DSEGenset

DSE

DSE3110

MANUAL & AUTO START CONTROL MODULE

FEATURES

The DSE3110 can be utilised as a Manual or Auto Start Module for single gen-set applications or engine only applications. The module has been designed to work with electronic and non-electronic engines, providing advanced engine monitoring and protection features.

The DSE3110 includes a back-lit icon LCD display which clearly shows the status of the engine at all times.

The module monitors engine speed, frequency, voltage and engine run hours and also displays the warning and shutdown status.

The module includes fixed and flexible outputs as well as configurable inputs making this product ideal for a wide variety of applications. The module can either be programmed using the front panel or by using the DSE Configuration Suite PC software.

The module is available in two variants:

CAN – For use with electronic engines only.

- Optional frequency (Hz) sensing from main AC alternator for gen-set applications.

MPU/ALT. – For use with non-electronic engines only (magnetic pick-up/alternator sensing).

- Optional frequency (Hz) sensing from main AC alternator for gen-set applications.
- Optional Magnetic Pickup speed sensing.

ENVIRONMENTAL TESTING STANDARDS

ELECTRO-MAGNETIC COMPATIBILITY
BS EN 61000-6-2
EMC Generic Immunity Standard for the Industrial Environment
BS EN 61000-6-4
EMC Generic Emission Standard for the Industrial Environment

ELECTRICAL SAFETY
BS EN 60950
Safety of Information Technology Equipment, including Electrical Business Equipment

TEMPERATURE
BS EN 60068-2-1
Ab/Ae Cold Test -30 °C
BS EN 60068-2-2
Bb/Be Dry Heat +70 °C

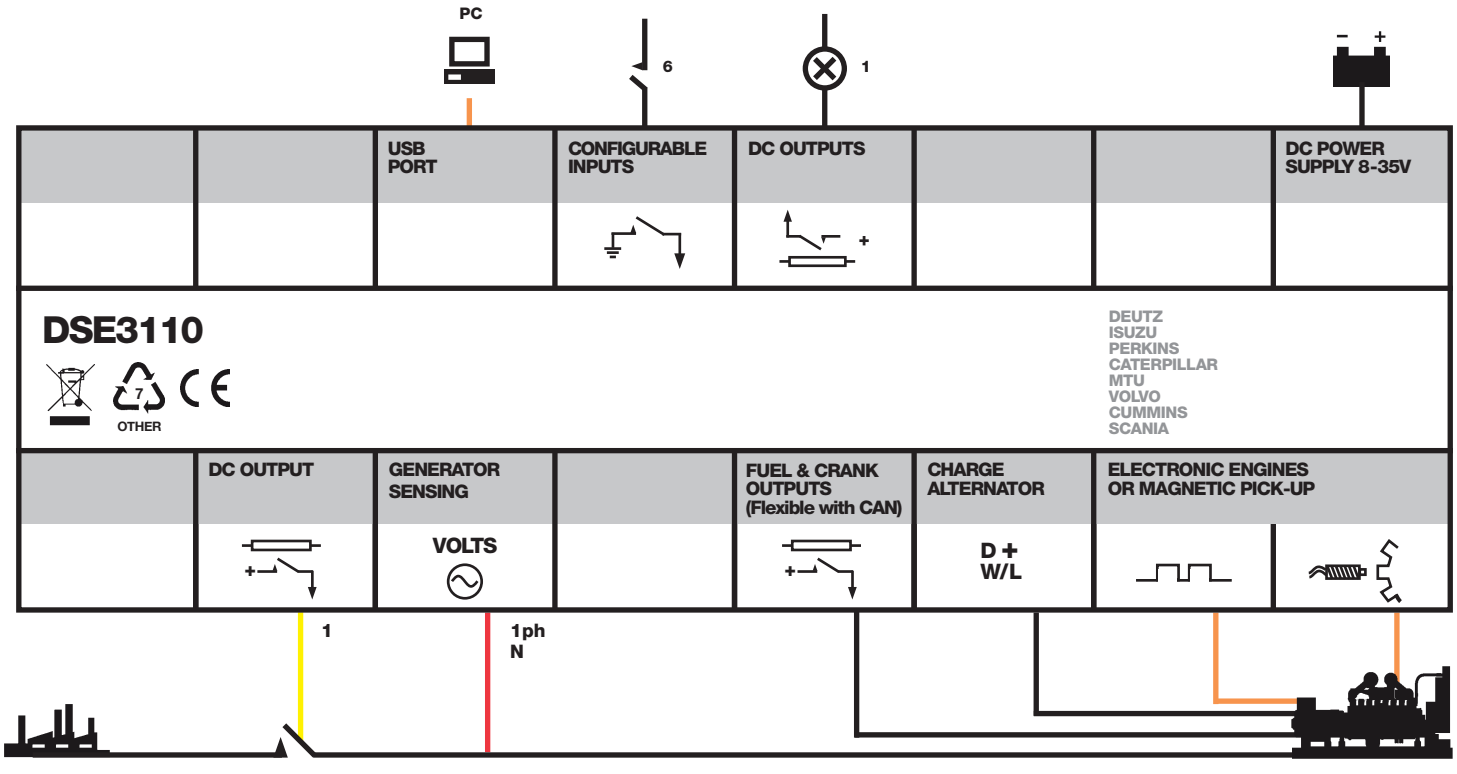
VIBRATION
BS EN 60068-2-6
Ten sweeps in each of three major axes
5 Hz to 8 Hz @ +/-7.5 mm,
8 Hz to 500 Hz @ 2 gn

HUMIDITY
BS EN 60068-2-30
Db Damp Heat Cyclic 20/55 °C @ 95% RH 48 Hours
BS EN 60068-2-78
Cab Damp Heat Static 40 °C @ 93% RH 48 Hours

SHOCK
BS EN 60068-2-27
Three shocks in each of three major axes
15 gn in 11 mS

DEGREES OF PROTECTION PROVIDED BY ENCLOSURES
BS EN 60529
IP65 - Front of module when installed into the control panel with the supplied sealing gasket.

COMPREHENSIVE FEATURE LIST TO SUIT A WIDE VARIETY OF GEN-SET APPLICATIONS



ISSUE 4

DSEGenset

DSE3110

MANUAL & AUTO START CONTROL MODULE

FEATURES

KEY FEATURES

- Back-lit icon LCD display
- Front panel editing
- LED and LCD alarm indication
- Power Save mode
- CAN and Magnetic Pick-up/Alt. versions available (specify on ordering)
- PC configurable
- 6 Digital inputs
- 4 Outputs (2 configurable on Magnetic Pick up/Alt., 4 configurable on CAN version)
- Configurable timers and alarms
- Alternative configuration
- Remote Start input
- Generator voltage display
- Generator frequency display
- Battery voltage display
- Engine speed display
- Hours counter
- Engine pre-heat
- Comprehensive shutdown or warning on fault condition

KEY BENEFITS

- Tamper-proof hours counter provides accurate information for monitoring and maintenance periods
- Multiple engine parameters are monitored simultaneously
- Module can be configured to suit individual applications
- Suitable for engine only applications
- Compatible with a wide range of CAN engines
- Uses DSE Configuration Suite PC software for simplified configuration
- IP65 rating (with optional gasket) offers increased resistance to water ingress
- Licence-free PC software

SPECIFICATION

DC SUPPLY

CONTINUOUS VOLTAGE RATING
8 V to 35 V Continuous

CRANKING DROPOUTS
Able to survive 0 V for 50 mS, providing supply was at least 10 V before dropout and supply recovers to 5 V. This is achieved without the need for internal batteries

CHARGE FAIL/ EXCITATION
8 V to 35 V fixed power source 2.5 W

NOMINAL STANDBY CURRENT
23 mA at 12 V, 18 mA at 24 V

MAXIMUM OPERATING CURRENT
35 mA at 12 V, 30 mA at 24 V

OUTPUTS

OUTPUT A (FUEL)
2 A DC at supply voltage

OUTPUT B (START)
2 A DC at supply voltage

AUXILIARY OUTPUTS C,D
2 A DC at supply voltage

GENERATOR

VOLTAGE RANGE
15 V - 333 V AC (L-N)

FREQUENCY RANGE
3.5 Hz to 75 Hz

MAGNETIC PICK UP

VOLTAGE RANGE
+/- 0.5 V to 70 V

FREQUENCY RANGE
10,000 Hz (max)

DIMENSIONS

OVERALL
98 mm x 79 mm x 40 mm
3.9” x 3.1” x 1.6”

PANEL CUT-OUT
80 mm x 68 mm
3.1” x 2.7”

MAXIMUM PANEL THICKNESS
8 mm
0.3”

RELATED MATERIALS

TITLE	PART NO’S
DSE3110 Installation Instructions	053-050
DSE3110 Quick Start Guide	057-104
DSE3110 Operator Manual	057-086
DSE3110 Configuration Suite PC Software Manual	057-087

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Configuration Parameters – Module (Page 1)					
101	Contrast	0 (%)	121	Disable Generator Voltage Display	On (1), Off (0)
102	Fast Loading Enabled	On (1), Off (0)	122	Disable Mains Voltage Display	On (1), Off (0)
103	All Warnings Latched	On (1), Off (0)	123	Disable Generator Frequency Display	On (1), Off (0)
104	Lamp Test at Startup	On (1), Off (0)	124	Disable Mains Frequency Display	On (1), Off (0)
105	Power Save Mode Enable	On (1), Off (0)	125	Disable Current Display	On (1), Off (0)
106	Deep Sleep Mode Enable	On (1), Off (0)	126	Disable kW Display	On (1), Off (0)
107	Protected Start Enable	On (1), Off (0)	127	Disable kvar Display	On (1), Off (0)
108	Event Log Display Format	On (1), Off (0)	128	Disable kVA Display	On (1), Off (0)
109	Power Up Mode	0 (Power Up Mode)	129	Disable pf Display	On (1), Off (0)
110	DTC String Enable	On (1), Off (0)	130	Disable kWh Display	On (1), Off (0)
111	RESERVED		131	Disable kvarh Display	On (1), Off (0)
112	Pin Protected Maintenance Reset	On (1), Off (0)	132	Disable kVAh Display	On (1), Off (0)
113	Stop Button Cooldown	On (1), Off (0)	133	RESERVED	
114	Use Module Oil Pressure	On (1), Off (0)	134	Show Load Switching Icons	On (1), Off (0)
115	Use Module Coolant Temp	On (1), Off (0)	135	Backlight Inactivity Timer	On (1), Off (0)
116	Use Module Engine Hours	On (1), Off (0)	136	ECU Periodic Wake Up	On (1), Off (0)
117	Use Module RPM	On (1), Off (0)	137	Coolant Temp Persistence	On (1), Off (0)
118	Use Module Charge Alt	On (1), Off (0)	138	Limit Audible Alarm Duration	On (1), Off (0)
119	Disable CAN Speed Control	On (1), Off (0)	139	Transducer Power Supply	On (1), Off (0)
120	CT Position	Gen (0), Load (1)	140	English Text Mode	On (1), Off (0)

Configuration Parameters – CAN Application (Page 2)					
201	CAN Alternative Engine Speed	On (1), Off (0)	203	CAN ECU Data Fail Action	0 (Action)
202	CAN ECU Data Fail Arming	0 (Arming)	204	CAN ECU Data Fail Delay	0 s

Configuration Parameters – Digital Inputs (Page 3)		
301	Digital Input A Source	0 (Input Source)
302	Digital Input A Polarity	0 (Polarity)
303	Digital Input A Action (If Source = User Config)	0 (Action)
304	Digital Input A Arming (If Source = User Config)	0 (Arming)
305	Digital Input A Activation Delay (If Source = User Config)	0 s
306	Digital Input B Source	0 (Input Source)
307	Digital Input B Polarity	0 (Polarity)
308	Digital Input B Action (If Source = User Config)	0 (Action)
309	Digital Input B Arming (If Source = User Config)	0 (Arming)
310	Digital Input B Activation Delay (If Source = User Config)	0 s
311	Digital Input C Source	0 (Input Source)
312	Digital Input C Polarity	0 (Polarity)
313	Digital Input C Action (If Source = User Config)	0 (Action)
314	Digital Input C Arming (If Source = User Config)	0 (Arming)
315	Digital Input C Activation Delay (If Source = User Config)	0 s
316	Digital Input D Source	0 (Input Source)
317	Digital Input D Polarity	0 (Polarity)
318	Digital Input D Action (If Source = User Config)	0 (Action)
319	Digital Input D Arming (If Source = User Config)	0 (Arming)
320	Digital Input D Activation Delay (If Source = User Config)	0 s

Configuration Parameters – Outputs (Page 4)					
401	Digital Output A Source	0 (Output Source)	407	Digital Output D Source	0 (Output Source)
402	Digital Output A Polarity	0 (Output Polarity)	408	Digital Output D Polarity	0 (Output Polarity)
403	Digital Output B Source	0 (Output Source)	409	Digital Output E Source	0 (Output Source)
404	Digital Output B Polarity	0 (Output Polarity)	410	Digital Output E Polarity	0 (Output Polarity)
405	Digital Output C Source	0 (Output Source)	411	Digital Output F Source	0 (Output Source)
406	Digital Output C Polarity	0 (Output Polarity)	412	Digital Output F Polarity	0 (Output Polarity)

Configuration Parameters – Timers (Page 5)					
501	Mains Transient Delay	513	ETS Solenoid Hold	525	Page Delay
502	Start Delay	514	Failed to Stop Delay	526	Cooling Time at Idle
503	Preheat Timer	515	Generator Transient Delay	527	Backlight Power Save Delay
504	Crank Time	516	Transfer Delay	528	Audible Alarm Timer
505	Crank Rest Time	517	Breaker Trip Pulse	529	Fuel Pull in Coil Duration
506	Smoke Limiting	518	Breaker Close Pulse	530	ECU Override Time
507	Smoke Limiting Off	519	Delayed Load Output 1	531	ECU Periodic Wakeup Period
508	DPF Ramp	520	Delayed Load Output 2	532	Post-Heat Timer
509	Safety On Delay	521	Delayed Load Output 3	533	Delay Crank Timer
510	Warm Up Time	522	Delayed Load Output 4	534	Max Star Pause Timer
511	Return Delay	523	Power Save Mode Delay		
512	Cooling Time	524	Deep Sleep Mode Delay		

Digital Input Polarity	
Index	Polarity
0	Close to Activate
1	Open to Activate

Output Polarity	
Index	Polarity
0	Energise
1	De-Energise

Alarm Action	
Index	Action
0	Electrical Trip
1	Shutdown
2	Warning

AC System	
Index	Type
0	2 Phase 3 Wire (L1-L3)
1	2 Phase 3 Wire (L1-L2)
2	3 Phase 3 Wire
3	3 Phase 4 Wire
4	3 Phase 4 Wire (Delta)
5	Single Phase 2 Wire

Digital Input Alarm Arming	
Index	Arming
0	Always
1	From Safety On
2	From Starting
3	Never

Power Up Mode	
Index	Mode
0	Stop
1	Manual
2	Auto

Functionality in DSE4510 MKII & DSE4520 MKII

Functionality in DSE4520 MKII only.

Configuration Parameters – Generator (Page 6)					
601	Alternator Fitted	On (1), Off (0)	625	Generator AC System	0 (AC System)
602	Alternator Poles	0	626	CT Primary	0 A
603	Under Voltage Shutdown Enable	On (1), Off (0)	627	CT Secondary	1 A, 5 A
604	Under Voltage Trip Shutdown	0 V	628	Full Load Rating	0 A
605	Under Voltage Warning Enable	On (1), Off (0)	629	Immediate Over Current Enable	On (1), Off (0)
606	Under Voltage Warning Trip	0 V	630	Delayed Over Current Alarm Enable	On (1), Off (0)
607	RESERVED		631	Delayed Over Current Alarm Action	0 (Action)
608	Loading Voltage	0 V	632	Over Current Delay Time	0 s
609	Over Voltage Warning Enable	On (1), Off (0)	633	Over Current Trip	0 %
610	Over Voltage Warning Return	0 V	634	kW Rating	0 kW
611	Over Voltage Warning Trip	0 V	635	Over kW Protection Enable	On (1), Off (0)
612	Over Voltage Shutdown Trip	0 V	636	Over kW Protection Action	0 (Action)
613	Under Frequency Shutdown Enable	On (1), Off (0)	637	Over kW Protection Trip	0 %
614	Under Frequency Shutdown Trip	0.0 Hz	638	Over kW Protection Trip Delay	0 s
615	Under Frequency Warning Enable	On (1), Off (0)	639	Enable CT Support	On (1), Off (0)
616	Under Frequency Warning Trip	0.0 Hz	640	Over kW Protection Return	0 %
617	RESERVED		641	Nominal Voltage	0 V
618	Loading Frequency	0.0 Hz	642-655	RESERVED	
619	Nominal Frequency	0.0 Hz	656	Load Unbalance Alarm	On (1), Off (0)
620	Over Frequency Warning Enable	On (1), Off (0)	657	Load Unbalance Alarm Action	0 (Action)
621	Over Frequency Warning Return	0.0 Hz	658	Load Unbalance Trip	0 %
622	Over Frequency Warning Trip	0.0 Hz	659	Load Unbalance Warning Return	0 %
623	Over Frequency Shutdown Enable	On (1), Off (0)	660	Load Unbalance Delay Time	0 s
624	Over Frequency Shutdown Trip	0.0 Hz			

Configuration Parameters – Mains (Page 7)					
701	Mains AC System	0 (AC System)	709	Over Voltage Level Trip	0 V
702	Mains Failure Detection	On (1), Off (0)	710	Under Frequency Enable	On (1), Off (0)
703	Immediate Mains Dropout	On (1), Off (0)	711	Under Frequency Trip	0.0 Hz
704	Under Voltage Enable	On (1), Off (0)	712	Under Frequency Return	0.0 Hz
705	Under Voltage Level	0 V	713	Over Frequency Enable	On (1), Off (0)
706	Under Voltage Return	0 V	714	Over Frequency Return	0 Hz
707	Over Voltage Enable	On (1), Off (0)	715	Over Frequency Trip	0.0 Hz
708	Over Voltage Return	0 V			

Configuration Parameters – Engine (Page 8)					
801	Start Attempts	0	832	Start on Low Battery Engine Run Duration	0 s
802	Over Speed Overshoot	0 %	833	RESERVED	
803	Over Speed Delay	0 s	834	RESERVED	
804	Gas Choke Timer (Gas Engine Only)	0 s	835	J1939-75 Instruments Enable	On (1), Off (0)
805	Gas On Delay (Gas Engine Only)	0 s	836	J1939-75 Alarms Enable	On (1), Off (0)
806	Gas Ignition Off Delay (Gas Engine Only)	0 s	837	Engine CAN Source Address	0
807	Crank Disconnect On Oil Pressure Enable	On (1), Off (0)	838	Instrumentation CAN Source Address	0
808	Check Oil Pressure Prior to Starting	On (1), Off (0)	839	RESERVED	
809	Crank Disconnect On Oil	0.00 Bar	840	Tier 4 Home Screen Enable	On (1), Off (0)
810	Crank Disconnect On Frequency	0.0 Hz	841	Start Pause Time	0 s
811	Crank Disconnect On Engine Speed	0 RPM	842	Preheat Enable	On (1), Off (0)
812	Under Speed Enable	On (1), Off (0)	843	Preheat Temperature	0 °C
813	Under Speed Trip	0 RPM	844	Post-heat Enabled	On (1), Off (0)
814	Over Speed Trip	0 RPM	845	Post-heat Temperature	0 °C
815	Low Battery Voltage Enable	On (1), Off (0)	846	Coolant Heater Enabled	On (1), Off (0)
816	Low Battery Voltage Warning	0.0 V	847	Coolant Heater On Temp	0 °C
817	Low Battery Voltage Return	0.0 V	848	Coolant Heater Off Temp	0 °C
818	Low Battery Voltage Delay	0:00:00	849	Coolant Cooler Enabled	On (1), Off (0)
819	High Battery Voltage Enable	On (1), Off (0)	850	Coolant Cooler On Temp	0 °C
820	High Battery Voltage Return	0.0 V	851	Coolant Cooler Off Temp	0 °C
821	High Battery Voltage Warning	0.0 V	852	RESERVED	
822	High Battery Voltage Warning Delay	0 s	853	Tank Bund Level High Alarm	0 (Action)
823	Charge Alt Shutdown Enable	On (1), Off (0)	854	Fan Speed Low Arming	0 (Arming)
824	Charge Alt Shutdown Trip	0.0 V	855	Fan Speed Low Action	0 (Action)
825	Charge Alt Shutdown Delay	0 s	856	Fan Speed Low Delay	0 s
826	Charge Alt Warning Enable	On (1), Off (0)	857	Fuel Low Switch Arming	0 (Arming)
827	Charge Alt Warning Trip	0.0 V	858	Fuel Low Switch Action	0 (Action)
828	Charge Alt Warning Delay	0 s	859	Fuel Low Switch Activation Delay	0 s
829	Start on Low Battery Enable	On (1), Off (0)	860	Crank Disconnect on Charge Alt Enable	On (1), Off (0)
830	Start on Low Battery Threshold	0.0 V	861	Crank Disconnect on Charge Alt Voltage	0.0 V
831	Start on Low Battery Start Delay	0 s			

Configuration Parameters – Analogue Inputs (Page 9)		
901-902	RESERVED	
903	Low Oil Pressure Enable	On (1), Off (0)
904	Low Oil Pressure Trip	0 Bar
905	Oil Pressure Sensor Open Circuit	On (1), Off (0)
906-907	RESERVED	
908	High Engine Temperature Trip	0.00 °C
909	Temperature Sensor Open Circuit	On (1), Off (0)
910-929	RESERVED	
930	Fuel Sensor C Low Alarm Action	Shutdown (2), Electrical Trip (1), Disabled (0)
931	Fuel Sensor C Low Shutdown Trip	0 %
932	Fuel Sensor C Low Shutdown Delay	0 s
933	Fuel Sensor C Low Pre-Alarm Enable	On (1), Off (0)
934	Fuel Sensor C Low Pre-Alarm Trip	0 %
935	Fuel Sensor C Low Pre-Alarm Return	0 %
936	Fuel Sensor C Low Pre-Alarm Delay	0 s
937	Fuel Sensor C High Pre-Alarm Enable	On (1), Off (0)
938	Fuel Sensor C High Pre-Alarm Return	0 %
939	Fuel Sensor C High Pre-Alarm Trip	0 %
940	Fuel Sensor C High Pre Alarm Delay	0 s
941	RESERVED	
942	Fuel Sensor C High Alarm Action	Shutdown (2), Electrical Trip (1), Disabled (0)
943	Fuel Sensor C High Alarm Trip	0 %
944	Fuel Sensor C High Alarm Delay	0 s
945-967	RESERVED	
968	Fuel Usage Alarm (Run) Arming	On (1), Off (0)
969	Fuel Usage Alarm (Run) Action	0 (Action)
970	Fuel Usage Alarm (Run) Trip	0 %
971	Fuel Usage Alarm (Run) Return	0 %
972	Fuel Usage Alarm (Stopped) Arming	0 (Arming)
973	Fuel Usage Alarm (Stopped) Action	0 (Action)
974	Fuel Usage Alarm (Stopped) Trip	0 %
975	Fuel Usage Alarm (Stopped) Return	0 %
976	Low Coolant Level Arming	0 (Arming)
977	Low Coolant Level Action	0 (Action)
978	Low Coolant Level Trip	0 %
979	Low Coolant Level Return	0 %
980	Low Coolant Level Delay	00:00:00
981	Low Coolant Level Open Circuit Arming	On (1), Off (0)
982	Low Coolant Level Switch Arming	0 (Arming)
983	Low Coolant Level Switch Action	0 (Action)
984	Low Coolant Level Switch Delay	00:00:00
985	High Engine Temp Pre-Alarm Enable	On (1), Off (0)
986	High Engine Temp Pre-Alarm Return	0.00 °C
987	High Engine Temp Pre-Alarm Trip	0.00 °C

Configuration Parameters – Scheduler (Page 10)		
1001	Enable Scheduler	On (1), Off (0)
1002	Schedule Run On or Off Load	On (1), Off (0)
1003	Scheduler Period	Weekly (0), Monthly (1)
1004, 1008, 1012, 1016, 1020, 1024, 1028, 1032	Start Time (Entry 1-8)	0:00:00
1005, 1009, 1013, 1017, 1021, 1025, 1029, 1033	Day (Entry 1-8)	0 (1=Monday)
1006, 1010, 1014, 1018, 1022, 1026, 1030, 1034	Week (Entry 1-8)	1, 2, 3 or 4
1007, 1011, 1015, 1019, 1023, 1027, 1031, 1035	Duration (Entry 1-8)	0 s

Configuration Parameters – Time (Page 11)					
1101	Time of Day	0:00:00	1104	Day of Month	1-31
1102	RESERVED		1105	Month of Year	1-12
1103	RESERVED		1106	Year	0-99

Configuration Parameters – Maintenance Alarms (Page 12)					
1201	Oil Maintenance Alarm Enable	On (1), Off (0)	1206	Air Maintenance Alarm Engine Hours	0 h
1202	Oil Maintenance Alarm Action	0 (Action)	1207	Fuel Maintenance Alarm Enable	On (1), Off (0)
1203	Oil Maintenance Alarm Engine Hours	0 h	1208	Fuel Maintenance Alarm Action	0 (Action)
1204	Air Maintenance Alarm Enable	On (1), Off (0)	1209	Fuel Maintenance Alarm Engine Hours	0 h
1205	Air Maintenance Alarm Action	0 (Action)			

Configuration Parameters – Alternate Configuration 1 (Page 20)	
2001-2057	Refer to the DSE Publication 057-260 DSE4510 MKII & DSE4520MKII Operators Manual for configuration parameters.

Configuration Parameters – Alternate Configuration 2 (Page 30)	
3002-3057	Refer to the DSE Publication 057-260 DSE4510 MKII & DSE4520MKII Operators Manual for configuration parameters.

Configuration Parameters – Alternate Configuration 3 (Page 40)	
4002-4057	Refer to the DSE Publication 057-260 DSE4510 MKII & DSE4520MKII Operators Manual for configuration parameters.

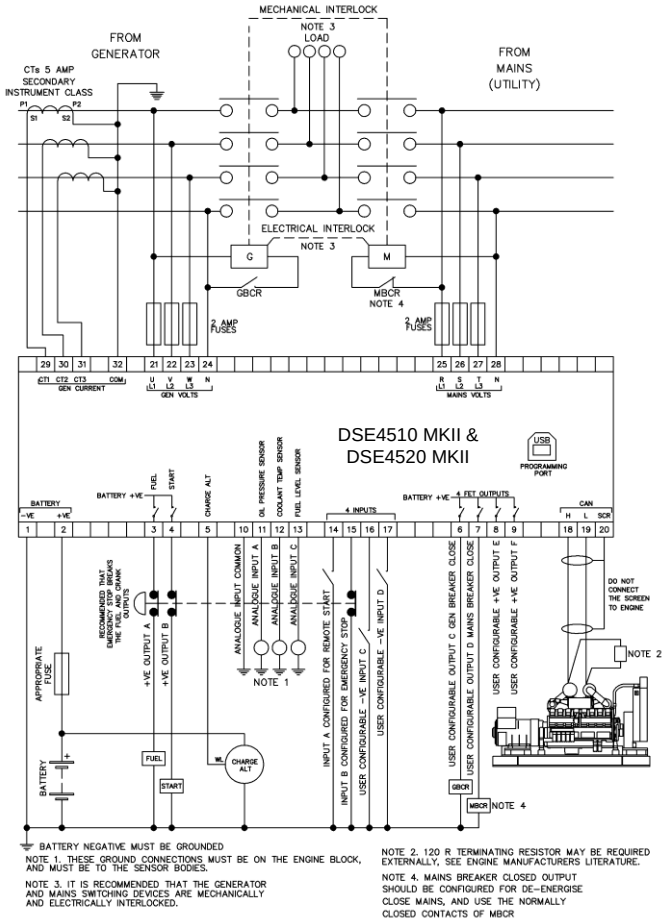
Input Sources					
0	User Configured	17	Mains Load Inhibit	41	Alternative Configuration 2
1	Remote Start on Load	18	RESERVED	42	Alternative Configuration 3
2	RESERVED	19	External Panel Lock	43	Emergency Stop
3	Auto Start Inhibit	20	Auxiliary Mains Fail	44	RESERVED
4	Lamp Test	21	Oil Pressure Switch	45	Maintenance Reset Oil
5	Alarm Mute	22	Coolant Temperature Switch	46	Maintenance Reset Air
6	Alarm Reset	23	RESERVED	47	Maintenance Reset Fuel
7	RESERVED	24	Simulate Mains Available	48	RESERVED
8	Simulate Start Button	25	Remote Start Off Load	49	RESERVED
9	Simulate Stop Button	26-30	RESERVED	50	DPF Auto Regen Inhibit
10	RESERVED	31	Auto Restore Inhibit	51	DPF Force Regeneration
11	Simulate Auto Button	32	RESERVED	52	DPF Regeneration Interlock
12	RESERVED	33	Low Fuel Level Switch	53	Water in Fuel
13	Close Generator / Open Mains	34	Smoke Limiting	54	Fuel Bund Level High
14	Generator Load Inhibit	35-38	RESERVED	55	Fan Speed Low
15	RESERVED	39	Main Configuration	56	Low Coolant Level Switch
16	Close Mains / Open Generator	40	Alternative Configuration 1	57	Wait To Start

Output Sources					
0	Not Used	46	Mains Low Frequency	92	RESERVED
1	Air Flap Relay	47	Mains Low Voltage	93	RESERVED
2	Audible Alarm	48	Oil Pressure Sensor Open Circuit	94	RESERVED
3	Battery High Volts Warning	49	Open Generator Output	95	Over Speed Overshoot Alarm
4	Battery Low Volts Warning	50	Open Generator Output Pulse	96	Over Frequency Overshoot Alarm
5	CAN ECU Data Fail	51	Open Mains Output	97	Display Heater Fitted and Active
6	ECU (ECM) Warning	52	Open Mains Output Pulse	98	RESERVED
7	ECU (ECM) Shutdown	53	Over Frequency Shutdown	99	SCR Inducement
8	CAN ECU Power	54	Over Speed Shutdown	100	DEF Level Low
9	CAN ECU Stop	55	Preheat During Preheat Timer	101	DPF Auto Regeneration Inhibit
10	Charge Alternator Shutdown	56	Preheat Until End of Crank	102	DPF Forced Regeneration
11	Charge Alternator Warning	57	Preheat Until End of Safety Timer	103	DPF None Mission State
12	Close Generator Output	58	Preheat Until End of Warming	104	DPF Regeneration in Progress
13	Close Generator Output Pulse	59	Smoke Limiting	105	DPF Regen Interlock Active
14	Close Mains Output	60	Start Relay	106	DPTC Filter
15	Close Mains Output Pulse	61	Temperature Sensor Open Circuit	107	HEST Active
16	Combined Mains Failure	62	Under Frequency Shutdown	108	Water in Fuel
17	Common Alarm	63	Under Speed Shutdown	109	Fuel Pull in Coil
18	Common Electrical Trip	64	Waiting for Manual Restore	110	Generator at Rest
19	Common Shutdown	65	Flexible Sensor C High Alarm	111	Fuel Tank Bund Level High
20	Common Warning	66	Flexible Sensor C High Pre-Alarm	112	ECU Preheat
21	Cooling Down	67	Flexible Sensor C Low Pre-Alarm	113	Water Heater
22	Digital Input A	68	Flexible Sensor C Low Alarm	114	Water Cooler
23	Digital Input B	69	RESERVED	115	Closed to Gen
24	Digital Input C	70	RESERVED	116	Closed to Mains
25	Digital Input D	71	RESERVED	117	Generator Under Frequency Warning
26	RESERVED	72	RESERVED	118	Generator Over Frequency Warning
27	RESERVED	73	Fuel Sensor High Alarm	119	Generator Low Voltage Warning
28	RESERVED	74	Fuel Sensor High Pre-Alarm	120	Generator High Voltage Warning
29	Emergency Stop	75	Fuel Sensor Low Pre-Alarm	121	Main Config Selected
30	Energise to Stop	76	Fuel Sensor Low Alarm	122	Alt Config 1 Selected
31	Fail to Start	77	Delayed Load Output 1	123	Alt Config 2 Selected
32	Fail to Stop	78	Delayed Load Output 2	124	Alt Config 3 Selected
33	Fuel Relay	79	Delayed Load Output 3	125	Flexible Sensor A High Alarm
34	Gas Choke On	80	Delayed Load Output 4	126	Flexible Sensor A High Pre-Alarm
35	Gas Ignition	81	Air Filter Maintenance	127	Flexible Sensor A Low Alarm
36	Generator Available	82	Oil Filter Maintenance	128	Flexible Sensor A Low Pre-Alarm
37	Generator High Voltage Alarm	83	Fuel Filter Maintenance	129	Flexible Sensor A Open Circuit
38	Generator Low Voltage Alarm	84	System in Stop Mode	130	Fan Speed Low
39	kW Overload Alarm	85	System in Auto Mode	131	Fuel Usage Alarm
40	Over Current Immediate Warning	86	System in Manual Mode	132	Low Coolant Level
41	Delayed Over Current Alarm	87	RESERVED	133	Low Coolant Level Open Circuit
42	High Coolant Temp Shutdown	88	Analogue Input A (Digital)	134	Waiting To Start
43	Low Oil Pressure Shutdown	89	Analogue Input B (Digital)	135	High Coolant Temp Pre-Alarm
44	Mains High Frequency	90	Analogue Input C (Digital)	136	Gen Over Frequency Delayed Alarm
45	Mains High Voltage	91	RESERVED	137	Load Unbalance Alarm

Functionality in DSE4510 MKII & DSE4520 MKII

Functionality in DSE4520 MKII only

TYPICAL WIRING DIAGRAM



DIMENSIONS
140 mm x 113 mm x 43 mm
(5.5" x 4.4" x 1.7")

PANEL CUTOUT
118 mm x 92 mm
(4.6" x 3.6")

TERMINALS
Tightening Torque: 0.5 Nm (4.5 lb-in)
Conductor Size: 0.5 mm² to 2.5 mm²
(AWG 20 to AWG 13)

NOTE: A larger version of the typical wiring diagram is included in the product's operator manual. Refer to DSE Publication: *057-260 DSE4510 MKII & DSE4520 MKII Operator Manual*

NOTE: Terminals 25, 26, 27 & 28 are not fitted to the DSE4510 MKII

REQUIREMENTS FOR UL CERTIFICATION

Specification	Description
Screw Terminal Tightening Torque	• 4.5 lb-in (0.5 Nm)
Conductors	• Terminals suitable for connection of conductor size 13 AWG to 20 AWG (0.5 mm² to 2.5 mm²). • Conductor protection must be provided in accordance with NFPA 70, Article 240 • Low voltage circuits (35 V or less) must be supplied from the engine starting battery or an isolated secondary circuit. • The communication, sensor, and/or battery derived circuit conductors shall be separated and secured to maintain at least ¼" (6 mm) separation from the generator and mains connected circuit conductors unless all conductors are rated 600 V or greater.
Current Inputs	• Must be connected through UL Listed or Recognized isolating current transformers with the secondary rating of 5 A max.
Communication Circuits	• Must be connected to communication circuits of UL Listed equipment
DC Output Pilot Duty	• 0.5 A
Mounting	• Suitable for use in type 1 Enclosure Type rating with surrounding air temperature -22 ºF to +158 ºF (-30 ºC to +70 ºC) • Suitable for pollution degree 3 environments when voltage sensing inputs do not exceed 300 V. When used to monitor voltages over 300 V device to be install in an unventilated or filtered ventilation enclosure to maintain a pollution degree 2 environment.
Operating Temperature	• -22 ºF to +158 ºF (-30 ºC to +70 ºC)
Storage Temperature	• -40 ºF to +176 ºF (-40 ºC to +80 ºC)

DEEP SEA ELECTRONICS

DSE4510 MKII & DSE4520 MKII Installation Instructions

Applicable to module version 3.0.0 and upwards.

EDITING A PARAMETER

- Press the *Stop/Reset Mode* (O) (-) and *Auto Mode* (AUTO) (✔) buttons together to enter the editor mode.
- Press the *Up* or *Down* navigation buttons to cycle through the front panel editor in increments of 100.
- Press the *Manual/Start Mode* (I) (+) or *Stop/Reset Mode* (O) (-) buttons to cycle through the front panel editor in increments of 1.
- When viewing the parameter to be edited, press the *Auto Mode* (AUTO) (✔) button and the value begins to flash.
- Press the *Manual/Start Mode* (I) (+) or *Stop/Reset Mode* (O) (-) navigation buttons to adjust the value to the required setting.
- Press the *Auto Mode* (AUTO) (✔) button to save the current value, the value ceases flashing.
- Press and hold the *Auto Mode* (AUTO) (✔) button to save and exit the editor, the configuration icon is removed from the display.

NOTE: Pressing and holding the *Manual/Start Mode* (I) (+) or *Stop/Reset Mode* (O) (-) buttons will give auto-repeat functionality.

NOTE: More comprehensive module configuration is possible via PC configuration software. For further details of module configuration, refer to DSE Publication: 057-258 DSE4510 MKII & DSE4520 MKII Configuration Suite PC Software Manual.

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DSEGenset

DSE

DSE4610/20

AUTO START AND AUTO MAINS FAILURE CONTROL MODULES

(ALTERNATOR FREQUENCY & MAGNETIC PICK-UP SPEED SENSING)

FEATURES

The DSE4610 Auto Start Control Module and the DSE4620 Auto Mains (Utility) Failure Control Module are suitable for a wide variety of single gen-set applications.

Whilst maintaining functions included within higher end controllers, such as generator or load power monitoring, the DSE46xx range of especially compact controllers provide the user with the ultimate size to feature ratio.

Monitoring engine speed, oil pressure, coolant temperature, frequency, voltage, current, power and fuel level, the modules will give comprehensive engine and alternator protection. This will be indicated on the largest back-lit LCD icon display in its class via an array of warning, electrical trip and shutdown alarms.

Alternator frequency & magnetic pick up speed sensing support for diesel, gas and petrol engines all in one variant. With a number of flexible inputs, outputs and protections, the modules can be easily adapted to suit a wide range of applications including lighting towers with the added option for staged loading outputs.

Through USB Communication both modules can be easily configured using the DSE Configuration Suite PC Software or can be fully configured through the module's front panel editor.

All DSE products are supported by the DSE global technical support team which gives our customers and end users access to 24 hour system help and advice.

ENVIRONMENTAL TESTING STANDARDS

ELECTRO-MAGNETIC COMPATIBILITY
BS EN 61000-6-2
EMC Generic Immunity Standard for the Industrial Environment
BS EN 61000-6-4
EMC Generic Emission Standard for the Industrial Environment

ELECTRICAL SAFETY
BS EN 60950
Safety of Information Technology Equipment, including Electrical Business Equipment

TEMPERATURE
BS EN 60068-2-1
Ab/Ae Cold Test -30 °C
BS EN 60068-2-2
Bb/Be Dry Heat +70 °C

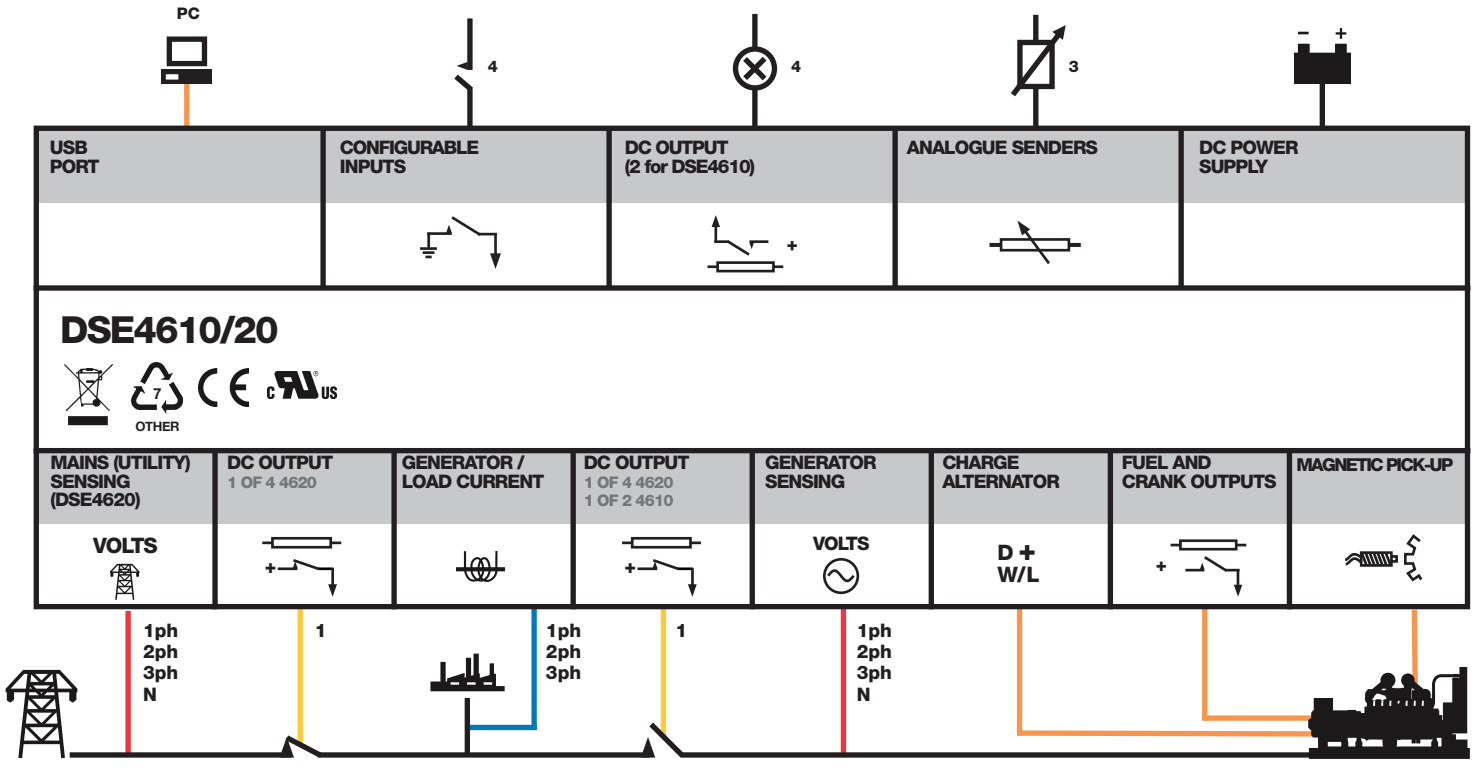
VIBRATION
BS EN 60068-2-6
Ten sweeps in each of three major axes
5 Hz to 8 Hz at +/-7.5 mm,
8 Hz to 500 Hz at 2 gn

HUMIDITY
BS EN 60068-2-30
Db Damp Heat Cyclic 20/55 °C at 95% RH 48 Hours
BS EN 60068-2-78
Cab Damp Heat Static 40 °C at 93% RH 48 Hours

SHOCK
BS EN 60068-2-27
Three shocks in each of three major axes
15 gn in 11 mS

DEGREES OF PROTECTION PROVIDED BY ENCLOSURES
BS EN 60529
IP65 - Front of module when installed into the control panel with the optional sealing gasket.

COMPREHENSIVE FEATURE LIST TO SUIT A WIDE VARIETY OF GEN-SET APPLICATIONS



ISSUE 1

DSEGenset

DSE4610/20

AUTO START AND AUTO MAINS FAILURE CONTROL MODULES

(ALTERNATOR FREQUENCY & MAGNETIC PICK-UP SPEED SENSING)

FEATURES

DSE**4620**

DSE**4610**

KEY BENEFITS

- Ultimate size to feature ratio
- Automatically transfers between mains (utility) and generator (DSE4620 only)
- Hours counter provides accurate information for monitoring and maintenance periods
- User-friendly set-up and button layout for ease of use
- Multiple parameters are monitored simultaneously which are clearly displayed on the largest back-lit icon display in its class
- The module can be configured to suit a wide range of applications
- Uses DSE Configuration Suite PC Software for simplified configuration
- Licence-free PC software
- IP65 rating (with optional gasket) offers increased resistance to water ingress

KEY FEATURES

- Alternator frequency & MPU speed sensing in one variant
- Largest back-lit icon display in its class
- Real time clock provides accurate event logging
- Fully configurable via the fascia or PC using USB communication
- Extremely efficient power save mode
- 3 phase generator sensing
- 3 phase mains (utility) sensing (DSE4620 only)
- Generator/load power monitoring (kW, kV A, kV Ar, pf)
- Generator/load current monitoring and protection
- Fuel and crank outputs
- Compatible with 600 V ph to ph nominal systems
- 4 configurable DC outputs
- 3 configurable analogue/digital inputs
- 4 configurable digital inputs
- Configurable staged loading outputs
- 3 engine maintainance alarms
- Engine speed protection
- Engine hours counter
- Engine pre-heat
- Engine run-time scheduler
- Battery voltage monitoring
- Start on low battery voltage
- Configurable remote start input
- 1 alternative configuration
- Comprehensive warning, electrical trip or shutdown protection upon fault condition
- LCD alarm indication
- Event log (50)

RELATED MATERIALS

TITLE	PART NO'S
DSE4610/20 Installation Instructions	053-156
DSE4610/20 Operator Manual	057-200
DSE4610/20 Configuration Suite PC Manual	057-201

SPECIFICATION

DC SUPPLY

CONTINUOUS VOLTAGE RATING
8 V to 35 V Continuous

CRANKING DROPOUTS
Able to survive 0 V for 50 mS, providing supply was at least 10 V before dropout and supply recovers to 5 V. This is achieved without the need for internal batteries. LEDs and backlight will not be maintained during cranking.

MAXIMUM OPERATING CURRENT
85 mA at 12 V, 96 mA at 24 V

MAXIMUM STANDBY CURRENT
51 mA at 12 V, 47 mA at 24 V

MAXIMUM SLEEP CURRENT
35 mA at 12 V, 32 mA at 24 V

MAXIMUM DEEP SLEEP CURRENT
<10 uA at 12 V, <10 uA at 24 V

MAINS (UTILITY) DSE4620 ONLY

VOLTAGE RANGE
15 V to 415 V AC (Ph to N)
26 V to 719 V AC (Ph to Ph)

FREQUENCY RANGE
3.5 Hz to 75 Hz

OUTPUTS

OUTPUT A (FUEL)
10 A short term, 5 A continuous, at supply voltage

OUTPUT B (START)
10 A short term, 5 A continuous, at supply voltage

AUXILIARY OUTPUTS C & D
2 A DC at supply voltage

AUXILIARY OUTPUTS E & F DSE4620
2 A DC at supply voltage

GENERATOR

VOLTAGE RANGE
15 V to 415 V AC (Ph to N)
26 V to 719 V AC (Ph to Ph)

FREQUENCY RANGE
3.5 Hz to 75 Hz

MAGNETIC PICK UP

VOLTAGE RANGE
+/- 0.5 V to 70 V

FREQUENCY RANGE
10,000 Hz (max)

DIMENSIONS

OVERALL
140 mm x 113 mm x 43 mm
5.5" x 4.4" x 1.7"

PANEL CUT-OUT
118 mm x 92 mm
4.6" x 3.6"

MAXIMUM PANEL THICKNESS
8 mm
0.3"

STORAGE TEMPERATURE RANGE
-40 °C to +85 °C
-40 °F to +185 °F

OPERATING TEMPERATURE RANGE
-30 °C to +70 °C
-22 °F to +158 °F

OPTIONAL PARTS

PART	PART NUMBER
IP65 Gasket	020-282

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DSEGenset

DSE6010/20 MKII

AUTO START AND AUTO MAINS FAILURE CONTROL MODULES

FEATURES

The DSE6010 MKII Auto Start Control Module and the DSE6020 MKII Auto Mains (Utility) Failure Control Module are suitable for a wide variety of single gen-set applications.

Monitoring engine speed, oil pressure, coolant temperature, frequency, voltage, current, power and fuel level, the modules give comprehensive engine and alternator protection. This is indicated on a large back-lit LCD icon display via an array of warning, electrical trip and shutdown alarms.

Electronic J1939 (CAN) and non-electronic MPU and alternator sensing engine support for diesel, gas and petrol engines all in one variant. With a number of flexible inputs, outputs and protections, the modules can be easily adapted to suit a wide range of applications.

Through USB Communication both modules can be configured using the DSE Configuration Suite PC Software or through the module's front panel editor.

Using the DSE Configuration Suite PC Software the controller is easy to use and configure which allows alteration of operating parameters, sequences, timers and alarms.

AVAILABLE VARIANTS

6010-03	Auto Start with real time clock
6010-04	Auto start with real time clock and heated display
6020-03	Auto Mains Failure with real time clock
6020-04	Auto Mains Failure with real time clock and heated display

ENVIRONMENTAL TESTING STANDARDS

ELECTRO-MAGNETIC COMPATIBILITY
BS EN 61000-6-2
EMC Generic Immunity Standard for the Industrial Environment
BS EN 61000-6-4
EMC Generic Emission Standard for the Industrial Environment

ELECTRICAL SAFETY
BS EN 60950
Safety of Information Technology Equipment, including Electrical Business Equipment

TEMPERATURE
BS EN 60068-2-1
Ab/Ae Cold Test -30 °C
BS EN 60068-2-2
Bb/Be Dry Heat +70 °C

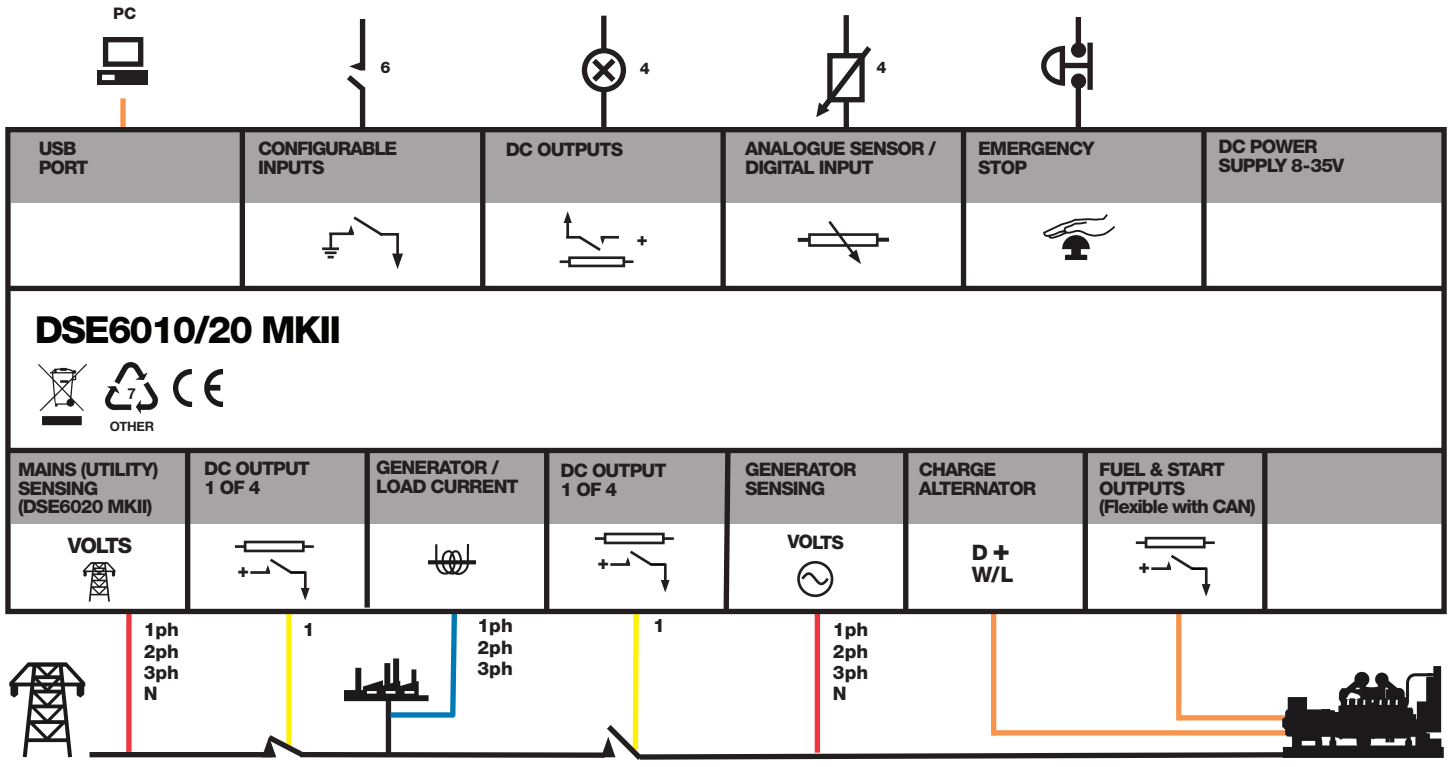
VIBRATION
BS EN 60068-2-6
Ten sweeps in each of three major axes
5 Hz to 8 Hz at +/-7.5 mm,
8 Hz to 500 Hz @ 2 GN

HUMIDITY
BS EN 60068-2-30
Db Damp Heat Cyclic 20/55 °C at 95% RH 48 Hours
BS EN 60068-2-78
Cab Damp Heat Static 40 °C at 93% RH 48 Hours

SHOCK
BS EN 60068-2-27
Three shocks in each of three major axes
15 GN in 11 mS

DEGREES OF PROTECTION PROVIDED BY ENCLOSURES
BS EN 60529
IP65 - Front of module when installed into the control panel with the optional sealing gasket.

COMPREHENSIVE FEATURE LIST TO SUIT A WIDE VARIETY OF GEN-SET APPLICATIONS



DSEGenset

DSE6010/20 MKII

AUTO START AND AUTO MAINS FAILURE CONTROL MODULES

FEATURES

DSE**6020 MKII**

DSE**6010 MKII**

KEY BENEFITS

- Automatically transfers between mains (utility) and generator (DSE6020 MKII only)
- Hours counter provides accurate information for monitoring and maintenance periods
- User-friendly set-up and button layout for ease of use
- Multiple parameters are monitored simultaneously which are clearly displayed on a large back-lit icon display
- The module can be configured to suit a wide range of applications
- Compatible with a wide range of CAN engines, including tier 4 engine support
- Uses DSE Configuration Suite PC Software for simplified configuration
- Licence-free PC software
- IP65 rating (with optional gasket) offers increased resistance to water ingress

KEY FEATURES

- Large back-lit icon display
- Heated display option available
- Fully configurable via the fascia or PC using USB communication
- Efficient power save mode
- 3 phase generator sensing
- 3 phase mains (utility) sensing (DSE6020 MKII only)
- Generator/load power monitoring (kW, kV A, kV Ar, pf)
- Accumulated power monitoring (kW h, kVA h, kVAr h)
- Generator overload protection (kW)
- Generator/load current monitoring and protection
- Breaker control via fascia buttons
- Fuel and start outputs, configurable when using CAN
- 4 configurable DC outputs
- 4 configurable analogue/digital inputs
- 6 configurable digital inputs
- Support for 0-10 V & 4-20 mA oil pressure sensors
- Configurable staged loading outputs
- CAN, MPU and alternator speed sensing in one variant
- 3 engine maintenance alarms
- Engine speed protection
- Engine hours counter
- Engine pre-heat
- Engine run-time scheduler
- Engine idle control for starting & stopping
- Fuel pump control
- Real time clock
- Battery voltage monitoring
- Start on low battery voltage
- Configurable remote start input
- 1 alternative configuration
- Comprehensive warning, electrical trip or shutdown protection upon fault condition
- LCD and LED alarm indication
- Configurable event log (50)

RELATED MATERIALS

TITLE	PART NO'S
DSE6010/20 MKII Installation Instructions	053-174
DSE6010/20 MKII Operator Manual	057-230
DSE6010/20 MKII Configuration Suite PC Manual	057-223

SPECIFICATION

DC SUPPLY

CONTINUOUS VOLTAGE RATING
8 V to 35 V Continuous

CRANKING DROPOUTS
Able to survive 0 V for 50 mS, providing supply was at least 10 V before dropout and supply recovers to 5 V. This is achieved without the need for internal batteries. LEDs and backlight will not be maintained during cranking.

MAXIMUM OPERATING CURRENT
100 mA at 12 V, 105 mA at 24 V

MAXIMUM STANDBY CURRENT
60 mA at 12 V, 55 mA at 24 V

MAXIMUM SLEEP CURRENT
40 mA at 12 V, 35 mA at 24 V

GENERATOR & MAINS (UTILITY)

VOLTAGE RANGE
15 V to 415 V AC (Ph to N)
26 V to 719 V AC (Ph to Ph)

FREQUENCY RANGE
3.5 Hz to 75 Hz

INPUTS

DIGITAL INPUTS A to F
Negative switching

ANALOGUE INPUTS A to C
Configurable as:
Negative switching digital input
0 Ω to 480 Ω

ANALOGUE INPUT D
Configurable as:
Negative switching digital input
0 V to 10 V
4 mA to 20 mA
0 Ω to 480 Ω

OUTPUTS

OUTPUT A (FUEL)
10 A short term, 5 A continuous, at supply voltage

OUTPUT B (START)
10 A short term, 5 A continuous, at supply voltage

AUXILIARY OUTPUTS C, D, E & F
2 A DC at supply voltage

DIMENSIONS

OVERALL
216 mm x 158 mm x 43 mm
8.5" x 6.2" x 1.5"

PANEL CUT-OUT
184 mm x 137 mm
7.2" x 5.3"

MAXIMUM PANEL THICKNESS
8 mm
0.3"

STORAGE TEMPERATURE RANGE
-40°C to +85°C
-40 °F to +185 °F

OPERATING TEMPERATURE RANGE
-30°C to +70°C
-22 °F to +158 °F

HEATED DISPLAY VARIANT
-40 °C to +70 °C
-40 °F to +158 °F

OPTIONAL PARTS

PART	PART NUMBER
IP65 Gasket	020-521

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055-190/05/14 (3) US

DSEGenset

DSE

DSE6110/20

AUTO START & AUTO MAINS FAILURE CONTROL MODULES

FEATURES

The DSE6110 is an Auto Start Control Module and the DSE6120 is an Auto Mains (Utility) Failure Control Module suitable for a wide variety of single gen-set applications.

Monitoring speed, frequency, voltage, current, oil pressure, coolant temperature and fuel level, the modules will display warnings, shutdown and engine status information on the back-lit LCD screen and illuminated LED.

Both modules offer electronic (CAN) and non-electronic (magnetic pick-up/alternator sensing) engine versions and offer a number of flexible inputs, outputs and engine protections so the system can be easily adapted to suit a wide range of application demands.

The modules can be easily configured using the DSE Configuration Suite PC software. Selected front panel editing is also available.

ENVIRONMENTAL TESTING STANDARDS

ELECTRO-MAGNETIC COMPATIBILITY
BS EN 61000-6-2
EMC Generic Immunity Standard for the Industrial Environment
BS EN 61000-6-4
EMC Generic Emission Standard for the Industrial Environment

ELECTRICAL SAFETY
BS EN 60950
Safety of Information Technology Equipment, including Electrical Business Equipment

TEMPERATURE
BS EN 60068-2-1
Ab/Ae Cold Test -30 °C
BS EN 60068-2-2
Bb/Be Dry Heat +70 °C

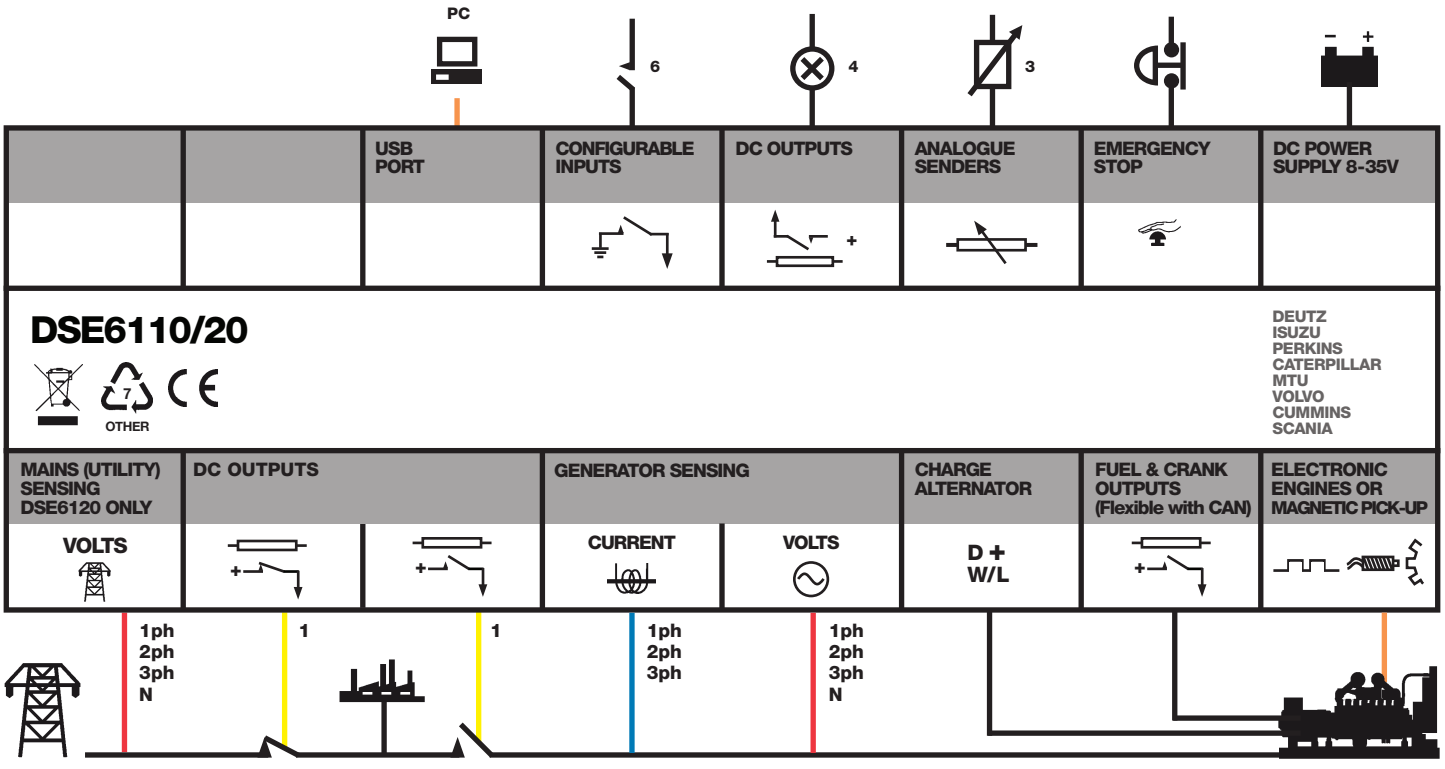
VIBRATION
BS EN 60068-2-6
Ten sweeps in each of three major axes
5 Hz to 8 Hz @ +/-7.5 mm,
8 Hz to 500 Hz @ 2 gn

HUMIDITY
BS EN 60068-2-30
Db Damp Heat Cyclic 20/55 °C @ 95% RH 48 Hours
BS EN 60068-2-78
Cab Damp Heat Static 40 °C @ 93% RH 48 Hours

SHOCK
BS EN 60068-2-27
Three shocks in each of three major axes
15 gn in 11 mS

DEGREES OF PROTECTION PROVIDED BY ENCLOSURES
BS EN 60529
IP65 - Front of module when installed into the control panel with the optional sealing gasket.

COMPREHENSIVE FEATURE LIST TO SUIT A WIDE VARIETY OF GEN-SET APPLICATIONS



ISSUE 2

DSEGenset

DSE

DSE6110/20

AUTO START & AUTO MAINS FAILURE CONTROL MODULES

FEATURES

DSE**6120**

DSE**6110**

KEY FEATURES

- Back-lit text LCD display
- Front panel editing
- LED and LCD alarm indication
- Power Save mode
- CAN and Magnetic Pick-up/Alt. versions available (specify on ordering)
- PC and front panel configuration
- 6 Digital inputs
- 3 Analogue inputs
- 6 Outputs (4 configurable on Magnetic Pick-up/Alt., 6 configurable on CAN version)
- Configurable timers and alarms
- Alternative configuration
- Event Log (10)
- Remote Start input
- 3 Phase generator monitoring
- Current Monitoring and protection
- 3 Phase Mains (Utility) monitoring (DSE6120 only)
- Test button (DSE6120 only)
- Battery voltage monitoring
- Engine pre-heat
- Hours counter
- Comprehensive shutdown or warning on fault condition

KEY BENEFITS

- Automatically transfers between mains (utility) and generator power (DSE6120 only)
- Hours counter provides accurate information for monitoring and maintenance periods
- User-friendly set-up and button layout
- Multiple engine parameters are monitored simultaneously
- Module can be configured to suit individual applications
- Compatible with a wide range of CAN engines
- Tier 4 engine support
- Uses DSE Configuration Suite PC software for simplified configuration
- IP65 rating (with optional gasket) offers increased resistance to water ingress
- Licence-free PC software

SPECIFICATION

DC SUPPLY

CONTINUOUS VOLTAGE RATING
8 V to 35 V Continuous

CRANKING DROPOUTS
Able to survive 0 V for 50 mS, providing supply was at least 10 V before dropout and supply recovers to 5 V. This is achieved without the need for internal batteries. LEDs and backlight will not be maintained during cranking.

MAXIMUM OPERATING CURRENT
178 mA at 12 V, 95 mA at 24 V

MAXIMUM STANDBY CURRENT
88 mA at 12 V, 50 mA at 24 V

CHARGE FAIL/EXCITATION RANGE
0 V to 35 V

MAINS (UTILITY) DSE6120 ONLY

VOLTAGE RANGE
15 V - 333 V AC (L-N)

FREQUENCY RANGE
3.5 Hz to 75 Hz

OUTPUTS

OUTPUT A (FUEL)
2 A DC at supply voltage

OUTPUT B (START)
2 A DC at supply voltage

AUXILIARY OUTPUTS C,D,E & F
2 A DC at supply voltage

GENERATOR

VOLTAGE RANGE
15 V - 333 V AC (L-N)

FREQUENCY RANGE
3.5 Hz to 75 Hz

MAGNETIC PICK UP

VOLTAGE RANGE
+/- 0.5 V to 70 V

FREQUENCY RANGE
10,000 Hz (max)

DIMENSIONS

OVERALL
215 mm x 158 mm x 42 mm
8.5” x 6.2” x 1.6”

PANEL CUT-OUT
182 mm x 137 mm
7.2” x 5.4”

MAXIMUM PANEL THICKNESS
8 mm
0.3”

STORAGE TEMPERATURE RANGE
-40 °C to +85 °C

RELATED MATERIALS

TITLE	PART NO’S
DSE6110 Installation Instructions	053-059
DSE6120 Installation Instructions	053-060
DSE6100 Quick Start Guide	057-102
DSE6100 Operator Manual	057-095
DSE6100 Configuration Suite PC Manual	057-096

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055-069/01/16 (5)

DSEGenset

DSE

DSE7110/20 MKII

AUTO START & AUTO MAINS FAILURE CONTROL MODULES

FEATURES

The DSE7110 MKII Auto Start Control Module and the DSE7120 MKII Auto Mains (Utility) Failure Control Module are suitable for a wide variety of single gen-set applications.

Monitoring engine speed, oil pressure, coolant temperature, frequency, voltage, current, power and fuel level, the modules will give comprehensive engine and alternator protection. This will be indicated on a large back-lit LCD icon display via an array of warning, electrical trip and shutdown alarms.

Electronic J1939 (CAN) and non-electronic MPU and alternator sensing engine support for diesel, gas and petrol engines all in one variant. With a number of flexible inputs, outputs and protections, the modules can be easily adapted to suit a wide range of applications.

Compehensive power metering for both generator and load is available (kW, kV A, kV Ar, pf). A real time clock allows scheduling while a 50 event log provides extensive event interrogation.

Through USB Communication both modules can be easily configured using the DSE Configuration Suite PC Software or can be fully configured through the module's front panel editor.

All DSE products are supported by the DSE global technical support team which gives our customers and end users access to 24 hour system help and advice.

ENVIRONMENTAL TESTING STANDARDS

ELECTRO-MAGNETIC COMPATIBILITY
BS EN 61000-6-2
EMC Generic Immunity Standard for the Industrial Environment
BS EN 61000-6-4
EMC Generic Emission Standard for the Industrial Environment

ELECTRICAL SAFETY
BS EN 60950
Safety of Information Technology Equipment, including Electrical Business Equipment

OPERATING TEMPERATURE
BS EN 60068-2-1
Ab/Ae Cold Test -30 °C
BS EN 60068-2-2
Bb/Be Dry Heat +70 °C

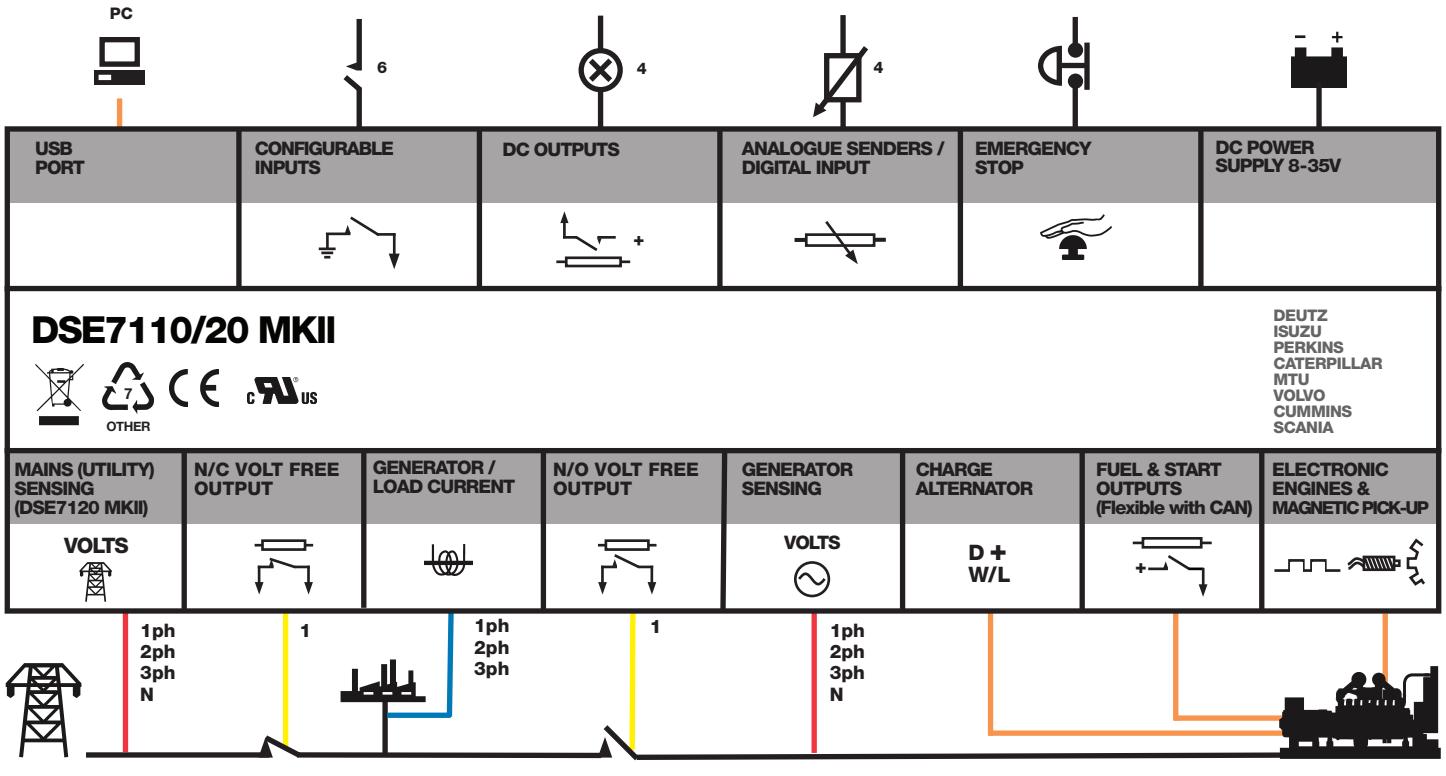
VIBRATION
BS EN 60068-2-6
Ten sweeps in each of three major axes
5 Hz to 8 Hz @ +/-7.5 mm,
8 Hz to 500 Hz @ 2 gn

HUMIDITY
BS EN 60068-2-30
Db Damp Heat Cyclic 20/55 °C
@ 95% RH 48 Hours
BS EN 60068-2-78
Cab Damp Heat Static 40 °C
@ 93% RH 48 Hours

SHOCK
BS EN 60068-2-27
Three shocks in each of three major axes
15 gn in 11 mS

DEGREES OF PROTECTION PROVIDED BY ENCLOSURES
BS EN 60529
IP65 - Front of module when installed into the control panel with the supplied sealing gasket.

COMPREHENSIVE FEATURE LIST TO SUIT A WIDE VARIETY OF GEN-SET APPLICATIONS



ISSUE 1

DSEGenset

DSE7110/20 MKII

AUTO START & AUTO MAINS FAILURE CONTROL MODULES

FEATURES

DSE7120 MKII

DSE7110 MKII

KEY BENEFITS

- Automatically transfers between mains (utility) and generator (DSE7120 MKII only)
- Hours counter provides accurate information for monitoring and maintenance periods
- User-friendly set-up and button layout for ease of use
- Multiple parameters are monitored & displayed simultaneously
- The module can be configured to suit a wide range of applications
- Compatible with a wide range of CAN engines, including tier 4 engine support
- Uses DSE Configuration Suite PC Software for simplified configuration
- Licence-free PC software
- IP65 rating (with supplied gasket) offers increased resistance to water ingress

KEY FEATURES

- Large back-lit icon display
- Heated display option available
- Fully configurable via the fascia or PC using USB communication
- Extremely efficient power save mode
- 3 phase generator sensing
- 3 phase mains (utility) sensing (DSE7120 MKII only)
- Generator/load power monitoring (kW, kV A, kV Ar, pf)
- Generator overload protection (kW)
- Generator/load current monitoring and protection
- Fuel and start outputs (configurable when using CAN)
- 4 configurable DC outputs
- 2 configurable volt-free outputs
- 4 configurable analogue/digital inputs
- 6 configurable digital inputs
- Support for 0-10 V & 4-20 mA oil pressure sensors
- Configurable staged loading outputs
- CAN, MPU and alternator speed sensing in one variant
- 3 engine maintainance alarms
- Engine speed protection
- Engine hours counter
- Engine pre-heat
- Engine run-time scheduler
- Engine idle control for starting & stopping
- Battery voltage monitoring
- Start on low battery voltage
- Real time clock
- Fuel pump control
- Configurable remote start input
- 1 alternative configuration
- Comprehensive warning, electrical trip or shutdown protection upon fault condition
- LCD and LED alarm indication
- Event log (50)

RELATED MATERIALS

TITLE	PART NO'S
DSE7110/20 MKII Installation Instructions	053-151
DSE7110/20 MKII Operator Manual	057-182
DSE7110/20 MKII Configuration Suite PC Manual	057-185

SPECIFICATION

DC SUPPLY

CONTINUOUS VOLTAGE RATING
8 V to 35 V Continuous

CRANKING DROPOUTS
Able to survive 0 V for 50 mS, providing supply was at least 10 V before dropout and supply recovers to 5 V. This is achieved without the need for internal batteries. LEDs and backlight will not be maintained during cranking.

MAXIMUM OPERATING CURRENT
290 mA at 12 V, 140 mA at 24 V

MAXIMUM STANDBY CURRENT
75 mA at 12 V, 40 mA at 24 V

CHARGE FAIL/EXCITATION RANGE
0 V to 35 V

GENERATOR & MAINS (UTILITY)

VOLTAGE RANGE
15 V to 415 V AC (Ph to N)
26 V to 719 V AC (Ph to Ph)

FREQUENCY RANGE
3.5 Hz to 75 Hz

MAGNETIC PICKUP

VOLTAGE RANGE
+/- 0.5 V to 70 V

FREQUENCY RANGE
10,000 Hz (max)

INPUTS

DIGITAL INPUTS A TO F
Negative switching

ANALOGUE INPUTS A TO C
Configurable as:
Negative switching digital input
0 Ω to 480 Ω

ANALOGUE INPUT D
Configurable as:
Negative switching digital input
0 V to 10 V
4 mA to 20 mA
0 Ω to 480 Ω

OUTPUTS

OUTPUT A & B (FUEL & START)
10 A short term, 5 A continuous, at supply voltage

OUTPUTS C & D
8 A AC at 250 V AC (Volt-free)

AUXILIARY OUTPUTS E, F, G & H
2 A DC at supply voltage

DIMENSIONS

OVERALL
240 mm x 181 mm x 42 mm
9.4" x 7.1" x 1.6"

PANEL CUT-OUT
220 mm x 160 mm
8.7" x 6.3"

MAXIMUM PANEL THICKNESS
8 mm
0.3"

STORAGE TEMPERATURE RANGE
-40°C to +85°C
-40 °F to +185 °F

OPERATING TEMPERATURE RANGE
-30°C to +70°C
-22 °F to +158 °F

HEATED DISPLAY VARIANT
-40 °C to +70 °C
-40 °F to +158 °F

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DSEGenset

DSE7310/20

AUTO START & AUTO MAINS FAILURE CONTROL MODULES

FEATURES

The DSE7310 is an Auto Start Control Module and the DSE7320 is an Auto Mains (Utility) Failure Control Module suitable for a wide variety of single, diesel or gas, gen-set applications.

Monitoring an extensive number of engine parameters, the modules will display warnings, shutdown and engine status information on the back-lit LCD screen, illuminated LEDs, remote PC and via SMS text alerts (with external modem).

The DSE7320 will also monitor the mains (utility) supply. The modules include USB, RS232 and RS485 ports as well as dedicated DSENet® terminals for system expansion.

Both modules are compatible with electronic (CAN) and non-electronic (magnetic pick-up/alternator sensing) engines and offer an extensive number of flexible inputs, outputs and extensive engine protections so the system can be easily adapted to meet the most demanding industry requirements.

The extensive list of features includes enhanced event and performance monitoring, remote communications, PLC functionality and dual mutual standby (DSE7310 only) to reduce engine wear.

The modules can be easily configured using the DSE Configuration Suite PC software. Selected front panel editing is also available.

ENVIRONMENTAL TESTING STANDARDS

ELECTRO-MAGNETIC COMPATIBILITY
BS EN 61000-6-2
EMC Generic Immunity Standard for the Industrial Environment
BS EN 61000-6-4
EMC Generic Emission Standard for the Industrial Environment

ELECTRICAL SAFETY
BS EN 60950
Safety of Information Technology Equipment, including Electrical Business Equipment

TEMPERATURE
BS EN 60068-2-1
Ab/Ae Cold Test -30 °C
BS EN 60068-2-2
Bb/Be Dry Heat +70 °C

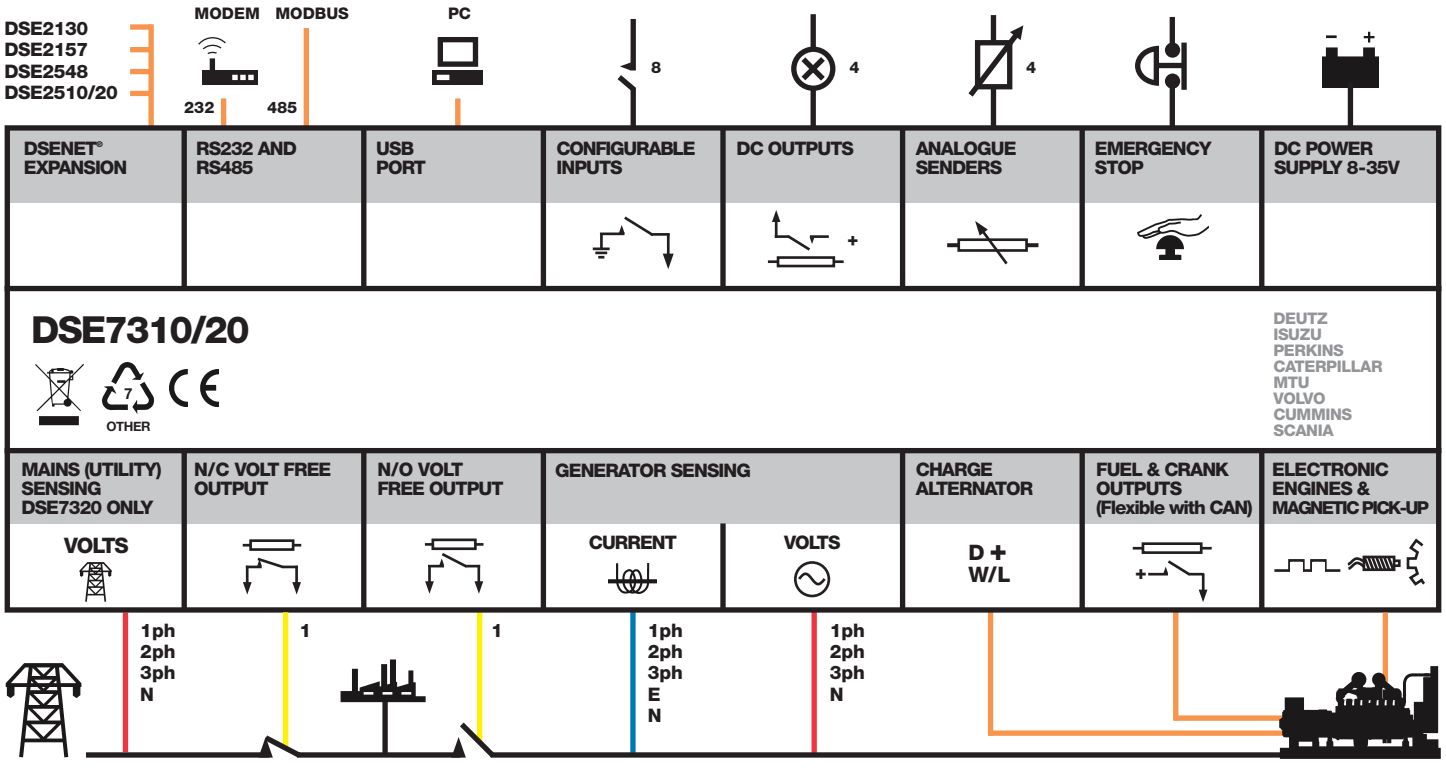
VIBRATION
BS EN 60068-2-6
Ten sweeps in each of three major axes
5 Hz to 8 Hz @ +/-7.5 mm,
8 Hz to 500 Hz @ 2 gn

HUMIDITY
BS EN 60068-2-30
Db Damp Heat Cyclic 20/55 °C @ 95% RH 48 Hours
BS EN 60068-2-78
Cab Damp Heat Static 40 °C @ 93% RH 48 Hours

SHOCK
BS EN 60068-2-27
Three shocks in each of three major axes
15 gn in 11 mS

DEGREES OF PROTECTION PROVIDED BY ENCLOSURES
BS EN 60529
IP65 - Front of module when installed into the control panel with the supplied sealing gasket.

COMPREHENSIVE FEATURE LIST TO SUIT A WIDE VARIETY OF GEN-SET APPLICATIONS



ISSUE 6

DSEGenset

DSE

DSE7310/20

AUTO START & AUTO MAINS FAILURE CONTROL MODULES

FEATURES

DSE**7310**

DSE**7320**

KEY FEATURES

- 4-Line back-lit LCD text display
- Five key menu navigation
- Front panel editing with PIN protection
- Customisable status screens
- Power save mode
- Support for up to three remote display units
- 9 configurable inputs
- 8 configurable outputs
- Flexible sender inputs
- Configurable timers and alarms
- 3 configurable maintenance alarms
- Multiple date and time scheduler
- Configurable event log (250)
- Tier 4 CAN engine support
- Integral PLC editor
- Easy access diagnostic page
- CAN and Magnetic Pick-up/Alt. sensing
- Fuel usage monitor and low fuel alarms
- Charge alternator failure alarm
- Manual speed control (on compatible CAN engines)
- Manual fuel pump control
- Engine exerciser
- “Protections disabled” feature
- kW & kV Ar protection
- Reverse power (kW & kV Ar) protection
- LED and LCD alarm indication
- Power monitoring (kW h, kV Ar, kV A h, kV Ar h)
- Load switching (load shedding and dummy load outputs)
- Automatic load transfer (DSE7320)
- Unbalanced load protection
- Independent Earth Fault trip
- True dual mutual standby with load balancing timer (DSE7310 only)
- USB connectivity
- Backed up real time clock
- Fully configurable via DSE Configuration Suite PC software
- Configurable display languages
- Remote SCADA monitoring via DSE Configuration Suite PC software
- User selectable RS232 and RS485 communications
- Configurable Gencomm pages
- Advanced SMS messaging (additional external modem required)
- Start & stop capability via SMS messaging
- Additional display screens to help with modem diagnostics
- Idle control for starting & stopping.
- DSENet® expansion compatible
- Heated display option available

KEY BENEFITS

- 132 x 64 pixel ratio display for clarity
- Real-time clock provides accurate event logging
- Multiple date and time scheduler
- Set maintenance periods can be configured to maintain optimum engine performance
- Ethernet communications (via DSE855 module), provides advanced remote monitoring
- Modules can be integrated into building management systems (BMS)
- Increased input and output expansion capability via DSENet®
- Licence-free PC software
- IP65 rating (with supplied gasket) offers increased resistance to water ingress
- PLC editor allows user configurable functions to meet specific application requirements

SPECIFICATION

DC SUPPLY

CONTINUOUS VOLTAGE RATING
8 V to 35 V Continuous

CRANKING DROPOUTS
Able to survive 0 V for 50 mS, providing supply was at least 10 V before dropout and supply recovers to 5 V. This is achieved without the need for internal batteries. LEDs and backlight will not be maintained during cranking.

MAXIMUM OPERATING CURRENT
340 mA at 12 V, 160 mA at 24 V

MAXIMUM STANDBY CURRENT
160 mA at 12 V, 80 mA at 24 V

CHARGE FAIL/EXCITATION RANGE
0 V to 35 V

MAINS (UTILITY) DSE7320 ONLY

VOLTAGE RANGE
15 V to 415 V AC (Ph to N)
26 V to 719 V AC (Ph to Ph)

FREQUENCY RANGE
3.5 Hz to 75 Hz

OUTPUTS

OUTPUT A (FUEL)
15 A DC at supply voltage

OUTPUT B (START)
15 A DC at supply voltage

OUTPUTS C & D
8 A 250 V (Volt free)

AUXILIARY OUTPUTS E,F,G,H
2 A DC at supply voltage

GENERATOR

VOLTAGE RANGE
15 V to 415 V AC (Ph to N)
26 V to 719 V AC (Ph to Ph)

FREQUENCY RANGE
3.5 Hz to 75 Hz

MAGNETIC PICK UP

VOLTAGE RANGE
+/- 0.5 V to 70 V

FREQUENCY RANGE
10,000 Hz (max)

DIMENSIONS

OVERALL
240 mm x 181 mm x 42 mm
9.4” x 7.1” x 1.6”

PANEL CUT-OUT
220 mm x 160 mm
8.7” x 6.3”

MAXIMUM PANEL THICKNESS
8 mm
0.3”

OPERATING TEMPERATURE RANGE
-30°C to +70°C

STORAGE TEMPERATURE RANGE
-40°C to +80°C

RELATED MATERIALS

TITLE	PART NO’S
DSE7310 Installation Instructions	053-028
DSE7320 Installation Instructions	053-029
DSE7200/7300 Quick Start Guide	057-101
DSE7200/7300 Operator Manual	057-074
DSE7200/7300 Configuration Suite PC Manual	057-077

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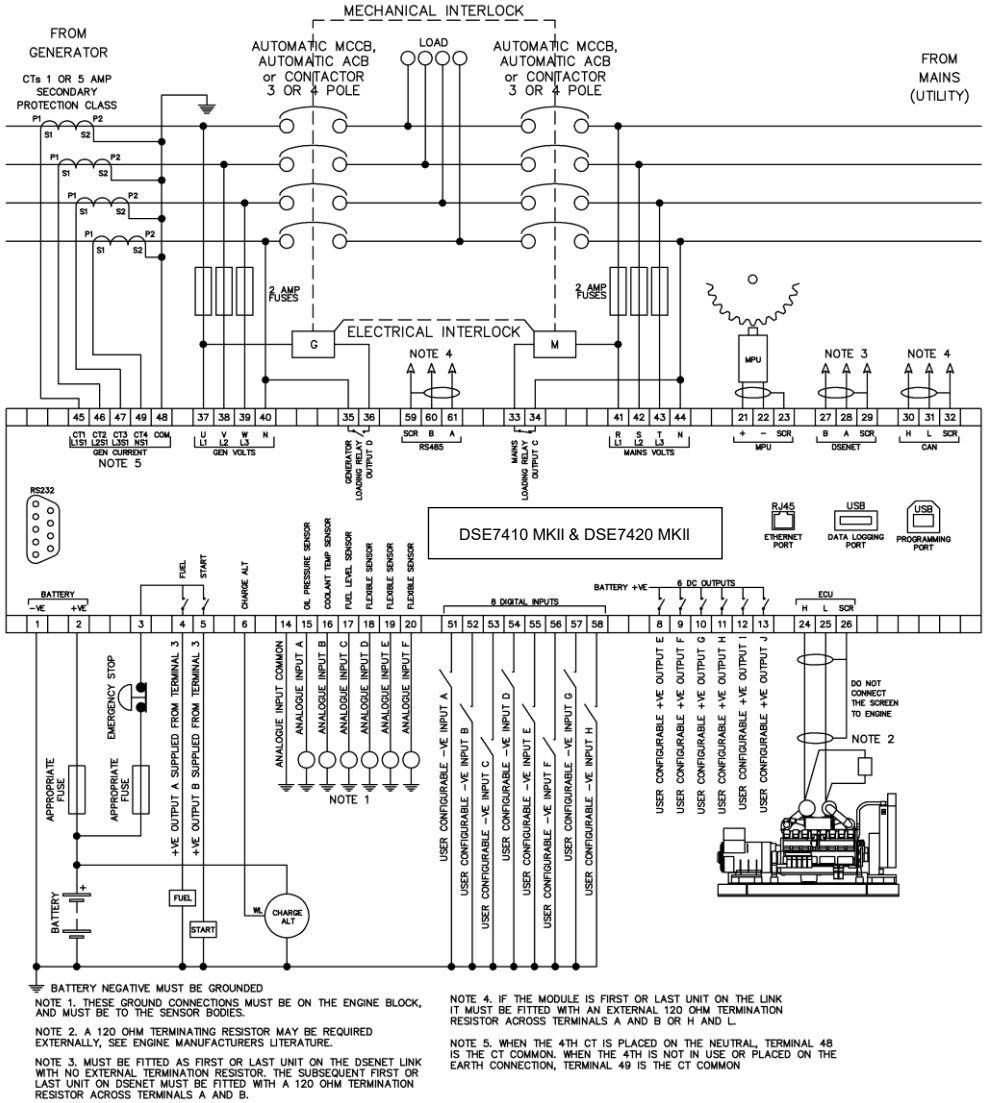
TYPICAL WIRING DIAGRAM



BATTERY NEGATIVE MUST BE GROUNDED

NOTE 1. THESE GROUND CONNECTIONS MUST BE ON THE ENGINE BLOCK, AND MUST BE TO THE SENSOR BODIES.

NOTE 2. A 120 OHM TERMINATING RESISTOR MAY BE REQUIRED EXTERNALLY, SEE ENGINE MANUFACTURERS LITERATURE.

NOTE 3. MUST BE FITTED AS FIRST OR LAST UNIT ON THE DSENET LINK WITH NO EXTERNAL TERMINATION RESISTOR. THE SUBSEQUENT FIRST OR LAST UNIT ON DSENET MUST BE FITTED WITH A 120 OHM TERMINATION RESISTOR ACROSS TERMINALS A AND B.

NOTE 4. IF THE MODULE IS FIRST OR LAST UNIT ON THE LINK IT MUST BE FITTED WITH AN EXTERNAL 120 OHM TERMINATION RESISTOR ACROSS TERMINALS A AND B OR H AND L.

NOTE 5. WHEN THE 4TH CT IS PLACED ON THE NEUTRAL, TERMINAL 48 IS THE CT COMMON. WHEN THE 4TH IS NOT IN USE OR PLACED ON THE EARTH CONNECTION, TERMINAL 49 IS THE CT COMMON

NOTE: Terminals 41, 42, 43 & 44 are not fitted to the DSE7410 MKII.

NOTE: A larger version of the Typical Wiring Diagram is available in the product's operator manual, refer to DSE Publication: *057-263 DSE7410 MKII & DSE7420 MKII Operator Manual* available from www.deepseaelectronics.com for more information.

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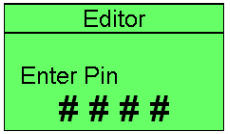
DEEP SEA ELECTRONICS

053-191
ISSUE 3

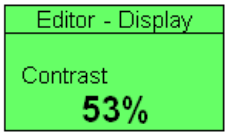
DSE7410 MKII & DSE7420 MKII Installation Instructions

ACCESSING THE MAIN CONFIGURATION EDITOR

- Ensure the engine is at rest and the module is in STOP mode by pressing the (Stop/Reset) button.
- Press the (Stop/Reset) and (Tick) buttons simultaneously.
- If a module security PIN has been set, the PIN number request is then shown:



- The first '**#**' changes to '**0**'. Press the (Up) or (Down) button to adjust it to the correct value.
- Press the (Right) button when the first digit is correctly entered. The digit previously entered now shows '**#**' for security.
- Repeat this process for the other digits of the PIN number. Press the (Left) button to move back to adjust one of the previous digits.
- When the (Tick) button is pressed after editing the final PIN digit, the PIN is checked for validity. If the number is not correct, the PIN must be re-entered.
- If the PIN has been successfully entered (or the module PIN has not been enabled), the editor is displayed:



EDITING A PARAMETER

- Enter the editor as described above.
- Press the (Right) or (Left) buttons to cycle to the section to view/change.
- Press the (Up) or (Down) buttons to select the parameter to view/change within the currently selected section.
- To edit the parameter, press the (Tick) button to enter edit mode. The parameter begins to flash to indicate editing.
- Press the (Up) or (Down) buttons to change the parameter to the required value.
- Press the (Tick) button to save the value. The parameter ceases flashing to indicate that it has been saved.
- To exit the editor and save the changes, press and hold the (Tick) button.
- To exit the editor and not save the changes, press and hold the (Stop/Reset) button.

NOTE: If the editor is left inactive for the duration of the *LCD Page Timer*, it is automatically exited to ensure security.

NOTE: The PIN number is automatically reset when the editor is exited (manually or automatically) to ensure security.

NOTE: Comprehensive module configuration is possible using the DSE Configuration Suite PC Software, refer to DSE publication *057-262 DSE7410 MKII & DSE7420 MKII Configuration Suite PC Software Manual* available from www.deepseaelectronics.com.

MAIN CONFIGURATION EDITOR PARAMETERS

NOTE: Depending upon module configuration, some values in the *Main & Running Configuration Editors* may not be available. For more information refer to DSE publication *057-262 DSE7410 MKII & DSE7420 MKII Configuration Suite PC Software Manual* available from www.deepseaelectronics.com

Section	Parameter As Shown On Display	Value
Display	Contrast	0 %
	Language	English
	Current Date and Time	dd:mm:yyyy hh:mm:ss
	Dual Mutual Mode	Set Priority / Run Time / Engine Hours
	Dual Mutual Priority	0
	Dual Mutual Duty Time	0 h 0 m
Alt Config	Config to Edit	Main Configuration / Alt Config 1, 2, 3, 4 or 5
	Default Configuration	Main Configuration / Alt Config 1, 2, 3, 4 or 5
Engine	Oil Pressure Low Shutdown	0.00 bar 0 psi 0 kPa
	Oil Pressure Low Pre Alarm	0.00 bar 0 psi 0 kPa
	Coolant Temperature Low Warning	0 °C 0 °F
	Coolant Temperature High Pre Alarm	0 °C 0 °F
	Coolant Temperature High Electrical Trip	0 °C 0 °F
	Coolant Temperature High Shutdown	0 °C 0 °F
	Fuel Usage Running Rate	0 %
	Fuel Usage Stopped Rate	0 %
	Specific Gravity	0.00
	Pre Heat Temp	0 °C 0 °F
	Pre Heat Timer	0 h 0 m 0 s
	Post Heat Temp	0 °C 0 °F
	Post Heat Timer	0 h 0 m 0 s
	Droop	Active / Inactive
	Droop	0.0 %
	Crank Disconnect Oil Pressure Delay	0.0 s
	Crank Disconnect	0 V
	Under Speed Shutdown	Active / Inactive
	Under Speed Shutdown	0 RPM
	Under Speed Warning	Active / Inactive
	Under Speed Warning	0 RPM
	Under Speed Delay	0.0 s
	Over Speed Warning	Active / Inactive
	Over Speed Warning	0 RPM
	Over Speed Shutdown	0 RPM
	Over Speed Delay	0.0 s
	Overspeed Overshoot	0 %
	Overspeed Overshoot Delay	0.0 s
	Battery Under Voltage Warning	Active / Inactive
	Battery Under Voltage Warning	0 V
	Battery Under voltage Warning Delay	0 h 0 m 0 s
	Battery Over Voltage Warning	Active / Inactive
	Battery Over Voltage Warning	0 V
	Battery Over Voltage Warning Delay	0 h 0 m 0 s
	Charge Alternator Failure Warning	Active / Inactive
	Charge Alternator Failure Warning	0 V
	Charge Alternator Warning Delay	0 h 0 m 0 s
	Charge Alternator Failure Shutdown	Active / Inactive
	Charge Alternator Failure Shutdown	0.0 V
	Charge Alternator Shutdown Delay	0 h 0 m 0 s
	Inlet Temperature Alarm	0 °C 0 °F
	Inlet Temperature Pre-Alarm	0 °C 0 °F
Generator	AC System	3 Phase, 4 Wire
	Under Voltage Shutdown	0 V
	Under Voltage Pre Alarm	0 V
	Under Voltage Delay	0.0 s
	Nominal Voltage	0 V
	Over Voltage Pre Alarm	0 V
	Over Voltage Shutdown	0 V
	Over Voltage Delay	0.0 s
	Under Frequency Shutdown	0.0 Hz
	Under Frequency Pre Alarm	0.0 Hz
	Under Frequency Delay	0.0 s

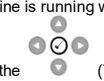
MAIN CONFIGURATION EDITOR PARAMETERS (CONTINUED)

Section	Parameter As Shown On Display	Value
Generator (Continued)	Nominal Frequency	0.0 Hz
	Over Frequency Pre Alarm	0.0 Hz
	Over Frequency Shutdown	0.0 Hz
	Over Frequency Delay	0.0 s
	Frequency Overshoot	0 %
	Frequency Overshoot Delay	0 m 0.0 s
	CT Primary	0 A
	CT Secondary	0 A
	Earth CT Primary	0 A
	Full Load Rating	0 A
	Delayed Over Current	Active / Inactive
	Delayed Over Current	0 %
	Earth Fault Trip	Active / Inactive
	Earth Fault Trip	0 %
	kW Overload Trip	0 %
Mains DSE7420 MKII Only	AC System	3 Phase, 4 Wire
	Under Voltage Trip	0 V
	Over Voltage Trip	0 V
	Under Frequency Trip	0.0 Hz
	Over Frequency Trip	0.0 Hz
Timers	Start Delay Off Load	0 h 0 m 0 s
	Start Delay On Load	0 h 0 m 0 s
	Start Delay Mains Fail	0 h 0 m 0 s
	Start Delay Telemetry	0 h 0 m 0 s
	Mains Transient Delay	0 m 0 s
	Engine Cranking	0 m 0 s
	Engine Cranking Rest	0 m 0 s
	Engine Smoke Limiting	0 m 0 s
	Engine Smoke Limiting Off	0 m 0 s
	Engine Safety On Delay	0 m 0 s
	Engine Warming	0 h 0 m 0 s
	ECU Override	0 m 0 s
	(Mains) Transfer Time	0 m 0.0 s
	Return Delay	0 h 0 m 0 s
	Engine Cooling	0 h 0 m 0 s
	Engine Fail To Stop Delay	0 m 0 s
	LCD Page Delay	0 h 0 m 0 s
	LCD Scroll Delay	0 h 0 m 0 s
	Sleep Timer	0 h 0 m 0 s
	Backlight Timer	0 h 0 m 0 s
Schedule	Schedule	Active / Inactive
	Schedule Period Bank 1	Weekly / Monthly
	On Load / Off Load / Auto Start Inhibit, Week, On, Run Time and Day Selection (1 to 8)	Press ***Tick*** to begin editing then up or down when selecting the different parameters in the scheduler.
	Schedule Period Bank 2	Weekly / Monthly
	On Load / Off Load / Auto Start Inhibit, Week, On, Run Time and Day Selection (1 to 8)	Press ***Tick*** to begin editing then up or down when selecting the different parameters in the scheduler.

DIMENSIONS AND MOUNTING

Parameter	Specification
Dimensions	245 mm x 184 mm x 51 mm (9.6 " x 7.2 " x 2.0 ")
Panel Cut-out	220 mm x 160 mm (8.7 " x 6.3 ")
Weight	0.98 kg (2.16 lb)
Operating Temperature With Standard Display	-30 °C to +70 °C (-22 °F to +158 °F)
Operating Temperature With Heated Display	-40 °C to +70 °C (-40 °F to +158 °F)
Storage Temperature	-40 °C to +80 °C (-40 °F to +176 °F)

ACCESSING THE 'RUNNING' CONFIGURATION EDITOR

- The 'running' editor can be entered while the engine is running. All protections remain active if the engine is running while the running editor is entered.
- Press and hold the  (Tick) button to enter the running editor.

RUNNING CONFIGURATION EDITOR PARAMETERS

Section	Parameter As Shown On Display	Value
Display	Contrast	0%
	Language	English
	Dual Mutual Status	Set Priority (1 to 8)
Engine	Manual Frequency Trim	0.0 Hz
	Speed Bias	0.0 Unit
	Governor Gain	0.0
	Frequency Adjust	0 %
	DPF Auto Regeneration Inhibit	Active / Inactive
	DPF Manual Regeneration Request	Active / Inactive
	ECU Service Mode	Active / Inactive
	Escape Mode	Active / Inactive
AVR	Droop (% of Set Point)	0.0
	Proportional Set Point	0.0
	Integral Set Point	0.0
	Derivative Set Point	0.0
	Off Load Duty Cycle	0.0
	Maximum Duty Cycle	0.0
	Soft Start Ramp Start Point	0.0
	Soft Start Ramp Rate (%/Hz)	0.0
	Alternative Configuration	0
	Stability Selection	0

REQUIREMENTS FOR UL CERTIFICATION

WARNING!: More than one live circuit exists, see diagram overleaf for further information.

Specification	Description
Screw Terminal Tightening Torque	• 4.5 lb-in (0.5 Nm)
Conductors	• Terminals suitable for connection of conductor size 13 AWG to 20 AWG (0.5 mm² to 2.5 mm²). • Conductor protection must be provided in accordance with NFPA 70, Article 240 • Low voltage circuits (35 V or less) must be supplied from the engine starting battery or an isolated secondary circuit. • The communication, sensor, and/or battery derived circuit conductors shall be separated and secured to maintain at least ¼" (6 mm) separation from the generator and mains connected circuit conductors unless all conductors are rated 600 V or greater.
Current Inputs	• Must be connected through UL Listed or Recognized isolating current transformers with the secondary rating of 5 A max.
Communication Circuits	• Must be connected to communication circuits of UL Listed equipment
DC Output Pilot Duty	• 0.5 A
Mounting	• Suitable for flat surface mounting in Type 1 Enclosure Type rating with surrounding air temperature -22 °F to +122 °F (-30 °C to +50 °C) • Suitable for pollution degree 3 environments when voltage sensing inputs do not exceed 300 V. When used to monitor voltages over 300 V device to be installed in an unventilated or filtered ventilation enclosure to maintain a pollution degree 2 environment.
Operating Temperature	• -22 °F to +122 °F (-30 °C to +50 °C)

DSEGenset

DSE8660

AUTO TRANSFER SWITCH & MAINS CONTROL MODULE

FEATURES

The DSE8660 is an easy-to-use single or multi-mains controller with automatic transfer switch capability. Designed to synchronise single or multiple DSE8610s and DSE8680s with single or multiple mains (utility) supplies, the DSE8660 will automatically control the change over from mains (utility) to generator supply or run generators in synchronisation with the mains (utility) to provide no-break, peak lopping and peak shaving power solutions.

The module can indicate operational status and fault conditions on the LCD screen (multiple languages available), by illuminated LED, audible sounder and SMS messaging.

Comprehensive communications are also available via RS232, RS485 & Ethernet for remote PC control and monitoring, and integration into building management systems.
The comprehensive event log will record up to 250 events to facilitate maintenance.

An extensive number of fixed and flexible monitoring and protection features are included. Easy alteration of the sequences, timers and alarms can be made using the DSE PC Configuration Suite Software. Selected configuration is also available via the module's front panel.

With all communication ports capable of being active at the same time, the DSE8xxx Series is ideal for a wide variety of demanding load share applications.

KEY LOAD SHARE FEATURES (WITH DSE8x10) :

- Peak lopping/shaving
- Sequential set start
- Manual voltage/frequency adjustment
- R.O.C.O.F. and vector shift protection
- Generator load demand
- Automatic hours run balancing
- Mains (Utility) de-coupling
- Mains (Utility) de-coupling test mode
- Bus failure detection
- Volts and frequency matching.
- kW & kV Ar load sharing

ENVIRONMENTAL TESTING STANDARDS

ELECTRO MAGNETIC COMPATIBILITY
BS EN 61000-6-2
EMC Generic Immunity Standard for the Industrial Environment
BS EN 61000-6-4
EMC Generic Emission Standard for the Industrial Environment

ELECTRICAL SAFETY
BS EN 60950
Safety of Information Technology Equipment, including Electrical Business Equipment

TEMPERATURE
BS EN 60068-2-1
Ab/Ae Cold Test -30°C
BS EN 60068-2-2
Bb/Be Dry Heat +70°C

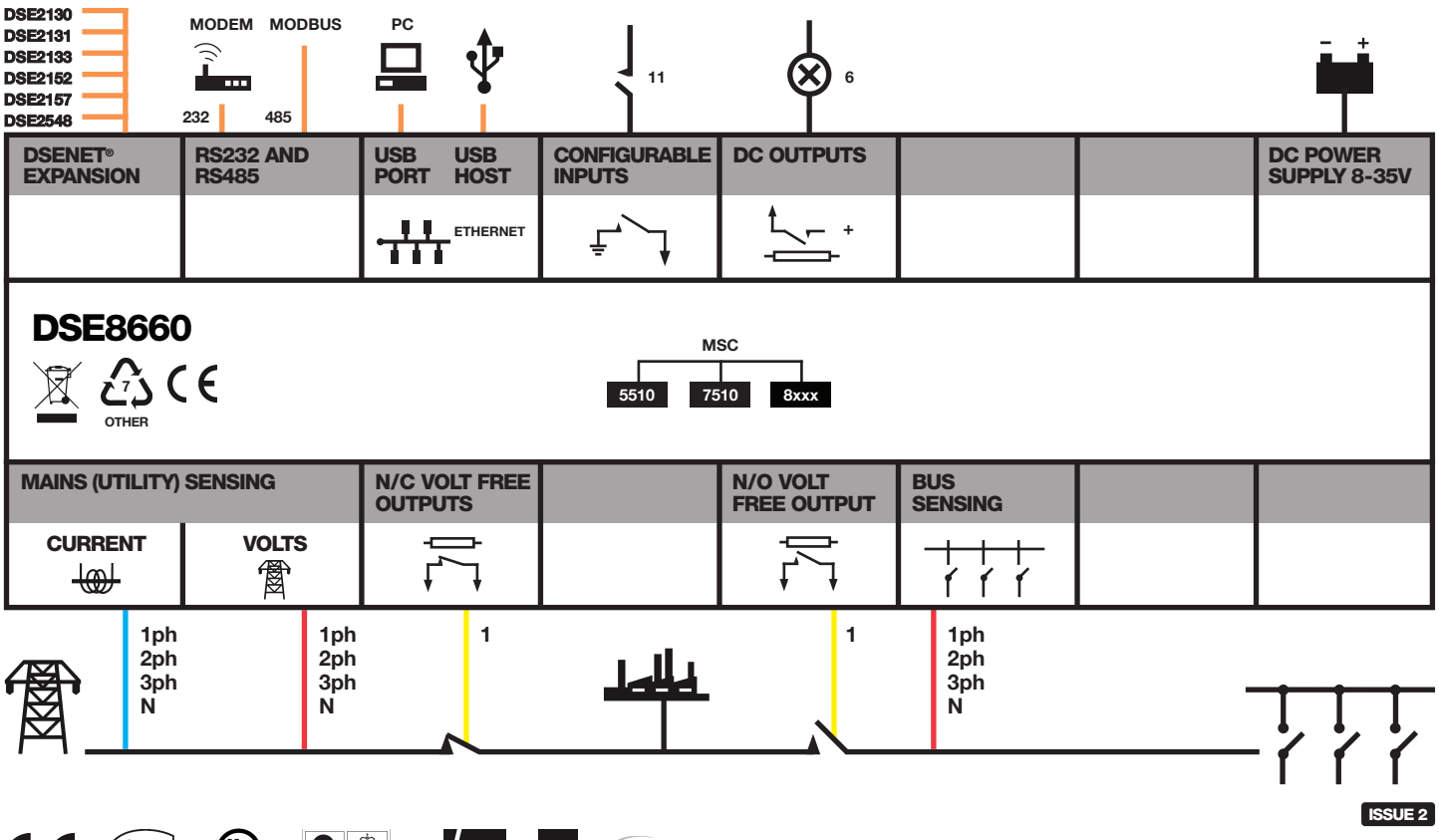
VIBRATION
BS EN 60068-2-6
Ten sweeps in each of three major axes
5Hz to 8Hz @ +/-7.5mm, 8Hz to 500Hz @ 2gn

HUMIDITY
BS EN 60068-2-30
Db Damp Heat Cyclic 20/55°C @ 95% RH 48 Hours
BS EN 60068-2-78
Cab Damp Heat Static 40°C @ 93% RH 48 Hours

SHOCK
BS EN 60068-2-27
Three shocks in each of three major axes
15gn in 11mS

DEGREES OF PROTECTION PROVIDED BY ENCLOSURES
BS EN 60529
IP65 - Front of module when installed into the control panel with the supplied sealing gasket.

COMPREHENSIVE FEATURE LIST TO SUIT A WIDE VARIETY OF LOAD SHARE APPLICATIONS



ISSUE 2

DSEGenset

DSE8660

AUTO TRANSFER SWITCH & MAINS CONTROL MODULE

FEATURES

KEY FEATURES

- Mains (utility) failure detection
- Mains (utility) power monitoring (kW, kV Ar, kV A and pf)
- Comprehensive synchronising and loadsharing capabilities
- Base load (kW export) functionality
- Positive & negative kVAr export control
- Peak lopping & shaving functionality
- Mains (utility) kW export protection
- Mains (utility) de-coupling protection
- Advanced integral PLC editor
- User configurable RS232, RS485 & Ethernet communications
- MODBUS RTU & TCP support
- User configurable MODBUS pages
- Advanced SMS control and fault messaging (additional GSM modem required)
- DSENet expansion compatible
- Data logging and trending
- 4-Line back-lit LCD text display
- Multiple display languages
- Five key menu navigation
- Front panel editing with PIN protection
- Customisable status screens
- Configurable inputs (11)
- Configurable outputs (8)
- Configurable timers and alarms
- Multiple entry scheduler
- Configurable event log (250)
- Easy access diagnostic pages
- LED and LCD alarm indication
- USB connectivity
- Backed up real time clock
- Fully configurable via DSE Configuration Suite PC Software

KEY BENEFITS

- A single flexible solution for multiple applications
- Compatible with DSE5510, DSE7510 & DSE8x10 series of modules
- 132 x 64 pixel ratio display for clarity
- Real-time clock provides accurate event logging
- Ethernet communication provides built in advanced remote monitoring.
- Can be integrated into building management systems (BMS) and programmable logic control (PLC)
- Increased input and output expansion capability via DSENet®
- Licence-free PC software
- IP65 rating (with supplied gasket) offers increased resistance to water ingress
- Advanced Internal PLC editor allows user configurable functions to meet specific application requirements.

EXPANSION DEVICES

- DSE124 CAN/MSC Extender
- DSE2130 Input Expansion Module
- DSE2131 Ratiometric Input Expansion Module
- DSE2133 RTD & Thermocouple Expansion Module
- DSE2152 Analogue Output Expansion Module
- DSE2157 Output Expansion Module
- DSE2548 LED Expansion Module

SPECIFICATION

DC SUPPLY
CONTINUOUS VOLTAGE RATING
8 V to 35 V Continuous

CRANKING DROPOUTS
Able to survive 0 V for 50 mS, providing supply was at least 10 V before dropout and supply recovers to 5 V. This is achieved without the need for internal batteries. LEDs and backlight will not be maintained during cranking.

MAXIMUM OPERATING CURRENT
340 mA at 12 V, 160 mA at 24 V

MAXIMUM STANDBY CURRENT
160 mA at 12 V, 80 mA at 24 V

MAINS (UTILITY)
VOLTAGE RANGE
15 V to 333 V AC (L-N)

FREQUENCY RANGE
3.5 Hz to 75 Hz

BUS
VOLTAGE RANGE
15 V to 333 V AC (L-N)

FREQUENCY RANGE
3.5 Hz to 75 Hz

OUTPUTS
OUTPUTS C & D
8 A at 250 V AC (Volt free)

AUXILIARY OUTPUTS E,F,G,H, I & J
2 A DC at supply voltage

DIMENSIONS
OVERALL
240 mm x 181 mm x 42 mm
9.4” x 7.1” x 1.6”

PANEL CUT-OUT
220 mm x 160 mm
8.7” x 6.3”

MAXIMUM PANEL THICKNESS
8 mm
0.3”

OPERATING TEMPERATURE RANGE
-30°C to +70°C

STORAGE TEMPERATURE RANGE
-40°C to +85°C

RELATED MATERIALS

TITLE	PART NO’S
DSE8660 Installation Instructions	053-070
DSE8660 Operator Manual	057-120
DSE8600 PC Configuration Suite Manual	057-119
DSE8610 Data Sheet	055-083
DSE8680 Data Sheet	055-091
DSE8700 Data Sheet	055-090
DSE8810 Data Sheet	055-116
DSE8860 Data Sheet	055-139

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055-086/04/11 (5) US

DSEGenset

DSE8680

SYNCHRONISING GENERATOR BUS-TIE CONTROL MODULE

FEATURES

The DSE8680 module is designed to control a generator bus-tie breaker. The module manages the synchronising and check-sync across the breaker automatically, via the DSE MSC (Multi-set Communications) Link, when opening or closing the bus-tie breaker.

The DSE8680 module has been designed to work with the DSE8x10 and DSE8x60 Load Share control modules which support up to sixteen DSE8680s with no DSE8x60 or up to two DSE8680s with one to fourteen DSE8x60s. This provides a standalone, fully integrated solution, without the need for PLC.

With all communication ports capable of being active at the same time, the DSE8680 is ideal for a wide variety of demanding load share applications.

ENVIRONMENTAL TESTING STANDARDS

ELECTRO MAGNETIC COMPATIBILITY
BS EN 61000-6-2
EMC Generic Immunity Standard for the Industrial Environment
BS EN 61000-6-4
EMC Generic Emission Standard for the Industrial Environment

ELECTRICAL SAFETY
BS EN 60950
Safety of Information Technology Equipment, including Electrical Business Equipment

TEMPERATURE
BS EN 60068
Ab/Ae Cold Test -30°C
BS EN 60068-2-2
Bb/Be Dry Heat +70°C

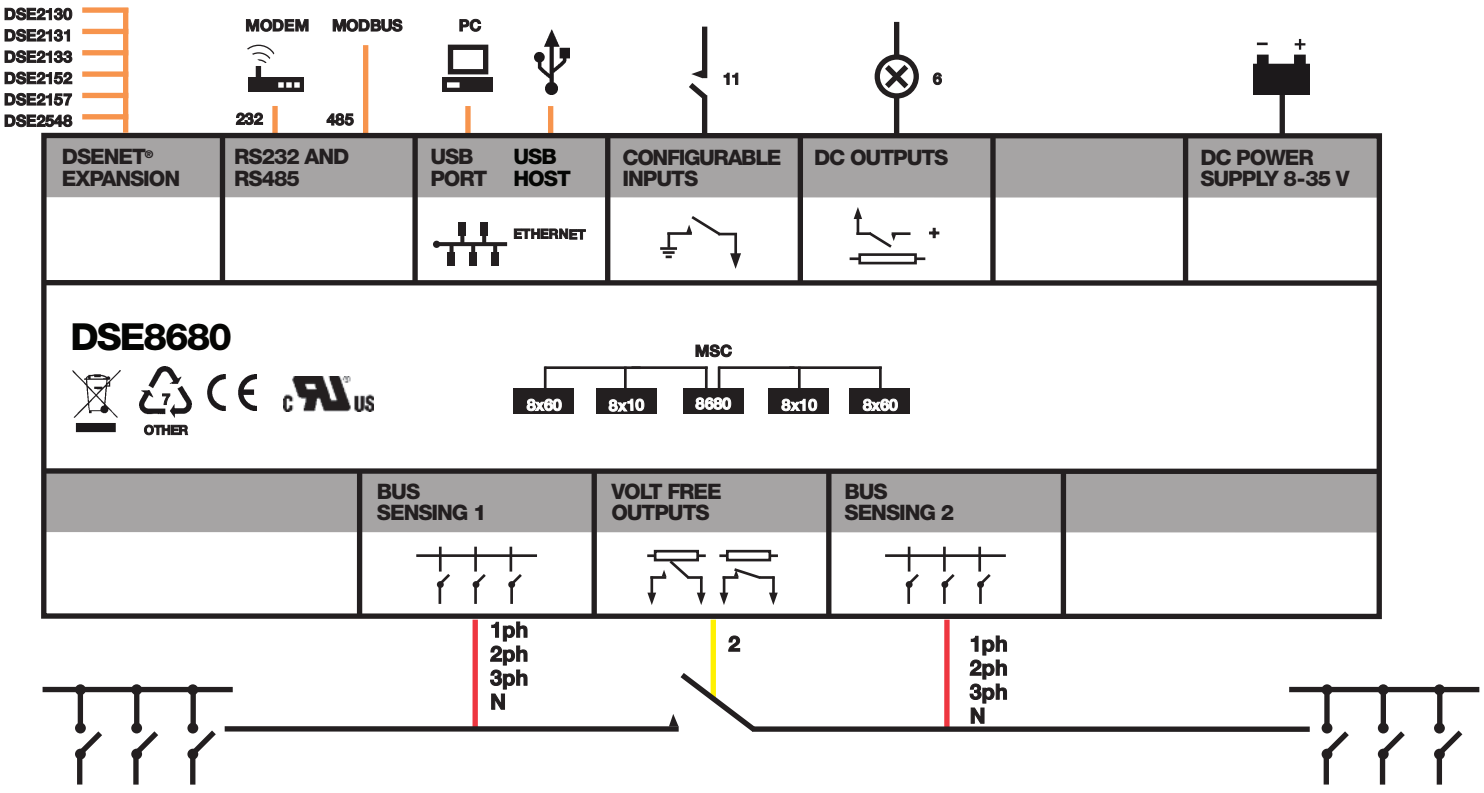
VIBRATION
BS EN 60068-2-6
Ten sweeps in each of three major axes
5Hz to 8Hz @ +/-7.5mm, 8Hz to 500Hz @ 2gn

HUMIDITY
BS EN 60068-2-30
Db Damp Heat Cyclic 20/55°C @ 95% RH 48 Hours
BS EN 60068-2-78
Cab Damp Heat Static 40°C @ 93% RH 48 Hours

SHOCK
BS EN 60068-2-27
Three shocks in each of three major axes
15gn in 11mS

DEGREES OF PROTECTION PROVIDED BY ENCLOSURES
BS EN 60529
IP65 - Front of module when installed into the control panel with the supplied sealing gasket.

COMPREHENSIVE FEATURE LIST TO SUIT A WIDE VARIETY OF GEN-SET APPLICATIONS



ISSUE 2

DSEGenset

DSE8680

SYNCHRONISING GENERATOR BUS-TIE CONTROL MODULE

FEATURES

KEY FEATURES

- Comprehensive synchronising & loadshare capabilities
- Connects to two DSE MSC links, one for 'bus 1' and another for 'bus 2'
- Advanced integral PLC editor
- 11 Configurable inputs
- 8 Configurable outputs
- DSENet® expansion compatibility
- User configurable RS232, RS485 and Ethernet communications
- Remote SCADA monitoring via various DSE software applications
- MODBUS RTU & TCP support
- User configurable MODBUS pages
- Advanced SMS control and fault messaging (additional GSM modem required)
- Easy access diagnostic pages including modem diagnostic pages
- Data logging and trending
- Front panel editing with PIN protection
- Fully configurable using DSE Configuration Suite PC software via USB
- 4 Line back-lit LCD text display
- LED and LCD alarm indication
- Configurable display languages
- Customisable status screens
- Configurable event log (250)
- Backed up real time clock

KEY BENEFITS

- Automatic control of the DSE MSC link when the breaker is opened/closed for synchronising
- Instrumentation shows the status and measurements of both buses
- Built-in RS232, RS485 & Ethernet can be used at the same time
- High number of inputs and outputs
- Worldwide Language Support
- Compatible in load share systems containing DSE5500, DSE7500 and DSE8600 series. Contact DSE for further details.
- 132 x 64 pixel ratio display for clarity
- Real-time clock provides accurate event logging
- Ethernet communications, provides advanced remote monitoring at low cost
- Can be integrated into building management systems (BMS)
- Increased input and output expansion capability via DSENet®
- Licence-free PC software
- IP65 rating (with supplied gasket) offers increased resistance to water ingress
- PLC editor allows user configurable functions to meet specific application requirements

SPECIFICATION

DC SUPPLY
CONTINUOUS VOLTAGE RATING
8 V to 35 V Continuous

MAXIMUM OPERATING CURRENT
150 mA at 12 V, 80 mA at 24 V

MAXIMUM STANDBY CURRENT
50 mA at 12 V, 30 mA at 24 V

BUS 1 AND BUS 2
VOLTAGE RANGE
15 V to 333 V AC (L-N)

FREQUENCY RANGE
3.5 Hz to 75 Hz

OUTPUTS
OUTPUTS C & D
8 A at 250 V AC (Volt free)

AUXILIARY OUTPUTS E,F,G,H,I & J
2 A DC at supply voltage

DIMENSIONS
OVERALL
240 mm x 181 mm x 42 mm
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PANEL CUTOUT
220 mm x 160 mm
8.7" x 6.3"

MAXIMUM PANEL THICKNESS
8 mm
0.3"

OPERATING TEMPERATURE RANGE
-30 °C to +70 °C

STORAGE TEMPERATURE RANGE
-40 °C to +85 °C

RELATED MATERIALS

TITLE	PART NO'S
DSE8680 Installation Instructions	053-082
DSE8680 Operator Manual	057-130
DSE8680 Configuration Suite PC Software Manual	057-131

TITLE	PART NO'S
DSE8610 Data Sheet	055-083
DSE8660 Data Sheet	055-086
DSE8700 Series Data Sheet	055-090
DSE8810 Data Sheet	055-116
DSE8860 Data Sheet	055-139

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