Gen set control unit

- Three-phases AMF automatic genset controller
- True RMS readings on generator voltages and currents
- Additional current measurement for neutral or differential protection
- Active, Reactive and apparent power measurement
- 20 fully programmable digital input
- Up to 14 programmable digital output
- Up to additional 16 INPUT and 16 OUTPUT by means DITEL DEVICE
- RS232 interface port with MODBUS RTU protocol
- J1939 and MTU MDEC CAN interface
- Real Time Clock
- Events and data logging
- Engine speed measurement by pick -up or W
- GSM and PSTN modem management
- SMS communication

DST4601

AMF generator set controller

DST4601 brings new concepts in gen-set controller devices:

Merging both LED and LCD displays, gives you measures reading easiness of standard panel meter devices alongside the use simplicity, due to plain text human interface; moreover a lot of technical measures and information can be reported to operators.

DST4601 is a full featured device; it integrates on the standard version almost all the required functionality: quite all generator protections, engine protections and monitoring, fuel pump managing, real time clock, serial communication and direct PSTN and GSM modem managing capability (no more special kit, connect the external modem, set the communication parameter and you are ready to work). Versatility of use thanks to 20 isolated inputs and to 8 relays and 8 static outputs, history logs and so on.

Device is designed and built for excellent measures performance. Both generator voltage and current measures are true RMS measures. Fast sampling rate alongside to special calculation algorithms yield good precision, linearity and immunity. Active, reactive and apparent power measure and energy counters share the same features. Engine instruments, thanks to a reference wire, avoid wrong measures due to ground voltage differences between panel and engine.

OPERATION

By means of key operated selector switch and push buttons, the following modes can be selected:

OFF/RESET/PROGRAM: engine start inhibition, load is forced to be supplied from the Mains. When the engine is running and the selector switch is turned to the 'OFF' position, the engine shutdown sequence is activated.

Reset of all alarms.

PROGRAM is a function which allows to access to all programmable parameters. If the key selector is in OFF position, it is possible to change parameters

Enable parameters change (programming)

MANUAL: engine manual START and STOP controls are enabled. The Gen Set protection devices are activated. The starting command is automatically disabled when the engine is running.

AUTOMATIC: DST4601 act as AMF device. Automatic start upon Mains failure. The engine start is obtained through a cycle of starting attempts, each followed by a pause.

In case of starting failure, the control board gives an optical signal and forces the Gen Set to shutdown, thus avoiding battery discharge. Upon engine starting, the starter motor is automatically disconnected by the electronic control board. Once the rated conditions are reached, the Gen Set is connected to the load. The Gen Set is automatically controlled by the appropriate protection devices. When the Mains return within the normal limits, the Gen Set is automatically disconnected from the load.

The load is then supplied by the Mains and the engine is stopped after an adjustable cooling time.

TEST: Automatic start for testing operations with safety protections enabled. Mains/Gen Set changeover is disabled. Upon Mains failure, the load is immediately supplied by the Gen Set.

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Technical characteristics

Controls

Key selector switch.
Engine START and STOP pushbutton.
ACK/MODE (acoustic alarm silencing and LED display operating mode selector).
LOAD/UNLOAD.
LCD CONTRAST DECREASE/INCREASE.
Four ARROW keys for LCD display selection mode, window selection, parameter change and other.
EXIT, ENTER keys.
Dead key SHIFT.

Measures

Generator Voltages:
L1-N, L2-N, L3-N, L1-L2, L2-L3, L3-L1
True RMS measure.
Lx-N max. voltage < 300Vac cat. IV
High voltage pulse = 6kV 1.2/50 us
Max. measurable voltage = 25.000V (by external TV).
Generator Currents:
L1, L2, L3
True RMS measure.
Nominal max. current: 5Aac
Overload measurable current : 4 x 5Aac (sinusoidal).
Internal current transformer.
Max. nominal current = 6000A (by external TA).
Mains Voltage:
L1-L2, L2-L3, L3-L1
Average measure calibrated to RMS.
Lx-N max. voltage < 300Vac cat. IV
High voltage pulse = 6kV 1.2/50 us
Max. measurable voltage = 25.000V (by external TV).
Generator Frequency meter:
Resolution = 0.1 Hz.
Accuracy = ± 50ppm, ±35ppm/°C (typical)
Battery Voltmeter:
Resolution = 0.1V
Oil Pressure Gauge:
VDO 0-10 Bar, VDO 0-5 Bar, Veglia 0-8 Bar
(optional 0-10V input)
Water Thermometer:
VDO, Veglia
(optional 0-10V input)
Fuel Level:
VDO, Veglia
Engine revolution counter:
By pick-up. Programmable teeth number.
Same input can be used by W signal.

Computed Measures

Active power meter, Reactive power meter, Apparent power meter, Power factor: total and phase by phase, Active and reactive energy counter, Hour counter, Start Counter

Engine Protections

Overspeed (12), Incomplete sequence (48), Belt-break, Engine temperature warning and alarm, Oil pressure warning and alarm, Water level warning and alarm, Max power

Generator Protections

Underfrequency (81U)
Overfrequency (81O)
Undervoltage (27)
Overvoltage (59),
Power direction (32)
Time dependent overcurrent (51)
Instantaneous overcurrent (50)
Phase sequence
Current and Voltage unbalance
Optional Ground Fault Protection (51N or 51GN)

Embedded functions

Real time clock calendar:
Hour, minute, second, day, month, year (leap year), day of week.
Operating without power for at lest 2 days.
Gen-set operation can be enabled base on days of the week and time.
Test operation can be enabled base on days of the week and time.
Date and time can be remotely adjusted by supervisor software.
Fast trend history log:
30 record of all measured value plus total powers measure (typical 30 last operating minutes).
Slow trend history log:
48 record of all measured value plus total powers measure (typical last operating day).
Event history log:
99 record of event. Relevant event connect to special 15 record of analogue measure.
Communication:
RS232 Serial communication, MODBUS RTU interface, PSTN and GSM direct modem management, data call on gen-set warning/ alarm function (in modem operation), SMS communication in GSM modem operation mode. Complete supervisor software for Windows available.
Fuel pump:
Board manages a fuel pump by means an external power relays and by 5 input level signals. Auto and Manual operating mode. Easy Manual operation by means front panel two pushbuttons toggle operation.
Maintenance warning:
Board issue a warning when the running hours before maintenance are elapsed.
Panel Temperature warning:
Board issue a warning when panel temperature are approaching a specified temperature
Gen-Set lock function:
Gen-Set operation can be remotely disabled. Unlocking requires the supplied password.
Internal Alarm Horn:
Internal Alarm Horn make easier panel assembling.

Available in option CANBUS interface (conform to J1939 SAE protocol and to MTU specification). Diagnostic code are acquired and displayed in SPN and FMI format with explanation message.

Other Technical data

Supply voltage: 6.5…33 Vdc
Power consumption: typical less than 7W
Nominal Gen-Set frequency: 50 or 60 Hz
Digital input: optoisolated
Static output: Max 300 mA
Relay outputs: 10A nominal
Auxiliary relays output: 1A 30V
LCD: transflective with LED backlight
Operating temperature: -20 °C to 60 °C
Weight: 1,6 Kg
Overall dimension: 260x205x75 mm
Required Panel cutting: 240x172 mm
Panel mounting: by means stud-bolt.
Protection Grade: IP65 (front panel, by means additional keylock protective cap).

EMC: conform to EN61326-1.
Safety: built in conformity to EN61010-1

As standard specifications and designs develop from time to time, always ask to SICES for confirmation of the information given in this publication.