Motor and Generator Terminals REM 543/545

Protects your investments
Extensive protection for motors and generators
Proven performance in challenging environments
Easy to use user HMI interface
Easy to configure for your applications
Flexible connectivity and IEC 61850 support

The REM 543/545 terminals
are ideal for protection and control of your electric motors and power generators, offering ease of use and reliable, proven performance. With their wide range of communications and connectivity support, they can easily be integrated into your process or plant automation and supervision system.

For the complete protection of your valuable machines
The REM 543/545 terminals provide complete protection for rotating machines. The terminals are intended for large asynchronous and synchronous motors and for small and medium-sized power generators. The motor and generator terminals have been successfully employed in challenging environments, such as mines, mills, marine and off-shore, and in demanding applications including base-load and peak-power generating sets, pumps, fans and crushers.

The motor and generator terminals REM 543/545 have been certificated for marine and off-shore use by Det Norske Veritas (DNV), and have obtained type approval by Registro Italiano Navale (RINA), Lloyd’s Register of Shipping and Germanischer Lloyd, as well as UL recognition by Underwrites Laboratories Inc.

One product – many possibilities
The REM 543/545 units provide you with integrated terminal technology including protection, measuring, supervision, control and condition monitoring functions in the most cost-effective way. In one powerful package these terminals offer you all the functionality needed for managing all start-up, operation and disturbance situations of power generators and large motors. The terminals come in two software versions. The M version is used for asynchronous motors while the more advanced G version is packed with the most sophisticated functionality for power generators and large synchronous motors.

Easy adaptation
The terminals’ user-friendly graphical configuration tools permit you to create your own application-specific configurations and MIMICs. Process status is shown on a dynamic graphical display. Detailed information on, for instance, measurements, events and application-specific alarms, are easily at hand on the display views.

Thanks to their comprehensive communication protocols, including widely
used industrial protocols such as Modbus and Profinbus, the terminals can easily be integrated into various control systems.

Diverse and adaptable I/Os

The machine terminal measures three-phase currents and voltages via conventional current and voltage transformers. If preferred, the three-phase currents can be measured via highly linear current sensors of type Rogowski coils. Correspondingly, the three-phase voltages can be measured via sensors of type voltage dividers. Further, the terminals can be fitted with an optional I/O module featuring eight general use RTD/analog signal inputs and four analog mA outputs. The inputs can be used for measuring the winding, bearing or cooling air temperatures of the machine as well as the ambient temperature. The freely assignable analog mA outputs can be used to transfer measured or calculated values to additional panel meters, cooperating automation systems, PLCs or the like.

Sophisticated local HMI

The relay is provided with a sophisticated local Human-Machine Interface to facilitate extensive local communication between the operator and the terminal. The backlit, graphic liquid crystal display has a resolution of 128 x 160 pixels. The large display surface is divided into two windows for display of alpha-numerical data, such as settings, measured and recorded values, alarms, etc as well as graphics like single-line diagrams of the switchgear lay-out. The informative display, the local control push-buttons and indicators give the operator full control of the terminal during start-up, operation and disturbance situations of the protected machine.

* RTD – Resistive thermal device
** PLC – Programmable logic controller

Innovative technology

REM 543/545 motor and generator terminal stations are part of ABB’s substation automation concept and the RE500 series. Innovative solutions like IEC 61850 support and the simultaneous dual port communication offering flexible connectivity cater for all your communications needs and help to cover future demands.

You can download the connectivity package from www.abb.com/substationautomation

Technical Data

REM 543/545

Protection functions

- ANSI number
- 3-phase non-directional overcurrent protection, 3 stages
- 3-phase directional overcurrent protection, 3 stages
- Voltage-dependent overcurrent protection, 2 stages
- 3-phase undervoltage protection, 2 stages
- 3-phase undervoltage protection, 2 stages
- Voltage-dependent overcurrent protection, 2 stages
- Neutral current, residual voltage
- Neutral current, residual voltage
- 3-phase energy/power factor
- System frequency
- Transient disturbance recorder

Inputs/outputs

- 15 or 20 freely assignable digital inputs
- 5 or 11 power outputs for trip/close control; 2 of them with trip circuit supervision
- 2 NO and 5 NO/NC signal outputs
- 8 RTD/MA inputs, e.g. PT100, NTC, Cu10 and 4 isolated analog outputs 0/4-20 mA

Energizing inputs

- Conventional CT/VT inputs or current/voltage sensors
- Several variants available, max 8 CT/VT inputs
- Up to 8 current transformers for 1A and 5A connection
- 1 current transformer for 0.2A and 1A connection
- Up to 4 voltage transformers for 100V-120V connection
- 9 inputs for current or voltage sensors

Communication & Connectivity

- SPA-LON®, MODBUS® RTU/ASCII®, PROFIBUS DP®
- IEC 61850

1) Requires the use of RS-232 to RS-485 converter module RER 133
2) With interface adapter SPA-ZC 302
3) With interface adapter SPA-ZC 400
4) Connectivity package

Condition monitoring

- Trip circuit supervision (TCS)
- Breaker wear
- Breaker traveltime
- Breaker operations counter
- Breaker inactive time
- Spring charging control
- Gas pressure
- Maintenance of energizing inputs
- Maintenance of energizing inputs
- Battery supervision
- Machine run time