PRODUCT NEWS

OMRON

Product Discontinuation Notice

Issue Date
March, 2023

Product Discontinuation Electric Power Monitoring Equipment		Recommended Replacement Electric Power Monitoring Equipment
KE1-PGR1C-FLK		**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 discontinuation		**Recommended replacement**	
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 □ 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]

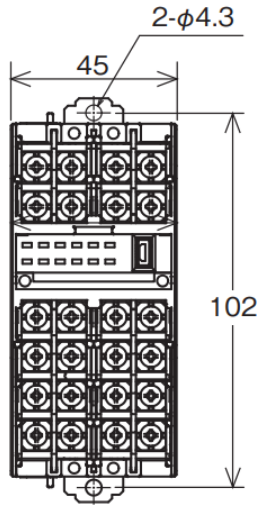
Product discontinuation	Recommended replacement
KE1-CTD8E	No recommended replacement
KE1-DRT-FLK	No recommended replacement
KE1-PGR1C-FLK	KM-N2-FLK
	KM-N3-FLK
	KM50-C1-FLK
	KM50-E1-FLK
	K8AK-PM1
	K8AK-PM2
KE1-PVS1C-FLK	KM-N2-FLK
	KM-N3-FLK
	KM50-C1-FLK
	KM50-E1-FLK
	K8AK-PM1
	K8AK-PM2
	K8AK-PW1
	K8AK-PW2
KE1-VAU1B-FLK	KM50-C1-FLK
	KM50-E1-FLK
	K8AK-PM1
	K8AK-PM2
KE1-VSU1B-FLK	KM50-C1-FLK
	KM50-E1-FLK
	K8AK-PM1
	K8AK-PM2
	K8AK-PW1
	K8AK-PW2
KE1-ZCT8E	No recommended replacement

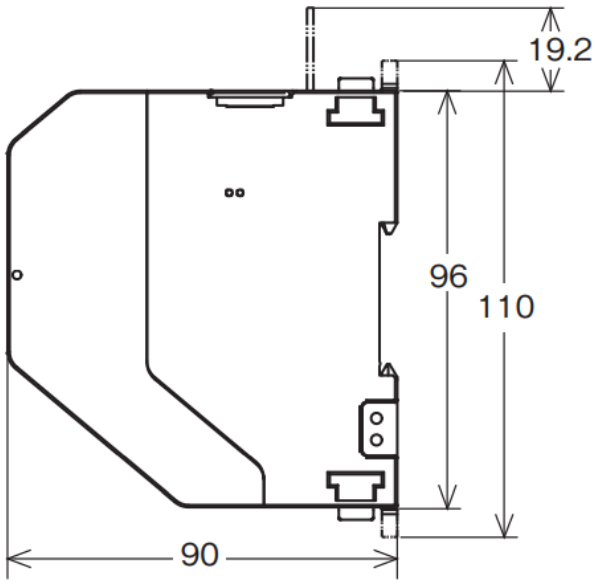
[Body color]

Product discontinuation KE1-PGR1C-FLK KE1-PVS1C-FLK KE1-VAU1B-FLK KE1-VSU1B-FLK	Recommendable replacement KM-N series KM50 series K8AK-PM[]/-PW[]
Black 	**Black** KM-N2-FLK  KM-N3-FLK  KM50-C1-FLK  KM50-E1-FLK  K8AK-PM  K8AK-PW 

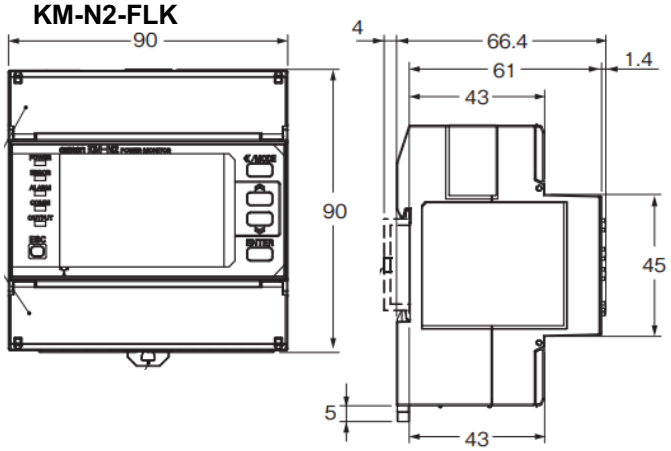
[Dimensions]

Product discontinuation KE1-PGR1C-FLK KE1-PVS1C-FLK KE1-VAU1B-FLK KE1-VSU1B-FLK	Recommendable replacement KM-N series KM50 series K8AK-PM[]/-PW[]

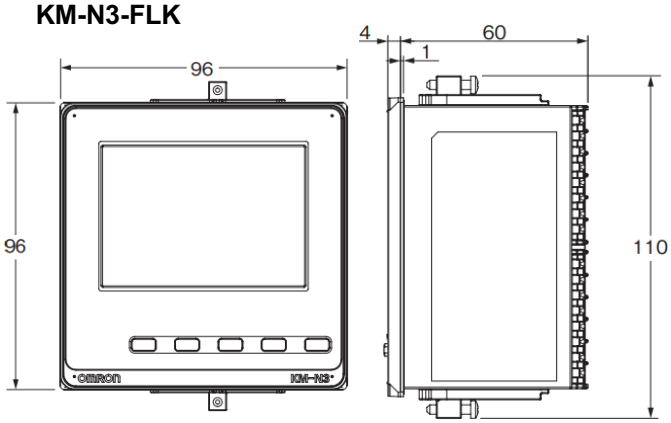




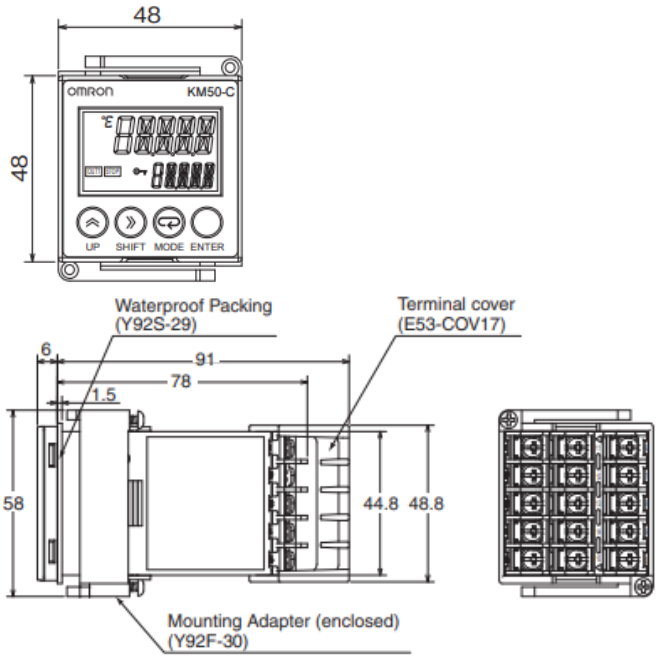
KM-N2-FLK

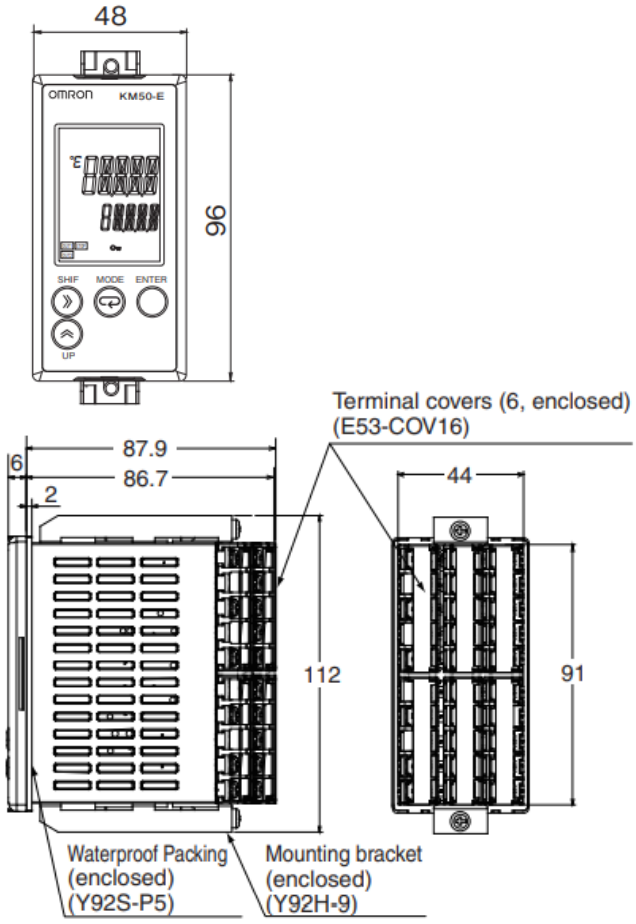
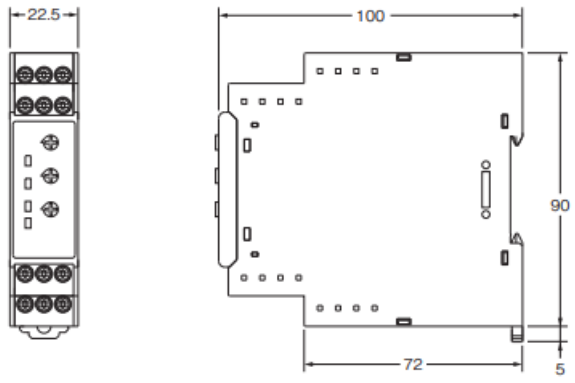


KM-N3-FLK

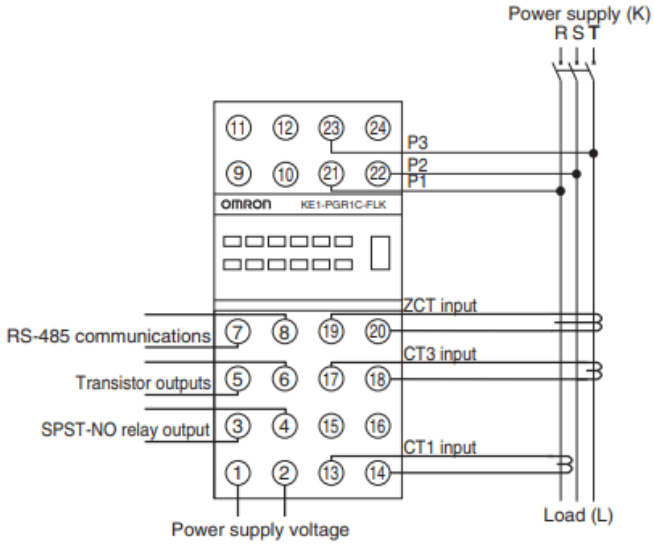
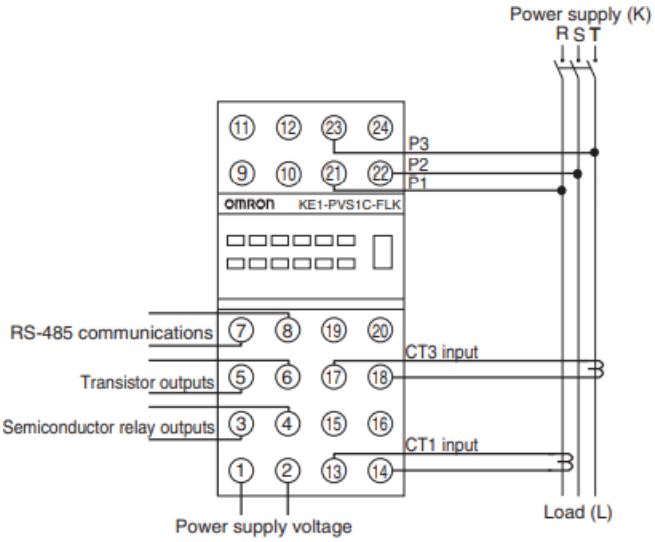
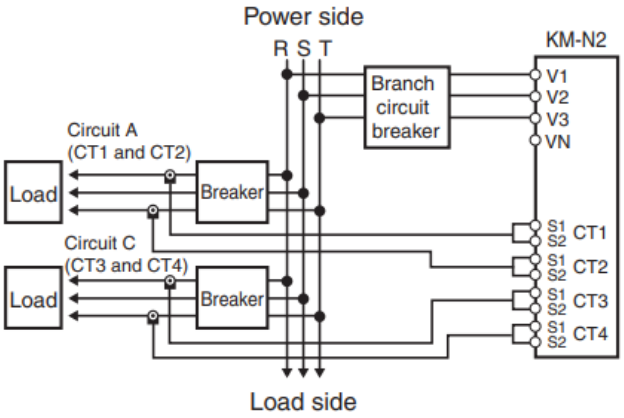
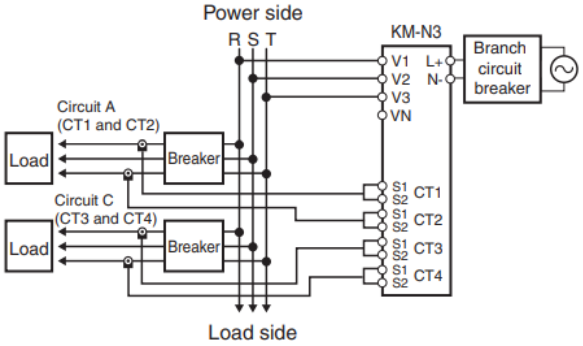
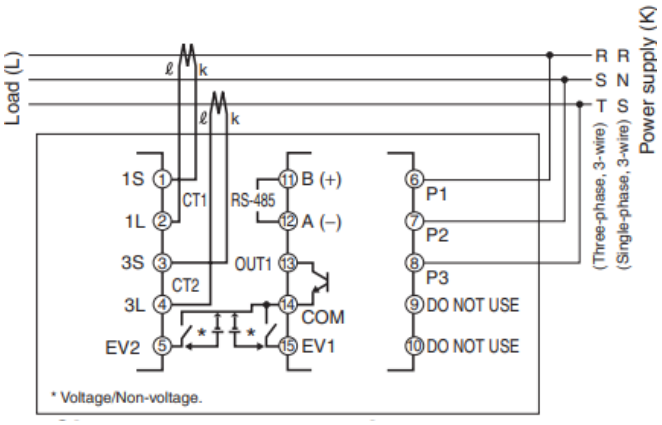


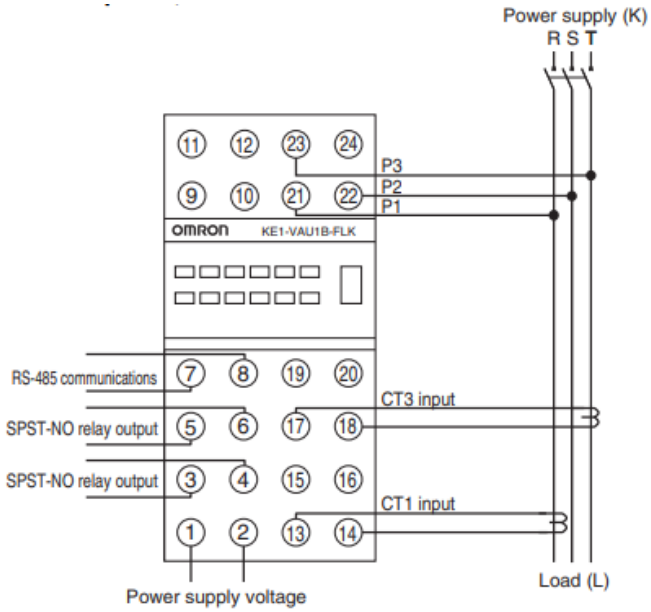
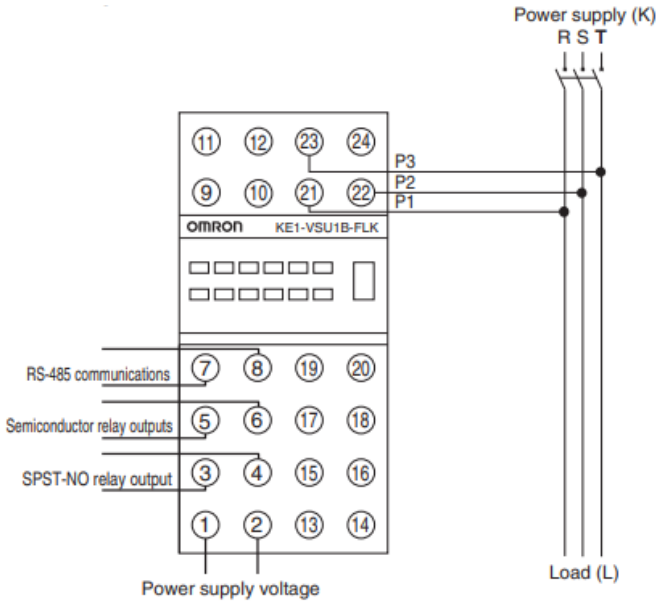
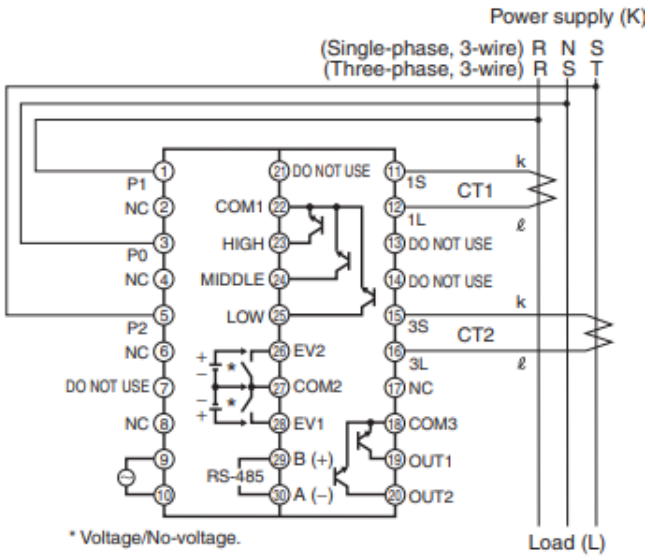
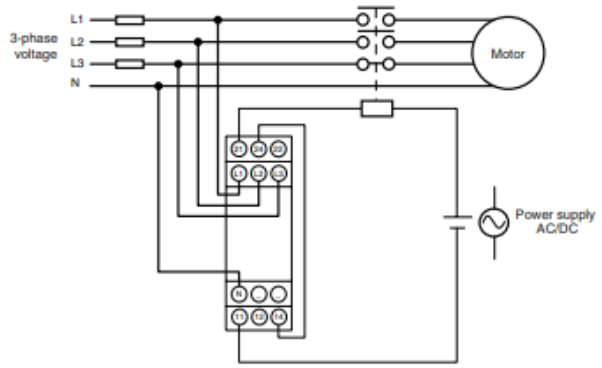
KM50-C1-FLK



Product discontinuation KE1-PGR1C-FLK KE1-PVS1C-FLK KE1-VAU1B-FLK KE1-VSU1B-FLK	Recommendable replacement KM-N series KM50 series K8AK-PM[]/-PW[]
	KM50-E1-FLK  **K8AK-PM/PW** 

[Wire connection]

Product discontinuation KE1-PGR1C-FLK KE1-PVS1C-FLK KE1-VAU1B-FLK KE1-VSU1B-FLK	Recommendable replacement KM-N series KM50 series K8AK-PM[]/-PW[]
Wire connection 3-phase 3-wire KE1-PGR1C-FLK  KE1-PVS1C-FLK  	**Wire connection** 3-phase 3-wire KM-N2-FLK  KM-N3-FLK  KM50-C1-FLK 

Product discontinuation KE1-PGR1C-FLK KE1-PVS1C-FLK KE1-VAU1B-FLK KE1-VSU1B-FLK	Recommendable replacement KM-N series KM50 series K8AK-PM[]/-PW[]
KE1-VAU1B-FLK  KE1-VSU1B-FLK  	KM50-E1-FLK  K8AK-PM[]/K8AK-PW[] 

[Mounting dimensions]

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

[Characteristics]

Item			Product discontinuation		Recommendable replacement	
			KE1-PGR1C-FLK	KE1-PVS1C-FLK	KM-N2-FLK	KM-N3-FLK
Applicable phase wiring method			Single-phase two-wire Single-phase three-wire Three-phase three-wire Three-phase four-wire		Same as left	
Power supply	**Rated power supply voltage**		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		85% to 115% of rated power supply voltage	85% to 110% of rated power supply voltage
	Power consumption		Standalone: 10 VA max., Maximum expansion: 14 VA max		7 VA max.	
Input	**Rated input voltage**	**Single-phase two-wire: Line voltage**	100 to 480 VAC		100 to 277 VAC	
		Single-phase 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	
		Three-phase four-wire Phase voltage/line voltage	58 to 277 VAC/100 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 neutral: 100 to 120VAC(Phase voltage) 173 to 208VAC(line voltage)	
	Rated input current for CT		Model KM20-CTF-☐A Model KM20-CTB-5A/50A (penetration type)		General-purpose CT with a rated secondary current of 1 A or 5 A	
	Dedicated CT		Model KM20-CTF-CB3		Model KM-NCT-E☐A * CE marking compliant KM-N2/N3 dedicated products	
	Dedicated CT cable		Model KM20-CTF-CB3		-	
	Rated input frequency		50/60 Hz		Same as left	
	Allowable input voltage		110% of rated input voltage (continuous)		115% of rated input voltage (continuous)	
	Allowable input current		120% of rated input current (continuous)		Maximum CT secondary current 6A	
Ambient operating temperature			−10 to 55°C (with no condensation or icing)		−25 to 55°C	
Storage humidity			−25 to 65°C (with no condensation or icing)		−25 to 85°C	
Ambient operating humidity			25% to 85%		Same as left	
Storage humidity			25% to 85%		Same as left	

Item		Product discontinuation		Recommendable replacement	
		KE1-PGR1C-FLK	KE1-PVS1C-FLK	KM-N2-FLK	KM-N3-FLK
Installation environment		Overvoltage category II, pollution degree 2, measurement category II		Same as left	
Compliant standards		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 accuracy of the voltage across the Vtr is ±2.0% FS ±1 digit under the same conditions.		No provision	
	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.		No provision	
	Power	Active power and reactive power ±2.0% FS ±1 digit (power factor = 1)		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 rated input in 0.1% increments		None	
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)		None	
	Output capacity	30 VDC, 30 mA			
	ON residual voltage	1.2 V max.			
	OFF leakage current	100 μA max.			
	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.			
Relay outputs	**Number of outputs**	One NO contact output (OUT1)	None	None	
	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		
Semicon ductor relay outputs	**Number of outputs**	None	One MOS FET output (OUT1)	None	
	Maximum load voltage/Contin	None	Peak: 24VAC/DC		

Item		Product discontinuation		Recommendable replacement	
		KE1-PGR1C-FLK	KE1-PVS1C-FLK	KM-N2-FLK	KM-N3-FLK
	uous load current		Peak: 80 mA AC/DC		
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		1200m	
	Maximum number of nodes	CompoWay/F: 31, Modbus: 99		Modbus: 99, CompoWay/F: 31 If you measure more than one circuit with one Power Monitor, the number of circuits is treated as the number of connected Power Monitors.	
USB		USB 1.1 compatible		None	

[Characteristics]

Item			Product discontinuation		Recommendable replacement	
			KE1-PGR1C-FLK	KE1-PVS1C-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 voltage range		85% to 110% of rated power supply voltage		Same as left	
	Power consumption		Standalone: 10 VA max., Maximum expansion: 14 VA max		7 VA max.	
Input	Rated input voltage	Single-phase two-wire: Line voltage	100 to 480 VAC		100 to 240 VAC	100 to 480 VAC
		Single-phase 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
		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		Same as left	

Item			Product discontinuation		Recommendable replacement	
			KE1-PGR1C-FLK	KE1-PVS1C-FLK	KM50-C1-FLK	KM50-E1-FLK
			Model KM20-CTB-5A/50A (penetration type)			
	Dedicated CT		Model KM20-CTF-CB3		Same as left	
	Dedicated CT cable		Model KM20-CTF-CB3		Same as left	
	Rated input frequency		50/60 Hz		Same as left	
	Allowable input voltage		110% of rated input voltage (continuous)		Same as left	
	Allowable input current		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 humidity			−25 to 65°C (with no condensation or icing)		Same as left	
Ambient operating humidity			25% to 85%		Same as left	
Storage humidity			25% to 85%		Same as left	
Installation environment			Overvoltage category II, pollution degree 2, measurement category II		Same as left	
Compliant standards			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.		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 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**		One open-collector 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 based on the set alarm output threshold.		Same as left	

Item		Product discontinuation		Recommendable replacement	
		KE1-PGR1C-FLK	KE1-PVS1C-FLK	KM50-C1-FLK	KM50-E1-FLK
Relay outputs	Number of outputs	One NO contact output (OUT1)	None	None	
	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		
Semicon ductor relay outputs	Number of outputs	None	One MOS FET output (OUT1)	None	
	Maximum load voltage/Continuous load current	None	Peak: 24VAC/DC Peak: 80 mA AC/DC		
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 number of nodes	CompoWay/F: 31, Modbus: 99		Same as left	
USB		USB 1.1 compatible		None	

[Characteristics]

Item			Product discontinuation		Recommendable replacement	
			KE1-PGR1C-FLK	KE1-PVS1C-FLK	K8AK-PM1	K8AK-PM2
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 power supply voltage		100 to 240 VAC, 50/60 Hz		Input voltages	
	Power consumption		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
		Three-phase four-wire Phase voltage/line voltage	58 to 277 VAC/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	Open phase detection condition		(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	

Item		Product discontinuation		Recommendable replacement	
		KE1-PGR1C-FLK	KE1-PVS1C-FLK	K8AK-PM1	K8AK-PM2
monitoring				will exist if any of the phases drops below 60% of the rated input.	
	Operating time	0.1 s		0.1 s max.	
Reversed phase monitoring	Reversed phase detection condition	Change in voltage phase sequence lasts for 0.1 second or longer.		Same as left	
	Operating time	0.1 s		0.1 s±0.05 s	

[Characteristics]

Item			Product discontinuation	Recommendable replacement	
			KE1-PVS1C-FLK	K8AK-PW1	K8AK-PW2
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 power supply voltage		100 to 240 VAC, 50/60 Hz	Input voltages	
	Power consumption		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
		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
Momentary voltage sag monitoring	Momentary voltage sag detection voltage		0 to 480.0 V	None	
	Allowable error in detection voltage		±2.5% FS ±1 digit	None	
	Continuation time for momentary voltage sag		Without backup: 0.02 to 0.2 s With backup: 0.02 to 1.00 s	None	
	Relay output operating time accuracy		±5 ms	None	
Voltage monitoring	Alarm threshold (overvoltage/ undervoltage)		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 delay (overvoltage/ undervoltage)		0.1 to 10.0 s	Overvoltage and undervoltage: 0.1 to 30 s	
	Operating time characteristic		±0.2 s	±50ms	

[Characteristics]

Item			Product discontinuation	Recommendable replacement	
			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 voltage range		85% to 110% of rated power supply voltage	Same as left	
	Power consumption		Standalone: 10 VA max., Maximum expansion: 14 VA max	7 VA max.	
Input	Rated input voltage	Single-phase two-wire: Line voltage	100 to 480 VAC	100 to 240 VAC	100 to 480 VAC
		Single-phase 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
		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	
	Allowable input voltage		110% of rated input voltage (continuous)	Same as left	
	Allowable input current		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 humidity			−25 to 65°C (with no condensation or icing)	Same as left	
Ambient operating humidity			25% to 85%	Same as left	
Storage humidity			25% to 85%	Same as left	
Installation environment			Overvoltage category II, pollution degree 2, measurement category II	Same as left	
Compliant standards			EN/IEC 61010-2-030 and EN/IEC 31626-1 Industrial electromagnetic environment	EN61010-1（IEC61010-1）、 EN61326-1（IEC61326-1）、	

Item		Product discontinuation	Recommendable replacement	
		KE1-VAU1B-FLK	KM50-C1-FLK	KM50-E1-FLK
			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 the Vtr line voltage for three-phase, three-wire power and the Vrs line voltage for single-phase, three-wire power under the same conditions.	
	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 the 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		30 VDC, 30 mA max.	
Relay outputs	**Number of outputs**	Two NO contact outputs (OUT1 and OUT2)	None	
	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		
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 number of nodes	CompoWay/F: 31, Modbus: 99	Same as left	
USB		USB 1.1 compatible	None	

[Characteristics]

Item	Product discontinuation	Recommendable replacement	
	KE1-VAU1B-FLK	K8AK-PM1	K8AK-PM2
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	

Item			Product discontinuation	Recommendable replacement	
			KE1-VAU1B-FLK	K8AK-PM1	K8AK-PM2
Power supply	Rated power supply voltage		100 to 240 VAC, 50/60 Hz	Input voltages	
	Power consumption		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
		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 monitoring	Open phase detection condition		(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 time		0.1 s	0.1 s max.	
Reversed phase monitoring	Reversed phase detection condition		Change in voltage phase sequence lasts for 0.1 second or longer.	Same as left	
	Operating time		0.1 s	0.1 s±0.05 s	

[Characteristics]

Item			Product discontinuation	Recommendable replacement	
			KE1-VSU1B-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 voltage range		85% to 110% of rated power supply voltage	Same as left	
	Power consumption		Standalone: 10 VA max.,	7 VA max.	
Input	Rated input voltage	Single-phase two-wire: Line voltage	100 to 480 VAC	100 to 240 VAC	100 to 480 VAC
		Single-phase 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

Item			Product discontinuation	Recommendable replacement	
			KE1-VSU1B-FLK	KM50-C1-FLK	KM50-E1-FLK
		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	
	Allowable input voltage		110% of rated input voltage (continuous)	Same as left	
Ambient operating temperature			−10 to 55°C (with no condensation or icing)	Same as left	
Storage humidity			−25 to 65°C (with no condensation or icing)	Same as left	
Ambient operating humidity			25% to 85%	Same as left	
Storage humidity			25% to 85%	Same as left	
Installation environment			Overvoltage category II, pollution degree 2, measurement category II	Same as left	
Compliant standards			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 the 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 capacity			30 VDC, 30 mA max.	
Relay outputs	Number of outputs		One NO contact output (OUT1)	None	
	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		
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	

Item		Product discontinuation	Recommendable replacement	
		KE1-VSU1B-FLK	KM50-C1-FLK	KM50-E1-FLK
	Maximum number of nodes	CompoWay/F: 31, Modbus: 99	Same as left	
USB		USB 1.1 compatible	None	

[Characteristics]

Item			Product discontinuation	Recommendable replacement	
			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 four-wire	Three-phase three-wire Three-phase four-wire	
Power supply	Rated power supply voltage		100 to 240 VAC, 50/60 Hz	Input voltages	
	Power consumption		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
		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 monitoring	Open phase detection condition		(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 time		0.1 s	0.1 s max.	
Reversed phase monitoring	Reversed phase detection condition		Change in voltage phase sequence lasts for 0.1 second or longer.	Same as left	
	Operating time		0.1 s	0.1 s±0.05 s	

[Characteristics]

Item			Product discontinuation	Recommendable replacement	
			KE1-VSU1B-FLK	K8AK-PW1	K8AK-PW2
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 power supply voltage		100 to 240 VAC, 50/60 Hz	Input voltages	
	Power consumption		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	Recommendable replacement	
			KE1-VSU1B-FLK	K8AK-PW1	K8AK-PW2
		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
Momentary voltage sag monitoring	**Momentary voltage sag detection voltage**		0 to 480.0 V	None	
	Allowable error in detection voltage		±2.5% FS ±1 digit	None	
	Continuation time for momentary voltage sag		Without backup: 0.02 to 0.2 s With backup: 0.02 to 1.00 s	None	
	Relay output operating time accuracy		±5 ms	None	
Voltage monitoring	**Alarm threshold (overvoltage/ undervoltage)**		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	±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 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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