

ComPass A 2.0

Short-circuit and earth fault indicator with monitoring



ComPass A 2.0

Product features

- Short-circuit and earth fault indicator
- Suitable for all types of networks / neutral point treatments
- Earth fault detection with earth short-circuit and pulse detection method
- LEDs and OLED display: for good visibility
- High-precision current measurement to 0.5 %
- PT100 temperature sensor for equipment monitoring
- Monitoring of the parameters current (I), temperature (T) and frequency (f)
- Limit monitoring: I, T
- Compass Explorer Software: Commissioning and parameterisation via front accessible USB port

Your advantages

- Fast commissioning and parameterisation
- One indicator for all type of networks
- Retrofit ready for earth and short-circuit indicators with monitoring/control and fault direction function

The ComPass A 2.0 is suitable for use in substations with a remote control connection of the electrical power distribution in a medium voltage network. Trip current values and pre-fault current values are logged with time stamp.

In addition to the short-circuit and earth fault function, the ComPass A 2.0 measures the temperature, for example of a transformer or the transformer station with the PT100 sensor.

The ComPass A 2.0 provides the collected information, measured values and their limits, for transmission to the control room. Phase selectivity and faults (earth fault or short-circuit) are also shown in the OLED display.

Technical data	ComPass A 2.0
Short-circuit indicator	■
Earth fault indicator	■
Earth fault detection method	Earth short-circuit
Measured values/indication	<ul style="list-style-type: none"> ▪ Phase currents I_1, I_2, I_3, I_E with phase angle ▪ Operating current, I_1, I_2, I_3, all average values adjustable (1–60 min), I_1, I_2, I_3 max. 24 h/7 days/365 days, maximum demand indicator $I_{max. LR}$ (last reset), $T_{min. LR}, T_{max. LR}$ ▪ Frequency f ▪ Temperature T
$I_{>>}$ short-circuit trip current	10–2,000 A, self-adjustment (200–2,000 A)
$tI_{>>}$ response delay	20 ms–60 s
I_E earth short-circuit trip current	10–1,000 A
tI_E response delay	40 ms–60 s
Limit monitoring	
$I_{>}$ overload current	5–1,500 A; $tI_{>}$ response delay: 40 ms–60 s
$T < / T << / T > / T >>$ temperature	–40 to +85 °C
Measurement accuracy phase currents	Up to 0.5 % / 0.5 A closed sensor type, ≤ 1 % / 0.5 A split-core sensor type
Indication	<ul style="list-style-type: none"> ▪ LED status display (multicolour) ▪ OLED display (multilingual)
Remote signal/communication	<ul style="list-style-type: none"> ▪ 4 potential-free relay contacts, freely configurable ▪ RS485/Modbus interface
Parameter setting	USB port with ComPass Explorer Software
Remote contact	4 potential-free permanent or momentary contacts, bistable, NC or NO Contact capacity: 230 V AC / 1 A / 62.5 VA max.; 220 V DC / 1 A / 60 W max.
Binary inputs	2, potential-free, $1 s < t < 5 s$, freely programmable
Reset	<ul style="list-style-type: none"> ▪ By rocker switch ▪ Automatic time reset: 1 min–24 h ▪ Remote reset ▪ Via RS485 / Modbus interface ▪ Current restoration ▪ Restoration of auxiliary supply ▪ ComPass Explorer Software
Power supply	
External auxiliary supply	24–230 V AC/DC (± 10 %)
Internal power supply	Long-life lithium cell, active flashing time $> 1,000$ h, $> 1,000$ display activations, shelf life ≥ 20 years
Housing	Polycarbonate, IP50
Temperature range	–30 to +70 °C

Dimension drawing see on page 159, M7



Equipment set	Page	Accessories	Page
1 display unit ComPass A 2.0	Order no. 38-0152-001	Connection to remote monitoring	77
3 single-phase current sensors	50	Wall-mounted housings	56
		Temperature sensor PT100	57
		External signal lamp	56
		Disassembly clip	57
		Spring clip	57

Product matrix on page 16

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.
49-6025-601¹⁾



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 (cubicle width 310 mm)
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.

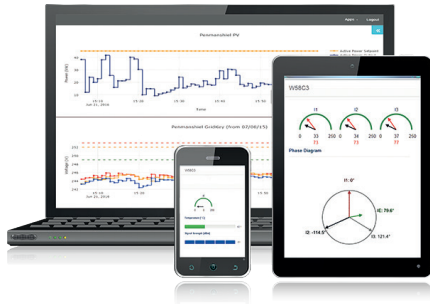
The iHost system collects data from devices such as from the short-circuit and earth fault indicators in the field (e.g. of the Compass series – see page 44), evaluates the data in a data concentrator and shares it with the control room systems and/or mobile terminals. Fault information and exceeded 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"> High availability cluster Software as a service 	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 ¹⁾ IEC60870-5-104 DNP3 (serial) ¹⁾ 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	
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 / 101	
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Compact 50 (SW/HW/101)	
Order no. 79-1110-101	
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 ¹⁾ IEC60870-5-104 DNP3 (serial) ¹⁾ DNP3 (IP)	IEC60870-5-104 DNP3 (IP)	IEC60870-5-101 IEC60870-5-104 DNP3 (serial) DNP3 (IP)	IEC60870-5-101 ¹⁾ IEC60870-5-104 DNP3 (serial) ¹⁾ 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"> ▪ Routine call ▪ Automatic date and time synchronisation ▪ Transmission of signal field strength ▪ Temperature sensor ▪ Fault and status notification via SMS and/or e-mail
Inputs	<ul style="list-style-type: none"> ▪ 16 digital inputs for potential-free relay contacts ▪ 2 analogue inputs (4–20 mA)
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