

OVERCURRENT RELAY

Type NCO11P and NCO12P

FEATURES

- Microprocessor based overcurrent relay with high accuracy
- One-phase or two-phase packaged is prepared.
- Low-set element(time overcurrent) and high-set element(instantaneous element)
- Ability to select a definite time or a time current curve out of three inverse time characteristics (standard inverse, very inverse, extremely inverse)
- High reliability realized by continuous monitoring function
- Numeric display function: input current and relay setting status

Figure 1 Type NCO11P Relay



APPLICATION

- This relay is suitable for time graded overcurrent and earth fault protection of distribution feeders, transmission lines, AC machines and transformers.
- With four operating time characteristics available on one relay, the relay can be applied to various protections.
- Also changes in system configuration can be easily accommodated.
- The relay is free from overtravel, thus permitting close coordination with other protective devices.

SPECIFICATION

Type	NCO11P		NCO12P	
Encased elements	One Time-overcurrent(IOC) and one Instantaneous(IINS) elements per phase			
Operation Indicator	Provided with Time-overcurrent (IOC)and Instantaneous (IINS) respectively			
Ratings	AC current In	5A		
	Frequency	50 or 60 Hz		
	DC power supply	100/110/125Vdc(Normal range:80 to 143Vdc)		
Overload rating	40 times rated for 1 second			
Burden	Current circuit	0.5 VA/phase(at rated current)		
	DC power supply	1.5 W at 110Vdc	2.0 W at 110Vdc	
Setting	Time- overcurrent (IOC)	2.0-2.5-3.0-3.5-4.0-4.5-5.0-6.0-7.0-8.0-9.0-10-12-14-16-18A		
	Time multiplier setting TMS	0.05 to 1.0		
	Instantaneous (IINS)	Disabled - 10 to 80A in 5A steps		
Accuracy	Pick-up current	IOC ,IINS :±5%		
	Operating time	Inverse time:±7% at 10 times the setting value, Definite time:±5%		
Output contacts	2 normally open contacts respectively per IOC and IINS Make and carry: 20A with 110Vdc resistive, Break: 0.2A with 110Vdc, L/R=40ms			

SPECIFICATION(continued)

Atmospheric environment (IEC Standard 255-0)	Operation guarantee: -10°C to +55°C Storage: -20°C to +70°C
Dielectric test	2kV at 50 or 60 Hz for 1 minute between all circuits and the case, and between all separate circuits.(IEC 255-4)
Impulse voltage test	5kV peak and 1.2/50μs, 0.5J waveform applied both transversely and between relay terminals and earth.(IEC 255-5)
1 MHz burst disturbance test	1 MHz, 2.5kV attenuated to half in 3 to 6 cycles(IEC 255-22-1, class III)
Electrostatic discharge	8kV±10%(IEC 255-22-2, class III)

CHARACTERISTICS

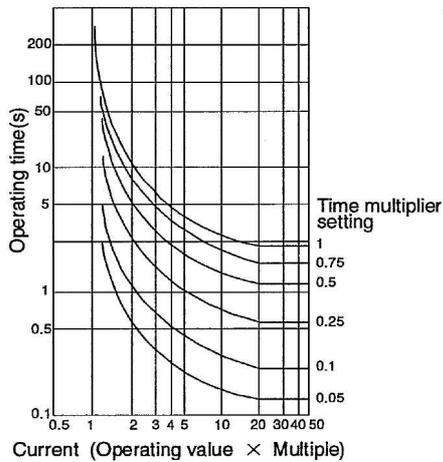


Figure 2 Standard Inverse

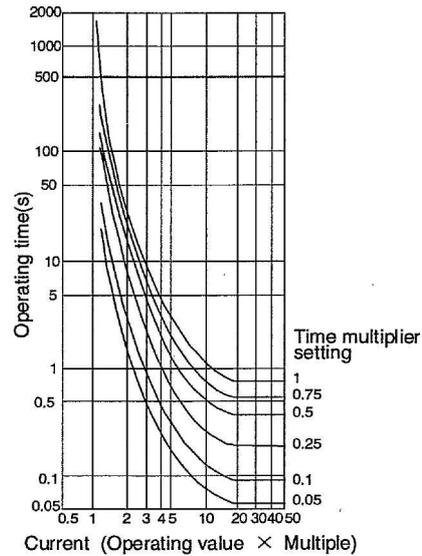


Figure 4 Extremely Inverse

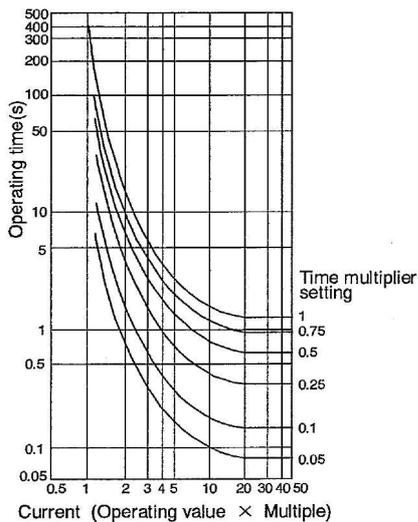


Figure 3 Very Inverse

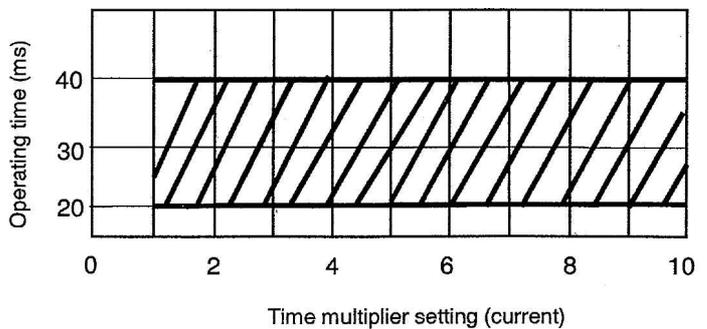


Figure 5 Instantaneous Element

INDICATIONS

- Operation indicators
Two orange targets for loc and lINS
These targets are can be reset by the lever at the lower side of case.
- Power supply indicator(yellow LED)
The LED is lit in normal service condition.
- Relay failure indicator(red LED)
When any relay failure is found by the self-monitoring function, the LED is lit.
- Numeric display LED
The numeric display LED is linked the indication selection switch and an item of the indication selection table is indicated in turn by pushing the switch.

Indication item: input current,
time overcurrent setting,
instantaneous setting,
time multiplier setting,
operating time characteristics setting

During a forced control operation, "000" flickers in the numeric display LED. During a setting switch operation, the setting value which is the numeric value pointed out by the setting switch flickers in the numeric display LED.

SETTINGS

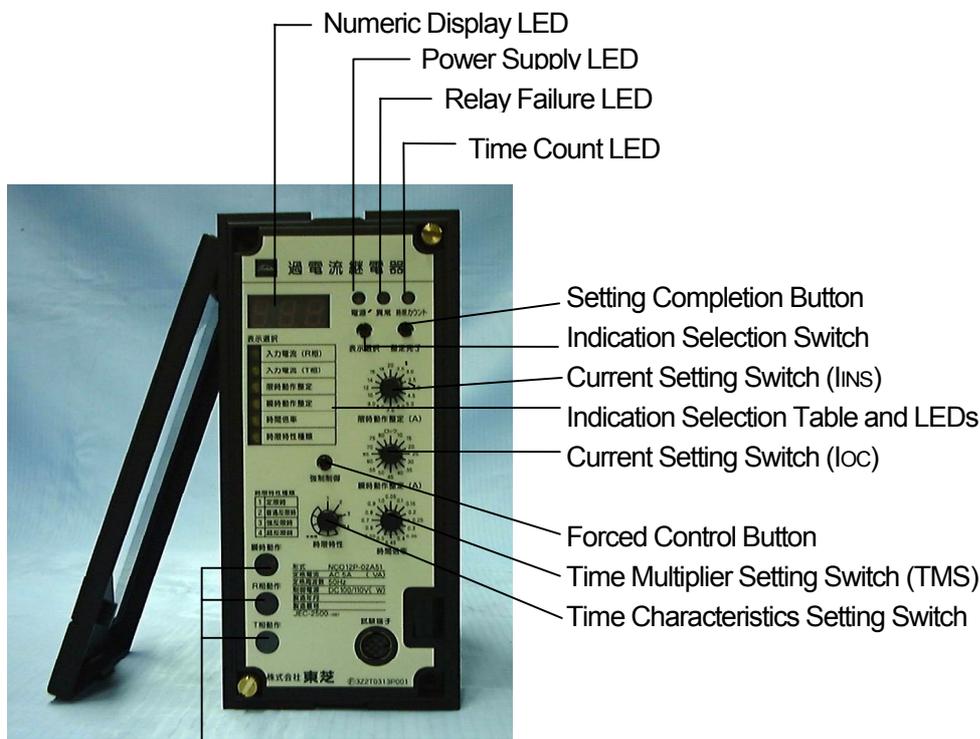
To select operating time characteristics, time multiplier and current settings, separate setting switches are provided on the relay front plate shown in Figure 6. Push the indication selection switch to select the setting item and set the desired value.

- Time characteristics mode selection
The operating time characteristic selection is carried out by a switch.

Table 3 Time Characteristics Setting

Switch Position	Time Characteristics
1	Definite time (1s)
2	Definite time (10s)
3	Standard inverse
4	Very inverse
5	Extremely inverse

- Time multiplier setting (TMS)
For the inverse time characteristics, the range of multiplication is from 0.05 to 1.0 in steps of 0.05.
- Current setting
The current setting is carried out by the switches loc and lINS where the current setting value is in amps.
- Setting completion switch
New settings are valid after pushing the setting completion switch.



Operation Indicators for loc and lINS

Figure 6 Indicator and Setting Switch Arrangement (Type NCO12P)

DIAGRAM
Block Diagram

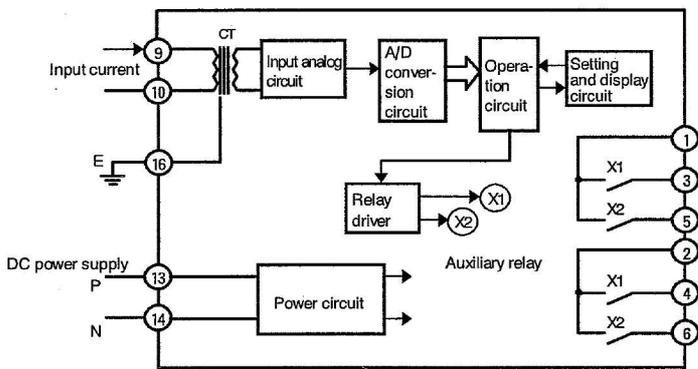


Figure 7 Block diagram of NCO11P

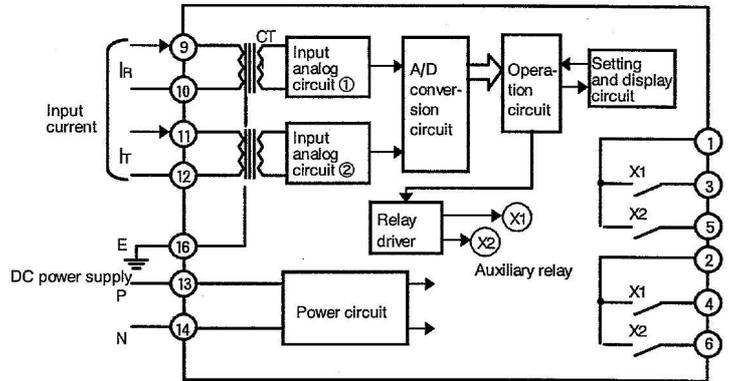


Figure 8 Block diagram of NCO12P

External connections

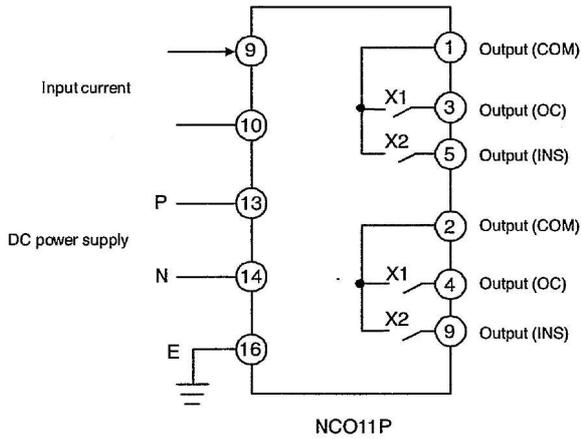


Figure 9 External connections for NCO11P

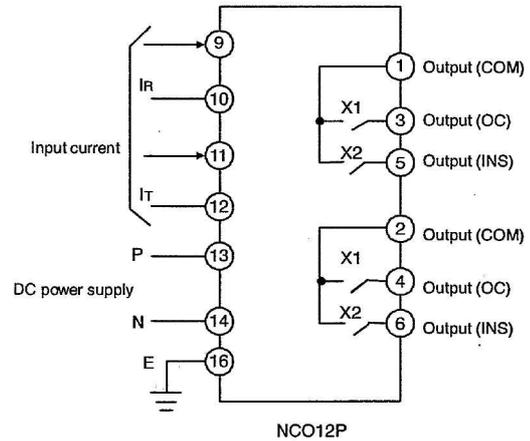


Figure 10 External connection for NCO12P

Outline and panel cut-out diagrams

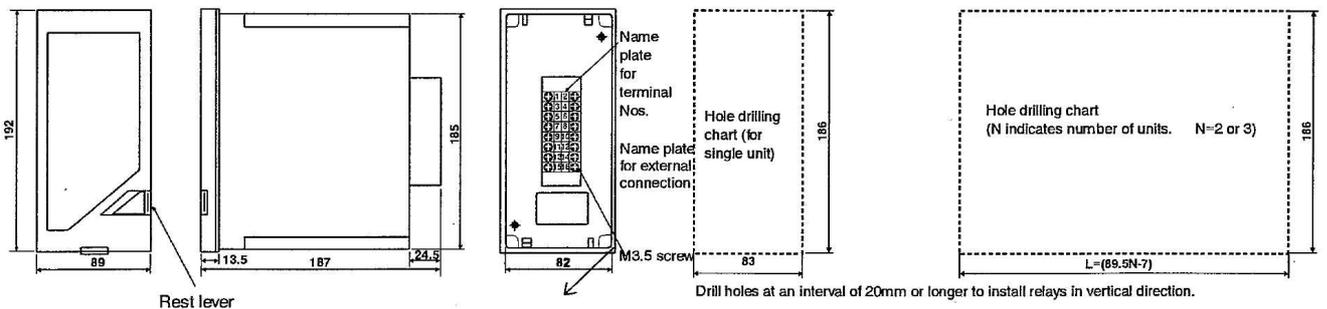


Figure 11 Case outline

Figure 12 Panel cut-out