

Ancillary functions

- Metering functions:
 - Phase currents (Ia, Ib, Ic), Zero sequence current (In1, In2)
 - Sequence currents (I1, I2), Ratio of sequence currents (I2/I1)
 - Phase voltages (Va, Vb, Vc), Phase-to-phase voltage (Vab, Vbc, Vca), Residual voltage (Vn)
 - Symmetrical component voltages (V1, V2, V0)
 - Power (P, Q, S), Power factor (PF)
 - Active power (W), Reactive power (VAR), 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,
- 2/3 x 19" (297mm) width,
- 163mm depth
- 3.5kg (standard model)

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Leading Innovation >>>

Ordering code GRE170 - [] - A - [] - []

Type :	
Machine protection	GRE170
Model (analog input) :	
3 x I	1
3 x I + 4 x V	2
6 x I + 4 x V	3
Model (EF/SEF) :	
EF	0
SEF	2
Model (Input and Output) :	
6xBIs, 4xBOs + Fail	1
12xBIs, 10xBOs + Fail	2
18xBIs, 16xBOs + Fail	3
6xBIs, 4xBOs + Fail + 4xRTD	4
12xBIs, 10xBOs + Fail + 4xRTD	5
18xBIs, 16xBOs + Fail + 4xRTD	6
Rating :	
CT: 1/5A, f: 50/60Hz, 110/250Vdc/110/240Vac	1
CT: 1/5A, f: 50/60Hz, 48/110Vdc	2
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

GRE170

Machine Protection



TOSHIBA

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GRE-Series – GRE170

Multi-Function Machine Protection



GRE170 is a fully numerical multi-function machine protection device designed for medium and small capacity generator and motor protection applications, drawing upon proven technologies developed over more than 100 years, and providing a comprehensive range of protection and control functions.

Features

- Protection of generators and motors
- Basic machine protection and comprehensive backup protection including directional and non-directional overcurrent and earth fault protection, thermal overload and optional current differential protection and RTD input for temperature measurement.
- 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

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| <ul style="list-style-type: none"> - Protection <ul style="list-style-type: none"> Inrush restraint (2f & 5f) Undervoltage (27) – option Reverse power (32) – option Undercurrent (37) Bearing and stator temperature (38/26) – option Mechanical jam / load jam (39) Loss of field protection (40G) – option NPS-OC (46) Phase sequence check – NOV (47) – option Thermal Overload (49) Phase Fault O/C (50/51P) Earth Fault O/C (50/51N) Sensitive earth fault protection SEF/SEFI – option Voltage restricted OCI (51V) – option Circuit Breaker Fail (50BF) Phase O/V (59) – Option Zero-phase sequence voltage protection (59N) – option Restart inhibit protection (66) Directional overcurrent protection (67) – option Directional earthfault protection (67N) – option Directional sensitive earthfault protection (67N) – option Over/Under Frequency (81U/O) – option Frequency rate of change (df/dt) – option Current differential (87) – option Lockout and trip relay (86/94) | <ul style="list-style-type: none"> - Control <ul style="list-style-type: none"> Local/Remote Control Autoreclose and synch check (79/25) - Monitoring <ul style="list-style-type: none"> Motor start supervision Trip circuit supervision (74TC) Self supervision CB State Monitoring Trip Counter Alarm ΣI² Alarm CB Operate Time Alarm RTD monitoring - Communication <ul style="list-style-type: none"> USB port Remote communication (Modbus, DNP3, IEC 60870-5-103 and IEC 61850) | <ul style="list-style-type: none"> - Others <ul style="list-style-type: none"> Two setting groups Menu-based HMI (16 x 8 characters) Configurable LED (8 fixed and 6 configurable) Programmable Logic Controller (PLC) |
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