Generator and Motor Commander

Synchronous machine control & protection in one package

The Generator and Motor Commander is a new innovation combining synchronous machine protection and control into one unit. Compared to traditional systems with several separate units and software, the Generator and Motor Commander takes less space and saves considerable hours of engineering time. Operation is smooth as there is only one interface to the system.

Highlights

- Over 86% space savings compared to traditional solution.
- Less spare parts needed.
- One, easy to use, software saves engineering time
- The included software wizard adapts the data from the generator specifications and calculates the majority of the parameters directly.
- 0,2S class measurement, robust technology and the newest protection functions guarantee the best solution available on the market.

Technical Data

GENERATOR PROTECTION FUNCTIONS

Generator protection functions
Generator/transformer differential (87T/87N/87G)
Harmonic overcurrent (Ih>; 50H/51H/68H) - 4 stages (INST, DT or IDMT)
Negative sequence overcurrent/ Phase current reversal/ Current unbalance (I2>; 46/46R/46L) - 2 stages (INST, DT or IDMT)
Directional overcurrent (Idir>; 67) - 4 stages (INST, DT or IDMT)
Sequence voltage (U1/U2>/<; 47/27P/59PN) - 2 stages (INST, DT or IDMT)
Rate-of-change of frequency (df/dt>/<; 81R) - 4 stages (INST, DT or IDMT)
Loss of excitation (40)

Voltage-restrained overcurrent (Iv>; 51V)

Trigger current pulse: 4 000 A

Overpower (P>; 32O)

Underimpedance (Z<; 21U)

Volts-per-hertz overexcitation (V/Hz>; 24)

Arc protection (IArc>/I0Arc>; 50Arc/50NArc) (optional)

MOTOR PROTECTION FUNCTIONS

Non-directional overcurrent (I>; 50/51) - 4 stages (INST, DT or IDMT)

Non-directional earth fault (I0>; 50N/51N) - 4 stages (INST, DT or IDMT)

Directional overcurrent (Idir>; 67) - 4 stages (INST, DT or IDMT)

Harmonic overcurrent (Ih>; 50H/51H/68H) - 4 stages (INST, DT or IDMT)

Negative sequence overcurrent/ Phase current reversal/ Current unbalance (I2>; 46/46R/46L) - 4 stages (INST, DT or IDMT)

Motor start/ Locked rotor monitoring (Ist>; 48/14)

Frequent start (N>; 66)

Non-directional undercurrent (I<; 37)

Power factor (PF<; 55)

Mechanical jam (Im>; 51M)

Loss of excitation (40)

Overvoltage (U>; 59) - 4 stages (INST, DT or IDMT)

Undervoltage (U<; 27) - 4 stages (INST, DT or IDMT)

Neutral overvoltage (U0>; 59N) - 4 stages (INST, DT or IDMT)

Overfrequency and underfrequency (f>/<; 81O/81U) - 8 stages (INST or DT)

Circuit breaker failure protection (CBFP; 50BF/52BF)

Arc protection (IArc>/I0Arc>; 50Arc/50NArc) (optional)

CONTROL

Synchronizer (ΔV/Δa/Δf; 25)

Excitation with external IGBT bridge

Number of objects to control and monitor: 10

Number of setting groups: 8

MEASURING AND MONITORING

Phase, sequence and residual currents (IL1, IL2, IL3, I01, I02)
Frequency (f)
Circuit breaker wear monitoring
Disturbance recorder (max. 15 000 permanent event records)
Current transformer supervision
Voltage transformer supervision (60)
Trip circuit supervision

Event recording

I/0

Current inputs: 10
Voltage inputs: 4
Digital inputs (fixed): 6

Options (11 slots)

Digital outputs: +5/10/15/20/25/30

COMMUNICATION

RJ-45 100 Mbps Ethernet and RS-485 (rear panel, fixed)
Double LC 100 Mbps Ethernet (PRP/HSR) (optional)
RS-232 & serial fibre (PP/PG/GP/GG) (optional)

Communication protocols

IEC 61850
Modbus/RTU and Modbus/TCP
DNP3
SPA

Application Drawing