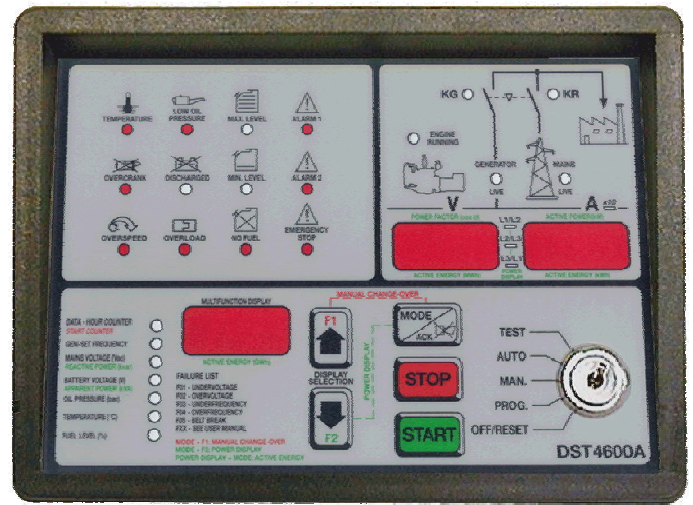


DST 4600A

It is the development of DST4600, of which it keeps the consolidated user interface. The card circuit, measures system and software are redesigned to improve the performances and to have new features:

- More flexibility thanks to increased programmable parameters.
- Better measurement instruments accuracy.
- Direct interface to GSM, SMS communication and board originated data call capability.
- RMS measuring.
- Power measures: kW, kVAR, PF, kWh, etc.
- Fuel level, oil pressure, engine temperature measures (for MTU and SCANIA also)
- Internal event history data base.
- Real time clock (optional)
- Electronic protection for overload and short circuit

The added features on the previous DST 4600 have permitted to obtain the best performances in any working conditions.



OPERATION

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

OFF / RESET: engine start inhibition, with forced control of load supply 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 which cause engine shutdown.

In OFF/RESET is always monitored the Gen Set status by means of "Mains live", "Generator live" and "Engine running" led.

PROGRAM: access to all programmable parameters listed in the "LIST OF SETTABLE PARAMETERS".

MANUAL: engine manual start and stop controls are enabled. The Gen Set protection devices are activated. The starting control is automatically disabled when the engine is running.

AUTOMATIC: 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 and acoustic 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 card. 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 periodical testing operations with safety protections enabled. Mains / Gen Set changeover is disabled. Upon mains failure, the load is immediately supplied by the Gen Set.

CONTROLS

Key operated Gen Set selector switch: off/reset, program, manual, automatic, test.
 Engine start push-button.
 Engine stop push-button.
 Acoustic alarm silencing push-button.
 UP/DOWN push buttons for display selection.
 Manual Control for changeover switch.

DIGITAL MEASURING DEVICES

The DST4600A card includes the following digital instruments incorporated into the 3-digit digital displays of the microprocessor control card:

Generator voltmeter: Phases L1/L2-L2/L3-L3/L1
 Mains voltmeter: Phases L1/L2-L2/L3-L3/L1
 Generator ammeter: Phases L1-L2-L3
 Generator frequency meter
 Gen Set hours counters
 Battery voltmeter
 Start-counter
 Oil pressure gauge
 Water thermometer
 Fuel level gauge
 Kilowattmeter
 Kvarmeter
 Apparent power
 Power factor
 Active energy counter

OPTICAL SIGNALING AND GEN SET PROTECTION

A set of high efficiency light emitting diodes are used for signalling the current status of the Generator Set and for the visualization of alarm intervention. Secondary alarms are represented by their corresponding display code.

Status

- Mains live
- Generator live
- Mains contactor closed
- Generator contactor closed
- Engine running
- Engine Cooling
- Engine start and stop (visualized on display)

Alarms without engine shut-down (ISA2C sequence)

- Fuel reserve
- Maximum fuel level
- Battery failure (min./max. Voltage)
- Pre-alarm for low oil pressure
- Pre-alarm for high engine temperature

Alarms with engine shut-down (ISA2C sequence)

- High engine temperature
- Engine over crank
- Over speed (electronic from generator frequency)
- Low oil pressure
- Generator overload (from external contact of circuit breaker)
- Fuel end
- Alarm 1 (reserve with motor shut down)
- Alarm 2 (reserve with motor shut down)
- Emergency stop

Alarms visualized on display

- Belt breakage
- Over load and short circuit (electronic protection)
- Operating conditions not reached
- Generator under-voltage
- Generator over-voltage
- Generator under-frequency
- Generator over-frequency
- Max power
- Reserve alarm (without motor shut-down)
- Power reverse
- Closing of mains contactor or gen set contactor failed
- Stop failure

Status/Alarms not indicated by led are visualized using the 3 digit digital display.

INTERFACE WITH TELECONTROL SYSTEM

The microprocessor control card is equipped with RS 232C for possible connection to a remote monitoring system. Other connections can be realized in optional as follows:

– Through internal terminal board connection, upon request, the internal voltage-free contacts of the microprocessor control card can be wired to an internal terminal box.

– Through RS485 serial interface or ETHERNET interface (Modbus protocol)- A dedicated software package is available for installation on PC, operating with Windows '98 or superior.

– Interface, by a kit modem GSM, for communication with remote system supervisor by SMS messages (automatic transmission of alarm messages from the Gen Sets with possibility of enquire of state of operations by mobile).

TECHNICAL FEATURES

Supply voltage: 230 ÷ 400 Vac (other to be specified)

Auxiliary voltage: 12 Vdc or 24 Vdc

Frequency: 50 Hz or 60 Hz

Insulation: > 50 Mohm

Ambient temperature: - 20° to + 60 °C

Conforming to: CEI – IEC – EN

LIST OF THE MAIN SETTABLE PARAMETERS

The settable parameters of the DST4600A card are listed below. Each parameter corresponds to a code number which identifies it and allows its value to be set.

P.01	Minimum Mains 3-phase voltage	0..570V
P.02	Mains hysteresis	3....20%
P.03	Threshold for Generator voltage recognition	0...515V
P.04	Gen Set connection delay	1....999s
P.05	Mains return delay	7....999s
P.06	Time delay for supply from Gen Set	0....999s
P.07	Engine cooling delay	0....999s
P.08	Start pulse duration	1....20s
P.09	Shut-down pulse duration	0....300s
P.10	Number of starting attempts	1....15
P.11	Generator under frequency threshold	10...60Hz
P.12	Generator over frequency threshold	52...99Hz
P.13	Generator under voltage threshold	10...515V
P.14	Generator over voltage threshold	100.515V
P.15	Maximum Mains voltage	100.570V
P.16	Generator max. current threshold	0..100%
P.17	Current transformer ratio	0..6000/5A
P.18	Generator periodical test start period	0..999h
P.19	Generator periodical test duration	0...60m
P.20	Preheating glow plug insertion time	0....99s
P.21	Over speed threshold	55...99Hz
P.22	Changeover switching delay	1...30s
P.23	Generator under/over frequency delay	1...20s
P.24	Generator under/over voltage delay	1...20s
P.25	Minimum oil pressure threshold – pre-alarm	0...9.9Bar
P.26	High engine temperature – pre-alarm	0....199°C
P.27	Maximum fuel level threshold	0....100%
P.28	No fuel threshold	0....100%
P.29	Fuel pump start threshold	0....100%
P.30	Fuel pump stop threshold	0....100%
P.31	Low oil pressure delay	5....120 s
P.32	Maximum time to reach. regime condition	5....999 s
P.33	Minimum level fuel pre alarm	0....100%
P.34	Low oil pressure alarm	0...9.9Bar
P.35	High water temperature alarm	0....199°C
P.37	Control board address for serial communication	
P.38	Pause time between 2 starting trial	2....99 s
P.39	Enable Mask	
P.40	Mask time for external alarm	0.5..10s
P.41	Keeping time contactor control	0....15s
P.42	Frequency . Recognition starting engine	5....20Hz
P.43	Frequency Recognition stop engine	2....10Hz
P.45	Mains voltage relay type	
P.46	Temperature detector	
P.47	Oil pressure detector	
P.48	Level detector	
P.49	Enable Mask 2	
P.50	Due maintenance	0...999h
P.51	Serial communication	
P.52	Energy Protection inversion	0...999kW
P.53	Energy Protection Inversion Delay	0...999s
P.54	Horn activation duration	0...999s
P.55	Engine heating/temperature threshold	0...199°C
P.56	1st Low power signal activation threshold	0...9999kW
P.57	Delay time for Low power signal activation	0...999s
P.58	2nd Low power signal activation threshold	0...9999kW
P.59	Delay time for Low power signal de-activation	0...999s
P.60	Connection role changing-load delay	0...999s
P.61	Enable mask 3	
P.62	Serial port baud rate configuration	3...192
P.63	Serial port parity and stop bits configuration	0...5
P.64	Analog historic recording interval	1...3600

Other parameters are available to personalize the device, in relation to the various applications.

OPTIONS

Active power, PF, energy counter (kWh), energy protection inversion.

Real time clock and event history data base.

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