



D-PRO

Multifunction protection relay for genset

DESCRIPTION

Multifunction protection relay used to provide additional generator protections in more demanding applications, such as medium or high voltage plants, or oil & gas installations.

D-PRO is studied in order to expand functions and protections already included in the **DST4602Evolution** genset controller, enhancing its performances: it provides a can bus connection for direct communication with it. All the **D-PRO** measurements and alarms are shown on the display of **DST4602Evolution**, and the relay's protections are directly managed by the genset controller.

Alternatively, it can be used stand-alone, connecting to the external control systems by its digital inputs and outputs.

This device has been designed to be placed in a control panel and can be configured/monitored through the different available communication ports. Parameters settings is directly managed by the free programming tool **BOARDPRG3**.

A comprehensive configurable history logging system is available, recording data on events and periodically (832 recordings for each archive with the default configuration). Additional pre-trigger and post-trigger fast recording allows to check what happened just before and/or just after the trip of a protection (112 recordings with the standard configuration). History logs can be visualized using the **HISVIEW** PC software.

Four alternative configuration (selectable by digital inputs) are available, providing support to multi-voltage and/or multi-frequency panels.

Digital inputs can be configured to selectively enable or disable groups of protections, allowing an easy integration in existing panels. Additional protections can be added by means virtual analogue inputs.

Configurable AND/OR logics are available for the digital outputs configuration, allowing remote signalling of the trip of the protections. Specific output functions are provided for the management of the interface and back-up circuit breakers.

INPUT – OUTPUT AND AUXILIARY FUNCTIONS



8 Digital inputs



4 Digital outputs



History logs



USB port



RS232



RS485



Ethernet connection

- 8 programmable digital inputs.
- 4 programmable relays (maximum 10A @ 250Vac each).
- 7 currents measurement inputs for external current transformers, double internal scaling system 5A or 1A.
- 1 current measurement input for external core transformer.
- 1 three-phase four-pole voltage sensor (L1-L2-L3-N), double internal scaling system 400V (or 100V with specific option).
- 1 voltage input maximum 100V for the 59N protection.
- 8 signalling LEDs.

Communication:

- 1 USB port (Modbus RTU slave).**
- 1 RS232 port (Modbus RTU slave).**
- 1 RS485 insulated port (Modbus RTU slave).**
- 1 Ethernet port RJ45 (Modbus TCP slave).**

MEASURES

Voltages L1-N, L2-N, L3-N.
L1-L2, L2-L3, L3-L1.
Residual voltage.

True RMS measures.
Rated voltage 400 Vac, option available for 100 Vac.
Max 300Vac CAT III (L-N).
Max 520Vac CAT III (L-L).

Currents IA1, IA2, IA3 (phase currents side A).
IB1, IB2, IB3 (phase currents side B).
ID1, ID2, ID3 (phase differential currents).
IS1, IS2, IS3 (phase average currents).
IAUX.
Negative sequence current.

True RMS measures.
Rated current: 5A or 1A.
Internal current transformers.

Frequency meter Resolution = 0.1 Hz.
Accuracy = $\pm 50\text{ppm}$, $\pm 35\text{ppm}/^\circ\text{C}$ (typical).

Power supply voltmeter Resolution = 0.1V.

Powers (total and by single phase) Active power.
Reactive power.
Apparent power.
Power factor.
Load type.

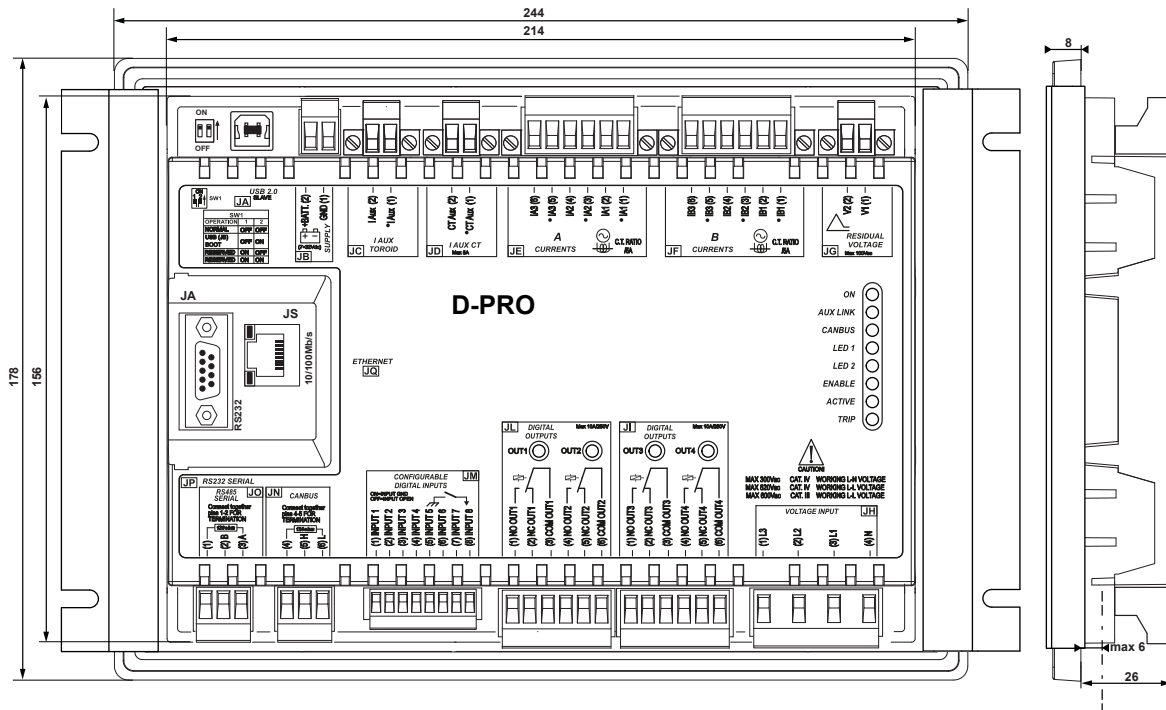
PROTECTIONS

Protections list with ANSI/IEEE codes

- 27 Under voltage.
- 27T Time-dependent under voltage.
- 32P Maximum active power.
- 32R Active power reverse.
- 32Q Maximum reactive power.
- 40 Loss of field.
- 46 Maximum negative sequence current.
- 47 Phase sequence.
- 50 Instantaneous over current.
- 51 Time-dependent over current.
- 50N Instantaneous neutral over current.
- 51N Time-dependent neutral over current.
- 50V Voltage restrained instantaneous over current.
- 51V Voltage restrained time-dependent over current.
- 59 Over voltage.
- 59N Residual overvoltage.
- 64 Restricted earth fault.
- 81O Over frequency.
- 81U Under frequency.
- 87G Differential protection.

TECHNICAL DATA

- > Power supply voltage: 7...32Vdc.
- > Power consumption in stand-by: less than 5 W (200mA @ 27 VDC).
- > Rated frequency: 50Hz or 60Hz
- > Operating temperature: -30°...+70 °C.
- > Storage temperature: -40...+80 °C.
- > Humidity: 10-90% (non-condensing).
- > Dimensions: 244 (L) x 178 (H) x 40 (P) mm.
- > Weight: 600g.
- > Protection degree: IP20 .
- > EMC: compliant to EN61326-1.
- > Safety: compliant to EN61010-1.



CERTIFIED MANAGEMENT SYSTEM
ISO 9001 - ISO 14001
BS OHSAS 18001



sices.eu

S.I.C.E.S. SRL

Società Italiana Costruzione
Elettriche Sumirago

Via Molinello 8B, 21040
Jerago con Orago (VA) Italy

Tel. +39 0331 212941
Fax +39 0331 216102
sales@sices.eu

100% PROUDLY ITALIAN