

# Sigma 2.0

Short-circuit indicator



Sigma 2.0



Sigma 2.0 AC/DC

## Product features

- Short-circuit indicator for all medium voltage networks
- Phase-selective fault indication
- Trip current values: load-dependent self-adjustment or fixed values
- Single and double flash mode for operation in radial and ring networks
- With auxiliary supply and capacitor storage available in AC/DC version

## Your advantages

- No false trips due to harmonics
- Highly visible LED fault indication
- Retrofit ready for earth and short-circuit indicators with monitoring/control and fault direction function

The Sigma 2.0 is a phase-selective short-circuit indicator. It is designed to detect, display and remotely indicate short-circuits in medium voltage distribution networks.

The current is measured via three single-phase current sensors. By using the new sensors retrofit to more advanced indicator series is possible at any time – without changing the sensors.

There are two response criteria for short-circuit detection, fixed response value with response delay or auto-adjustment based on load current.

If the current for the selected response criterion – fixed value or self-adjustment – is exceeded, the fault-affected phase will be indicated by a bright flashing LED and remote contact will be activated. A double flashing LED signals a second fault that has occurred within the reset time, e. g. by an automatic reclose attempt and the remote contact will be reactivated.

For testing and commissioning purposes, the trip current values can be reduced to 10 A without changing the DIP switch settings.

## Sigma 2.0 AC/DC

This version can be connected to auxiliary supply. If the auxiliary power drops out in the event of a fault, the LED indicator can operate using a back-up capacitor for up to 8 hours.

Technical data	Sigma 2.0
Short-circuit indicator	■
Earth fault detection method	Earth short-circuit
I>> short-circuit trip current	<ul style="list-style-type: none"> <li>■ 200, 300, 400, 600, 800, 1,000, 2,000 A</li> <li>■ Self-adjustment to load current (<math>I_L</math> = load current): <math>I_L &lt; 100 \text{ A} \rightarrow I_{&gt;&gt;} = 400 \text{ A}</math>, <math>I_L &gt; 100 \text{ A} \rightarrow I_{&gt;&gt;} = 4 \times I_L</math></li> </ul>
tI>> response delay	40, 80 ms
Accuracy	<ul style="list-style-type: none"> <li>±5 % (0 – 630 A)</li> <li>±10 % (&gt;630 A)</li> </ul>
Indication	3 red LEDs: 3 x short-circuit (L1, L2, L3)
Remote signal/ communication	1 potential-free relay contact
Remote contact	Potential-free permanent or momentary contact Contact capacity: 230 V AC / 1 A / 62.5 VA max.; 220 V DC / 1 A / 60 W max.
Reset	<ul style="list-style-type: none"> <li>■ By button</li> <li>■ Automatic time reset: 1, 2, 4 or 8 h</li> <li>■ Remote reset</li> </ul>
Power supply	
CT powered	■
Internal power supply	Long-life lithium cell, active flashing time >900 h, shelf life ≥20 years AC/DC version: back-up capacitor, max. 8 h
External auxiliary supply	AC/DC version: 24 – 230 V AC/DC
Housing	Polycarbonate, IP40
Temperature range	–30 to +70 °C

Dimension drawing in catalogue on page 158, M3



Equipment set	Accessories
1 display unit	Connection to remote monitoring
Sigma 2.0	Order no. 37-1111-101
Sigma 2.0 AC/DC	Order no. 37-1121-101
3 single-phase current sensors	Wall-mounted housings
	External signal lamp
	Disassembly clip
	Spring clip

# Single-phase current sensors

## For new installations on bushings

for Sigma 2.0 series, Sigma D series, ComPass series



**ABB**  
Type:  
Safelink, SafePlus, SafeRing  
Ø 79,5 mm / 84 mm  
Order no.  
3 x 49-6025-000 or  
3 x 49-6025-301



**Driescher**  
Type:  
MINEX, MINEX C, G.I.S.E.L.A.  
Ø 84 mm  
Order no.  
49-6025-601<sup>1)</sup>



**EATON**  
Type:  
XIRIA  
Ø 79,5 mm / 84 mm  
Order no.  
3 x 49-6025-000 or  
3 x 49-6025-301



**Lucy Electric**  
Type:  
AegisPlus  
Ø 84 mm  
Order no.  
3 x 49-6025-601



**Ormazabal**  
Type:  
ga, gae, ge  
Ø 84 mm  
Order no.  
3 x 49-6025-311



**Schneider Electric**  
Type:  
RM6  
Ø 84 mm  
Order no.  
3 x 49-6025-301



**Schneider Electric**  
Type:  
FBX  
Ø 84 mm  
Order no.  
1 x 49-6025-622



**Siemens**  
Type:  
8DJH (cable panel)  
Ø 84 mm  
Order no.  
1 x 49-6025-630



**Siemens**  
Type:  
NXPLUS C,  
8DJH (cubicle width 430 mm)  
Ø 84 mm  
Order no.  
3 x 49-6025-611

For screened connectors only. Insulation level: 0.72/3 kV.  
1) Without retaining plates. Order no. with retaining plates on request

## For retrofit on insulated cables

for Sigma 2.0 series, Sigma D series, ComPass series



Conductor Ø [mm]	Cable length [m]	Order no.
15–55	3.00	49-6024-001



Conductor [mm]	Cable length [m]	Order no.
15–65	3.00	49-6024-010
15–78 (1250 A)	3.00	49-6024-130



iHost solution

## Horstmann products are in step with the times:

As grids become increasingly complex and heterogeneous, greater demands are placed on the availability of electricity networks. The increasing use of renewable energy sources and the desire for decentralisation play important roles in this development.

### The Horstmann solution:

Information based network monitoring – the iHost system reduces power outage times thanks to quicker availability of information.

The iHost system collects data from devices such as from the short-circuit and earth fault indicators in the field (e.g. of the Compass series – see page 44), evaluates the data in a data concentrator and shares it with the control room systems and/or mobile terminals. Fault information and exceeded limits can also be send by e-mail or SMS.

### Advantages at a glance:

- Current information about network performance
- Continuous network supervision prevents power outages
- Alerts in the case of faults or irregularities
- Analysis tools for increasing network visibility

### Product features:

- Data concentrator for short-circuit and earth fault indicators
  - Bundles and processes all data received from remote field devices
  - Provides data access at any time in various ways and devices
- Central management of all field devices – with one click
  - Grid monitoring: system overview, data analysis, health checks
  - Configuration and firmware updates from SCADA
- Data on demand
  - Customised visualisation of data and alarms
  - Individual notifications, generated automatically
- Embedded database
  - Grid data available from day one of installation
  - Flexible data provision for asset management, planning, engineers and further user



iHost Cloud



iHost Compact

## iHost Cloud

For smaller scale projects or pilot schemes iHost Cloud is the best choice. Quick and easy implementation works without software installation. Handling is very user-friendly – all you need is a web-enabled device, your username and password. Customised notifications in case of a fault or alarms are possible via SMS and e-mail.

## iHost Compact

If you want to see the data in your SCADA, iHost Compact is the right choice. With this solution iHost becomes part of your SCADA infrastructure. Installed on a physical or a virtual server iHost is a gateway that processes all data and forwards them directly to your SCADA. With iHost Compact you manage all remote devices installed in the power network.

Feature	iHost Cloud	iHost Compact		
		Software	Software / hardware	Software/hardware/101
Hardware / Server arrangement	<ul style="list-style-type: none"> <li>High availability cluster</li> <li>Software as a service</li> </ul>	Single installation of the ihost software on a customer supplied, pre-installed and virtual server	Single server, Horstmann supplied	Single server, Horstmann supplied with serial interface
Operating system (OS)	Cloud service / data centre	Microsoft Windows Server OS	Microsoft Windows Server OS	Microsoft Windows Server OS
Visualisation	Web browser	SCADA		
SIM cards for smart FCI/RTU	Available on request	Customer supplied SIM with private APN		
iHost licence type	Software included	One-time license fees		
RTU count	1 – 1,000	50 / 250 / 500		
Limits of users / user roles	50 / 3	2 / 2		
Maps	Yes	No		
Notifications	Yes (e-mail / SMS)	No		
Historian	Yes	No		
Data access API	No	No		
SCADA protocols	n/a	IEC60870-5-101 <sup>1)</sup> IEC60870-5-104 DNP3 (serial) <sup>1)</sup> DNP3 (IP)	IEC60870-5-104  DNP3 (IP)	IEC60870-5-101 IEC60870-5-104 DNP3 (serial) DNP3 (IP)
Simultaneous SCADA channels	n/a	2		

1) Customers server hardware must contain serial interface.

iHost Cloud	Accessories
1 licence	Smart Navigator 2.0
Cloud per RTU / year	Reporter 3.0
Order no. 79-1010-000	Reporter 4.0
1 SIM card	ComPass AX12
Cloud – 1 SIM-S*	ComPass BX12
Order no. 79-1040-000	Radio Reporter 2.0
Cloud – 1 SIM-M**	
Order no. 79-1041-000	
iHost Compact Software	
1 licence	
Compact 50 (SW)	
Order no. 79-1110-000	
Compact 250 (SW)	
Order no. 79-1120-000	
Compact 500 (SW)	
Order no. 79-1130-000	
1 software installation package (remote VPN access)	
Order no. 79-1160-000	
1 technical support for 12 months	
Order no. 79-1150-000	
iHost Compact Software / hardware	
1 licence	
Compact 50 (SW/HW)	
Order no. 79-1110-100	
Compact 250 (SW/HW)	
Order no. 79-1120-100	
Compact 500 (SW/HW)	
Order no. 79-1130-100	
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Compact 250 (SW/HW/101)	
Order no. 79-1120-101	
Compact 500 (SW/HW/101)	
Order no. 79-1130-101	
1 software installation package (remote VPN access)	
Order no. 79-1160-000	
1 technical support for 12 months	
Order no. 79-1150-000	

\*SIM-S: 2G, 3G; 10 MB data volume / month / SIM card

\*\*SIM-M: 2G, 3G, 4G; 20 MB data volume / month / SIM card





iHost Solo



iHost Pro

With iHost Solo and iHost Pro all measured values as well as fault information are transferred directly to your SCADA and are available on mobile devices at the same time. All data is stored in iHost. Installed in your premises these solutions provide you multiple options regarding the use, analysis and visualisation of data.

## iHost Solo

iHost Solo is designed for medium sized distribution networks whereas iHost Pro can handle the variety of remote devices, even of large distribution utilities.

## iHost Pro

Complete with high availability resilience the system supports all departments of your company. The system can be tailored for user groups depending on their requirements.

Feature	iHost Solo			iHost Pro
	Software	Software / hardware	Software/hardware/101	
Hardware / Server arrangement	Single installation of the ihost software on a customer supplied, pre-installed and virtual server	Single server, Horstmann supplied	Single server, Horstmann supplied with serial interface	Single installation of the ihost software on a customer supplied, pre-installed and virtual server
Operating system (OS)	Microsoft Windows Server OS	Microsoft Windows Server OS	Microsoft Windows Server OS	Microsoft Windows Server OS
Visualisation	Web browser and SCADA			
SIM cards for smart FCI/RTU	Customer supplied SIM with private APN			
iHost licence type	One-time license fees			Annual license fees
RTU count	100/500/1,000			2,000/3,500/5,000
Limits of users/user roles	50/10			Unlimited/50
Maps	Yes (option)			
Notifications	Yes (e-mail/SMS)			
Historian	Yes			
Data access API	Yes			
SCADA protocols	IEC60870-5-101 <sup>1)</sup> IEC60870-5-104 DNP3 (serial) <sup>1)</sup> DNP3 (IP)	IEC60870-5-104  DNP3 (IP)	IEC60870-5-101 IEC60870-5-104 DNP3 (serial) DNP3 (IP)	IEC60870-5-101 <sup>1)</sup> IEC60870-5-104 DNP3 (serial) <sup>1)</sup> DNP3 (IP)
Simultaneous SCADA channels	2			10

1) Customers server hardware must contain serial interface.

iHost Solo Software	Accessories
1 licence	Smart Navigator 2.0
Solo 100 (SW) Order no. 79-1210-000	Reporter 3.0
Solo 500 (SW) Order no. 79-1220-000	Reporter 4.0
Solo 1000 (SW) Order no. 79-1230-000	ComPass AX12
1 software installation package (remote VPN access) Order no. 79-1260-000	ComPass BX12
1 technical support for 12 months Order no. 79-1250-000	Radio Reporter 2.0
iHost Solo Software / hardware	
1 licence	
Solo 100 (SW/HW) Order no. 79-1210-100	
Solo 500 (SW/HW) Order no. 79-1220-100	
Solo 1000 (SW/HW) Order no. 79-1230-100	
1 software installation package (remote VPN access) Order no. 79-1260-000	
1 technical support for 12 months Order no. 79-1250-000	
iHost Solo Software / hardware / 101	
1 licence	
Solo 100 (SW/HW/101) Order no. 79-1210-101	
Solo 500 (SW/HW/101) Order no. 79-1220-101	
Solo 1000 (SW/HW/101) Order no. 79-1230-101	
1 software installation package (remote VPN access) Order no. 79-1260-000	
1 technical support for 12 months Order no. 79-1250-000	
iHost Pro Software	
1 licence	
Pro 2000 Order no. 79-1310-000	
Pro 3500 Order no. 79-1320-000	
Pro 5000 Order no. 79-1330-000	
1 software installation package (remote VPN access) Order no. 79-1360-000	
1 technical support for 12 months Order no. 79-1350-000	



# Reporter 3.0

Remote monitoring to iHost



Reporter 3.0

## Product features

- Detection and forwarding of digital states as generated e.g. by short-circuit or earth fault indicators, door contacts etc.
- Bidirectional data transfer to iHost
- Internal battery supply / no auxiliary supply necessary

The Reporter 3.0 is used for the remote signalling of short-circuits, earth faults and additional status reports (door contact, temperature sensor etc.) from a medium-voltage network that are reported by short-circuit and earth fault indicators. The received reports are transferred to iHost through a bidirectional data connection. The Reporter 3.0 is housed in robust, weatherproof housing for wall mounting and can be configured using Windows-based PC software and iHost.

Reported short-circuits and earth faults are securely sent to SCADA via the iHost system and can be retrieved by any web-enabled device at any time. Notifications can also be received by e-mail and/or SMS.



Technical data	Reporter 3.0
Special features	<ul style="list-style-type: none"> <li>▪ Routine call</li> <li>▪ Automatic date and time synchronisation</li> <li>▪ Transmission of signal field strength</li> <li>▪ Temperature sensor</li> <li>▪ Fault and status notification via SMS and/or e-mail</li> </ul>
Inputs	<ul style="list-style-type: none"> <li>▪ 16 digital inputs for potential-free relay contacts</li> <li>▪ 2 analogue inputs (4–20 mA)</li> </ul>
Communication	Bidirectional data connection to iHost
Indication (inside)	Control LEDs for data reception/ connection
Power supply	Replaceable long-life lithium cell 7–10 years, min. 1,000 calls
Housing	Glass fibre reinforced polycarbonate, IP66
Installation	Wall mounting
Temperature range	–30 to +70 °C

Dimension drawing in catalogue on page 159, M10

Equipment set	Accessories
1 Reporter 3.0	Fault indicators with relay contacts
Order no. 28-7330-022	
1 iHost solution	
iHost Cloud	
iHost Compact	
iHost Solo	
iHost Pro	

# Accessories

For short-circuit and earth fault indicators and integrated voltage detecting systems

## Wall-mounted housings

for the installation of short-circuit and earth fault indicators as well as integrated voltage detecting systems outside the switchgear



W x H x D  
125 x 75 x 125 mm  
Order no.  
49-9001-001 bottom cable entry  
49-9001-002 rear cable entry



W x H x D  
125 x 175 x 125 mm  
Order no.  
V49-9001-004-001  
incl. earthing bar



W x H x D  
125 x 75 x 75 mm  
Order no.  
49-9001-006



W x H x D  
290 x 77 x 200 mm  
Order no.  
V49-9001-007-001  
incl. earthing bar

## External signal lamps

for installation outside the switchgear



3 LEDs	Order no.
5 m connection cable, with battery, for permanent contact	49-0702-005
10 m connection cable, with battery, for permanent contact	49-0702-010
15 m connection cable, with battery, for permanent contact	49-0702-015



Bicolour 3 LEDs red/green	Order no.
3 m connection cable, with battery	49-0706-001



Bicolour 1 LED red/green	Order no.
2 m connection cable, with battery, without fibre optic cable (see page 57)	49-0704-001

## Installation system

for Sigma D series and ComPass series



	Order no.
Tablet for parameter setting during installation or monitoring, incl. cover, pencil, power supply and USB cable	49-6022-010

## Temperature sensor PT100



	Order no.
Temperature range	-50 to +180 °C
Dimension	6 x 50 mm
Cable length	10 m (silicone, 2 ferrules)
Protection degree	IP65

## Fibre optic cables



	Order no.
Fibre optic cable 3 m (standard length for short-circuit CTs)	49-0602-009
Fibre optic cable 4 m (standard length for earth fault CTs)	49-0602-001
Fibre optic cable 1,8 m (standard length for external signal lamp)	49-6007-206

## Accessories for Opto series



	Order no.
Cutting tool for fibre optic cables	49-0109-003



	Order no.
Transformer with cable for top-hat rail mounting (115 V – 230 V AC / 24 V – 48 V AC)	49-0921-002



	Order no.
Optical testing unit to excite the indicator for connection to the fibre optic cable plug	49-0109-002

## Accessories for plug-in housing



	Order no.
Disassembly clip	49-9090-016
Disassembly clip for ComPass B 2.0 / Bs 2.0	49-9090-017



	Order no.
Spring clip suitable for 2 mm front plate thickness (standard)	49-9090-018
Spring clip suitable for 3 mm front plate thickness	49-9090-019