Standard Specification

Engine

ENGINE	Heavy duty industrial diesel engine Manufactured in accordance with B.S.S. 5514 and generally to such International standards as D.I.N. E.I.C., N.E.M.A. In addition the engine is normally capable of providing a 10% overload for a maximum of ONE hour in any TWELVE hour period. The engine arrangement is detailed on the attached data sheet.
GOVERNOR	Mechanical compliant with BS5514, class A1 **OR** Electronic compliant with BS5514, class A1
ELECTRICAL SYSTEM	12/24V D.C electrical system complete with energise to run shutdown solenoid. Oil pressure and water temperature shut down switches and gauge senders.
ENGINE PROTECTION	Low oil pressure and High water temperature protections.
FILTERS	Filters are provided for: Fuel oil Lubricating oil Air intake
ANTIFREEZE	The radiator is filled with the correct mix of water and Glycol Antifreeze giving protection to -20°c. This also acts as engine inhibitor to avoid internal corrosion.
COOLING SYSTEM	Radiator and cooling fan complete with protection guards, designed to cool engine at specified output in air-on temperature up to 52°C (125°F).
EXHAUST	Canopied sets: Residential silencer is supplied mounted within the canopy. Open sets: Industrial type silencer is supplied loose.
STARTING	The engine is arranged for starting by means of an axial starter motor engaging on a toothed ring on the flywheel.
BATTERIES	The battery is of the high capacity, maintenance free lead acid type and come complete with leads. The battery rack is mounted on the generator base frame.
CHARGING	Dual Charging of these batteries is provided by means of an engine driven charge alternator and a constant potential battery charger mounted within the control panel.

Alternator

ALTERNATOR	Brushless design screen protected, fan ventilated, drip-proof, self exciting in accordance with IP22. Fitted with heavy duty long life bearings, lubricant packed for 4000 hours operation. Constructed in accordance with B.S.S.5000 part 99.
REGULATION	Voltage regulation is maintained within the limits of +/- 1 to 2 % from no load to full load including cold to hot variations at any power factor between 0.8 lagging and unity and inclusive of a speed variation of 4.5%.nominal voltage is set by means of a trimmer mounted within the terminal box before despatch.
INSULATION	Stator and rotor insulation is Class "H" standard.
SUPRESSION	Radio and television suppression is provided to comply with B.S.S. 800/1983.

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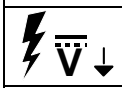
Baseframe, Canopy and Accessories

BASEFRAME	The complete generating set is mounted as a whole on a heavy duty steel base frame.
ANTIVIBRATION MOUNTS	The engine and alternator assembly is isolated from the base frame using anti-vibration mounts. This will reduce the level of vibration transmitted to the base and the surrounding area.
FUEL TANK	The fuel tank forms an integral part of the base plate and has a normal capacity of at least 8 hours operation at full load. The tank is complete with contents indicator, fuel fill cap with breather, fuel feed/return lines to engine and drain plug. NB for sets over 700kVA fuel tank is an optional item.
COUPLING	The engine is directly coupled to the alternator by means of an SAE flange so there is no possibility of misalignment after prolonged use.
GUARDS	The fan, fan drive and battery charging alternator drive are fully guarded for personnel protection. A stone guard protects the radiator core from accidental damage.
CE CERTIFICATION CE	All machinery placed into operation in the European Union or the European Economic Area must be "CE" certified and marked with the "CE" mark. This mark and the accompanying "Certificate of Conformance" is your assurance that the generating set meets EC legislation.
CANOPY	Canopied sets are mounted within a close fitting sound attenuated, weatherproof enclosure designed to reduce the overall noise level to not more than 85DBA at one metre in accordance with E.U. regulations. The canopy is manufactured from mild steel with full length doors on either side for ease of maintenance. All components used are pre treated against corrosion and finished in polyester coating.
PAINT FINISH	Canopies are sprayed with two undercoats and finished with two coats of oil proof enamel.
MANUALS & DRAWINGS	One set of operation and engine manuals on CD ROM One set of engine and alternator maintenance books One electrical schematic
FACTORY ACCEPTANCE TESTS	Standard tests to verify generator operation at 25, 50, 75, 100, 110% Load

TYPICAL CONTROL SYSTEM SHUTDOWN & WARNING INDICATIONS

Shutdowns are latching and stop the Generator. The alarm must be accepted and cleared, and the fault removed to reset the module.

DISPLAY	NAME	DESCRIPTION
	COMMON ALARM LED	The will also illuminate (*Red* Flashing). The appropriate LCD icon will also be displayed flashing
	FAIL TO START	Enables if the engine does not fire after the pre-set number of attempts has been made a shutdown will be initiated. The LCD will indicate
	EMERGENCY STOP	Indicates the Emergency Stop pushbutton has been pressed.
	LOW OIL PRESSURE	Indicates the low oil pressure alarm has triggered.
	HIGH ENGINE TEMPERATURE	Indicated the high engine temperature alarm has triggered.
	OVERSPEED	If the engine speed exceeds the pre-set trip a shutdown is initiated
	UNDERSPEED	If the engine speed falls below the pre-set trip after the Safety On timer has expired, a shutdown is initiated.
	GENERATOR HIGH VOLTAGE	If the module detects a generator output voltage in excess of the pre-set trip a shutdown is initiated
	GENERATOR LOW VOLTAGE	If the module detects a generator output voltage below the below the pre-set trip after the Safety On timer has expired, a shutdown is initiated
	UNDER FREQUENCY	If the module detects a generator output frequency in excess of the pre-set pre-alarm, a warning is initiated.
	OVER FREQUENCY	If the module detects a generator output frequency below the pre-set pre-alarm after the Safety On timer has expired, a warning is initiated.
	ELECTRICAL TRIPS	Dependant on configuration this will cause a shutdown of the unit

NOTE:- *The alarm condition must be rectified before a reset will take place. If the alarm condition remains it will not be possible to reset the unit (The exception to this is the Low Oil Pressure alarm and the like, as the oil pressure will be low with the engine at rest). Any subsequent warnings or shutdowns which occur will be displayed steady, therefore only the first-up shutdown will appear flashing.*

WARNINGS

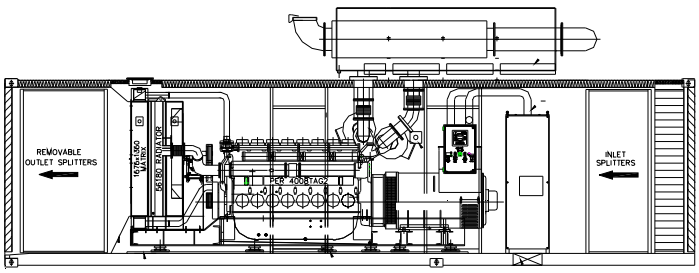
Warnings are none latching and will self clear if the fault is rectified.

	BATTERY VOLTAGE LOW	If the module detects that the plant DC supply has fallen below the low volts setting level.
	BATTERY VOLTAGE HIGH	If the module detects that the plant DC supply has risen above the high volts setting level.
	LOW FUEL (IF FITTED)	If the fuel level detected by the fuel level sender falls below the low fuel level setting, a warning will occur.
	BATTERY CHARGER FAILURE	If the module does not detect a voltage from the warning light terminal on the auxiliary charge alternator.
	FAIL TO STOP	If the module detects the engine is still running when the 'Fail to stop timer' expires.

Changeover Switch

CHANGEOVER SWITCH (ATS 63-1600A)	Wall/ Floor mounting intelligent automatic change over switch consisting of a Socomec 4 pole changeover device for mains/alternator load transfer. LCD Display giving Mains Ph-N and Ph-Ph Voltage Generator Ph-Ph Voltage Mains / Generator Hz Programming facility of controller and timers. Mode selector pushbuttons giving Test with load / Test without load Retransfer Commence (If Programmed) Lamp Test LED Indicator Lamps for Panel Healthy Heartbeat Mains available Mains on Load Generator available Generator on Load Changeover In Manual Handle Mode Changeover In Auto Mode Changeover In Test Off Load Mode Changeover In Test On Load Mode Changeover Awaiting Retransfer Commence (If Programmed) Timers For Delay on Start (1 to 25 secs) Delay on Transfer (1 to 70 secs) Delay on Re transfer (2 min-48secs to 28 mins) Cool down timer (3 secs to 5 mins) Mains Detection For Under & Over Frequency Under & Over Voltage

Container

CONTAINER	When generators are supplied in containers, they are a close walk in type sound attenuated, weatherproof enclosure designed to reduce the overall noise level to not more than 85dBA at one metre in accordance with E.U. regulations. The container is of ISO Container construction and base design and is complete with:- • Designed and constructed in accordance with ISO668 series 1 freight containers classifications, dimensions and ratings, • Corner fittings to ISO1161, providing four point lifting capability for full wet weight. • Personnel Access Doors Min 1 Per Side With Stainless Catches And Hinges • Panic Release Door Latches • Exterior Emergency Stop • Internal lighting – One emergency DC bulkhead light complete with push type timer switch located at personnel door. • Power cable exit via a non ferrous gland plate in the container wall. • Finished In 2 Pack Epoxy Paint • Fuel lines and Fluid drains connected to wall sockets for ease of connection • Full Acoustic Splitter Ducts Complete With Weather Louvres • Cooling Fan And Charging Alternator Fully Guarded Inside Enclosure  Typical arrangement

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