

# ULTRA SILENT SERIES

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

MODEL  
 MODELE  
 MODELO  
 MODELLO

## VO 511 FQ\*



### ULTRA SILENT VERSION



| GENERATING SET PERFORMANCE<br>PERFORMANCES DU GROUPE<br>PRESTACIONES DEL GRUPO<br>PRESTAZIONI DEL GRUPPO                                |          | 50 Hz                | 60 Hz          |
|-----------------------------------------------------------------------------------------------------------------------------------------|----------|----------------------|----------------|
| Voltage<br>Voltage<br>Voltaje<br>Tensione                                                                                               |          | V 400 / 230          | V 220 / 127    |
| Continuous Power<br>Puissance service continue<br>Potencia servicio continuo<br>Potenza servizio continuo                               | PRP      | kVA <b>450</b>       | kVA <b>500</b> |
| Stand-by Power<br>Puissance service secours<br>Potencia servicio emergencia<br>Potenza servizio in emergenza                            | LTP      | kVA <b>495</b>       | kVA <b>550</b> |
| Continuous Power<br>Puissance service continue<br>Potencia servicio continuo<br>Potenza servizio continuo                               | PRP      | kWe 360              | kWe 400        |
| Stand-by Power<br>Puissance service secours<br>Potencia servicio emergencia<br>Potenza servizio in emergenza                            | LTP      | kWe 396              | kWe 440        |
| Power factor<br>Facteur de puissance<br>Factor de potencia<br>Fattore di potenza                                                        | cos φ    | 0,8                  | 0,8            |
| Fuel consumption<br>Consommation combustible<br>Consumo de combustible<br>Consumo combustibile                                          | 70 %     | l/h 61,7             | l/h 69,5       |
| Noise level<br>Niveau de bruit<br>Nivel de ruido<br>Livello rumorosità                                                                  | dB(A)@7m | 62dB(A) without load |                |
| Limit ambient temperature<br>Limite de la température ambiante<br>Limite de la temperatura ambiente<br>Limite di temperatura ambientale |          | 55°C minimum         |                |

| ENGINE<br>MOTEUR<br>MOTOR<br>MOTORE                                                                                                                 |     | VOLVO PENTA |                                               | TAD 1640 GE             |                                                                   |
|-----------------------------------------------------------------------------------------------------------------------------------------------------|-----|-------------|-----------------------------------------------|-------------------------|-------------------------------------------------------------------|
| PERFORMANCE<br>PERFORMANCES<br>PRESTACIONES<br>PRESTAZIONI                                                                                          |     | 1500 rpm    |                                               | 1800 rpm                |                                                                   |
| Continuous Power<br>Puissance service continue<br>Potencia servicio continuo<br>Potenza servizio continuo                                           | PRP | kWm         | 396,8                                         | kWm                     | 439,8                                                             |
| Stand-by Power<br>Puissance service secours<br>Potencia servicio emergencia<br>Potenza servizio in emergenza                                        | LTP | kWm         | 435,8                                         | kWm                     | 488,8                                                             |
| Specific fuel consumption<br>Consommation spécifique combustible<br>Consumo específico de combustible<br>Consumo specifico combustibile             |     | g/kWh       | 25 % 227<br>50 % 203<br>75 % 198<br>100 % 200 | g/kWh                   | 25 % 245<br>50 % 210<br>75 % 202<br>100 % 202                     |
| Diesel 4 Stroke – Injection type<br>Diesel 4 temps – Type injection<br>Diesel 4 tiempos – Tipo de inyección<br>Diesel a 4 tempi – Tipo di iniezione |     |             |                                               |                         | Direct<br>Directe<br>Directa<br>Diretta                           |
| Aspiration type<br>Type d'aspiration<br>Tipo de aspiracion<br>Tipo d'aspirazione                                                                    |     |             |                                               |                         | Turbocharged<br>Suralimentée<br>Sobrealimentado<br>Sovralimentata |
| Cooling system<br>Refroidissement<br>Sistema de refrigeración<br>Raffreddamento                                                                     |     |             |                                               |                         | Water<br>Eau<br>Agua<br>Acqua                                     |
| Speed governor<br>Régulateur de tours<br>Regulador<br>Regolatore di giri                                                                            |     |             |                                               |                         | Electronic<br>Électronique<br>Eléctronico<br>Elettronico          |
| Cylinders, numbers and arrangement<br>Nombre et disposition des cylindres<br>Cilindros, numero y disposición<br>Numero e disposizione dei cilindri  |     |             |                                               |                         | 6 L                                                               |
| Total displacement<br>Cylindrée totale<br>Cilindrata total<br>Cilindrata totale                                                                     |     |             |                                               | cm <sup>3</sup>         | 16.120                                                            |
| Bore x stroke<br>Alésage x course<br>Diámetro x carrera<br>Alesaggio x corsa                                                                        |     |             |                                               | mm                      | 144 x 165                                                         |
| Compression ratio<br>Rapport de compression<br>Relación de compresión<br>Rapporto di compressione                                                   |     |             |                                               |                         | 17.5:1                                                            |
| Engine electric system voltage<br>Voltage système électrique moteur<br>Voltaje sistema eléctrico motor<br>Voltaggio sistema elettrico motore        |     |             |                                               |                         | 24 V                                                              |
| Derating for temperature<br>Déclassement pour temperature<br>Declasamiento para temperatura<br>Declassamento per temperatura                        |     |             |                                               |                         | NO DERATING                                                       |
| Derating for altitude<br>Déclassement pour altitude<br>Declasamiento para altitud<br>Declassamento per altitudine                                   |     |             |                                               | 0÷1500 m<br>1500÷3000 m | 0<br>3,5%/500m                                                    |
| Derating for relative humidity<br>Déclassement pour humidité relative<br>Declasamiento para humedad relativa<br>Declassamento per umidità relativa  |     |             |                                               |                         | NO DERATING                                                       |

| ALTERNATOR<br>ALTERNATEUR<br>ALTERNADOR<br>ALTERNATORE                                                                       |                                                                                                                                                                                                                                         | MECCALTE                               |                                        |
|------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------|----------------------------------------|
| PERFORMANCE<br>PERFORMANCES<br>PRESTACIONES<br>PRESTAZIONI                                                                   |                                                                                                                                                                                                                                         | 1500 rpm                               | 1800 rpm                               |
| Model<br>Modèle<br>Modelo<br>Modello                                                                                         |                                                                                                                                                                                                                                         | ECO40-2S/4                             | ECO40-2S/4                             |
| Continuous Power<br>Puissance service continue<br>Potencia servicio continuo<br>Potenza servizio continuo                    | 40 °C                                                                                                                                                                                                                                   | kVA <b>450</b><br>kWe 360              | kVA <b>510</b><br>kWe 408              |
| Stand-by Power<br>Puissance service secours<br>Potencia servicio emergencia<br>Potenza servizio in emergenza                 | 40 °C                                                                                                                                                                                                                                   | KVA <b>468</b><br>kWe 374,4            | KVA <b>536</b><br>kWe 428,8            |
| Stand-by Power<br>Puissance service secours<br>Potencia servicio emergencia<br>Potenza servizio in emergenza                 | 27 °C                                                                                                                                                                                                                                   | KVA <b>491</b><br>kWe 392,8            | KVA <b>556</b><br>kWe 444,8            |
| Efficiency<br>Rendement<br>Eficiencia<br>Efficienza                                                                          |                                                                                                                                                                                                                                         | 2/4 93,2 %<br>3/4 94,0 %<br>4/4 93,7 % | 2/4 94,2 %<br>3/4 95,5 %<br>4/4 94,7 % |
| Standard winding connections<br>Liaison des bobinages<br>Tipo de conexión<br>Collegamento avvolgimenti                       |                                                                                                                                                                                                                                         | Y                                      | YY                                     |
| Exciter<br>Eccitatrice<br>Excitador<br>Eccitatrice                                                                           | <b>brushless</b> rotating exciter design with solid state<br>pivotante <b>sans brosses</b> avec pont de diodes pivotants<br>puente de diodos <b>sin escobillas</b> rotantes<br>rotante <b>senza spazzole</b> con ponte di diodi rotanti |                                        |                                        |
| Poles<br>Poles<br>Polos<br>Poli                                                                                              |                                                                                                                                                                                                                                         | 4                                      |                                        |
| Phases<br>Phases<br>Fases<br>Fasi                                                                                            |                                                                                                                                                                                                                                         | 3 + N                                  |                                        |
| Wires<br>Fils<br>Hilos<br>Morsetti                                                                                           |                                                                                                                                                                                                                                         | 12                                     |                                        |
| Voltage regulation<br>Regulation Voltage<br>Regulación voltaje<br>Regolazione tensione                                       |                                                                                                                                                                                                                                         | ± 1%                                   |                                        |
| Insulation class<br>Classe d' isolation<br>Classe de aislamiento<br>Classe di isolamento                                     |                                                                                                                                                                                                                                         | H                                      |                                        |
| Enclosure<br>Degré de protection mécanique<br>Grado de protección mecánica<br>Grado di protezione meccanica                  |                                                                                                                                                                                                                                         | IP 21                                  |                                        |
| Air Volume<br>Volume d'air<br>Volumen de aire<br>Volume d'aria                                                               |                                                                                                                                                                                                                                         | 50 Hz                                  | 54 m³/min                              |
|                                                                                                                              |                                                                                                                                                                                                                                         | 60 Hz                                  | 64,8 m³/min                            |
| Standard AVR model<br>Modèle AVR standard<br>Modelo AVR standard<br>Modello AVR standard                                     |                                                                                                                                                                                                                                         | <b>DER-1</b>                           |                                        |
| Derating for temperature<br>Déclassement pour temperature<br>Declasamiento para temperatura<br>Declassamento per temperatura |                                                                                                                                                                                                                                         | 0 ÷ 40°C                               | 0                                      |
|                                                                                                                              |                                                                                                                                                                                                                                         | > 40 °C                                | 3 % / 5°C                              |
| Derating for altitude<br>Déclassement pour altitude<br>Declasamiento para altitud<br>Declassamento per altitudine            |                                                                                                                                                                                                                                         | 0 ÷ 1000 m                             | 0                                      |
|                                                                                                                              |                                                                                                                                                                                                                                         | 1000 ÷ 2500 m                          | 3% / 500 m                             |
|                                                                                                                              |                                                                                                                                                                                                                                         | 2500 ÷ 3000 m                          | 4% / 500 m                             |

**LOGISTIC INFORMATION**  
**INFORMATIONS LOGISTIQUES**  
**INFORMATION LOGISTICA**  
**INFORMAZIONI LOGISTICHE**

|  | Integrated fuel tank capacity<br>Capacité réservoir intégré<br>Capacidad Tanque integrado<br>Capacità Serbatoio integrato |         | Weight<br>Poids<br>Peso<br>Peso | Dimensions<br>Cotes d'encombrement<br>Medidas externas<br>Dimensioni d'ingombro |     |     |
|--|---------------------------------------------------------------------------------------------------------------------------|---------|---------------------------------|---------------------------------------------------------------------------------|-----|-----|
|  | ( L )                                                                                                                     |         | (kg)                            | ( cm )                                                                          |     |     |
|  | STD                                                                                                                       | EXTRA 1 |                                 | L                                                                               | W   | H   |
|  | SOUND PROOF VERSION<br>VERSION INSONORISEE<br>VERSION INSONORISADA<br>VERSIONE INSONORIZZATA                              | 2000    | ON REQUEST                      | 8550                                                                            | 500 | 210 |

**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>✓ Lifting eye</li> <li>✓ Fully bunded fuel tank</li> <li>✓ Integrated fuel tank</li> <li>✓ Vibration dampers</li> <li>✓ One or more electric fans controlled by Inverter VSi</li> <li>✓ Manual autostart control panel <b>ACP7310AUS</b> with circuit breaker</li> <li>✓ Battery</li> <li>✓ Ultra silent canopy</li> <li>✓ Residential silencer</li> <li>✓ Fork lift guides</li> </ul> | <ul style="list-style-type: none"> <li>✓ Crochet de levage</li> <li>✓ Bac de rétention</li> <li>✓ Réservoir intégré</li> <li>✓ Amortisseurs de vibration</li> <li>✓ Un ou plusieurs ventilateurs électriques commandés par Inverter VSi</li> <li>✓ Démarrage manuel autostart <b>ACP7310AUS</b> avec disjoncteur de protection</li> <li>✓ Batterie</li> <li>✓ Capotage ultra-silencieux</li> <li>✓ Silencieux résidentielle</li> <li>✓ Supports pour fourches</li> </ul> | <ul style="list-style-type: none"> <li>✓ Gancho central</li> <li>✓ Tanque del combustible con sistema de recolección de líquidos</li> <li>✓ Tanque de combustible integrado</li> <li>✓ Sistema de amortiguación anti-vibrante</li> <li>✓ Uno o más ventiladores eléctricos controlados para Inverter Vsi</li> <li>✓ Cuadro manual autostart <b>ACP7310AUS</b> con interruptor magnetotérmico</li> <li>✓ Batería</li> <li>✓ Cabina ultra-silenciosa</li> <li>✓ Silenciador residencial</li> <li>✓ Supportes para carretilla</li> </ul> | <ul style="list-style-type: none"> <li>✓ Gancio di sollevamento centrale</li> <li>✓ Serbatoio con vasca di raccolta liquidi</li> <li>✓ Serbatoio integrato</li> <li>✓ Anti vibranti</li> <li>✓ Una o più ventole elettriche controllate da tecnologia Inverter VSi</li> <li>✓ Quadro di comando manuale autostart <b>ACP7310AUS</b> con interruttore magnetotermico</li> <li>✓ Batteria</li> <li>✓ Cabina ultra silenziosa</li> <li>✓ Marmitta residenziale</li> <li>✓ Porta forche</li> </ul> |

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

## ACP 7310 AUS

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

**1600 A** (220 V - 3 ph - 60Hz - 1800 rpm)

|                                                                                                                                                     |                                                                                                                                                                         |                                                                                                                                                           |                                                                                                                                                                   |
|-----------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>STANDARD EQUIPMENT:</b><br>4 poles circuit breaker<br>Electronic control board <b>DSE 7310</b><br>Control panel box key<br>Emergency Stop button | <b>EQUIPEMENT STANDARD:</b><br>Disjoncteur de protection 4 pôles<br>Fiche électronique <b>DSE 7310</b><br>Clé pour serrure du coffret<br>Interrupteur d'arrêt d'urgence | <b>EQUIPAMIENTO STANDARD:</b><br>Interruptor magnetotérmico 4 polos<br>Carta electronica <b>DSE 7310</b><br>Llave cuadro<br>Botón de parada de emergencia | <b>EQUIPAGGIAMENTO STANDARD:</b><br>Interruttore magnetotermico 4 poli<br>Scheda elettronica <b>DSE 7310</b><br>Chiave quadro<br>Pulsante di arresto di emergenza |
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**DSE  
7310**

**CONTROL BOARD**  
**CARTE ELECTRONIQUE DE CONTROL**  
**CARTA ELECTRONICA DE CONTROL**  
**SCHEDA ELETTRONICA DI CONTROLLO**

| PROTECTIONS                                                                                                                                                                                                                                                                                             | PROTECTIONS                                                                                                                                                                                                                                                                                               | PROTECCIONES                                                                                                                                                                                                                                                                                                                             | PROTEZIONI                                                                                                                                                                                                                                                                                                                                       |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Low oil pressure<br>High engine temperature<br>Low fuel level<br>Fail to start<br>Non démarrage<br>Arrêt d'urgence<br>Emergency stop<br>Over/under generator frequency<br>Over/under generator voltage<br>Over/under speed<br>Fuel level<br>Belt breakage<br>Over current<br>Over/under battery voltage | Basse pression huile moteur<br>Haute température moteur<br>Basse niveau combustible<br>Non démarrage<br>Arrêt d'urgence<br>Sur/sous générateur fréquence<br>Sur/sous générateur voltage<br>Sur/sous vitesse<br>Niveau de combustible<br>Rupture courroie<br>Surcoursant<br>Sur/sus la tension de batterie | Baja presión aceite<br>Elevada temperatura motor<br>Baja nivel carburante<br>Falta de arranque<br>Falta de parada<br>Parada de emergencia<br>Sobre/bajo generatore frecuencia<br>Sobre/bajo generatore voltaje<br>Sobre/bajo velocidad<br>nivel de combustible<br>Ruptura correa<br>Corriente maxima<br>Sobre/bajo voltaje de la batería | Bassa pressione olio<br>Alta temperatura motore<br>Basso livello di carburante<br>Mancato avviamento<br>Mancato arresto<br>Stop d'emergenza<br>Sovra/sotto frequenza generatore<br>Sovra/sotto voltaggio generatore<br>Sovra/sotto velocità<br>Livello del carburante<br>Rottura cinghia<br>Sovracorrente<br>Sovra/sotto tensione della batteria |
| DIGITAL METERS                                                                                                                                                                                                                                                                                          | VOYANT NUMERIQUE POUR                                                                                                                                                                                                                                                                                     | VISOR DIGITAL PARA                                                                                                                                                                                                                                                                                                                       | MISURATORE DIGITALE PER                                                                                                                                                                                                                                                                                                                          |
| Generator volts ( 3 phases )<br>Generator amperes ( 3 phases )<br>Generator frequency<br>KW-meter<br>kVA-meter<br>Cos φ-meter<br>Rpm meter<br>Gen set hours counter<br>Battery Volts                                                                                                                    | Voltmètre générateur ( 3 phases )<br>Ampèremètre générateur (3 phases)<br>Fréquencemètre générateur<br>KW-mètre<br>kVA- mètre<br>Cos φ- mètre<br>Tm mètre<br>Totalisateur d'heures de marche<br>Voltmètre batterie                                                                                        | Voltmetro ( 3 fases )<br>Amperímetro ( 3 fases )<br>Frecuencímetro<br>KW- metro<br>kVA- metro<br>Cos φ- metro<br>Revoluciones por minuto metro<br>Medida horas de marcha<br>Voltmetro batería                                                                                                                                            | Voltmetro tensione generatore (3 fasi)<br>Amperometro generatore ( 3 fasi )<br>Frequenzimetro generatore<br>KW- metro<br>kVA- metro<br>Cos φ- metro<br>Gm metro<br>Contatore di funzionamento gruppo<br>Voltmetro batteria                                                                                                                       |

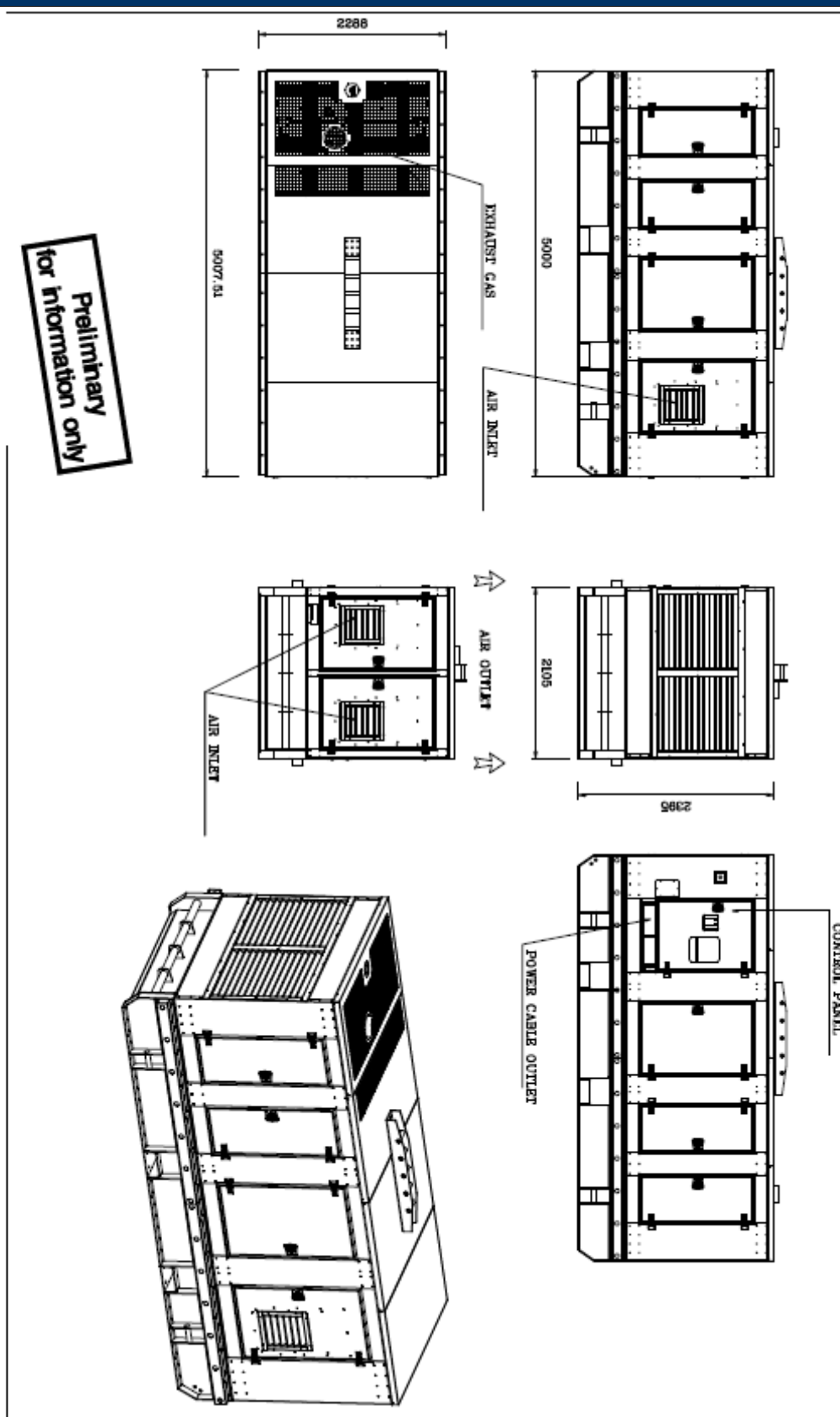
**AUTOMATIC CONTROL PANEL  
COFFRET ELECTRIQUE AUTOMATIQUE  
CUADRO ELECTRICO AUTOMATICO  
QUADRO ELETTRICO AUTOMATICO**

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

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|  | <b>DSE 7320</b> | <b>CONTROL BOARD<br/>CARTE ELECTRONIQUE DE CONTROL<br/>CARTA ELECTRONICA DE CONTROL<br/>SCHEDA ELETTRONICA DI CONTROLLO</b> |
|-----------------------------------------------------------------------------------|-----------------|-----------------------------------------------------------------------------------------------------------------------------|

| 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 arrancar 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<br>LCD display scroll<br>Event log view<br>Acoustic alarm                                                                                                                                                                                                                                     | Fiche électronique de contrôle DSE7320<br>Disjoncteur de protection<br>Chargeur de batterie<br>Bouton poussoir arrête d'urgence                                                                                                                                                                                                                                                            | Ficha electrónica de control DSE7320<br>Interruptor magnetotermico<br>Cargador de batería<br>Botón de parada de emergencia                                                                                                                                                                                                                                         | Scheda elettronica di controllo DSE7320<br>Interruttore magnetotermico<br>Carica batteria<br>Pulsante stop emergenza                                                                                                                                                                                                                                                                                     |
| DIGITAL MEASURING                                                                                                                                                                                                                                                                                                                  | MESURES NUMERIQUES                                                                                                                                                                                                                                                                                                                                                                         | MEDIDAS DIGITALES                                                                                                                                                                                                                                                                                                                                                  | MISURAZIONI DIGITALI                                                                                                                                                                                                                                                                                                                                                                                     |
| Generator volts (3 phases)<br>Generator amperes (3 phases)<br>Generator frequency<br>KW-meter<br>KVA-meter<br>Cos φ-meter<br>Rpm meter<br>Water temperature (optional)<br>Oil pressure (optional)<br>Gen set hours counter<br>Mains volts<br>Battery volts<br>Mains frequency<br>Charging voltage<br>Start-counter<br>Fuel level % | Voltmètre générateur (3 phases)<br>Ampèremètre générateur (3 phases)<br>Fréquencemètre générateur<br>KW-mètre<br>KVA-mètre<br>Cos φ-mètre<br>Tm mètre<br>Température eau (facultatif)<br>Pression huile (facultatif)<br>Totalisateur d'heures de marche<br>Voltmètre secteur<br>Voltmètre batterie<br>Fréquence réseau<br>Tension de charge<br>Compteur démarrages<br>Niveau combustible % | Voltmetro (3 fases)<br>Amperimetro (3 fases)<br>Frecuencimetro<br>KW- metro<br>KVA- metro<br>Cos φ-metro<br>Revoluciones por minuto metro<br>Termometro agua (opcional)<br>Presión aceite (opcional)<br>Medida horas de marcha<br>Voltmetro tensión de red<br>Voltmetro batería<br>Frecuencia red<br>Tensión de carga<br>Numero de arranques<br>Nivel carburante % | Voltmetro tensione generatore (3 fasi)<br>Amperometro generatore (3 fasi )<br>Frequenzimetro generatore<br>KW- metro<br>KVA- metro<br>Cos φ-metro<br>Gm metro<br>Temperatura acqua (facoltativo)<br>Pressione olio (facoltativo)<br>Contatore di funzionamento gruppo<br>Voltmetro tensione rete<br>Voltmetro batteria<br>Frequenza rete<br>Tensione di carica<br>Contavviamanti<br>Livello carburante % |
| INDICATORS                                                                                                                                                                                                                                                                                                                         | INDICATEURS                                                                                                                                                                                                                                                                                                                                                                                | INDICADORES                                                                                                                                                                                                                                                                                                                                                        | INDICATORI                                                                                                                                                                                                                                                                                                                                                                                               |
| Mains live<br>Generator live<br>Mains contactor closed<br>Generator contactor closed<br>Engine running                                                                                                                                                                                                                             | Présence secteur<br>Présence tension générateur<br>Inverseur secteur fermé<br>Inverseur générateur fermé<br>Moteur en marche                                                                                                                                                                                                                                                               | Presencia tensión de red<br>Presencia tensión grupo<br>Transferencial red cerrado<br>Transferencial grupo cerrado<br>Motor en marcha                                                                                                                                                                                                                               | Presenza tensione di rete<br>Presenza tensione generatore<br>Erogazione da rete<br>Erogazione da gruppo<br>Motore avviato                                                                                                                                                                                                                                                                                |
| PROTECTIONS                                                                                                                                                                                                                                                                                                                        | PROTECTIONS                                                                                                                                                                                                                                                                                                                                                                                | PROTECCIONES                                                                                                                                                                                                                                                                                                                                                       | PROTEZIONI                                                                                                                                                                                                                                                                                                                                                                                               |
| Low oil pressure<br>High engine temperature<br>Low fuel level<br>Fail to start<br>Fail to stop<br>Emergency stop<br>Over/under frequency<br>Over/under voltage<br>Over/under speed<br>Fuel level<br>Belt breakage<br>Over current<br>Over/under battery voltage                                                                    | Bas pression huile moteur<br>Haute température moteur<br>Bas niveau combustible<br>Non démarrage<br>Non arrêt<br>Arrêt d'urgence<br>Sur/sous fréquence<br>Sur/sous voltage<br>Sur/sous vitesse<br>Niveau de combustible<br>Rupture courroie<br>Surcoursant<br>Sur/sus la tension de batterie                                                                                               | Baja presión aceite<br>Elevada temperatura motor<br>Baja nivel carburante<br>Falta de arranque<br>Falta de parada<br>Parada de emergencia<br>Sobre/bajo frecuencia<br>Sobre/bajo voltaje<br>Sobre/bajo velocidad<br>nivel de combustible<br>Ruptura correa<br>Corriente maxima<br>Sobre/bajo voltaje de la batería                                                 | Bassa pressione olio<br>Alta temperatura motore<br>Basso livello di carburante<br>Mancato avviamento<br>Mancato arresto<br>Stop d'emergenza<br>Sovra/sotto frequenza<br>Sovra/sotto voltaggio<br>Sovra/sotto velocità<br>Livello del carburante<br>Rottura cinghia<br>Sovracorrente<br>Sovra/sotto tensione della batteria                                                                               |

**SOUND PROOF VERSION DRAWING**  
**DESSIN VERSION INSONORISEE**  
**DIBUJO VERSION INSONORISADA**  
**DISEGNO VERSIONE INSONORIZZATA**





## VOLVO PENTA GENSET ENGINE

# TAD1640GE

432 kW (588 hp) at 1500 rpm, 480 kW (653 hp) at 1800 rpm, acc. ISO 3046

The TAD1640GE is a powerful, reliable and economical Generating Set Diesel Engine built on the dependable in-line six design.

### Durability & low noise

Designed for easiest, fastest and most economical installation. Well-balanced to produce smooth and vibration-free operation with low noise level.

To maintain a controlled working temperature in cylinders and combustion chambers, the engine is equipped with piston cooling. The engine is also fitted with replaceable cylinder liners and valve seats/guides to ensure maximum durability and service life of the engine.

### Low exhaust emission

The state of the art, high-tech injection and charging system with low internal losses contributes to excellent combustion and low fuel consumption.

The TAD1640GE complies with EU Stage 2 emission regulations.

### Easy service & maintenance

Easily accessible service and maintenance points contribute to the ease of service of the engine.

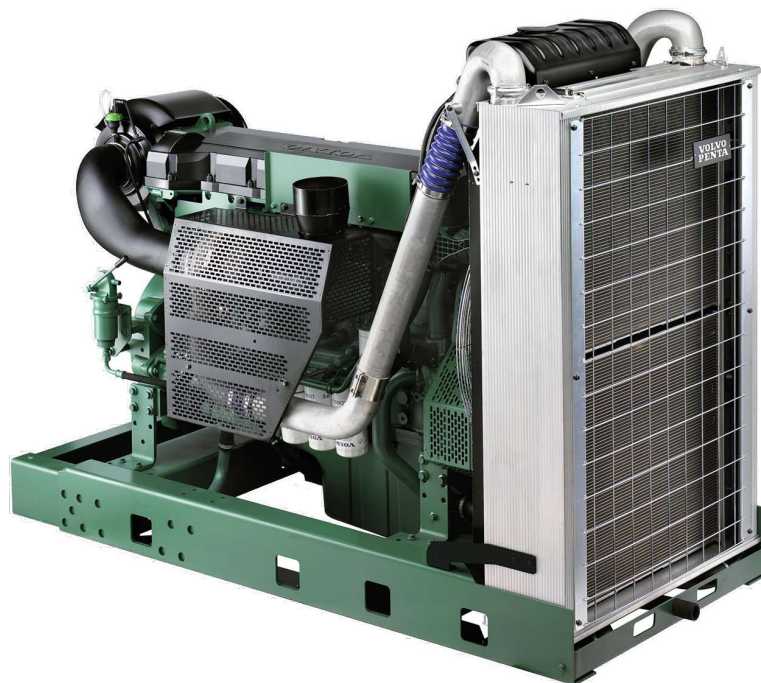
### Technical description

#### Engine and block

- Optimized cast iron cylinder block with optimum distribution of forces without the block being unnecessarily heavy.
- Wet, replaceable cylinder liners
- Piston cooling for low piston temperature and reduced ring temperature
- Tapered connecting rods for reduce risk of piston cracking
- Crankshaft induction hardened bearing surfaces and fillets with seven bearings for moderate load on main and high-end bearings
- Case hardened and Nitrocarburized transmission gears for heavy duty operation
- Keystone top compression rings for long service life
- Viscous type crankshaft vibration dampers to withstand single bearing alternator torsional vibrations
- Replaceable valve guides and valve seats
- Over head camshaft and four valves per cylinder

#### Lubrication system

- Full flow oil cooler
- Full flow disposable spin-on oil filter, for extra high filtration
- The lubricating oil level can be measured during operation
- Gear type lubricating oil pump, gear driven by the transmission



### Features

- Maintained performance, air temp 40°C
- Cooling system (55°C)
- Fully electronic with Volvo Penta EMS 2
- Dual frequency switch (between 1500 rpm and 1800 rpm)
- High power density
- Emission compliant
- Low noise levels
- Gen Pac configuration

#### Fuel system

- Non-return fuel valve
- Electronic unit injectors
- Fuel prefilter with water separator and water-in-fuel indicator / alarm
- Gear driven low-pressure fuel pump
- Fine fuel filter with manual feed pump and fuel pressure switch
- Fuel shut-off valve, electrically operated

#### Cooling system

- Efficient cooling with accurate coolant control through a water distribution duct in the cylinder block. Reliable sleeve thermostat with minimum pressure drop
- Belt driven, maintenance-free coolant pump with high degree of efficiency
- Coolant filter as standard

#### Turbo charger

- Efficient and reliable turbo charger
- Extra oil filter for the turbo charger

#### Electrical system

- Engine Management System 2 (EMS 2), an electronically controlled processing system which optimizes engine performance. It also includes advanced facilities for diagnostics and fault tracing
- The instruments and controls connect to the engine via the CAN SAE J1939 interface, either through the Control Interface Unit (CIU) or the Digital Control Unit (DCU). The CIU converts the digital CAN bus signal to an analog signal, making it possible to connect a variety of instruments. The DCU is a control panel with display, engine control, monitoring, alarm, parameter setting and diagnostic functions. The DCU also presents error codes in clear text.
- Sensors for oil pressure, oil temp, boost pressure, boost temp, coolant temp, fuel temp, water in fuel, fuel pressure and two speed sensors.

**VOLVO  
PENTA**

# TAD1640GE

## Technical Data

### General

|                                         |             |  |
|-----------------------------------------|-------------|--|
| Engine designation .....                | TAD1640GE   |  |
| No. of cylinders and configuration..... | in-line 6   |  |
| Method of operation .....               | 4-stroke    |  |
| Bore, mm (in.).....                     | 144 (5.67)  |  |
| Stroke, mm (in.).....                   | 165 (6.50)  |  |
| Displacement, l (in <sup>3</sup> )..... | 16.12 (984) |  |
| Compression ratio.....                  | 17.5:1      |  |
| Dry weight, kg (lb).....                | 1480 (3263) |  |
| Dry weight with Gen Pac, kg (lb).....   | 1910 (4211) |  |
| Wet weight, kg (lb).....                | 1550 (3417) |  |
| Wet weight ith Gen Pac, kg (lb).....    | 2020 (4453) |  |

| Performance           | 1500 rpm  | 1800 rpm  |
|-----------------------|-----------|-----------|
| with fan, kW (hp) at: |           |           |
| Prime Power           | 392 (533) | 430 (585) |
| Max Standby Power     | 431 (586) | 479 (651) |

| Lubrication system                            | 1500 rpm     | 1800 rpm     |
|-----------------------------------------------|--------------|--------------|
| Oil consumption, liter/h (US gal/h) at:       |              |              |
| Prime Power                                   | 0.10 (0.026) | 0.10 (0.026) |
| Max Standby Power                             | 0.10 (0.026) | 0.11 (0.029) |
| Oil system capacity incl filters, liter ..... | 48           |              |

| Fuel system                       | 1500 rpm    | 1800 rpm    |
|-----------------------------------|-------------|-------------|
| Specific fuel consumption at:     |             |             |
| Prime Power, g/kWh (lb/hph)       |             |             |
| 25 %                              | 227 (0.368) | 245 (0.397) |
| 50 %                              | 203 (0.329) | 210 (0.340) |
| 75 %                              | 198 (0.320) | 202 (0.327) |
| 100 %                             | 200 (0.323) | 202 (0.328) |
| Max Standby Power, g/kWh (lb/hph) |             |             |
| 25 %                              | 221 (0.359) | 234 (0.377) |
| 50 %                              | 201 (0.325) | 206 (0.334) |
| 75 %                              | 197 (0.319) | 201 (0.326) |
| 100 %                             | 202 (0.327) | 206 (0.334) |

| Intake and exhaust system                                | 1500 rpm    | 1800 rpm    |
|----------------------------------------------------------|-------------|-------------|
| Air consumption, m <sup>3</sup> /min (cfm) at:           |             |             |
| Prime Power                                              | 31.7 (1119) | 39.7 (1402) |
| Max Standby Power                                        | 36.2 (1278) | 42.6 (1504) |
| Max allowable air intake restriction, kPa (In wc)        | 5 (20.1)    | 5 (20.1)    |
| Heat rejection to exhaust, kW (BTU/min) at:              |             |             |
| Prime Power                                              | 299 (17004) | 319 (18141) |
| Max Standby Power                                        | 335 (19051) | 381 (21667) |
| Exhaust gas temperature after turbine, °C (°F) at:       |             |             |
| Prime Power                                              | 452 (846)   | 408 (766)   |
| Max Standby Power                                        | 456 (853)   | 444 (831)   |
| Max allowable back-pressure in exhaust line, kPa (In wc) | 10 (40.2)   | 10 (40.2)   |
| Exhaust gas flow, m <sup>3</sup> /min (cfm) at:          |             |             |
| Prime power                                              | 74.8 (2642) | 86.9 (3069) |
| Max Standby Power                                        | 85.4 (3016) | 98.0 (3461) |

| Cooling system                                         | 1500 rpm   | 1800 rpm    |
|--------------------------------------------------------|------------|-------------|
| Heat rejection radiation from engine, kW (BTU/min) at: |            |             |
| Prime Power                                            | 18 (1024)  | 20 (1137)   |
| Max Standby Power                                      | 20 (1137)  | 22 (1251)   |
| Heat rejection to coolant kW (BTU/min) at:             |            |             |
| Prime Power                                            | 158 (8985) | 176 (10009) |
| Max Standby Power                                      | 166 (9440) | 188 (10691) |
| Fan power consumption, kW (hp)                         | 9 (12)     | 15 (20)     |

## Standard equipment

### Engine

Automatic belt tensioner

Lift eyelets

### Flywheel

Flywheel housing with conn. acc. to SAE 1

Flywheel for 14" flex. plate and flexible coupling

Vibration dampers

### Engine suspension

Fixed front suspension

### Lubrication system

Oil dipstick

Full-flow oil filter of spin-on type

By-pass oil filter of spin-on type

Oil cooler, side mounted

Low noise oil sump

### Fuel system

Fuel filters of disposable type

Electronic unit injectors

Pre-filter with water separator

### Intake and exhaust system

Air filter with replaceable paper insert

Air restriction indicator

Air cooled exhaust manifold

Connecting flange for exhaust pipe

Exhaust flange with v-clamp

Turbo charger, low right side

### Cooling system

Radiator incl intercooler

Gear driven coolant pump

Fan hub

Thrust fan

Fan guard

Belt guard

### Control system

Engine Management System (EMS) with

CAN-bus interface SAE J1939

CIU, Control Interface Unit

### Alternator

Alternator 80A / 24 V

### Starting system

Starter motor, 6.0kW, 24 V

Connection facility for extra starter motor

### Instruments and senders

Temp.- and oil pressure for automatic

stop/alarm 103°C

### Other equipment

Expandable base frame

### Engine Packing

Plastic warpping

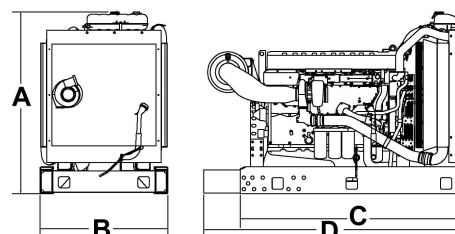
1) must be ordered, se order specification

– optional equipment or not applicable

• included in standard specification

## Dimensions TAD1640GE

Not for installation



A\* = 1587 mm / 62.5 in

B\* = 1120 mm / 44.1 in

C\* = 1976 mm / 77.8 in

D = 2296 mm / 90.5 in (During transport)

D = Max 3311 mm / 130.5 in

\* Including radiator and intercooler

Note! Not all models, standard equipment and accessories are available in all countries.

All specifications are subject to change without notice.

The engine illustrated may not be entirely identical to production standard engines.

### Power Standards

The engine performance corresponds to ISO 3046, BS 5514 and DIN 6271. The technical data applies to an engine without cooling fan and operating on a fuel with calorific value of 42.7 MJ/kg (18360 BTU/lb) and a density of 0.84 kg/liter (7.01 lb/US gal), also where this involves a deviation from the standards. Power output guaranteed within 0 to +2% at rated ambient conditions at delivery. Ratings are based on ISO 8528. Engine speed governing in accordance with ISO 3046/IV, class A1 and ISO 8528-5 class G3

### Exhaust emissions

The engine complies with EU stage 2 emission legislation according to the Non Road Directive EU 97/68/EEC. The engine also complies with TA-luft -50% exhaust emission regulations.

### Rating Guidelines

PRIME POWER rating corresponds to ISO Standard Power for continuous operation. It is applicable for supplying electrical power at variable load for an unlimited number of hours instead of commercially purchased power. A10 % overload capability for governing purpose is available for this rating.

MAXIMUM STANDBY POWER rating corresponds to ISO Standard Fuel Stop Power. It is applicable for supplying standby electrical power at variable load in areas with well established electrical networks in the event of normal utility power failure. No overload capability is available for this rating.

1 hp = 1 kW x 1.36

### Information

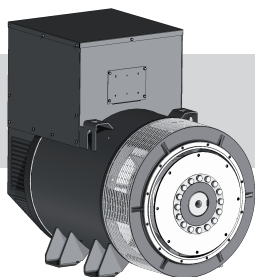
For more technical data and information, please look in the Generating Set Engines Sales Guide.

**VOLVO  
PENTA**

**AB Volvo Penta**

SE-405 08 Göteborg, Sweden  
www.volvopenta.com





# ECO 40

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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              |      |      |
|-------------------|--------------------------------------|------------|-----|-------|---------------------|------------|-----|-------------------------|------|------|
| 50 Hz             | CL. H ( ΔT= 125 °C)                  |            |     |       | CL. F ( ΔT= 105 °C) |            |     | η % CL. H ( ΔT= 125 °C) |      |      |
| Series Star Y     | 760                                  | 800        | 830 |       | 760                 | 800        | 830 |                         |      |      |
| Parallel Star YY  | 380                                  | 400        | 415 | IP45  | 380                 | 400        | 415 |                         |      |      |
| Series Delta Δ    | 440                                  | 460        | 480 | 400 V | 440                 | 460        | 480 | 2/4                     | 3/4  | 4/4  |
| Parallel Delta ΔΔ | 220                                  | 230        | 240 |       | 220                 | 230        | 240 |                         |      |      |
| ECO40-1S/4        | 400                                  | <b>400</b> | 400 | 330   | 370                 | <b>370</b> | 370 | 92,9                    | 93,8 | 93,5 |
| ECO40-2S/4        | 450                                  | <b>450</b> | 450 | 370   | 410                 | <b>410</b> | 410 | 93,2                    | 94   | 93,7 |
| ECO40-3S/4        | 500                                  | <b>500</b> | 500 | 410   | 450                 | <b>450</b> | 450 | 93,3                    | 94,2 | 93,9 |
| ECO40-1L/4        | 550                                  | <b>550</b> | 540 | 450   | 500                 | <b>500</b> | 490 | 93,7                    | 94,6 | 94,2 |
| ECO40-1.5L/4      | 620                                  | <b>620</b> | 620 | 480   | 560                 | <b>560</b> | 560 | 93,7                    | 94,6 | 94,3 |
| ECO40-2L/4        | 680                                  | <b>680</b> | 680 | 500   | 630                 | <b>630</b> | 630 | 93,8                    | 94,7 | 94,3 |
| ECO40-VL/4        | 720                                  | <b>720</b> | 710 | 520   | 660                 | <b>660</b> | 650 | 93,9                    | 94,8 | 94,4 |

| 60 Hz             | CL. H ( ΔT= 125 °C) |     |            |       | CL. F ( ΔT= 105 °C) |     |            | Efficiency |      |      |
|-------------------|---------------------|-----|------------|-------|---------------------|-----|------------|------------|------|------|
| Series Star Y     | 880                 | 920 | 960        |       | 880                 | 920 | 960        |            |      |      |
| Parallel Star YY  | 440                 | 460 | 480        | IP45  | 440                 | 460 | 480        |            |      |      |
| Series Delta Δ    | 508                 | 530 | 554        | 480 V | 508                 | 530 | 554        | 2/4        | 3/4  | 4/4  |
| Parallel Delta ΔΔ | 254                 | 265 | 277        |       | 254                 | 265 | 277        |            |      |      |
| ECO40-1S/4        | 450                 | 480 | <b>480</b> | 396   | 410                 | 440 | <b>440</b> | 94,4       | 95,2 | 95   |
| ECO40-2S/4        | 510                 | 540 | <b>540</b> | 444   | 460                 | 490 | <b>490</b> | 94,2       | 95,5 | 94,7 |
| ECO40-3S/4        | 580                 | 600 | <b>600</b> | 492   | 520                 | 540 | <b>540</b> | 94,8       | 95,6 | 95,2 |
| ECO40-1L/4        | 630                 | 660 | <b>660</b> | 540   | 570                 | 600 | <b>600</b> | 94,8       | 95,5 | 95,2 |
| ECO40-1.5L/4      | 700                 | 744 | <b>744</b> | 576   | 632                 | 672 | <b>672</b> | 95,3       | 96,4 | 95,7 |
| ECO40-2L/4        | 780                 | 816 | <b>816</b> | 600   | 720                 | 756 | <b>756</b> | 95,5       | 96,7 | 95,8 |
| ECO40-VL/4        | 865                 | 865 | <b>865</b> | 625   | 800                 | 800 | <b>800</b> | 95,8       | 96,8 | 96   |

#### 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° |
| ECO40-1S/4   | 437                         | 417        | 417        | 525                         | 500        | 500        |
| ECO40-2S/4   | 491                         | 468        | 468        | 590                         | 563        | 563        |
| ECO40-3S/4   | 546                         | 521        | 521        | 656                         | 625        | 625        |
| ECO40-1L/4   | 601                         | 567        | 567        | 722                         | 680        | 680        |
| ECO40-1.5L/4 | 670                         | 640        | 640        | 805                         | 770        | 770        |
| ECO40-2L/4   | 735                         | 700        | 700        | 882                         | 840        | 840        |
| ECO40-VL/4   | 779                         | 740        | 740        | 935                         | 890        | 890        |

| Type         | J<br>(Kg m <sup>2</sup> )<br>B3-B14 FORM | Weight<br>(Kg) | Air Volume                  |                             | Noise dB(A) |    |       |    |
|--------------|------------------------------------------|----------------|-----------------------------|-----------------------------|-------------|----|-------|----|
|              |                                          |                | 50 Hz                       |                             | 50 Hz       |    | 60 Hz |    |
|              |                                          |                | 50 Hz (m <sup>3</sup> /min) | 60 Hz (m <sup>3</sup> /min) | 1m          | 7m | 1m    | 7m |
| ECO40-1S/4   | 5,504                                    | 1040           | 54                          | 64,8                        | 94          | 82 | 98    | 88 |
| ECO40-2S/4   | 6,240                                    | 1118           |                             |                             |             |    |       |    |
| ECO40-3S/4   | 6,852                                    | 1171           |                             |                             |             |    |       |    |
| ECO40-1L/4   | 7,356                                    | 1324           |                             |                             |             |    |       |    |
| ECO40-1.5L/4 | 8,739                                    | 1380           |                             |                             |             |    |       |    |
| ECO40-2L/4   | 9,258                                    | 1586           |                             |                             |             |    |       |    |
| ECO40-VL/4   | 9,874                                    | 1693           |                             |                             |             |    |       |    |

### ACCESSORIES

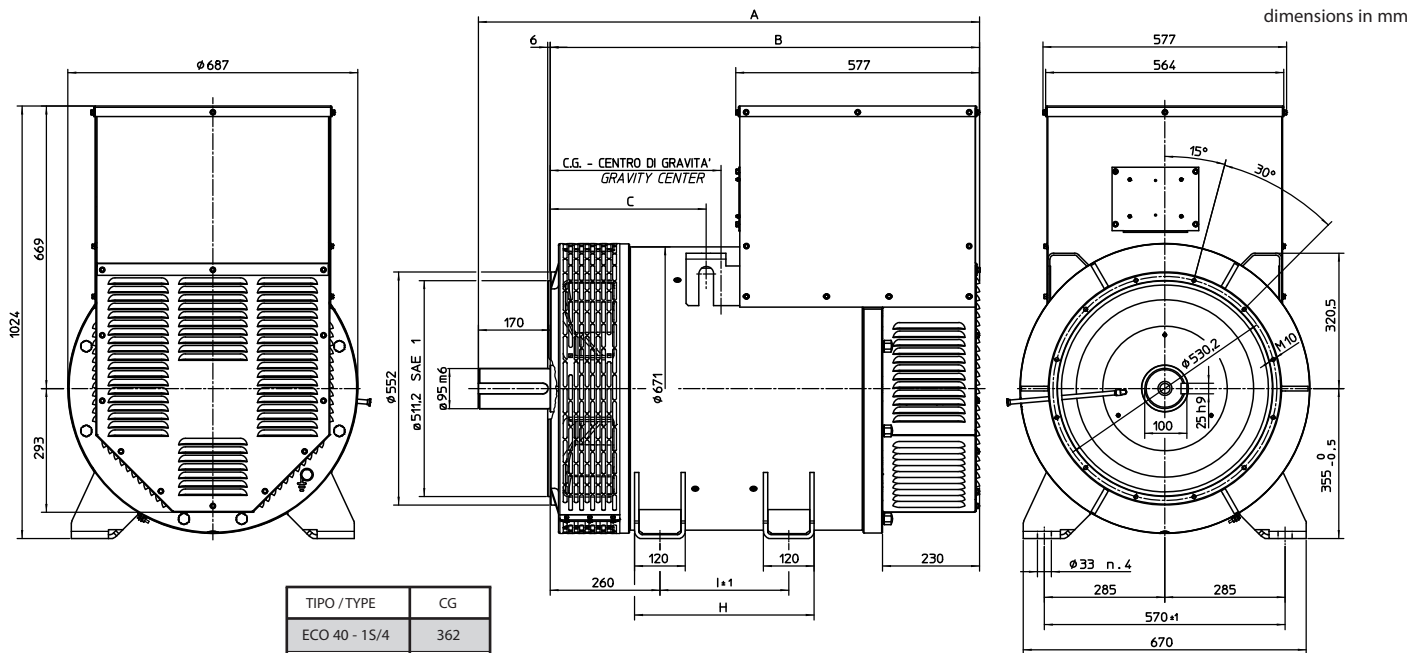
| REGULATOR                |                                     |                          |                          | PARALLEL<br>DEVICE                  | THERMAL PROTECTION       |                          |                          | HEATERS                  | MECHANICAL PROTECTION            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

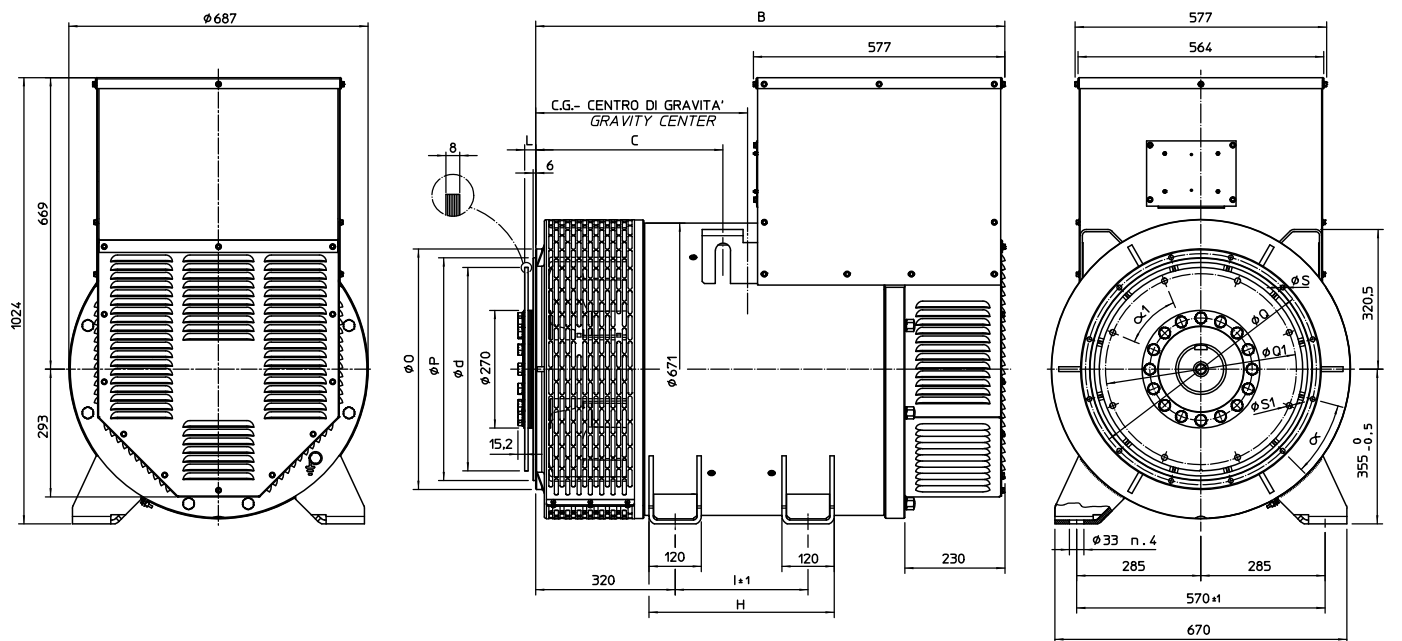
Rating



## OVERALL DIMENSIONS B3 - B14 FORM



## OVERALL DIMENSIONS MD35 FORM



| TIPO / TYPE    | CG  |
|----------------|-----|
| ECO 40 - 1S/4  | 422 |
| ECO 40 - 2S/4  | 432 |
| ECO 40 - 3S/4  | 442 |
| ECO 40 - 1L/4  | 597 |
| ECO 40 - 1SL/4 | 600 |
| ECO 40 - 2L/4  | 607 |
| ECO 40 - VL/4  | 650 |

| SAE N. | FLANGIE<br>FLANGE<br>BRIDE<br>FLANSCH<br>BRIDAS |       |       |         |    |       |
|--------|-------------------------------------------------|-------|-------|---------|----|-------|
|        | O                                               | P     | Q     | n. fori | S  | α     |
| 1      | 552                                             | 511,2 | 530,2 | 12      | 11 | 30°   |
| 1/2    | 648                                             | 584,2 | 619,1 | 12      | 14 | 30°   |
| 0      | 711                                             | 647,7 | 679,5 | 16      | 14 | 22,5° |
| 00     | 883                                             | 787,4 | 850,9 | 16      | 14 | 22,5° |

| SAE<br>N. | GIUNTI A DISCHI<br>DISC COUPLING<br>DISQUE DE MONOPALIER<br>SCHEIBENKUPPLUNG |        |        |         |    |     |
|-----------|------------------------------------------------------------------------------|--------|--------|---------|----|-----|
|           | L                                                                            | d      | Q1     | n. fori | S1 | α 1 |
| 14        | 25,4                                                                         | 466,72 | 438,15 | 8       | 14 | 45° |
| 18        | 15,7                                                                         | 571,5  | 542,92 | 6       | 17 | 60° |

| TIPO/TYPE/TYPE/TYP/TIPO | B    | C     | I   | H   |
|-------------------------|------|-------|-----|-----|
| ECO 40 S                | 1077 | 429,5 | 305 | 425 |
| ECO 40 L                | 1242 | 594,5 | 470 | 590 |
| ECO 40 VL               | 1342 | 604,5 | 470 | 590 |

# 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

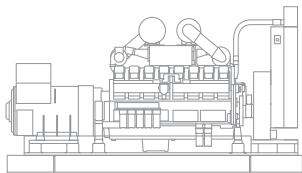
The module includes a comprehensive event log that shows the most recent 250 alarm conditions and the date and time that they occurred. This function assists the user when fault finding and maintaining a generating set.

## ELECTRONIC ENGINE 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.

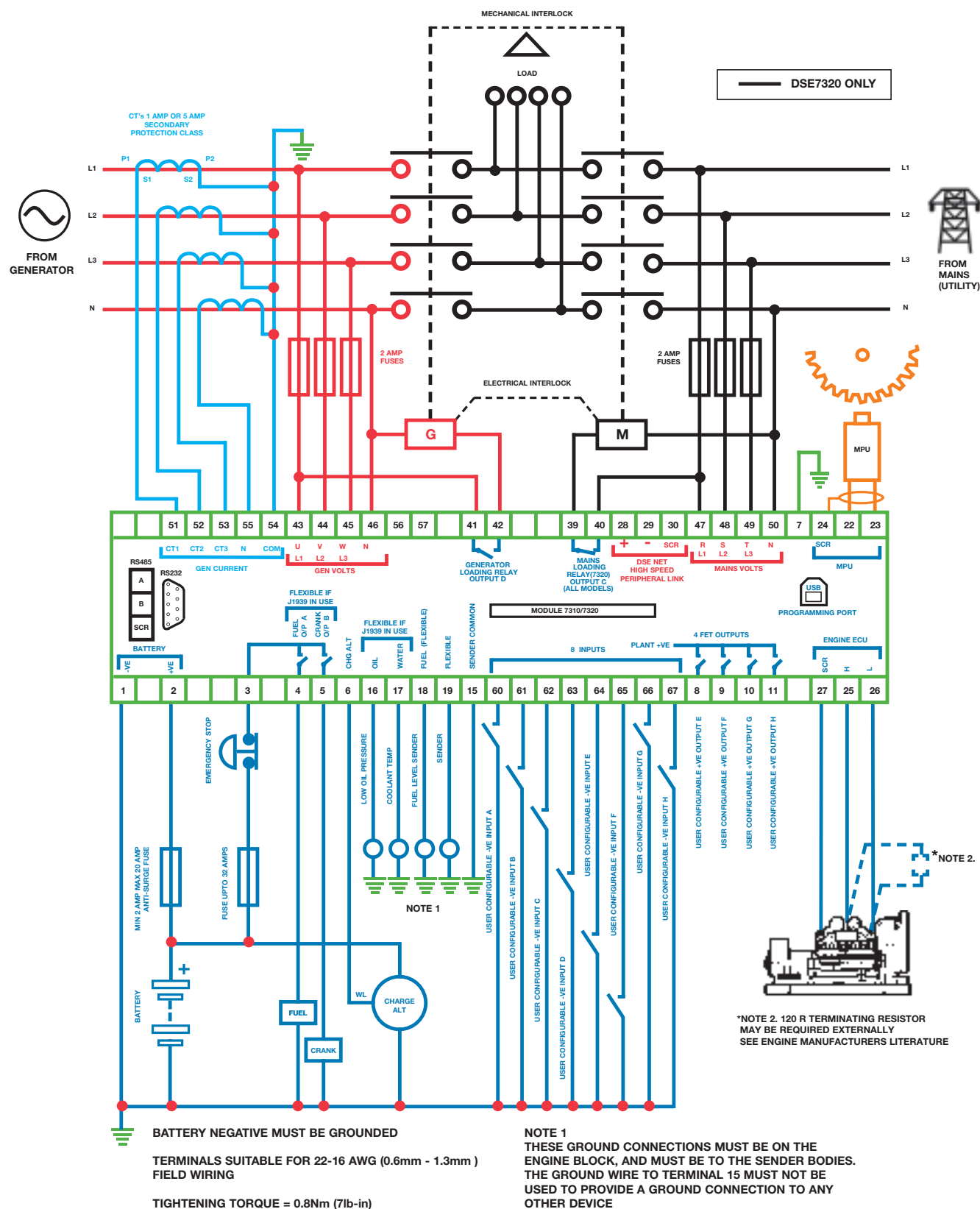
#### Electronic Engines

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)

## DSE7310 & DSE7320





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