Ancillary functions

- Metering functions:
  Phase currents (Ia, Ib, Ic), Zero sequence current (Ie, Ise)
  Sequence currents (I1, I2), Ratio of sequence currents (I2/I1)
  Phase voltages (Va, Vb, Vc), Phase-to-phase voltage (Vab, Vbc, Vca),
  Residual voltage (Ve)
  Symmetrical component voltages (V1, V2, V0)
  Power (P, Q, S), Power factor (PF)
  Active energy (Wh), Reactive energy (VARh), Frequency (f)
  Percentage of thermal capacity (THM%)
  Maximum phase currents and voltages
  Maximum power
  Maximum and minimum frequency
- Event recording
  Up to 200 most recent events time-tagged to 1ms resolution.
- Fault recording
  Up to 4 most recent faults with phase-by-phase reports prior to and during fault conditions.
- Disturbance recording
  8 analog and 32 binary signal records.
  Max. 5 records each of five seconds duration.
- Communication
  RS485: Modbus, DNP3 or IEC 60870-5-103
  Ethernet (100Base-TX or 100Base-FX): Modbus, DNP3 or IEC 61850

Dimensions and Weight

- 4U (177mm) height,
  1/2 x 19" (223mm) width,
  163mm depth
- 2.5kg

Ordering code

GRE140 — [ ] A — [ ][ ] — [ ][ ]

Type :	
Directional overcurrent protection	GRE140
Model :	
3DOC+DEF	
6xBIs, 4xBOs + Fail	400
12xBIs, 10xBOs + Fail	401
18xBIs, 16xBOs + Fail	402
3DOC+DEF+SDEF	
6xBIs, 4xBOs + Fail	420
12xBIs, 10xBOs + Fail	421
18xBIs, 16xBOs + Fail	422
3DOC+DEF+Motor Protection	
6xBIs, 4xBOs + Fail	700
12xBIs, 10xBOs + Fail	701
18xBIs, 16xBOs + Fail	702
3DOC+DEF+SDEF+Motor Protection	
6xBIs, 4xBOs + Fail	720
12xBIs, 10xBOs + Fail	721
18xBIs, 16xBOs + Fail	722
Rating :	
VT: 110V, CT: 1/5A, f: 50/60Hz, 110/250Vdc/110/240Vac	1
VT: 110V, CT: 1/5A, f: 50/60Hz, 48/110Vdc	2
VT : 110V, CT: 1/5A, f : 50/60Hz, 24/48Vdc	A
Standard and language :	
IEC (English)	0
ANSI (English)	1
Communication :	
RS485 x 1 (Modbus/ IEC 60870-5-103)	10
RS485 x 1 (Modbus/DNP3)	11
For others, see (*)	

(*)
A0 : 100BASE-TX (Modbus/IEC 61850) x 1 port and RS485 (Modbus/IEC 60870-5-103) x 1 port
A1 : 100BASE-TX (Modbus/IEC 61850/DNP3) x 1 port and RS485 (Modbus/DNP3) x 1 port
C0 : 100BASE-FX (Modbus/IEC 61850) x 1 port and RS485 (Modbus/IEC 60870-5-103) x 1 port
C1 : 100BASE-FX (Modbus/IEC 61850/DNP3) x 1 port and RS485 (Modbus/DNP3) x 1 port

TOSHIBA

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TOSHIBA

Leading Innovation

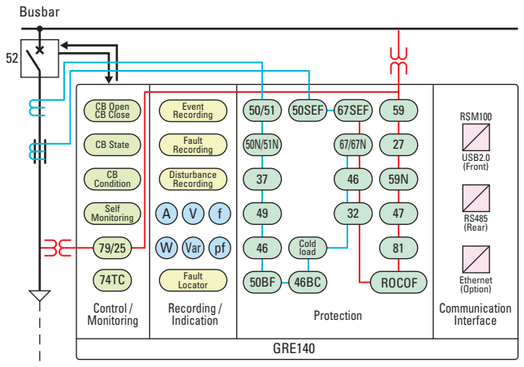
GRE140

Protection and Control for MV Systems

GRE-Series – GRE140

Multi-Function Directional Overcurrent Protection and Control

GRE140 is a fully numerical multi-function directional overcurrent protection device designed for feeder protection applications in MV networks, drawing upon proven technologies developed over more than 100 years, and providing a comprehensive range of protection and control functions. This compact and cost-effective device can be applied not only as a feeder protection but also as a back-up protection for HV/EHV equipment and feeders.



Features

- Protection of feeders in medium voltage networks
- Backup protection for generators, transformers and feeders in high voltage networks
- Feeder manager device with CB control function, 43R/L switch and comprehensive support functions
- Compact and cost-effective design
- Elementary, environmentally-friendly, easy to use and featuring enhanced product concepts

Functions

- Protection
  - Directional Phase Fault (67/50P/51P)
  - Directional Earth Fault (67N/50N/51N)
  - Directional Sensitive Earth Fault (67SEF/50SEF/51SEF)
  - Underpower (32)
  - Phase Fault O/C (50/51P)
  - Earth Fault O/C (50/51N)
  - SEF (50/51N)
  - Phase undercurrent (37P)
  - Thermal Overload (49)
  - Directional Negative Phase Sequence Overcurrent (67/46)
  - Phase O/V (59)
  - ZPS OV (59N)
  - Phase U/V (27)
  - NPS O/V (47)
  - Frequency (81U/O)
  - Frequency rate of change (df/dt)
  - Broken Conductor (46BC)
  - Circuit Breaker Fail (50BF)
  - Start Protection (48)
  - Stalled Motor Protection (50S)
  - Locked Rotor Protection (51LR)
  - Restart Inhibit
  - Cold Load Protection
  - Inrush Current Detector (2f)
- Control
  - Local/Remote Control
  - Autoreclose and synch check (79/25)
- Monitoring
  - Trip circuit supervision (74TC)
  - Fault locator (FL)
  - Self supervision
  - CB State Monitoring
  - Trip Counter Alarm
  - ΣI^y Alarm
  - CB Operate Time Alarm
- Communication
  - USB port
  - Remote communication (Modbus, DNP3, IEC 60870-5-103 and IEC 61850)
- Others
  - Two setting groups
  - Menu-based HMI (16 x 8 characters)
  - Configurable LED (8 fixed and 6 configurable)
  - Programmable Logic Controller (PLC)