

FUSTEQ SERIES

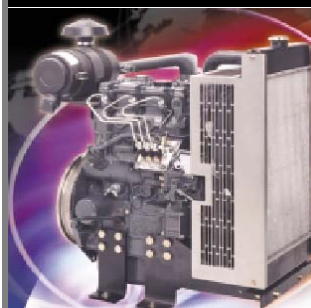
**DIESEL GENERATOR
GROUPE ELECTROGENE DIESEL
GRUPO ELECTROGENO DIESEL
GRUPPO ELETTROGENO DIESEL**

MODEL
MODELE
MODELO
MODELLO

PK 221 FQ

POWERED BY

Perkins



meccalte



ULTRA SILENT VERSION



GENERATING SET PERFORMANCE PERFORMANCES DU GROUPE PRESTACIONES DEL GRUPO PRESTAZIONI DEL GRUPPO		50 Hz	60 Hz
Voltage Voltage Voltaje Tensione		V 400 / 230	V
Continuous Power Puissance service continue Potencia servicio continuo Potenza servizio continuo	PRP	kVA 200	kVA --
Stand-by Power Puissance service secours Potencia servicio emergencia Potenza servizio in emergenza	LTP	kVA 220	kVA --
Continuous Power Puissance service continue Potencia servicio continuo Potenza servizio continuo	PRP	kWe 160	kWe --
Stand-by Power Puissance service secours Potencia servicio emergencia Potenza servizio in emergenza	LTP	kWe 176	kWe --
Power factor Facteur de puissance Factor de potencia Fattore di potenza	cos φ	0,8	--
Fuel consumption Consommation combustible Consumo de combustible Consumo combustibile	70 %	l/h 30,3	--
Noise level Niveau de bruit Nivel de ruido Livello rumorosità	dB(A)@7m	59dB(A) at 0% of load	
Limit ambient temperature Limite de la température ambiante Limite de la temperatura ambiente Limite di temperatura ambientale		55°C minimum	

ENGINE MOTEUR MOTOR MOTORE		PERKINS		1106A-70TAG4	
PERFORMANCE PERFORMANCES PRESTACIONES PRESTAZIONI		1500 rpm		1800 rpm	
Continuous Power Puissance service continue Potencia servicio continuo Potenza servizio continuo	PRP	kWm	175,6	kWm	---
Stand-by Power Puissance service secours Potencia servicio emergencia Potenza servizio in emergenza	LTP	kWm	193,0	kWm	---
Specific fuel consumption Consommation spécifique combustible Consumo específico de combustible Consumo specifico combustibile		g/kWh	50 % 215 75 % 215 100 % 213 110 % 209	g/kWh	50 % --- 75 % --- 100 % --- 110 % ---
Diesel 4 Stroke – Injection type Diesel 4 temps – Type injection Diesel 4 tiempos – Tipo de inyeccion Diesel a 4 tempi – Tipo di iniezione					Direct Directe Directa Diretta
Aspiration type Type d'aspiration Tipo de aspiracion Tipo d'aspirazione					Turbocharged Suraalimentée Sobrealimentato Sovralimentata
Cooling system Refroidissement Sistema de refrigeracion Raffreddamento					Water Eau Agua Acqua
Speed governor Régulateur de tours Regulador Regolatore di giri					Electronic Electronique Electronico Elettronico
Cylinders, numbers and arrangement Nombre et disposition des cylindres Cilindros, numero y disposicion Numero e disposizione dei cilindri					6L
Total displacement Cylindrée totale Cilindrata total Cilindrata totale				cm ³	7.010
Bore x stroke Alésage x course Diametro x carrera Alesaggio x corsa				mm	105 x 135
Compression ratio Rapport de compression Relación de compresión Rapporto di compressione					16:1
Engine electric system voltage Voltage système électrique moteur Voltaje sistema eléctrico motor Voltaggio sistema elettrico motore					24 V
Derating for temperature Déclassement pour temperature Declasamiento para temperatura Declassamento per temperatura				0 ÷ 25°C > 25 °C	0 2 % / 10°C
Derating for altitude Déclassement pour altitude Declasamiento para altitud Declassamento per altitudine				0 ÷ 1000 m > 1000m	0 1,5 % / 500 m

ALTERNATOR ALTERNATEUR ALTERNADOR ALTERNATORE			MECCALTE		
PERFORMANCE PERFORMANCES PRESTACIONES PRESTAZIONI		1500 rpm		1800 rpm	
Model Modèle Modelo Modello		ECO38-2SN/4		---	
Continuous Power Puissance service continue Potencia servicio continuo Potenza servizio continuo		40 °C	KVA 200,0 kWe 160,0	KVA ---	kWe ---
Stand-by Power Puissance service secours Potencia servicio emergencia Potenza servizio in emergenza		40 °C	KVA 211,0 kWe 168,8	KVA ---	kWe ---
Stand-by Power Puissance service secours Potencia servicio emergencia Potenza servizio in emergenza		27 °C	KVA 220,0 kWe 176,0	KVA ---	kWe ---
Efficiency Rendement Eficienza Efficienza			2/4 91,7 % 3/4 92,9 % 4/4 92,7 %	2/4 ---	3/4 ---
Standard winding connections Liaison des bobinages Tipo de conexión Collegamento avvolgimenti			Y	---	
Exciter Excitatrice Excitador Excitatrice		brushless rotating exciter design with solid state pivotante sans brosses avec pont de diodes pivotants puente de diodos sin escobillas rotantes rotante senza spazzole con ponte di diodi rotanti			
Poles Poles Polos Poli		4			
Phases Phases Fases Fasi		3 + N			
Wires Fils Hilos Morsetti		12			
Voltage accuracy Regulation Voltage Regulación voltaje Regolazione tensione		± 1 %			
Insulation class Classe d' isolation Classe de aislamiento Classe di isolamento		H			
Enclosure Degré de protection mécanique Grado de protección mecánica Grado di protezione meccanica		IP 21			
Air volume Volume d'air Volumen de aire Volume d'aria		50 Hz	32 m³/min		
		60 Hz	39 m³/min		
Standard AVR model Modèle AVR standard Modelo AVR standard Modello AVR standard		DSR			
Derating for temperature Déclassement pour température Declasamiento para temperatura Declassamento per temperatura		0 ÷ 40°C	0		
		> 40 °C	3 % / 5°C		
Derating for altitude Déclassement pour altitude Declasamiento para altitud Declassamento per altitudine		0 ÷ 1500 m	0		
		1500 ÷ 2500 m	3% / 500 m		
		2500 ÷ 3000 m	4% / 500 m		

LOGISTIC INFORMATION INFORMATIONS LOGISTIQUES INFORMATION LOGISTICA INFORMAZIONI LOGISTICHE						
	Integrated fuel tank capacity Capacité réservoir intégré Capacidad Tanque integrado Capacità Serbatoio integrato		Weight Poids Peso Peso	Dimensions Cotes d'encombrement Medidas externas Dimensioni d'ingombro		
	(L.)		(kg)	(cm)		
	STD	EXTRA1		L	W	H
SOUND PROOF VERSION VERSION INSONORISEE VERSION INSONORISADA VERSIONE INSONORIZZATA	700	ON REQUEST	3330	345	110	218

**GENSET STANDARD EQUIPMENT
EQUIPEMENT STANDARD GROUPE ELECTROGENE
EQUIPAMIENTO STANDARD GRUPO ELECTROGENO
EQUIPAGGIAMENTO STANDARD GRUPPO ELETTROGENO**

GB	F	E	I
✓ Lifting eye ✓ Fully bunded fuel tank ✓ Integrated fuel tank ✓ Vibration dampers ✓ One or more electric fans controlled by Inverter VSi ✓ Manual autostart control panel ACP7310AUS with circuit breaker ✓ Battery ✓ Ultra silent canopy ✓ Residential silencer ✓ Fork lift guides	✓ Crochet de levage ✓ Bac de rétention ✓ Réservoir intégré ✓ Amortisseurs de vibration ✓ Un ou plusieurs ventilateurs électriques commandés par Inverter VSi ✓ Démarrage manuel autostart ACP7310AUS avec disjoncteur de protection ✓ Batterie ✓ Capotage ultra-silencieux ✓ Silencieux résidentielle ✓ Supports pour fourches	✓ Gancho central ✓ Tanque del combustible con sistema de recolección de líquidos ✓ Tanque de combustible integrado ✓ Sistema de amortiguación anti-vibrante ✓ Uno o más ventiladores eléctricos controlados para Inverter VSi ✓ Cuadro manual autostart ACP7310AUS con interruptor magnetotérmico ✓ Batería ✓ Cabina ultra-silenciosa ✓ Silenciador residencial ✓ Supportes para carretilla	✓ Gancio di sollevamento centrale ✓ Serbatoio con vasca di raccolta liquidi ✓ Serbatoio integrato ✓ Anti vibranti ✓ Una o più ventole elettriche controllate da tecnologia Inverter VSi ✓ Quadro di comando manuale autostart ACP7310AUS con interruttore magnetotermico ✓ Batteria ✓ Cabina ultra silenziosa ✓ Marmitta residenziale ✓ Porta forche

**MANUAL AUTOSTART CONTROL PANEL
COFFRET ELECTRIQUE MANUEL AUTOSTART
CUADRO ELECTRICO MANUAL AUTOSTART
QUADRO ELETTRICO MANUALE AUTOSTART**

ACP 7310 AUS

400 A (400 V - 3 ph - 50Hz - 1500 rpm)

STANDARD EQUIPMENT: 4 poles circuit breaker Electronic control board DSE 7310 Control panel box key Emergency Stop button	EQUIPEMENT STANDARD: Disjoncteur de protection 4 pôles Fiche électronique DSE 7310 Clé pour serrure du coffret Interrupteur d'arrêt d'urgence	EQUIPAMIENTO STANDARD: Interruptor magnetotérmico 4 polos Carta electronica DSE 7310 Llave cuadro Botón de parada de emergencia	EQUIPAGGIAMENTO STANDARD: Interruttore magnetotermico 4 poli Scheda elettronica DSE 7310 Chiave quadro Pulsante di arresto di emergenza
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	DSE 7310	CONTROL BOARD CARTE ELECTRONIQUE DE CONTROL CARTA ELECTRONICA DE CONTROL SCHEDELETTRONICA DI CONTROLLO
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PROTECTIONS	PROTECTIONS	PROTECCIONES	PROTEZIONI
Low oil pressure High engine temperature Low fuel level Fail to start Fail to stop Emergency stop Over/under generator frequency Over/under generator voltage Over/under speed Fuel level Belt breakage Over current Over/under battery voltage	Basse pression huile moteur Haute température moteur Basse niveau combustible Non démarrage Non arrêt Arrêt d'urgence Sur/sous générateur fréquence Sur/sous générateur voltage Sur/sous vitesse Niveau de combustible Rupture courroie Surcoursant Sur/sus la tension de batterie	Baja presión aceite Elevada temperatura motor Baja nivel carburante Falta de arranque Falta de parada Parada de emergencia Sobre/bajo generatore frecuencia Sobre/bajo generatore voltaje Sobre/bajo velocidad nivel de combustible Ruptura correa Corriente maxima Sobre/bajo voltaje de la batería	Bassa pressione olio Alta temperatura motore Basso livello di carburante Mancato avviamento Mancato arresto Stop d'emergenza Sovra/sotto frequenza generatore Sovra/sotto voltaggio generatore Sovra/sotto velocità Livello del carburante Rottura cinghia Sovracorrente Sovra/sotto tensione della batteria
DIGITAL METERS	VOYANT NUMERIQUE POUR	VISOR DIGITAL PARA	MISURATORE DIGITALE PER
Generator volts (3 phases) Generator amperes (3 phases) Generator frequency KW-meter kVA-meter Cos φ-meter Rpm meter Gen set hours counter Battery Volts	Voltmètre générateur (3 phases) Ampèremètre générateur (3 phases) Fréquencemètre générateur KW-mètre kVA- mètre Cos φ- mètre Tm mètre Totalisateur d'heures de marche Voltmètre batterie	Voltmetro (3 fases) Amperimetro (3 fases) Frecuencimetro KW- metro kVA- metro Cos φ-metro Revoluciones por minuto metro Medida horas de marcha Voltmetro batería	Voltmetro tensione generatore (3 fasi) Amperometro generatore (3 fasi) Frequenzimetro generatore KW- metro kVA- metro Cos φ-metro Gm metro Contaore di funzionamento gruppo Voltmetro batteria

AUTOMATIC CONTROL PANEL COFFRET ELECTRIQUE AUTOMATIQUE CUADRO ELECTRICO AUTOMATICO QUADRO ELETTRICO AUTOMATICO			
1)	ACP 7320 ATS 	COMPLETE CONTROL PANEL FREE STANDING TYPE Equipment: control board, circuit breaker, battery charger, transfer switch, box key. COFFRET ELECTRIQUE COMPLET TYPE ARMOIRE SEPRE DU GROUPE Equipement : carte électronique de contrôle, disjoncteur de protection, chargeur de batterie, inverseur de source, clé coffret. CUADRO ELECTRICO COMPLETO EN ARMARIO SEPARADO DEL GRUPO Equipamiento: carta electronica de controllo, interruptor magnetotermico, cargador de bateria, transferencial, llave quadro. QUADRO ELETTRICO COMPLETO SEPARATO DAL GRUPPO Equipaggiamento: scheda elettronica di controllo, interruttore magnetotermico, carica batteria, telecommutazione e chiave quadro.	
2)	ACP 7320 AMF 	AMF CONTROL PANEL FITTED ON THE GEN-SET WITHOUT TRANSFER SWITCH Equipment: control board, circuit breaker, battery charger, box key. COFFRET ELECTRIQUE MONTE SUR LE GROUPE SANS INVERSEUR DE SOURCE Equipement : carte électronique de contrôle, disjoncteur de protection, chargeur de batterie, clé coffret. CUADRO ELECTRICO MONTADO SOBRE EL GRUPO SIN TRANSFERENCIAL Equipamiento: carta electronica de controllo, interruptor magnetotermico, cargador de bateria, llave quadro. QUADRO ELETTRICO MONTATO SUL GRUPPO ELETTROGENO SENZA TELECOMMUTAZIONE Equipaggiamento: scheda elettronica di controllo, interruttore magnetotermico, carica batteria, chiave quadro.	
3)	ACP 7320 STS 	CONTROL PANEL FITTED ON THE GEN-SET WITH TRANSFER SWITCH SUPPLIED IN A SEPARATED BOX Equipment: control board, circuit breaker, battery charger, box key, separate transfer switch. COFFRET ELECTRIQUE MONTE SUR LE GROUPE + INVERSEUR DE SOURCE FOURNI DANS UN COFFRET SEPRE Equipement : carte électronique de contrôle, disjoncteur de protection, chargeur de batterie, inverseur de source séparé, clé coffret. CUADRO ELECTRICO MONTADO SOBRE EL GRUPO CON TRANSFERENCIAL SEPARADO Equipamiento: carta electronica de controllo, interruptor magnetotermico, cargador de bateria, llave quadro, transferencial separado. QUADRO ELETTRICO MONTATO SUL GRUPPO ELETTROGENO CON TELECOMMUTAZIONE SEPARATA Equipaggiamento: scheda elettronica di controllo, interruttore magnetotermico, carica batteria, chiave quadro, telecommutazione in armadio separato.	
 DSE 7320 CONTROL BOARD CARTE ELECTRONIQUE DE CONTROL CARTA ELECTRONICA DE CONTROL SCHEDA ELETTRONICA DI CONTROLLO			
GB	F	E	I
The DSE7320 is an Automatic Mains Failure Control Module designed to automatically start and stop diesel generating sets that include electronic and non electronic engines. The module also provides excellent genset monitoring and protection features.	La DSE7320 est une carte de contrôle projetée pour démarrer et arrêter automatiquement groupes électrogènes diesel avec moteurs électroniques et non électroniques. La carte représente un système excellent de contrôle et de protection du groupe électrogène.	La DSE7320 es una carta de control para arranque y parar automáticamente grupos electrógenos diesel con motores electrónicos y no electrónicos. La carta constituye un excelente sistema de control y protección del grupo electrógeno.	La DSE7320 è una scheda di controllo progettata per avviare e arrestare automaticamente gruppi elettrogeni diesel con motori elettronici e non elettronici. La scheda costituisce un eccellente sistema di controllo e di protezione del gruppo elettrogeno.
FEATURES	EQUIPEMENT	EQUIPMENT	EQUIPAGGIAMENTO
Stop/restart – Auto – Manual – Start LCD display scroll Event log view Acoustic alarm	Fiche électronique de contrôle DSE7320 Disjoncteur de protection Chargeur de batterie Bouton poussoir arrête d’urgence	Ficha electrónica de control DSE7320 Interrupor magnetotermico Cargador de batería Boton de parada de emergencia	Scheda elettronica di controllo DSE7320 Interruttore magnetotermico Carica batteria Pulsante stop emergenza
DIGITAL MEASURING	MESURES NUMERIQUES	MEDIDAS DIGITALES	MISURAZIONI DIGITALI
Generator volts (3 phases) Generator amperes (3 phases) Generator frequency KW-meter kVA-meter Cos φ- meter Rpm meter Water temperature (optional) Oil pressure (optional) Gen set hours counter Mains volts Battery volts Mains frequency Charging voltage Start-counter Fuel level %	Voltmètre générateur (3 phases) Ampèremètre générateur (3 phases) Fréquencemètre générateur KW-mètre kVA- mètre Cos φ- mètre Tm mètre Température eau (facultatif) Pression huile (facultatif) Totalisateur d'heures de marche Voltmètre secteur Voltmètre batterie Fréquence réseau Tension de charge Compteur démarrages Niveau combustible %	Voltmetro (3 fases) Amperimetro (3 fases) Frecuencimetro KW- metro kVA- metro Cos φ- metro Revoluciones por minuto metro Termometro agua (opcional) Presión aceite (opcional) Medida horas de marcha Voltmetro tensión de red Voltmetro batería Frecuencia red Tensión de carga Numero de arranques Nivel carburante %	Voltmetro tensione generatore (3 fasi) Amperometro generatore (3 fasi) Frequenzimetro generatore KW- metro kVA- metro Cos φ- metro Gm metro Temperatura acqua (facoltativo) Pressione olio (facoltativo) Contaore di funzionamento gruppo Voltmetro tensione rete Voltmetro batteria Frequenza rete Tensione di carica Contavviameti Livello carburante %
INDICATORS	INDICATEURS	INDICADORES	INDICATORI
Mains live Generator live Mains contactor closed Generator contactor closed Engine running	Présence secteur Présence tension générateur Inverseur secteur fermé Inverseur générateur fermé Moteur en marche	Presencia tensión de red Presencia tensión grupo Transferencial red cerrado Transferencial grupo cerrado Motor en marcha	Presenza tensione di rete Presenza tensione generatore Erogazione da rete Erogazione da gruppo Motore avviato
PROTECTIONS	PROTECTIONS	PROTECCIONES	PROTEZIONI
Low oil pressure High engine temperature Low fuel level Fail to start Fail to stop Emergency stop Over/under frequency Over/under voltage Over/under speed Fuel level Belt breakage Over current Over/under battery voltage	Bas pression huile moteur Haute température moteur Bas niveau combustible Non démarrage Non arrêt Arrêt d’urgence Sur/sous fréquence Sur/sous voltage Sur/sous vitesse Niveau de combustible Rupture courroie Rupture courroie Surcourant Sur/sus la tension de batterie	Baja presión aceite Elevada temperatura motor Baja nivel carburante Falta de arranque Falta de parada Parada de emergencia Sobre/bajo frecuencia Sobre/bajo voltaje Sobre/bajo velocidad nivel de combustible Ruptura correa Corriente maxima Sobre/bajo voltaje de la batería	Bassa pressione olio Alta temperatura motore Basso livello di carburante Mancato avviamento Mancato arresto Stop d'emergenza Sovra/sotto frequenza Sovra/sotto voltaggio Sovra/sotto velocità Livello del carburante Rottura cinghia Sovracorrente Sovra/sotto tensione della batteria

1100 Series 1106A-70TAG4 Diesel Engine – Electropak

200 kVA Prime Power / 220 kVA Standby Power

Building upon Perkins proven reputation within the power generation industry, the 1100 Series range of Electropak engines now fit even closer to customers needs.

In the world of power generation success is only gained by providing more for less. With the 1106A-70TAG Perkins has engineered even higher levels of reliability, yet lowered the cost of ownership.

1100A units are designed for territories that do not require compliance to EPA or EU emissions legislation. These engines are assembled around optimal, efficient manufacturing processes with state-of-the-art technology. They are built to provide the exact power solution for customers who sell their applications into lesser regulated countries.

Focusing on our common platform theme, changes to engine envelope dimensions and connection points have been kept to a minimum.



Dependable power

- The Perkins 1106A-70TAG delivers up to 220 kVA standby at 50 Hz, providing greater productivity through an improved power to weight ratio
- This world-class power density has been achieved in a 7 litre engine, using a mechanical fuel injection system; making this engine robust for all markets, with the ability to cope with the variation of fuel qualities around the world

The 1106A has been designed for excellent load acceptance to ensure your facility is powered quickly at all conditions

Low operating costs

- Service intervals are set at 500 hours as standard.
- Perkins provides comprehensive warranty cover for two years (up to 3,000 hours), with three years on major engine components
- A low usage warranty package is also available

World class product support

- Through an experienced global network of distributors and dealers, fully trained engine experts deliver total service support around the clock, 365 days a year. They have a comprehensive suite of web based tools at their finger tips, covering technical information, parts identification and ordering systems, all dedicated to maximising the productivity of your engine
- Perkins actively pursues product support excellence by insisting our distribution network invest in their territory to provide you with a consistent quality of support across the globe
- Throughout the entire life of a Perkins engine, we provide access to genuine OE specification parts giving 100% reassurance that you receive the very best in terms of quality for lowest possible cost... wherever your Perkins powered machine is operating in the world

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[To find your local distributor](#)

Engine Speed rpm	Type of Operation	Typical Generator Output (Net)		Engine Power			
				Gross		Net	
		kVA	kWe	kWm	hp	kWm	hp
1500	Prime Power	200	160	178.9	240	173.9	240
	Standby (maximum)	220	176	196.3	263	191.3	256

Photographs are for illustrative purposes only and may not reflect final specification.

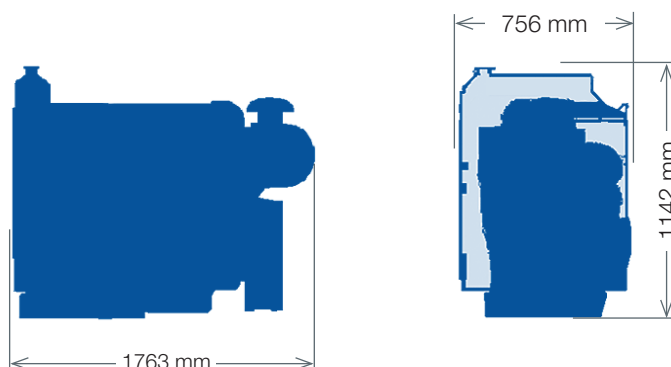
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 **Perkins®**

THE HEART OF EVERY GREAT MACHINE

1100 Series 1106A-70TAG4 Diesel Engine – Electropak

200 kVA Prime Power / 220 kVA Standby Power



Engine specification

- Tropical radiator pipes and guards
- Flywheel housing
- Flywheel and starter ring
- Oil filters
- Starter motor
- Air cleaners and brackets
- Lubricating oil sump
- Alternator
- Induction manifolds
- Exhaust manifolds
- Fuel filter
- Cold start aid
- Engine mountings

Engine data

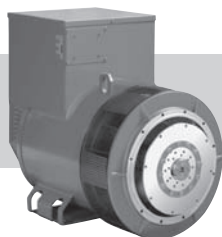
Number of cylinders Vertical in-line 6 cylinder
Bore and stroke 105 x 135 mm (4.13 x 5.31 in)
Displacement 7.01 litres (428 in³)
Aspiration Turbocharged aftercooled
Cycle 4 stroke
Combustion system Direct injection
Compression ratio 16:1
Engine rotation Anti-clockwise viewed on flywheel
Cooling system Liquid
Total lubrication capacity 16.5 litres (4.36 US gal)
Total coolant capacity 21 litres (5.5 US gal)
Dimensions – Length 1763 mm (69.4 in) with air cleaner
Width 756 mm (29.8 in)
Height 1142 mm (45 in)
Dry weight 788 kg (1737 lbs)
Final weight and dimensions will depend on completed specification

Photographs are for illustrative purposes only and may not reflect final specification.

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 **Perkins®**
THE HEART OF EVERY GREAT MACHINE



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4 POLE

CHARACTERISTICS

INDUSTRIAL RATINGS

ambient 40° C

Type	KVA - cos 0.8 Φ - 3 Phase continuous							Efficiency η % CL. H ($\Delta T=125^{\circ}\text{C}$)		
50 Hz	CL. H ($\Delta T=125^{\circ}\text{C}$)				CL. F ($\Delta T=105^{\circ}\text{C}$)					
Series Star Y	380	400	415	IP45 400 V	380	400	415	2/4	3/4	4/4
Parallel Star YY	190	200	208		190	200	208			
Series Delta Δ	220	230	240		220	230	240			
Parallel Delta $\Delta\Delta$	110	115	120		110	115	120			
ECO38-1SN/4	180	180	180	145	170	170	170	91,3	92,6	92,4
ECO38-2SN/4	200	200	200	160	185	185	185	91,7	92,9	92,7
ECO38-3SN/4	225	225	225	180	207	207	207	92	93,3	93
ECO38-1LN/4	250	250	250	200	230	230	230	92,4	93,7	93,4
ECO38-2LN/4	300	300	300	240	275	275	275	92,7	94	93,7
ECO38-3LN/4	350	350	350	280	320	320	320	92,6	93,7	93,5

60 Hz	CL. H ($\Delta T=125^{\circ}\text{C}$)				CL. F ($\Delta T=105^{\circ}\text{C}$)			Efficiency η % CL. H ($\Delta T=125^{\circ}\text{C}$)		
Series Star Y	440	460	480	IP45 480 V	440	460	480	2/4	3/4	4/4
Parallel Star YY	220	230	240		220	230	240			
Series Delta Δ	254	265	277		254	265	277			
Parallel Delta $\Delta\Delta$	127	133	138		127	133	138			
ECO38-1SN/4	220	220	220	175	205	205	205	92,3	93,6	93,4
ECO38-2SN/4	240	240	240	192	220	220	220	92,8	94	93,8
ECO38-3SN/4	270	270	270	215	250	250	250	93,4	94,5	94,2
ECO38-1LN/4	300	300	300	240	280	280	280	93,7	94,9	94,5
ECO38-2LN/4	340	360	360	280	310	330	330	93,9	95,1	94,7
ECO38-3LN/4	420	420	420	330	385	385	385	93,3	94,5	94,3

STANDBY RATINGS

Type	KVA Temp. Rise / Ambient $^{\circ}\text{C}$			KVA Temp. Rise / Ambient $^{\circ}\text{C}$		
	50 Hz			60 Hz		
	163° / 27°	150° / 40°	125° / 27°	163° / 27°	150° / 40°	125° / 27°
ECO38-1SN/4	196	188	188	236	230	230
ECO38-2SN/4	220	211	211	264	253	253
ECO38-3SN/4	250	237	237	300	284	284
ECO38-1LN/4	275	264	264	330	316	316
ECO38-2LN/4	330	315	315	396	378	378
ECO38-3LN/4	370	360	360	444	432	432

Type	J (Kgm ²) B3-B14 FORM	Weight (Kg)	Air Volume		Noise dB(A)			
					50 Hz		60 Hz	
			50 Hz (m ³ /min)	60 Hz (m ³ /min)	1m	7m	1m	7m
ECO38-1SN/4	1,7243	510	32	39	82	69	86	73
ECO38-2SN/4	1,8799	560						
ECO38-3SN/4	2,0751	590						
ECO38-1LN/4	2,3481	680						
ECO38-2LN/4	2,8342	765						
ECO38-3LN/4	3,4747	905						

ACCESSORIES

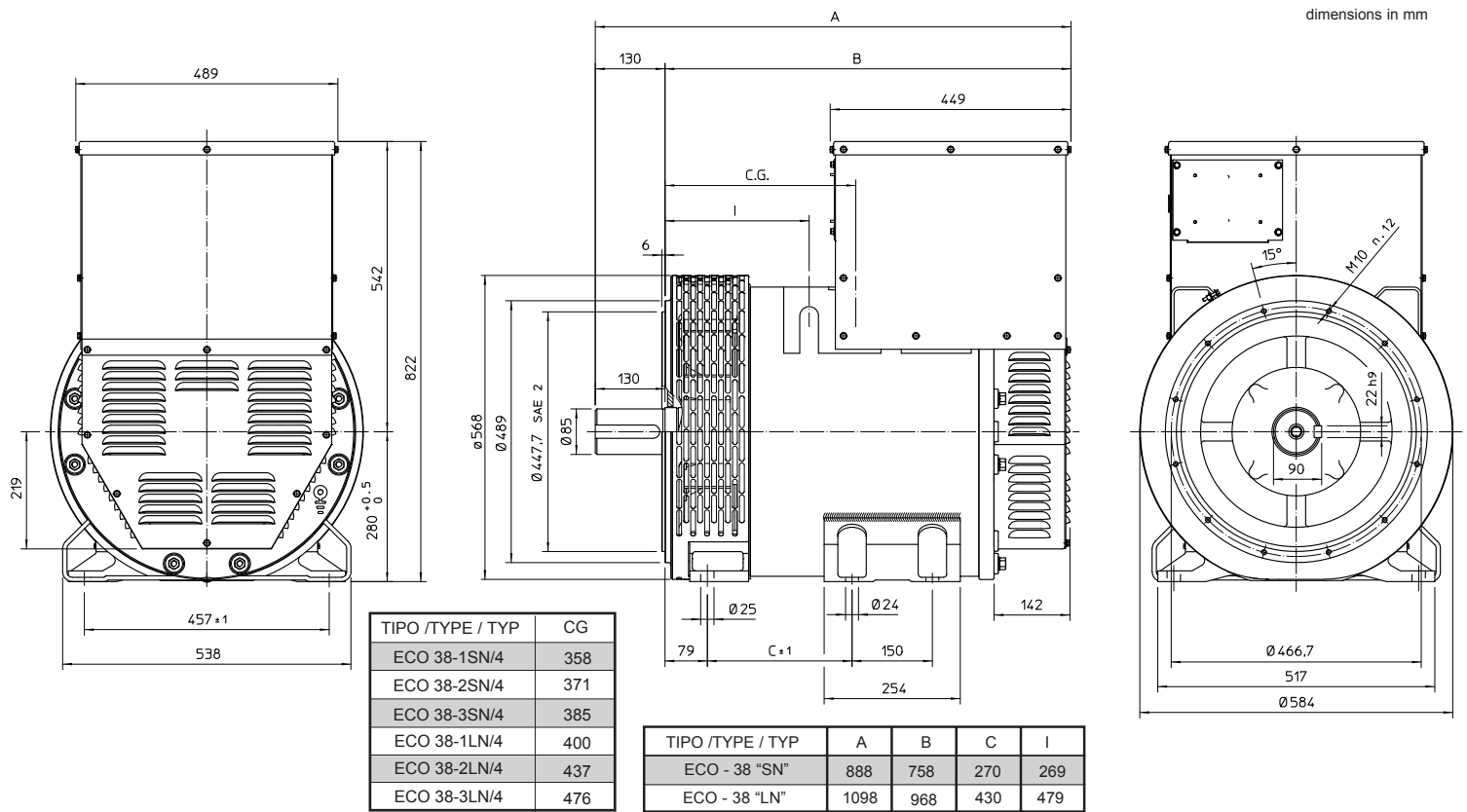
REGULATOR				PARALLEL DEVICE	THERMAL PROTECTION			HEATERS	MECHANICAL PROTECTION		
DSR	DER-1	SR7/2	UVR6		PTC	BIMET. DEVICE	PT100		IP21	IP23	IP45
●	□	□	□	□	□	□	□	□	●	□	□

● = Standard
□ = Optional

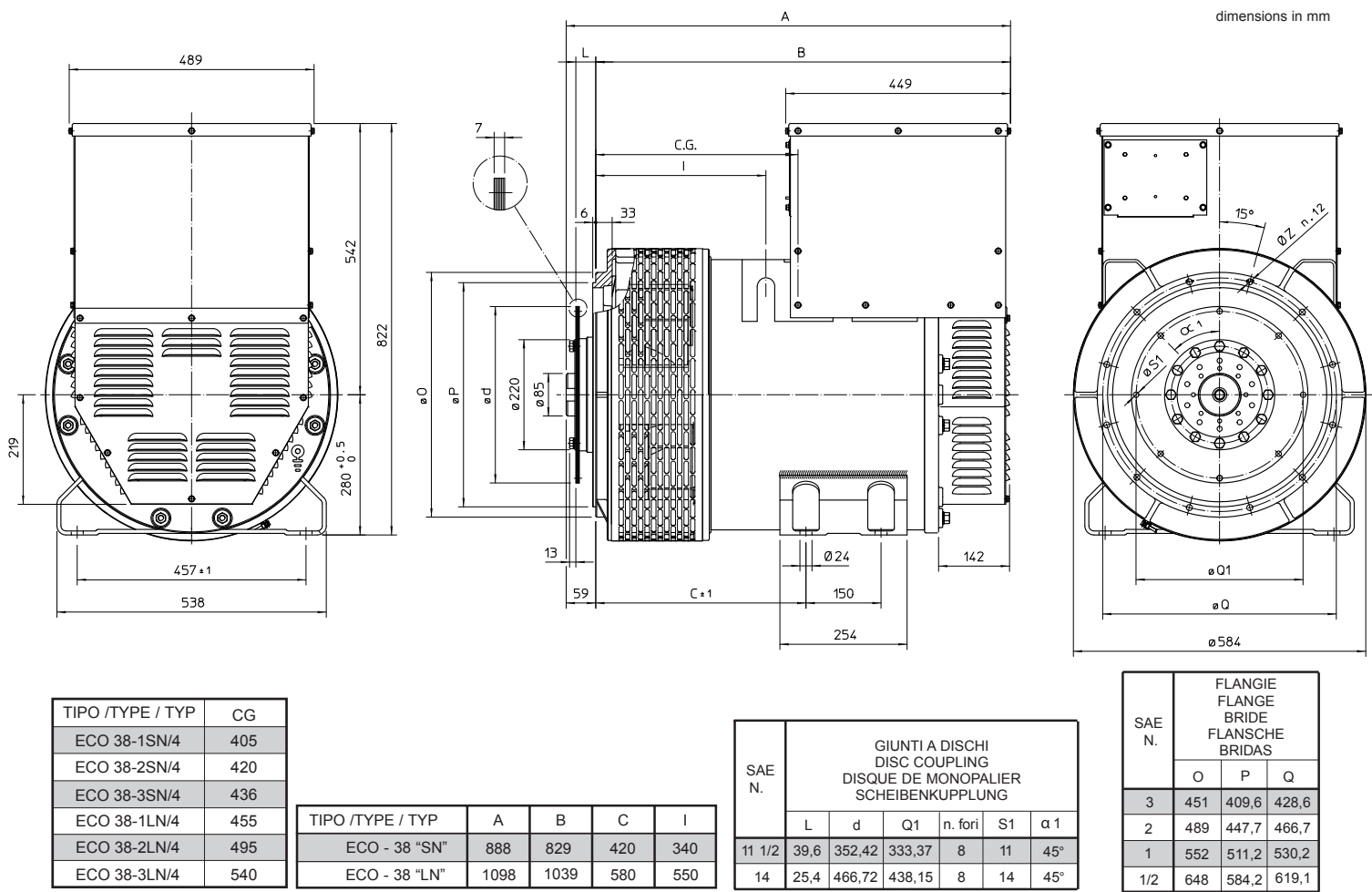
Rating



OVERALL DIMENSIONS B3-B14 FORM



OVERALL DIMENSIONS MD35 FORM



DSECONTROL[®] MONITORING WITH INTELLIGENCE.



DSE7310 & DSE7320

AUTO START & AUTO MAINS FAILURE CONTROL MODULES (COMMUNICATIONS & EXPANSION)



The DSE7310 and DSE7320 are control modules for single gen-set applications. The modules have been developed from the successful DSE5310 and DSE5320 Series and incorporate a number of advanced features to meet the most demanding on-site applications.

The DSE7310 is an Automatic Start Control Module and the DSE7320 is an Auto Mains (Utility) Failure Control Module. Both modules have been designed to start and stop diesel and gas generating sets that include electronic and non-electronic engines. The DSE7320 includes the additional capability of being able to monitor a mains (utility) supply.

Both modules include USB, RS232 and RS485 ports as well as dedicated DSENet[®] terminals for expansion device connectivity.

The modules are simple to operate and feature a user-friendly menu layout for improved clarity. Enhanced features include a real time clock for enhanced event and performance monitoring, ethernet communications for low cost monitoring, mutual standby (DSE7310 only) to reduce engine wear and tear and preventative maintenance features to detect engine part faults prior to a major problem occurring.

FEATURES

- Backed up real time clock
- 132 x 64 pixel LCD display
- Configurable display languages
- Five-key menu navigation
- Fully configurable via PC software
- LED and LCD alarm indication
- Engine exercise mode
- Configurable start & fuel outputs
- kWh monitoring
- Automatic load transfer
- Eight configurable digital inputs
- Six configurable outputs
- Configurable timers and alarms
- Modbus RTU
- Magnetic pick-up
- Selected front panel programming
- Multiple date and time exercise scheduler
- SMS messaging (additional external modem required)
- Power save mode
- User selectable RS232 & RS485 communications
- DSENet[®] compatible
- Ethernet communications via DSE860/865
- Multiple date and time maintenance scheduler
- Configurable display pages
- Programmable load shedding/acceptance
- Preventative maintenance
- kW overload protection
- Unbalanced load protection
- Flexible sender input
- Configurable SCADA output page
- True dual mutual standby with load balancing timer (DSE7310 only)
- Fan control for additional cooling
- 'Protections Disabled' facility
- Fuel usage monitoring and low fuel alarm
- Support for up to three remote display units
- Automatic sleep mode
- Easy access, configurable diagnostics page shows summary of output states
- Improved programmable event log (250) showing date and time
- Manual fuel pump control
- 3 alternative configurations
- Multiple date and time scheduler
- 3 Programmable Maintenance alarms with comms alert
- Customisable status screens
- Low fuel level alarm delay
- Charge alternator fail warning and shutdown alarms with user programmable delay
- Independent Earth fault trip
- Sleep mode
- Load switching (Load shedding and dummy load outputs)
- Manual speed trim (on CAN engines that support this feature)
- Additional display screens to help with modem diagnostics
- Security levels – PC software has password system to control access to PC software features
- Operator configurable virtual LEDs visible in SCADA

NEW FEATURES

- Additional programmable logic
- Improved modem diagnostics
- Remote control sources (10) can be accessed via SCADA
- Additional electrical trip options
- Additional start delay functions
- Oil pressure values from additional engines
- Front panel editing of scheduler
- Displays kW as % of rated kW setting

SPECIFICATION

DC SUPPLY

CONTINUOUS VOLTAGE RATING
8V to 35V Continuous

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

CHARGE FAIL/ EXCITATION
0V to 35V fixed power source 2.5W

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

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

ALTERNATOR INPUT

RANGE
15V - 333V (L-N) 50Hz - 60Hz
(Minimum 15V AC Ph-N)

ACCURACY
1% of full scale true RMS sensing

SUPPORTED TOPOLOGIES
3 phase 4 wire
3 phase 3 wire
3 phase 4 wire Delta
Single phase 2 wire
2 phase 3 wire L1 & L2
2 phase 3 wire L1 & L3

MAINS/UTILITY INPUT (DSE7320 ONLY)

RANGE
15V - 333V (L-N) 50Hz - 60Hz
(Minimum 15V AC Ph-N)

ACCURACY
1% of full scale true RMS sensing

SUPPORTED TOPOLOGIES
3 phase 4 wire
3 phase 3 wire
3 phase 4 wire Delta
Single phase 2 wire
2 phase 3 wire L1 & L2
2 phase 3 wire L1 & L3

CT'S

BURDEN
0.5VA

PRIMARY RATING
1A - 8000A (user selectable)

SECONDARY RATING
1A or 5A secondary (user selectable)

ACCURACY OF MEASUREMENT
1% of full load rating

RECOMMENDATIONS
Class 1 required for instrumentation
Protection class required if using for protection

SPECIFICATION

MAGNETIC PICKUP

VOLTAGE RANGE

+/- 0.5V minimum (during cranking) to 70V peak

FREQUENCY RANGE

10,000 Hz (max)

OUTPUTS

OUTPUT A (FUEL)

15 Amp DC at supply voltage

OUTPUT B (START)

15 Amp DC at supply voltage

OUTPUTS C & D

8 Amp 250V (Volt free)

AUXILIARY OUTPUTS E,F,G,H

2 Amp DC at supply voltage

DIMENSIONS

OVERALL

240mm x 181.1mm x 41.7mm
9.4" x 7.1" x 1.6"

PANEL CUT-OUT

220mm x 160mm
8.7" x 6.3"
Max panel thickness 8mm (0.3")

ENVIRONMENTAL TESTING STANDARDS

ELECTRICAL SAFETY

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

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

TEMPERATURE (OPERATING)

BS EN 60068
Test Ab to +70°C 60068-2-2 Hot
Test Ab to -30°C 60068-2-1 Cold

VIBRATION

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

HUMIDITY

BS 2011 part 2.1 60068-2-30
Test Cb Ob Cyclic
93% RH @ 40°C for 48 hours

SHOCK

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

BENEFITS

- 132 x 64 pixel ratio makes information easy to read
- Real time clock provides accurate event logging
- PC software is license free
- Set maintenance periods can be configured to maintain optimum engine performance
- Ethernet communications provides advanced remote monitoring at low cost
- Modules can be integrated into building management systems
- Preventative maintenance avoids expensive engine down time
- Advanced PCB layout ensures high reliability
- Robust design
- Extensive performance monitoring

OPERATION

The modules are operated via the START, STOP, AUTO and MANUAL soft touch membrane buttons on the front panel. The DSE7320 also has a TEST button. Both modules include load switch buttons. The main menu system is accessed using the five navigation buttons to the left of the LCD display.

CONFIGURATION

The modules can be configured using the front panel buttons or by using the DSE Configuration Suite PC software and a USB lead.

COMMUNICATIONS

The DSE7310 & DSE7320 have a number of different communication capabilities.

SMS Messaging

When the module detects an alarm condition, it has the ability to send an SMS message to a dedicated mobile number (s), notifying an engineer of the exact time, date and reason why the engine failed (GSM Modem and SIM Card required).

Remote Communications

When the module detects an alarm state, it dials out to a PC notifying the user of the condition (Modem required).

Remote Control

The module can be controlled remotely using either a GSM Modem, Ethernet via DSE860/865 or via RS485. Using a modem allows the module to be controlled from any distance. Using RS485 limits the distance to 1km (0.6 miles).

Building Management

The module has been designed to be integrated into new and existing building management systems, using RS485.

PC Software

The module has the ability to be configured and monitored from a remote PC, using the PC software and a USB lead.

INPUTS & OUTPUTS

Analogue inputs are provided for oil pressure, coolant temperature and fuel level. These connect to conventional engine mounted resistive sensor units to provide accurate monitoring and protection facilities. They can also be configured to interface with digital switch type inputs for low oil pressure and high coolant temperature shutdowns. Eight user configurable digital inputs are also included, plus one flexible sender.

Outputs are provided for fuel solenoid, start solenoid and six additional configurable outputs. On these configurable outputs a range of different functions, conditions or alarms can be selected.

INSTRUMENTATION

The modules provide advanced metering facilities, displaying the information on the LCD display. The information can be accessed using the five-key menu navigation to the left of the display.

DSENET®

DSENet® is a collection of expansion modules that have been created to work with DSENet® compatible control modules. DSENet® allows up to 20 different expansion devices to be used at a time. The expansion modules available are:

- DSE2157 Relay Output Expansion Module
- DSE2130 Input Expansion Module
- DSE2548 Annunciator Module Remote Display Module
- DSE2510 Remote Display
- DSE2520 Remote Display

EVENT LOG

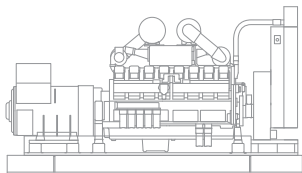
The module includes a comprehensive event log that shows the most recent 250 alarm conditions and the date and time that they occurred. This function assists the user when fault finding and maintaining a generating set.

ELECTRONIC ENGINE COMPATABILITY

- CAT
- Cummins
- Deutz
- John Deere
- MTU
- Perkins
- Scania
- Volvo
- IVECO
- Generic
- Plus additional manufacturers

RELATED MATERIALS

TITLE	PART NO'S
DSE7xxx Manual	057-074
DSE72xx/73xx PC Software Manual	057-077
DSE2130 Data Sheet	053-060
DSE2157 Data Sheet	053-061
DSE2548 Data Sheet	053-062
DSE860/865 Data Sheet	055-071
DSE2510/20 Data Sheet	055-074



ELECTRONIC ENGINE CAPABILITY

7310

Generator Instruments

Volts, Hz, Amps, kW, kVA, Pf, kWh, kVAr, kVArh, KVAh

Engine Instruments

RPM, Oil Pressure, Coolant Temperature, Hours Run, Charging Voltage, Battery Volts.

Electronic Engines

Enhanced Instrumentation and Engine ECU diagnostics via electronic engine interface.

7320

Generator Instruments

Volts, Hz, Amps, kW, kVA, Pf, kWh, kVAr, kVArh, KVAh

Engine Instruments

RPM, Oil Pressure, Coolant Temperature, Hours Run, Charging Voltage, Battery Volts.

Electronic Engines

Enhanced instrumentation and Engine ECU diagnostics via electronic engine interface.

Mains/Utility Instruments

Volts, Frequency, Amps (optional when CT's are fitted load side of the line)

DEEP SEA ELECTRONICS PLC

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