

## **Product Discontinuation Notices**



**Product Discontinuation** 

**Electric Power Monitoring Equipment** 

**KE1-PGR1C-FLK** 

**Recommended Replacement** 

**Electric Power Monitoring Equipment** 

KM-N series or

KM50 series or

K8AK-PM[]

**KE1-PVS1C-FLK** KM-N series or

> KM50 series or K8AK-PM[] or

K8AK-PW[]

**KE1-VAU1B-FLK** 



KM50 series or K8AK-PM[]

**KE1-VSU1B-FLK** KM50 series or

> K8AK-PM[] or K8AK-PW[]

**KE1-DRT-FLK** 

KE1-CTD8

**KE1-ZCT8E** 

No recommended replacement

#### [ Final order entry date ]

The end of March, 2024

### [ Date of The Last Shipping ]

The end of June, 2024

#### [ Scheduled date of maintenance close ]

The end of June, 2025

#### [ Caution on recommended replacement ]

The KE1 series has multiple recommended alternatives due to its multiple functions. The table below lists recommended alternatives from a functional perspective.

Product discontin	i atternatives from a functional perspective. <b>uation</b>	Recommended r	eplacement
Model	Functions	Model	Note
KE1-CTD8E	CT input	None	
KE1-DRT-FLK	DeviceNet communications	None	
KE1-PGR1C-FLK	Power measurement · Alarm output · RS485 communications	KM-N、KM50-[]	Note1,Note2,Note3
	Curren measurement · Alarm output · RS485 communications	KM-N、KM50-[]	Note1,Note2,Note3
	Voltage measurement · Alarm output · RS485 communications	KM-N、KM50-[]	Note1,Note2,Note3
	Phase-sequence Phase-loss Alarm output RS485 communications	K8AK-PM	Note4
KE1-PVS1C-FLK	Power measurement · Alarm output · RS485 communications	KM-N、KM50-[]	Note1,Note2,Note3
	Curren measurement · Alarm output · RS485 communications	KM-N、KM50-[]	Note1,Note2,Note3
	Voltage measurement · Alarm output · RS485 communications	KM-N、KM50-[]	Note1,Note2,Note3
	Momentary Voltage Sag Monitor · Alarm output · Measurement Logging · RS485 communications	K8AK-PW	Note5
	Phase-sequence Phase-loss Alarm output RS485 communications	K8AK-PM	Note4
KE1-VAU1B-FLK	Curren measurement · Alarm output · RS485 communications	KM50-[]	Note1,Note2,Note3
	Voltage measurement · Alarm output · RS485 communications	KM50-[]	Note1,Note2,Note3
	Phase-sequence Phase-loss Alarm output RS485 communications	K8AK-PM	Note4
KE1-VSU1B-FLK	Momentary Voltage Sag Monitor · Alarm output · Measurement Logging · RS485 communications	K8AK-PW	Note5
	Voltage measurement · Alarm output · RS485 communications	KM50-[]	Note1,Note2,Note3
	Phase-sequence Phase-loss Alarm output RS485 communications	K8AK-PM	Note4
KE1-ZCT8E	ZCT input	None	

Note1: KM-N series does not have an alarm function. If an alarm output is required, use the KM-50 series. The output of the KM-50 series is a transistor output. There is no relay output.

Note2: For KM-50 series, a mounting bracket type KM50-OPT-CD1 is required separately for DIN rail mounting.

Note3: Since the format of the dedicated CT of KM-N series is different, it is necessary to replace the CT and CT cable when replacing.

Note4: K8AK-PM does not have measurement or communication functions. Only phase loss and reversed phase alarm function.

Note5: The K8AK-PW does not have instantaneous low detection, measurement log or RS485 communication function. With only an alarm output with undervoltage detection, the output response time is as short as 0.1 seconds.

Note6: AGD-N5 does not have measurement or communication functions. Only the alarm function of leakage current. The zero-phase current type OTG-L  $\square$  can be diverted.

[ Difference from discontinued product ]

Recommended replacement Model	Body Color	Dimen- sions	Wire connection	Mounting Dimensions	Charac- teristics	Operation ratings	Operation methods
KM-N2-FLK	**						
KM-N3-FLK	**						
KM50-C1-FLK	**						
KM50-E1-FLK	**						
K8AK-PM1	**						
K8AK-PM2	**						
K8AK-PW1	**						
K8AK-PW2	**						

\*\* : Compatible

\* : The change is a little/Almost compatible
-- : Not compatible

- : No corresponding specification

[ Product Discontinuation and recommended replacement ]

Product Discontinuation and recommended replacement J					
Product discontinuation	Recommended replacement				
KE1-CTD8E	No recommended replacement				
KE1-DRT-FLK	No recommended replacement				
	KM-N2-FLK				
	KM-N3-FLK				
KE1-PGR1C-FLK	KM50-C1-FLK				
REI-PGRIC-PLK	KM50-E1-FLK				
	K8AK-PM1				
	K8AK-PM2				
	KM-N2-FLK				
	KM-N3-FLK				
	KM50-C1-FLK				
KEA DVCAC ELK	KM50-E1-FLK				
KE1-PVS1C-FLK	K8AK-PM1				
	K8AK-PM2				
	K8AK-PW1				
	K8AK-PW2				
	KM50-C1-FLK				
KEA WALIAD ELK	KM50-E1-FLK				
KE1-VAU1B-FLK	K8AK-PM1				
	K8AK-PM2				
	KM50-C1-FLK				
	KM50-E1-FLK				
NEA VOLIAD ELIK	K8AK-PM1				
KE1-VSU1B-FLK	K8AK-PM2				
	K8AK-PW1				
	K8AK-PW2				
KE1-ZCT8E	No recommended replacement				

[ Body color ]

Product discontinuation
KE1-PGR1C-FLK
KE1-PVS1C-FLK
KE1-VAU1B-FLK
KE1-VSU1B-FLK
KE1-PVS1C-FLK KE1-VAU1B-FLK

Recommendable replacement KM-N series KM50 series K8AK-PM[]/-PW[]

**Black** 



**Black** 



KM-N3-FLK



KM50-C1-FLK





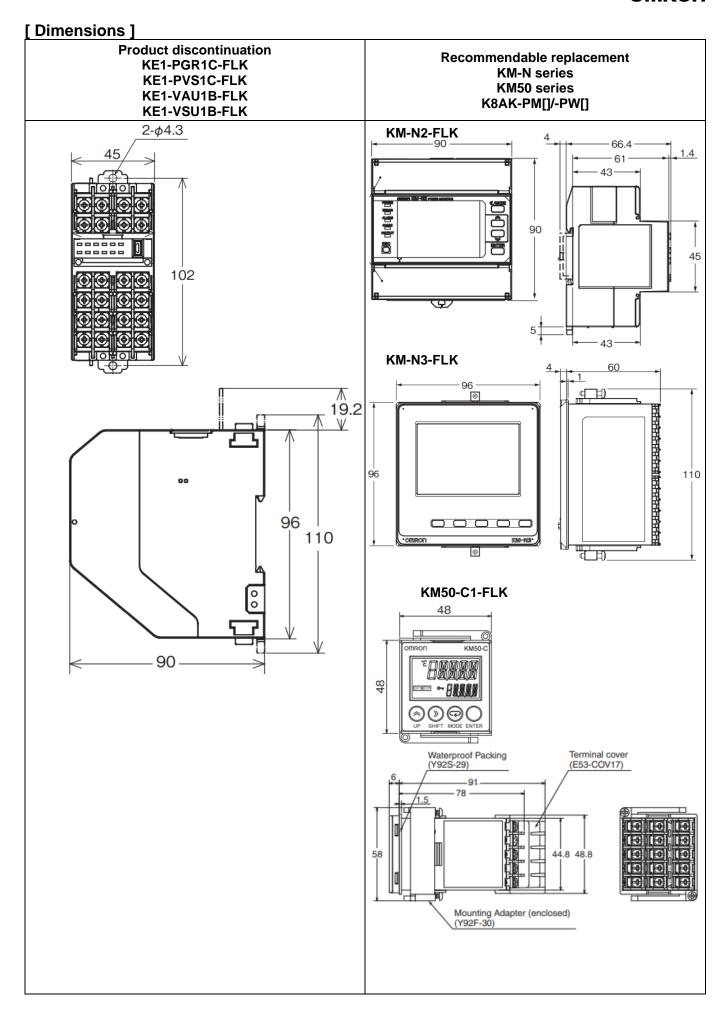
KM50-E1-FLK

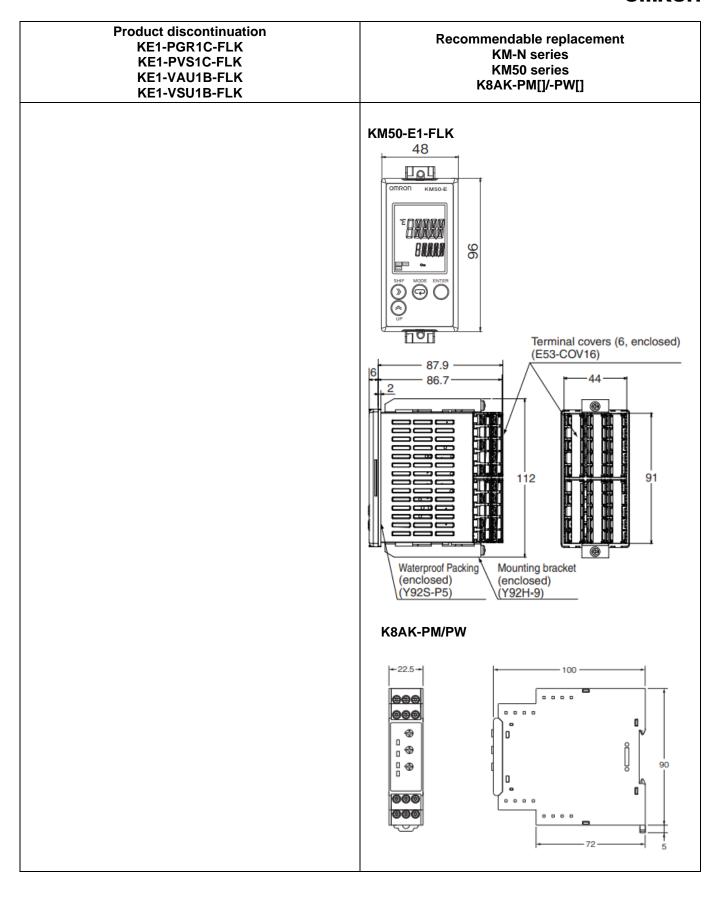
K8AK-PM



K8AK-PW







Wire connection ] **Product discontinuation** Recommendable replacement **KE1-PGR1C-FLK** KM-N series **KE1-PVS1C-FLK** KM50 series **KE1-VAU1B-FLK** K8AK-PM[]/-PW[] **KE1-VSU1B-FLK** Wire connection Wire connection 3-phase 3-wire 3-phase 3-wire KE1-PGR1C-FLK KM-N2-FLK Power supply (K) RST Power side KM-N2 RST V1 Branch V2 circuit (12) **24**) V3 Circuit A breaker γN (CT1 and CT2) (9) (10) 21) (22)-S1 CT1

S1 CT2

S1 CT3

S1 CT3

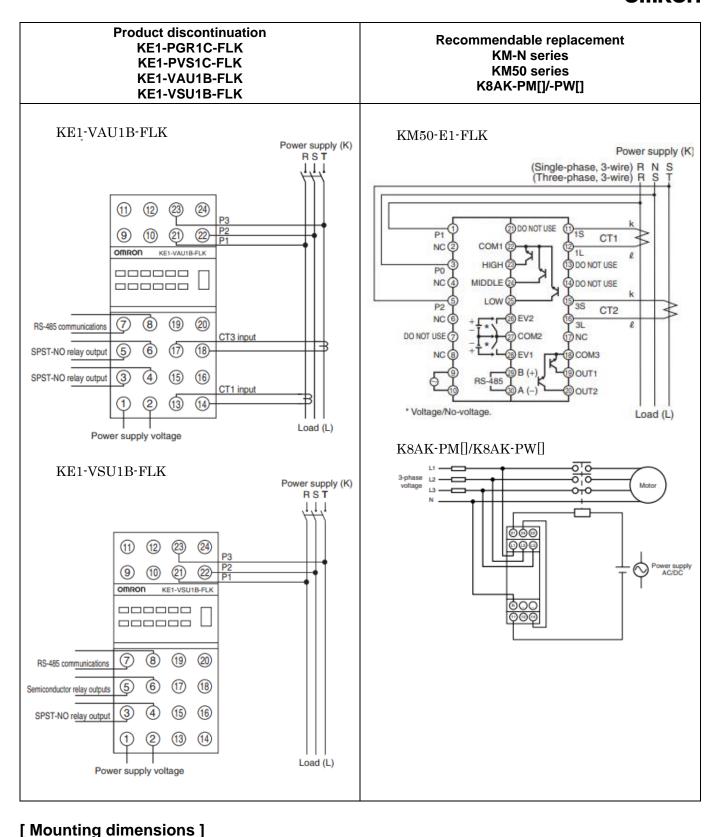
S1 CT3 \_\_\_\_ Circuit C \_\_\_\_ (CT3 and CT4) 7 8 (19) 20) RS-485 communications T3 input (5) 6 17 Transistor outputs Load side SPST-NO relay output 3 4 (15) (16) KM-N3-FLK T1 input (2) (13) Power side KM-N3 RŞŢ Branch Load (L) V1 Power supply voltage circuit V2 breaker V3 ovn Circuit A KE1-PVS1C-FLK (CT1 and CT2) Power supply (K) S1 CT1

S2 CT2

S3 CT2

S5 CT3

S5 CT4 Circuit C (CT3 and CT4 11 (12) **24**) 9 10 21) <u>@</u>-Load side omron KE1-PVS1C-FLK \_\_\_\_ \_\_\_\_ KM50-C1-FLK R N R 7 8 19 20 RS-485 communications CT3 input Load (5) 6 17 (18) Transistor outputs T S Power 8 Three-phase, 3-wire) (Single-phase, 3-wire) Semiconductor relay outputs 3 4 (15) (16) T1 input 1S (1 ள் B (+) (2) (13) 14 P1 1L Load (L) P2 Power supply voltage 38 P3 CT2 DO NOT USE 3L **ODO NOT USE** \* Voltage/Non-voltage



Product discontinuation KE1-PGR1C-FLK KE1-PVS1C-FLK KE1-VAU1B-FLK KE1-VSU1B-FLK	Recommendable replacement KM-N series KM50 series K8AK-PM[]/-PW[]
Screw mounting,DIN Track	KM-N2-FLK: DIN Track KM-N3-FLK,KM50 series: Front panel mounting

K8AK-PM[]/-PW[]:DIN Track

Onarao	teristics	•	Product disc	continuation	Recommendat	ole replacement
	Item		KE1-PGR1C-FL K	KE1-PVS1C-FL K	KM-N2-FLK	KM-N3-FLK
Applicable phase wiring method		Single-phase two- Single-phase three Three-phase three Three-phase four-	e-wire e-wire	Same as left		
Power supply Rated powers voltage		wer supply	100 to 240 VAC, 5	50/60 Hz	input voltages	100 to 240 VAC, 50/60 Hz
	Allowable voltage ra		85% to 110% of ravoltage	ated power supply	85% to 115% of rated power supply voltage	85% to 110% of rated power supply voltage
	Power co	ensumption	Standalone: 10 VA Maximum expansi		7 VA max.	
			100 to 480 VAC		100 to 277 VAC	
	Rated input	Single-phas e three-wire: Phase voltage/line voltage	100/200 VAC		100 to 220VAC/ 200 to 440VAC	100 to 240VAC/ 200 to 480VAC
		Three-phase three-wire: Line voltage	100 to 480 VAC		173 to 277VAC	
Input	voltage	Three-phase four-wire Phase voltage/line voltage	58 to 277 VAC/10	0 to 480 VAC	Grounded neutral: 100 to 254VAC(Phase voltage) 173 to 440VAC(line voltage)	Grounded neutra: 100 to 277VAC(Phase voltage) 173 to 480V(line voltage)
					Not grounded neu 100 to 120VAC(P 173 to 208VAC(lir	hase voltage)
	Rated input current for CT		Model KM20-CTF Model KM20-CTB (penetration type)		General-purpose CT with a rated secondary current of 1 A or 5 A	
	Dedicate	d CT	Model KM20-CTF	-CB3	Model KM-NCT-E * CE marking com dedicated product	npliant KM-N2/N3
	Dedicate	d CT cable	Model KM20-CTF	-CB3	-	
	Rated inp	out frequency	50/60 Hz		Same as left	
	Allowable voltage	e input	110% of rated inpercention (continuous)	ut voltage	115% of rated inp (continuous)	ut voltage
	Allowable input current		120% of rated inpercention (continuous)	ut current	Maximum CT sec	ondary current 6A
Ambient	Ambient operating temperature		-10 to 55°C (with or icing)	no condensation	−25 to 55°C	
Storage I	humidity		-25 to 65°C (with or icing)	no condensation	-25 to 85°C	
Ambient	operating	humidity	25% to 85%		Same as left	
Storage I	numidity		25% to 85%		Same as left	
Installation	on environ	ment	Overvoltage categories degree 2, measure		Same as left	

			Product discontinuation		Recommendable replacement	
lt	em	KE1-PGR1C-FL K	KE1-PVS1C-FL K	KM-N2-FLK	KM-N3-FLK	
Compliant stand	lards	EN/IEC 61010-2-030 and EN/IEC 31626-1 Industrial electromagnetic environment		UL61010-1(Recognized) EN61010-2-030 EN61326-1		
Accuracy	Voltage	±1.0% FS ±1 digit the voltage across FS ±1 digit under conditions.	the Vtr is ±2.0%	No provision		
	Current	±1.0% FS ±1 digit accuracy is ±2.0% phase-S current for three-wire circuit a current for a single three-wire circuit u conditions.	FS ±1 digit for the or a three-phase, and the phase-N e-phase,	No provision		
	Power	Active power and ±2.0% FS ±1 digit	•	0.5% (IEC 62053-	22 class 0.5S)	
	Frequency	±0.3 Hz ±1 digit		No provision		
Low-cut current	set value	0.1% to 19.9% of r increments	rated input in 0.1%	None		
Sampling cycle	Sampling cycle		100 ms for measurement voltage at 50 Hz and 83.3 ms for measurement voltage at 60 Hz		80 ms for 50 Hz and 66.7 ms for 60 Hz	
Weight		230 g		350g		
Transistor outputs	Number of outputs	One open-collector output (OUT2)		_		
	Output capacity	30 VDC, 30 mA				
	ON residual voltage	1.2 V max.				
	OFF leakage current	100 μA max.		None		
	Total power consumption pulse output	Outputs one pulse when the power consumption reaches the set pulse output unit (1, 10, 100, 1k, 2k, 5k, 10k, 20k, 50k, 100k W/h).				
	Alarm output	Outputs an alarm based on the set alarm output threshold.				
	Number of outputs	One NO contact output (OUT1)	None			
Relay outputs	Rated load	Resistance load, 250 VAC, 3 A; 30 VDC, 3 A Inductive load (cosφ = 0.4, L/R = 7 ms): 250 VAC, 1 A; 30 VDC, 1 A	None	None		
Somicon	Number of outputs	None	One MOS FET output (OUT1)			
Semicon ductor relay outputs	Maximum load voltage/Contin uous load current	None	Peak: 24VAC/DC Peak: 80 mA AC/DC	None		
RS-485	Protocols	Communications p		Same as left		

	Product disc	continuation	Recommendable replacement		
Item	KE1-PGR1C-FL K	KE1-PVS1C-FL K	KM-N2-FLK	KM-N3-FLK	
Baud rate	9,600 bps, 19,200 bps, or 38,400 bps		1.2、2.4、4.8、9.6、19.2、38.4kbps		
Maximum transmission distance	500 m 1200m		1200m	200m	
Maximum number of nodes	CompoWay/F: 31,	Modbus: 99	Modbus: 99, Comyou measure morwith one Power Moficircuits is treated of connected Power Modern Moder	e than one circuit lonitor, the number ed as the number	
USB	USB 1.1 compatible		None		

Charac	teristics		Γ		1	
		Product disc	continuation	Recommendable replacement		
	ltem		KE1-PGR1C-FL K	KE1-PVS1C-FL K	KM50-C1-FLK	KM50-E1-FLK
Applicable phase wiring method		Single-phase two-wire Single-phase three-wire Three-phase three-wire Three-phase four-wire		Single-phase two-wire Single-phase three-wire Three-phase three-wire	Single-phase two-wire Single-phase three-wire Three-phase three-phase four-wire	
Power supply	Rated po voltage	wer supply	100 to 240 VAC, 5	50/60 Hz	input voltages	100 to 240 VAC, 50/60 Hz
	Allowable voltage ra		85% to 110% of ravoltage		Same as left	
	Power co	nsumption	Standalone: 10 VA max., Maximum expansion: 14 VA max		7 VA max.	
	Rated input voltage	Single- phase two-wire: Line voltage	100 to 480 VAC		100 to 240 VAC	100 to 480 VAC
		Single-phas e three-wire: Phase voltage/line voltage	100/200 VAC		Same as left	
		Three-phase three-wire: Line voltage	100 to 480 VAC		100 to 240 VAC	100 to 480 VAC
Input		Three-phase four-wire Phase voltage/line voltage	58 to 277 VAC/10	0 to 480 VAC	None	58 to 277 VAC/100 to 480 VAC
	Rated input current for CT		Model KM20-CTF-□A Model KM20-CTB-5A/50A (penetration type)		Same as left	
	Dedicate	d CT	Model KM20-CTF	-CB3	Same as left	
	Dedicate	d CT cable	Model KM20-CTF	-CB3	Same as left	
		out frequency	50/60 Hz		Same as left	
	Allowable	e input	110% of rated inp	ut voltage	Same as left	

		Product disc	continuation	Recommendable replacement		
<u> </u>	tem	KE1-PGR1C-FL K	KE1-PVS1C-FL K	KM50-C1-FLK	KM50-E1-FLK	
volta	ge	(continuous)				
Allow curre	vable input ent	120% of rated inpotential (continuous)	ut current	Same as left		
Ambient operat	ing temperature	-10 to 55°C (with or icing)	no condensation	Same as left		
Storage humidi	ty	-25 to 65°C (with or icing)	no condensation	Same as left		
Ambient operat	ing humidity	25% to 85%		Same as left		
Storage humidi	ty	25% to 85%		Same as left		
Installation env	ironment	Overvoltage categories degree 2, measure		Same as left		
Compliant stan		EN/IEC 61010-2-0 31626-1 Industrial environment	electromagnetic	EN61010-1 (IEC6 EN61326-1 (IEC6 UL61010-1, CAN, No.61010-1	1326-1)、	
Accuracy	Voltage	±1.0% FS ±1 digit The accuracy of the voltage across the Vtr is ±2.0% FS ±1 digit under the same conditions.		Same as left		
	Current		±1.0% FS ±1 digit However, the accuracy is ±2.0% FS ±1 digit for the phase-S current for a three-phase, three-wire circuit and the phase-N current for a single-phase, three-wire circuit under the same conditions.		Same as left	
	Power	Active power and reactive power ±2.0% FS ±1 digit (power factor = 1)		Same as left		
	Frequency	±0.3 Hz ±1 digit		Same as left		
Low-cut curren	t set value	0.1% to 19.9% of rated input in 0.1% increments		Same as left		
Sampling cycle		100 ms for measurement voltage at 50 Hz and 83.3 ms for measurement voltage at 60 Hz		Same as left		
Weight		230 g		150g		
Transistor outputs	Number of outputs	One open-collecto	or output (OUT2)	1 open-collector	5 open-collector	
	Output capacity	30 VDC, 30 mA		Same as left		
	Total power consumption pulse output	Outputs one pulse when the power consumption reaches the set pulse output unit (1, 10, 100, 1k, 2k, 5k, 10k, 20k, 50k, 100k W/h).		Same as left		
	Alarm output	Outputs an alarm alarm output thres		Same as left		
	Number of outputs	One NO contact output (OUT1)	None			
Relay outputs	Rated load	Resistance load, 250 VAC, 3 A; 30 VDC, 3 A Inductive load (cosφ = 0.4, L/R = 7 ms): 250 VAC, 1 A;	None	None		

			continuation	Recommendable replacement		
ltem _		KE1-PGR1C-FL K	KE1-PVS1C-FL K	KM50-C1-FLK	KM50-E1-FLK	
		30 VDC, 1 A				
Semicon	Number of outputs	None	One MOS FET output (OUT1)			
ductor relay outputs	Maximum load voltage/Contin uous load current	None	Peak: 24VAC/DC Peak: 80 mA AC/DC	None		
RS-485	Protocols	Communications p		Same as left		
	Baud rate	9,600 bps, 19,200 bps, or 38,400 bps		1.2, 2.4, 4.8, 9.6, 19.2, 38.4kbps		
	Maximum transmission distance	500 m		Same as left		
	Maximum number of nodes	CompoWay/F: 31, Modbus: 99		Same as left		
USB		USB 1.1 compatible		None		

[ Charac	teristics					
			Product disc	continuation	Recommendab	le replacement
	Item		KE1-PGR1C-FL K	KE1-PVS1C-FL K	K8AK-PM1	K8AK-PM2
Applicab	Applicable phase wiring method		Single-phase two-wire Single-phase three-wire Three-phase three-wire Three-phase four-wire		Three-phase three-wire Three-phase four-wire	
Power supply	Rated po	wer supply	100 to 240 VAC, 5	50/60 Hz	Input voltages	
	Power co	nsumption	Standalone: 10 V/ Maximum expans		Approx. 4.4 VA	
	Rated input voltage	Three-phase three-wire: Line voltage	100 to 480 VAC		Three-phase, three-wire Mode: 200, 220, 230 and 240 VAC	Three-phase, three-wire Mode: 380, 400, 415 and 480 VAC
Input		Three-phase four-wire Phase voltage/line voltage	58 to 277 VAC/10	0 to 480 VAC	Three-phase, four-wire Mode: 115, 127, 133 and 138 VAC	Three-phase, four-wire Mode: 220, 230, 240 and 277 VAC
Open phase monitor ing	Open phase detection condition		(Largest error betwooltage and average voltage ×	ge voltage) ÷	Phase loss is detected by L1, L2 and L3 voltage drops. A phase low will exist if any of the phases drough below 60% of the rated input.	
			0.1 s		0.1 s max.	
ed			Change in voltage lasts for 0.1 secon		Same as left	
phase monitor ing	Operating	g time	0.1 s		0.1 s±0.05 s	

[ Characteristics ]

Characteristics		J	Product discontinuation	Recommendat	ole replacement
	Item		KE1-PVS1C-FLK	K8AK-PW1	K8AK-PW2
Applicabl	Applicable phase wiring method		Single-phase two-wire Single-phase three-wire Three-phase three-wire Three-phase four-wire	Three-phase three-wire Three-phase four-wire	
Power supply	Rated po voltage	wer supply	100 to 240 VAC, 50/60 Hz	Input voltages	
	Power co	onsumption	Standalone: 10 VA max., Maximum expansion: 14 VA max	Approx. 4.4 VA	
	Rated input voltage	Three-phase three-wire: Line voltage	100 to 480 VAC	Three-phase, three-wire Mode: 200, 220, 230 and 240 VAC	Three-phase, three-wire Mode: 380, 400, 415 and 480 VAC
Input		Three-phase four-wire line voltage	100 to 480 VAC	Three-phase, four-wire Mode: 115, 127, 133 and 138 VAC	Three-phase, four-wire Mode: 220, 230, 240 and 277 VAC
Moment ary	Momentary voltage sag detection voltage		0 to 480.0 V	None	
voltage sag	Allowable error in detection voltage		±2.5% FS ±1 digit	None	
monitor ing	Continuation time for momentary voltage sag		Without backup: 0.02 to 0.2 s With backup: 0.02 to 1.00 s	None	
	Relay ou	tput operating uracy	±5 ms	None	
Voltage monitor in	Alarm the (overvolt undervol	age/	0.0 to 12,100.0 V	Overvoltage -30% to 25% of rated input voltage Undervoltage -30% to 25% of rated input voltage	
	Operation characteristic		±1.0% FS ±1 digit The accuracy of the voltage across the Vtr is ±2.0% FS ±1 digit under the same conditions.	±0.5% full scale (at 25°C and an ambient humidity of 65% at the rated power supply voltage, DC and 50/60 Hz sine wave input)	
	Alarm ON (overvolt undervol	age/	0.1 to 10.0 s	Overvoltage and to 30 s	undervoltage: 0.1
	Operating characte		±0.2 s	±50ms	

	ltom	Product discontinuation	Recommendable replaceme	
ltem		KE1-VAU1B-FLK	KM50-C1-FLK	KM50-E1-FLK
Applicable phase wiring method		Single-phase two-wire Single-phase three-wire Three-phase three-wire Three-phase four-wire	Single-phase two-wire Single-phase three-wire Three-phase three-wire	Single-phase two-wire Single-phase three-wire Three-phase three-wire Three-phase four-wire
Power supply	Rated power supply voltage	100 to 240 VAC, 50/60 Hz	input voltages	100 to 240 VAC, 50/60 Hz
	Allowable supply	85% to 110% of rated power supply	Same as left	

Itam			Product discontinuation	Recommendat	ole replacement
	Item		KE1-VAU1B-FLK	KM50-C1-FLK	KM50-E1-FLK
	voltage r	ange	voltage		
	Power consumption		Standalone: 10 VA max., Maximum expansion: 14 VA max	7 VA max.	
		Single- phase two-wire: Line voltage	100 to 480 VAC	100 to 240 VAC	100 to 480 VAC
	Rated input	Single-phas e three-wire: Phase voltage/line voltage	100/200 VAC	Same as left	
	voltage	Three-phase three-wire: Line voltage	100 to 480 VAC	100 to 240 VAC	100 to 480 VAC
Input		Three-phase four-wire Phase voltage/line voltage	58 to 277 VAC/100 to 480 VAC	None	58 to 277 VAC/100 to 480 VAC
	Rated input current for CT		Model KM20-CTF-□A Model KM20-CTB-5A/50A (penetration type)	Same as left	
	Dedicated CT		Model KM20-CTF-□A	Same as left	
	Dedicated CT cable		Model KM20-CTF-CB3	Same as left	
	Rated input frequency		50/60 Hz	Same as left	
	Allowabl voltage	e input	110% of rated input voltage (continuous)	Same as left	
	Allowabl current	e input	120% of rated input current (continuous)	Same as left	
Ambient	operating	temperature	−10 to 55°C (with no condensation or icing)	Same as left	
Storage h	numidity		−25 to 65°C (with no condensation or icing)	Same as left	
Ambient	operating	humidity	25% to 85%	Same as left	
Storage h	numidity		25% to 85%	Same as left	
Installatio	on environ	ment	Overvoltage category II, pollution degree 2, measurement category II	Same as left	
Compliant standards		ds	EN/IEC 61010-2-030 and EN/IEC 31626-1 Industrial electromagnetic environment	EN61010-1(IEC61010-1), EN61326-1(IEC61326-1), UL61010-1, CAN/CSA-C22.2 No.61010-1	
Accuracy Voltage		oltage/	±1.0% FS ±1 digit The accuracy of the voltage across the Vtr is ±2.0% FS ±1 digit under the same conditions.	±1.0% FS ±1 digit (at ambient temperature of 23 °C, rated input, and rated frequency). However, the accuracy is ±2.0% FS ±1 digit for th Vtr line voltage for three-phase, three-wire power and the Vrs line voltage for single-phase, three-wire power under the same conditions.	

Item		Product discontinuation	Recommendat	ole replacement
100		KE1-VAU1B-FLK	KM50-C1-FLK	KM50-E1-FLK
	Current	±1.0% FS ±1 digit However, the accuracy is ±2.0% FS ±1 digit for the phase-S current for a three-phase, three-wire circuit and the phase-N current for a single-phase, three-wire circuit under the same conditions.	±1.0% FS ±1 digit (at ambient temperature of 23 °C, rated input, and rated frequency). However, the accuracy is ±2.0% FS ±1 digit for th phase-S current for three-phase, three-wire power and the phase-N current for single-phase, three-wire power under the same conditions.	
Low-cut current	set value	0.1% to 19.9% of rated input in 0.1% increments	Same as left	
Sampling cycle		100 ms for measurement voltage at 50 Hz and 83.3 ms for measurement voltage at 60 Hz	Same as left	
Weight		230 g	150g	
Transistor outputs	Number of outputs	None	1 open-collector output	5 open-collector output (
	Output capacity	None	30 VDC, 30 mA max.	
	Number of outputs	Two NO contact outputs (OUT1 and OUT2)		
Relay outputs	Rated load	Resistance load, 250 VAC, 3 A; 30 VDC, 3 A Inductive load ( $\cos \varphi = 0.4$ , L/R = 7 ms): 250 VAC, 1 A; 30 VDC, 1 A	None	
RS-485	Protocols	Communications protocol setting: Compoway/F or Modbus	Same as left	
	Baud rate	9,600 bps, 19,200 bps, or 38,400 bps	1.2, 2.4, 4.8, 9.6	, 19.2, 38.4kbps
	Maximum transmission distance	500 m	Same as left	
	Maximum CompoWay/F: 31, Modbus: 99 Same as left nodes		Same as left	
USB		USB 1.1 compatible	None	

Lonarao	ter istics			1	
	ltem		Product discontinuation	Recommendat	ole replacement
			KE1-VAU1B-FLK	K8AK-PM1	K8AK-PM2
Applicable phase wiring method		iring method	Single-phase two-wire Single-phase three-wire Three-phase three-wire Three-phase four-wire	Three-phase three-wire Three-phase four-wire	
Power supply			100 to 240 VAC, 50/60 Hz	Input voltages	
	Power co	onsumption	Standalone: 10 VA max., Maximum expansion: 14 VA max	Approx. 4.4 VA	
Input	Rated input voltage	Three-phase three-wire: Line voltage	100 to 480 VAC	Three-phase, three-wire Mode: 200, 220, 230 and 240 VAC	Three-phase, three-wire Mode: 380, 400, 415 and 480 VAC

	Item		Product discontinuation	Recommendab	ole replacement
			KE1-VAU1B-FLK	K8AK-PM1	K8AK-PM2
		Three-phase four-wire Phase voltage/line voltage	100 to 480 VAC	Three-phase, four-wire Mode: 115, 127, 133 and 138 VAC	Three-phase, four-wire Mode: 220, 230, 240 and 277 VAC
Open phase monitor ing	Open pha condition	ase detection	(Largest error between any phase voltage and average voltage) ÷ Average voltage × 100 ≤ 85%	Phase loss is detected by L1, L2, and L3 voltage drops. A phase loss will exist if any of the phases drops below 60% of the rated input.	
	Operating	g time	0.1 s	0.1 s max.	
Revers ed	Reversed detection	l phase condition	Change in voltage phase sequence lasts for 0.1 second or longer.	Same as left	
phase monitor ing	Operating	g time	0.1 s	0.1 s±0.05 s	

Charac	teristics			· -	
	Item		Product discontinuation		ole replacement
			KE1-VSU1B-FLK	KM50-C1-FLK	KM50-E1-FLK
Applicable phase wiring method		iring method	Single-phase two-wire Single-phase three-wire Three-phase three-wire Three-phase four-wire	Single-phase two-wire Single-phase three-wire Three-phase three-wire	Single-phase two-wire Single-phase three-wire Three-phase three-phase four-wire
Power supply	Rated po voltage	wer supply	100 to 240 VAC, 50/60 Hz	input voltages	100 to 240 VAC, 50/60 Hz
	Allowable supply voltage range		85% to 110% of rated power supply voltage	Same as left	
	Power co	nsumption	Standalone: 10 VA max.,	7 VA max.	
	Rated input voltage	Single- phase two-wire: Line voltage	100 to 480 VAC	100 to 240 VAC	100 to 480 VAC
		Single-phas e three-wire: Phase voltage/line voltage	100/200 VAC	Same as left	
Input		Three-phase three-wire: Line voltage	100 to 480 VAC	100 to 240 VAC	100 to 480 VAC
		Three-phase four-wire Phase voltage/line voltage	58 to 277 VAC/100 to 480 VAC	None	58 to 277 VAC/100 to 480 VAC
	Rated input frequency		50/60 Hz	Same as left	

Item		Product discontinuation	Recommendable replacement	
	em	KE1-VSU1B-FLK	KM50-C1-FLK	KM50-E1-FLK
Allow volta	able input ge	110% of rated input voltage (continuous)	Same as left	
Ambient operati	ng temperature	−10 to 55°C (with no condensation or icing)	Same as left	
Storage humidit	у	−25 to 65°C (with no condensation or icing)	Same as left	
Ambient operati	ng humidity	25% to 85%	Same as left	
Storage humidit	•	25% to 85%	Same as left	
Installation envi	ronment	Overvoltage category II, pollution degree 2, measurement category II	Same as left	
Compliant stand	lards	EN/IEC 61010-2-030 and EN/IEC 31626-1 Industrial electromagnetic environment	EN61010-1 (IEC61010-1) 、 EN61326-1 (IEC61326-1) 、 UL61010-1、CAN/CSA-C22.2 No.61010-1	
Accuracy	Voltage	±1.0% FS ±1 digit The accuracy of the voltage across the Vtr is ±2.0% FS ±1 digit under the same conditions.	±1.0% FS ±1 digit (at ambient temperature of 23 °C, rated input, and rated frequency). However, the accuracy is ±2.0% FS ±1 digit for th Vtr line voltage for three-phase, three-wire power and the Vrs line voltage for single-phase, three-wire power under the same conditions.	
Sampling cycle		100 ms for measurement voltage at 50 Hz and 83.3 ms for measurement voltage at 60 Hz	Same as left	
Weight		230 g	150g	
Transistor outputs	Number of outputs	None	1 open-collector output	5 open-collector output (
	Output	None	30 VDC, 30 mA max.	
	capacity		30 VDC, 30 mA m	nax.
	capacity Number of outputs	One NO contact output (OUT1)	30 VDC, 30 mA m	nax.
Relay outputs	Number of	One NO contact output (OUT1)  Resistance load, 250 VAC, 3 A; 30 VDC, 3 A Inductive load (cosφ = 0.4, L/R = 7 ms): 250 VAC, 1 A; 30 VDC, 1 A	None	nax.
Relay outputs	Number of outputs	Resistance load, 250 VAC, 3 A; 30 VDC, 3 A Inductive load (cosφ = 0.4, L/R = 7 ms): 250 VAC, 1 A; 30 VDC,	·	nax.
	Number of outputs  Rated load	Resistance load, 250 VAC, 3 A; 30 VDC, 3 A Inductive load (cosφ = 0.4, L/R = 7 ms): 250 VAC, 1 A; 30 VDC, 1 A  Communications protocol setting:	None	
	Number of outputs  Rated load  Protocols	Resistance load, 250 VAC, 3 A; 30 VDC, 3 A Inductive load (cosφ = 0.4, L/R = 7 ms): 250 VAC, 1 A; 30 VDC, 1 A  Communications protocol setting: Compoway/F or Modbus  9,600 bps, 19,200 bps, or 38,400	None Same as left	
	Number of outputs  Rated load  Protocols  Baud rate  Maximum transmission	Resistance load, 250 VAC, 3 A; 30 VDC, 3 A Inductive load (cosφ = 0.4, L/R = 7 ms): 250 VAC, 1 A; 30 VDC, 1 A  Communications protocol setting: Compoway/F or Modbus  9,600 bps, 19,200 bps, or 38,400 bps	None  Same as left  1.2, 2.4, 4.8, 9.6,	

Item	Product discontinuation	Recommendable replacement	
item	KE1-VSU1B-FLK	K8AK-PM1	K8AK-PM2
Applicable phase wiring method	Single-phase two-wire Single-phase three-wire Three-phase three-wire	Three-phase three-wire Three-phase four-wire	

	Item		Product discontinuation	Recommendat	ole replacement
	item		KE1-VSU1B-FLK	K8AK-PM1	K8AK-PM2
			Three-phase four-wire		
Power supply	Rated power supply voltage		100 to 240 VAC, 50/60 Hz	Input voltages	
	Power co	nsumption	Standalone: 10 VA max., Maximum expansion: 14 VA max	Approx. 4.4 VA	
	Rated input voltage	Three-phase three-wire: Line voltage	100 to 480 VAC	Three-phase, three-wire Mode: 200, 220, 230 and 240 VAC	Three-phase, three-wire Mode: 380, 400, 415 and 480 VAC
Input		Three-phase four-wire Phase voltage/line voltage	100 to 480 VAC	Three-phase, four-wire Mode: 115, 127, 133 and 138 VAC	Three-phase, four-wire Mode: 220, 230, 240 and 277 VAC
Open phase monitor ing			(Largest error between any phase voltage and average voltage) ÷ Average voltage × 100 ≤ 85%	Phase loss is dete and L3 voltage dr will exist if any of below 60% of the	ops. A phase loss the phases drops
	Operating	g time	0.1 s	0.1 s max.	
Revers ed	Reversed detection	l phase condition	Change in voltage phase sequence lasts for 0.1 second or longer.	Same as left	
phase monitor ing	Operating	g time	0.1 s	0.1 s±0.05 s	

Itam		•	Product discontinuation	Recommendat	ole replacement	
	Item		KE1-VSU1B-FLK	K8AK-PW1	K8AK-PW2	
Applicable phase wiring method		iring method	Single-phase two-wire Single-phase three-wire Three-phase three-wire Three-phase four-wire	Three-phase three-wire Three-phase four-wire		
Power supply	Rated po voltage	wer supply	100 to 240 VAC, 50/60 Hz	Input voltages		
	Power co	onsumption	Standalone: 10 VA max., Maximum expansion: 14 VA max	Approx. 4.4 VA	Approx. 4.4 VA	
	Rated input voltage	Three-phase three-wire: Line voltage	100 to 480 VAC	Three-phase, three-wire Mode: 200, 220, 230 and 240 VAC	Three-phase, three-wire Mode: 380, 400, 415 and 480 VAC	
Input		Three-phase four-wire Phase voltage/line voltage	100 to 480 VAC	Three-phase, four-wire Mode: 115, 127, 133 and 138 VAC	Three-phase, four-wire Mode: 220, 230, 240 and 277 VAC	
Moment ary	Momentary voltage sag detection voltage		0 to 480.0 V	None		
voltage sag	Allowable error in detection voltage		±2.5% FS ±1 digit	None		
monitor ing	Continuation time for momentary voltage sag		Without backup: 0.02 to 0.2 s With backup: 0.02 to 1.00 s	None		

Item		Product discontinuation	Recommendab	le replacement
		KE1-VSU1B-FLK	K8AK-PW1 K8AK-PV	
	Relay output operating time accuracy	±5 ms	None	
Voltage monitor ing	Alarm threshold (overvoltage/ undervoltage)	0.0 to 12,100.0 V	Overvoltage -30% to 25% of input voltage Undervoltage - 25% of rated input voltage	
	Operation characteristic	±1.0% FS ±1 digit	±0.5% full scale (a ambient humidity rated power suppl 50/60 Hz sine way	of 65% at the y voltage, DC and
	Alarm ON delay (overvoltage/ undervoltage)	0.1 to 10.0 s	Overvoltage and undervoltage: 0.1 to 30 s	
	Operating time characteristic	±0.2 s	±50ms	

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Only main changes in specifications are described in this document. Please be sure to read the relevant catalogs, datasheets, product specifications, instructions, and manuals for precautions and necessary information when using products.