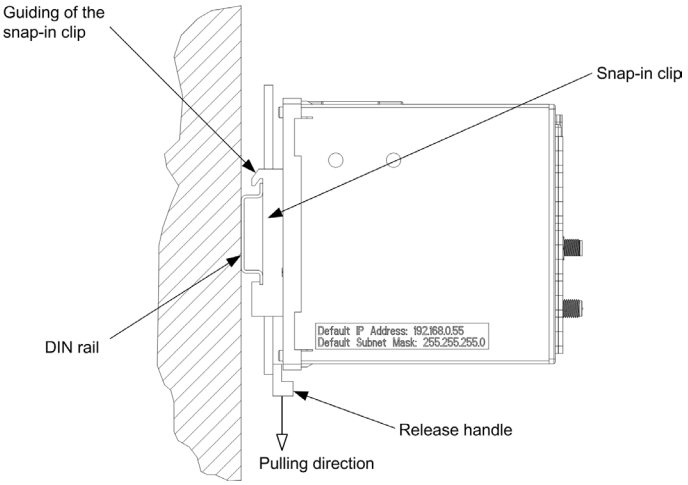
2 SICAM FCG DIN Rail Side



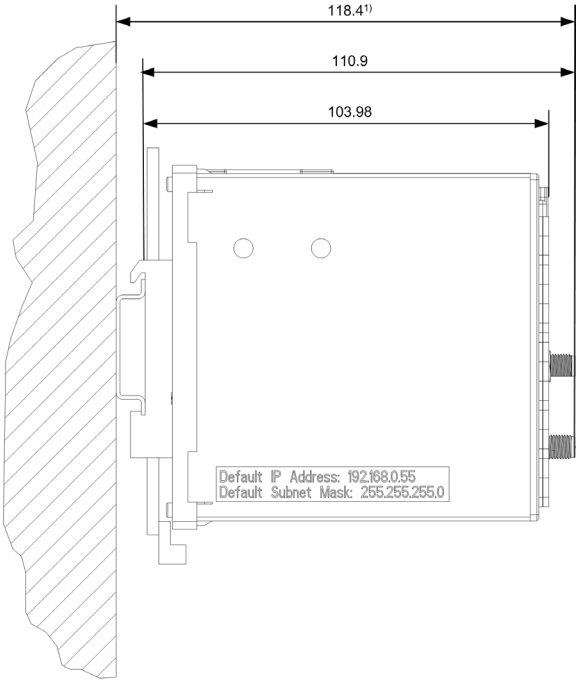
3 SICAM FCG Device Top Side, Cover of Battery Compartment



4 SICAM FCG DIN-rail Assembly



5 SICAM FCG Dimension Drawing



1) Dimensional drawing is valid for DIN rail DIN EN 50022-35x7.5