

# TENAX K SERIES

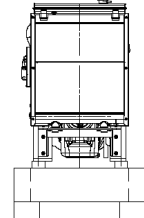
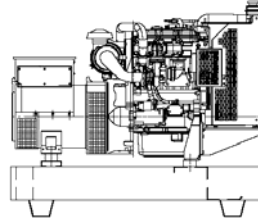
**DIESEL GENERATOR**  
**GROUPE ELECTROGENE DIESEL**  
**GRUPO ELECTROGENO DIESEL**  
**GRUPPO ELETTOGENO DIESEL**

MODEL  
 MODELE  
 MODELO  
 MODELLO

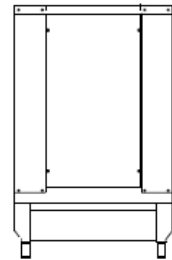
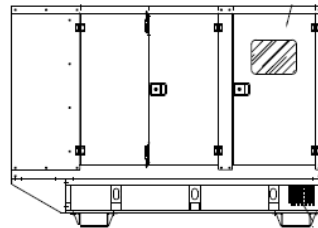
## PK 51 TK



### OPEN VERSION



### SOUNDPROOF 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	220 / 127
Continuous Power Puissance service continue Potencia servicio continuo Potenza servizio continuo	PRP	kVA	45	kVA	56
Stand-by Power Puissance service secours Potencia servicio emergencia Potenza servizio in emergenza	LTP	kVA	50	kVA	61,6
Continuous Power Puissance service continue Potencia servicio continuo Potenza servizio continuo	PRP	kWe	36	kWe	44,8
Stand-by Power Puissance service secours Potencia servicio emergencia Potenza servizio in emergenza	LTP	kWe	40	kWe	49,3
Power factor Facteur de puissance Factor de potencia Fattore di potenza	cos φ		0,8		0,8
Fuel consumption Consommation combustible Consumo de combustible Consumo combustibile	70 %	l/h	7,4	l/h	9,0

ENGINE MOTEUR MOTOR MOTORE		PERKINS		1103A-33TG1	
PERFORMANCE PERFORMANCES PRESTACIONES PRESTAZIONI		1500 rpm		1800 rpm	
Continuous Power Puissance service continue Potencia servicio continuo Potenza servizio continuo	PRP	kWm	41,3	kWm	48,9
Stand-by Power Puissance service secours Potencia servicio emergencia Potenza servizio in emergenza	LTP	kWm	45,6	kWm	53,9
Specific fuel consumption Consommation spécifique combustible Consumo específico de combustible Consumo specifico combustibile		g/kWh	50 % 227 75 % 218 100 % 215 110 % 221	g/kWh	50 % 235 75 % 221 100 % 215 110 % 217
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					Mechanical Mécanique Mecanico Meccanico
Cylinders, numbers and arrangement Nombre et disposition des cylindres Cilindros, numero y disposicion Numero e disposizione dei cilindri					3 L
Total displacement Cylindrée totale Cilindrata total Cilindrata totale				cm <sup>3</sup>	3.300
Bore x stroke Alésage x course Diámetro x carrera Alesaggio x corsa				mm	105.0 x 127.0
Compression ratio Rapport de compression Relación de compresión Rapporto di compressione					17.25 :1
Engine electric system voltage Voltage système électrique moteur Voltaje sistema eléctrico motor Voltaggio sistema elettrico motore					12 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		ECO32-1L/4	ECO32-1L/4
Continuous Power Puissance service continu Potencia servicio continuo Potenza servizio continuo	40 °C	KVA 50,0 kWe 40,0	KVA 60,0 kWe 48,0
Stand-by Power Puissance service secours Potencia servicio emergencia Potenza servizio in emergenza	40 °C	KVA 53,3 kWe 42,6	KVA 64,0 kWe 51,2
Stand-by Power Puissance service secours Potencia servicio emergencia Potenza servizio in emergenza	27 °C	KVA 56,0 kWe 44,8	KVA 68,0 kWe 54,4
Efficiency Rendement Eficienza Efficienza		2/4 87,6 % 3/4 89,5 % 4/4 89,1 %	2/4 89,1 % 3/4 92,1 % 4/4 91,8 %
Standard winding connections Liaison des bobinages Tipo de conexión Collegamento avvolgimenti		Y	YY
Exciter Eccitatrice Excitador Eccitatrice	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 60 Hz	11,8 m <sup>3</sup> /min 14,5 m <sup>3</sup> /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 > 40 °C	0 3 % / 5 °C
Derating for altitude Déclassement pour altitude Declasamiento para altitud Declassamento per altitudine		0 ÷ 1500 m 1500 ÷ 2500 m 2500 ÷ 3000 m	0 3% / 500 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
OPEN SKID VERSION VERSION SUR SKID VERSION ABIERTA VERSIONE APERTA	120	ON REQUEST	810	188	100	145	
SOUND PROOF VERSION VERSION INSONORISEE VERSION INSONORISADA VERSIONE INSONORIZZATA	120	ON REQUEST	1070	228	100	165	

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

GB	F	E	I
<ul style="list-style-type: none"> <li>Steel base frame</li> <li>Vibration dampers</li> <li>Integrated bunded fuel tank</li> <li>Silencer <b>industrial</b> type for open version</li> <li>Battery</li> <li>Manual autostart control panel With <b>DSE7310</b></li> <li>Engine with original tropical radiator</li> <li>Emergency stop button</li> <li>Sound proof canopy of galvanized steel with <b>residential</b> silencer</li> </ul>	<ul style="list-style-type: none"> <li>Châssis acier</li> <li>Amortisseurs de vibrations</li> <li>Réservoir intégré avec bac de retention</li> <li>Silencieux <b>industriel</b> pour la version ouverte</li> <li>Batterie</li> <li>Coffret de contrôle manuel autostart avec <b>DSE7310</b></li> <li>Moteur avec radiateur tropical</li> <li>Bouton arrêt d'urgence</li> <li>Capote d'insonorisation d'acier galvanisé avec silencieux <b>résidentiel</b></li> </ul>	<ul style="list-style-type: none"> <li>Telar de acero</li> <li>Apagadores de vibracion</li> <li>Tanque combustible con bandeja para la recogida de líquidos</li> <li>Silenciador industrial para la versión abierta</li> <li>Bateria</li> <li>Cuadro electrico manual autostart con <b>DSE7310</b></li> <li>Motor con radiador original tropical</li> <li>Botón parada de emergencia</li> <li>Cabina de insonorización de acero cincado con silenciador <b>residencial</b></li> </ul>	<ul style="list-style-type: none"> <li>Basamento in acciaio</li> <li>Antivibranti</li> <li>Serbatoio integrato con vasca raccolta liquidi</li> <li>Silenziatore <b>industriale</b> per versione aperta</li> <li>Batteria</li> <li>Quadro elettrico manuale autostart con <b>DSE7310</b></li> <li>Motore con radiatore originale tropicalizzato</li> <li>Pulsante arresto di emergenza</li> <li>Cabina di insonorizzazione di acciaio zincato con marmitta <b>residenziale</b></li> </ul>

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

**ACP 7310 AUS**

**80 A** (400 V - 3 ph - 50Hz - 1500 rpm)  
**160 A** (220 V - 3 ph - 60Hz - 1800 rpm)

<b>STANDARD EQUIPMENT:</b> 4 poles circuit breaker Electronic control board <b>DSE7310</b> Emergency Stop button	<b>EQUIPEMENT STANDARD:</b> Disjoncteur de protection 4 pôles Fiche électronique <b>DSE7310</b> Interrupteur d'arrêt d'urgence	<b>EQUIPAMIENTO STANDARD:</b> Interruptor magnetotermico 4 polos Carta electronica <b>DSE7310</b> Botón de parada de emergencia	<b>EQUIPAGGIAMENTO STANDARD:</b> Interruttore magnetotermico 4 poli Scheda elettronica <b>DSE7310</b> Pulsante di arresto di emergenza
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**CONTROL BOARD**  
**CARTE ELECTRONIQUE DE CONTROL**  
**CARTA ELECTRONICA DE CONTROL**  
**SCHEDA ELETTRONICA DI CONTROLLO**

PROTECTIONS	PROTECTIONS	PROTECCIONES	PROTEZIONI
Low oil pressure High engine temperature Low fuel level Fail to start Fail to stop Over/under 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 Sur/sous voltage Sur/sous survitesse Niveau de combustible Rupture courroie Surcourant Sur/sous tension batterie	Baja presión de aceite Alta temperatura agua Bajo nivel combustible Fallido start Fallido stop Sovra/baja tensión Sovra/baja frecuencia Nivel de combustible Rotura de la correa Sobre intensidad Sobre/baja tension batería	Bassa pressione olio Alta temperatura acqua Basso livello carburante Mancato avviamento Mancato arresto Sovra/sotto frequenza Sovra/sotto voltaggio Livello di combustibile Rottura cinghia Sovracorrente Sovra/sotto voltaggio batterie
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 hour counter Battery Volts	Voltmètre générateur (3 phases) Ampèremètre générateur (3 phases) Fréquencemètre générateur KW-mètre kVA- mètre Cos φ- mètre Tr/min mètre Totalisateur d'heures de marche Voltmètre batterie	Voltios del generador (3 fases) Amperios del generador (3 fases) Frecuencia del generador kW kVA Cosφ RPM Horas de funcionamiento del grupo Tensión baterías	Volt generatore (3 fasi) Ampere generatore (3 fasi) Frequenza del generatore kW kVA Cosφ RPM Ore di funzionamento del gruppo Volt batteria

**AUTOMATIC CONTROL PANEL  
COFFRET ELECTRIQUE AUTOMATIQUE  
CUADRO ELECTRICO AUTOMATICO  
QUADRO ELETRICO AUTOMATICO**

<p>1) <b>ACP 7320 ATS</b></p> 	<p><b>COMPLETE CONTROL PANEL FREE STANDING TYPE</b> Equipment: control board, circuit breaker, battery charger, transfer switch, box key. <b>COFFRET ELECTRIQUE COMPLET TYPE ARMOIRE SEPRE DU GROUPE</b> Equipement : carte électronique de contrôle, disjoncteur de protection, chargeur de batterie, inverseur de source, clé coffret. <b>CUADRO ELECTRICO COMPLETO EN ARMARIO SEPARADO DEL GRUPO</b> Equipamiento: carta electronica de controllo, interruptor magnetotermico, cargador de bateria, transferencial, llave quadro. <b>QUADRO ELETRICO COMPLETO SEPARATO DAL GRUPPO</b> Equipaggiamento: scheda elettronica di controllo, interruttore magnetotermico, carica batteria, telecommutazione e chiave quadro.</p>
<p>2) <b>ACP 7320 AMF</b></p> 	<p><b>AMF CONTROL PANEL FITTED ON THE GEN-SET WITHOUT TRANSFER SWITCH</b> Equipment: control board, circuit breaker, battery charger, box key. <b>COFFRET ELECTRIQUE MONTE SUR LE GROUPE SANS INVERSEUR DE SOURCE</b> Equipement : carte électronique de contrôle, disjoncteur de protection, chargeur de batterie, clé coffret. <b>CUADRO ELECTRICO MONTADO SOBRE EL GRUPO SIN TRANSFERENCIAL</b> Equipamiento: carta electronica de controllo, interruptor magnetotermico, cargador de bateria, llave quadro. <b>QUADRO ELETRICO MONTATO SUL GRUPPO ELETTROGENO SENZA TELECOMMUTAZIONE</b> Equipaggiamento: scheda elettronica di controllo, interruttore magnetotermico, carica batteria, chiave quadro.</p>
<p>3) <b>ACP 7320 STS</b></p> 	<p><b>CONTROL PANEL FITTED ON THE GEN-SET WITH TRANSFER SWITCH SUPPLIED IN A SEPARATED BOX</b> Equipment: control board, circuit breaker, battery charger, box key, separate transfer switch. <b>COFFRET ELECTRIQUE MONTE SUR LE GROUPE + INVERSEUR DE SOURCE FOURNI DANS UN COFFRET SEPRE</b> Equipement : carte électronique de contrôle, disjoncteur de protection, chargeur de batterie, inverseur de source séparé, clé coffret. <b>CUADRO ELECTRICO MONTADO SOBRE EL GRUPO CON TRANSFERENCIAL SEPARADO</b> Equipamiento: carta electronica de controllo, interruptor magnetotermico, cargador de bateria, llave quadro, transferencial separado. <b>QUADRO ELETRICO MONTATO SUL GRUPPO ELETTROGENO CON TELECOMMUTAZIONE SEPARATA</b> Equipaggiamento: scheda elettronica di controllo, interruttore magnetotermico, carica batteria, chiave quadro, telecommutazione in armadio separato.</p>

**DSE 7320**  
**CONTROL BOARD  
CARTE ELECTRONIQUE DE CONTROL  
CARTA ELECTRONICA DE CONTROL  
SCHEDA ELETRONICA DI CONTROLLO**

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<p>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.</p>	<p>La DSE7320 est une carte de contrôle projetée pour démarrer et arrêter automatiquement groupes électrogènes diesels avec moteurs électroniques et non électroniques. La carte représente un système excellent de contrôle et de protection du groupe électrogène.</p>	<p>La DSE7320 es una carta de control para arranquar 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.</p>	<p>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.</p>
<b>FEATURES</b>	<b>EQUIPEMENT</b>	<b>EQUIPMENT</b>	<b>EQUIPAGGIAMENTO</b>
<p>Electronic control module DSE7320 Circuit breaker Battery charger Emergency stop button</p>	<p>Fiche électronique de contrôle DSE7320 Disjoncteur de protection Chargeur de batterie Bouton poussoir arrête d'urgence</p>	<p>Ficha electrónica de control DSE7320 Interruptor magnetotermico Cargador de batería Boton de parada de emergencia</p>	<p>Scheda elettronica di controllo DSE7320 Interruttore magnetotermico Carica batteria Pulsante stop emergenza</p>
<b>DIGITAL MEASURING</b>	<b>MESURES NUMERIQUES</b>	<b>MEDIDAS DIGITALES</b>	<b>MISURAZIONI DIGITALI</b>
<p>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</p>	<p>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</p>	<p>Voltmetro (3 fases) Amperimetro (3 fases) Frecuencimetro KW- metro kVA- metro Cos φ- metro Revoluciones por minuto metro Termometro agua (opcional) Presion aceite (opcional) Medida horas de marcha Voltmetro tensión de red Voltmetro batería</p>	<p>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</p>
<b>INDICATORS</b>	<b>INDICATEURS</b>	<b>INDICADORES</b>	<b>INDICATORI</b>
<p>Mains live Generator live Mains contactor closed Generator contactor closed</p>	<p>Présence secteur Présence tension générateur Inverseur secteur fermé Inverseur générateur fermé</p>	<p>Presencia tensión de red Presencia tensión grupo Transferencial red cerrado Transferencial grupo cerrado</p>	<p>Presenza tensione di rete Presenza tensione generatore Erogazione da rete Erogazione da gruppo</p>
<b>PROTECTIONS</b>	<b>PROTECTIONS</b>	<b>PROTECCIONES</b>	<b>PROTEZIONI</b>
<p>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</p>	<p>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 Surcourant Sur/sus la tension de batterie</p>	<p>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</p>	<p>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 Sovraccorrente Sovra/sotto tensione della batteria</p>

**SOUNDPROOF CANOPY**  
**CAPOTE D'INSONORISATION**  
**CAPOTA DE INSONORIZACION**  
**CABINA INSONORIZATA**

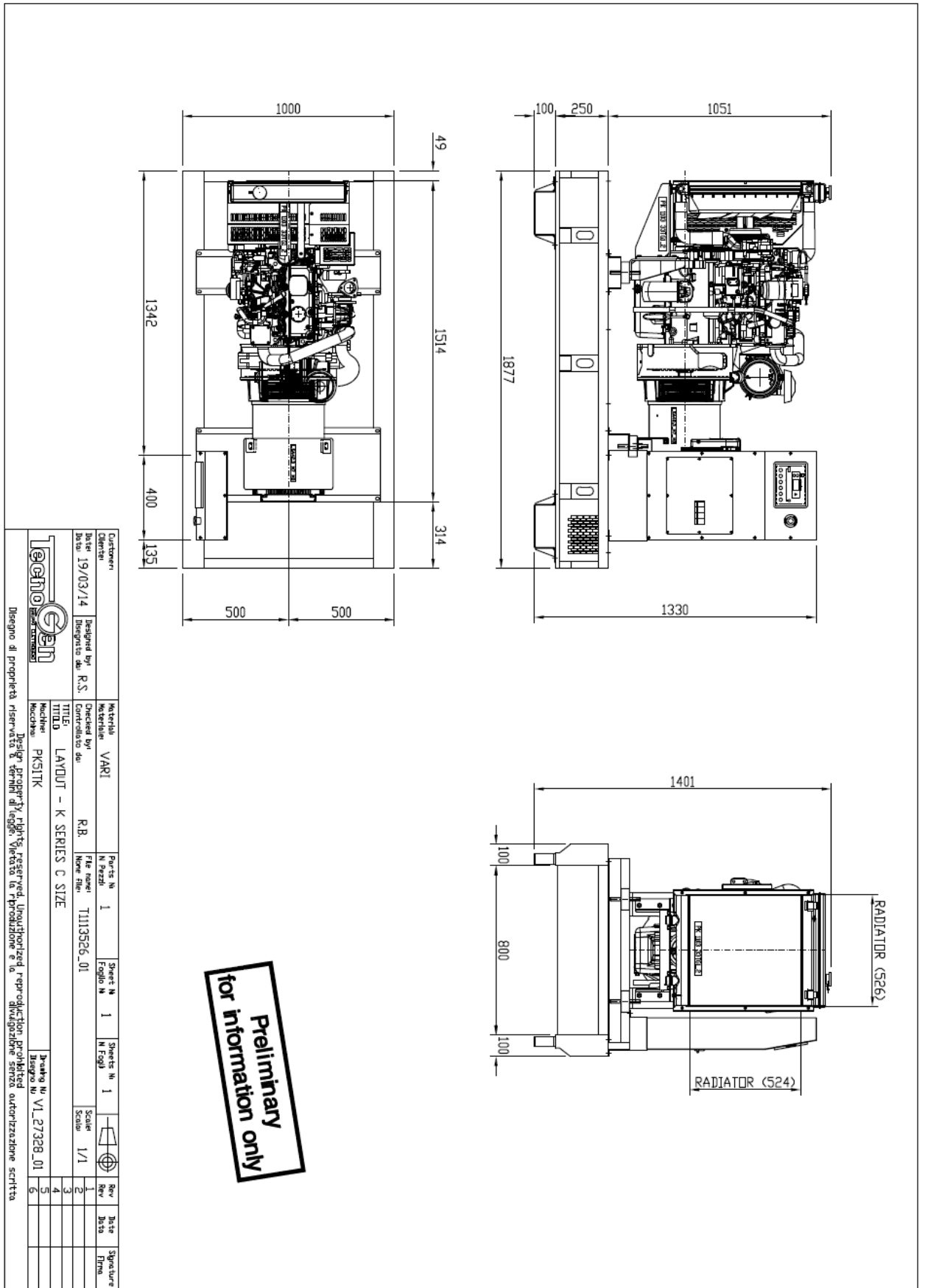
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<p>The TecnoGen soundproof canopy has been designed with the aim of achieving the maximum noise level reduction and to provide a perfect cooling of the engine. The cooling airflow is forced through fixed circuits. The canopy is suitable for tropical ambient application. The exhaust gas silencer is residential type internally mounted. The canopy is completely built of hot galvanized carbon sheet steel. The sheets have a thickness 20/10. The structure is fully bolted, fixed by a special polyethylene sealing, completely free from electrical installation. All the panels can be easily removed. The canopy is provided with doors of wide opening for easy access to generating set for the maintenance operations. The soundproofing materials are highly fire resistant and self-extinguishing.</p>	<p>La capote insonorisée TecnoGen à été conçue pour atteindre le niveau de bruit le mineur possible et un refroidissement du moteur parfait. Le souffle d'air refroidissant est canalisé en circuits fixes. La capote est apte à être utilisée dans les ambiances tropicales. Le silencieux des gaz d'échappement, de type résidentiel, est mis à l'intérieur de la capote. La cabine est construite en acier galvanisé à chaud. Les tôles ont une épaisseur de 20/10. La structure est complètement boulonnée et fixée à travers des garnitures spéciales au polyéthylène. Tous les panneaux sont facilement amovibles. La cabine est dotée de portes avec grandes ouvertures qui permettent un accès facile au groupe électrogène pour les opérations de maintenance. Les matériaux d'insonorisation sont fortement résistant au feu et auto-extinguibles.</p>	<p>La capota insonorizada TecnoGen tiene sido planeada con el objetivo de alcanzar el menor nivel de rumorosidad posible y un perfecto enfriamiento del motor. El soplo de aire es canalizado en circuitos fijos. La cabina es apta a ser utilizada en ambientes tropicales. El silenciador de los gases de descargue, de tipo residencial, es colocado dentro de la cabina. La cabina es construida en acero cincado. Las chapas tienen un espesor de 20/10. La estructura es completamente bullonata y montada con sellos especiales de polietilene. Todos los paneles son fácilmente removibles. La cabina es dotada con puertas con amplias aberturas que permiten el fácil acceso al grupo electrógeno por las operaciones de manutención. Los materiales insonorizantes son muy resistentes al fuego y auto-extinguentes.</p>	<p>La cabina insonorizzata TecnoGen è stata progettata allo scopo di raggiungere il minor livello di rumorosità possibile e un perfetto raffreddamento del motore. Il soffio d'aria raffreddante è canalizzato in circuiti fissi. La cabina è adatta ad essere utilizzata in ambienti tropicali. Il silenziatore dei gas di scarico, di tipo residenziale, è collocato all'interno della cabina. La cabina è costruita in acciaio zincato a caldo. Le lamiere hanno uno spessore di 20/10. La struttura è completamente bullonata e fissata tramite speciali sigilli al polietilene. Tutti i pannelli sono facilmente rimovibili. La cabina è dotata di porte con ampie aperture che consentono il facile accesso al gruppo elettrogeno per le operazioni di manutenzione. I materiali insonorizzanti sono altamente resistenti al fuoco e autoestinguenti.</p>

***Our quality in 10 points***  
***Notre qualité résumée en 10 points***  
***Nuestra calidad en 10 puntos***  
***La nostra qualità in 10 punti***

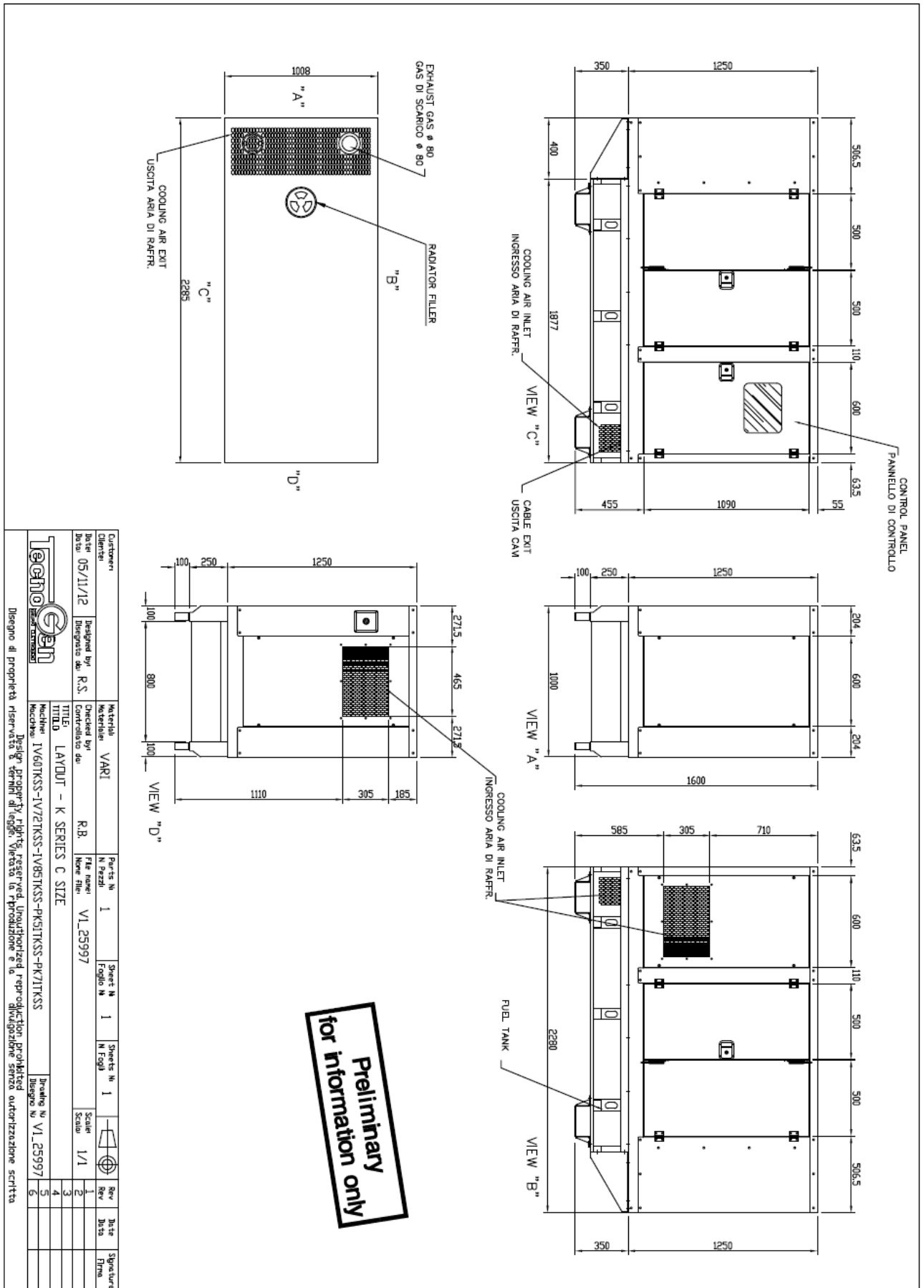
1	<p>Internal residential silencer for lower sound levels            Silencieux interne pour un niveau bas de bruit            Silenciador interno para un nivel de rumorosidad más bajo            Silenziatore interno per un livello di rumorosità più basso</p>
2	<p>Integrated fuel tank of different sizes            Réservoirs de combustible disponibles, sur demande, de capacité supérieure            Tanques integrados disponibles, como opción, de capacidad superior            Serbatoi integrati disponibili, su richiesta, di capacità superiore</p>
3	<p>Control panel viewing window to easily check status of generating set            Fenêtre de visualisation du panneau de contrôle pour un contrôle plus facile du status opérationnel du groupe            Ventana de visualización del panel de control por un más fácil control del estatus operativo del grupo            Finestra di visualizzazione del pannello di controllo per un più facile controllo dello status operativo del gruppo</p>
4	<p>Lockable access doors for extra safety and security            Porte d'accès avec serrure pour une sûreté majeure            Puertas de acceso con cerradura para una mayor seguridad            Porte di accesso con serratura per una maggiore sicurezza</p>
5	<p>Galvanized bolts            Boulons galvanisés            Pernos cincados            Bulloni zincati</p>
6	<p>Emergency stop button            Interrupteur d'arrêt d'urgence            Botón parada de emergencia            Pulsante arresto di emergenza</p>
7	<p>Doors location convenient to controls and service area            Placement des portes pour rendre les contrôles plus faciles            Colocación de las puertas para facilitar los controles            Collocazione delle porte per facilitare i controlli</p>
8	<p>High serviceability level            Haut niveau d'accessibilité pour la manutention            Alto nivel de accesibilidad para la manutención            Alto livello di accessibilità per la manutenzione</p>
9	<p>Large cable entry area for easy installation            Grande zone d'entrée des câbles pour une installation plus facile            Amplia área de entrada cables para una instalación fácil            Ampia area di entrata cavi per una facile installazione</p>
10	<p>Galvanized metal steel sheet pre-treated prior to powder coating            Tôles en acier galvanisé pré-traitées avant le vernissage à poudre            Chapas de acero cincado pre-tratadas antes de la pintura a polvo            Lamiere di acciaio zincato pre-trattate prima della verniciatura a polvere</p>



**TENAX K series - OPEN VERSION DRAWING**  
**Série TENAX k - DESSIN VERSION SUR SKID**  
**Serie TENAX k - DIBUJO VERSION ABIERTA**  
**Serie TENAX k - DISEGNO VERSIONE APERTA**



**TENAX K series - SOUND PROOF VERSION DRAWING**  
**Série TENAX k - DESSIN VERSION INSONORIZEE**  
**Serie TENAX k - DIBUJO VERSION INSONORISADA**  
**Serie TENAX k - DISEGNO VERSIONE INSONORIZZATA**



**Preliminary  
for information only**

Customer	Materials	Part N	Sheet N	Scale	Rev	Date	Signature
Client	VARI	1	1	1/1	1		
Date	Checked by	File name	Sheet N (top)	Scale	Rev	Date	Signature
05/11/12	R.B.	V1_25997	1	1/1	1		
Drawn by	Contracted by	Machine	Sheet N (bottom)	Scale	Rev	Date	Signature
	R.S.	IV68TKSS-IV72TKSS-IV85TKSS-PK51TKSS-PK71TKSS	1	1/1	1		
		TITLE	Sheet N (top)	Scale	Rev	Date	Signature
		LAYOUT - K SERIES C SIZE	1	1/1	1		
		Machine	Sheet N (bottom)	Scale	Rev	Date	Signature
		IV68TKSS-IV72TKSS-IV85TKSS-PK51TKSS-PK71TKSS	1	1/1	1		
		TITLE	Sheet N (top)	Scale	Rev	Date	Signature
		LAYOUT - K SERIES C SIZE	1	1/1	1		
		Machine	Sheet N (bottom)	Scale	Rev	Date	Signature
		IV68TKSS-IV72TKSS-IV85TKSS-PK51TKSS-PK71TKSS	1	1/1	1		

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# 1100 Series 1103A-33TG1 Diesel Engine – Electropak

45.6 kWm at 1500 rpm  
53.9 kWm at 1800 rpm

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 1103A-33TG1 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 units are able to meet TA luft legislation.

## Compact, efficient power

- 1100 Series is the result of an intensive period of customer research that has guided the development of the range
- The new 3.3 litre cylinder block ensures bore roundness is maintained under the pressures of operation. It also ensures combustion and mechanical noise is lowered
- A new cylinder head has re-established Perkins mastery of air control

## Quality by design

- Product design and Class A manufacturing improvements enhance product reliability while maintaining Perkins legendary reputation for durability

## Cost effective power

- Compact size and low noise
- Lower fuel consumption and oil use
- 500 hour service intervals
- 2 year warranty

## Product support

- Perkins actively pursues product support excellence by ensuring our distribution network invest in their territory – strengthening relationships and providing more value to you, our customer
- 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 fingertips covering technical information, parts identification and ordering systems, all dedicated to maximising the productivity of your engine
- Throughout the entire life of a Perkins engine, we provide access to genuine OE specification parts and service. We give 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



Engine Speed (rev/min)	Type of Operation	Typical Generator Output (Net)		Engine Power			
				Gross		Net	
		kVA	kWe	kWm	bhp	kWm	bhp
1500	Prime Power	45.0	36.0	42.2	56.6	41.3	55.4
	Standby Power	49.6	39.7	46.5	62.4	45.6	61.2
1800	Prime Power	53.1	42.5	50.5	67.7	48.9	65.6
	Standby Power	58.7	46.9	55.6	74.6	53.9	72.3

The above ratings represent the engine performance capabilities to conditions specified in ISO 8528/1, ISO 3046/1:1986, BS5514/1. Derating may be required for conditions outside these; consult Perkins Engines Company Limited.

Generator powers are typical and are based on an average alternator efficiency and a power factor (cos.  $\theta$ ) of 0.8 Fuel specification: BS 2869: Part 2 1998 Class A2 or DIN EN 590. Lubricating oil: 15W40 to API CG4.

### Rating Definitions

**Prime Power:** Variable load. Unlimited hours usage with an average load factor of 80% of the published prime power over each 24 hour period. A 10% overload is available for 1 hour in every 12 hours of operation. **Standby Power:** Variable load. Limited to 500 hours annual usage, up to 300 hours of which may be continuous running. No overload is permitted.

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

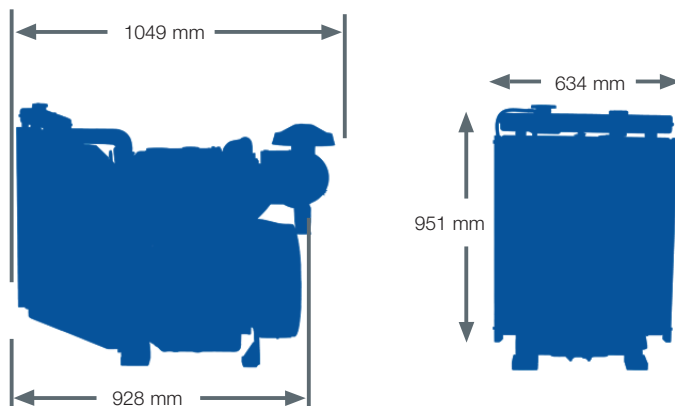
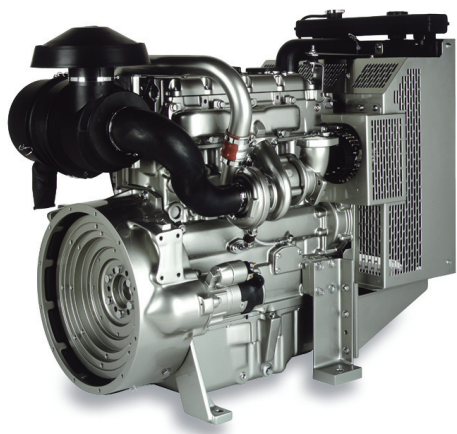
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 **Perkins**<sup>®</sup>

THE HEART OF EVERY GREAT MACHINE

# 1100 Series 1103A-33TG1 Diesel Engine – Electropak

45.6 kWm at 1500 rpm  
53.9 kWm at 1800 rpm



## Standard Electropak specification

### Air inlet

- Mounted air filter

### Fuel system

- Rotary type pump
- Ecoplus fuel filter

### Lubrication system

- Wet sump with filler and dipstick
- Spin-on oil filter

### Cooling system

- Thermostatically controlled system with gear-driven circulation pump and belt-driven pusher fan
- Mounted radiator and piping

### Electrical equipment

- 12 volt starter motor and 12 volt 65 amp alternator with DC output
- 12 volt shutdown solenoid energised to run

### Flywheel and housing

- High inertia flywheel to SAE J620 Size 10/11½
- SAE 3 flywheel housing

### Mountings

- Front engine mounting bracket

### Literature

- User's Handbook

### Optional equipment

- Woodward electronic governor (LCG2)
- Workshop manual
- Parts book

Engine Speed	Fuel Consumption			
	1500 rev/min		1800 rev/min	
	UK g/hr	l/hr	UK g/hr	l/hr
Standby	2.6	12.0	3.1	14.3
Prime Power	2.3	10.7	2.8	12.9
75% of Prime Power	1.8	8.2	2.1	9.9
50% of Prime Power	1.2	5.7	1.5	7.1

## General data

Number of cylinders .....	3 vertical in-line
Bore and stroke.....	105 x 127 mm
Displacement .....	3.3 litres
Aspiration .....	Turbocharged
Cycle.....	4 stroke
Combustion system.....	Direct injection
Compression ratio .....	17.25:1
Rotation.....	Anti-clockwise viewed from flywheel
Cooling system.....	Water-cooled
Total lubrication system capacity.....	7.9 litres
Total coolant capacity .....	10.2 litres
Dimensions – Length .....	1049 mm
Width .....	634 mm
Height .....	951 mm
Dry weight (approx.).....	420 kg

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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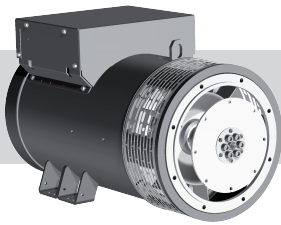
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[www.perkins.com](http://www.perkins.com)



THE HEART OF EVERY GREAT MACHINE



# meccalte



# ECO 32

MECCALTE spa - Via Roma, 20 - 36051 CREAZZO (VI) ITALIA  
 Tel. +39 0444/396111 - Fax +39 0444/396166 - e-mail : info@meccalte.it  
 web site: www.meccalte.com

## 4 POLE

### CHARACTERISTICS

#### INDUSTRIAL RATINGS

ambient 40 ° C

Type	KVA - cos φ 0.8 - 3 Phase continuous								Efficiency			1 Phase KVA COS φ 1 CL H (ΔT= 125 °C) DELTA
	CL H ( ΔT= 125 °C)				CL F ( ΔT= 105 °C)				CL H ( ΔT= 125 °C)			
Series Star Y	380	400	415	IP45 400V	380	400	415	2/4	3/4	4/4	23,5	
Parallel Star YY	190	200	208		190	200	208					
Series Delta Δ	220	230	240		220	230	240					
Parallel Delta ΔΔ	110	115	120		110	115	120					
ECO32-2S/4	35	<b>35</b>	35		29	33	<b>33</b>					33
ECO32-3S/4	42,5	<b>42,5</b>	42,5	34	39	<b>39</b>	39	87,3	89,1	88,6	33	
ECO32-1L/4	50	<b>50</b>	50	40	48	<b>48</b>	48	87,6	89,5	89,1	40	
ECO32-2L/4	60	<b>60</b>	60	50	57	<b>57</b>	57	89,5	90,8	90,3	48	
ECO32-3L/4	75	<b>75</b>	75	60	67	<b>67</b>	67	89,7	91,1	90,7	48	

60 Hz	CL H ( ΔT= 125 °C)				CL F ( ΔT= 105 °C)				Efficiency			1 Phase KVA COS φ 1 CL H (ΔT= 125 °C) DELTA
	CL H ( ΔT= 125 °C)				CL F ( ΔT= 105 °C)				CL H ( ΔT= 125 °C)			
Series Star Y	440	460	480	IP45 480V	440	460	480	2/4	3/4	4/4	28	
Parallel Star YY	220	230	240		220	230	240					
Series Delta Δ	254	265	277		254	265	277					
Parallel Delta ΔΔ	127	133	138		127	133	138					
ECO32-2S/4	42	42	<b>42</b>		34,8	40	40					<b>40</b>
ECO32-3S/4	51	51	<b>51</b>	40,8	49	49	<b>49</b>	89	90,6	90	39,5	
ECO32-1L/4	60	60	<b>60</b>	48	58	58	<b>58</b>	89,1	92,1	91,8	48	
ECO32-2L/4	68	72	<b>72</b>	60	65	69	<b>69</b>	91,1	93,3	92,9	60	
ECO32-3L/4	86	90	<b>90</b>	72	80	83	<b>83</b>	91,1	93,4	93,2	60	

#### STANDBY RATINGS

Type	KVA Temp. Rise / Ambient °C			KVA Temp. Rise / Ambient °C		
	50 Hz			60 Hz		
	163° / 27°	150° / 40°	125° / 27°	163° / 27°	150° / 40°	125° / 27°
ECO32-2S/4	39	36,7	36,7	47	44	44
ECO32-3S/4	48	46	46	57	54	54
ECO32-1L/4	56	52,5	52,5	67	63	63
ECO32-2L/4	68	62,5	62,5	80	75	75
ECO32-3L/4	83	78	78	100	93,7	93,7

Type	J (Kgm <sup>2</sup> ) B3-B14 FORM	Weight (Kg)	Air Volume		Noise dB(A)			
					50 Hz		60 Hz	
			50 Hz (m <sup>3</sup> /min)	60 Hz (m <sup>3</sup> /min)	1m	7m	1m	7m
ECO32-2S/4	0,322	199	11,8	14,5	75	60	79	64
ECO32-3S/4	0,350	214						
ECO32-1L/4	0,421	248						
ECO32-2L/4	0,503	282						
ECO32-3L/4	0,570	298						

### ACCESSORIES

REGULATOR				PARALLEL DEVICE	THERMAL PROTECTION			HEATERS	MECHANICAL PROTECTION		
DSR	DER-1	SR7/2	UVR6		PTC	BIMET. DEVICE	PT100		IP21	IP23	IP45
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

● = Standard

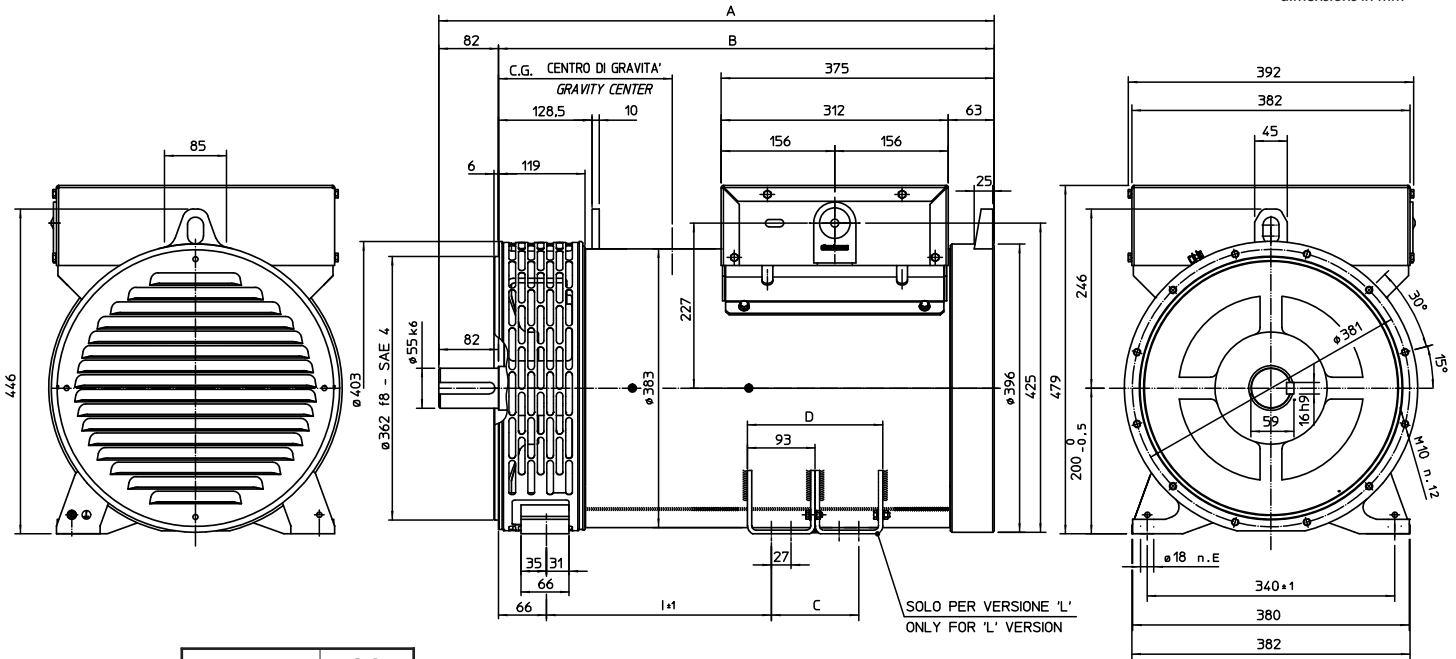
□ = Optional

Rating



## OVERALL DIMENSIONS B3 - B14 FORM

dimensions in mm

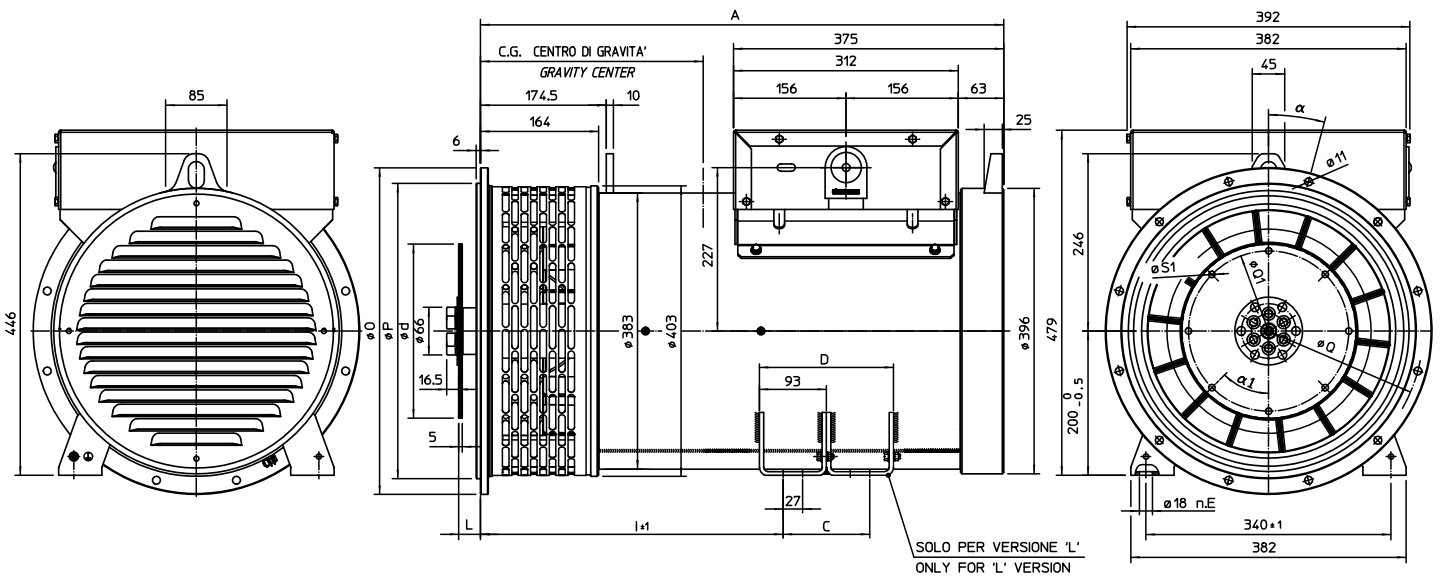


TIPO / TYPE	C. G.
ECO 32-2S/4	269
ECO 32-3S/4	274
ECO 32-1L/4	316
ECO 32-2L/4	330
ECO 32-3L/4	351

TIPO/TYPE/TYP	A	B	I	C	D	E
ECO 32 S	638	556	185	-	-	6
ECO 32 L	763	681	310	120	186	10

## OVERALL DIMENSIONS MD35 FORM

dimensions in mm



TIPO / TYPE	C. G.
ECO 32-2S/4	312
ECO 32-3S/4	316
ECO 32-1L/4	366
ECO 32-2L/4	377
ECO 32-3L/4	388

TIPO/TYPE/TYP	A	I	C	D	E
ECO 32 S	601	295	-	-	4
ECO 32 L	726	420	120	186	8

SAE N.	GIUNTI A DISCHI DISC COUPLING DISQUE DE MONOPALIER SCHEIBENKUPPLUNG				
	L	d	Q1	S1	α1
6 1/2	30,2	215,9	200	9	60°
7 1/2	30,2	241,3	222,25	9	45°
8	62	263,52	244,47	11	60°
10	53,8	314,32	295,27	11	45°
11 1/2	39,6	352,42	333,37	11	45°

SAE N.	FLANGE FLANGE BRIDE FLANSCH BRIDAS			
	O	P	Q	α
5	356	314,3	333,4	45°
4	403	362	381	30°
3	451	409,6	428,6	30°
2	490	447,7	466,7	30°
1	552	511,2	530,2	30°

# DSECONTROL<sup>®</sup> 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<sup>®</sup> 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<sup>®</sup> 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

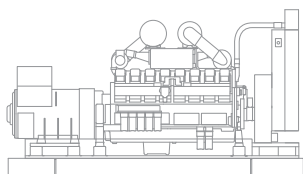
The module includes a comprehensive event log that shows the most recent 250 alarm conditions and the date and time that they occurred. This function assists the user when fault finding and maintaining a generating set.

### ELECTRONIC ENGINE COMPATIBILITY

- 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

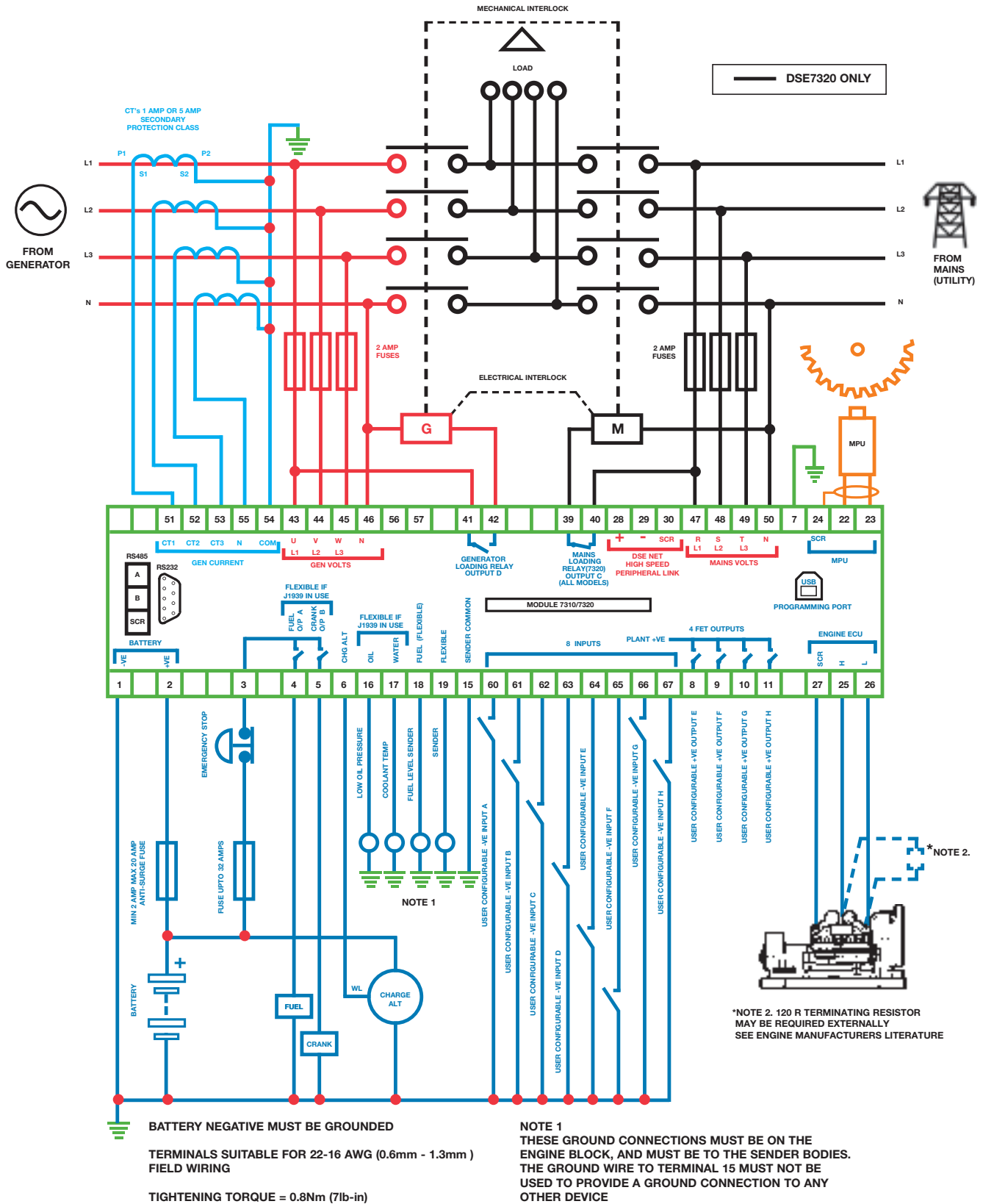


**ELECTRONIC ENGINE CAPABILITY**

7310	7320
<p><b>Generator Instruments</b> Volts, Hz, Amps, kW, kVA, Pf, kWh, kVAr, kVArh, KVArh</p> <p><b>Engine Instruments</b> RPM, Oil Pressure, Coolant Temperature, Hours Run, Charging Voltage, Battery Volts.</p> <p><b>Electronic Engines</b> Enhanced Instrumentation and Engine ECU diagnostics via electronic engine interface.</p>	<p><b>Generator Instruments</b> Volts, Hz, Amps, kW, kVA, Pf, kWh, kVAr, kVArh, KVArh</p> <p><b>Engine Instruments</b> RPM, Oil Pressure, Coolant Temperature, Hours Run, Charging Voltage, Battery Volts.</p> <p><b>Electronic Engines</b> Enhanced instrumentation and Engine ECU diagnostics via electronic engine interface.</p> <p><b>Mains/Utility Instruments</b> Volts, Frequency, Amps (optional when CT's are fitted load side of the line)</p>



# DSE7310 & DSE7320



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