



# MU2300

## Introduction

The MU2300 is a microprocessor based numerical relay for voltage protection functions in electrical distribution network.

## Features

- Multifunction numerical voltage protection relay
- Low-set undervoltage stage ( $U<$ ) with definite-time or inverse-time characteristic
- High-set undervoltage stage ( $U<<$ ) with definite-time
- Low-set overvoltage stage ( $U>$ ) with definite-time or inverse-time characteristic
- High-set overvoltage stage ( $U>>$ ) with definite-time
- Negative sequence overvoltage protection ( $U_{2>}$ ) with definite-time or inverse-time characteristic
- Neutral displacement / residual overvoltage protection ( $U_{0>}$ ) with definite-time or inverse-time characteristic
- Can be used in single-phase or three-phase operation
- Multi-function isolated digital input with wide input voltage range
- Fault record and event code recording
- Five programmable voltage-free output contacts
- Isolated RS485 Modbus - RTU communication

### NEGATIVE SEQUENCE OVER-VOLTAGE ELEMENT

Negative sequence over-voltage setting, $U_{2>}$	: 5 - 200 V
Time multiplier, TMS	: 0.5 - 100
Negative sequence over-voltage definite time $tU_{2>}$	: 0 - 600 s

### RESIDUAL OVER-VOLTAGE ELEMENT

Residual over-voltage setting, $U_{0>}$	: 0.5 - 130 V
Time multiplier, TMS	: 0.5 - 100
Residual over-voltage definite time $tU_{0>}$	: 0 - 600 s

## Technical Data

### INPUTS

#### Measuring input:

Rated voltage input	: 57-130 V
Rated frequency	: 50 / 60 Hz

#### Rated auxiliary voltage:

Model MU2300-150D	: 24~150 V DC
Model MU2300-240AD	: 85~265 V AC 110~340 V DC

#### Power consumption:

AC auxiliary voltage	: 6 ~ 10 VA typical
DC auxiliary voltage	: 5 ~ 9 W typical

#### Binary Input:

External binary input	: 85~265 V AC/DC
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### OUTPUTS

#### 5 programmable contacts + 1 IRF contact:

Rated voltage	: 250 V AC/DC
Continuous carry	: 5 A
Make and carry for 0.2 s	: 30 A

#### Contact specification:

Expected electrical life	: $10^5$ operations
Expected mechanical life	: $5 \times 10^6$ operations

### UNDER-VOLTAGE ELEMENT

Low set setting $U<$	: 5 - 130 V
High set setting $U<<$	: 5 - 130 V
Time multiplier, TMS	: 0.5 - 100
Low set Definite time $tU<$	: 0 - 600 s
High set Definite time $tU<<$	: 0 - 600 s

### OVER-VOLTAGE ELEMENT

Low set setting $U>$	: 5 - 200 V
High set setting $U>>$	: 5 - 260 V
Time multiplier, TMS	: 0.5 - 100
Low set definite time $tU>$	: 0 - 600 s
High set definite time $tU>>$	: 0 - 600 s

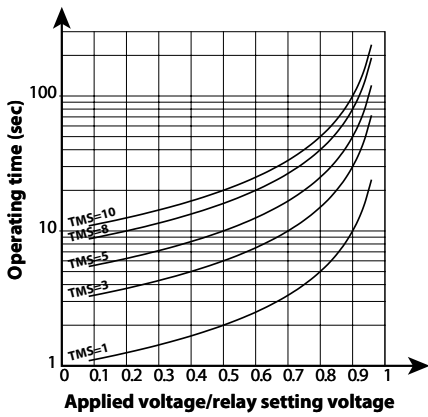
### COMMUNICATION

RS485 Modbus - RTU

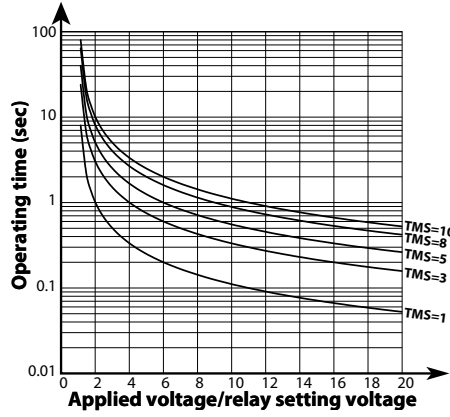
### ENVIRONMENTAL CONDITIONS

Temperature	: -5°C to +55°C
Humidity	: 56 days at 93% RH and 40°C non-condensing

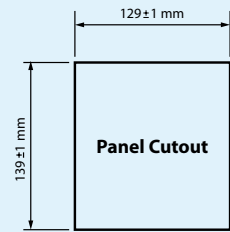
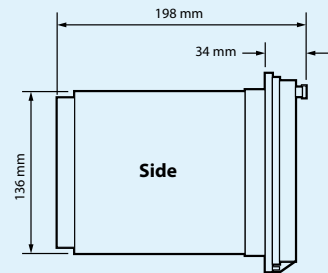
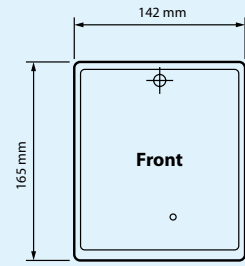
## UNDERVOLTAGE CHARACTERISTIC



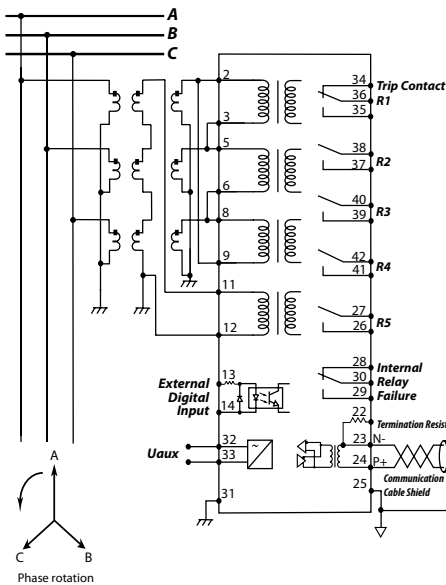
## OVERVOLTAGE CHARACTERISTIC



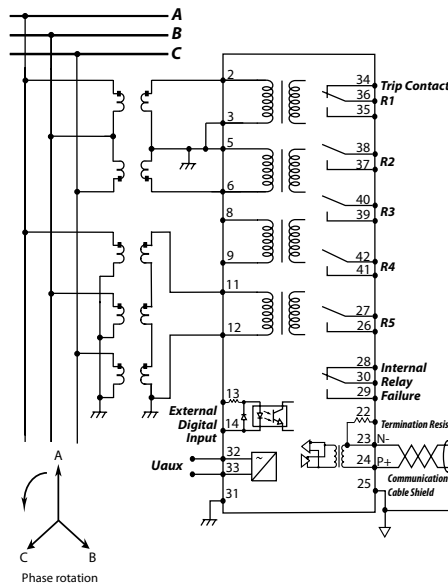
## CASE DIMENSIONS



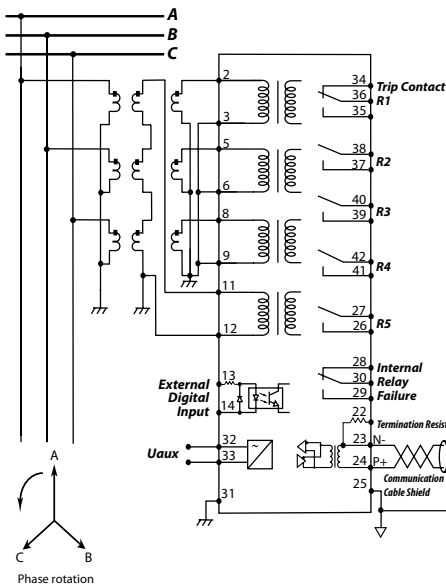
## TYPICAL APPLICATION DIAGRAMS



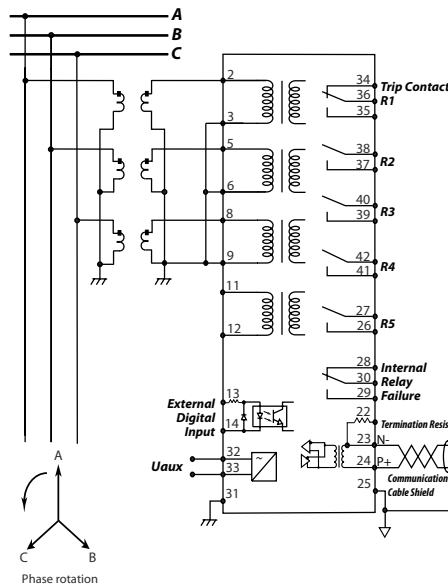
3V<sub>p-p</sub> + V<sub>residual</sub> connection



2V<sub>p-p</sub> + V<sub>residual</sub> connection



3V<sub>p-n</sub> + V<sub>residual</sub> connection



3V<sub>p-n</sub> connection

## Ordering Information

MODEL	DESCRIPTION
MU2300-150D	For 50 / 60 Hz system, auxiliary voltage 24 ~ 150 V DC
MU2300-240AD	For 50 / 60 Hz system, auxiliary voltage 85 ~ 265 V AC or 110~340 V DC

