

The Power in Electrical Safety

Device overview 01/2022



The Power in Electrical Safety



In the past 70 years we have learnt thinking ahead in a strategic and forward-looking way
and to consider today what customers are going to need tomorrow.

Innovative solutions and service activities, excellent know-how global expertise when it
comes to electrical safety provide answers to the challenges of various application areas.

With over 1100 employees we are globally present in over 70 countries.



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Bender catalogue

Device overview insulation monitoring devices ISOMETER®

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		ISOMETER® iso685-...	ISOMETER® iso685-...-B	ISOMETER® iso685-...-P	ISOMETER® isoNAV685-D	ISOMETER® isoNAV685-D-B
Catalogue page		16	20	24	30	35
Special applications		–	–	–	Quick response to combined resistance and offset voltage measurement	De-energised loads/frequency converters
Circuits	Control circuits	■	■	■	■	■
	Auxiliary circuits	■	■	■	■	■
	Main circuits	■	■	■	■	■
Voltage system	3(N)AC	■	■	■	■	■
	AC	■	■	■	■	■
	AC/DC	■	■	■	■	■
	DC	■	■	■	–	■
Nominal system voltage U_n		AC, 3(N)AC 0...690 V, DC 0...1000 V	AC, 3(N)AC 0...690 V, DC 0...1000 V	AC, 3(N)AC 0...690 V, DC 0...1000 V	AC, 3(N)AC 0...690 V (60 Hz)	offline (AC 0...690 V) (DC 0...1000 V)
Tolerance of U_n		+ 15 %	+ 15 %	+ 15 %	+ 15 %	–
System leakage capacitance C_e µF		≤ 1000	≤ 1000	≤ 1000	≤ 1000	≤ 1000
Response value R_{an} kΩ		1...10000	1...10000	1...10000	1...10000	10...1000
Coupled systems		–	■	■	–	–
Locating current injector for insulation fault location		–	–	■	–	–
Installation	DIN rail	■	■	■	■	■
	Screw mounting	■	■	■	■	■
	Panel mounting/wall fastening	■	■	■	–	–
Interfaces	Web server	■	■	■	■	■
	Modbus	TCP/RTU	TCP/RTU	TCP/RTU	TCP	TCP
	BCOM	■	■	■	■	■
	BS	■	■	■	■	■
	BMS	–	–	–	–	–
	isoData	■	■	■	–	–
Product details (Products on www.bender.de/en)						

	Type	C. p.	Suitable system components				
Coupling devices	FP200	53	■	■	■	–	–
	AGH150W-4	356	■	■	–	–	–
	AGH204S-4	358	■	■	–	–	–
	AGH520S	359	■	■	–	–	–
	AGH675S-7	360	–	–	–	–	–
	AGH676S-4	362	■	■	–	–	–



ISOMETER®
isoHR685W-...-B



ISOMETER®
isoRW685W-D



ISOMETER®
isoRW685W-D-B



ISOMETER®
IRDH275BM-7

40	45	49	55
Installations with a high level of insulation	Railway	Railway	AC, DC or AC/DC medium voltage systems
■	■	■	—
■	■	■	—
■	■	■	■
■	■	■	■
■	■	■	—
■	■	■	■
■	■	■	■
AC 0...1000 V, 3AC 0...690 V, DC 0...1300 V	AC, 3(N)AC 0...690 V, DC 0...1000 V	AC, 3(N)AC 0...690 V, DC 0...1000 V	AC, 3(N)AC, DC 0...15,5 kV (absolute)
+ 15 %	+ 15 %	+ 15 %	+ 15 %
≤ 1000	≤ 1000	≤ 1000	≤ 5
1...3000000	1...10000	1...10000	100...10000
■	—	—	—
—	—	—	—
■	■	■	■
■	■	■	■
■	—	—	—
■	■	■	—
TCP/RTU	TCP/RTU	TCP/RTU	—
■	■	■	—
■	■	■	—
—	—	—	■
■	■	■	—

Suitable system components			
■	—	—	—
■	■	■	—
■	■	■	—
■	■	■	—
—	—	—	■
■	■	■	—

Device overview insulation monitoring devices ISOMETER®

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		ISOMETER® iso415R	ISOMETER® IR420-D4	ISOMETER® IR425	ISOMETER® iso1685P	ISOMETER® iso1685DP
Catalogue page		59	62	65	68	71
Special applications		–	–	–	–	–
Circuits	Control circuits	■	■	■	–	–
	Auxiliary circuits	■	■	■	–	–
	Main circuits	–	–	–	■	■
Voltage system	3(N)AC	–	–	–	–	–
	AC	■	■	■	■	■
	AC/DC	■	–	■	■	■
	DC	■	–	■	■	■
Nominal system voltage U_n		Depending on variant	AC 0...250 V	AC/DC 0...300 V	AC 0...1000 V, DC 0...1500 V	AC 0...1000 V, DC 0...1500 V
Tolerance of U_n		–30 %...+15 %	+20 %	+20 %	+10 %, +6 %	+10 %, +5 %
System leakage capacitance C_e μ F		≤ 25	≤ 20	≤ 20	≤ 500	≤ 2000
Response value R_{an} k Ω		5...1000	1...200	1...200	0,2...1000	0,2...1000
Coupled systems		–	–	–	■	■
Locating current injector for insulation fault location		–	–	–	–	–
Installation	DIN rail	■	■	■	–	–
	Screw mounting	■	■	■	■	■
	Panel mounting/ wall fastening	–	–	–	–	–
Interfaces	Web server	–	–	–	–	–
	Modbus	RTU	–	–	–	RTU
	BCOM	–	–	–	–	–
	BS	–	–	–	–	–
	BMS	–	–	–	■	■
	isoData	–	–	–	–	–
Product details (Products on www.bender.de/en)						

	Type	C. p.	Suitable system components				
Coupling devices	FP200	53	–	–	–	–	–
	AGH150W-4	356	–	–	–	–	–
	AGH204S-4	358	–	–	–	–	–
	AGH520S	359	–	–	–	–	–
	AGH675S-7	360	–	–	–	–	–
	AGH676S-4	362	–	–	–	–	–



71	71	75	78
–	Induction furnace	insulated elevating work platforms	–
–	–	–	–
–	–	–	–
■	■	■	■
–	–	–	■
■	■	■	■
■	■	■	■
■	■	■	■
AC 0...2000 V, DC 0...3000 V	AC 0...690 V, DC 0...690 V	AC 0...1000 V, DC 0...1500 V	AC, 3(N) AC 0...400 V DC 0...400 V
+10 %, +5%	+10 %, +5%	+10 %, +5%	+ 20 %
≤ 2000	≤ 2000	≤ 1	≤ 60
0,2...1000	0,02...100	100...1000	2...1000
■	■	■	–
–	–	–	–
–	–	–	–
■	■	■	–
–	–	–	■
–	–	–	–
RTU	RTU	RTU	–
–	–	–	–
–	–	–	–
■	■	■	■
–	–	–	–
			

Suitable system components			
–	–	–	–
–	–	–	–
–	–	–	–
–	–	–	–
–	–	–	–
–	–	–	–

Device overview insulation monitoring devices ISOMETER®

1

						
		ISOMETER® IR427	ISOMETER® isoMED427P	ISOMETER® isoLR275	ISOMETER® isoPV	ISOMETER® isoPV425
Catalogue page		81	85	88	91	95
Special applications		Medical locations	Medical locations	Installations with a low level of insulation	Photovoltaic	Photovoltaic
Circuits	Control circuits	–	■	–	–	–
	Auxiliary circuits	–	–	–	–	–
	Main circuits	■	■	■	■	■
Voltage system	3(N)AC	–	–	■	■	–
	AC	■	■	■	■	■
	AC/DC	–	–	■	■	■
	DC	–	–	■	■	■
Nominal system voltage U_n		AC 70...330 V	AC 70...230 V	via AGH-LR 3(N)AC 0...690 V DC 0...1000 V	via AGH-PV 3(N)AC 0...793 V DC 0...1000 V	DC 0...1000 V, AC 0...690 V, 15...460 Hz
Tolerance of U_n		+ 15 %	+ 15 %	+ 15 % + 10 %	+ 10 %	+ 15 %
System leakage capacitance C_e µF		≤ 5	≤ 5	≤ 500	≤ 2000	≤ 500
Response value R_{an} kΩ		50...500	50...500 kΩ	0.2...100	0.2...100	1...990
Coupled systems		–	–	–	–	–
Locating current injector for insulation fault location		–	■	–	–	–
Installation	DIN rail	■	■	■	■	■
	Screw mounting	■	■	■	■	■
	Panel mounting/ wall fastening	–	–	–	–	–
Interfaces	Web server	–	–	–	–	–
	Modbus	–	–	–	–	RTU
	BCOM	–	–	–	–	–
	BS	–	–	–	–	–
	BMS	–	■	■	■	■
	isoData	–	–	–	–	■
Product details (Products on www.bender.de/en)						

	Type	C. p.	Suitable system components				
Coupling devices	FP200	53	–	–	–	–	–
	AGH150W-4	356	–	–	–	–	–
	AGH204S-4	358	–	–	–	–	–
	AGH520S	359	–	–	–	–	–
	AGH675S-7	360	–	–	–	–	–
	AGH676S-4	362	–	–	–	–	–



99	99	102	105	108	111
Photovoltaic	Photovoltaic	Disconnected loads	Mobile generators	Mobile generators	Generators acc. to standard DIN VDE 0100-551
–	–	–	–	–	–
–	–	–	–	–	–
■	■	■	■	■	■
–	–	■	–	–	■
–	–	■	■	■	■
–	–	–	–	–	■
■	■	■	–	–	■
AC 0...1000 V DC 0...1500 V	DC 0...1500 V	offline (AC 0...400 V)	AC 0...250 V	AC 100...250 V	3(N)AC, AC 0...400 V, DC 0...400 V
+ 6 %	+ 6 %	–	+ 20 %	+ 20 %	+25 %
≤ 2000	≤ 2000	≤ 10	≤ 5	≤ 1	≤ 5
0.2...990	0.2...990	100...10000	1...200	46/23	5...200
–	–	–	–	–	–
–	–	–	–	–	–
–	–	■	■	–	■
■	■	■	■	■	■
–	–	–	–	–	–
–	–	–	–	–	–
RTU	–	–	–	–	RTU
–	–	–	–	–	–
–	–	–	–	–	–
■	■	–	–	–	■
–	–	–	–	–	■
					

Suitable system components					
–	–	–	–	–	–
–	–	–	–	–	–
–	–	–	–	–	–
–	–	■	–	–	–
–	–	–	–	–	–
–	–	■	–	–	–

Device overview insulation monitoring devices ISOMETER®

1

						
		ISOMETER® isoRW425	ISOMETER® isoUG425	ISOMETER® isoES425	ISOMETER® isoHV425	ISOMETER® IR155
Catalogue page		114	117	120	123	127
Special applications		Railway	Unearthed DC systems	Energy storage VDE-AR-E 2510-2	–	Electric mobility
Circuits	Control circuits	–	–	–	–	–
	Auxiliary circuits	–	–	–	–	–
	Main circuits	■	■	■	■	■
Voltage system	3(N)AC	■	–	–	■	–
	AC	■	–	■	■	–
	AC/DC	■	–	■	■	–
	DC	■	■	■	■	■
Nominal system voltage U_n		AC/DC 0...400 V	DC 12...120 V	3 (N)AC, AC 0...400 V, DC 0...400 V	with AGH422 AC 0...1000 V, DC 0...1000 V	DC 0...1000 V
Tolerance of U_n		+ 25 %	+20 %	+25 %	+10 %	+ 0 %
System leakage capacitance C_e µF		≤ 300	≤ 50	≤ 100	≤ 150	≤ 1
Response value R_{an} kΩ		1...990	2...100	2...990	11...500	100...10000
Coupled systems		–	–	–	–	–
Locating current injector for insulation fault location		–	–	–	–	–
Installation	DIN rail	■	■	■	■	–
	Screw mounting	■	■	■	■	■
	Panel mounting/ wall fastening	–	–	–	–	–
Interfaces	Web server	–	–	–	–	–
	Modbus	RTU	RTU	–	RTU	–
	BCOM	–	–	–	–	–
	BS	–	–	–	–	–
	BMS	■	■	■	■	–
	isoData	■	■	■	■	–
Product details (Products on www.bender.de/en)						

	Type	C. p.	Suitable system components				
Coupling devices	FP200	53	–	–	–	–	–
	AGH150W-4	356	–	–	–	–	–
	AGH204S-4	358	–	–	–	–	–
	AGH520S	359	–	–	–	–	–
	AGH675S-7	360	–	–	–	–	–
	AGH676S-4	362	–	–	–	–	–



131	135	138	142
Electric mobility	Electric mobility	Electric mobility	Electric mobility
–	–	–	–
–	–	–	–
■	■	■	■
–	–	–	–
–	–	–	–
–	–	–	–
■	■	■	■
DC 0...1000 V AC 0...690 V, 15...460 Hz	DC 0...400 V	DC 0...1000 V with AGH420-1	DC 0...600 V
+ 10 % + 15 %	–	+10 %	+ 15 %
≤ 5	≤ 2	≤ 5	≤ 1
10...990	23 kΩ 46 kΩ	120 kΩ 600 kΩ	30 kΩ...1 MΩ; 40 kΩ...2 MΩ
–	–	–	–
–	–	–	–
■	■	■	–
■	–	–	■
–	–	–	–
–	–	–	–
RTU	RTU	RTU	–
–	–	–	–
–	–	–	–
■	■	■	–
■	■	■	–
			

Suitable system components			
–	–	–	–
–	–	–	–
–	–	–	–
–	–	–	–
–	–	–	–
–	–	–	–



Device overview Equipment for insulation fault location ISOSCAN®

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	ISOSCAN® EDS440	ISOSCAN® EDS441	ISOSCAN® EDS441-LAB	ISOSCAN® EDS440-LAF	ISOSCAN® EDS460/490
Catalogue page	148	148	148	148	155
Special applications	–	–	High-resistance insulation faults in case of high system leakage capacitances and low test current value	Use with flexible strap transformers CTAF	–
Application	stationary	stationary	stationary	stationary	stationary
Circuits	Control circuits	■	■	–	–
	Main circuits	■	–	■	■
Voltage system	3(N)AC	■	–	■	■
	AC	■	■	■	■
	AC/DC	■	■	■	■
	DC	■	■	■	■
Nominal voltage U_n max	see Locating current injector (e. g. ISOMETER® iso685-D-P)	AC 20...276 V, DC 20...308 V	AC 20...276 V, DC 20...308 V	see Locating current injector (e. g. ISOMETER® iso685-D-P)	see Locating current injector (e. g. ISOMETER® iso685-D-P)
System leakage capacitance C_e µF	acc. to characteristic curve	acc. to characteristic curve	acc. to characteristic curve	acc. to characteristic curve	acc. to characteristic curve
Response value R_{an} kΩ	acc. to characteristic curve	acc. to characteristic curve	acc. to characteristic curve	acc. to characteristic curve	acc. to characteristic curve
Installation	DIN rail	■	■	■	■
	Screw mounting	■	■	■	■
Interfaces	BB	EDS440-S	EDS441-S	–	–
	BS	EDS440-L	EDS441-L	■	–
	BMS	–	–	–	■
Product details (Products on www.bender.de/en)					

	Type	C. p.	Suitable system components				
Suitable ISOMETER®s with integrated PGH	iso685-D-P	24	■	■	■	–	■
	isoMED427P	85	–	■	–	–	–
	isoPV1685P	99	–	–	–	–	■
	iso1685DP	71	–	–	–	–	■
Measuring current transformers	CTAC...	366	■	■	–	–	■
	CTUB100	369	–	–	■	–	–
	WR...S(P)	373	■	–	–	–	■
	CTBS25	378	■	–	–	–	–
	WS...	380	■	–	–	–	■
	WS...-8000	380	–	■	■	–	–
	CTAF...	–	–	–	–	■	–
Power supply unit	AN410	400	–	–	■	–	–
	AN450	402	–	–	■	–	–
	STEP-PS	397	–	–	■	–	–
Relay module	IOM441	408	■	■	■	■	–



155	159	159	162
—	—	Medical locations	EDS3096PG for de-energised systems
stationary	stationary	stationary	portable
■	—	■	■
—	■	—	■
—	■	—	■
■	■	■	■
■	■	■	■
■	■	■	■
AC 230 V, DC 220 V	see Locating current injector (e. g. ISOMETER® iso685-D-P)	AC 20...276 V, DC 20...308 V	dependent on type
acc. to characteristic curve	acc. to characteristic curve	acc. to characteristic curve	acc. to characteristic curve
acc. to characteristic curve	acc. to characteristic curve	acc. to characteristic curve	acc. to characteristic curve
■	—	—	—
■	■	■	—
—	—	—	—
—	—	—	—
■	■	■	—

Suitable system components			
■	—	—	■
■	—	■	■
—	■	—	■
—	■	—	■
■	—	—	—
—	—	—	—
—	—	—	—
—	—	—	—
—	—	—	—
—	—	—	—
■	—	—	—
—	—	—	—
—	■	■	—
—	■	■	—
—	—	—	—
—	—	—	—

Device overview residual current monitors LINETRAXX®



Catalogue page		176	179	182	185	192
Special applications		–	–	–	–	Monitoring of final circuits, DGVV Regulation 3 (German Social Accident Insurance)
Type of distribution system	TN/TT	■	■	■	■	■
	IT	–	–	–	–	–
Residual currents		■	■	■	■	■
		–	■	■	■	■
Rated frequency range		42...2000 Hz	0...2000 Hz	0...2000 Hz	0...2000 Hz	0...1000 Hz
Number of measuring channels		1	1	1	12 (per device) 1080 (per system)	6 virtual 12
Response value	$I_{\Delta n1}$	50...100 % x $I_{\Delta n2}$	50...100 % x $I_{\Delta n2}$	50...100 % x $I_{\Delta n2}$	10...100 % x $I_{\Delta n2}$ min. 5 mA	50...100 % x $I_{\Delta n2}$
	$I_{\Delta n2}$	10 mA...10 A	10...500 mA	30 mA...3 A	10 mA...10 A (Type B) 6 mA...20 A (Type A)	3...300 mA (Type B) 3...300 mA (DC)
Response delay t_{on}		0...10 s	0...10 s	0...10 s	0...99 s	0...600 s
Start-up delay t		0...10 s	0...10 s	0...10 s	0...99 s	0.5...600 s
Delay on release t_{off}		0...300 s	0...99 s	0...99 s	0...999 s	0...600 s
Operating principle, alarm relays		N/C operation or N/O operation	N/C operation or N/O operation	N/C operation or N/O operation	N/C operation or N/O operation	–
Installation	DIN rail	■	■	■	■	■
	Screw mounting	■	■	■	■	■
Interfaces	BMS	–	–	–	■	■
	Modbus	–	–	–	–	RTU
Product details (Products on www.bender.de/en)						

	Type	C. p.	Suitable system components			
Measuring current transformers	CTAC...	366	■	–	–	–
	CTUB100	369	–	■	■	–
	WR...S(P)	373	■	–	–	–
	CTBS25	378	–	–	■	–
	WS...	380	■	–	■	–
	WF...	384	■	–	■	–
RS-485 repeater	DI-1DL	405	–	–	■	■
Power supply units	STEP-PS	397	–	–	■	■



				
LINETRAXX® MRCD423	LINETRAXX® MRCD300 series	LINETRAXX® RCMB300 series	LINETRAXX® RCMB330	LINETRAXX® RCM410R-24/-2

195	199	203	207	210
Additional protection (MRCD applications)	Additional protection (MRCD applications)	–	–	–
■	■	■	■	■
–	–	–	–	–
■	■	■	■	■
■	■	■	■	■
0...2000 Hz	DC...100000 Hz	DC...100000 Hz	DC...100000 Hz	42...70 Hz
1	–	–	–	–
50...100 % von $I_{\Delta n2}$	50...100 % x $I_{\Delta n2}$	50...100 % x $I_{\Delta n2}$	50...100 % x $I_{\Delta n2}$	50...100 % x $I_{\Delta n}$
30 mA...3 A	30 mA...3 A	30 mA...3 A	30...500 mA	10 mA...30 A
0...10 s	0 s...60 min	50 ms...60 min	50 ms...60 min	0...10 s
1 s	0 s...60 min	0 s...60 min	0 s...60 min	0...999 s
–	0 s...60 min	0 s...60 min	0 s...60 min	0...999 s
N/C operation	N/C operation or N/O operation	N/C operation or N/O operation	–	N/C operation or N/O operation
■	partly	partly	■	■
■	■	■	■	■
–	–	–	–	–
–	RTU	RTU	RTU	RTU
				

Suitable system components				
–	–	–	–	■
■	–	–	–	–
–	–	–	–	■
–	–	–	–	–
–	–	–	–	■
–	–	–	–	■
–	–	–	–	–
–	■	■	■	■

Device overview residual current monitors LINETRAXX®



Catalogue page		213	216	219	222	225
Special applications		Monitoring of final circuits, integration in power distribution units (PDUs)	Monitoring of final circuits, integration in power distribution units (PDUs)	Monitoring of final circuits, integration in power distribution units (PDUs)	Electric vehicle charging systems	Electric vehicle charging systems
Type of distribution system	TN/TT	■	■	■	■	■
	IT	–	–	–	–	–
Residual currents		■	■	■	■	■
		■	■	■	■	■
Rated frequency range		DC...2000 Hz	DC...2000 Hz	DC...2000 Hz	0...2000 Hz	0...2000 Hz
Number of measuring channels		–	–	–	–	–
Response value	$I_{\Delta n1}$	3,5...100 mA (DC)	3,5...100 mA (DC)	3,5...100 mA (DC)	DC 6 mA (RCMB104-1) r.m.s. 5 mA (RCMB104-2)	–
	$I_{\Delta n2}$	3,5...100 mA (r.m.s.)	3,5...100 mA (r.m.s.)	3,5...100 mA (r.m.s.)	r.m.s. 30 mA (RCMB104-1) r.m.s. 20 mA (RCMB104-2)	DC 6 mA
Response delay t_{on}		–	–	–	–	–
Start-up delay t		–	–	–	–	–
Delay on release t_{off}		–	–	–	–	–
Operating principle, alarm relays		–	–	–	–	–
Installation	DIN rail	■	■	■	–	–
	Screw mounting	■	■	■	–	–
Interfaces	BMS	–	–	–	–	–
	Modbus	RTU	–	RTU	–	–
Product details (Products on www.bender.de/en)						

	Type	C. p.	Suitable system components			
Measuring current transformers	CTAC...	366	–	–	–	–
	CTUB100	369	–	–	–	–
	WR...S(P)	373	–	–	–	–
	CTBS25	378	–	–	–	–
	WS...	380	–	–	–	–
	WF...	384	–	–	–	–
RS-485 repeater	DI-1DL	405	–	–	–	–
Power supply units	STEP-PS	397	■	■	■	–



LINETRAXX®
RCMB42...

228

Fault current monitoring
of electric vehicle AC
charging stations

■

—

■

■

0...2000 Hz

1 (RCMB422EC) or
2 (RCMB420EC)

DC 6 mA

RMS 30 mA

—

—

2 s (after reset)

N/C operation

■

■

—

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Device overview neutral grounding resistance monitoring (NGR) LINETRAXX®

					
		LINETRAXX® NGRM500	LINETRAXX® NGRM550	LINETRAXX® NGRM700	LINETRAXX® NGRM750
Catalogue page		234	234	239	239
Special applications		Neutral grounding resistance monitoring (NGR monitoring)	Neutral grounding resistance monitoring (NGR monitoring)	Neutral grounding resistance monitoring (NGR monitoring)	Neutral grounding resistance monitoring (NGR monitoring)
System type	HRG	■	—	■	—
	LRG	—	■	—	■
Fault currents		■	■	■	■
		■	■	■	■
Phase monitoring L1, L2, L3		—	—	■	■
System voltage L-L*		600 V...25000 V	600 V...25000 V	600 V...25000 V	600 V...25000 V
Harmonic analysis	RMS 0...32	■	■	■	■
	Analysis range	■	■	■	■
Relay operating mode		Configurable fail-safe or non-fail-safe	Configurable fail-safe or non-fail-safe	Configurable fail-safe or non-fail-safe	Configurable fail-safe or non-fail-safe
Communication		Webserver, BCOM, Modbus RTU, Modbus TCP	Webserver, BCOM, Modbus RTU, Modbus TCP	Webserver, BCOM, Modbus RTU, Modbus TCP	Webserver, BCOM, Modbus RTU, Modbus TCP
Maximum altitude		2000 m	2000 m	5000 m	5000 m
Mounting	Detachable HMI for front panel mounting	—	—	■	■
	DIN rail	■	■	—	—
	Screw mounting	—	—	■	■
Product details (Products on www.bender.de/en)					

* Freely configurable in the device, taking suitable coupling devices into account.

Device overview coupling devices for NGR monitoring

							
	CTUB103	RC48N	CD1000	CD1000-2	CD5000	CD14400	CD25000

Catalogue page		245	248	251	253	255	257	259
Special applications		AC/DC sensitive measuring current transformer	Ground-fault neutral-grounding monitor	Coupling device for HRG applications	Coupling device for HRG applications	Coupling device for HRG applications	Coupling device for HRG applications	Coupling device for HRG applications
System voltage L-L (U_{NGR} voltage)		–	–	Up to $U_{LL} = 690$ V ($U_{NGR} = 400$ V)	Up to $U_{LL} = 1000$ V ($U_{NGR} = 600$ V)	Up to $U_{LL} = 4300$ V ($U_{NGR} = 2500$ V)	Up to $U_{LL} = 14400$ V ($U_{NGR} = 8400$ V)	Up to $U_{LL} = 25$ kV ($U_{NGR} = 14.5$ kV)
Mounting	Screw mounting	■	■	■	■	■	■	■
	DIN rail mounting	■	■	–	–	–	–	–
Product details (Products on www.bender.de/en)								

Recommended minimum value R_{NGR} (tripping level 50 %)																
		CD1000			CD1000-2				CD5000		CD14400					CD25000
U_{sys}		400 V	600 V	690 V	400 V	600 V	690 V	1000 V	2400 V	4200 V	6 kV	6.6 V	7.2 kV	11 kV	14.4 kV	25 kV
I_{NGR}	1 A	231 Ω	346 Ω	398 Ω	231 Ω	346 Ω	398 Ω	577 Ω	1386 Ω	–	–	–	–	–	–	–
	5 A	46 Ω	69 Ω	80 Ω	46 Ω	69 Ω	80 Ω	115 Ω	277 Ω	485 Ω	693 Ω	762 Ω	831 Ω	1270 Ω	1663 Ω	–
	10 A	(23 Ω)	35 Ω	40 Ω	(23 Ω)	35 Ω	40 Ω	58 Ω	139 Ω	242 Ω	346 Ω	381 Ω	416 Ω	635 Ω	831 Ω	1443 Ω
	15 A	(15 Ω)	(23 Ω)	(27 Ω)	(15 Ω)	(23 Ω)	(27 Ω)	38 Ω	92 Ω	162 Ω	231 Ω	254 Ω	277 Ω	423 Ω	554 Ω	962 Ω
	20 A	–	(17 Ω)	(20 Ω)	–	(17 Ω)	(20 Ω)	29 Ω	69 Ω	121 Ω	(173 Ω)	191 Ω	208 Ω	318 Ω	416 Ω	722 Ω
	25 A	–	–	(16 Ω)	–	–	(16 Ω)	(23 Ω)	55 Ω	97 Ω	(139 Ω)	(152 Ω)	(166 Ω)	254 Ω	333 Ω	577 Ω
	30 A	–	–	–	–	–	–	(19 Ω)	(46 Ω)	81 Ω	(115 Ω)	(127 Ω)	(139 Ω)	212 Ω	277 Ω	481 Ω
	40 A	–	–	–	–	–	–	–	(35 Ω)	61 Ω	(87 Ω)	(95 Ω)	(104 Ω)	(159 Ω)	208 Ω	361 Ω
	50 A	–	–	–	–	–	–	–	(28 Ω)	(48 Ω)	–	(76 Ω)	(83 Ω)	(127 Ω)	(166 Ω)	289 Ω
	100 A	–	–	–	–	–	–	–	–	(24 Ω)	–	–	–	–	(83 Ω)	(144 Ω)

Temperature range $-40 \dots +70$ °C, field calibration at 25 °C

(Limited temperature range $0 \dots +40$ °C, field calibration at 25 °C)



Device overview charge controller



CC612



CC613



CC613-Hxx

Catalogue page		264	267	271
Modem		4G modem (optional)	4G modem (optional)	–
Integrated patented 6 mA DC fault current detection		■	■	■
Integrated Powerline Communication (PLC)		■	■	■
Emergency Opener		–	■	■
Basis for compliance with German calibration law		■	–	–
Interface	eHZ	■	–	–
	S0	■	–	–
	Ethernet	–	■	■
	Modbus	■	■	■
Product details (Products on www.bender.de/en)				



Device overview accessories charge controller

							
		CTBC17	W15BS	DPM2x16FP	RFID105-L1	RFID114	RFID117-L1
Catalogue page		274	278	280	281	282	283
Special applications		Measuring current transformer	Measuring current transformer	Display module	RFID module	RFID module	RFID module
For series	CC612	■	■	■	■	■	■
	CC613	■	■	■	■	■	■
	CC613-Hxx	■	■	–	–	–	–
	RCMB104	■	■	–	–	–	–
	RCD104	■	■	–	–	–	–
Product details (Products on www.bender.de/en)							



Device overview Universal Devices for Power Quality and Energy Measurement PEM



LINETRAXX®
PEM353

Catalogue page		288
Normative requirements	Accuracy class according to IEC 62053-22	0.5 s
	DIN EN 50160 (report)	–
	DIN EN 61000-4-7 (harmonic)	Class II
	DIN EN 61000-4-15 (flicker) DIN EN 61000-4-30 (PQ measurement method)	–
Parameters	Phase voltages/ Line voltages	■
	Phase currents	■
	Neutral current I_N	■ (PEM353-N only)
	Neutral current I_N (calculated)	■
	Frequency/phase angle	■
	Reactive and active power import/ Reactive and active power export	■
	Voltage unbalance/current unbalance	■
	Power	per phase and total S in kVA, P in kW, Q in kvar
	Displacement factor $\cos(\varphi)$ / power factor λ	■
	Total harmonic distortion (THD _U /THD _I)	up to the 31 st
	Harmonic components voltage	up to the 31 st
	Harmonic components current	up to the 31 st
	Transient detection	–
	Overvoltage (swell)	–
	Undervoltage (sag)	–
	Flicker severity P_{ST}	–
Features	Data recorder / HighSpeed data recorder	5/0
	Waveform recorder	–
	Digital inputs	4
	Digital outputs	2 (PEM353-P only)
	Relay outputs (RO)	2 (PEM353, PEM353-N only)
Technical aspects	Voltage supply	AC/DC 95...250 V (47...440 Hz)
	Sampling rate	3,2 kHz
	Temperature	-25...+55 °C
	Communication	Modbus RTU
Product details (Products on www.bender.de/en)		



Energy meter and Measuring current transformer for universal measuring devices

						
	ALD1	ALE3	AWD3	PCD07	CTB41/CTB51	KBR18/KBR32

Catalogue page	296	296	296	296	293	293
Type	Energy meter	Energy meter	Energy meter	SO pulse counter	Measuring current transformer	Measuring current transformer
Description	1PH./32A MID MODBUS RTU	3PH./65A MID MODBUS RTU	3PH./6A MID MODBUS RTU	(four-fold) with MODBUS RTU	—	—
Product details (Products on www.bender.de/en)						



Device overview measuring and monitoring relays LINETRAXX®

							
		LINETRAXX® VME420	LINETRAXX® VME421H	LINETRAXX® VMD258	LINETRAXX® ES258	LINETRAXX® VMD420	LINETRAXX® VMD421H
Catalogue page		302	305	308	311	312	315
Special applications		–	–	Power plant	Energy backup for device series VMD258	–	–
Application	Voltage monitoring	■	■	■	–	■	■
	Current monitoring	–	–	–	–	–	–
Voltage monitoring	AC	$U<, U>$	$U<, U>$	–	–	–	–
	3AC	–	–	$U<, U>$	–	$U<, U>$	$U<, U>$
	3(N)AC	–	–	–	–	$U<, U>$	$U<, U>$
	DC	$U<, U>$	$U<, U>$	–	–	–	–
Measuring range/ nominal system voltage U_N		AC/DC systems 0...300 V	VME421H-D-1 AC/DC systems 9,6...150 V VMD421H-D-2 70...300 V	3AC 690/500/480/440/ 400/230/110/100 V	–	(L-N) 0...288 V (L-L) 0...500 V	(L-N) 0...288 V (L-L) 0...500 V
Frequency		$f<, f>$	$f<, f>$	–	–	$f<, f>$	$f<, f>$
Phase sequence		–	–	–	–	■	■
Phase failure		–	–	–	–	■	■
Asymmetry		–	–	–	–	■	■
Supply voltage U_s		external	system	system	–	external	system
Current monitoring	1 AC with U_s	–	–	–	–	–	–
	3 AC with U_s	–	–	–	–	–	–
Special function		–	–	–	–	–	–
Installation	DIN rail	■	■	■	■	■	■
	Screw mounting	■	■	■	■	■	■
Product details (Products on www.bender.de/en)							



318	321	326	332	335	338	341	344
Interface Protection System/Decoupling protection relay	Interface Protection System/Decoupling protection relay	Interface Protection System/Decoupling protection relay	–	–	–	Loop monitoring	Residual current/loop monitoring
■	■	■	–	–	–	–	–
–	–	–	■	■	■	–	■
–	$U<, U<<, U>, U>>, U_{10min}>$	$U<, U<<, U<<<, U>, U>>, U>>>$	–	–	–	–	–
–	$U<, U<<, U>, U>>, U_{10min}>$	$U<, U<<, U<<<, U>, U>>, U>>>$	–	–	–	–	–
$U<, U>, U_{10min}>$	$U<, U<<, U>, U>>, U_{10min}>$	$U<, U<<, U<<<, U>, U>>, U>>>$	–	–	–	–	–
–	–	–	–	–	–	–	–
(L-N) 0...288 V (L-L) 0...500 V	(L-N) 0...300 V (L-L) 0...520 V	VMD461 (L-N) AC 50...260 V (L-L) AC 87...450 V (DC+ / DC-) DC 50...450 V VMD461+CD440 (L-N) AC 250...690 V (L-L) AC 440...1200 V (DC+/DC-) DC 250...1200 V	–	–	–	–	–
$f<, f>$	$f<, f<<, f>, f>>$	$f<, f<<, f<<<, f>, f>>, f>>>$	–	–	–	–	–
■	■	■	–	–	–	–	–
■	■	■	–	–	–	–	–
■	■	■	–	–	–	–	–
external (VMD423) system (VMD423H)	external	external	–	–	–	extern	extern
–	–	–	$I<, I>$	–	$I<, I>$	–	–
–	–	–	–	$I<, I>$	$I<, I>$	–	–
–	RS-485 interface, Islanding detection: -ROCOF (df/dt) -Vector shift	RS-485 interface, Islanding detection: -ROCOF (df/dt) -Vector shift	–	–	RS-485 interface	Monitoring of conductor loops for interruption	Monitoring of conductor loops for interruption and short circuit by using an termination device
■	■	■	■	■	■	■	■
■	■	■	■	■	■	■	■

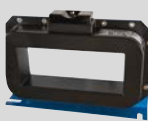
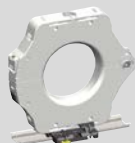
Device overview coupling devices

						
		AGH150W-4	AGH204S-4	AGH520S	AGH675S-7/ AGH675S-7MV	AGH676S-4
Catalogue page		356	358	359	360	362
Application		Extension of the nominal voltage range for ISOMETER®s	Extension of the nominal voltage range for ISOMETER®s	Extension of the nominal voltage range for ISOMETER®s	Extension of the nominal voltage range for ISOMETER®s	Extension of the nominal voltage range for ISOMETER®s
Nominal system voltage U_n		AC 0...1150 V, DC 0...1760 V	AC 0...1300 V / AC 0...1650 V	AC/3(N)AC 0...7200 V	AC, 3(N)AC, DC 0...7.2 kV AC, 3(N)AC, DC 0...15.5 kV	AC/3(N)AC 0...12 kV
Device family	IRDH275BM-7	—	—	—	■	—
	IR420-D64	—	—	—	—	■
	iso685-D	■	■	■	—	■
	iso685-S	■	■	■	—	■
Product details (Products on www.bender.de/en)						

Device overview measuring current transformers

																										
		W0-S20...W5-S210, W10/600							CTAC...					CTUB100-CTBC...												
Catalogue page		364							366					369												
Characteristics																										
CT type		W10/600	W0-S20	W1-S35	W2-S70	W3-S105	W4-S140	W5-S210	CTAC20(0/1)	CTAC35(0/1)	CTAC60	CTAC120	CTAC210	CTUB101-CTBC20(P)	CTUB101-CTBC35(P)	CTUB101-CTBC60(P)	CTUB101-CTBC120(P)	CTUB101-CTBC210(P)	CTUB102-CTBC20(P)	CTUB102-CTBC35(P)	CTUB102-CTBC60(P)	CTUB102-CTBC120(P)	CTUB102-CTBC210(P)	CTUB104-CTBC20(P)	CTUB104-CTBC35(P)	CTUB104-CTBC60(P)
Dimensions (mm)	Inside diameter	10	20	35	70	105	140	210	20	35	60	120	210	20	35	60	120	210	20	35	60	120	210	20	35	60
	Width x height	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Strip length	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Device family	EDS440	■	■	■	■	■	■	■	■	■	■	■	■	-	-	-	-	-	-	-	-	-	-	-	-	-
	EDS441	-	-	-	-	-	-	-	■	■	■	■	■	-	-	-	-	-	-	-	-	-	-	-	-	-
	EDS441-LAB	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	■	■	■	
	EDS460/490	■	■	■	■	■	■	■	■	■	■	■	■	-	-	-	-	-	-	-	-	-	-	-	-	-
	EDS461/491	-	-	-	-	-	-	-	■	■	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	RCM420	■	■	■	■	■	■	■	■	■	■	■	■	-	-	-	-	-	-	-	-	-	-	-	-	-
	RCMA420	-	-	-	-	-	-	-	-	-	-	-	-	■	■	■	-	-	-	-	-	-	-	-	-	-
	RCMA423	-	-	-	-	-	-	-	-	-	-	-	-	-	■	■	■	■	-	-	-	-	-	-	-	-
	RCMS460/490	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	-	-	-
Product details (Products on www.bender.de/en)																										



 WR...S(P)				 CTAS...			 CTBS25	 WS.../WS...-8000				 WS...S		 WF...								
373				375			378	380				382		384								
				split-core			split-core	split-core				split-core		flexible								
WR70x175S(P)	WR115x305S(P)	WR150x350S(P)	WR200x500S(P)	CTAS50/(01)	CTAS80/(01)	CTAS120/(01)	CTBS25	WS20x30	WS50x80	WS80x120	WS20x30-8000	WS50x80-8000	WS50x80S	WS80x80S	WS80x120S	WS80x160S	WF170	WF250	WF500	WF800	WF1200	WF1800
-	-	-	-	50	80	120	25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
70 x 175	115 x 305	150 x 350	200 x 500	-	-	-	-	20 x 30	50 x 80	80 x 120	20 x 30	50 x 80	50 x 80	80 x 80	80 x 120	80 x 160	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	170	250	500	800	1200	1800
■	■	■	■	■	■	■	■	■	■	■	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	■	■	■	-	-	-	-	■	■	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	■	-	-	-	-	-	-	-	-	-	-
■	■	■	■	■	■	■	-	■	■	-	-	■	■	■	■	■	-	-	-	-	-	-
-	-	-	-	■	■	■	-	-	-	-	■	■	-	-	-	-	-	-	-	-	-	-
■	■	■	■	■	■	■	-	■	■	■	-	-	■	■	■	■	■	■	■	■	■	■
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
■	■	■	■	■	■	■	■	■	■	■	-	-	■	■	■	■	■	■	■	■	■	■
																						

Device overview isolating transformers, transformers for operating theatre lights

				
		ES710	DS0107	ESL0107
Catalogue page		387	392	395
Application		Design of medical IT systems	Supply of three-phase loads in group 0, 1 or 2 medical locations	Supply of operating theatre luminaires
Type of distribution system		single-phase	three-phase	single-phase
Voltages	Input	AC 230 V	3AC 400 V	AC 230 V ($\pm 5\%$, $\pm 10\%$)
	Output	AC 230 V	3NAC 230 V	AC 23...28 V
	Frequency range	50...60 Hz	50...60 Hz	50...60 Hz
Power		3150 VA 4000 VA 5000 VA 6300 VA 8000 VA 10000 VA	2000 VA 3150 VA 4000 VA 5000 VA 6300 VA 8000 VA 10000 VA	120 VA 160 VA 280 VA 400 VA 630 VA 1000 VA
Design type	vertical	■	■	■
	horizontal	■	■	—
	encapsulated (protection class B)	■	■	—
Product details (Products on www.bender.de/en)				

Device overview power supply units

				
		STEP-PS	AN410	AN450
Catalogue page		397	400	402
Application		for measuring current transformers	for DC 24 V power supply	for voltage supply
Rated voltage		DC 24 V	DC 24 V	AC 20 V, 50...60 Hz
Rated input voltage U_{IN}		AC 85...264 V, 45...65 Hz DC 95...250 V	AC 90...264 V DC 120...370 V	AC 230 V, 50...60 Hz AC 127 V, 50...60 Hz
Product details (Products on www.bender.de/en)				



Device overview measuring instruments

				
	7204	7220	9604	9620
Catalogue page	404	404	404	404
Input current	0...400 µA	0...20 mA	0...400 µA	0...20 mA
Dimensions (mm)	72 x 72	72 x 72	96 x 96	96 x 96
Device family iso685...	—	■	■	■
Product details (Products on www.bender.de/en)				

Device overview interface converters and repeaters

		
	DI-1DL	DI-2USB
Catalogue page	405	407
Application	Interface repeater BMS bus	Interface converter BMS/USB
Input	Input	RS-485
	Connection	screw-type terminal
	Cable length	≤ 1200 m
Output	Output	RS-485
	Connection	screw-type terminal
	Cable length	≤ 1200 m
	Expansion of bus devices	≤ 30
Supply voltage U_s	AC 85...260 V, 50...60 Hz	via USB
Particular features	—	Driver CD
Product details (Products on www.bender.de/en)		

Device overview Relay module

	
	IOM441
Catalogue page	408
Application	for extension of EDS44x applications
Relay number	12 N/O contacts
Supply voltage U_s	via BB bus
Interface	BB bus
Connection	push-wire terminal / BBbus PCB
Relay operation	configurable
Product details (Products on www.bender.de/en)	

Device overview condition monitors/gateways

						
		COMTRAXX® COM4651P	COMTRAXX® COM465DP	COMTRAXX® COM465ID	COMTRAXX® COM463BC	COMTRAXX® CP9...-I
Catalogue page		410	414	418	422	424
Application		Condition Monitor/Gateway	Condition Monitor/ PROFIBUS-Gateway	Condition Monitor/Gateway	Condition Monitor/Gateway	Condition Monitor/Gateway
Functions	Protocol input	BMS / BCOM / Modbus RTU/TCP	BMS / BCOM / Modbus RTU/TCP	isoData / Modbus TCP	BMS (extern) / BCOM	BMS (intern) / BCOM / Modbus RTU/TCP
	Protocol output	Ethernet / Modbus RTU/TCP / SNMP / PROFINET	Ethernet / Modbus RTU/TCP / SNMP / PROFINET / PROFIBUS DP	Ethernet / Modbus TCP / OPC-UA ⁵⁾	Ethernet	Ethernet / Modbus RTU/TCP / SNMP / PROFINET
	Display	LED	LED	LED	LED	Display in 7" oder 15,6"
	Alarm messages	■ 1, 2)	■ 1, 2)	■ 1, 2)	■ 1, 2)	■ 1, 2, 3)
	Measured values	■ 1, 2)	■ 1, 2)	■ 1, 2)	■ 1, 2)	■ 1, 2, 3)
	Device parameter setting	■ 1)	■ 1)	■ 1)	—	■ 1)
	Device tests	■ 1, 2)	■ 1, 2)	■ 1, 2)	—	■ 1, 2)
	Alarm list	■ 1)	■ 1)	■ 1)	—	■ 1, 3)
	History memory	■ 1)	■ 1)	■ 1)	—	■ 1)
	Diagrams	■ 1)	■ 1)	■ 1)	—	■ 1, 3)
	Visualisation	■ 1)	■ 1)	■ 1)	—	■ 1)
	E-mail notification	■ 1, 4)	■ 1, 4)	■ 1, 4)	■ 1, 4)	■ 1, 4)
	Data logger	■ 1)	■ 1)	■ 1)	—	■ 1)
Connection	BMS	screw-type terminal	screw-type terminal	—	screw-type terminal	screw-type terminal
	Modbus RTU	screw-type terminal	screw-type terminal	—	screw-type terminal	screw-type terminal
	isoData	—	—	screw-type terminal	—	—
	Output	RJ 45	RJ 45, Sub-D 9-pole	RJ 45	RJ 45	RJ 45
System requirements	Supply voltage U_s	AC/DC 24...240 V	AC/DC 24...240 V	AC/DC 24...240 V	AC/DC 24...240 V	DC 24 V
	Browser	Google Chrome, Microsoft Edge, Mozilla Firefox	Google Chrome, Microsoft Edge, Mozilla Firefox	Google Chrome, Microsoft Edge, Mozilla Firefox	Google Chrome, Microsoft Edge, Mozilla Firefox	Google Chrome, Microsoft Edge, Mozilla Firefox
Product details (Products on www.bender.de/en)						

¹⁾ Functions available on the web server – accessible via a personal computer with browser

²⁾ Available via the protocol

³⁾ On the device's own LC display

⁴⁾ TLS/SSL Support

⁵⁾ Special OPC-UA profile stored for railway applications

Device overview alarm indicator and test combinations

				
		COMTRAXX® CP9xx	COMTRAXX® MK2430	Visualisation
Catalogue page		427	430	433
Messages/ displays	MEDICS® systems	■	■	■
	RCMS Residual current monitoring system	■	■	■
	EDS insulation fault locator	■	■	■
Installation type	Flush-mounting	■	■	■
	Cavity wall mounting	■	■	■
	Cable-duct mounting	–	■	–
	Panel mounting	■	■	■
	Surface mounting	■	■	–
Inputs/outputs	Digital inputs (potential free)	12	0/12	–
	N/O or N/C operation	selectable	selectable	–
	Relay outputs	1	1	–
	N/O or N/C operation	programmable	programmable	–
	Common alarm	programmable	programmable	–
	System fault alarm	programmable	programmable	–
Parameter setting/text message	Languages selectable	25	20	programmable
	Standard display	Graphic LCD (7", 15.6", 24")	4 x 20 characters	–
	Additional text display	■	3 x 20 characters	–
	Standard texts	■	■	–
	Freely configurable text messages	■	200	–
	History memory, maximum number of data records	1000	250	–
	Real-time clock	■	■	–
	Parameterisation software	integrated	TMK-Set V 4.xx (USB, BMS)	–
	Messages/alarms, medical gases	acc. to EN475, EN737-3	acc. to EN475, EN737-8	–
Interfaces	RS-485 (BMS protocol)	■	■	–
	BMS address range	1...150	1...150	–
	Master redundancy, BMS internal	■	■	–
	Master redundancy, BMS external	–	–	–
	USB	■	■	–
	Ethernet (TCP/IP)	■	–	■
Supply voltage U_s		DC 24 V/AC 250 V	AC/DC 24 V	–
Stored energy time in the event of power failure		≥ 15 s	≤ 15 s	–
Product details (Products on www.bender.de/en)				



Device overview POWERSCOUT®



POWERSCOUT®

Catalogue page		434
Functions	Multi-tenant	Unlimited
	User management	Unlimited
	Logger	Unlimited (all measured values)
	Web front end	■
	Cloud	■
	Max. number of devices/data points	Unlimited
	Creation of dashboards	■
	Event aggregation on the main page	■
	Configuration of an individual main page	■
	Reporting	■
	Export data	csv export
	Import data	csv import
	Virtual measuring point calculation	■
	Login overview	■
Widgets	Graph	■
	Event statistics	■
	Measurement statistics	■
	Text editor	■
	Table view	■
	Alarm state	■
	Event protocol	■
	Gauge	■
	Heat map	■
	Sankey diagram	■
	Bar graph	■
Product details (Products on www.bender.de/en)		



Device overview ATICS® switchover and monitoring devices

			
		ATICS®-...-ISO	ATICS®-...-DIO
Catalogue page		440	444
Application		Unearthed safety power supplies	Safety power supplies
Rated insulation voltage		2-pole: 250 V	2-pole: 250 V 4-pole: 400 V
Voltages	Nominal system voltage U_n	AC 230 V (AC 160...276 V)	2-pole: AC 230 V 4-pole: 3N AC 400/230 V
	Frequency range	48...62 Hz	48...62 Hz
Insulation monitoring Measuring range		10 kΩ...1 MΩ	—
Insulation monitoring Response value R_{an1}		50...500 kΩ	—
Digital inputs/relays		1/1	4/4
Interface/protocol		RS-485/BMS	RS-485/BMS
Connection	Pluggable screw terminals	■	■ (up to 125 A)
	Screw terminals	—	■ (160 A)
Installation	DIN rail	■	■
	Screw mounting	4 x M5	6 x M5
Product details (Products on www.bender.de/en)			

Device overview UNIMET® test systems

					
		UNIMET® 300ST	UNIMET® 400ST	UNIMET® 610ST	UNIMET® 810ST
Catalogue page		450	453	457	460
Application	Electrical equipment	■	■	■	■
	Electric hospital and care beds	■	■	—	■
	Medical electrical equipment	■ ¹⁾	■	—	■
	Electrical machines	—	—	■	—
Voltages	Supply voltage U_s	AC 230 V	AC 230 V	AC 230 V	AC 100...120 V, AC 220...240 V
	Voltage measurement Measuring range	AC 90...264 V	AC 90...264 V	AC 90...264 V	AC 90...264 V
	Load current measurement	0.01...16 A	0.01...16 A	0.01...16 A	0.01...16 A
Test sequence	manual	■	■	■	■
	semi-automatic	—	—	■	■
	automatic	■	■	■	■
Data exchange		UNIData300	UNIData300/400	UNIMET® 610ST Control Center	UNIMET® 810ST Control Center
Product details (Products on www.bender.de/en)					

¹⁾ Medical electrical equipment without patient connections



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