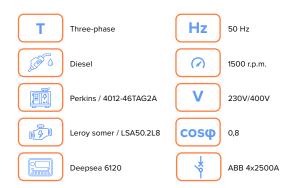
ATP Perkins - Leroy Somer Series

ATP1650-PK/LS

Main Features



Standby Power (STP)	1650 kVA	1320 kW
Continuous Power (PRP)	1500 kVA	1200 kW
Continuous Power (COP)	- kVA	- kW

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Soundproof

Length (L)	5800 mm	
Height (H)	2430 mm	
Width (W)	2650 mm	I I I I I I I I I I I I I I I I I I I
Weight	13200 kg	
Daily deposit	2540 Lts	WL
		50Hz
Medium sound pressure level for a bare engine (without intake or exhaust) at 1 meter.		114 dB(A)

Installation in room

Sistema de escape		50Hz	
	COP	PRP	STP
Maximum backpressure (kPa)		5	
Maximum static weight supported on the turbocharger outlet flange (N.m)		-	
Maximum intake air restriction with heavy-duty air filter		-	
Dirty Element (kPa) Clean Element (kPa)		-	
Max. exhaust pipe diameter (mm)		254	

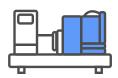
Fuel System	50Hz		
	COP	PRP	STP
Nozzle opening pressure (MPa)	140		
Fuel flow rate (L/hr)	1020		
Pressure (kPa)	300		
Maximum suction height (kPa)		2,5	

Electric System		50Hz	
	COP	PRP	STP
Starter engine (Vdc)		24	
Battery charging system, negative ground (A)		55	
Maximum allowed resistance of the starting circuit (Ω)		-	
Minimum recommended battery capacity — Cold soak @ 0 to 32°F (-18 to 0°C)		810	



Engine specifications

General specifications	50 Hz
Model	4012-46TAG2A
Emissions	Not applicable
Operating Method	Four-stroke
Fuel Type	Diesel
Cooling System	Liquid (water + 50% antifreeze)
Aspiration System	Aftercooled and turbocharged
Injection System	Indirect injection
Number and Arrangement of Cylinders	12 in-line
Displacement (L)	45,842
Cylinder Bore (mm)	160
Cylinder Stroke (mm)	190
Compression Ratio	13:1
Regulation	Electronic
Rotational Speed	1500
Oil Capacity (L)	207
Gross Power COP (kWm)	973
Gross Power PRP (kWm)	1212
Gross Power STP (kWm)	1327
Oil capacity (L)	177
Net Power COP (kWm)	931
Net Power PRP (kWm)	1170
Net Power STP (kWm)	1285



Consu	nption	50Hz	
Fuel consumption	Charge	lt/h	g/kWh
STP	100%	341	201
	100%	310	200
000	75%	234	201
PRP	50%	157	203
	25%	-	-
Fuel flow rate (L/h)		1020	
Condiciones de refe	rencia		
Temperature (°C)		25	
Atmospheric pressure (kPa)		100	
Sistema de arranque			
Voltage (V)		2	4
Standard thermostat	Standard thermostat range (°C)		85

Alternator specifications

TAL-A473-E	
Model	LSA50.2L8
Number of Phases	Three-phase
Protection	IP23
Insulation	Н
Heating	н
Waveform IEC = THF:	1,8
Waveform NEMA = TIF:	TIF<50
Coupling	Flex plate
Support	Monopalier



No-load waveform distortion	< 3.5%
Load waveform distortion	< 3.5%
Number of windings	6
Excitation (standard / option)	AREP / PMG
AVR Model (standard / option)	D350
Voltage Regulation (standard / option)	± 0.25%

Starter Battery

- BB -	Battery voltage	
1* -1	Battery Capacity	
	Amount	
	Battery type	Maintenance-free, sealed lead-acid type

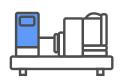
Certifications





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Control Panel





Generator	DSE6110/20
Tension (F-F / F-N)	*/*
Intensity	*
Frequency	*
RMS values	*
Generator phase sequence	*
Generator ground current [1]	*
Number of events registered	250
Integrated clock	*
PIN protection	*
kWh, kVAr, kVAh, kVArh, cos Ø	*
Synchronoscope (m)	*
Number of available departures [2]	6
Engine running hours	*
Alarm i ndication on LCD	*
Total number of LED indicators	8
No. of LED alarms	X
Acoustic alarm signaling	
Programmer	*
Fuel level	*
Engine	DSE6110/20
Engine speed	*
Low oil pressure protection	*
Oil pressure reading [3]	
High engine temperature protection	*
Engine temperature reading[3]	
Battery voltage	*
Battery Intensification [4]	-
Fuel consumption [5]	*
Low water level in radiator [6]	
Scheduled maintenance for engine	*
Communication	DSE6110/20
USB Type B Female Port (Max. 6m)	*
[7] USB Type A Female Port (n)	X
CAN port (Max. 40m)	*
PLC function	*

Grun Descention/20 Tension (F F / F-N) it Intensity (1) It Frequency it KVA.LWL, cos Ø (a) It Protections and alarms DSEE6110/20 High/low battery voltage Q Battery charging alternator failure Q/O Bott failure Q/O Bott failure Q/O Coverload Q/O Ground fault Q/O Asymmetry between phases Q/O Mintenance Q/O High/Low Generator Frequency Q/O Engine overspeed Q/O Low wengine speed Q/O Surge Q/O ECU Alert (if applicable) Q/O Low water I evel In radiator [1] Q/O High engine temperature Q/O Fuel leak/theft Q/O Aplications X Automatic or manual start X Remote start by dry context NA X Automatic or manual start X Generator- grid I is synchronism wit	Ciid	DSE6440/20
Intensity [1]Image: ControlFrequency**KVA,kW, cos Ø (a)Image: ControlNetwork-group switching controlImage: ControlProtections and alarmsDSES0110/20High/low battery voltageImage: ControlBattery charging alternator failureImage: ControlStop failureImage: ControlBoot failureImage: ControlLow fuel levelImage: ControlOverloadImage: ControlGround faultImage: ControlAsymmetry between phasesImage: ControlMaintenanceImage: ControlHigh/Low Generator FrequencyImage: ControlEngine overspeedImage: ControlLow voltage in generatorImage: ControlSurgeImage: ControlCu wanter I evel in radiator [f]Image: ControlHigh engine temperatureImage: ControlFuel leak/theftImage: ControlAutomatic or manual startImage: ControlAutomatic due to network failureImage: ControlMult-generatorsImage: ControlMult-generatorsImage: ControlAutomatic due to network failureImage: ControlAutomatic due to network failureImage: ControlDSEC11020Image: ControlStrip [G] (mitter) [I Image: ControlImage: ControlDSE2150 (B] digital Inputs/outputs 1-4Image: ControlDSE2151 I - RB8 I G-06 (8 relay outputs)Image: ControlDSE2151 I - RB8 I G-06 (8 relay outputs)Image: ControlDSE2151 I - RB8 I G-06 (8 relay	Grid	DSE6110/20
Frequency ★ KVA.kW, cos Ø (a) ⊠ Network-group switching control ★ Protections and alarms OSEG110/20 High/low battery voltage Q Battery charging alternator failure Q/O Stop failure Q/O Boot failure Q/O Coverload Q/O Ground fault Q/O Asymmetry between phases Q/O Maintenance Q/O High/Low Generator Frequency Q/O Engine overspeed Q/O Low voltage in generator Q/O Surge Q/O Low water I evel in radiator [f] Q/O High engine temperature Q/O Fuel teak/theft Q Aplications SUSE Automatic or manual start * Remote start by dry contact NA * Automatic or manual start Q Multi-generatoriand in grif (m) Q Sector-grif i in synchronism and with load sharing (1) S Generator-grif i in synchronism and with load sharing (1) * Sector-grif i in synchronism and with load sharing (1) * Sector-grif i in synchronism and with load sharing (1) * Sector-grif i in synchronism and with load sharing (1) </td <td></td> <td></td>		
KVA.kW. os Ø (a) Image: Stars		
Network-group switching control * Protections and alarms DSE6110/20 High/low battery voltage Q Battery charging alternator failure Q/O Stop failure Q/O Boot failure Q/O Low fuel level Q/O Overload Q/O Ground fault Q/O Asymmetry between phases Q/O Maintenance Q/O High/Low Generator Frequency Q/O Engine overspeed Q/O Low voltage in generator Q/O ECU Alert (if applicable) Q/O Low water I evel in radiator [f] Q/O High engine temperature Q/O Fuel leak/theft Q Automatic or manual start X Remote start by dry contact NA X Automatic due to network failure X Mult-generators in synchronism and with load (Max 32 generators) (m) X DSE2150 (R eight in puts) I 1 G-IO (R digital inputs/outputs + 4) Aniconal start DSE2157 (I L-RA15 I - (expansion with 8 Additional LEDs X DSE2510(20 (mirror controller, max distance 1km) X Working temperature -30 > 70°C Protection index (when mounted with sealing gasket) IP65		
Protections and alarms DSEG110/20 High/low battery voltage A Battery charging alternator failure A/O Stop failure A/O Boot failure A/O Cow fuel level A/O Overload A/O Ground fault A/O Asymmetry between phases A/O Maintenance A/O High/Low Generator Frequency A/O Engine overspeed A/O Low voltage in generator A/O Surge A/O Low water I evel in radiator [f] A/O High/Low Generator X A/O Low water I evel in radiator [f] A/O High engine temperature A/O Fuel leak/theft A Automatic or manual statt * Remote start by dry contact NA * Automatic due to network failure X Multi-generator-grid i n synchronism and with load sharing (1 X Generator-grid i n synchronism and with load sharing (1 X DSE2130 (20 digital inputs) I G-OM (20 digital inputs/outputs + 4) * DSE2147 I I-RB8 I G-OE (8 relay outp		
High/low battery voltage A Battery charging alternator failure A Stop failure A/O Boot failure A/O Coverload A/O Coverload A/O A/O Asymmetry between phases A/O Maintenance A/O High/Low Generator Frequency A/O Engine overspeed A/O Surge Coverload A/O Surge A/O Coverload A/O Surge A/O Coverload A/O Surge A/O Coverload A/O A/O Surge A/O Coverload A/O Coverload A/O A/O Coverload A/O A/O A/O A/O Coverload A/O Aplications Apli		
Battery charging alternator failure 		
Stop failure Q/() Boot failure Q/() Boot failure Q/() Low fuel level Q/() Overload Q/() Ground fault Q/() Asymmetry between phases Q/() Maintenance Q/() High/Low Generator Frequency Q/() Engine overspeed Q/() Low ongine speed Q/() Surge Q/() ECU Alert (if applicable) Q/() Low oil pressure Q/() Low water I evel in radiator (f) Q/() High engine temperature Q/() Fuel leak/theft Q Aplications DSE55110/20 Automatic or manual start * Remote start by dry contact NA * Automatic due to network failure I Multi-generators in synchronism and with load sharing (1) I generator-grid in synchronism and with load sharing (1) I Grid generator and 1 grid) (m) X DSE2150 (B digital inputs) II G-IOM (B digital inputs/outputs + 4) * DSE2157 II - RBB I G-O6 (B relay outputs) X </td <td></td> <td></td>		
Boot failure Q/O Low fuel level Q/O Overload Q/O Overload Q/O Ground fault Q/O Asymmetry between phases Q/O Maintenance Q/O High/Low Generator Frequency Q/O Engine overspeed Q/O Low voltage in generator Q/O Low voltage in generator Q/O ECU Alert (if applicable) Q/O Low voltage in generator Q/O Low voltage in generator Q/O Low voltage in generator Q/O ECU Alert (if applicable) Q/O Low water I evel in radiator [f] Q/O High engine temperature Q/O Fuel leak/theft Q Aplications DSEE110/20 Automatic or manual start * Remote start by dry contact NA * Automatic due to network failure I Multi-generators in synchronism with load (Max 32 generators) (m) I Generator-grid in synchronism and with load sharing (1) I generator and 1 grid) (m) X DS	Battery charging alternator failure	-
Low fuel level Q/0 Overload Q/0 Overload Q/0 Ground fault Q/0 Asymmetry between phases Q/0 Maintenance Q/0 High/Low Generator Frequency Q/0 Engine overspeed Q/0 Low engine speed Q/0 Surge Q/0 Low voltage in generator Q/0 ECU Alert (if applicable) Q/0 Low oil pressure Q/0 Low water I evel in radiator [f] Q/0 High engine temperature Q/0 Fuel leak/theft Q Aplications DSEE110/20 Automatic or manual start * Remote start by dry contact NA * Automatic due to network failure X Multi-generators in synchronism and with load sharing (1) S Generator grid i n synchronism and with load sharing (1) S Optional Expansions DSEE110/20 DSE2130 (B digital inputs) II G-10M (B digital inputs/outputs + 4) * DSE21510/20 (mirror controller, max distance 1km)	Stop failure	₽/⊗
Overload Q/O Ground fault Q/O Asymmetry between phases Q/O Maintenance Q/O High/Low Generator Frequency Q/O Engine overspeed Q/O Low engine speed Q/O Surge Q/O Low voltage in generator Q/O ECU Alert (if applicable) Q/O Low oil pressure Q/O Low water I evel in radiator [f] Q/O High engine temperature Q/O Fuel leak/theft Q Automatic or manual start * Renote start by dry contact NA * Automatic due to network failure X Multi-generators in synchronism and with load sharing (1 X Greinerator-grid i n synchronism and with load sharing (1 X DSE2130 (B digital inputs) II G-IOM (B digital inputs/outputs + 4 * DSE2130 (B digital inputs) II G-IOM (B digital inputs/outputs + 4 * DSE2130 (B digital inputs) II G-IOM (B digital inputs/outputs + 4 * DSE2130 (B digital inputs) II G-IOM (B digital inputs/outputs + 4 *	Boot failure	₽/⊗
Ground fault ↓/○ Asymmetry between phases ↓/○ Maintenance ↓/○ High/Low Generator Frequency ↓/○ Engine overspeed ↓/○ Low engine speed ↓/○ Surge ↓/○ Low voltage in generator ↓/○ ECU Alert (if applicable) ↓/○ Low oil pressure ↓/○ Low water I evel in radiator [f] ↓/○ High engine temperature ↓/○ Fuel leak/theft ↓ Automatic or manual start ★ Remote start by dry contact NA ★ Automatic due to network failure ∑ Multi-generators in synchronism with load (Max 32 generators) (m) ∑ Generator-grid i n synchronism with load sharing (1) ∑ Generator-grid i n synchronism with load sharing (1) ∑ DSE2130 (8 digital inputs) I 1 G-IOM (8 digital inputs/outputs + 4) ★ DSE2157 I 1 - RBS I G-06 (8 relay outputs) ★ DSE2510/20 (mirror controller, max distance 1km) ★ Working temperature -30 > 70°C Working temperature -30 > 70°C <td>Low fuel level</td> <td>\mathcal{P} / \otimes</td>	Low fuel level	\mathcal{P} / \otimes
Asymmetry between phases Q/O Maintenance Q/O High/Low Generator Frequency Q/O Engine overspeed Q/O Low engine speed Q/O Surge Q/O Low voltage in generator Q/O ECU Alert (if applicable) Q/O Low oil pressure Q/O Low water I evel in radiator [f] Q/O High engine temperature Q/O Fuel leak/theft Q Automatic or manual start * Remote start by dry contact NA * Automatic due to network failure X Multi-generators in synchronism with load (Max 32 generators) (m) X Generator-grid i n synchronism and with load sharing (1) X DSE2130 (8 digital inputs) I1 G-IO M (8 digital inputs/outputs + 4) * DSE2130 (8 digital inputs) II G-IO M (8 digital inputs/outputs + 4) * DSE2130 (8 digital inputs) II G-IO M (8 digital inputs/outputs + 4) * DSE2130 (0 mirror controller, max distance 1km) * DSE2130 (0 mirror controller, max distance 1km) * DSE2150/20 (mirror controller, max distance 1km) * Working tem	Overload	\bigcirc / \otimes
Maintenance Q/O High/Low Generator Frequency Q/O Engine overspeed Q/O Low engine speed Q/O Surge Q/O Low voltage in generator Q/O ECU Alert (if applicable) Q/O Low voltage in generator Q/O ECU Alert (if applicable) Q/O Low water I evel in radiator [f] Q/O High engine temperature Q/O Fuel leak/theft Q Aplications DSEE110/20 Automatic or manual start * Remote start by dry contact NA * Automatic due to network failure X Multi-generators in synchronism with load (Max 32 generators) (m) X Generator-grid i n synchronism and with load sharing (1) X Optional Expansions DSEE110/20 DSE2130 (8 digital inputs) I1 G-IO M (8 digital inputs/outputs + 4) * DSE2157 I1 -RB8 I G-06 (8 relay outputs) * DSE2510/20 (mirror controller, max distance 1km) * Working temperature -30 > 70°C Protection index (when mounted with sealing gasket) IP65	Ground fault	\mathcal{P} / \otimes
High/Low Generator Frequency ↓/⊙ Engine overspeed ↓/⊙ Low engine speed ↓/⊙ Surge ↓/⊙ Low voltage in generator ↓/⊙ ECU Alert (if applicable) ↓/⊙ Low voltage in generator ↓/⊙ ECU Alert (if applicable) ↓/⊙ Low voltage in generator (f] ↓/⊙ High engine temperature ↓/⊙ Fuel leak/theft ↓ Aplications DSEE6110/20 Automatic or manual start ★ Remote start by dry contact NA ★ Automatic due to network failure ⊥ Multi-generators in synchronism and with load sharing (1 generator-grid i n synchronism and with load sharing (1 generator and 1 grid) (m) ⊥ SE2130 (8 digital inputs) 1 G-IOM (8 digital inputs/outputs + 4 analog inputs) G-O8 (8 ent. dig.) ★ DSE2157 1 -RB8 G-O6 (8 relay outputs) ★ DSE2548 IGL-RA15 - (expansion with 8 Additional LEDs ★ DSE2510/20 (miror controller, max distance 1km) ★ Working temperature -30 -> 70°C Working temperature -30 -> 70°C	Asymmetry between phases	\mathcal{Q} / \otimes
Engine overspeed ↓/⊗ Low engine speed ↓/⊗ Surge ↓/⊗ Low voltage in generator ↓/⊗ ECU Alert (if applicable) ↓/⊗ Low oil pressure ↓/⊗ Low water I evel in radiator [f] ↓/⊗ High engine temperature ↓/⊗ Fuel leak/theft ↓ Aplications DSEE6110/20 Automatic or manual start ★ Remote start by dry contact NA ★ Alternation with distributed time ☑ Multi-generators in synchronism and with load (Max 32 generators) (m) ☑ Generator-grid i n synchronism and with load sharing (1) ☑ generator and 1 grid) (m) ★ DSE2157 11 -RB8 I G-06 (8 relay outputs) ★ DSE2548 I IGL-RA15 1 - (expansion with 8 Additional LEDs ★ DSE2510/20 (mirror controller, max distance 1km) ★ Working temperature 30 -> 70°C Working temperature 30 -> 70°C	Maintenance	\mathcal{Q} / \otimes
Low engine speed ♀/◎ Surge ♀/◎ Surge ♀/◎ Low voltage in generator ♀/◎ ECU Alert (if applicable) ♀/◎ Low oil pressure ♀/○ Low water I evel in radiator [f] ♀/○ High engine temperature ♀/○ Fuel leak/theft ♀ Aplications DSEE6110/20 Automatic or manual start ★ Remote start by dry contact NA ★ Automatic due to network failure ⋉ Multi-generators in synchronism with load (Max 32 generators) (m) ⋉ Generator-grid i n synchronism and with load sharing (1 generator and 1 grid) (m) ⋉ DSE2130 (8 digital inputs) I I G-IOM (8 digital inputs/outputs + 4 analog inputs)I G-O8 (8 ent. dig.) ★ DSE2130 (8 digital inputs) I I G-IOM (8 digital inputs/outputs + 4 stanalog inputs)I G-O8 (8 ent. dig.) ★ DSE2157 I I -RB8 I G-O6 (8 relay outputs) ★ ↓ DSE2150/20 (mirror controller, max distance 1km) ★ ↓ Rules ✓ → → Working temperature -30 -> 70°C → →	High/Low Generator Frequency	$\mathcal{P} \otimes$
Surge ♀/⊗ Surge ♀/⊗ Low voltage in generator ♀/⊗ ECU Alert (if applicable) ♀/∞ Low oil pressure ♀/∞ Low water I evel in radiator [f] ♀/∞ High engine temperature ♀/∞ Fuel leak/theft ♀ Aplications DSEE6110/20 Automatic or manual start ★ Remote start by dry contact NA ★ Automatic due to network failure ▼ Multi-generators in synchronism with load (Max 32 generators) (m) ⊠ Generator-grid i n synchronism and with load sharing (1 generator and 1 grid) (m) ⊠ DSE2130 (β digital inputs) II G-IOM (8 digital inputs/outputs + 4 analog inputs)I G-08 (8 ent. dig.) ★ DSE2157 II -RB8 I G-06 (8 relay outputs) ★ DSE2510/20 (mirror controller, max distance 1km) ★ Rules -30 -> 70°C Working temperature -30 -> 70°C Protection index (when mounted with sealing gasket) µP65	Engine overspeed	$\mathcal{P} \otimes$
Low voltage in generator ♀/ ○ ECU Alert (if applicable) ♀/ ○ ECU Alert (if applicable) ♀/ ○ Low oil pressure ♀/ ○ Low water I evel in radiator [f] ♀/ ○ High engine temperature ♀/ ○ Fuel leak/theft ♀ Aplications DSE6110/20 Automatic or manual start ★ Remote start by dry contact NA ★ Automatic due to network failure ★ Alternation with distributed time ⊠ Multi-generators in synchronism and with load sharing (1 generator and 1 grid) (m) ⊠ Optional Expansions DSE6110/20 DSE2130 (8 digital inputs) II G-IOM (8 digital inputs/outputs + 4 analog inputs)I G-08 (8 relay outputs) ★ DSE2130 (8 digital inputs) II G-IOM (8 digital inputs/outputs + 4 sc ★ DSE2130 (8 digital inputs) II G-IOM (8 digital inputs/outputs + 4 sc ★ DSE2130 (8 digital inputs) II G-IOM (8 digital inputs/outputs + 4 sc ★ DSE2130 (9 digital inputs) II G-IOM (8 digital inputs/outputs + 4 sc ★ DSE2130 (9 digital inputs) II G-IOM (8 digital inputs/outputs + 4 sc ★ DSE2130 (9 digital inputs) II G-IOM (8 digital inputs/outputs + 4 sc ★	Low engine speed	$\mathcal{P} \otimes$
ECU Alert (if applicable) ♀/ ⊗ ECU Alert (if applicable) ♀/ ⊗ Low oil pressure ♀/ ∞ Low water I evel in radiator [f] ♀/ ∞ High engine temperature ♀/ ∞ Fuel leak/theft ♀ Aplications DSE6110/20 Automatic or manual start ★ Remote start by dry contact NA ★ Automatic due to network failure ★ Alternation with distributed time ⊠ Multi-generators in synchronism with load (Max 32 generators) (m) ⊠ Generator-grid i n synchronism and with load sharing (1 generator and 1 grid) (m) ⊠ Optional Expansions DSE6110/20 DSE2130 (8 digital inputs) 1 G-IOM (8 digital inputs/outputs + 4 analog inputs) G-O8 (8 ent. dig.) ★ DSE2157 1 -RB8 G-O6 (8 relay outputs) ★ DSE2548 IGL-RA15 - (expansion with 8 Additional LEDs ★ DSE2510/20 (mirror controller, max distance 1km) ★ Rules 30 -> 70°C Working temperature -30 -> 70°C Protection index (when mounted with sealing gasket) 105	Surge	\mathcal{P} / \otimes
Low oil pressure ♀/ ⊗ Low water I evel in radiator [f] ♀/ ⊗ High engine temperature ♀/ ∞ Fuel leak/theft ♀ Aplications DSE6110/20 Automatic or manual start ★ Remote start by dry contact NA ★ Automatic due to network failure ★ Alternation with distributed time ▼ Multi-generators in synchronism with load (Max 32 generators) (m) ▼ Generator-grid i n synchronism and with load sharing (1 generator and 1 grid) (m) ▼ Optional Expansions DSE6110/20 DSE2130 (8 digital inputs) 1 G-IOM (8 digital inputs/outputs + 4 analog inputs) G-08 (8 rel. dig.) ★ DSE2157 1 -RB8 G-06 (8 relay outputs) ★ DSE2510/20 (mirror controller, max distance 1km) ★ Rules ✓ Working temperature -30 -> 70°C Protection index (when mounted with sealing gasket) IP65	Low voltage in generator	\mathcal{Q} / \otimes
Low water I evel in radiator [f] ↓ / ③ High engine temperature ↓ / ③ Fuel leak/theft ↓ Aplications DSE6110/20 Automatic or manual start ★ Remote start by dry contact NA ★ Automatic due to network failure ★ Alternation with distributed time ▼ Multi-generators in synchronism and with load (Max 32 generators) (m) ▼ Generator-grid i n synchronism and with load sharing (1) ▼ generator and 1 grid) (m) ▼ DSE2130 (8 digital inputs) I I G-IOM (8 digital inputs/outputs + 4) ★ DSE2157 I I -RB8 I G-06 (8 relay outputs) ★ DSE2510/20 (mirror controller, max distance 1km) ★ Rules 30 -> 70°C Working temperature -30 -> 70°C Protection index (when mounted with sealing gasket) IP65	ECU Alert (if applicable)	\bigcirc / \otimes
High engine temperature ♀1.∞ High engine temperature ♀1.∞ Fuel leak/theft ♀ Aplications DSE6110/20 Automatic or manual start ★ Remote start by dry contact NA ★ Automatic due to network failure ★ Alternation with distributed time ⊠ Multi-generators in synchronism with load (Max 32 generators) (m) ⊠ Generator-grid i n synchronism and with load sharing (1) ⊠ generator and 1 grid) (m) ⊠ Optional Expansions DSE6110/20 DSE2130 (8 digital inputs) 1 G-IOM (8 digital inputs/outputs + 4 ★ DSE2157 1 -RB8 G-O6 (8 relay outputs) ★ DSE2548 IGL-RA15 - (expansion with 8 Additional LEDs ★ DSE2510/20 (mirror controller, max distance 1km) ★ Rules 30 -> 70°C Working temperature -30 -> 70°C Protection index (when mounted with sealing gasket) IP65	Low oil pressure	\mathcal{P} / \otimes
Fuel leak/theft Q Aplications DSE6110/20 Automatic or manual start * Remote start by dry contact NA * Automatic due to network failure * Alternation with distributed time X Multi-generators in synchronism with load (Max 32 generators) (m) X Generator-grid i n synchronism and with load sharing (1 generator and 1 grid) (m) X Optional Expansions DSE6110/20 DSE2130 (8 digital inputs) 1 G-IOM (8 digital inputs/outputs + 4 analog inputs) G-O8 (8 ent. dig.) * DSE2157 1 -RB8 G-O6 (8 relay outputs) * DSE2548 IGL-RA15 - (expansion with 8 Additional LEDs * DSE2510/20 (mirror controller, max distance 1km) * Rules Working temperature -30 -> 70°C Protection index (when mounted with sealing gasket) IP65	Low water I evel in radiator [f]	\mathcal{Q} / \otimes
Aplications DSE6110/20 Automatic or manual start * Remote start by dry contact NA * Automatic due to network failure * Automatic due to network failure * Alternation with distributed time X Multi-generators in synchronism with load (Max 32 generators) (m) X Generator-grid i n synchronism and with load sharing (1 generator and 1 grid) (m) X Optional Expansions DSE6110/20 DSE2130 (8 digital inputs) I G-IOM (8 digital inputs/outputs + 4 analog inputs)I G-08 (8 ent. dig.) * DSE2157 I -RB8 G-06 (8 relay outputs) * DSE2548 IGL-RA15 - (expansion with 8 Additional LEDs * DSE2510/20 (mirror controller, max distance 1km) * Rules	High engine temperature	\mathcal{P} / \otimes
Automatic or manual start * Remote start by dry contact NA * Automatic due to network failure * Automatic due to network failure * Alternation with distributed time * Multi-generators in synchronism with load (Max 32 generators) (m) * Generator-grid i n synchronism and with load sharing (1) * generator and 1 grid) (m) * Optional Expansions DSE6110/20 DSE2130 (8 digital inputs) 1 G-IOM (8 digital inputs/outputs + 4) * DSE2157 1 -RB8 G-06 (8 relay outputs) * DSE2548 IGL-RA15 - (expansion with 8 Additional LEDs * DSE2510/20 (mirror controller, max distance 1km) * Rules * Working temperature -30 -> 70°C Protection index (when mounted with sealing gasket) IP65	Fuel leak/theft	Q
Remote start by dry contact NA * Automatic due to network failure * Alternation with distributed time X Multi-generators in synchronism with load (Max 32 generators) (m) X Generator-grid i n synchronism and with load sharing (1 generator and 1 grid) (m) X Optional Expansions DSE6110/20 DSE2130 (8 digital inputs) I I G-IOM (8 digital inputs/outputs + 4 analog inputs)I G-08 (8 ent. dig.) * DSE2157 I I -RB8 I G-06 (8 relay outputs) * DSE2548 I IGL-RA15 I - (expansion with 8 Additional LEDs * DSE2510/20 (mirror controller, max distance 1km) * Rules -30 -> 70°C Working temperature -30 -> 70°C Process -30 -> 70°C	Aplications	DSE6110/20
Automatic due to network failure * Alternation with distributed time Image: Comparison of the state of	Automatic or manual start	*
Alternation with distributed time Image: Control is a synchronism with load (Max 32 generators) (m) Multi-generators in synchronism with load sharing (1 generator and 1 grid) (m) Image: Control is a synchronism and with load sharing (1 generator and 1 grid) (m) Optional Expansions DSE6110/20 DSE2130 (8 digital inputs) I G-IOM (8 digital inputs/outputs + 4 analog inputs)I G-08 (8 ent. dig.) Image: Control is a synchronism with 8 Additional LEDs DSE2548 IGL-RA15 - (expansion with 8 Additional LEDs Image: Control is a synchronism with 8 Additional LEDs DSE2510/20 (mirror control ler, max distance 1km) Image: Control is a synchronism with sealing gasket) Protection index (when mounted with sealing gasket) IP65	Remote start by dry contact NA	*
Multi-generators in synchronism with load (Max 32 generators) (m) Image: Comparison of the synchronism and with load sharing (1 minimum of the synchronism and with load sharing (1 minimum of the synchronism and with load sharing (1 minimum of the synchronism and with load sharing (1 minimum of the synchronism and with load sharing (1 minimum of the synchronism and with load sharing (1 minimum of the synchronism and with load sharing (1 minimum of the synchronism and with load sharing (1 minimum of the synchronism and with load sharing (1 minimum of the synchronism and with load sharing (1 minimum of the synchronism of the sy	Automatic due to network failure	*
Generator-grid i n synchronism and with load sharing (1 Image: Comparison of the synchronism and with load sharing (1 Optional Expansions DSE6110/20 DSE2130 (8 digital inputs) 1 G-IOM (8 digital inputs/outputs + 4 ★ analog inputs) G-08 (8 ent. dig.) ★ DSE2157 1 -RB8 G-06 (8 relay outputs) ★ DSE2548 IGL-RA15 - (expansion with 8 Additional LEDs ★ DSE2510/20 (mirror controller, max distance 1km) ★ Rules	Alternation with distributed time	X
generator and 1 grid) (m) L Optional Expansions DSE6110/20 DSE2130 (8 digital inputs) I G-IOM (8 digital inputs/outputs + 4 analog inputs) G-08 (8 ent. dig.) * DSE2157 I -RB8 G-06 (8 relay outputs) * DSE2548 IGL-RA15 - (expansion with 8 Additional LEDs * DSE2510/20 (mirror controller, max distance 1km) * Rules -30 -> 70°C Protection index (when mounted with sealing gasket) IP65	Multi-generators in synchronism with load (Max 32 generators) (m)	X
DSE2130 (8 digital inputs) I G-IOM (8 digital inputs/outputs + 4 analog inputs) G-08 (8 ent. dig.) ★ DSE2157 I -RB8 G-06 (8 relay outputs) ★ DSE2548 IGL-RA15 - (expansion with 8 Additional LEDs ★ DSE2510/20 (mirror controller, max distance 1km) ★ Rules Working temperature -30 -> 70°C Protection index (when mounted with sealing gasket) IP65		X
analog inputs)I G-08 (8 ent. dig.) ★ DSE2157 I -RB8 G-06 (8 relay outputs) ★ DSE2548 IGL-RA15 - (expansion with 8 Additional LEDs ★ DSE2510/20 (mirror controller, max distance 1km) ★ Rules Working temperature -30 -> 70°C Protection index (when mounted with sealing gasket) IP65	Optional Expansions	DSE6110/20
DSE2548 I IGL-RA15 I - (expansion with 8 Additional LEDs ★ DSE2510/20 (mirror controller, max distance 1km) ★ Rules Working temperature -30 -> 70°C Protection index (when mounted with sealing gasket) IP65		*
DSE2510/20 (mirror controller, max distance 1km) ★ Rules Working temperature -30 -> 70°C Protection index (when mounted with sealing gasket) IP65	DSE2157 I -RB8 G-06 (8 relay outputs)	*
Rules Working temperature -30 -> 70°C Protection index (when mounted with sealing gasket) IP65	DSE2548 IGL-RA15 - (expansion with 8 Additional LEDs	*
Working temperature -30 -> 70°C Protection index (when mounted with sealing gasket) IP65	DSE2510/20 (mirror controller, max distance 1km)	*
Protection index (when mounted with sealing gasket) IP65	Rules	
	Working temperature	-30 -> 70°C
Maximum humidity level (for 48 h) 93% / 40°C	Protection index (when mounted with sealing gasket)	IP65
	Maximum humidity level (for 48 h)	93% / 40°C



Legend

*	Available	[4]	Needs an additional ammeter
-	Optional	[5]	If the information is provided by the engine ECU
X	Not available	[6]	Requires an additional sensor
Q	Warning alarm	[7]	Need to include an additional IL-NT-S-USB module
⊗	Stop alarm	[8]	Need to include an additional IL-NT-RS232-485 module
[1]	Need an additional IT	[9]	DeepSea: Needs to include an additional DSE891 module/ComAp: Needs to include an additional IB-LITE module
[2]	Number of outputs available for standard configuration. Outputs do not include relays or additional wiring to terminals.	[10]	DeepSea: Needs to include an additional DSE890 module/ComAp: Needs to include an additional IL-NT-GPRS module
[3]	If the information is not provided by the engine ECU, an additional sensor needs to be included.	[11]	DeepSea: Needs to include an additional DSE892 module/ComAp: Needs to include an additional IB-LITE module

Emergency Standby Power (ESP)

Emergency standby power is the maximum power available to a variable load during a main power grid failure. The average load factor over 24 hours of operation must not exceed 70% of the motor's ESP rated power. Typical motor operating hours are 200 hours per year, with a maximum usage of 500 hours per year.

This includes an annual maximum of 25 hours per year at the ESP power rating. Overload capability is not permitted. The motor must not be used for sustained utility parallel applications.

Main Power (PRP)

Prime Power is the maximum power available for unlimited hours of use in a variable load application. The average load factor must not exceed 70% of the motor's PRP rating during any 24-hour period. A 10% overload capability is available; however, it is limited to 1 hour within each 12-hour period.

- 1. All ratings are based on operating conditions according to ISO 8528-1, ISO 3046, DIN6271. Performance tolerance ±5%.
- 2. Test conditions: 100 kPa, 25°C air inlet temperature, 30% relative humidity, with fuel density of 0.84 kg/L. Derating may be required for conditions outside these, contact factory for details.
- 3. Power output curves are based on engine operation with fuel system, water pump and lubricating oil pump; battery charging alternator, fan and optional equipment are not included.

