

Short-circuit and
earth fault indicators



Product matrix

Short-circuit and earth fault indicators
Voltage detectors and detecting systems

Function	Earth Zero Typ Flag	Sigma 2.0 Sigma 2.0 AC/DC	Sigma F+E 2.0 Sigma F+E 2.0 AC/DC	Sigma F+E 3 2.0 Sigma F+E 3 2.0 AC/DC	Sigma D	Sigma D+	Sigma D++	Sigma DM+	ComPass B 2.0	ComPass Bs 2.0	ComPass D
Short-circuit indication / earth short-circuit indication	—	■	■	■	■	■	■	■	■	■	■
Earth fault indication	■	—	■	■	■	■	■	■	■	■	■
Directional indication	—	—	—	—	■	■	■	■	■	■	■
Monitoring	—	—	—	—	—	—	—	■	■	■	■
Control function and programmable logic	—	—	—	—	—	—	—	—	—	2 independent	2 independent
Neutral Earthing System											
Short-term / low-impedance earthed	■	■	■	■	■	■	■	■	■	■	■
Isolated earthed	■	—	■	■	■	■	■	■	■	■	■
Resonant earthed (with Petersen coil)	—	—	—	—	—	■	■	■	■	■	■
Short-circuit trip current values											
I>> Short-circuit trip current / earth short-circuit trip current	—	200 — 2,000 A, self-adjusting	200 — 2,000 A, self-adjusting	200 — 2,000 A, self-adjusting	50 — 2,000 A, self-adjusting	50 — 2,000 A, self-adjusting	50 — 2,000 A, self-adjusting	50 — 2,000 A, self-adjusting	10 — 2,000 A, self-adjusting	10 — 2,000 A, self-adjusting	10 — 2,000 A, self-adjusting
tl>> Response delay	—	40, 80 ms	40, 80 ms	40, 80, 200, 300 ms	40 ms — 60 s	40 ms — 60 s	40 ms — 60 s	40 ms — 60 s	40 ms — 60 s	40 ms — 60 s	40 ms — 60 s
Earth fault detection methods											
IE> Earth fault trip current	25 — 100 A	—	20 — 160 A	20 — 160 A	20 — 1,000 A	20 — 1,000 A	20 — 1,000 A	20 — 1,000 A	10 — 1,000 A	10 — 1,000 A	10 — 1,000 A
IEP> Active residual current cos φ	—	—	—	—	—	5 — 200 A	5 — 200 A	1 — 200 A*	1 — 200 A	1 — 200 A	1 — 200 A
IEQ> Reactive current sin φ	—	—	—	—	—	5 — 200 A	5 — 200 A	1 — 200 A*	1 — 200 A	1 — 200 A	1 — 200 A
IET> Transient earth fault method	—	—	—	—	—	10 — 100 A	10 — 500 A*	10 — 500 A*	10 — 500 A	10 — 500 A	10 — 500 A
VNE> Neutral point displacement voltage (permanent earth fault)	—	—	—	—	—	—	—	1 — 100%	1 — 100%	1 — 100%	1 — 100%
IE> Pulse (stroke)	—	—	—	—	—	1 — 100 A	1 — 100 A	1 — 100 A	1 — 200 A	1 — 200 A	1 — 200 A
Response delay	80, 160 ms	—	80, 200 ms	60, 80, 200 oder 300 ms	40 ms — 60 s	40 ms — 60 s	40 ms — 60 s	40 ms — 60 s	40 ms — 60 s	40 ms — 60 s	40 ms — 60 s
Reset											
Manual/ Remote	■ / —	■ / ■	■ / ■	■ / ■	■ / ■	■ / ■	■ / ■	■ / ■	■ / ■	■ / ■	■ / ■
Automatic time reset	■	■	■	■	■	■	■	■	■	■	■
Current- / voltage- / auxiliary supply restoration	— / ■ / —	— / — / —	— / — / ■	— / — / —	■ / — / ■	■ / ■ / —	■ / ■ / —	■ / ■ / —	■ / ■ / ■	■ / ■ / ■	■ / ■ / ■
Test											
Manual (button)/ Remote	■ / —	■ / ■	■ / ■	■ / ■	■ / ■	■ / ■	■ / ■	■ / ■	■ / ■	■ / ■	■ / ■
Communication											
Relay contacts (bi-/ monostable)	1 / —	1 / —	2 / —	3 / —	4 / —	4 / —	4 / —	— / —	4 / —	— / 4	— / 4
Ethernet/ IEC 60870-5-104	—	—	—	—	—	—	—	—	—	—	■
RS485 / Modbus RTU	—	—	—	—	—	—	—	■**	■	■	—
USB port	—	—	—	—	■	■	■	■	■	■	■
Parameter setting											
Manual (DIP switch) / remote / software via USB	■ / — / —	■ / — / —	■ / — / —	■ / — / —	■ / — / ■	■ / — / ■	■ / — / ■	■ / — / ■	■ / ■ / ■	■ / ■ / ■	■ / ■ / ■
Power supply											
Long-life lithium cell / capacitor	■ / —	■ / —	— / ■	■ / —	— / ■	■ / —	■ / —	■ / —	■ / ■	■ / —	■ / —
CT powered	■	■	■	■	■	■	■	■ (not IET>)	■ (not IET>)	—	—
External auxiliary supply [V AC/DC]	—	—	24 — 230	—	24 — 230	—	24 — 230	24 — 230 (for IET>)	24 — 230	24 — 230	24
Number of current transformers (CT) / current sensor (S)											
Phase current / summation current	— / 1 (CT)	3 / —	3 / —	3 / —	3 / —	3 / 1, opt. 3 / —	3 / — , opt. 3 / 1	3 / —	3 / —, opt. 3 / 1 or 2 / 1	3 / —, opt. 3 / 1 or 2 / 1	3 / —, opt. 3 / 1 or 2 / 1
Voltage coupling											
Capacitive / resistive	—	—	—	—	■ / —	■ / —	■ / —	■ / —	■ / ■	■ / ■	■ / ■

* Only with auxiliary voltage supply
** 1 minute buffering after failure of auxiliary voltage supply

In case of any questions, please do not hesitate to contact us:

Integrated voltage detecting systems

							
Function	Wega 1	Wega 1 V	Wega 2	Wega 2 V	Wega PD	Wega T1	Wega 1 LV
3 phase VDIS according to IEC 62271-213	■	■	■	■	■	—	—
Capacitive voltage coupling for ComPass B/D series and Sigma D series	■	■	■	■	■	—	■
Overvoltage indication	■	■	■	■	■	■	—
Integrated permanent maintenance test	■	■	■	■	■	■	■
Integrated display test (without auxiliary supply)	■	■	■	■	■	■	■
Fully enclosed electronics	■	■	■	■	■	■	■
Adjustable C2 capacity	—	■	—	—	—	Vario variant	—
Nominal voltage / nominal frequency							
Nominal voltage of switchgear	from 1kV	from 1kV	from 1kV	from 1kV	from 1kV	from 1kV	400-700 V
Nominal frequency 50 Hz / 60 Hz	■	■	■	■	■	■	50 Hz
Display							
LCD display / LED indication	■ / —	■ / —	■ / ■	■ / ■	■ / 1 LED for PD monitoring	■ / —	■ / —
Display powered by measured voltage	■	■	■	■	■	■	■
LCD symbols							
Voltage present	■	■	■	■	■	■	■
Threshold value: 0.1 — 0.45 x Vnom							
Voltage present	■	■	■	■	■	■	■
Integrated maintenance test passed							
Voltage present	■	■	■	■	■	■	—
Integrated maintenance test passed							
Voltage signal too high (overvoltage)							
Voltage not present	■	■	■	■	■	■	■
Interface							
Front accessible, fully featured LRM interface, also in compliance with LRM system according to IEC 61243-5	■	■	■	■	■	Test point	—
Earth socket	■	■	■	■	■	■	■
Communication							
Relay contacts	—	—	■	■	1 relais for PD remote indication	—	—
Connections							
Flat connector	■	■	■	—	■	■	■
System connector (AMP)	■	■	■	■	■	Vario variant	■
Power supply							
External auxiliary supply	—	—	■	■	24V/DC for PD functionality	—	—

Voltage detectors / Phase comparators

								
Function	FL-I	Comet BL-I / BL-A	Comet BK-I / BK-A	Comet BS-I / BS-A	Compare 2.0	PG II	BO-A 2.0	BO-A AC / DC
Environmental conditions								
Indoor*	■	BL-I: ■	BK-I: ■	BS-I: ■	■	■	■	■
Indoor and outdoor**	—	BL-A: ■	BK-A: ■	BS-A: ■	■	—	■	■
Signalling								
Visual	■	■	■	■	■	■	■	■
Visual and audible	—	■	■	■	—	—	■	■
Further functions								
Self-test	—	■	■	■	■	—	■	■
Test principle: capacitive / resistive	■ / —	■ / —	■ / —	■ / —	■ / —	— / ■	■ / —	— / ■
Voltage detection for overhead lines	—	—	—	—	—	—	■	■
AC / DC	■ / —	■ / —	■ / —	■ / —	■ / —	■ / —	■ / —	■ / ■
Nominal voltage [kV]***								
0,1–3	—	—	—	—	—	—	—	■
5	—	■	—	—	—	■	—	—
6	■	—	—	—	—	■	—	—
10	■	■	—	—	—	■	—	—
11	—	■	—	—	—	—	■	—
15	—	—	—	—	—	—	■	—
20	■	■	—	—	—	■	—	—
25	—	—	—	—	—	—	■	—
30	—	■	—	—	—	—	—	—
5–10	—	■	—	■	■	—	—	—
6–10	—	■	■	—	—	—	—	—
10–20	—	■	■	■	■	—	—	—
20–30	—	■	—	■	—	■	—	—
20–36	—	—	—	—	■	—	—	—
Voltage range selectable	—	—	—	■	■	—	—	—
Technical data								
Length [mm]****	1,270–1,370	1,270–1,570	900–1,000	1,570	1,420	1,220–1,420	1,111–4,700	1,100–4,700
Weight [g]****	700–1,000	700–1,000	750–850	850–1,000	900	1,600	3,340	3,800–4,060

* Can be used outside, but not under wet conditions!
** Can be used under wet conditions.
*** Other voltage ranges on request.
**** Length and weight vary depending on the version.