WHOLESALE DIESEL GENERATORS
A DIVISION OF NORTH STAR LOGISTICS LLC
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19KW Perkins Diesel Generator

Perkins Engine | Customizable Options | EPA Tier 3

General

Model	WDG-19-PER
Fuel Type	Diesel
Prime Rating	19 kW / 24 kVA
Standby Rating	21 kW / 26 kVA
Frequency	60 Hz
Voltage	Any voltage can be customized
Phase	Single Phase or Three Phase
Enclosure Type	Silent, Weatherproof
Engine Brand	Perkins
Alternator Brand	Stamford
Controller Model	Deep Sea DSE 6120/6110

Engine Data

Engine Model	Perkins 404D-22G
Configuration	4 cylinder, in-line
Aspiration	Naturally Aspirated
Typical Electrical Output	19.2-21.3 kWe
Bore x Stroke (in.)	3.3 x 3.9 (in.)
Rated Speed (RPM)	1800
Displacement (L)	2.21
Compression Ratio	23.3:1
Cooling Method	Water cooled
Governor	Electronic

Alternator Data

Alternator Model	Stamford S0L2-M1
Type	Self-excited, Brushless
Power Factor	0.8
Voltage Regulation	AVR
Insulation System	Class H
Protection Level	IP23

Size & Dimensions

Dimensions (L x W x H)	90 x 43 x 70 (in.)
Net Weight (lbs.)	2,300

Other Customization

- ☐ Open type without enclosure
- ☐ Silent type with enclosure
  - Options for:
    - Painted
    - Stainless Steel
    - Aluminum (MOQ required)

Product Specifications for 404D-22G

Total Power Range

Gross Mechanical Output	18-24 kWm
Typical Electrical Output	20-26 kVA (16-21 kWe)
Rated Speed	1500/1800 rpm

Emission Standards

Emissions	UN ECE R96 Stage IIIA constant speed and U.S. EPA Stationary Emergency Engine

50 Hz Typical Electrical Output

Prime	20.3 kVA
Standby	22.1 kVA

60 Hz Typical Electrical Output

Prime	19.2 kWe
Standby	21.3 kWe

General

Number of Cylinders	4 inline
Bore	84 mm
Stroke	100 mm
Displacement	2.2 l
Compression Ratio	23.3:1
Aspiration	Naturally aspirated

Combustion System	Indirect injection
Rotation from Flywheel End	Anti-clockwise
Cooling System	Liquid
Aftertreatment	-
Typical Alternator Efficiency	87-89%
Switchable	Yes

ElectropaK Dimensions

Length	948 mm
Width	498 mm
Height	841 mm
Dry Weight	242 kg

Disclaimer

Note 1	*Final dimensions dependent on selected options
Note 2	ESE (1800 rpm) only - Emergency Stationary Equipment

Definitions

Prime Power	Power available at variable load in lieu of a main power network. Overload of 10% is permitted for one hour in every 12 hours of operation.
Standby Power	Power available at variable load in the event of a main power network failure. No overload is permitted.

404D-22G Standard Equipment

Air inlet system

Mounted air filter

Control system

12 volt Electronic Shut Off Solenoid (ESOS) energised to run
12 volt starter motor and 12 volt 14 amp alternator with DC output
Glow plug cold start aid and heater/starter switch
Oil pressure and coolant temperature switches

Cooling system

Thermostatically controlled system with belt driven coolant pump and pusher fan
Mounted radiator, piping and guards

Flywheel and flywheel housing

1500/1800 rpm high inertia flywheel to SAE J620 size 7½ heavy flywheel housing SAE 4 long
3000 rpm high inertia flywheel to SAE J620 size 7½ light flywheel housing SAE 4 short

Fuel system

Mechanically governed cassette type fuel injection pump
Split element fuel filter

General

Front and rear engine mounting bracket

Oil system

Wet steel sump with filler and dipstick
Spin-on full flow lubricating oil filter

STAMFORD

S0L2-M1 Winding 14

S0L2-M1 - Technical Data Sheet

Standards

Stamford industrial alternators meet the requirements of IEC EN 60034 and the relevant section of other international standards such as BS5000, VDE 0530, NEMA MG1-32, IEC34, CSA C22.2-100 and AS1359. Other standards and certifications can be considered on request.

Quality Assurance

Alternators are manufactured using production procedures having a quality assurance level to BS EN ISO 9001.

Excitation and Voltage Regulators

Excitation System	
AVR Type	**AVR Power**
AS540	Self-Excited
Voltage Regulation	± 1%
No Load Excitation Voltage (V)	7.7 V
Full Load Excitation Voltage (V)	37.4 V

STAMFORD

S0L2-M1 Winding 14

Electrical Data				
Insulation System	Class H			
Stator Winding	Double Layer Concentric			
Winding Pitch	Two Thirds			
Winding Leads	12			
Winding Number	14			
Number of Poles	4			
IP Rating	IP23			
RFI Suppression	EN 61000-6-2 & EN 61000-6-4, refer to factory for others			
Waveform Distortion	NO LOAD < 2.5% NON-DISTORTING BALANCED LINEAR LOAD < 5.0%			
Short Circuit Ratio	1/Xd			
Steady State X/R Ratio	N/A			
	60 Hz			
Telephone Interference	TIF<75			
Voltage Series Star	380	400	416	-
Voltage Parallel Star	190	200	208	-
Voltage Series Delta	220	230	240	-
kVA Base Rating (Class H)	30	30	30	-
Saturated Values in Per Unit at Base Ratings and Voltages				
Xd Dir. Axis Synchronous	2.236	2.018	1.866	-
X'd Dir. Axis Transient	0.163	0.147	0.136	-
X"d Dir. Axis Subtransient	0.137	0.123	0.114	-
Xq Quad. Axis Reactance	1.582	1.428	1.320	-
X"q Quad. Axis Subtransient	0.170	0.154	0.142	-
XL Stator Leakage Reactance	0.089	0.080	0.074	-
X2 Negative Sequence Reactance	0.259	0.234	0.216	-
X0 Zero Sequence Reactance	0.054	0.049	0.045	-
Unsaturated Values in Per Unit at Base Ratings and Voltages				
Xd Dir. Axis Synchronous	2.684	2.422	2.239	-
X'd Dir. Axis Transient	0.187	0.169	0.156	-
X"d Dir. Axis Subtransient	0.160	0.144	0.133	-
Xq Quad. Axis Reactance	1.629	1.471	1.360	-
X"q Quad. Axis Subtransient	0.204	0.184	0.170	-
XL Stator Leakage Reactance	0.100	0.090	0.084	-
X2 Negative Sequence Reactance	0.311	0.280	0.259	-
X0 Zero Sequence Reactance	0.063	0.057	0.053	-
Time Constants (Seconds)				
T'd TRANSIENT TIME CONST.	0.02			
T''d SUB-TRANSTIME CONST.	0.002			
T'do O.C. FIELD TIME CONST.	0.559			
Ta ARMATURE TIME CONST.	0.005			

STAMFORD

S0L2-M1 Winding 14

Resistances in Ohms (Ω) at 22°C	
Stator Winding Resistance (Ra)	0.175 Ω per phase series star connected
Rotor Winding Resistance (Rf)	0.747 Ω
Exciter Stator Winding Resistance	15.42 Ω
Exciter Rotor Winding Resistance	0.106 Ω per phase
Positive Sequence Resistance (R1)	0.219 Ω
Negative Sequence Resistance (R2	0.252 Ω
Zero Sequence Resistance (R0)	0.219 Ω
Aux Winding Resistance	N/A

Mechanical data	
Cooling Air	0.126 m³/sec
Shaft and Keys	All alternator rotors are dynamically balanced to better than BS6861: Part 1 Grade 2.5 for minimum vibration in operation.
Bearing	Single Bearing
Weight Complete Alternator	121.1 kg
Weight Wound Stator	49.0 kg
Weight Wound Rotor	43.4 kg
Moment of Inertia	0.159 kgm^2
Shipping weight in a Crate	159 kg
Packing Crate Size	930X590X760 mm
Maximum Over Speed	2250 RPM for two minutes
Bearing Drive End	N/A
Bearing Non-Drive End	Ball Bearing, 6305-2RS1

STAMFORD

S0L2-M1 Winding 14

RATINGS AT 0.8 POWER FACTOR

	Class - Temp Rise	Standby - 163/27°C	Standby - 150/40°C	Cont. H - 125/40°C	Cont. F - 105/40°C
50 Hz	Series Star (V)	N/A	N/A	N/A	N/A
	Parallel Star (V)				
	Series Delta (V)				
	kVA	N/A	N/A	N/A	N/A
	kW				
	Efficiency (%)				
	kW Input				

60 Hz	Series Star (V)	380	400	416	-	380	400	416	-	380	400	416	-	380	400	416	-
	Parallel Star (V)	190	200	208	-	190	200	208	-	190	200	208	-	190	200	208	-
	Series Delta (V)	220	230	240	-	220	230	240	-	220	230	240	-	220	230	240	-
	kVA	32.7	32.7	32.7	-	31.5	31.5	31.5	-	30.0	30.0	30.0	-	27.0	27.0	27.0	-
	kW	26.2	26.2	26.2	-	25.2	25.2	25.2	-	24.0	24.0	24.0	-	21.6	21.6	21.6	-
	Efficiency (%)	85.9	86.1	86.2	-	86.3	86.5	86.6	-	86.8	87.0	87.1	-	87.7	87.8	87.8	-
	kW Input	30.5	30.4	30.3	-	29.2	29.1	29.1	-	27.6	27.6	27.6	-	24.6	24.6	24.6	-

De-Rates

All values tabulated above are subject to the following reductions:

- 3% for every 500 meters by which the operating altitude exceeds 1000 meters above mean sea level
- 3% for every 5°C by which the operational ambient temperature exceeds 40°C
- For any other operating conditions impacting the cooling circuit please refer to applications

Note: Requirement for operating in an ambient exceeding 60°C and altitude exceeding 4000 meters must be referred to applications.

Dimensional and Torsional Drawing

For dimensional and torsional information please refer to the alternator General Arrangement and rotor drawings available on our website (http://stamford-avk.com/)

Note: Continuous development of our products means that the information contained in our data sheets can change without notice, and specifications should always be confirmed with Cummins Generator Technologies prior to purchase.

DSEGenset®

DSE6110/20 MKIII

AUTO START & AUTO MAINS (UTILITY) FAILURE CONTROL MODULES

DSE**6110 MKIII**

DSE**6120 MKIII**

KEY FEATURES

- 4-line back-lit LCD text display
- Multiple display languages
- Five-key menu navigation
- LCD alarm indication
- Customisable power-up text and screen images.
- DSENet® expansion compatibility
- Data logging facility
- Internal PLC editor
- Protections disable feature
- Fully configurable via PC using USB communications
- Front panel configuration with PIN protection
- Power save mode
- 3-phase generator sensing and protection
- 3-phase mains (utility) sensing and protection (DSE6120 MKIII only)
- Automatic load transfer control (DSE6120 MKIII only)
- Generator current and power monitoring (kW, kvar, kVA, pf)
- Mains (utility) current and power monitoring (kW, kvar, kVA, pf) (DSE6120 MKIII only)
- kW overload alarm
- Over current protection
- Breaker control via fascia buttons
- Fuel and start outputs configurable when using CAN
- 6 configurable DC outputs
- 4 configurable analogue/digital inputs
- Support for 0 V to 10 V & 4 mA to 20 mA sensors
- 8 configurable digital inputs
- CAN, MPU and alternator frequency speed sensing in one variant
- Real time clock
- Manual and automatic fuel pump control
- Engine pre-heat and post-heat functions
- Engine run-time scheduler
- Engine idle control for starting & stopping
- Fuel level alarms
- 3 configurable maintenance alarms
- 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
- Configurable CAN read & transmitted information.
- 1 alternative configuration.

KEY BENEFITS

- Automatically transfers between mains (utility) and generator (DSE6120 MKIII only) for convenience.
- 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 for full visibility
- The module can be configured to suit a wide range of applications for user flexibility
- PLC editor allows user configurable functions to meet user specific application requirements.

RELATED MATERIALS

TITLE	PART NO.
DSE6110 MKIII & DSE6120 MKIII Installation Instructions	053-240
DSE6110 MKIII & DSE6120 MKIII Operator Manual	057-289
DSE6110 MKIII & DSE6120 MKIII Configuration Suite PC Manual	057-290

SPECIFICATIONS

DC SUPPLY

CONTINUOUS VOLTAGE RATING
8 V to 35 V Continuous
5 V for up to 1 minute

CRANKING DROPOUTS
Able to survive 0 V for 100 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
260 mA at 12 V, 150 mA at 24 V

MAXIMUM STANDBY CURRENT
145 mA at 12 V, 85 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 H
Negative switching

ANALOGUE INPUTS A & D
Configurable as:
Negative switching digital input
0 V to 10 V sensor
4 mA to 20 mA sensor
Resistive sensor

ANALOGUE INPUTS B & C
Configurable as:
Negative switching digital input
Resistive sensor

OUTPUTS

OUTPUT A & B (FUEL & START)
10 A DC at supply voltage

AUXILIARY OUTPUTS C, D, E, F, G & H
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

NON-HEATED DISPLAY VARIANT
-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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Deep Sea Electronics maintains a policy of continuous development and reserves the right to change the details shown on this data sheet without prior notice. The contents are intended for guidance only.

Registered in England & Wales No.01319649
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DSEGenset®

DSE6110/20 MKIII

AUTO START & AUTO MAINS (UTILITY) FAILURE CONTROL MODULES

The DSE6110 MKIII is an Auto Start Control Module and the DSE6120 MKIII 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 and remote PC.

The DSE6120 MKIII will also monitor the mains (utility) supply. The modules include USB connection and 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.

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

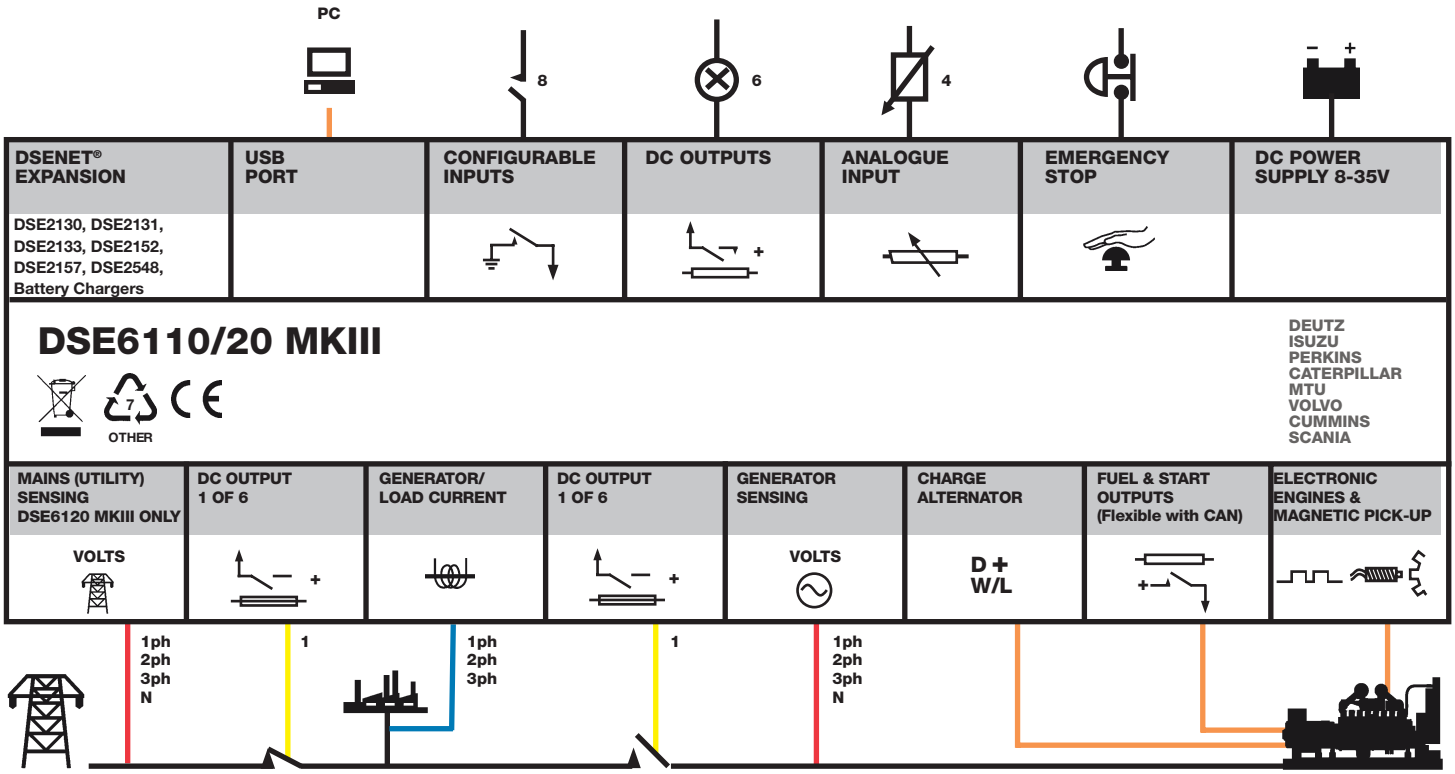
VIBRATION
BS EN 60068-2-6
Ten sweeps in each of three major axes
5 Hz to 8 Hz at +/-7.5 mm,
8 Hz to 500 Hz at 2 gn

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



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