Tap-off unit for busbar trunking – AKM



MAXIMUM TRANSPARENCY FOR BUSBAR TRUNKING SYSTEMS

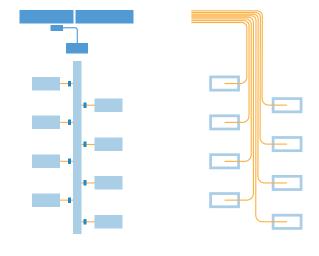
Plug & Play Energy Monitoring For Busbar Systems

Janitza[®]

MAXIMUM TRANSPARENCY ON BUSBARS

Busbar systems for power distribution in manufacturing plants, large buildings, and data centers offer the following advantages:

- Simple and flexible planning with a modular system
- Early planning without precise knowledge of load locations
- Time and cost savings during installation
- Speed and flexibility for expansions and changes of machine locations
- Changes and expansions also possible with system alive
- Type-approved safety
- High short-circuit rating
- Low fire load
- Good EMC properties



Busbar trunking installation

Cable installation

Tap-off units with integrated measurement technology offer additional features:

- Maximum energy transparency at the machine level (foundational technology for Energy 4.0)
- Optimized plant availability through continuous monitoring of the energy supply quality.



Busbar tap-off units (AKM) from Janitza:

- Tap-off unit for BD2 busbar trunking system, other busbar systems on request
- Proven and powerful Janitza energy measuring technology
- Compact design with optimized temperature behavior
- Pre-assembled systems for Plug & Play installation
- Versions with up to 125 A fuse protection per feeder, higher currents on request
- Tap-off unit dimensions (for 125 A size): approx. 530 x 310 x 100 mm³.

ADVANTAGES OF THE AKM BUSBAR TAP-OFF UNIT

ENERGY EFFICIENCY ANALYSIS

Measuring the energy consumption of each connected consumer enables evaluation and improvement of the energy efficiency as well as comparative evaluation of different consumers.

TRANSPARENCY OVER THE ENTIRE BUSBAR

Monitoring of the entire busbar forms an important basis for the planning of changes and expansions. The measured values enable simple determination of key performance indicators, benchmarks and reports.

SIMPLE PLUG & PLAY SETUP WITH NO MANIPU-LATION OF THE MACHINE

Enables time-saving installation of an energy monitoring system with pre-assembled tap-off units.

CONTINUOUS MEASUREMENT OF ALL CURRENTS

The measurement of all phase currents and continuous measurement of the neutral conductor current enable high measuring resolution as well as early detection of overloads caused by unbalances and harmonics.

POWER QUALITY MONITORING

Continuous measurement of the power quality. Avoidance of plant downtimes through continuous analysis and warning of deviations.

TEMPERATURE MONITORING

Direct measurement with a temperature sensor in the unit allows early detection of overloads.

MEASUREMENT OF RESIDUAL CURRENT

Continuous measurement of the residual current: Early detection of failures in the electrical installation.

ADVANCED RESIDUAL CURRENT MEASURE-MENT (OPTIONAL)

Enhancement of RCM measurement for pulsating alternating currents up to 20 kHz (Type B+) for standard-compliant measurement and monitoring according to IEC 62020.

DIGITAL INPUT (OPTIONAL)

For recording additional measured values, e.g. compressed-air or coolant consumption.



Tap-off unit with integrated measurement technology



1. Power fuses

Easily accessible fuses for the load side

2. Transformer for operating current measurement

Measurement of phase currents L1, L2 and L3 and direct measurement of the neutral current

3. Sensor for temperature measurement

Measurement of the internal tap-off unit temperature

4. Residual current transformer for RCM measurement

Measurement of residual currents

5. Power connections

Generously dimensioned connection compartment for easy connection of loads

6. Contact block

The connection to the busbar is automatically disconnected when the unit is opened

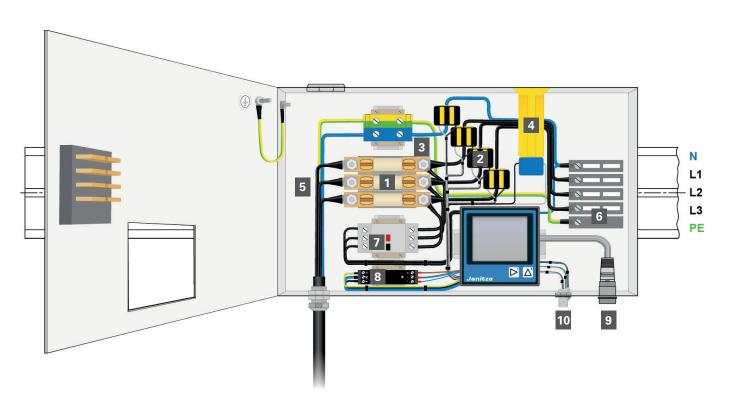
7. Measurement device protection

8. Optional:

24 V power supply unit and digital input

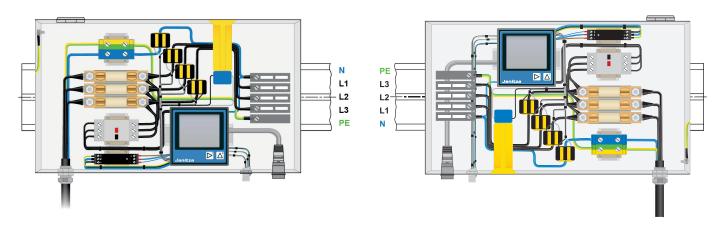
9. Ethernet port

10. RS485 connections



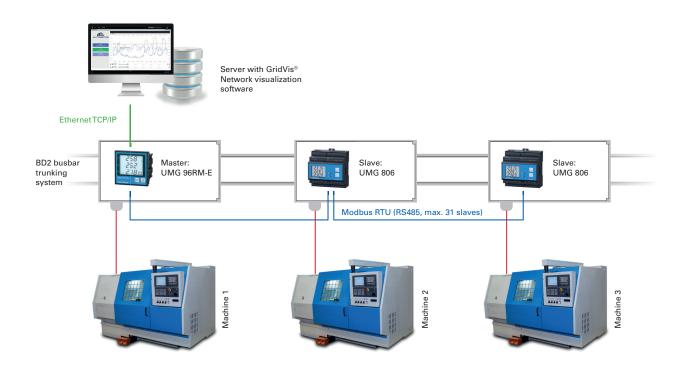
Technical details

FREELY SELECTABLE CABLE OUTLET ORIENTATION SIMPLIFIES INSTALLATION



A choice of two possible cable outlets allows easy adaptation to the installation situation. In the version with a display, the measurement device can be rotated by 180° to enable correct display orientation.

EASY BUS INSTALLATION BY SETTING UP MASTER-SLAVE STRUCTURES



The busbar tap-off units (AKM) can be linked via Ethernet or RS485 and have an integrated Ethernet RS485 gateway. When the first AKM is connected directly to the Ethernet, as shown in the example, and the integrated gateway func-

tion is used, all subsequent AKMs can be linked via RS485, saving costs and IP addresses. Two connection sockets each enable the bus connection to be simply looped from one busbar tap-off unit to the next.

VERSIONS AND OPTIONS

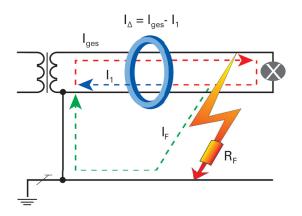
Pulse input for additional measurements (option DI)

- Optional digital input for recording any process variables (e.g. compressed air or water)
- Measured values are standardized and temporarily stored in the AKM



Enhanced residual current detection (option RCM plus)

- Recording of pulsating residual currents of up to 20 kHz
 (Type B+) according to IEC 62020
- An alternative to insulation measurement in TN-S systems and thus reduced test effort on stationary electrical installations within the scope of German Social Accident Insurance (DGUV) Regulation 3



Versions with and without display

Depending on whether the AKM is to be operated locally or a display is required, a version with or without an external display can be selected.



AKM with display in the front panel



AKM without display in the front panel

VISUALIZATION AND EVALUATION

PERFECT OUTLINE AND EVALUATION OF MEASURED VALUES IN GridVis®



Freely configurable dashboards*



Keep track of system utilization*: The report shows the utilization of all selected measurement points as a percentage and as an absolute value in the selected time period. Limit violations, excessive utilization, and reserves can be seen at a glance.

Zeltraum Geräte					Auslettungsre										
	19.08.2019 - 26.08.2019	Messitelle				Auslastung		Strom MAX Grenzwert		Reserve 25.30 A			100	100 0	50
						125%						Gr	= _/\	#= _ (Ð
Gruppen 3 Messwerte Mittelwert (AVG)		Total Consumption Hall 6 Total Consumption Hall 6			39%		15,76 A 40,00 A			24,24 A 24.58 A		ı - r		, i e	_
overtreristaune		Total Consumption Hall Total Consumption Hall			_	35%	15,43		00 A	24,58 A		U	u		
		5. Total Consumption Hall 8				36%		14,54 A 43,00 A		25,46 A					
						Verbrauch									
		Audatung							Phasen			Leistung			
Messstellenbe	eseldmung	Auslantung	Strom MAX	Grenowert	Reserve	u	12	13	N	Cos phi	Wirkleblung	Scheinlebtung	Blindleistung	Bezagene Wirkschaft	Sidnerung
Gesamtverbra		III IN	3,02 A	40,00 A	36,98 A	1,76 A	2,42 A	3.02 A	3,32 A	0,60	1,18 kW	1,65 kVA	-0,60 kVM	295 kWh	SOA
Geantvetra		I IN	1,23 A	40,00 A	38,77 A	1,23 A	1,00 A	1,11 A	1,43 A	0,54	0,43 VW	0,26 kVA	-0,45 kVA	73 kWh	SOA
Gesamtverbrauch Halle 1		39%	15,76 A	40,00 A	24,24 A	15,76 A	11,18 A	11,06 A	7,15 A	0,97	8,04 VW	8,20 kVA	0,44 kVAr	1349 kmh	50 A
Gesamtverbrauch Halle 2		32%	12,94 A	40,00 A	27,06 A	12,94 A	7,59 A	4,82 A	10,68 A	0,51	5,17 kW	5,89 kVA	-0,71 kVAr	868 kWh	50 A
Gerantverbrauch Halle 3 Gerantverbrauch Halle 3		23%	2,19 A 9,03 A	40,00 A 40,00 A	37,81 A 30,97 A	2,19 A 9,03 A	1,01 A 6,07 A	1,73 A 5.92 A	1,78 A 5.15 A	0,80	0,94 kW 4.17 kW	1,13 kVA 4,83 kVA	-0,35 kW/r -1,40 kW/r	158 kWh 201 kWh	SO A
Gesamowhrauth Halle 10		23%	15.42.A	A 00.00	24.58 A	9,03 A	15.42.A	15.10 A	11.13 A	0,90	8,32 kW	9.34 IVA	-1,43 KVM	1410 kWh	SOA
Gesantvertrauth Halle S		19%	15.47.A	40.00 A	24.50 A	9.43 A	13,42 A	15.08 A	11.12 A	0.87	8.39 KW	9.34 NVA	1.80 100	1410 100	30 A
Gnamverbra	uot males	7%	2,71 A	40.00 A	37,29 A	2,51 A	1,48 A	2,71 A	2.14 A	0.76	1,30 kW	1.54 MA	-0.47 W/e	218 kWh	50 A
Gerantvertra		36%	14.54 A	40,00 A	25.46 A	11.33 A	9.65 A	1454A	4.79 A	0.39	2.92 kW	BJS KVA	-0.85 KVMc	1339 kmb	50 A
Gerantverbra	uch Halle S	24%	2.48 A	40.00 A	30.52 A	9.48 A	3.82 A	2.88 A	8.59 A	0.90	2.82 VW	3.71 kVA	-1.13 kVM	423.8Wb	SOA
mer.						83.07 A	23.43.A	TINIA	67.76 A		65.82 VW	34.66 YYA	-9.12 NVA/	3194 km2	
						Cinspelsung									
		Auslantung				- Contract		Phases				Leistung			
Device Descrip		Aunlestung	Strom MAX	Grenowert	Reserve	u	12	L3	N	Cos phi	Wirklebtung	Scheinlebtung	Blindleistung	Bezogene Wirksrbeit	Sicherung
Transformer 5		125%	125,30 A	100,00 A	-25,30 A	125,80 A	103,71 A	200,81 A	54,39 A	0,96	71,98 kW	75,87 kWA	-12,67 kxxxr	12100 kWh	200 A
Photovoltaic S		19%	7,64 A	40,00 A	32,36 A	7,64 A	7,62 A	7,62 A	0,13 A	0,99	5,15 kW	5,26 N/A	-0,77 kVM	866 kWh	A 08
Transformer 5	Ration-P2	1%	2,24 A	160,00 A	157,76 A	2,24 A	2,23 A	1,97 A	0.01 A	0,56	69,75 kW	73,03 kWA	-11,94 kNAr	11719 kWh	200 A
Supply 1		EK.	12,64 A	160,00 A	147,36 A	12,64 A	10,46 A	10,77 A	5,81 A	0,81	5,18 VW	7,80 kVA	-2,35 kWAr	915 kWh	200 A
Supply 2		III BN	12,63 A	160,00 A	347,37 A	12,63 A	20,55 A	10,85 A	5,60 A	0,81	5,35 kW	7,83 kVA 83,66 kVA	-2,33 kW/r -15,03 kW/r	950 kWh	A 005
nme B											10.50 kW	13.10 WA	-3.10 WA		
						160,45 A	134,57 A	132,05 A	65,94 A		137,82 VW	73,03 WA	-11,54 WAr	26509 kWh	
						ima und Licht									
nne.		Audatung				ima und Licht		Phasen				Leistung			
n=4			Strom MAX	Grenowert	Reserve	u	12	L3	N	Cos phi	Wirklebtung	Scheinlebtung	Blindleistung	Berngene Wirkarbeit	Sicherung
Device Descrip	ption	Aunlestung				0.79 A	1,44 A	0,46 A	0,90 A	1,00	0,61 kW	0,61 kVA	40,06 kVAr	102 kWh	50 A
Device Descrip	tale 1	4%	1,44 A	35,00 A	33,56 A			0,52 A	0,74 A	1,00	0,62 VW	O,82 kVA	-0,03 kVA-	304 kWh	50 A
Device Descriptions of Bellevichtung H	tale 1 tale 2	4% 3%	1,44 A 1,22 A	35,00 A	33,78 A	1,00 A				0.31	0,47 kW	0,82 kVA 0,99 kVA	0.06 kVAr -0.23 kVAr	81 kWh 157 kWh	50 A
Device Descriptions of Bellevichtung H	talle 1 talle 2 talle 3	4 N 3 N 5 N	1,44 A 1,22 A 1,80 A	35,00 A 35,00 A	33,78 A 33,20 A	1,00 A 1,80 A	1.00 A	0,79 A	2,49 A						50 A
Device Descriptions of the Control o	nate 1 nate 2 nate 3 nate 6	4 N. 3 N. 3 N. 6 N.	1,44 A 1,22 A 1,80 A 2,13 A	35,00 A 35,00 A 35,00 A	33,78 A 33,20 A 32,87 A	1,00 A 1,80 A 0,27 A	1,00 A 1,91 A	2,13 A	2,05 A	0,96					
Device Descriptions of the Control o	sale 1 sale 2 sale 3 sale 6 sale 7	4% 9% 5% 6%	1,44 A 1,22 A 1,80 A 2,13 A 1,81 A	35,00 A 35,00 A 35,00 A 35,00 A	33,78 A 33,20 A 32,87 A 33,69 A	1,00 A 1,80 A 0,27 A 1,81 A	1,00 A 1,91 A 0,69 A	2,13 A 1,19 A	2,05 A 0,66 A	0.96	0,72 kW	0,73 kVA	-0,13 kVM	120 kWh	SOA
Device Description of the Control of	sale 1 sale 2 sale 3 sale 6 sale 7	4% 3% 1 5% 6% 4% 8%	1,44 A 1,22 A 1,80 A 2,13 A 1,31 A 2,16 A	35,00 A 35,00 A 35,00 A 35,00 A 28,00 A	33,20 A 32,87 A 33,69 A 25,84 A	1,00 A 1,80 A 0,27 A 1,81 A 2,16 A	1,00 A 1,91 A 0,69 A 1,93 A	2,13 A 1,19 A 2,50 A	2,05 A 0,66 A 0,76 A	0,96	0,72 VW 1,00 VW	0,73 kVA 1,42 kVA	-0,13 kW/-	120 kWh 168 kWh	50 A 40 A
Device Descriptions of the second sec	salie 1 salie 2 salie 3 salie 3 salie 6 salie 6 salie 7 salie 7 salie 1	4% 3% 5% 6% 1 4% 8%	1,44 A 1,22 A 1,80 A 2,13 A 1,31 A 2,15 A 1,97 A	35,00 A 35,00 A 35,00 A 35,00 A 28,00 A 28,00 A	33,20 A 32,87 A 33,69 A 25,84 A 26,01 A	1,00 A 1,80 A 0,27 A 1,81 A 2,16 A 1,99 A	1,00 A 1,91 A 0,69 A 1,93 A 1,73 A	2,13 A 1,39 A 2,30 A 1,89 A	2,05 A 0,66 A 0,76 A 0,74 A	0,96 0,99 0,81 0,71	0,72 kW 1,00 kW 0,88 kW	0,73 kVA 1,42 kVA 1,29 kVA	-0,13 kVAr -0,19 kVAr -0,21 kVAr	120 kWh 168 kWh 147 kWh	50 A 40 A
Selecthing H Beleuthing H Selecthing H Selecthing H Beleuthing H Klimanlage H	sale 1 sale 2 sale 6 sale 7 sale 7 sale 2 sale 2	4% 3% 1 5% 6% 4% 8%	1,44 A 1,22 A 1,80 A 2,13 A 1,31 A 2,16 A	35,00 A 35,00 A 35,00 A 35,00 A 28,00 A	33,20 A 32,87 A 33,69 A 25,84 A	1,00 A 1,80 A 0,27 A 1,81 A 2,16 A	1,00 A 1,91 A 0,69 A 1,93 A	2,13 A 1,19 A 2,50 A	2,05 A 0,66 A 0,76 A	0,96	0,72 VW 1,00 VW	0,73 kVA 1,42 kVA	-0,13 kW/-	120 kWh 168 kWh	50 A 40 A

reporting*, e.g. availability, events, transients and limit violations

Automated

^{*} The availability of individual functions depends on the selected $\operatorname{GridVis}^{\otimes}$ edition

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