
**Digital Intelligent Protective Relay**
**- Selective & Directional Ground**

◆ It is a digital complete arithmetic relay equipped with DSP, and various operating times and operating voltages can be easily corrected.

◆ Powerful calculation function and 32 sampling per channel, 4×20 LCD provides convenient MIMIC function and various types of display.

◆ FAULT VIEW program provided Easy system design using soft PLC function, free application to PMS system by applying MOD-BUS RTU protocol, and stable system operation by enhancing EMC performance for application to high and low voltage s witchboards.

◆ As a voltage type relay that selectively detects ground faults in grounded and ungrounded systems, logic can be configured with a simple PLC program for input/output contacts, and can be applied to various sequences and easily configured for specific purposes.

◆ Various monitoring and measurement functions are supported, and 16 Faults, 128 System Events, 16 Waves and maximum waveform data can be saved, making accident analysis easier. And the self-diagnosis function is performed during operation, and an alarm is output when an error occurs.

◆ Through the operating program for PC interface, all protection elements can be set and monitored, and various functions supported by the product can be set and checked.

## Specification Overview

▶ By storing 128 events, information in case of line failure is stored in real time, including accident time.

▶ Built-in Fault Recording function to save the accident waveform in case of an accident (up to 16)

▶ Instantaneous and limited time, IEC 60225 standard 2 TIME CURVE built-in (definite time, inverse time)

▶ The set value and LOGIC configuration of the relay are permanently stored regardless of the presence or absence of control power.

## Use Envirnmant

| | |
|---|---|
| Store Temp. Range | -10℃ ~ 55 ℃ |
| Use Temp. Range | -25 ℃ ~ 70 ℃ |
| Use Humidity Range | Daily 30 ~ 80% |
| Elevation | Low than 1,000m Sea level |
| etc | Place no vibration and shock |
| Applicable Standard | KEMC 1120, IEC60255 |

## Case

| | |
|---|---|
| Type | Rectangular Drawout Type |
| Color | Munsell No. N1.5 (Black) |
| Material | LUPOY |

## Ratings

| | | |
|---|---|---|
| Rated Input | Frequency | 60Hz/50Hz |
| | Input Votage | GVT : 110/190V |
| | Rated Current | CT : 5A, ZCT : 200mA /1.5mA |
| | Control Power | AC/DC 100V ~ 240V |
| | Power Consumption | Stand by : less than 10W/ Run : less than 20W |
| | Input Burden | GVT : 0.5VA, CT : 0.5VA |
| Contact Capacity | Digital Input (DI) | Digital Input : AC/DC 100V ~ 240V |
| | Output Contact (Relay 2Ports for DO Trip) | AC 240V 30A, DC 28V 30A: Resistive Load |
| | Output Contact (Relay 2Ports for DO ALARM) | AC 240V 10A, DC 30V 10A : Max. switching voltage/ current |

## Selective Ground Fault Element [67G]

| | | |
|---|---|---|
| RUN | Zero Phase Current Correction( Io ) | 0.1A ~ 1.0A ( 0.01A STEP ) , Acurracy ±5% or ±10mA |
| | Zero Phase Voltage Correction( Vo ) | 10V ~ 80V( 1V STEP ) , Acurracy ±5% or ±1V |
| | Reference phase Correction ( Ang ) | -90º ~ +90 º ( 1.0º STEP ) , Acurracy ±5º |
| | Operation Phase Correction ( Ang ) | 기준 위상각 ± 90º ( 1.0º STEP ) , Acurracy ±5º |
| | Operation time correction | 0.10 ~ 60.0s ( 0.01s STEP ) , Acurracy ±5% or ±35ms |
| | Operation time Characteristic | DT |
| RETURN | Return value | 95% and more of correction value |
| | Return time | Less than 100ms |
| | Output holding time | 0.00 ~ 30.00s (0.01 STEP) |

## Directional Grond Fault Element [67N]

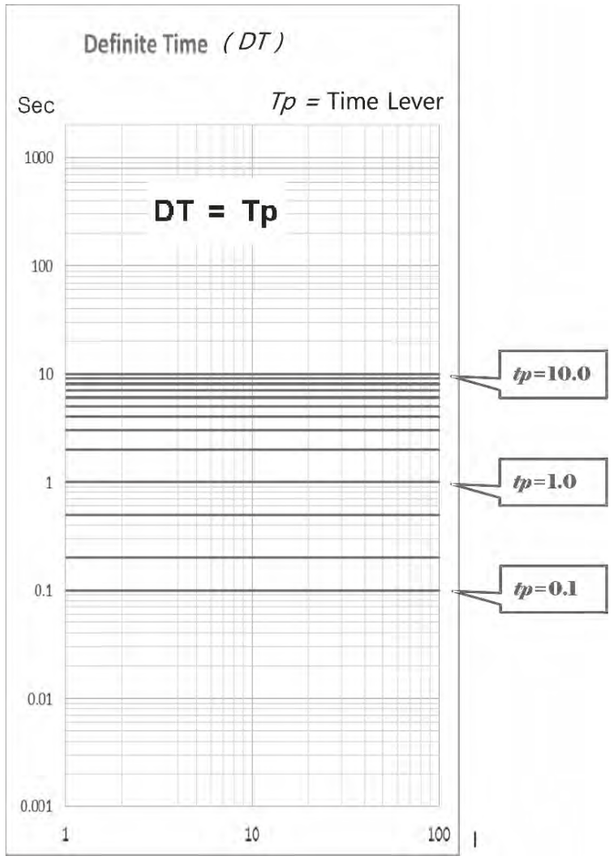
| | | |
|---|---|---|
| RUN | Zero Phase Current Correction( Io ) | Instantaneous: 3A~40A(1.0A STEP) |
| | | Limit-time: 0.2A~5A(0.1A STEP) |
| | Zero Phase Voltage Correction( Vo ) | 10V ~ 80V( 1V STEP ) , Acurracy ±5% or ±1V |
| | Reference phase Correction ( Ang ) | -90º ~ +90º ( 1.0º STEP ) , Acurracy ±5º |
| | Operation Phase Correction ( Ang ) | 기준 위상각 ± 90º ( 1.0º STEP ) , Acurracy ±5º |
| | Operation time correction | 0.10 ~ 60.0s ( 0.01s STEP ) , Acurracy ±5% or ±35ms |
| | Operation time Characteristic | DT |
| RETURN | Return value | 95% and more of correction value |
| | Return time | Less than 100ms |
| | Output holding time | 0.00 ~ 30.00s (0.01 STEP) |

## Ground Fault Over Voltage Element [64]

| | | |
|---|---|---|
| RUN | Zero Phase Voltage Correction( Io ) | 10 ~ 80V (1V STEP), Acurracy ±5% or 1V |
| | Operation Time Correction | 0.10 ~ 60.0s (0.01s STEP), Acurracy ±5% or ±35ms |
| | Operation time Characteristic | DT, NI |
| RETURN | Return value | 95% and more of correction value |
| | Return time | Less than 100ms |
| | Output holding time | 0.00 ~ 30.00s (0.01 STEP) |

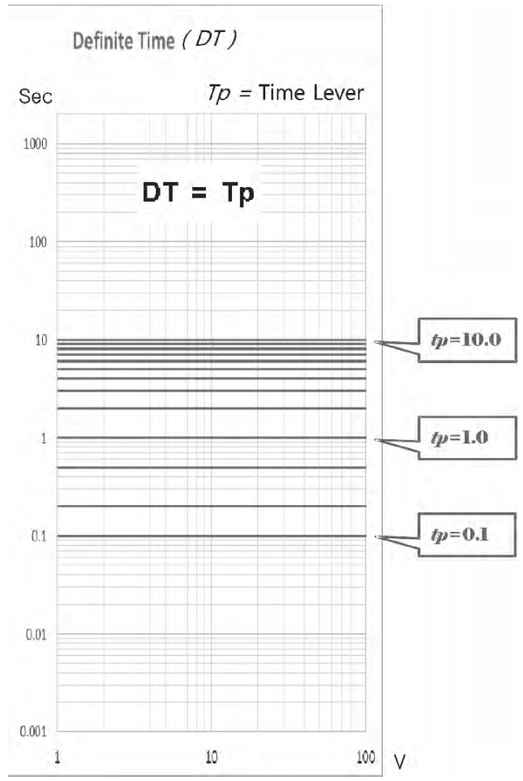
## Protection Relay Characteristic Curve

### IEC DT Curve ( Selective / Directional Ground Fault )

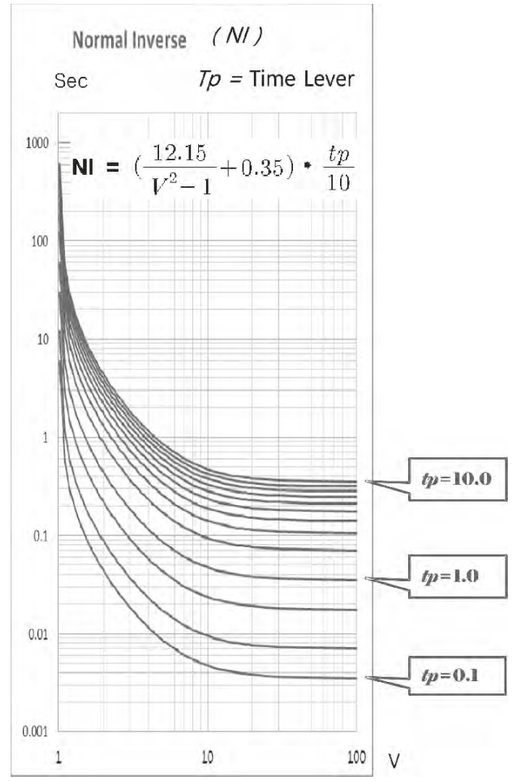



## Protection Relay Characteristic Curve

### IEC DT Curve




### IEC NI Curve




Continuous monitoring function [Self-diagnosis]

## Add-on Function

| | |
|---|---|
| CT/PT Calibration | It monitors whether CT/PT Calibration is performed, and if it is not valid data or calibration is not performed, it is recorded in the SYSTEM event. |
| Watch Dog | It judges whether DSP operates normally, and if the DSP does not operate normally, the external monitoring IC forcibly resets the DSP and peripheral devices and boots in the same order as when the first power is booted. In this case, there is no separate indication. Determining whether the DSP operates normally, |
| Memory and correction value abnormal monitoring | Monitors external memory errors. If the external memory does not operate normally, “FRAM ERROR” is displayed on the LCD, and if the correction value is abnormal, “MEMORY ERROR” is displayed and recorded in the SYSTEM event. |

## EVENT Function [EVENT RECORDING]

### Add-on Function

| | |
|---|---|
| Fault Event : 16 count | |
| Trigger | Pickup, Operation |
| Time Tag | Time of occur event |
| Main Information | Fault voltage or current |
| Sub Information | DI/DO Status |
| System Event : 128 count | |
| Trigger | Power ON, Setting changed, DI/DO Status change |
| Time Tag | Time of occur event |
| Wave : 16 count | |
| Trigger | Operation |
| Sample/Cycle | 32 |
| Saving Cycle | 30 Cycle(50/60Hz common) |
| Time Tag | Time of occur operation |

## Measurement display function [METERING]

### Add-on Function

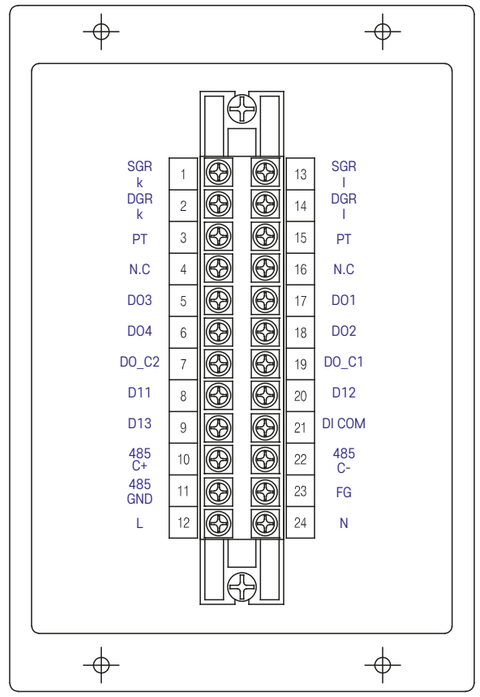
| Metering Items | Display range(Based on device display value) | Error (Device input rating standard) |
|---|---|---|
| Phase Current(A) | 0.000A ~ 999.999kA (Cut-off less than 2% of rated value) | ±0.5[%] at In, ±0.5[%] or ±0.05[A] (Rated 5A) |
| Zero Phase Current(N) | 0.000A ~ 999.999kA (Cut-off less than 2% of rated value) | ±0.05 or ±0.05 (Rated 5A) |

## DO Default Setting

### 부가 기능

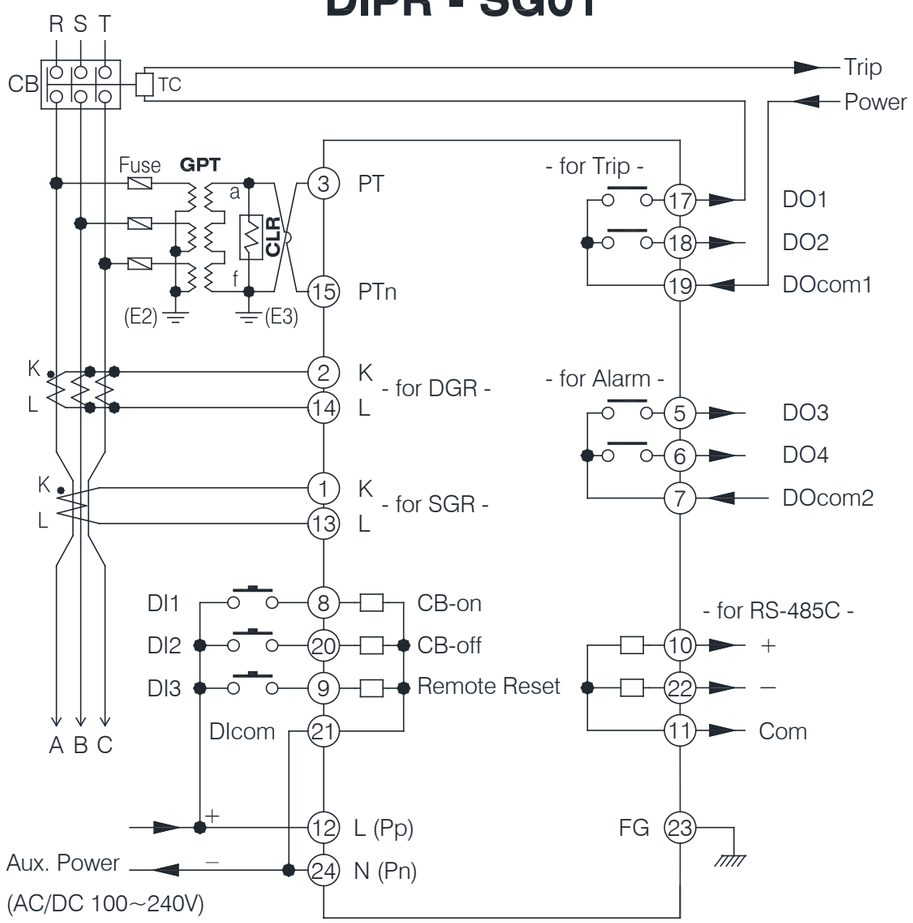
| DEVICE | ITEMS | SETTING |
|---|---|---|
| DIPR-SG01 | DO 01 | TRIP(SGR, DGR, OVGR) |
| | DO 02 | SGR ALRAM |
| | DO 03 | DGR ALRAM |
| | DO 04 | OV GR ALRAM |

### Terminal Configuration




| ITEMS | DESCRIPTION |
|---|---|
| SGR(K-L) | Connect the Zero-phase current input terminal and ZCT. |
| DGR(K-L) | Connect the Zero-phase current input terminal and CT. |
| PT(G1-G2) | Connect the Zero-phase voltage input terminal and GVT. |
| DO1 ~ DO4 DOC1 ~ _2 | Digital Output terminal. Output Trip/Alarm signal in case of accident |
| | DO_COM1(COM)-DO1(NO),DO2(NO) : Contact for Alarm (16A) |
| | DO_COM2(COM)-DO3(NO),DO4(NO) : Contact for TRIP (40A) |
| | DO1 ~ 4 : Custom Setting |
| Di1 ~ 3/DI_COM | Digital Input Terminal. In the case of DI_1 and DI_2, the ON/OFF signal of the circuit breaker can be input and all DI terminals can be set arbitrarily by the user. |
| 485C+/C-/GND | CommunicationTeminal. Comm. is RS-485/MODBUS method. |
| FG | FGound Terminal |
| L/N | Power Input Terminal. Rating : AC 85 ~ 240V |

## Wiring Diagrm




## Dimensions