Analyser Impedance System

Type AIS series

Harmonic analyser / Flickermeter /
Reference impedance

Fig. 1: Front view AIS 16/3

The relating standards:

IEC 61000-3-2
(2018) Ed. 5.0, (2020) Ed. 5.1
IEC 61000-3-3
(2017) Ed. 3.1, (2021) Ed. 3.2
IEC 61000-3-11
(2017) Ed. 2.0
IEC 61000-3-12
(2011) Ed. 2.0, (2021) Ed. 2.1

Key facts:

- ✓ AIS is a highly integrated measurement unit serving 3 functions in one device: Harmonic analyser – flickermeter – reference impedance network including phase- and measurement range switching unit
- ✓ Fully compliant emission measurements according to the EMC directive and the latest standards
- ✓ Automated testing with software platform “SPS TestManager” and modules for EMC standards
- ✓ Easy testing due to one-time EUT connection and automated test runs through all applicable standards
- ✓ Double FFT for simultaneous check of the source during the EUT measurement in harmonic analysis
- ✓ Simultaneous two-channel measurement for source check (flicker measurement)
- ✓ Real-time harmonic analyser meets IEC 61000-4-7 (2009) Ed. 2.1
- ✓ Digital flickermeter meets IEC 61000-4-15 (2010) Ed. 2.0
- ✓ Calibratable line impedance simulating network meets IEC 60725 (2012) Ed. 3.0
- ✓ High measurement accuracy due to overlapping current measurement ranges
- ✓ Touch panel operation 7” (800x480)

“THE REFERENCE INSTRUMENT FOR CE EMISSION TESTING”

TECHNICAL DATA - REAL-TIME HARMONIC ANALYSER

Reference standards	IEC 61000-4-7 (2009) Ed. 2.1 IEC 61000-3-2 (2018) Ed. 5.0, (2020) Ed. 5.1 IEC 61000-3-12 (2011) Ed. 2.0, (2021) Ed. 2.1
Frequency range fundamental	45Hz … 65Hz
Frequency range harmonics	Up to 10kHz
Measuring uncertaincy current measurement ranges	±0.5% of value ±0.04% of adjusted nominal current range *(DC…3kHz)*
Voltage drop of current measurement	< 0.15V_{rms}
Voltage measurement ranges	Nominal voltage (rms): 150V / 300V / 600V / 1000V Peak voltage: 225V / 450V / 900V / 1800V
Max. voltage	1000V_{peak}
Measuring uncertaincy voltage measurement ranges	±0.1% of value ± 0.004% of adjusted nominal voltage range *(DC…3kHz)*
Input impedance (voltage)	> 1 MΩ
Acquired values	Voltage, current, power and frequency values (acquired over 100ms): U_{rms}, U_{AC}, U_{DC}, U_{min}, U_{max}, I_{rms}, I_{AC}, I_{DC}, I_{min}, I_{max}, P, S, Q, PF, f_U, f_I Harmonic analysis values according to IEC 61000-4-7 Ed. 2.1 (acquired over adjusted width of time window): U_{hrms}, U_{hAC}, I_{hrms}, I_{hAC}, S_h, S_{hAC}, P_h, P_{hAC}, P_f, λ_{AC}, cos(φ), THD_U, THD_I, THV, THC, POHV, POHC, $PWHD_{H\_U}$, $PWHD_{H\_I}$, PWHV, PWHC, $THDG_U$, $THDG_I$, THVG, THCG, $POHV_g$, $POHC_g$, $PWHD_{g\_U}$, $PWHD_{g\_I}$, $PWHV_g$, $PWHC_g$, $THDS_U$, $THDS_I$, THVS, THCS, $POHV_{sg}$, $POHC_{sg}$, $PWHD_{sg\_U}$, $PWHD_{sg\_I}$, $PWHV_{sg}$, $PWHC_{sg}$
Width of time window	200ms … 500ms (adjusted to a multiple of the period)
Anti-aliasing filter	> 50dB
Smoothing filter	Digital low-pass filter 1st order (adjustable; preset: τ =1.5s)
Grouping	Harmonics and beside interharmonics acc. to IEC 61000-4-7 Ed. 2.1 (grouping of current and voltage harmonics, set to active or non-active)
Interharmonics	Optional results for interharmonics
Operating mode	Continuous measurement with real-time data transfer
Memory	FIFO for 10 min
Offset adjustment	Automatically

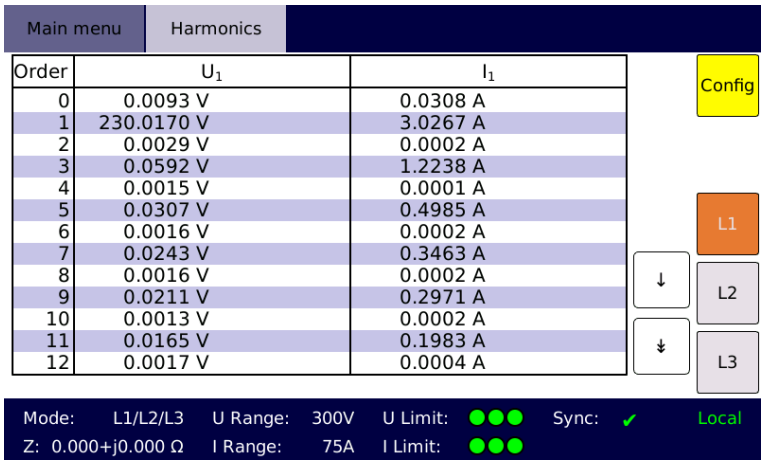

Fig. 2: Screenshot harmonics measurement

TECHNICAL DATA - FLICKERMETER

Reference standards	IEC 61000-4-15 (2010) Ed. 2.0 IEC 61000-3-3 (2017) Ed. 3.1, (2021) Ed. 3.2 IEC 61000-3-11 (2017) Ed. 2.0
Measurement inputs	2 (EUT/source) per phase
Voltage range	1000V_{peak}
Frequency range	50Hz / 60Hz
Input impedance	> 1MΩ
Flicker measurement values	$P_{inst,max}$, P_{st}, P_{lt}
Accuracy	Acc. to IEC 61000-4-15 Ed. 2.0, Flickermeter class F1
Flicker classification	Logarithmic
Working range of the classifier	0.1 ≤ k ≤ 10
d(t) measurement values	d_c, d_{max}, T_{max} (adjustable level)
Measurement duration	1s … 24h

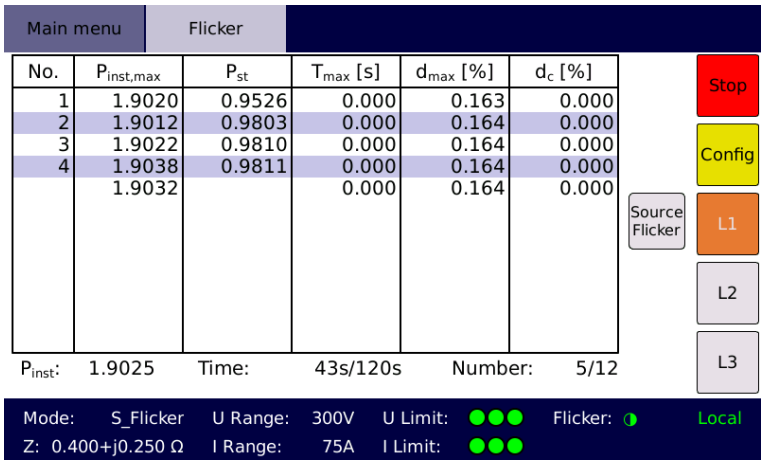

Fig. 3: Screenshot
flicker measurement

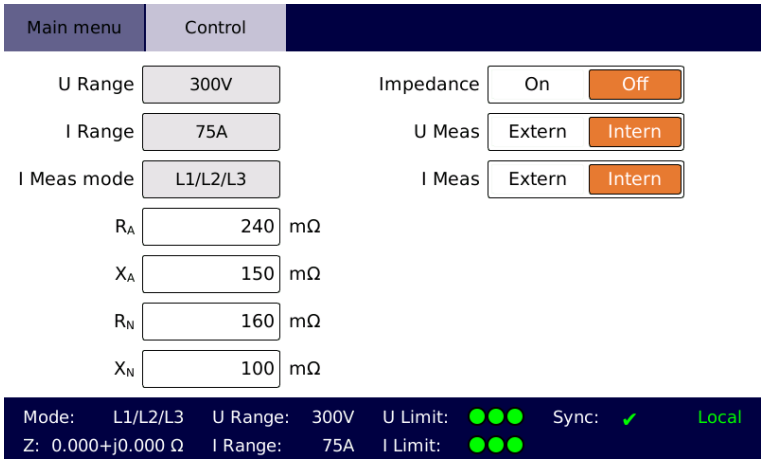

Fig. 4: Screenshot
impedance settings

TECHNICAL DATA – GENERAL

Resolution measurement input	20bit SAR A/D converter (per channel)
Display	7.0” Touch panel (17.8cm, resolution 800x480)
Interface	Ethernet 100Mbit
Max. input voltage	$1000V_{peak}$
Impedance accuracy	Z=R+jX: 4% at X/R relation 0.5 … 0.75 acc. to IEC 61000-3-11 Ed. 2.0
Ext. measurement inputs	U: $1000V_{peak}$ I: $200mA_{peak}$
Safety circuits	Overcurrent (circuit breaker plus electronic protection) Overtemperature (electronic protection)
Calibration cycle	1 year (recommended)
Power supply	230V (±10%) 50Hz … 60Hz
Protection	2A[1)]
Ambient temperature	0°C up to 40°C
Relative Humidity (non-condensing)	max. 80% for temperatures <31°C, decreasing linearly to 50% at 40°C
System of protection	IP20
Ambient temperature for measurement accuracy values	23°C ±5°C

THE AIS TYPE GLOSSARY

AIS	xxx	/x	/x	/JK
Analyser Impedance System				
Nominal current (A) *16/32/75/125/250/375/500/750/1500*				
Number of phases */1 = single phase* */3 = three phase*				
Impedance values are programmable */M = manual* */P = pneumatic or motorized (type depending)* *left out = no*				
Additional Japanese/Korean reference impedance */JK = built-in* *left out = not built-in*				

OPTIONS

EPS 16/3	Testing according to Appendix B.2 of IEC 61000-3-3
Dimensions	2U 89x483x150
Weight (approx.)	3.5kg

TECHNICAL DATA TYPES AIS 16/1 and AIS 16/3

Type		**AIS 16/1**			**AIS 16/3**		
Performance							
Max. continuous current		16A_{rms}			16A_{rms}		
Max. short time current		32A_{rms}			32A_{rms}		
Current measurement ranges							
Nominal current (rms)		0.16A	0.75A	3A	20A	-	-
Peak current		0.938A	3.75A	15A	60A	-	-
Internal impedance		IEC/EN standards					
Phase conductor	R_A: 240mΩ X_A: 150mΩ at 50Hz (X_A: 180mΩ at 60Hz)						
Neutral conductor	R_N: 160mΩ X_N: 100mΩ at 50Hz (X_N: 120mΩ at 60Hz)						
Max. phase-neutral impedance	R: 400mΩ X: 250mΩ at 50Hz (X: 300mΩ at 60Hz)						
Impedance bridging	No bridging						
Cooling type	Air cooling						
Size							
Dimensions		4U 178x483x600			4U 178x483x600		
Weight (approx.)		22kg			27kg		

WIRING DIAGRAMS

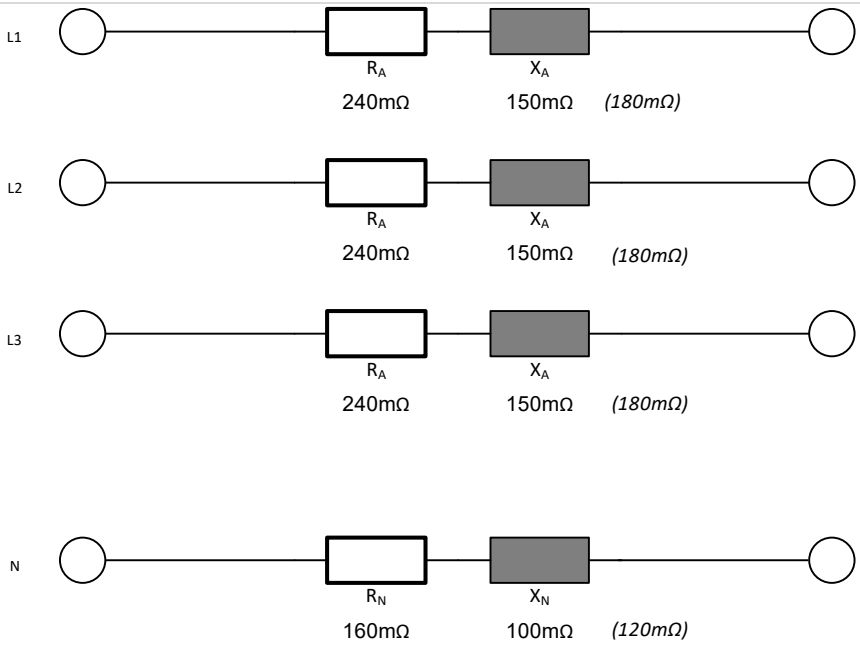

Fig. 6: IEC/EN standard reference impedance 50Hz/(60Hz) values for AIS 16/1 (L1, N) and AIS 16/3 (L1, L2, L3, N)

TECHNICAL DATA TYPES AIS 32/1 and AIS 32/3

Type	AIS 32/1			AIS 32/3		
Performance						
Max. continuous current	$32A_{rms}$			$32A_{rms}$		
Max. short time current	$64A_{rms}$			$64A_{rms}$		
Current measurement ranges						
Nominal current (rms)	0.16A	0.64A	2.5A	16A	75A	-
Peak current	0.78A	3.125A	12.5A	50A	200A	-
Internal impedance	IEC/EN standards					
Phase conductor	R_A: 150mΩ or 240mΩ X_A: 150mΩ at 50Hz (X_A: 180mΩ at 60Hz)					
Neutral conductor	R_N: 100mΩ or 160mΩ X_N: 100mΩ at 50Hz (X_N: 120mΩ at 60Hz)					
Max. phase-neutral impedance	R: 250mΩ or 400mΩ X: 250mΩ at 50Hz (X: 300mΩ at 60Hz)					
Impedance bridging	Automatic bridging					
Cooling type	Air cooling					
Size						
Dimensions	9U 400x483x600			9U 400x483x600		
Weight (approx.)	55kg			62kg		

WIRING DIAGRAM

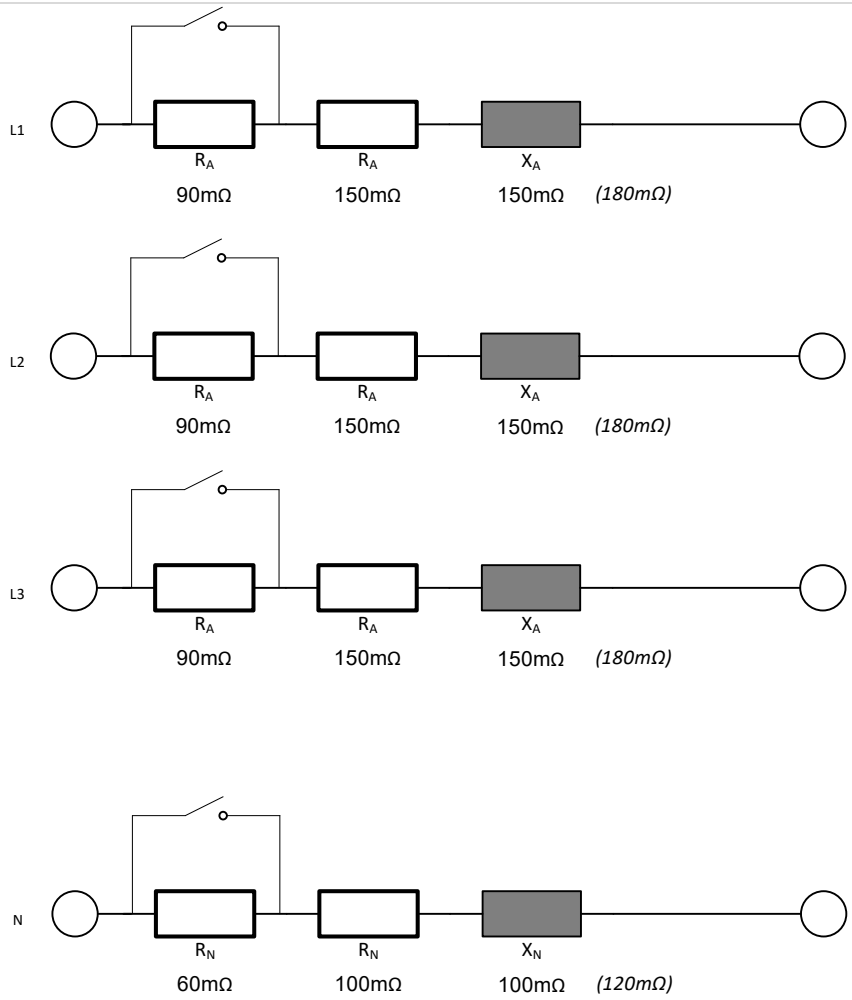

Fig. 7: IEC/EN standard reference impedance 50Hz/(60Hz) values for AIS 32/1 (L1, N) and AIS 32/3 (L1, L2, L3, N)

TECHNICAL DATA TYPES AIS 75/1 and AIS 75/3

Type		**AIS 75/1**			**AIS 75/3**		
Performance							
Max. continuous current		75A$_{rms}$			75A$_{rms}$		
Max. short time current		126A$_{rms}$			126A$_{rms}$		
Current measurement ranges							
Nominal current (rms)		0.16A	0.64A	2.5A	16A	75A	-
Peak current		0.78A	3.125A	12.5A	50A	200A	-
Internal impedance		IEC/EN standards					
Phase conductor	R_A: 150mΩ or 240mΩ X_A: 150mΩ at 50Hz (X_A: 180mΩ at 60Hz)						
Neutral conductor	R_N: 100mΩ or 160mΩ X_N: 100mΩ at 50Hz (X_N: 120mΩ at 60Hz)						
Max. phase-neutral impedance	R: 250mΩ or 400mΩ X: 250mΩ at 50Hz (X: 300mΩ at 60Hz)						
Impedance bridging		Automatic bridging					
Cooling type		Air cooling					
Size							
Dimensions		11U 489x483x600			11U 489x483x600		
Weight (approx.)		100kg			110kg		

WIRING DIAGRAM

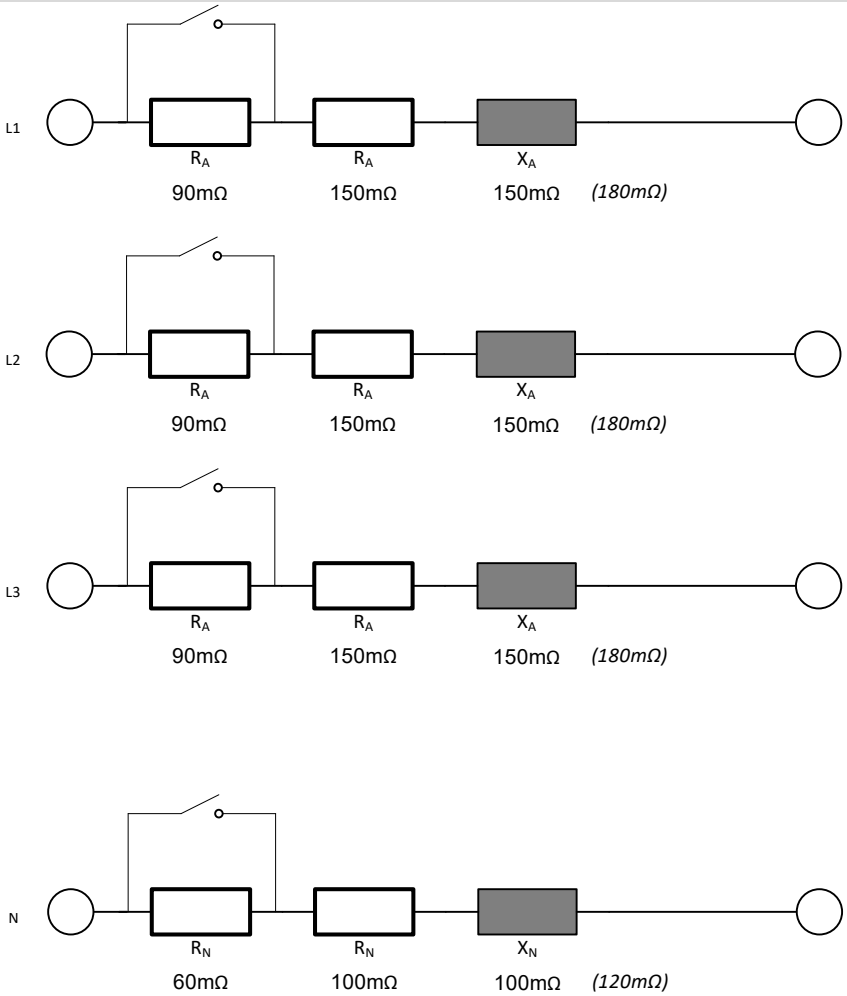

Fig. 8: IEC/EN standard reference impedance 50Hz/(60Hz) values for AIS 75/1 (L1, N) and AIS 75/3 (L1, L2, L3, N)

TECHNICAL DATA TYPES AIS 32/3/M, AIS 32/3/P, AIS 75/3/M and AIS 75/3/P

Type	**AIS 32/3/M / AIS 32/3/P**			**AIS 75/3/M / AIS 75/3/P**		
Performance						
Max. continuous current	$32A_{rms}$			$75A_{rms}$		
Max. short time current	$64A_{rms}$			$126A_{rms}$		
Current meas. ranges						
Nominal current (rms)	0.16A	0.64A	2.5A	16A	75A	-
Peak current	0.78A	3.125A	12.5A	50A	200A	-
Internal impedance	IEC/EN standards					
Phase conductor	R_A: 15mΩ … 240mΩ in 15mΩ - steps X_A: 9.38mΩ ... 150mΩ in 9.38mΩ - steps at 50Hz X_A: 11.26mΩ ... 180mΩ in 11.26mΩ - steps at 60Hz					
Neutral conductor	R_N: 10mΩ ... 160mΩ in 10mΩ - steps X_N: 6.25mΩ … 100mΩ in 6.25mΩ - steps at 50Hz X_N: 7.5mΩ … 120mΩ in 7.5mΩ - steps at 60Hz					
Max. phase-neutral impedance	R: 400mΩ X: 250mΩ at 50Hz (X: 300mΩ at 60Hz)					
Impedance bridging	Software assisted manual bridging (M types), Automatic bridging (P types)					
Cooling type	Air cooling					
Size						
Dimensions (mm)	15U 667x483x600			15U 667x483x600		
Weight (approx.)	150kg			175kg		

WIRING DIAGRAM

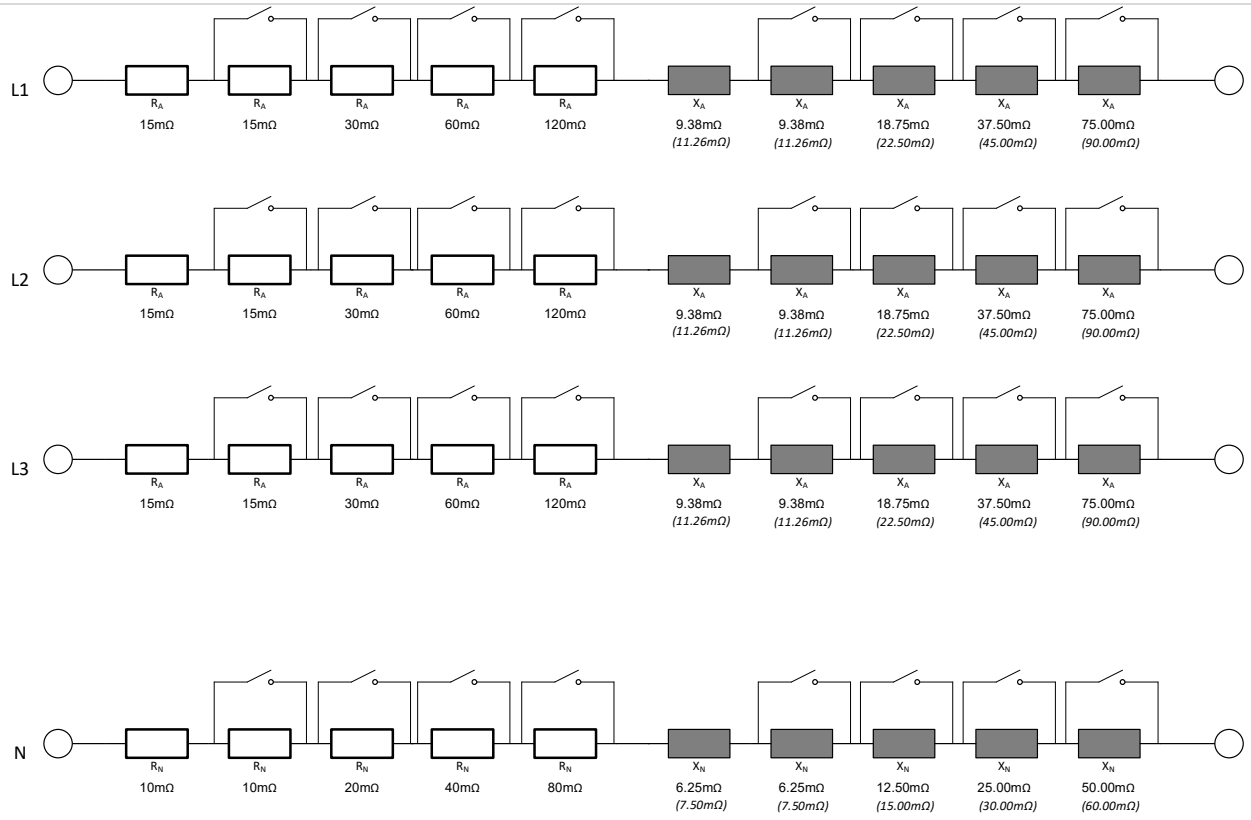

Fig. 9: IEC/EN standard reference impedance 50Hz/(60Hz) values for AIS 32/3/M, AIS 32/3/P, AIS 75/3/M and AIS 75/3/P

TECHNICAL DATA TYPE AIS 125/3/P

Type	**AIS 125/3/P**					
Performance						
Max. continuous current	$125A_{rms}$					
Max. short time current	$250A_{rms}$					
Current meas. ranges						
Nominal current (rms)	0.16A	0.64A	2.5A	16A	75A	125A
Peak current	0.78A	3.125A	12.5A	50A	200A	400A
Internal impedance	IEC/EN standards					
Phase conductor	R_A: 7.5mΩ … 240mΩ in 7.5mΩ - steps X_A: 4.69mΩ ... 150mΩ in 4.69mΩ - steps at 50Hz X_A: 5.63mΩ ... 180mΩ in 5.63mΩ - steps at 60Hz					
Neutral conductor	R_N: 5mΩ ... 160mΩ in 5mΩ - steps X_N: 3.13mΩ … 100mΩ in 3.13mΩ - steps at 50Hz X_N: 3.75mΩ … 120mΩ in 3.75mΩ - steps at 60Hz					
Max. phase-neutral impedance	R: 400mΩ X: 250mΩ at 50Hz (X: 300mΩ at 60Hz)					
Basic impedance inaccuracy	1mΩ					
Max. continuous impedance voltage drop	$30V_{rms}$					
Max. short term impedance voltage drop	$45V_{rms}$					
Impedance bridging	Automated pneumatic bridging *(pressure: 5-10bar, connector ¼" NW 7.2)*					
Cooling type	Air cooling					
Size						
Dimensions (mm)	37U 1645x600x600					
Weight (approx.)	650kg					

WIRING DIAGRAM

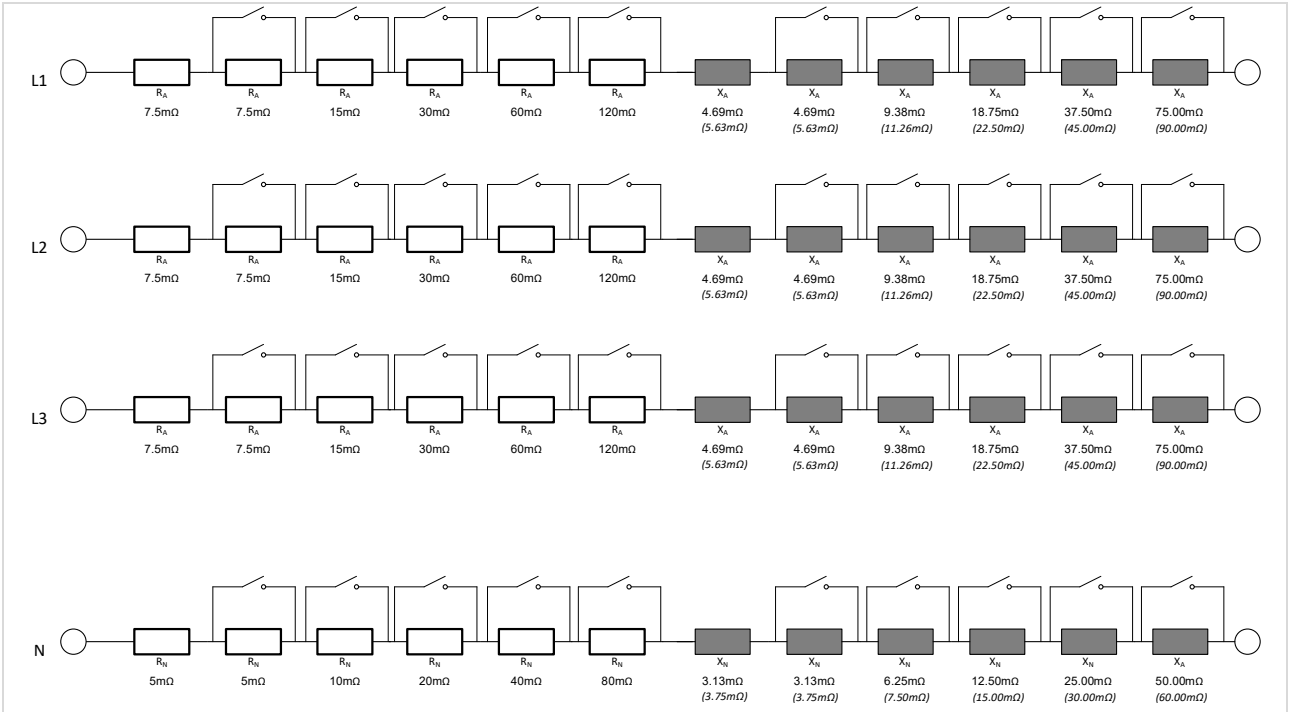

Fig. 10: IEC/EN standard reference impedance 50Hz/(60Hz) values for AIS 125/3/P

TECHNICAL DATA TYPES
AIS 250/3/P, AIS 375/3/P, AIS 500/3/P, AIS 750/3/P, AIS 1500/3/P

Type	AIS 250/3/P	AIS 375/3/P	AIS 500/3/P	AIS 750/3/P	AIS 1500/3/P
Performance					
Max. continuous current	250A_{rms}	375A_{rms}	500A_{rms}	750A_{rms}	1500A_{rms}
Max. short time current	500A_{rms}	563A_{rms}	750A_{rms}	1125A_{rms}	2250A_{rms}
Current meas. ranges	for AIS based measurements				
Nominal current (rms)	0.16A	0.64A	2.5A	16A	75A	300A
Peak current	0.78A	3.125A	12.5A	50A	200A	800A
Current meas. ranges	for APS based measurements				
Nominal current (rms)	100A	200A	400A	800A	-	-
Peak current	280A	560A	1120A	2300A	-	-
Internal impedance	IEC/EN standards				
Phase conductor	R_A: 3.75mΩ … 240mΩ in 3.75mΩ - steps X_A: 2.34mΩ ... 150mΩ in 2.34mΩ - steps at 50Hz X_A: 2.81mΩ ... 180mΩ in 2.81mΩ - steps at 60Hz				
Neutral conductor	R_N: 2.5mΩ ... 160mΩ in 2.5mΩ - steps X_N: 1.56mΩ … 100mΩ in 1.56mΩ - steps at 50Hz X_N: 1.88mΩ … 120mΩ in 1.88mΩ - steps at 60Hz				
Max. phase-neutral impedance	R: 400mΩ X: 250mΩ at 50Hz (X: 300mΩ at 60Hz)				
Basic impedance inaccuracy	1mΩ				
Max. continuous impedance voltage drop	30V_{rms}				
Max. short term impedance voltage drop	45V_{rms}				
Impedance bridging	Automated pneumatic bridging *(pressure: 5-10bar, connector ¼" NW 7.2)*				
Cooling type	Water cooling *(connector 1,5")*				
Size					
Dimensions (mm)	2x37U 1920x1200x1050	3x42U 2120x1800x1050	3x46U 2320x1800x1050	3x46U 2320x1800x1050	2x 3x46U 2x 2320x1800x1050
Weight (approx.)	1000kg	2500kg	3000kg	4000kg	8000kg

WIRING DIAGRAM

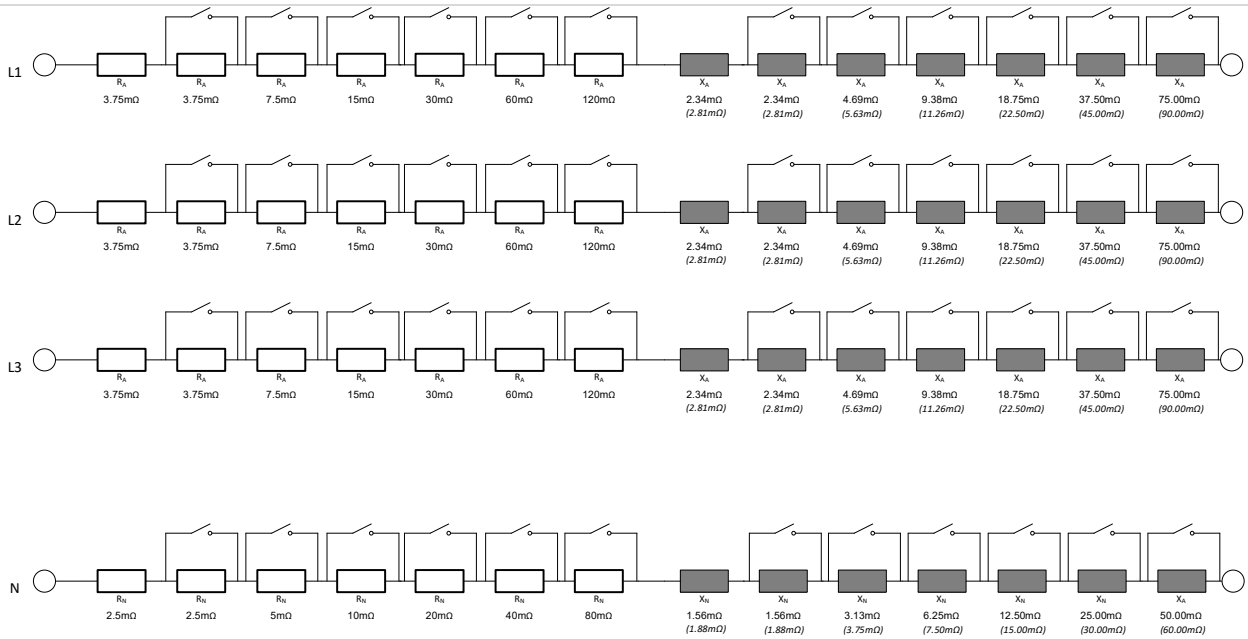

Fig. 11: IEC/EN standard reference impedance 50Hz/(60Hz) values for AIS 250/3/P, AIS 375/3/P, AIS 500/3/P, AIS 750/3/P and AIS 1500/3/P

TECHNICAL DATA TYPE JK (JAPANESE/KOREAN STANDARDS)[5)]

Type	AIS 32/3/M/JK AIS 32/3/P/JK	AIS 75/3/M/JK AIS 75/3/P/JK	AIS 125/3/P/JK
Performance			
Max. continuous current	$32A_{rms}$	$75A_{rms}$	$125A_{rms}$
Max. short time current	$64A_{rms}$	$126A_{rms}$	$250A_{rms}$
Internal impedance	Japanese/Korean standards		
Phase conductor	R_A: 0mΩ / 15mΩ / 50mΩ / 55mΩ / 90mΩ X_A: 0mΩ / 34.37mΩ / 66.67mΩ / 101.04mΩ at 50Hz X_A: 0mΩ / 41.25mΩ / 80mΩ / 121.25mΩ at 60Hz		
Neutral conductor	R_N: 0mΩ / 10mΩ / 190mΩ X_N: 0mΩ / 8.33mΩ / 33.33mΩ / 41.67mΩ at 50Hz X_N: 0mΩ / 10mΩ / 40mΩ / 50mΩ at 60Hz		
Max. phase-neutral impedance	R: 680mΩ X: 393mΩ at 50Hz (X: 471mΩ at 60Hz)		
Impedance bridging	Software assisted manual bridging (M types), Automatic bridging (P types)		Automated pneumatic bridging *(pressure: 5-10bar, connector ¼" NW 7.2)*
Cooling type	Air cooling		
Size			
Dimensions (mm)	23U 1022x483x600	23U 1022x483x600	2x37U 1645x1200x600
Weight (approx.)	210kg	250kg	1100kg

WIRING DIAGRAM

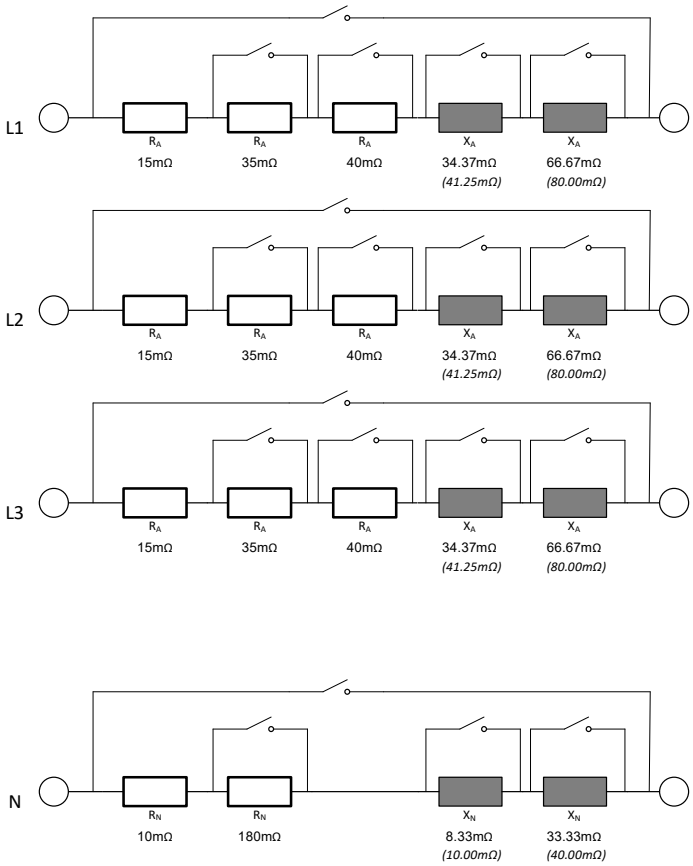

Fig. 12: Japanese/Korean standard reference impedance 50Hz/(60Hz) values for all AIS xxx/3/P/JK

POSSIBLE IMPEDANCE COMBINATIONS AT 50Hz

(Without additional Japanese/Korean standard values)
Fixed values displayed in red colour

No.	R_A [mΩ]	R_N [mΩ]	R_{total} [mΩ]	ratio X_{total} / R_{total}	X_A [mΩ]	X_N [mΩ]	X_{total} [mΩ]	AIS with 32A 75A	AIS with 125A	AIS with 250A 375A 500A 750A 1500A
1[3)]	3.75	2.5	**6.25**	0.625	2.34	1.56	**3.9**	×	×	✓
2[4)]	7.5	5	**12.5**	0.625	4.69	3.13	**7.82**	×	✓	✓
3	11.25	7.5	**18.75**	0.625	7.03	4.69	**11.72**	✓	✓	✓
4[5)]	15	10	**25**	0.625	9.38	6.25	**15.63**	✓	✓	✓
5	18.75	12.5	**31.25**	0.625	11.72	7.81	**19.53**	×	×	✓
6	22.5	15	**37.5**	0.625	14.07	9.38	**23.45**	×	✓	✓
7	26.25	17.5	**43.75**	0.625	16.41	10.94	**27.35**	×	×	✓
8	30	20	**50**	0.625	18.75	12.5	**31.25**	✓	✓	✓
9	33.75	22.5	**56.25**	0.625	21.09	14.06	**35.15**	×	×	✓
10	37.5	25	**62.5**	0.625	23.44	15.63	**39.07**	×	✓	✓
11	41.25	27.5	**68.75**	0.625	25.78	17.19	**42.97**	×	×	✓
12	45	30	**75**	0.625	28.13	18.75	**46.88**	✓	✓	✓
13	48.75	32.5	**81.25**	0.625	30.47	20.31	**50.78**	×	×	✓
14	52.5	35	**87.5**	0.625	32.82	21.88	**54.7**	×	✓	✓
15	56.25	37.5	**93.75**	0.625	35.16	23.44	**58.6**	×	×	✓
16	60	40	**100**	0.625	37.5	25	**62.5**	✓	✓	✓
17	63.75	42.5	**106.25**	0.625	39.84	26.56	**66.4**	×	×	✓
18	67.5	45	**112.5**	0.625	42.19	28.13	**70.32**	×	✓	✓
19	71.25	47.5	**118.75**	0.625	44.53	29.69	**74.22**	×	×	✓
20	75	50	**125**	0.625	46.88	31.25	**78.13**	✓	✓	✓
21	78.75	52.5	**131.25**	0.625	49.22	32.81	**82.03**	×	×	✓
22	82.5	55	**137.5**	0.625	51.57	34.38	**85.95**	×	✓	✓
23	86.25	57.5	**143.75**	0.625	53.91	35.94	**89.85**	×	×	✓
24	90	60	**150**	0.625	56.25	37.5	**93.75**	✓	✓	✓
25	93.75	62.5	**156.25**	0.625	58.59	39.06	**97.65**	×	×	✓
26	97.5	65	**162.5**	0.625	60.94	40.63	**101.57**	×	✓	✓
27	101.25	67.5	**168.75**	0.625	63.28	42.19	**105.47**	×	×	✓
28	105	70	**175**	0.625	65.63	43.75	**109.38**	✓	✓	✓
29	108.75	72.5	**181.25**	0.625	67.97	45.31	**113.28**	×	×	✓
30	112.5	75	**187.5**	0.625	70.32	46.88	**117.2**	×	✓	✓

31	116.25	77.5	**193.75**	0.625	72.66	48.44	**121.1**	×	×	✓
32	120	80	**200**	0.625	75	50	**125**	✓	✓	✓
33	123.75	82.5	**206.25**	0.625	77.34	51.56	**128.9**	×	×	✓
34	127.5	85	**212.5**	0.625	79.69	53.13	**132.82**	×	✓	✓
35	131.25	87.5	**218.75**	0.625	82.03	54.69	**136.72**	×	×	✓
36	135	90	**225**	0.625	84.38	56.25	**140.63**	✓	✓	✓
37	138.75	92.5	**231.25**	0.625	86.72	57.81	**144.53**	×	×	✓
38	142.5	95	**237.5**	0.625	89.07	59.38	**148.45**	×	✓	✓
39	146.25	97.5	**243.75**	0.625	91.41	60.94	**152.35**	×	×	✓
40	150	100	**250**	0.625	93.75	62.5	**156.25**	✓	✓	✓
41	153.75	102.5	**256.25**	0.625	96.09	64.06	**160.15**	×	×	✓
42	157.5	105	**262.5**	0.625	98.44	65.63	**164.07**	×	✓	✓
43	161.25	107.5	**268.75**	0.625	100.78	67.19	**167.97**	×	×	✓
44	165	110	**275**	0.625	103.13	68.75	**171.88**	✓	✓	✓
45	168.75	112.5	**281.25**	0.625	105.47	70.31	**175.78**	×	×	✓
46	172.5	115	**287.5**	0.625	107.82	71.88	**179.7**	×	✓	✓
47	176.25	117.5	**293.75**	0.625	110.16	73.44	**183.6**	×	×	✓
48	180	120	**300**	0.625	112.5	75	**187.5**	✓	✓	✓
49	183.75	122.5	**306.25**	0.625	114.84	76.56	**191.4**	×	×	✓
50	187.5	125	**312.5**	0.625	117.19	78.13	**195.32**	×	✓	✓
51	191.25	127.5	**318.75**	0.625	119.53	79.69	**199.22**	×	×	✓
52	195	130	**325**	0.625	121.88	81.25	**203.13**	✓	✓	✓
53	198.75	132.5	**331.25**	0.625	124.22	82.81	**207.03**	×	×	✓
54	202.5	135	**337.5**	0.625	126.57	84.38	**210.95**	×	✓	✓
55	206.25	137.5	**343.75**	0.625	128.91	85.94	**214.85**	×	×	✓
56	210	140	**350**	0.625	131.25	87.5	**218.75**	✓	✓	✓
57	213.75	142.5	**356.25**	0.625	133.59	89.06	**222.65**	×	×	✓
58	217.5	145	**362.5**	0.625	135.94	90.63	**226.57**	×	✓	✓
59	221.25	147.5	**368.75**	0.625	138.28	92.19	**230.47**	×	×	✓
60	225	150	**375**	0.625	140.63	93.75	**234.38**	✓	✓	✓
61	228.75	152.5	**381.25**	0.625	142.97	95.31	**238.28**	×	×	✓
62	232.5	155	**387.5**	0.625	145.32	96.88	**242.2**	×	✓	✓
63	236.25	157.5	**393.75**	0.625	147.66	98.44	**246.1**	×	×	✓
64	240	160	**400**	0.625	150	100	**250**	✓	✓	✓

ADDITIONAL IMPEDANCE COMBINATIONS JAPANESE/KOREAN STANDARD[6)]

No.	R_A [mΩ]	R_N [mΩ]	R_{total} [mΩ]	ratio X_{total} / R_{total}	X_A [mΩ]	X_N [mΩ]	X_{total} [mΩ]	
1	15	10	**25**	0.625	9.38	6.25	**15.63**	*= Fixed value*
2	35	180	**215**	0.199	34.37	8.33	**42.70**	
3	40		**40**	2.5	66.67	33.33	**100.00**	
4	330	350	**680**	0.578	251	142	**393**	*= Japanese/Korean standard values*

Remarks:

1) 4A for AIS 500/3/P/xxx, AIS 750/3/P/xxx and AIS 1500/3/P/xxx
2) Fixed impedance value for AIS 250/3/P/xxx, AIS 375/3/P/xxx, AIS 500/3/P/xxx, AIS 750/3/P/xxx and AIS 1500/3/P/xxx
3) Fixed impedance value for AIS 125/3/P/xxx
4) Fixed impedance value for AIS 32/3/x/xxx and AIS 75/3/x/xxx
5) Impedance values for JK type must be added to the IEC impedance values because of the serial connection of the two impedances.
6) When using the AIS xxx/x/JK version the additional JK impedance can be disabled. The remaining impedance is then the adjusted IEC impedance value. The minimum impedance value is the fixed impedance value of the according AIS version.

AIS OUTPUT CONNECTORS:

AIS type	Output connectors (AIS front panel or external connector panel) Each connector is protected by appropriate circuit breaker unit
AIS 16/1	16A safety plug, 16A laboratory plugs
AIS 16/3	16A CEE, 16A safety plug, 16A laboratory plugs
AIS 32/1	32A CEE (3-pole), 16A safety plug, 32A laboratory plugs
AIS 32/3, AIS 32/3/M, AIS 32/3/P	32A CEE (5-pole), 16A safety plug, 32A laboratory plugs
AIS 75/1	125A CEE (3-pole), 16A safety plug, 32A laboratory plugs
AIS 75/3, AIS 75/3/M, AIS 75/3/P	125A CEE (5-pole), 16A safety plug, 32A laboratory plugs
AIS 125/3/P	125A CEE (5-pole), 16A safety plug, 32A laboratory plugs
AIS 250/3/P	copper bars, 125/63/32/16A CEE (5-pole), 32A laboratory plugs
AIS 375/3/P	copper bars, 125/63/32/16A CEE (5-pole), 32A laboratory plugs
AIS 500/3/P	copper bars, 125/63/32/16A CEE (5-pole), 32A laboratory plugs
AIS 750/3/P	copper bars, 125/63/32/16A CEE (5-pole), 32A laboratory plugs

Fig 13: AIS 16/3 with APS 1000 power source

A compact and cost-efficient design with highest measurement quality and precision.
Best performance for EMC testing of line-conducted and low frequency phenomena.