

Frequency Monitoring Relay Ex9JP F-1

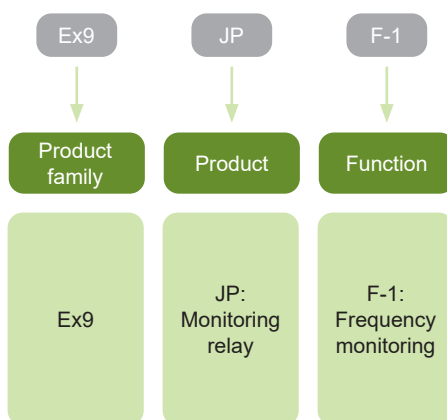


- Monitoring AC frequency of AC voltage in photovoltaic, power stations and generators
- Monitoring frequencies 50/60/400 Hz
- Adjustable parameters
 - Fmax in the range of 80–120 % Fn
 - Fmin in the range of 80–120 % Fn
 - difference level in the range of 0.5–5 % Fn
 - delay level in the range of 0.5–10 s

The Ex9JP F-1 is a specialized Frequency Monitoring Relay designed for monitoring AC frequencies in critical applications such as photovoltaic stations and generators. It supports 50/60/400 Hz frequencies and allows adjustable frequency thresholds (80–120% of nominal frequency), providing adaptability for different power systems.

Key features include adjustable difference (0.5–5% of Fn) and delay levels (0.5–10 seconds), enabling precise control over frequency variations. The device operates within a 161-500 V AC voltage range and includes 2 change-over contacts, offering flexibility in connections. Its user-friendly design, with front-panel switches for settings adjustments, makes it suitable for complex power monitoring tasks.

Type Key



Certification marks



Frequency Monitoring Relay Ex9JP F-1

Frequency Monitoring Relay

- The monitored frequency 50/60/400 Hz
- 2 Adjustable levels of frequency (Fmin, Fmax) in the range of 80–120% Fn
- Adjustable difference level in the range of 0.5–5 % Fn
- Adjustable delay level in the range of 0.5–10 s
- Adjustments are set by switches on the front of the device



Supply voltage U_e	Function	Contacts	Article No.	Type	Packing
161-500 V AC	Frequency monitoring	2 CO	114567	Ex9JP F-1	1

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Frequency Monitoring Relay

General parameters

The monitored frequency 50/60/400 Hz
2 Adjustable levels of frequency (Fmin, Fmax) in the range of 80–120% Fn
Adjustable difference level
Adjustable delay level
Adjustments are set by switch on the front of the device

Electrical parameters

Tested according to	EN 61000-6-2, EN 61000-6-4, EN 60255-1, EN 60255-26, EN 60255-27
Supply voltage	161-500 V AC
Rated frequency f	50 / 60 / 400 Hz
Max. power input	1.7 VA / 1.1 W
Power consumption	≤ 2 W
Overload capacity: - continuous - max.10 s	500 V 550 V
Frequency Fmax	adjustable 80–120 % Fn
Frequency Fmin	adjustable 80–120 % Fn
Difference	adjustable 0.5–5 % Fn
Delay (until failure)	adjustable 0.5–10 s
Opening level (Uopen)	161 V
Output relay-contact	2x change-over
AC contact capacity	250 V / 8 A, max. 2000 VA
DC contact capacity	30 V / 8 A
Dielectrical strenght	4 kV / 1 min

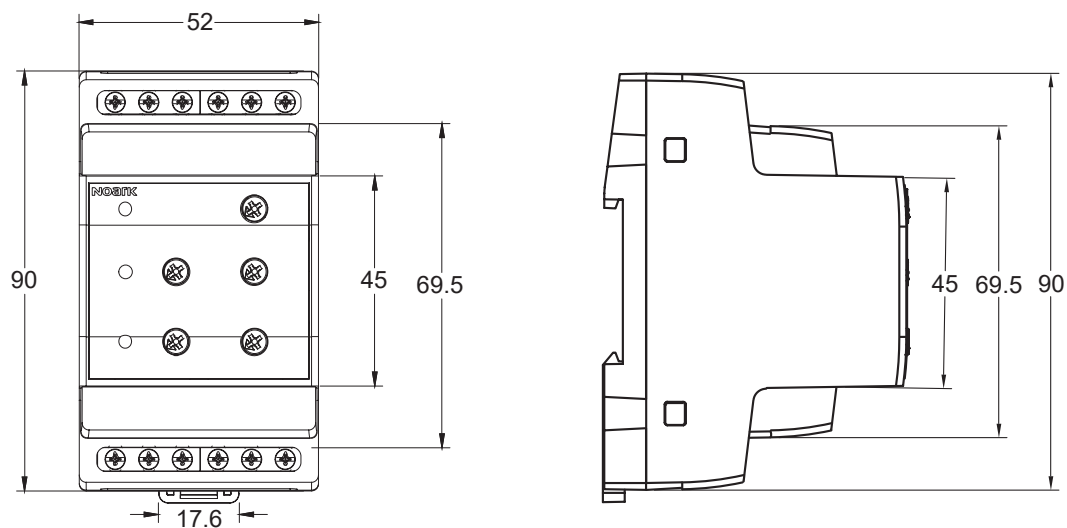
Mechanical parameters

Device width	52 mm
Device height	90 mm
Frame size	45 mm
Mounting	onto 35 mm device rail (DIN)
Mounting position	any
Degree of protection	IP40 from front panel / IP20 terminals
Terminals	screw terminals
Terminal capacity	1–2.5 mm ²
Fastening torque of terminals	0.5 Nm
Mechanical life	30 000 000 operation cycles
Electrical life (AC1)	200 000 operation cycles
Ambient temperature	-20°C–+55°C
Overvoltage category	III
Pollution degree	2
Weight	0.127 kg

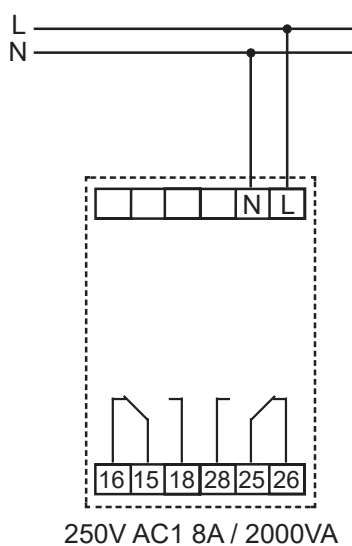
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Frequency Monitoring Relay

Dimensions



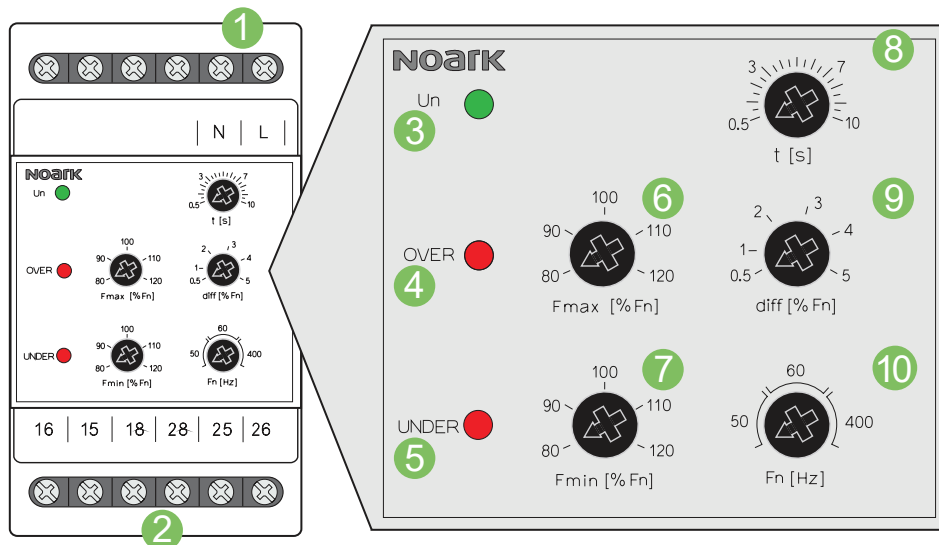
Wiring diagrams



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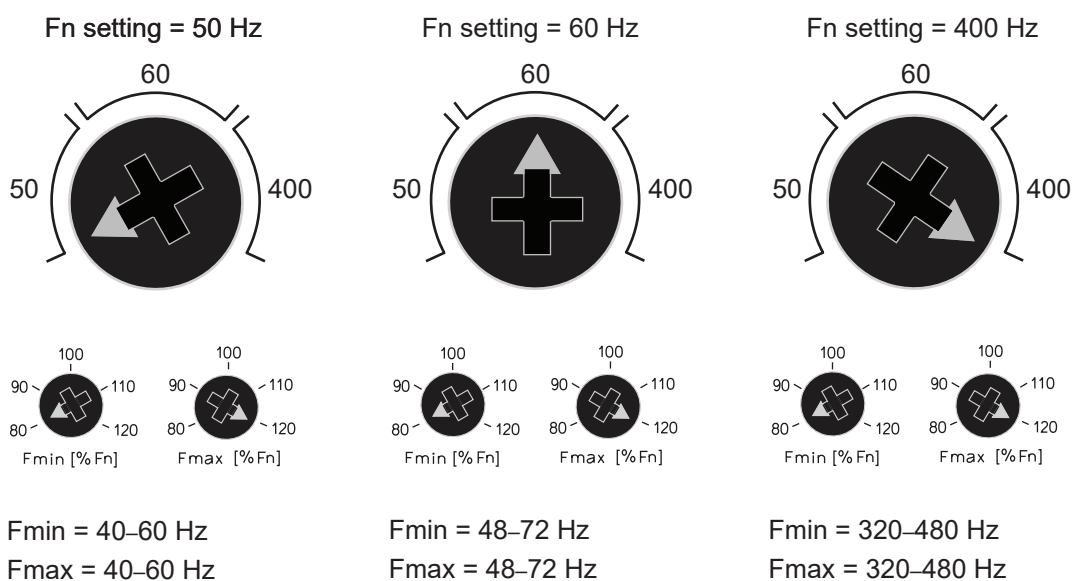
Frequency Monitoring Relay

Description



- ① - Supply / monitored voltage terminals (N-L)
- ② - Output contacts (15-16-18-25-26-28)
- ③ - Supply voltage indication
- ④ - Indication $F > F_{max}$
- ⑤ - Indication $F < F_{min}$
- ⑥ - F_{max} setting
- ⑦ - F_{min} setting
- ⑧ - Delay setting
- ⑨ - Difference setting
- ⑩ - F_n setting

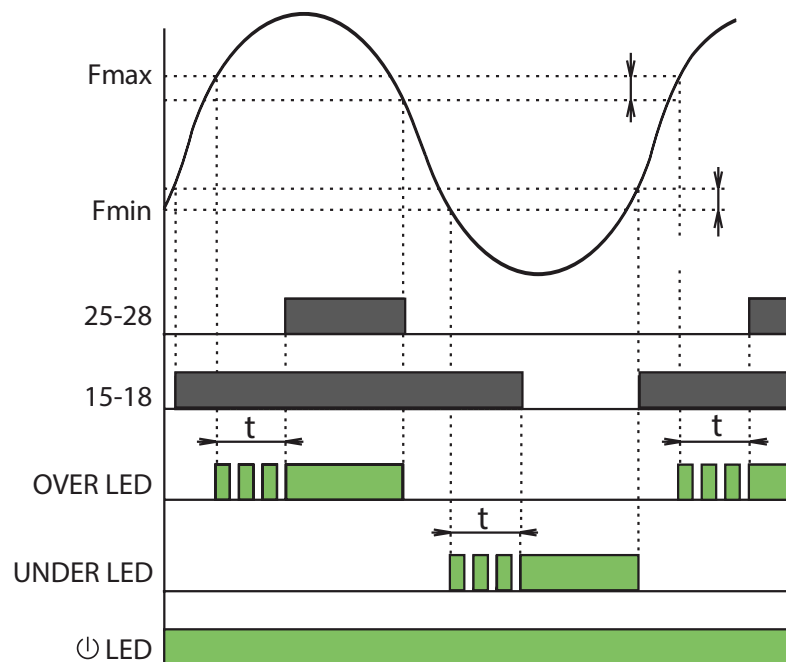
Frequency setting



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Frequency Monitoring Relay

Functions



- Upon connecting the monitored supply voltage, the green LED lights up.
- If the monitored frequency is within the range of the set levels F_{min} - F_{max} , the red LED remains off, activating the UNDER relay (contacts 15-16-18) and disconnecting the OVER relay (contacts 25-26-28).
- When the monitored frequency exceeds the set level F_{max} , the OVER relay triggers after a delay, illuminating the red LED OVER, which flashes during this timing.
- If the monitored frequency drops below F_{max} -difference, the relay activates instantly, turning off the red LED OVER.
- If the monitored frequency falls below the set level F_{min} , the UNDER relay disconnects after a delay, and the red LED UNDER lights up. The red LED flashes during this timing.
- Conversely, if the monitored frequency exceeds the level F_{min} + difference, the relay triggers instantly, turning off the red LED UNDER.
- When the monitored voltage is lower than the opening level U_{open} , both relays disconnect, and both red LEDs (UNDER and OVER) start flashing slowly, indicating insufficient supply voltage.