Multifunction HMI

- Standard LCD and touch type screens together with mimic option
- 24 configurable tri-state LEDs selectable red/green/yellow provided at the local human-machine interface
- 7 programmable function keys and direct control buttons for open/close (O/I) and control authority (43R/L)
- Standard local USB port and three signal monitoring terminals for testing purposes
- Multi-language display

Metering and Recording

- Measurement of V, I, P, Q, S, f and THM%
- Alarms and events (each with 1,024) can be recorded with 1ms resolution.
- 8 most recent time-tagged fault records including pre-fault and fault values for currents and voltages in text format
- Disturbance records provided using sampled data from all analog inputs and binary signals selected, recorded in COMTRADE format

Extensive Hardware Options and Flexible Adaptation

- Comprehensive range of hardware components
- Main Processing/computing board with enhanced processor
- Wide variety of binary input & output combinations
- Plug-in communication module
- Flexible hardware combinations to meet specific applications

Function-wise Implementation

- Library of function blocks enables wide application for protection, control, measurement and other functions
- Protection elements and schemes
- Control schemes
- Metering and recording functions
- Individual function blocks work independently
- Easy IED customisation to add/delete particular function blocks
- Flexible implementation of new functions and modification of specific functions

TOSHIBA

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The information provided in this catalog is accurate as of 25 October 2017

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TOSHIBA Leading Innovation >>>

GR-200 Series **GRL 200**

Line Differential **Protection IED**







GR-200 Series – GRL 200

Line Differential **Protection IED**

The GRL200 line differential protection is implemented on Toshiba's next generation GR-200 Series IED platform and has been designed to provide phase-segregated current differential protection using digital telecommunications and control applications. This powerful and user-friendly IED will provide you with the flexibility to meet your application and engineering requirements in addition to offering high performance, the highest quality and operational peace of mind.





Features

- Complete EHV/HV/MV transmission line protection package
 - •Overhead lines or underground cables
 - ·Line differential protection for up to five terminals ·Integrated distance, directional OC/EF and other voltage/ current protections
- ·Single or parallel lines - Communications
 - ·Line differential and teleprotection, direct optical fibre, X.21, RS530, CCITT G703 and IEEE Std. C37.94
 - •Within a substation or to a remote control centre, IEC 61850, Modbus® RTU protocol and IEC 60870-5-103
- Advanced fault location function
- Bay control and monitoring functions

Function/ device number	Description	Single breaker scheme	One and a half breaker scheme
87L	Phase-segregated current differential protection	•	•
87N	Zero-phase current differential protection	•	•
R87	Remote differential function	٠	•
21(4Z)	Distance protection (for phase fault) with 4zone	0	0
21N(4Z)	Distance protection (for earth fault) with 4zone	0	0
85-21	Command protection by distance schemes	0	0
85-50N/51N/67N	Command protection by EF and DEF schemes	0	0
50/67,51/67	Non-directional / directional Phase over-current protection	•	•
50N/67N,51N/67N	Non-directional / directional Earth fault over-current protection	•	•
46/67	Non-Directional / directional Negative sequence phase over-current protection	•	•
37	Phase under-current protection	0	0
49	Thermal overload protection	•	•
46BC	Broken conductor protection	•	•
50BF	Circuit breaker failure protection	•	•
50SOTF	Switch on to fault protection	٠	•
50STUB	Stub protection	-	•
59	Phase over-voltage protection	٠	•
59P	Phase-phase over-voltage protection	0	0
59N	Earth fault over-voltage protection	0	0



·Lines with heavy load current

·Short or long distance lines

·Lines with weak or no-infeed

·Single/three/multiphase tripping facilitating all auto-reclose schemes

Function/ device number	Description	Single breaker scheme	One and a half breaker scheme
59	Positive sequence phase over-voltage protection	0	0
47	Negative sequence phase over-voltage protection	0	0
27	Phase under-voltage protection	•	•
27P	Phase-phase under-voltage protection	0	0
27	Positive sequence phase under-voltage protection	0	0
81	Frequency protection	•	•
68	Power swing block	•	•
56	Out of step tripping by distance	0	0
78	Out of step tripping by voltage	•	•
ICD	Inrush current detection function	0	0
CLP	Cold load protection function	0	0
FS	Fail-safe function	0	0
VTF	VTF detection function	•	•
CTF	CTF detection function	•	•
21FL	Fault locator	•	•
79	Autoreclosing function	•	•
25	Voltage check for autoreclosing	•	•
Control	Control	0	0

•:Standard o:Available(by integration) -: Not available