

Watthour meters with pulse initiators

■ Description

These meters are fitted with pulse initiators which transmit a pulse signal corresponding to the amount of power consumed. The pulse initiator consists of a signal disk on a rotor shaft and a pulse initiating circuit with a photo sensor. The disk is provided with a slot. When the rotor of the meter rotates, the slot passes the sensor and the signal is output. Meters with pulse initiators are simply designed and robust so that they will give troublefree service over long periods with little attention. They are generally used with counters, recorders, maximum demand meters and other receiving equipment.



kWh meters

Phase and wiring	Class	Max. current (A)	Rated voltage (V)	Frequency (Hz)	Pulse initiator and rating	Surface mounting Type	Flush mounting Type
1 ϕ 2W	2.0	30	100, 120, 200, 240	50, 60	Contact: • PhotoMOS relay • 125V AC, 0.1A • 125V DC, 0.1A	F11F-K23	–
		120	100, 120, 200, 240	50, 60		F12F-K23	–
		*1 □/5	100, 120, 200, 240, □/110	50, 60		F13F-K23	F13F-K23V
1 ϕ 3W	2.0	30	100	50, 60	Pulse width: 1.05±0.05 sec.	F21F-K23	–
		120	100	50, 60		F22F-K23	–
		*1 □/5	100	50, 60		F23F-K23	F23F-K23V
3 ϕ 3W	2.0	30	100, 200	50, 60	Pulse width: 1.05±0.05 sec.	F31F-K23	–
		120	100, 200	50, 60		F32F-K23	–
		*1 □/5	100, 200,*2 □/110	50, 60		F33F-K23	F33F-K23V
3 ϕ 4W	2.0	30	100, 240	50, 60	Pulse width: 1.05±0.05 sec.	F41F-K23	–
		120	100, 240	50, 60		F42F-K23	–
		*1 □/5	*2 □/63.5, 100, □/110, 240	50, 60		F43F-K23	F43F-K23V

Notes: *1 □: CT primary current *2 □: VT primary voltage

■ Engineering data

Type	Max. current (A)	Pulse initiator Fixed number	Power consumption (VA)		
			Voltage circuit *1	60Hz Current circuit	
F11F-K23	30	0.01, 0.1, 1kWh/pulse	2.3	1.0 *2	
F12F-K23	120	0.1, 1, 10kWh/pulse	2.3	1.8 *2	
F13F-K23	□/5	10 ⁿ kWh/pulse	2.5	2.8 *2	
F21F-K23	30	0.01, 0.1, 1kWh/pulse	P ₁ –P ₂	4.5	1.2 *2
			P ₃ –P ₂	4.9	
F22F-K23	120	0.1, 1, 10kWh/pulse	P ₁ –P ₂	4.5	1.8 *2
			P ₃ –P ₂	4.9	
F31F-K23	30	0.1, 1, 10kWh/pulse	P ₁ –P ₂	4.7	1.2 *2
			P ₃ –P ₂	5.2	
F32F-K23	120	0.1, 1, 10kWh/pulse	P ₁ –P ₂	4.7	1.8
			P ₃ –P ₂	5.2	
F23F-K23	□/5	10 ⁿ kWh/pulse	P ₁ –P ₂	4.5	2.9
			P ₃ –P ₂	4.9	
F33F-K23	□/5	10 ⁿ kWh/pulse	P ₁ –P ₂	4.7	2.9
			P ₃ –P ₂	5.2	

■ Ordering information

Specify the following:

1. Type number or ordering code
2. Rated voltage, max. current and frequency
3. VT and CT ratio

Notes: *1 Refer to wiring diagrams
*2 At 50% of rated current

Watt-hour Meters With pulse initiator

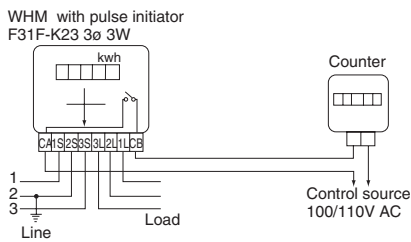
Engineering data

Type	Max. current (A)	Pulse initiator Fixed number	Power consumption (VA) 60Hz		
			Voltage circuit *	Current circuit	
F41F-K23	30	100V: 0.01, 0.1, 1 kWh/pulse 240V: 0.1, 1, 10 kWh/pulse	P ₁ -P ₀	3.2	0.85
			P ₂ -P ₀	3.2	0.85
			P ₃ -P ₀	4.3	0.85
F42F-K23	120	0.1, 1, 10 kWh/pulse	P ₁ -P ₀	3.2	1.8
			P ₂ -P ₀	3.2	1.8
			P ₃ -P ₀	4.3	1.8
F43F-K23	□/5	10 ⁿ kWh/pulse	P ₁ -P ₀	3.7	2.4
			P ₂ -P ₀	3.7	2.4
			P ₃ -P ₀	5.2	2.4

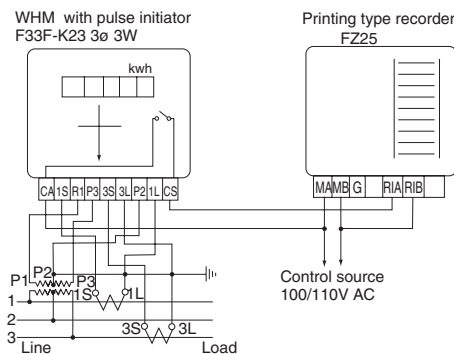
* Refer to wiring diagrams

Application examples

Combination with counter

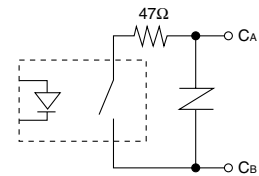


Combination with printing type recorder



Connection with a receiver

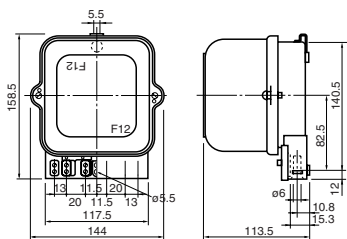
Because a semiconductor relay is used as a pulse initiator output contact, a maximum 10Ω on-resistance occurs when the output contact is closed. The output contact is provided with a protective circuit comprising a resistor and surge suppressor as shown. If an inductive load has to be connected, add another surge suppressor on the load side.



On-resistance (max. 10Ω)

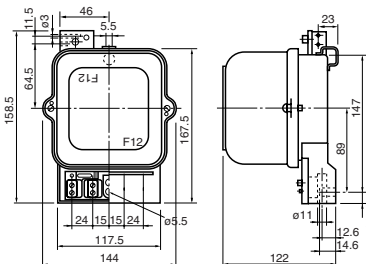
Dimensions, mm Surface mounting

1φ 2W F11F-K23, 30A



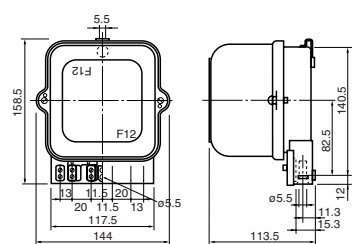
Mass: 2.1kg

F12F-K23, 120A



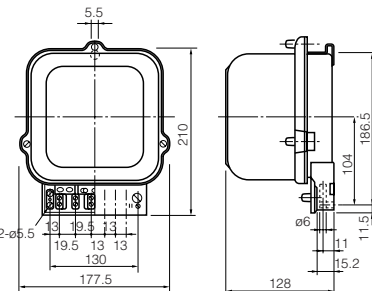
Mass: 2.5kg

F13F-K23, -/5A



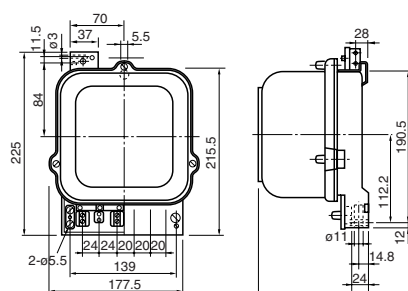
Mass: 2.1kg

1φ 3W, 3φ 3W F21F-K23, 30A F31F-K23



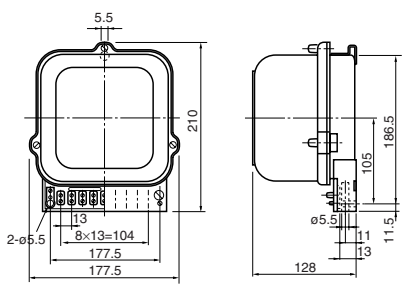
Mass: 3.6kg

F22F-K23, 120A F32F-K23



Mass: 3.9kg

F23F-K23, -/5A F33F-K23

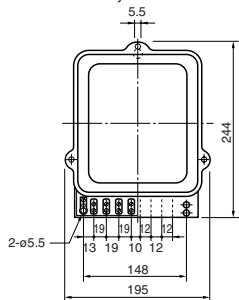


Mass: 3.6kg

■ Dimensions, mm
Surface mounting

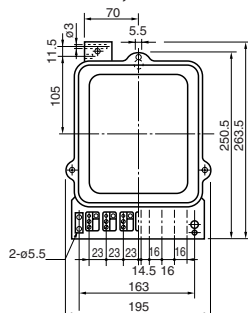
● 3φ 4W

F41F-K23, 30A



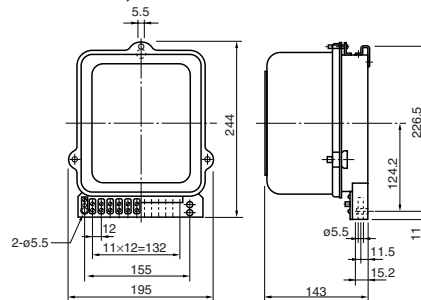
Mass: 4.7kg

F42F-K23, 120A



Mass: 5.7kg

F43F-K23, -/5A

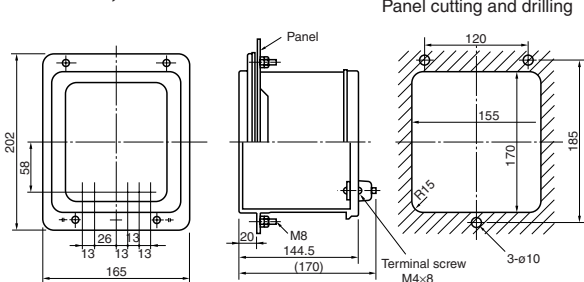


Mass: 4.7kg

Flush mounting

● 1φ 2W

F13F-K23V, -/5A

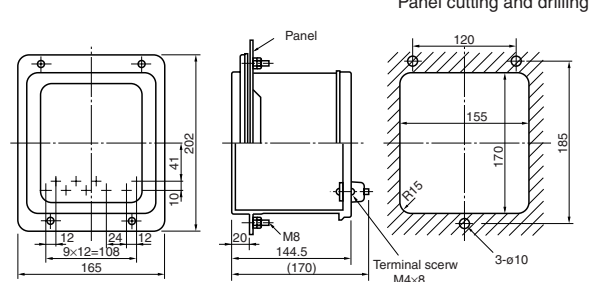


Mass: 2.8kg

● 1φ 3W, 3φ 3W

F23F-K23V

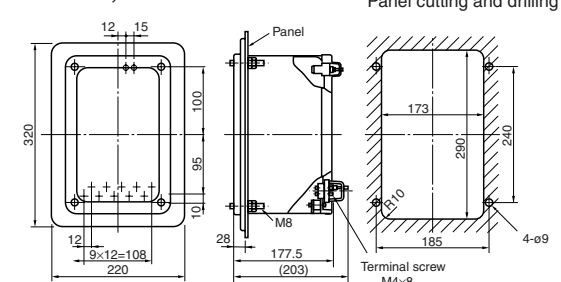
F33F-K23V, -/5A



Mass: 3.5kg

● 3φ 4W

F43F-K23V, -/5A

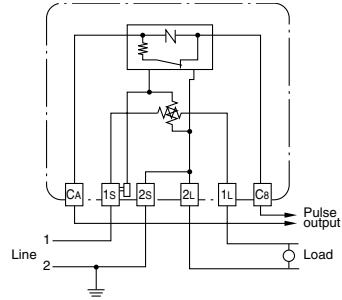


Mass: 5.9 kg

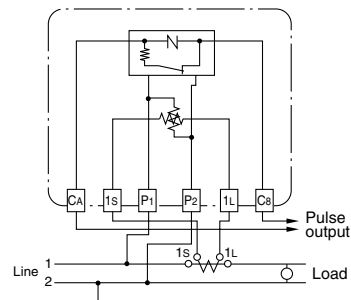
Watt-hour Meters With pulse initiator

■ Wiring diagrams

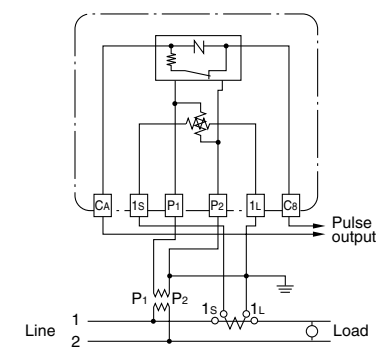
● 1 ϕ 2W
F11F-K23, 30A



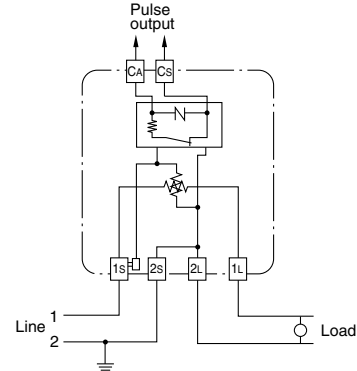
F13F-K23 Connection to CT



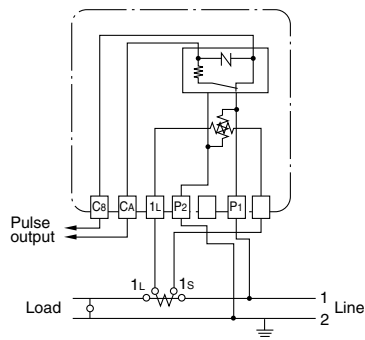
F13F-K23 Connection to VT and CT



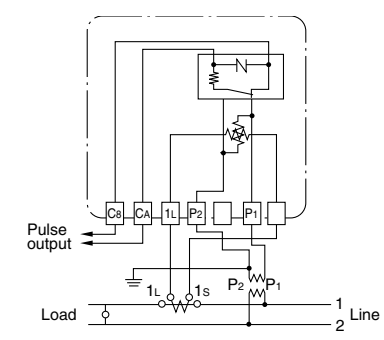
F12F-K23, 120A



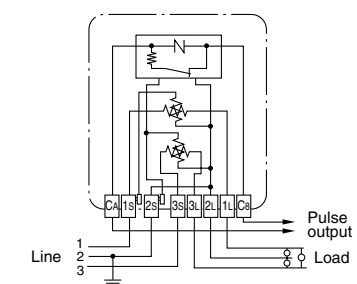
F13F-K23V Connection to CT



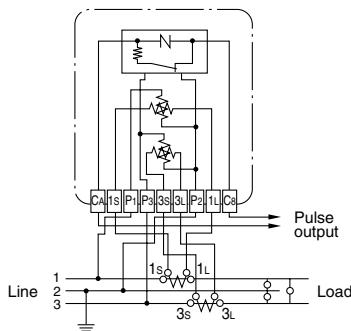
F13F-K23V Connection to VT and CT



● 1 ϕ 3W, 3 ϕ 3W
F21F-K23, 30A
F31F-K23



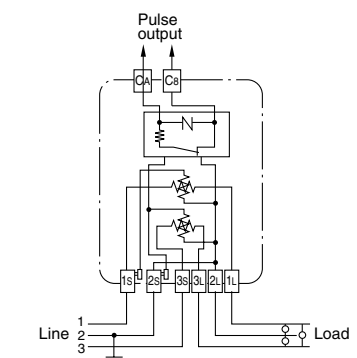
F23F-K23 Connection to CT
F33F-K23



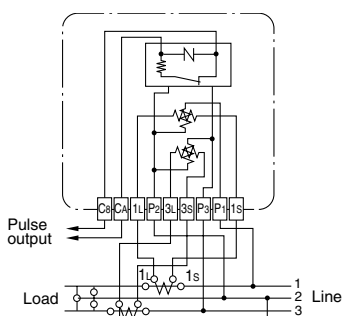
F33F-K23 Connection to VT and CT



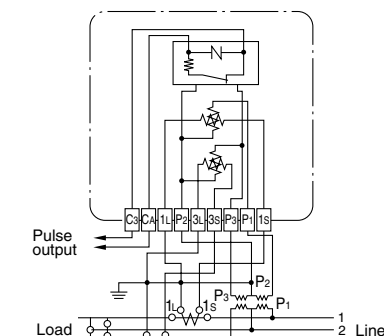
F22F-K23, 120A
F32F-K23



F23F-K23V Connection to CT
F33F-K23V



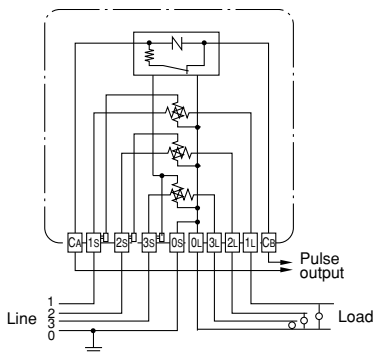
F33F-K23V Connection to VT and CT



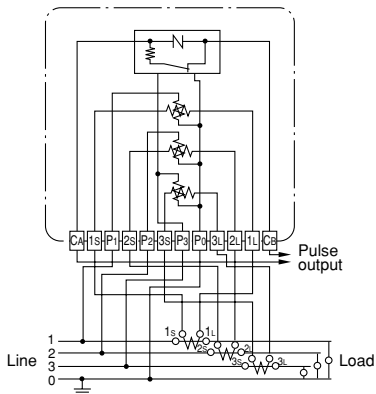
■ Wiring diagrams

● 3φ 4W

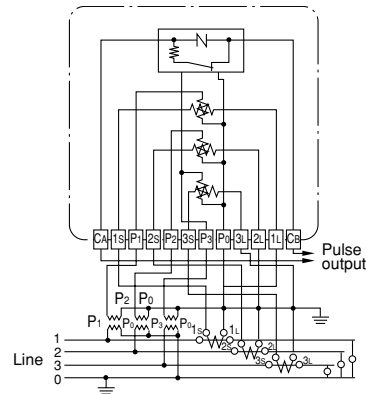
F41F-K23, 30A



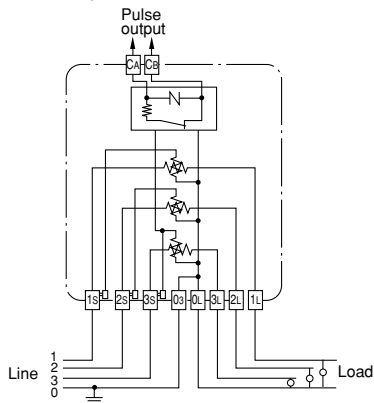
F42F-K23 Connection to CT



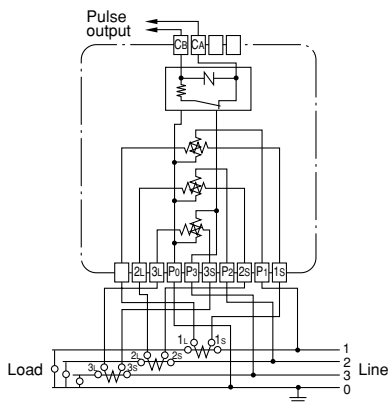
F43F-K23 Connection to VT and CT



F42F-K23, 120A



F43F-K23V Connection to CT



F43F-K23V Connection to VT and CT

