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DC Transducer trip relay M200-TA

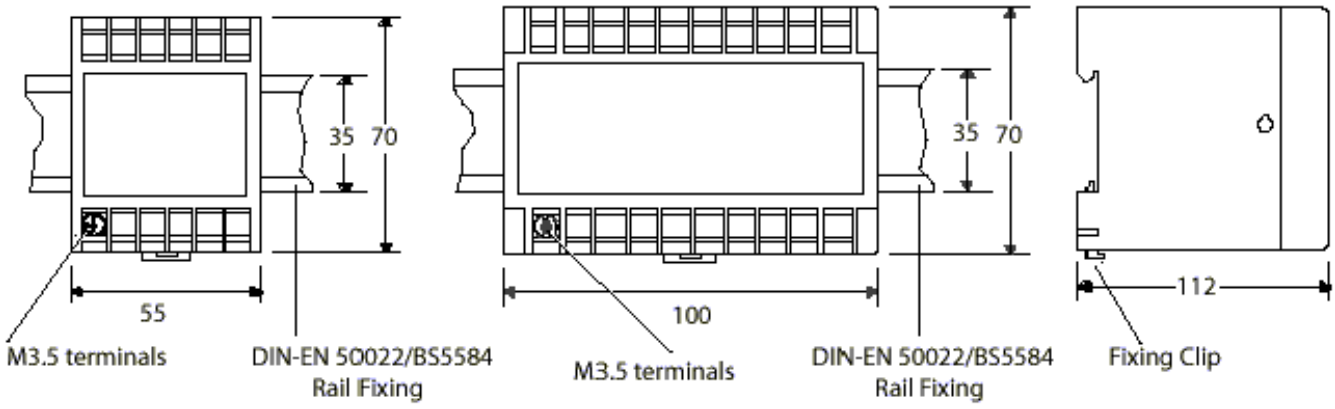
Thermocouple trip relay M200-TJ, TK

Thermistor trip relay M200-TT

Milivolt trip relay M200-MV

CASE DIMENSIONS

All Dimensions in mm



ENVIRONMENTAL

Working temperature	*0 to +60 deg C*
Functional temperature	*-25 to + 70 deg C*
Storage temperature	*-40 to +85 deg C*
Temperature Coefficient	*0.03% per deg C (3OOppm/0 C)*
Relative humidity	*95% non condensing*
Class of climate HSE	*complying with DIN 40040 -3 complying with VDE/VDJ 3540*

INSULATION

Test voltage	*4kV RMS 50Hz 1min between Input / Case /Auxiliary*
Impulse test EMC	*5kV transient complying with IEC 801 / EN55020*
HF interference test	*EHF 2.5kv 1MHz complying with IEC 255-4*
Protection class II	*complying with IEC 348*

APPLIED STANDARDS

General	*IEC 144/ BS 5420/ VDE/ VDI 0435/ IEC 947/ EN60947*
Safety	*BS EN 61010 DIN 57411 / VDE 0411 ANSI C37*
Surge withstand	*IEC 801 / EN 55020 ANSI C37-90a*
Radio screening	*RFI degree N complies with VDEO87S*
EMC Emissions	*EN50081-2 Immunity EN50082-1*

RELAY OUTPUT

Relay type	*dual pole change over*
Material	*Silver / Cadmium*
Contact resistance	*200mOhm max*
	Typically <50m Ohm
Rating	*AC 250V 5A non resistive 1200VA*
Rating	*DC 125V 1A resistive 120 watts*
Electrical lije	*1 x 10 6 at above load*
Mechanical life	*5 x 10 6*
Operating time	*approx. 7ms (20ms max)*
Dielectric strength	*Between coil and contacts*
	5kV RMS 1min
	Between open contacts
	1kV RMS Imin
	Between adjacent contacts
	1kV RMS imin
Insulation resistance	*1000M Ohm at 5OOV DC*
Operating temperature	*-30 to + 75 deg C*
Approval	*UL and CSA recognised*

ENCLOSURE

Fixing	*Snap on to DIN rail 35 x7.5 mm complies with DIN-EN 50022 BS 5584*
Mounting	*Any position*
Enclosure	*Code Case IP 50/ terminals IP 30*
	Complies with IEC 529 BS 5490 DIN 40050
Material	*Complying with UL 94 VO*

APPROVALS

U.L. Approval File No E157034

M200-PSI

PHASE SEQUENCE RELAY 는 3 상이 제대로 연결되었는지를 감시합니다.
상이 제대로 연결되지않으면 RELAY 는 DEENERGIZE 되어 잘못연결된 발전기가 동작하지 않도록 합니다.
물론 결상일때도 RELAY 는 트립하며 이 경우에는 PHASE FAILURE RELAY 로서 동작합니다.
빨간 LED 가 켜지면 상이 잘못되었다는 것을 의미하며 RELAY 가 DEENERGIZE 됩니다.
녹색 LED 는 켜지면 상이 제대로 연결되었다는 것을 의미하며 REALY 가 ENERGIZE 돕니다.

SELECTION GUIDE

M200-PS1 3 phase 3 or 4 wire

TYPICAL APPLICATIONS

The M200-PS1 provides phase and sequence phase failure protection. Used to ensure the sequence is correct when connecting 3 phase loads.
With an incorrect phase sequence the relay will de-energise preventing the starting of incorrectly connected machinery.
The relay will also trip if there is a phase loss and can therefore be used as a phase failure relay.
Note if regenerated voltage is present in the open phase the M200-PB1 or M200-PB2 should be used.
The red LED "ON" indicates phase sequence incorrect and relay is de-energised.
The green LED "ON" indicates phase sequence correct and relay is energised.

TECHNICAL SPECIFICATION

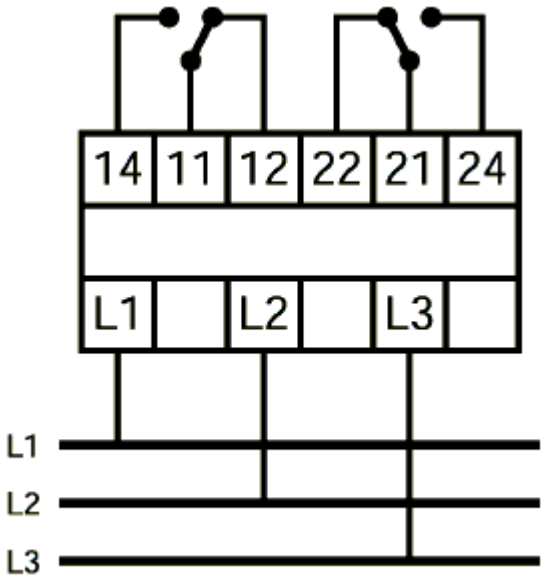
INPUT *Rated value Un 57.8 < 500V ± 25%*
Frequency 50/60/400 Hz
Burden *<3VA*
Overload *1.5x Un continous*
2 x Un for 3 seconds
SETPOINT Not adjustable
AUXILIARY Self powered.
WEIGHT & CASE SIZE Approx. 0.4kg. 55mm case

ORDERING INFORMATION

Product Code Input Un Freq. Options
M200-PS1 415v 50Hz Cal 35° C

OPTIONS

1. Calibration at nominal Hz 35…450Hz
2. Calibration at temperature other than 23° C



M200-PS 결선도

M200-PB 시리즈

PHASE BALANCE RELAY 은 3 상 3 선이나 3 상 4 선시스템에서 다음사항들을 감지합니다 .

Phase unbalance

Phase loss

Phase reversal

Phase sequence

Phase balance relay 는 모터 ,발전기 ,heater ,변압기 등을 사용하는 시스템에서 phase loss 와 unbalance 를 감지하는데 사용됩니다 . 3 상 모터에서 phase unbalance 가 10%정도만 되어도 모터권선에 120%이상의 온도를 발생시킵니다 . M200- PB1/ PB2 를 제대로 설정해 놓으면 이러한 것을 예방할 수 있습니다 .어느 한 phase 의 문제 때문에 발생한 open phase regenerated voltage 에 대해서도 대처 보호할 수 있습니다 .사용자는 unbalance 5 ~ 15%, time delay 200ms ~ 10 초를 설정하여 사용합니다 .

시스템에 문제가 없다면 , relay 는 여자되어 있으며 LED 가 켜져 있습니다 . phase unbalance 가 설정치를 초과하거나 phase loss 혹은 phase reversal 이 발생하면 relay 는 설정해 놓은 time delay 이후에 비여자 됩니다 .

M200- PB2 는 PB1 에 under voltage 보호기능이 추가되어 있습니다 .말하자면 모든 3 상전압이 균형을 이루고 있지만 ,미리 설정한 전압이하로 내려간다면 relay 가 비여자 됩니다 . under voltage 는 내부적으로 설정되어 있습니다 . 표준형의 경우에는 정격의 85%로 설정됩니다 .그러나 70%나 90%등도 주문시 요청하면 가능합니다

SELECTION GUIDE

M200-PB1 Detects phase loss & phase unbalance

M200-PB2 Detects phase loss, phase unbalance & symmetrical under-voltage

TYPICAL APPLICATIONS

The M200-PB1 can detect the following conditions in phase 3 or 4 wire systems. Phase Unbalance, Phase Loss, Phase Reversal and Phase Sequence.

The phase balance relays are used to detect phase loss and unbalance in systems using motors, generators, heater elements, transformers etc. A Phase unbalance as small as 10% in a 3 phase motor can cause the temperature in the motor winding to increase by more than 120%, correct setting of the PB1/PB2 will ensure this does not occur. Protection against open phase regenerated voltage, created if a single phase should fail is also provided.

Customer adjustment of unbalanced voltage between 5 to 15% is provided along with time delay adjustment of 200ms to 10 seconds.

If the system being monitored is healthy, the relay is energised, and the red LED will be illuminated. If a phase unbalance greater than the pre-set level or phase loss / reversal occurs, the relay de-energises after the time delay period. The M200-PB2 provides all the protection features of the PB1 with the additional benefit of having symmetrical under voltage protection. This means that if all the phase voltages remain balanced but drop below a pre-set value, the relay will de-energise. The under voltage is internally set. For standard units it is set at 85% below the nominal voltage, but this value can optionally be between 70% and 90%

TECHNICAL SPECIFICATION

INPUT *Rated value Un 57.8<500V± 25%*

Frequency 50/60/400 Hz

Burden *<2VA*

Overload *1.5x Un*

2x Un

SETPOINT

Range Adjustment 5 to 15% unbalanced voltage

Repeatability Better than 0.5% of full span

Under-voltage PB2 only, pre-set 85% of nominal voltage (optional 90% to 70%)

Time delay Adjustable 200 ms to 10 sec

AUXILIARY Self powered

WEIGHT& CASE SIZE Approx. 0.4kg. 55mm case

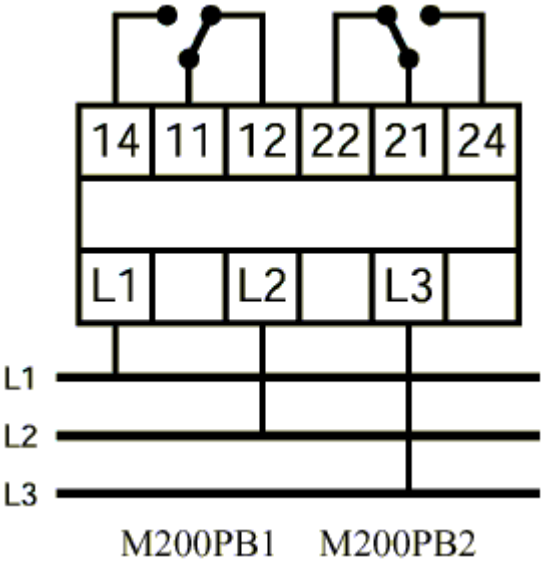
ORDERING INFORMATION(예)

M200-PB2 415 v 50Hz Under Volts at 70%

OPTIONS

1. Adjustable time delay max 30 seconds

2. Internal under voltage set between 90% to 70%



M200-A 시리즈

전류계전기는 단상회로나 3 상회로를 감시 보호하며 주로 모터보호, 부하감지, 발전기제어에 사용합니다.
저전류, 과전류, 또는 두개가 조합된 제품을 모두 공급하고 있으며 미리 설정한 전류값에 다다르면 RELAY 는 동작합니다.
사용자는 RELAY 가 동작하는 전류값과 TIME DELAY 를 자유로이 설정할 수 있습니다.
입력신호가 설정치를 초과했을 때, 과전류 RELAY 는 ENGERGIZE 됩니다.
또한 입력신호가 설정치 이하로 내려가면, 저전류 RELAY 는 DEENERGIZE 됩니다.
빨간 LED 는 RELAY 가 동작하는 것을 보여줍니다.
파란 LED 는 전원이 들어오면 켜집니다.

SELECTION GUIDE

M200-A1U Single phase under current
M200-A1O Single phase over current
M200-A1C Single Phase combined current
M200-A3U 3 Phase under current
M200-A3O 3 Phase over current

TYPICAL APPLICATIONS

The M200 AC current relays provide current monitoring and protection in both single and 3 phase systems. Used in applications such as motor protection, load detection and generator control.
Under over and combined under/over units are available.
The relay operates when the adjustable trip point is reached. An externally adjustable time delay is provided to prevent nuisance tripping.
As is common with all the M200 relays, on over units the relay energises when the input signal exceeds the trip point On under units the relay de-energises when the input signal goes below the trip point.
A red LED indicates the state of the relay, whilst a green LED indicates the condition of the power supply.

TECHNICAL SPECIFICATION

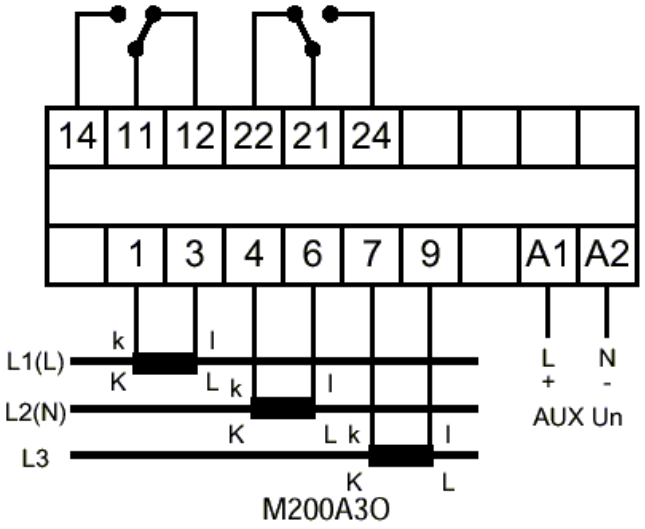
INPUT *Rated value In 1A or 5A from CT 0.2 to 10 Amp direct connected*
Frequency 50 /60 /400 Hz
Burden *<0.5 VA per phase*
Overload *2 x In continuous*
10 x In for 3 seconds
SETPOINT
Range Over Adjustable 40% to 120% In
Range Under Adjustable 0% to 80% In
Repeatability Better than 0.5% of full span
Differential Fixed 5%
Time Delay Adjustable 200ms to 10seconds
AUXILIARY AC Voltage 115/230/400V
(± 25% /45-65 Hz / <2 VA)
DC Voltage 24 volt (± 20% /galvanically isolated) <3 watt
WEIGHT& CASE SIZE
Single units Approx. 0.4kg. 55mm case
Combined units Approx. 0.6kg. 100mm case

ORDERING INFORMATION

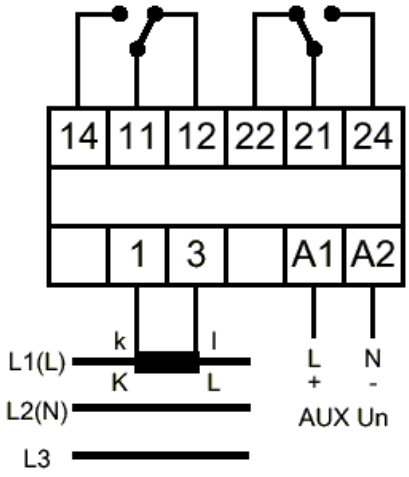
Product Code Input Freq. Aux. Options
M200-A30 5A 50Hz 230V

OPTIONS

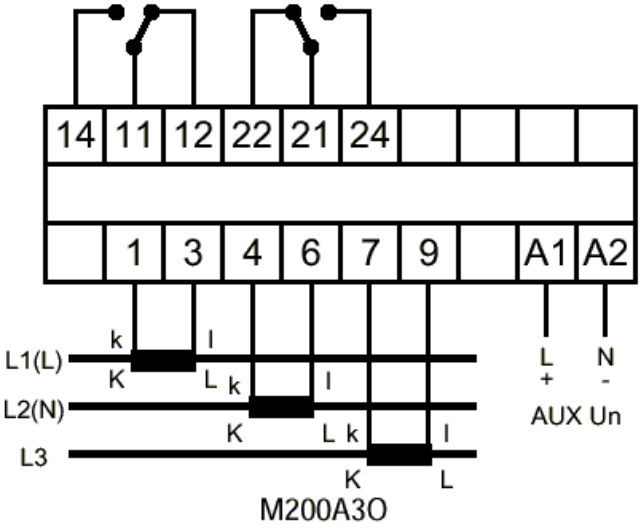
1.Adjustable time delay max 30 seconds
2.AC Auxiliary in the range 57.7 to 480 volts
3.Calibration at nominal Hz 35 450Hz
4.Calibration at temperature other than 23° C



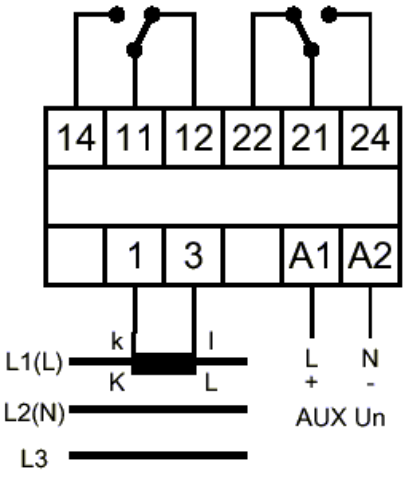
M200A3O



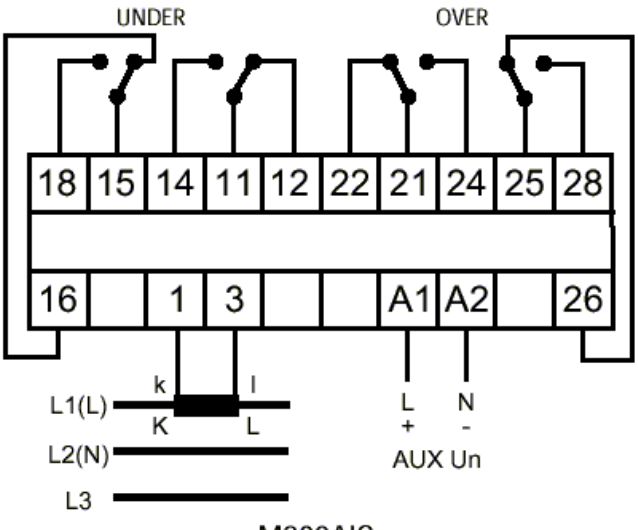
M200A1O



M200A3O



M200A1U



M200AIC

M200-V 시리즈

AC 전압 RELAY 는 단상회로나 3 상회로를 감시보호하며 주로 전원이상, 전원조절 그리고 전압에 민감한 제품들을 보호하는 목적으로 사용합니다.

저전압,과전압 또는 두개가 조합된 제품을 모두 공급하며 미리 설정한 전압값에 다다르면 RELAY 는 동작합니다.

사용자는 RELAY 가 동작하는 전류값과 TIME DELAY 를 자유로이 설정할 수 있습니다.

DIFFERENTIAL 도 1~15%까지 조정할 수 있으므로, 주변 전압이 정해놓은 값 이상이나 이하에 다다르면 RELAY 가 정상으로 돌아옵니다.

입력신호가 설정치를 초과했을 때, 과전압 RELAY 는 ENGERGIZE 됩니다.

또한 입력신호가 설정치 이하로 내려가면, 저전압 RELAY 는 DEENERGIZE 됩니다.

빨간 LED 는 RELAY 가 동작하는 것을 보여줍니다.

파란 LED 는 전원이 들어오면 켜집니다.

SELECTION GUIDE

M200-V1U Single phase under voltage
M200-V1O Single phase over voltage
M200-V1C Single phase combined voltage
M200-V33U 3 phase 3 wire under voltage
M200-V33O 3 phase 3 wire over voltage
M200-V33C 3 phase 3 wire combined
M200-V34U 3 phase 4 wire under voltage
M200-V34O 3 phase 4 wire over voltage
M200-V34C 3 phase 4 wire combined voltage

TYPICAL APPLICATIONS

The M200 AC voltage relay provides voltage monitoring and protection in both single and 3 phase systems. Used in applications such as mains failure, regulation of power supplies and to protect voltage sensitive equipment.

Under, over and combined under/over units are available.

The relay operates when the externally adjustable trip point is reached. An external differential control is provided with adjustment 1-15%. The differential ensures that the parameter being measured returns to % set above or below (depending on whether it is under or over unit) the trip point before the relay returns to its original state.

As is common with al/the M200 relays; on over units the relay energises when the input signal exceeds the trip point. On under units the relay de-energises when the input signal goes below the trip point.

A red LED indicates the state of the relay, whilst a green LED indicates the condition of the power supply.

TECHNICAL SPECIFICATION

INPUT

Rated value Un Single phase 57.8 <500 V
Three phase 100 <500 V
Frequency 50/60/400 Hz
Burden <2.5 VA per phase single units
<3 VA per phase combined units
Overload 1.5x Un continuous
2 x Un for 3 seconds

SETPOINT

Range under Adjustable 75% to 100% Un
Range over Adjustable 100% to 125% Un
Repeatability Better than 0.5% of full span
Differential Adjustable 1 to 15%
Operating time Typically 200ms

AUXILIARY

All units self powered.

WEIGHT& CASE SIZE

Single units Approx. 0.4kg. 55mm case
Combined units Approx. 0.6kg. 100 mm case

ORDERING INFORMATION(예)

M200-V34U/D 230V 50Hz 5 sec t/d

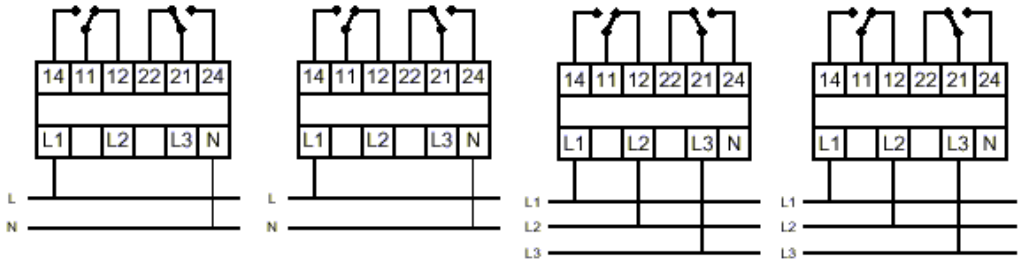
선택사양

1. 발주하실때 지정하시면 TIME DELAY 를 가진 제품을 공급합니다. 단, TIME DELAY 는 발주시 지정하신 시간으로 고정됩니다. 지정가능한 TIME DELAY 는 1~10 초입니다.

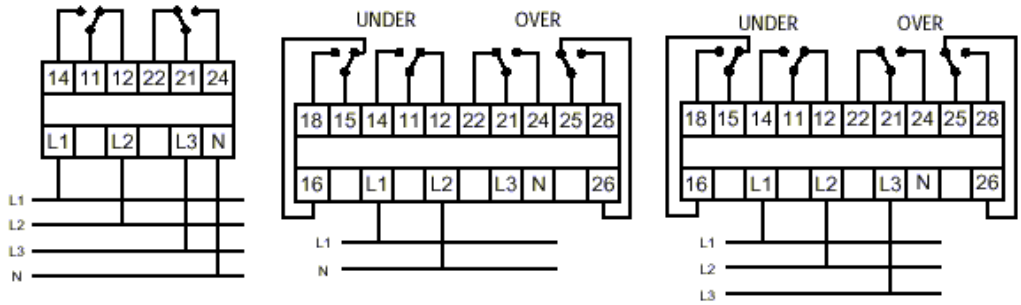
2. 사용자가 TIME DELAY를 상황에 맞게 직접 조정하길 원한다면 다음의 제품중에서 선택하시기 바랍니다. 기존 제품의 DIFFERENTIAL조정노브가 TIME DELAY로 바뀐 제품을 공급합니다. 이 경우에는 TIME DELAY는 200ms에서 10초까지 조정할 수 있으며, DIFFERENTIAL은 1%로 고정됩니다.

M200- V1X Single phase under voltage
M200-V1Y Single phase over voltage
M200-V1W Single phase combined voltage
M200-V33X 3 phase 3 wire under voltage
M200- V33Y 3 phase 3 wire over voltage
M200-V33W 3 phase 3 wire combined voltage
M200-V34X 3 phase 4 wire under voltage
M200- V34Y 3 phase 4 wire over voltage
M200- V34W 3 phase 4 wire combined voltage

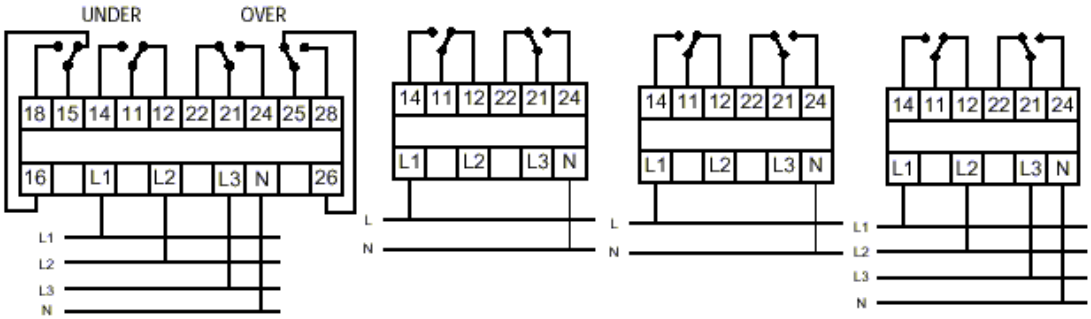
M200 시리즈 보호계전기



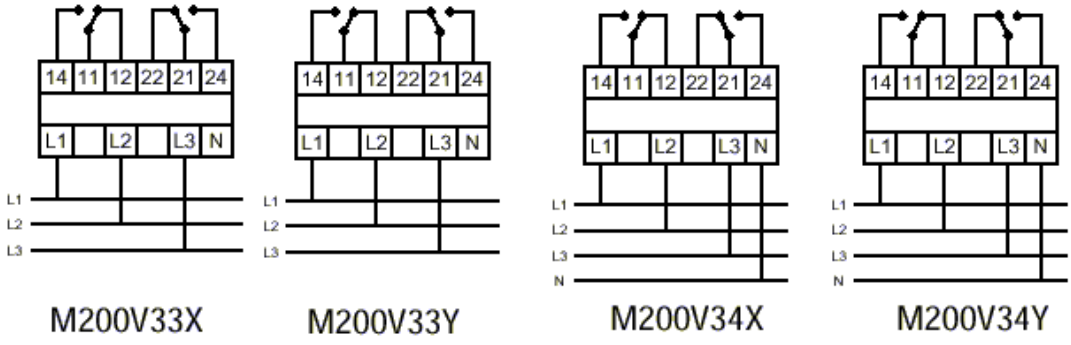
M200V1O M200V1U M200V33O M200V33U



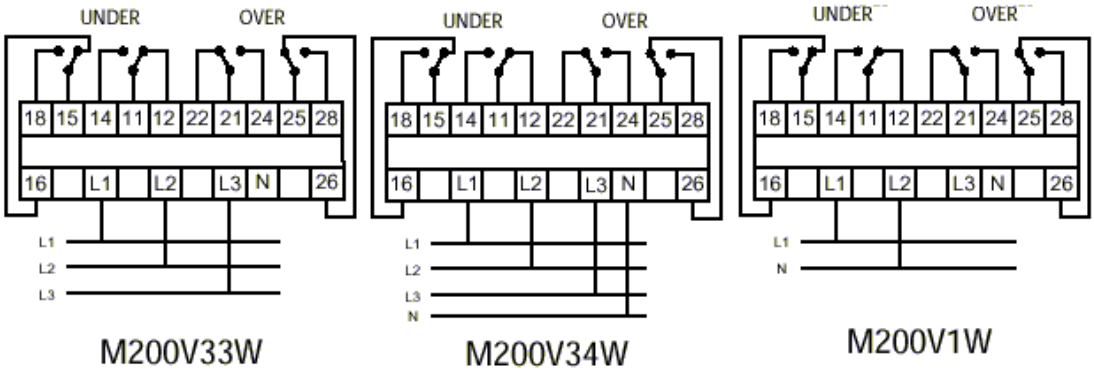
M200V34U M200V1C M200V33C



M200V34C M200V1X M200V1Y M200V34O



M200V33X M200V33Y M200V34X M200V34Y



M200V33W M200V34W M200V1W

M200-TV 시리즈

DC VOLTAGE TRIP RELAY 는 주로 밧데리를 감시하는데 사용하지만 기타 DC 전압에 민감한 여러제품에 사용합니다.

UNDER TRIP 용은 0-80%를 설정하며, OVER TRIP 용은 40-120%를 설정할 수 있습니다.

DIFFERENCTIAL 은 5%이며 TIME DELAY 는 없습니다.

입력신호가 설정치를 초과했을 때, OVER TRIP RELAY 는 ENGERGIZE 됩니다.

또한 입력신호가 설정치 이하로 내려가면, UNDER TRIP RELAY 는 DEENERGIZE 됩니다.

빨간 LED 는 RELAY 가 동작하는 것을 보여줍니다.

녹색 LED 는 전원이 들어오면 켜집니다.

SELECTION GUIDE

M200-TVU DC volts under trip

M200- TVO DC volts over trip

M200-TVC DC volts combined trip

TYPICAL APPLICATIONS

The M200 DC voltage trips are commonly used for monitoring battery voltage conditions but can be used in any application where the dc voltage level is critical. The user is provided with an adjustable set-point of 0-80% on under units and 40-120% on over units. The differential is internally set at 5%; no time delay is provided.

As is common with all M200 relays, on over units the relay energises when the input signal exceeds the trip point and on under units the relay de-energises when the input signal goes below the trip point.

A red LED indicates the state of the relay whilst a green LED indicates the state of the power supply.

TECHNICAL SPECIFICATION

INPUT

Rated value Un 1<150 volt

Impedance 10k Ohm / Volt

Overload 1.5 x Un continuous

2 x Un for 3 seconds

SETPOINT

Range Over Adjustable 40% to 120%

Range Under Adjustable 0% to 80%

Repeatabiltiy Better than 0.5% of full span

Differential Fixed 5%

AUXILIARY

AC Voltage 115/230/400V

± 25% / 45-65Hz / 2VA

DC Voltage 24 volt (± 20% / galavanically isolated)

<3 watt

WEIGHT & CASE SIZE

Single units Approx. 0.4kg. 55mm case size

Combined unit Approx. 0.6kg. 100mm case size

ORDERING INFORMATION

Product Code Input Vn Aux Freq Options

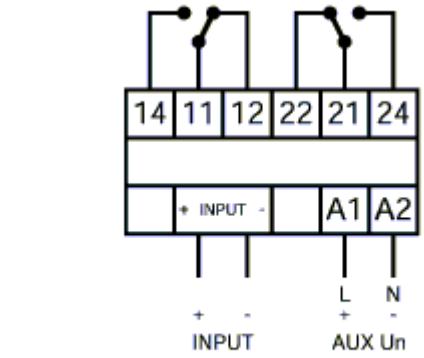
M200-TVU 24V 110V 50Hz

OPTIONS

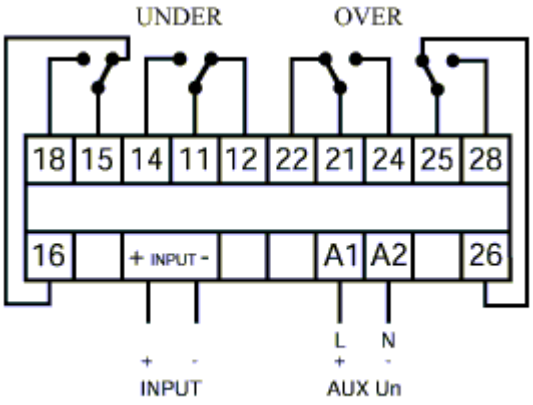
1. AC auxiliary in the range 57.7 to 480 volts

2. Calibration at nominal Hz 35...450Hz

3. Calibration at temperature other than 23° C



M200TVO M200TVU



M200TVC

M200 시리즈 보호계전기

M200-F 시리즈

주파수 RELAY 는 시스템의 주파수를 감시하며, 만약 주파수가 미리 정한 범위밖으로 벗어나면 동작합니다. 일반적으로 발전기를 과속 혹은 저속상태에서 보호하려는 목적으로 사용합니다. 발전기의 주파수는 통상 발전기의 속도와 비례합니다. 또 다른 용도는 전원이나 컴퓨터전원등의 보호등등입니다.

사용자는 RELAY 가 동작할 주파수와 DIFFERENTIAL 을 자유로이 설정할 수 있습니다.

입력신호가 설정치를 초과했을 때, 과주파수 RELAY 는 ENGERGIZE 됩니다.

또한 입력신호가 설정치 이하로 내려가면, 저주파수 RELAY 는 DEENERGIZE 됩니다.

빨간 LED 는 RELAY 가 동작하는 것을 보여줍니다.

녹색 LED 는 전원이 들어오면 켜집니다.

이 주파수 RELAY 는 자체적으로 전원을 감시하기 때문에 별도의 보조전원이 필요없습니다.

SELECTION GUIDE

M200-F1U Single or 3 phase under frequency

M200-F1O Single or 3 phase over frequency

M200-F1C Single or 3 phase combined frequency

TYPICAL APPLICATIONS

The M200 series frequency relays are designed to monitor the frequency of a system and if the frequency deviates outside the adjustable pre-set limits, the relay will operate.

Typically used in protecting generators against over or under speed, this is achieved as speed is proportional to frequency. Other uses such as monitoring mains power supplies, computer supplies etc.

The user is provided with adjustment of both the trip point of frequency being monitored and the differential

As is common with all the M200 relays; on over units the relay energises when the input signal exceeds the trip point. On under units the relay de-energises when the input signal goes below the trip point

A red LED indicates the state of the relay, whilst a green LED indicates the condition of the power supply. The frequency relays monitor their own power supply so no auxiliary power is necessary.

TECHNICAL SPECIFICATION

INPUT Rated value Un 57.8<500V+ 25%
Rated Frequency 50/60/400 Hz
Burden <25 VA
Overload 1.5 x Un continuous
2 x Un for 3 seconds

SETPOINT Range 50Hz nominal Adjustable 40 to 60Hz
Range 60Hz nominal Adjustable 50 to 70Hz
Range 400Hz nominal Adjustable 360 to 440Hz
Differential 50 & 60Hz Adjustable 0.3 to 3Hz
Differential 400Hz Adjustable 3 to 30Hz
Repeatability Better than 0.5% of full span
Operating time Typically 200 ms

AUXILIARY All units self powered

WEIGHT & CASE SIZE

Single units Approx. 0.4kg. 55mm case

Combined units Approx. 0.6kg. 100mm case

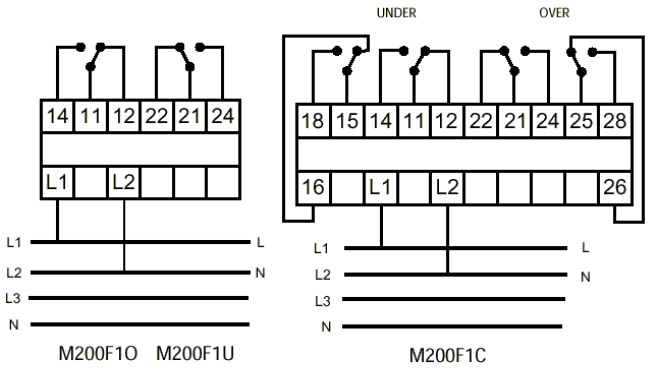
1. 발주하실때 지정하시면 TIME DELAY 를 가진 제품을 공급합니다. 단, TIME DELAY 는 발주시 지정하신 시간으로 고정됩니다. 지정가능한 TIME DELAY 는 1~10 초입니다.

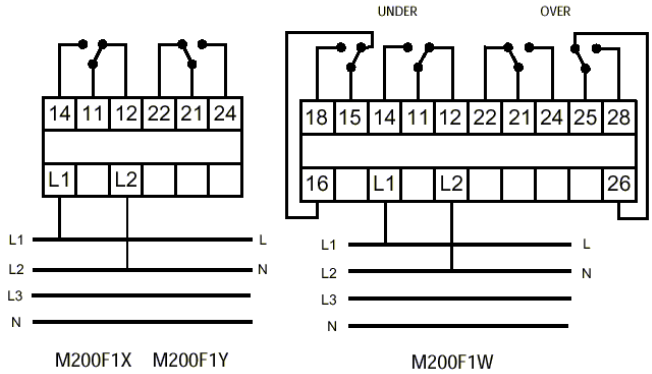
2. 사용자가 TIME DELAY를 상황에 맞게 직접 조정하길 원한다면 다음의 제품중에서 선택하시기 바랍니다. 기존 제품의 DIFFERENTIAL조정노브가 TIME DELAY로 바뀐 제품을 공급합니다. 이 경우에는 TIME DELAY는 200ms에서 10초까지 조정할 수 있으며, DIFFERENTIAL은 1%로 고정됩니다.

M200-F1X Single or 3 phase under frequency

M200-F1Y Single or 3 phase over frequency

M200-F1W Single or 3 phase combined frequency





M200 시리즈 보호계전기

M200-R 시리즈

REVERSE POWER RELAY 는 AC 발전기의 전력의 방향을 감시합니다. 만약 시스템의 전류가 역전되어서 미리 설정한 범위보다 크면 RELAY 가 동작합니다.
적당하게 RELAY 동작값과 TIME DELAY 를 설정하면, 발전기이상이 발생했을때 보호할수 있고 또한 동기중에 일어나는 일시적인 TRIP 도 피할 수 있습니다.
빨간 LED 는 RELAY 가 동작하는 것을 보여줍니다.
녹색 LED 는 전원이 들어오면 켜집니다.

SELECTION GUIDE

M200-RP1 Single phase or 3 phase 4 wire
M200-RP3 3 phase 3 wire

TYPICAL APPLICATIONS

The M200 reverse power relay is used to monitor the direction of power from AC generators. If the current in the system being monitored is reversed, to a value greater than the customer adjustable pre-set limit, the relay will energise.
The adjustable trip point is 2 to 20% of input current. An adjustable time delay of 0 to 20 seconds is provided. Correct setting of the trip point and time delay will ensure protection against motoring in the event of a generator failure and prevent tripping due to transients encountered during synchronising.
A red LED indicates the state of the relay and a green LED indicates the condition of the power supply

TECHNICAL SPECIFICATION

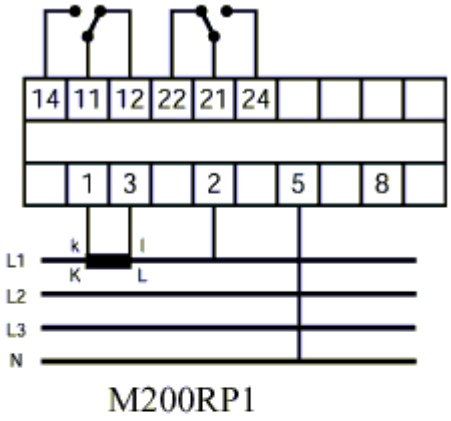
INPUT
Rated value Un 57.8 <500V ± 25%
Rated value In C. T operated 1 or 5A amp direct
connection 0.2 to 10A
Frequency 50 / 60 /400Hz
Burden <3VA voltage < 0.5 VA current
Overload 1.5 x Un 2 x In continuous
2x Un 10 x In for 3 seconds
SETPOINT
Range 2% to 20% reverse current
Repeatability Better than 0.5% of full span
Time delay Adjustable 200ms to 20 sec
Hysteresis 1%
AUXILIARY
All units self powered
WEIGHT & CASE SIZE Approx. 0.6kg. 100mm case

ORDERING INFORMATION

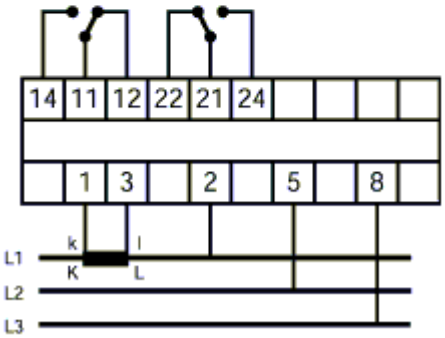
Product Code In Input Un Input Freq.
M200-RP3 1 Amp 400V 50Hz

OPTIONS

1. Adjustable time delay max 30 seconds
2. AC auxiliary in range 57.7 to 480 volts
3. Calibration at nominal Hz 35 450Hz
4. Calibration at temperature other than 23 C



M200RP1



M200RP3

M200-PL 시리즈

SYNCHROCHECK RELAY 는 두 개의 AC 전원을 동기시키는데 사용합니다. 동기되려면 주파수, 위상각, 전압이 허용범위안에 있어야 합니다.

M200-PLL 은 발전기 1 대와 부스 1, 혹은 2 대의 발전기를 동기시킬때 사용합니다. PLL 은 사용자가 DIFFERENTIAL 전압을 10~30%까지 조정할 수 있읍니다. 이 전압은 전기적으로는 6 도~20 도를 의미합니다.

M200-PLD 는 PLL 과 동작하는 것은 같지만 DEAD BUS 용입니다. 이 제품은 발전기전원만 가지고도(주 전원에 이상이 발생하였을 때) RELAY 가 동작합니다.

SELECTION GUIDE

M200-PLL 1 generator 1 bus or 2 generators

M200-PLD 1 generator 1 bus with dead bus facility

Both units can be used on Single or 3 phase systems.

TYPICAL APPLICATIONS

The M200-PLL & PLD are synchronising check relays, also known as paralleling relays. They are used to ensure at two AC supplies are synchronised. For a system to be synchronised, frequency, phase angle and voltage have to within pre-set limits.

The M200-PLL can monitor either mains bus bar and incoming generator or two generators.

The PLL has customer adjustment of the differential voltage between 10 to 30%. This voltage corresponds to 6 to 20 electrical degrees. The unit compares the input voltage and phase relationship of the bus bar to that of the generator when the signal is within the pre-set limits, the relay energises.

The M200-PLD operates as the M200-PLL but has the additional feature of the dead bus facility. This enables the relay to energise with a generator supply only, which is a common requirement when mains failure occurs.

TECHNICAL SPECIFICATION

INPUT

Rated value Un 57.8<500V± 25%

Frequency 50 /60/400 Hz

Burden <4VA terminals marked GEN

<2VA terminals marked BUS

Overload 1.5x Un continuous

10x Un for 3 seconds

SETPOINT

Range Adjustable 10% to 30% of nominal system voltage

(6-20 electrical degrees)

Repeatability Better than 0.5% of full span

Differential Fixed at 5%

Operating time Typically 500ms

AUXILIARY

Both units self powered.

WEIGHT & CASE SIZE Approx. 0.6kg. 100mm case

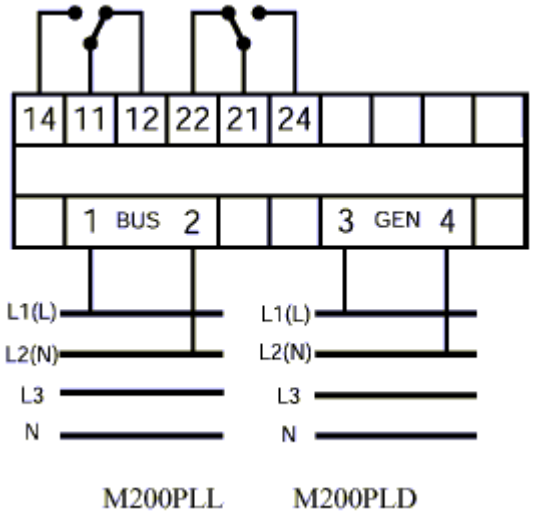
ORDERING INFORMATION

Product Code System Voltage Freq. Options

M200-PLD 400V 50Hz Cal at 35 0 C

OPTION

1. *Calibration at temperature other than 23 0*



M200-ST3

SPEED SENSING RELAY 은 발전기의 엔진의 속도를 감지하는데 사용합니다. 플라이휠에 근접 설치되어있는 픽업은 놓은 주파수펄스를 발생하게 되는데 이것은 회전하면서 지나치는 톱니바퀴의 이의 갯수와 비례합니다. 이 주파수는 ST3 에 의해 mA 신호로 변환되는데 이것은 플라이휠의 회전속도와 비례하게 됩니다.

시동, 정상속도, 과속 등의 제어를 위하여 사용자는 RELAY 에서 이러한 값들을 설정할 수 있습니다.

크랭크스피드 : 10 ~ 50%

UNDER SPEED : 50 ~ 100%

OVER SPEED : 100 ~ 133%

일반적인 시동은 다음과 같습니다.

모터의 속도가 (혹은 주파수가 일어나서) 크랭크설정점에 다다르면, 크랭크 RELAY 가 ENERGIZE 되며, UNDER SPEED 설정점에 다다르면 UNDER SPEED RELAY 가 ENERGIZE 됩니다. 이제 모터는 정상상태에 (모든 RELAY 가 ENERGIZE 됨) 다다른 것입니다. 만약 저속이나 과속상태가 되면 , 해당하는 RELAY 는 DE-ENERGIZE 됩니다.

두가지 보완장치가 추가되어있는데. 만약 픽업센서가 부러기면 과속 RELAY 가 DE-ENERGIZE 됩니다. 입력주파수가 20%이하로 떨어지면 크랭크 RELAY 가 DE-ENERGIZE 됩니다.

mA 출력신호는 속도를 나타내는 외부의 지시계기나 제어실의 PLC 와 연결할 수 있습니다.

TYPICAL APPLICATIONS

The M200-ST3 is most commonly used to detect the speed of engines used in generating sets. The pick-up, situated close to the flywheel, produces a high frequency pulse train directly proportional to the number of teeth passing it. The frequency is converted by the ST3 into a mA signal directly proportional to the rotational speed of the flywheel.

The relay provides the user with the following adjustments, which allows the control of start up and normal running and protects against over and under speeds of the generator.

Adjustment of crank speed 10 to 50%

Adjustment of under speed 50 to 100%

Adjustment of over speed 100 to 133 %

A mA output signal proportional to input frequency. Typical start-up as follows -

When the speed of the motor reaches the crank's set-point, the crank relay energises, disengaging the crank starter. When the under speed set-point is reached, the under speed relay is energised and the motor is now in the normal running condition with all relays energised.

Should an under or over speed condition occur the appropriate relay is de-energised. Two other safety features are incorporated; if the pick-up sensor input lead breaks the over speed relay will de-energise also the crank relay will only de-energise when the input frequency goes below 20% of the set-point. The mA output signal can be fed to digital or analogue meters scaled in speed, or to provide a control signal to a PLC etc.

TECHNICAL SPECIFICATION

INPUT Pulses 5V-75V peak to peak

Frequency 1000-10000 Hz (speed of rotation

RPM x number of teeth / 60)

Open circuit protection Over-speed relay de-energised

OUTPUT Rated value 0-1mA = 133% of nominal speed

Load resistance < lOk Ohm

Calibration Value 0.75mA = 100% of nominal speed

SETPOINT Range Crank 10 to 50%

Under 50 to 100%

Over 100 to 130%

Repeatability Better than 0.5% of full span

Hysteresis 2% (under, over) crank resets at 20% setting

Operating time Typically 200 ms

AUXILIARY DC Voltage 24 VDC ±20%

WEIGHT& CASE SIZE Approx. 0.5kg. l00mm case

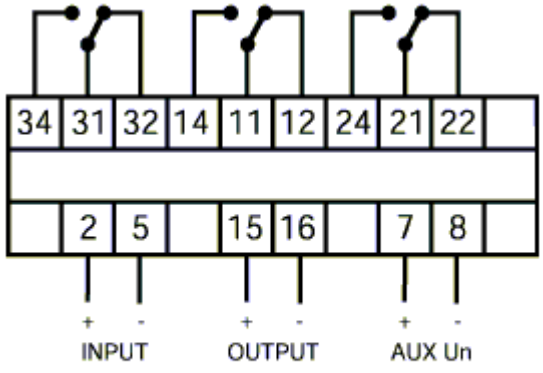
NOTE: The 3 relays in this product are single pole changeover.

ORDERING INFORMATION (예)

Normal running speed 1800 rpm

Number of teeth on flywheel 50

Magnetic pick up output voltage 10 volt pk-pk



M200ST3

M200-TA 시리즈

DC TRANSDUCER TRIP RELAY 는 TRANSDUCER 나 TRANSMITTER 로부터 입력을 받아 TRANSDUCER 의 신호가 설정한 범위를 벗어나면 RELAY 가 동작합니다. M100 시리즈의 어느 TD 도 연결할 수 있습니다.
일반적으로 전력을 제어하는데 많이 사용합니다. DC 전압이나 DC 전류도 입력으로 사용할 수 있습니다.
입력신호가 설정치를 초과했을 때, OVER TRIP RELAY 는 ENGERGIZE 됩니다.
또한 입력신호가 설정치 이하로 내려가면, UNDER TRIP RELAY 는 DEENERGIZE 됩니다.
빨간 LED 는 RELAY 가 동작하는 것을 보여줍니다. 녹색 LED 는 전원이 들어오면 켜집니다.

SELECTION GUIDE

M200-TAU DC volts or mA under trip
M200-TAO DC volts or mA over trip
M200-TAC DC volts or mA combined trip

TYPICAL APPLICATIONS

The M200 DC transducer trips have endless applications. As the name implies they are designed to accept inputs from transducers and transmitters, and provide a relay operation when the transducer signal deviates outside a pre-set limit.
Any of the M100 series transducers can be used with the transducer trip. A typical application is to control power using a M100-WA5 with a 4-20mA signal fed to a M200-TAO.
For example the output goes above a pre-set limit of 80%, the TAO relay will close, setting off an alarm or shutting down a process.
Either DC voltage or DC current inputs can be used. As is common with all the M200 relays, on over units the relay energises when the input signal exceeds the trip point and on under units the relay de-energises when the input signal goes below the trip point.
A red LED indicates the state of the relay, whilst a green LED indicates the condition of the power supply.

TECHNICAL SPECIFICATION

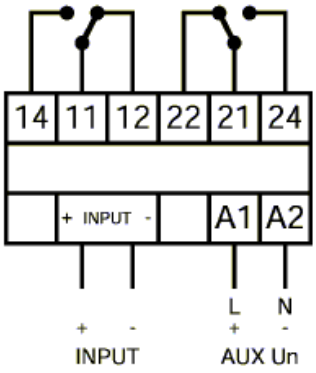
INPUT Rated value In 0<20mA or 4- 20mA
Voltage drop 1 volt
Rated value Un 1<50 volt or 1-5 volt
Impedance 10k Ohm / Volt
Overload 2xIn 1.5x Un continuous
10x In 2x Un for 3 seconds
SETPOINT
Range Over Adjustable 40% to 120% for both voltage and current input.
Range Under Adjustable 0% to 80% for both voltage and current input.
Repeatability Better than 0.5% of full span
Time delay Adjustable 200 ms to 10 seconds
Differential Fixed 5%
AUXILIARY
AC Voltage 115/230/400 V ± 25% / 45-65Hz / 2VA
DC voltage 24 volt (± 20% / galvanically isolated) <3 watt
WEIGHT & CASE SIZE
Single units Approx. 0.4kg. 55mm case
Combined unit Approx. 0.6 kg. 100mm case

ORDERING INFORMATION

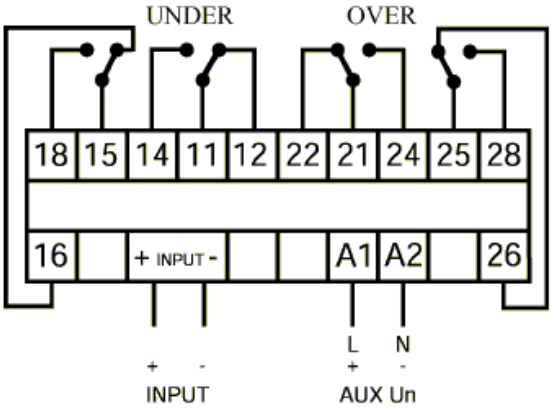
Product Code Input Vn or In Aux Freq
M200-TAC 1mA 110v 50Hz

OPTIONS

1. Adjustable time delay max 30 seconds
2. AC auxiliary in the range 57.7 to 480 volts
3.Calibration at nominal Hz 35.....450Hz
4.Calibration at temperature other than 23° C



M200TAO M200TAU



M200TAC

M200-TJ , M200-TK 시리즈

THERMOCOUPLE TRIP RELAY 는 써모커플을 감시하여 미리 설정한값을 초과하면 RELAY 가 동작합니다.
J TYPE 이나 K TYPE 이나 넓은 적용범위를 가지고 있습니다.
입력신호가 설정치를 초과했을 때, OVER TRIP RELAY 는 ENGERGIZE 됩니다.
또한 입력신호가 설정치 이하로 내려가면, UNDER TRIP RELAY 는 DEENERGIZE 됩니다.
빨간 LED 는 RELAY 가 동작하는 것을 보여줍니다. 녹색 LED 는 전원이 들어오면 켜집니다.

SELECTION GUIDE

M200-TJU J type thermocouple under trip
M200-TJO J type thermocouple over trip
M200-TKU K type thermocouple under trip
M200-TKO K type thermocouple over trip

TYPICAL APPLICATIONS

Designed to monitor thermocouples and provide a relay signal if the temperature being monitored exceeds the pre-set limit. J and K type thermocouples inputs are available covering a wide range of temperatures. As is common with all the M200 relays, on over units the relay energises when the input signal exceeds the trip point and on under units the relay de-energises when the input signal goes below the trip point. A red LED indicates the state of the relay, whilst a green LED indicates the condition of the power supply.

TECHNICAL SPECIFICATION

INPUT *Type J Fe/const Min range 0-185ºC (min span 10mV)*
Max range 0-870ºC (max span 50mV)
Type K NiCr/NiAl Min range 0-245ºC (min span 10mV)
Max range 0-1230ºC (max span 50mV)
Thermocouple
break protection Upscale energise
Cold junction
Compensation Automatic over range 0-50 C
Overload 10 x Input continuous
SETPOINT Range Over Adjustable 40% to 120% for both voltage nd current inpu Range Under Adjustable 0% to 80% for both voltage and current input
Repeatability Better than 0.5% of full span
Time delay Adjustable 200ms to 10 seconds
Differential Fixed 2%
AUXILIARY AC Voltage 115/230/400V ± 25% / 45-65Hz / 2VA
DC Voltage 24 volt (± 20% / galvanically isolated) <3 Watt
WEIGHT & CASE SIZE Approx. 0.4kg 55mm case

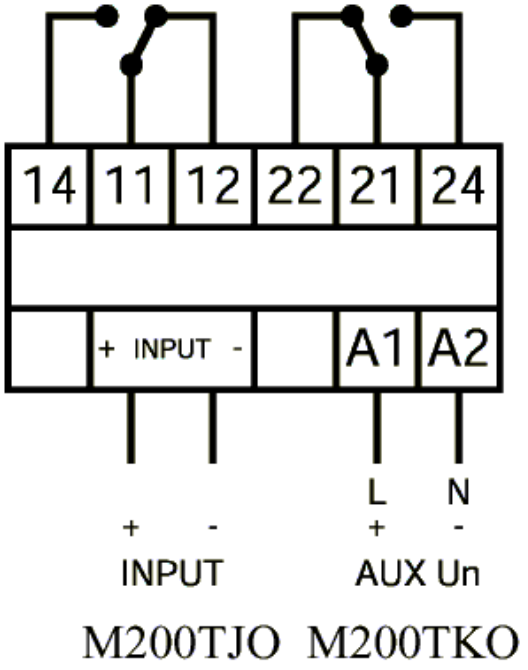
ORDERING INFORMATION

Product Code Temp range Aux Freq Options
M200-TJO 0-300ºC 120V 60Hz 0-30 sec T/D

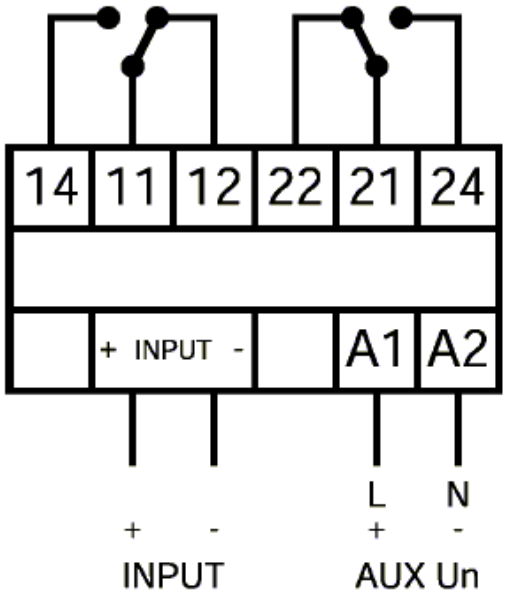
OPTIONS

1. Adjustable time delay max 30 seconds
2. AC auxiliary in the range 57.7 to 480 volts
3. Calibration at temperature other than 23° C

M200 시리즈 보호계전기



M200TJO M200TKO



M200TJU M200TKU

M200-TT 시리즈

THERMISTOR TRIP RELAY 는 THERMISTOR 로부터 입력을 받으며 주로 모터의 코일을 보호하는데 사용합니다. THERMISTOR 가 설정한 온도보다 낮을때는 그 저항은 낮으며 RELAY 는 ENERGIZE 됩니다.

녹색 LED 는 안전한 상태에 있다는 것을 보여줍니다.

온도가 미리 설정한 것보다 초과하면 그 저항은 빠르게 증가하며 RELAY 는 이를 감지하여 DE-ENERGIZE 됩니다. TTM 은 수동으로 RESET 하는 제품이며 TTA 는 RELAY 가 동작했더라도 한번 설정치이하로 내려가면 자동으로 RESET 됩니다.

노란 LED 는 전원이 정상적이라는 것을 보여줍니다.

SELECTION GUIDE

M200- TTA Automatic reset

M200-TTM Manual reset

TYPICAL APPLICATIONS

The M200 thermistor trip accepts positive temperature coefficient thermistor inputs. Typically used to monitor temperature in motor windings.

When the thermistor is below its predetermined temperature the resistance is low and the M200-TTA / TTM relay is energised. A green LED indicates the safe condition. When the temperature exceeds the predetermined temperature, the resistance of the thermistor rapidly increases, this increase in temperature is detected by M200-TTA/TTM and the relay is de-energised.

The M200-TTM is manually reset. Once the relay has de-energised it will stay de-energised regardless of the temperature being monitored. The relay can only be reset

via the reset push button on the front of the unit. The M200-TTA automatically resets once the temperature has dropped below the trip point

A yellow LED is provided to indicate the condition of the power supply.

TECHNICAL SPECIFICATION

INPUT

Positive temperature coefficient thermistors <1500 Ohms max at nominal temperature. Sensors can be connected in series but 1500 ohm must not be exceeded.

Trip point 2500-3500 Ohms

Reset point 1500-2300 Ohms

Total resistance of sensor loop 1500 Ohms max at nominal temperature

Differential Fixed 5%

Repeatability Better than 5% of range

RESET

M200-TTA Automatic

M200-TTM Manual via push switch on front of product

AUXILIARY

AC Voltage 115/230/400V ± 25% / 45-65Hz / 2VA

DC Voltage 24 volt (± 20% / non isolated) <3 watt

WEIGHT & CASE SIZE Approx. 0.3kg 55mm case

M200 시리즈 보호계전기

ORDERING INFORMATION

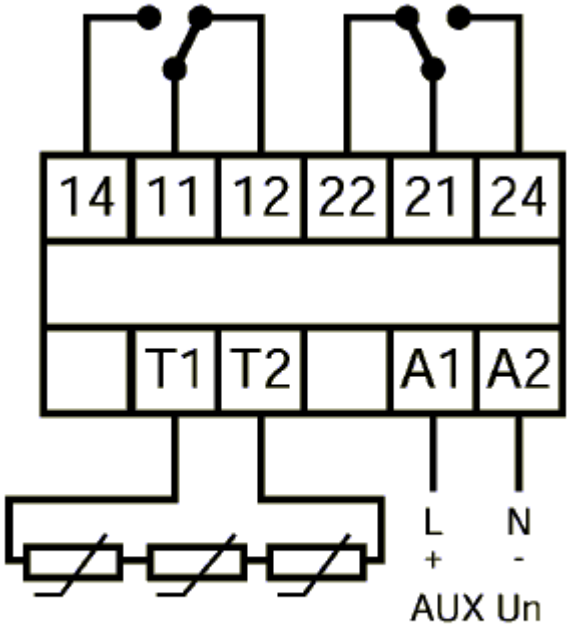
Product Code Aux Freq Options

M200-TTA 230V 50Hz

OPTIONS

1. AC auxiliary in the range 57.7 to 480 volts

2. Calibration at temperature other than 23 C



M200TTA M200TTM

M200-MV 시리즈

mV TRIP RELAY 는 SHUNT, 센서, TD 로부터 DC mili VOLT 를 입력으로 받습니다.

주로 DC 충전시스템에서 설비를 보호하는데 사용합니다. 예를 들어 400AMP/ 75mV 를 사용한다고 할 때, 75mV 가 이 RELAY 에 연결되며, 사용자가 300AMP 를 초과하지 않기를 바란다면 RELAY 의 설정을 75%(56.25mV)에 하면 됩니다. 만약 전류가 300AMP 를 초과하면 RELAY 는 ENERGIZE 됩니다.

입력신호가 설정치를 초과했을 때, OVER TRIP RELAY 는 ENGERGIZE 됩니다.

또한 입력신호가 설정치 이하로 내려가면, UNDER TRIP RELAY 는 DEENERGIZE 됩니다.

빨간 LED 는 RELAY 가 동작하는 것을 보여줍니다. 녹색 LED 는 전원이 들어오면 켜집니다

SELECTION GUIDE

M200-MVU mV under trip

M200-MVO mV over trip

M200-MVC mV combined trip

TYPICAL APPLICATIONS

The mV trip relays will accept DC millivolt signals from shunts, sensors and transducers.

A common application is to protect equipment from over current in a DC charging system. For example using a 400A to 75mV shunt. The 75mV signal is fed to the M200-MVO if the customer wishes to ensure the current does not exceed 300 amps then the MVO trip would be set at 75 % (56.25mv). If the current goes above 300 Amps the relay would energise. As is common with all the M200 relays, on over units the relay energises when the input signal exceeds the trip point and on under units the relay de-energises when the input signal goes below the trip point.

A red LED indicates the state of the relay, whilst a green LED indicates the condition of the power supply.

TECHNICAL SPECIFICATION

INPUT

*Rated value mV dc l**0**-999.9mV dc*

Input Impedance 50k Ohm

Source impedance 100 ohms max

Overload 10 x Input continuous

SETPOINT

Range Over Adjustable 40% to 120%

Range Under Adjustable 0% to 80%

Repeatability Better than 0.5% of full span

Time delay Adjustable 200 ms to 10 seconds

Differential Fixed 5%

AUXILIARY

AC Voltage 115/230/400V ± 25% / 45-65 Hz / <2VA

DC Voltage 24V (± 20% galvanically isolated) < 3 W

WEIGHT & CASE SIZE

Single units Approx. 0.4kg 55mm case

Combined units Approx. 0.6kg 100mm case

ORDERING INFORMATION

Product Code Input Aux Freq Options

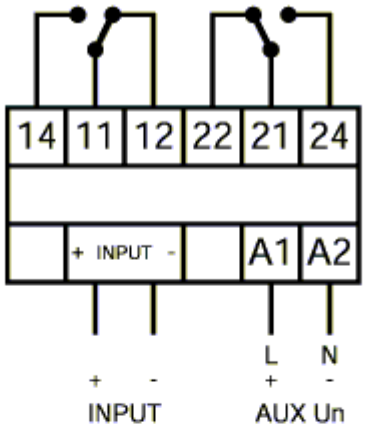
M200-MVU 75mV 230V 50Hz Cal 40ºC

OPTIONS

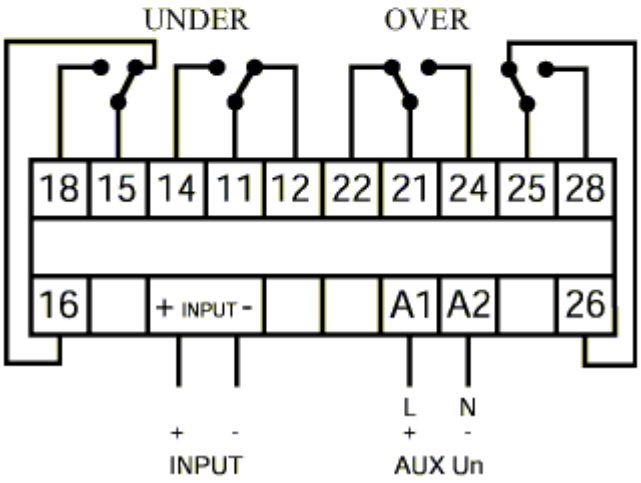
1.Adjustable time delay max 30 seconds

2.AC auxiliary in the range 577 to 480 volt

2. Calibration at temperature other than 23° C



M200MVO M200MVU



M200MVC