

Cat® D600 GC

Diesel Generator Sets



Standby: 60 Hz



Image shown may not reflect actual configuration.

Engine Model	Cat® C18 In-line 6, 4-cycle diesel
Bore x Stroke	145 mm x 183 mm (5.7 in x 7.2 in)
Displacement	18.1 L (1106 in³)
Compression Ratio	14.5:1
Aspiration	Turbocharged Air-to-Air Aftercooled
Fuel Injection System	MEUI
Governor	Electronic ADEM™ A4

Model	Standby	Emission Strategy
D600 GC	600 kW, 750 kVA	EPA Certified for Stationary Emergency Application

PACKAGE PERFORMANCE

Performance	Standby
Frequency	60 Hz
Genset Power Rating	750 kVA
Genset power rating with fan @ 0.8 power factor	600 kW
Emissions	EPA TIER 2
Performance Number	DM8518
Fuel Consumption	
100% load with fan, L/hr (gal/hr)	159.5 (42.1)
75% load with fan, L/hr (gal/hr)	127.9 (33.8)
50% load with fan, L/hr (gal/hr)	90.5 (23.9)
25% load with fan, L/hr (gal/hr)	46.2 (12.2)
Cooling System¹	
Radiator air flow restriction (system), kPa (in water)	0.12 (0.48)
Radiator air flow, m³/min (cfm)	803 (28357)
Engine coolant capacity, L (gal)	20.8 (5.5)
Radiator coolant capacity, L (gal)	61 (16)
Total coolant capacity, L (gal)	82 (22)
Inlet Air	
Combustion air inlet flow rate m³/min (cfm)	47.8 (994.3)
Max. allowable combustion air inlet temp, °C (°F)	49 (122)
Exhaust System	
Exhaust stack gas temperature, °C (°F)	534.6 (994.3)
Exhaust gas flow rate, m³/min (cfm)	135.5 (4784.4)
Exhaust system backpressure (maximum allowable) kPa (in. water)	10.0 (40.0)
Heat Rejection	
Heat rejection to jacket water, kW (Btu/min)	180 (10236)
Heat rejection to exhaust (total), kW (Btu/min)	595 (33837)
Heat rejection to aftercooler, kW (Btu/min)	141 (8019)
Heat rejection to atmosphere from engine, kW (Btu/min)	77 (4379)
Heat rejection from alternator, kW (Btu/min)	33 (1854)
Emissions (Nominal)²	
NOx, mg/Nm³ (g/hp-hr)	2703.5 (5.5)
CO, mg/Nm³ (g/hp-hr)	161.0 (0.3)
HC, mg/Nm³ (g/hp-hr)	4.6 (0.01)
PM, mg/Nm³ (g/hp-hr)	13.2 (0.03)

D600 GC Diesel Generator Sets

Electric Power



APPLICABLE CODES AND STANDARDS:

AS1359, CSA C22.2 No100-04, UL142, UL489, UL869, UL2200, NFPA37, NFPA70, NFPA99, NFPA110, IBC, IEC60034-1, ISO3046, ISO8528, NEMA MG1-22, NEMA MG1-33, 2006/95/EC, 2006/42/EC, 2004/108/EC.

Note: Codes may not be available in all model configurations. Please consult your local Cat Dealer representative for availability.

STANDBY: Output available with varying load for the duration of the interruption of the normal source power. Average power output is 70% of the standby power rating. Typical operation is 200 hours per year, with maximum expected usage of 500 hours per year.

RATINGS: Ratings are based on SAE J1349 standard conditions. These ratings also apply at ISO3046 standard conditions.

FUEL RATES: Based on fuel oil of 35° API [16° C (60° F)] gravity having an LHV of 42 780 kJ/kg (18,390 Btu/lb) when used at 29° C (85° F) and weighing 838.9 g/litre (7.001 lbs/U.S. gal.). Additional ratings may be available for specific customer requirements, contact your Caterpillar representative for details. For information regarding Low Sulfur fuel and Biodiesel capability, please consult your Cat dealer.

DEFINITIONS AND CONDITIONS

¹ For ambient and altitude capabilities consult your Cat dealer. Air flow restriction (system) is added to existing restriction from factory.

² Emissions data measurement procedures are consistent with those described in EPA CFR 40 Part 89, Subpart D & E and ISO8178-1 for measuring HC, CO, PM, NOx. Data shown is based on steady state operating conditions of 77° F, 28.42 in HG and number 2 diesel fuel with 35° API and LHV of 18,390 BTU/lb. The nominal emissions data shown is subject to instrumentation, measurement, facility and engine to engine variations. Emissions data is based on 100% load and thus cannot be used to compare to EPA regulations which use values based on a weighted cycle.

³ UL 2200 Listed packages may have oversized generators with a different temperature rise and motor starting characteristics. Generator temperature rise is based on a 40° C ambient per NEMA MG1-32.

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D250 GC – D600 GC Sound Attenuated Enclosures

60 Hz

Features

Robust/Highly Corrosion Resistant Construction

- Safeguards genset against environmental and weather conditions.
- Factory installed on skid base or tanks base.
- Environmentally friendly, polyester powder baked paint.
- Enclosure constructed with 18-gauge steel.
- Interior zinc plated fasteners.
- Internally mounted exhaust silencing system.
- Comply with ASCE /SEI 7 for Wind loads up to 100 mph.
- Designed and tested to comply with UL 2200 Listed generator set package.

Excellent Access

- Large cable entry area for installation ease.
- Accommodates side mounted single or multiple breakers.
- Two doors on both sides.
- Vertically hinged allow 180° opening rotation.
- Radiator fill cover.

Security and Safety

- Lockable access doors which give full access to control panel and breaker.
- Cooling fan and battery charging alternator fully guarded.
- Fuel fill, oil fill and battery can only be reached via lockable access.
- Externally mounted emergency stop button (Optional).
- Designed for spreader bar lifting to ensure safety.
- Stub-up area is rodent proof.

Sound Attenuated Level 2

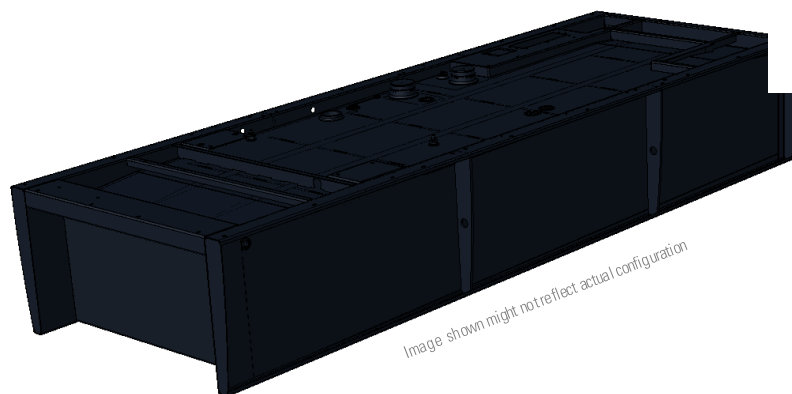
- Caterpillar white paint.
- ~~• UL Listed integral fuel tank with 24 hours running time capacity (Optional).~~
- ~~• DC lighting package (Optional).~~

Enclosure Package Operating Characteristics

Enclosure Type	Standby	Cooling Air Flow Rate		Ambient Capability*		Sound Pressure Levels (dBA) at 7m (23 ft)
	ekW	m ³ /s	cfm	°C	°F	100% Load
Level 2 Sound Attenuated Enclosure (Steel)	250	6.4	13561	57	135	74
	300	6.4	13561	51	125	74
	350	7.4	15680	57	134	71
	400	7.4	15680	53	127	71
	450	8.4	17692	54	130	73
	500	8.4	17692	50	122	73
	550	11.2	23731	56	133	73
	600	11.2	23731	53	127	73

*Cooling system performance at sea level. Consult your Cat[®] dealer for site specific ambient and altitude capabilities.

Note: Sound level measurements are subject to instrumentation, installation and manufacturing variability, as well as ambient site conditions



INTEGRAL FUEL TANKS D250 GC – D600 GC

FEATURES

- UL Listed for United States (UL 142) and Canada (CAN/ULC S601)
- Facilitates compliance with NFPA 30 code, NFPA 37 and 110 standards and CSA C282 code
- Dual wall
- Low fuel level warning standard, customer configurable warning or shutdown
- Primary tank leak detection switch in containment basin
- Tank design provides capacity for thermal expansion of fuel
- Fuel supply dip tube is positioned so as not to pick up fuel sediment
- Fuel return and supply dip tube is separated by an internal baffle to prevent immediate re-supply of heated return fuel
- Pressure washed with an iron phosphate solution
- Interior tank surfaces coated with a solvent-based thin-film rust preventative
- Heavy gauge steel gussets with internal lifting rings
- Primary and secondary tanks are leak tested at 20.7 kPa (3 psi) minimum
- Compatible with open packages and enclosures
- Gloss black polyester alkyd enamel exterior paint
- Welded steel containment basin (minimum of 110% of primary tank capacity)
- Direct reading fuel gauge with variable electrical output
- Emergency vents on primary and secondary tanks are sized in accordance with NFPA 30.

INTEGRAL

- Integral diesel fuel tank is incorporated into the generator set base frame
- Robust base design includes linear vibration isolators between tank base and engine generator.

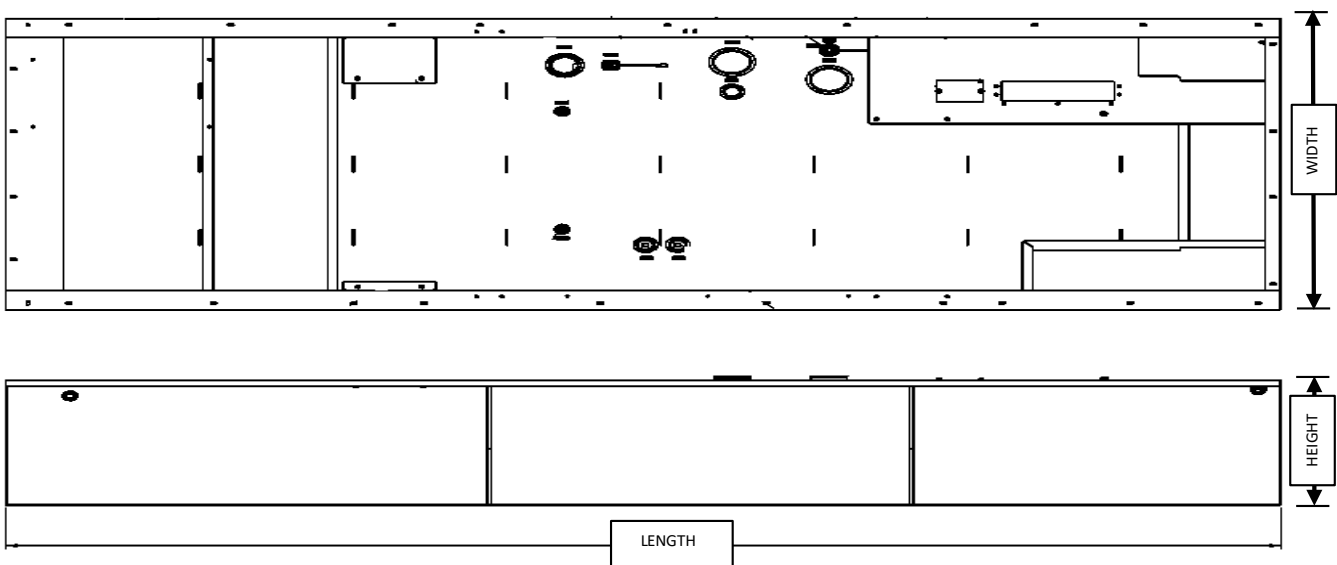
OPTIONS

- Audio/visual fuel level alarm panel
- 5gal (18.9 L) spill containment*
- **Locking Fuel Fill**
- Overfill prevention Valve*

*Applicable for D350GC-D600GC Models only

Integral Fuel Tank Base Useable Capacities with Fuel Tank Dimensions & Weights

Standby ekW	Width mm	Width in
250-300	1430	56.3
350-400	1630	64.1
450-500	1630	64.1
550-600	1865	73.4



The heights listed above do not include lumber used during manufacturing and shipping

A. Open Set & Sound Attenuated Enclosure

Tank Design	Feature Code	Total Capacity		Useable Capacity		Tank Only						Overall Package Height with Tank			
						Dry Weight		Height 'H'		Length 'L'		Open		Enclosure	
		Litre	Gallon	Litre	Gallon	kg	lb	mm	in	mm	in	mm	in	mm	in
Integral Tank	FTDW035	2270.7	599.8	2059.9	543.9	970	2138	762.4	30.0	3958	155.8	2202	86.7	2487	97.9
	FTDW036	2820	744.9	2553	674.4	1165	2568	818.8	32.2	4625	182.1	2584	101.7	2644	104
	FTDW037	3671	969.7	3323	877.8	1331	2934	668.2	26.3	4622	181.9	2456	96.7	2644	104
	FTDW038	4292	1133.8	3889	1027.3	1657	3653	816.4	32.1	4980	196	2560	100.7	2721	107.1

B. Estimated Run Time (Hours)

Tank Design	Feature Code	Standby Ratings (kVA)						
		ekW	100%		75%		50%	
			Hrs	L/hr	Hrs	L/hr	Hrs	L/hr
Integral Tank	FTDW035	250	28.1	73.3	35	58.8	47	43.8
		300	24	86.0	30.8	66.8	40	51.5
	FTDW036	350	27.1	94.3	31.2	81.9	42.4	60.2
		400	24.1	105.9	28.1	90.7	38.6	66.2
	FTDW037	450	25.2	131.7	31.3	106.1	42.0	79.1
		500	24.3	137	30.1	110.5	46.6	71.3
	FTDW038	550	25.7	151.1	32.9	118.1	45.2	86.1
		600	24.1	161.6	30.0	129.6	42.4	91.7

Tanks with full electrical stub-up area include removable end channel. Tanks with RH stub-up include stubup area directly below the circuit breaker or power terminal strips.

Fuel tanks and applicable options facilitate compliance with the following United States NFPA Code and Standards:

NFPA 30: Flammable and Combustible Liquids Code

NFPA 37: Standard for the Installation and Use of Stationary Combustion Engines and Gas Turbines

NFPA 110: Standard for Emergency and Standby Power Systems

Fuel tanks and applicable options facilitate compliance with the following Canadian Standard and Code:

CSA C282 – Emergency Electrical Power Supply for Buildings

CSA B139-09 – Installation Code for Oil-Burning Equipment

Full Load Current Table for the Circuit Breakers

Three Phase – 60 Hz

Power		Voltage		
kW	KVA	600 V	480 V	208 V
		FLC	FLC	FLC
250.0	312.5	300.7	375.9	867.4
300.0	375.0	360.9	451.1	1040.9
350.0	437.5	421.0	526.2	NA
400.0	500.0	481.1	601.4	NA
450.0	562.5	541.3	676.6	NA
500.0	625.0	601.4	751.8	NA
550.0	687.5	661.6	827.0	NA
600.0	750.0	721.7	902.1	NA

Circuit Breakers [C9, C13, C15, C18]

D250 GC, D300 GC, D350 GC, D400 GC, D450 GC, D500 GC, D550 GC, D600 GC

Manually Operated Circuit Breakers

Current (A)	Frame	Number of Poles	Interrupting Ratings (kA ms)			Trip Unit	(Lugs) Cable Size Range / Phase	Auxilliary Options
			240V	480V	600V			
100	XT2	3	65	25	18	Electronic LS/I or LSI	14-1/0AWG	1 Form C + 1 Bell Alarm Shunt Trip 24VDC
250	XT4	3	65	25	18	Electronic LS/I or LSI	14-1/0AWG	1 Form C + 1 Bell Alarm Shunt Trip 24VDC
400	XT5	3	65	35	18	Electronic LS/I or LSI	(2) 2/0 – 500 kcmil	1 Form C + 1 Bell Alarm Shunt Trip 24VDC
600	XT6	3	65	35	20		(3) 2/0 – 400 kcmil	
800	XT6	3	65	35	20		(3) 2/0 – 400 kcmil	
1200	XT7	3	65	50	25		(4) 4/0 – 500 kcmil	1 Form C + 1 Bell Alarm Shunt Trip 24VAC/VDC

1st Breaker Options (400 – 1200A)

Model	Current (A)	Operation
C9, C13, C15	400	Manually Operated
C9, C13, C15, C18	600	Manually Operated
C9, C13, C15, C18	800	Manually Operated
C9, C18	1200	Manually Operated

1st Breaker FLC Capacity or one frame less than FLC capacity except when 1st breaker is 400 A.

2nd Breaker Options

Model	Current (A)	Operation
C9, C13, C15, C18	100 / 250	Manually Operated

2nd Breaker either 100A or 250A.

XT7 – XT7 M Ekip Dip LSI L-S-I Functions

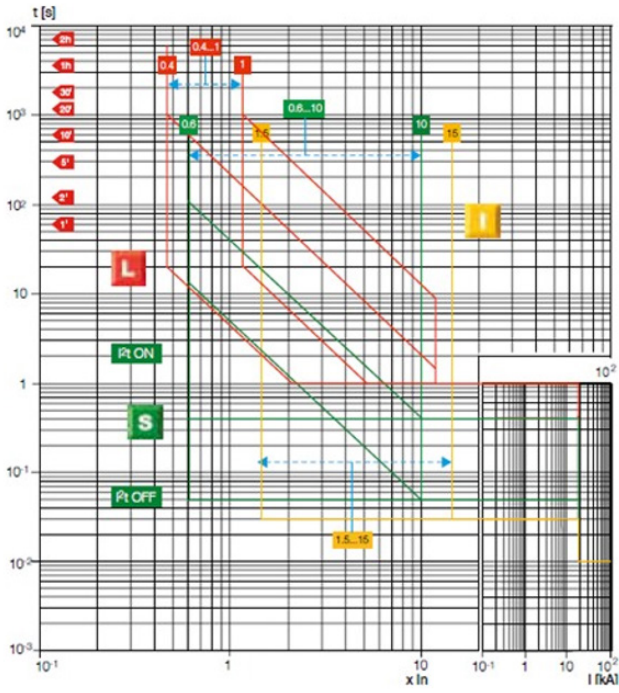
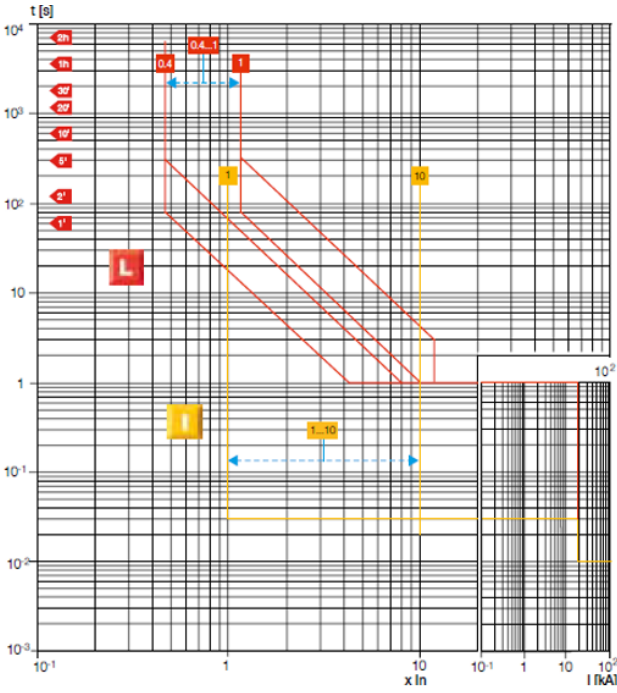


Figure 7

XT7 – XT7 M Ekip Dip LS/I L-I Functions



L-S Functions

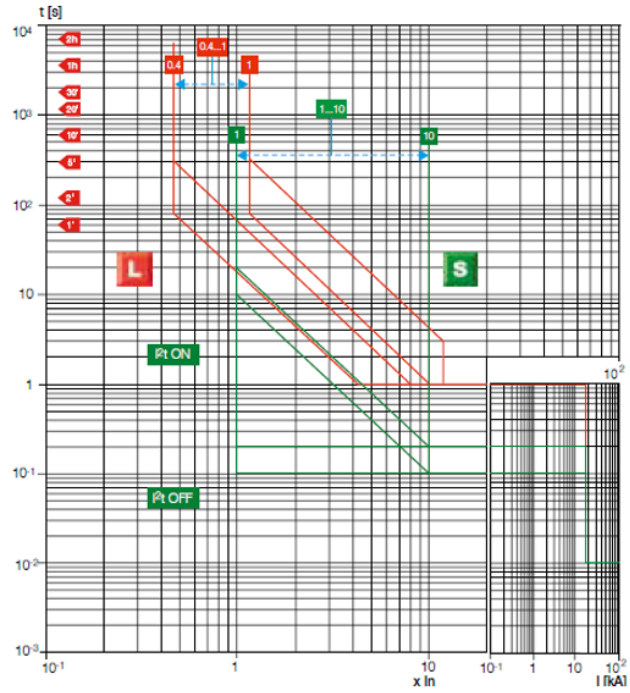


Figure 8

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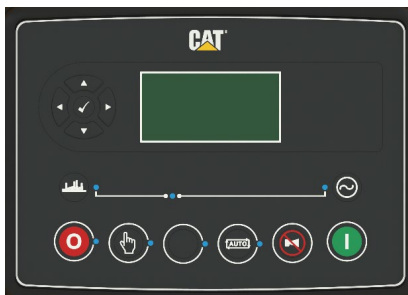


Image shown may not reflect actual configuration

GCCP 1.2 - Control Panel

GCCP 1.2 is an Auto Start Control Module suitable for a wide variety of diesel gen-set applications. Monitoring an extensive number of engine parameters, the modules will display warnings, shutdown and engine status information on the back-lit LCD screen, illuminated LEDs and remote PC.

Description

The controller is compatible with electronic (CAN) and non-electronic (magnetic pick-up/alternator sensing) engines and offer an extensive number of flexible inputs, outputs and extensive engine protections so the system can be easily adapted to meet the most demanding industry requirements.

The extensive list of features includes enhanced event and performance monitoring, remote communications & PLC functionality. The modules can be easily configured using a configuration suite PC software.

Full Range of Attachments

- Wide range of system expansion attachments, designed specifically to work with the GCCP controller
- Flexible packaging options for easy and cost effective installation

Benefits

- Hours counter provides accurate information for monitoring and maintenance periods
- User-friendly set-up and button layout for ease of use
- Multiple parameters are monitored & displayed simultaneously for full visibility
- The module can be configured to suit a wide range of applications for user flexibility
- PLC editor allows user configurable functions to meet user specific application requirements.
- RS485 Communication port can be used for the Remote Monitoring Communication (Compatible with Cat PLG)

World Wide Product Support

- Cat dealers provide extensive pre and post sale support
- Cat dealers have over 1,600 dealer branch stores operating in 200 countries

Features

- 4-line back-lit LCD text display
- Multiple display languages
- Five-key menu navigation
- LCD alarm indication
- Customisable power-up text and images
- Data logging facility
- Internal PLC editor
- Protections disable feature
- Fully configurable via PC using USB & RS485 communication
- Front panel configuration with PIN protection
- Power save mode
- 3-phase generator sensing and protection
- Generator current and power monitoring (kW, kvar, kVA, pf)
- kW and kvar overload and reverse power alarms
- Over current protection
- Unbalanced load protection
- Breaker control via fascia buttons
- Fuel and start outputs configurable when using CAN Support for 0 V to 10 V & 4 mA to 20 mA sensors
- 8 configurable digital inputs (3 available for Customer use)
- 8 configurable digital outputs (5 available for Customer use)
- 4 configurable analogue inputs (3 available for Customer Use)
- CAN, MPU and alternator frequency speed sensing in one variant
- Real time clock
- Engine pre-heat and post-heat functions
- Engine run-time scheduler
- Engine idle control for starting & stopping
- Fuel usage monitor and low fuel level alarms
- 3 configurable maintenance alarms

SPECIFICATIONS

DC SUPPLY

CONTINUOUS VOLTAGE RATING

8 V to 35 V continuous
5V for upto 1 minute

CRANKING DROPOUTS

Able to survive 0 V for 100 mS, providing supply was at least 10 V before dropout and supply recovers to 5 V. This is achieved without the need for internal batteries.
LEDs and backlight will not be maintained during cranking

MAXIMUM OPERATING CURRENT

260 mA at 12 V, 150 mA at 24 V

MAXIMUM STANDBY CURRENT

145 mA at 12 V, 85 mA at 24 V

CHARGE FAIL/EXCITATION RANGE

0 V to 35 V

GENERATOR & MAINS (UTILITY) VOLTAGE RANGE

15V to 415 V AC (Ph to N)
26 V to 719 V AC (Ph to Ph)

MAGNETIC PICK-UP VOLTAGE RANGE

+/- 0.5 V to 70 V

FREQUENCY RANGE

10,000 Hz (max)

INPUTS

DIGITAL INPUTS A TO H

Negative switching

ANALOGUE INPUTS A TO D

Configurable as:
Negative switching digital input 0-10V sensor 4 mA to 20mA Resistive Sensor

ANALOGUE INPUTS A TO C

Configurable as:
Negative switching digital input Resistive Sensor

OUTPUTS

OUTPUT A and B (FUEL & START)

15 A DC at supply voltage

AUXILIARY OUTPUTS C, D, E, F, G, H, I & J 2

A DC at supply voltage

DIMENSIONS

OVERALL

216 mm x 158 mm x 43 mm
8.5" x 6.2" x 1.5"

PANEL CUTOUT

184 mm x 137 mm
7.2" x 5.3"

MAXIMUM PANEL THICKNESS

8 mm
0.3"

OPERATING TEMPERATURE

-30 Deg C to +70 Deg C
-22 Deg F to +158 Deg F

STORAGE TEMPERATURE RANGE

-40 Deg C to +85 Deg C
-40 Deg F to +185 Deg F

STANDARDS

UL, cUL Listed

NFPA 70[#]

Electro-Magnetic Compatibility BS EN 61000-6-2/6-4

Electrical Safety: BS EN 60950

Temperature: BS EN 60068-2-1, BS EN 60068-2-2

Vibration: BS EN 60068-2-6

Humidity: BS EN 60068-2-30, BS EN 60068-2-78

Shock: BS EN 60068-2-27

Degrees of protection provided by enclosures: BS EN 60529 Ingress Protection: IP65 - Front of module when installed into the control panel with the optional sealing gasket.

[#] Applicable codes and standards facilitate compliance to NFPA 70



Remote Emergency Stop Button

Image shown may not reflect actual configuration.

Features and Benefits

- Enclosure degree of protection – IP 69K (NEMA 6)
- UL Listed (NKCR)
- Assembled enclosure with shroud
- 40 mm mushroom emergency stop
- Twist release
- 2NC – horizontally mounted

Dimensions

- Net Width: 0.065 m
- Net Height: 0.078 m
- Net Depth: 0.065 m
- Net Weight: 0.124 kg

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Remote Annunciator Module

It is an LED expansion module that can be used with compatible control modules. The module has been designed to display a maximum of eight individual LED indications up to a maximum distance of 1 KM (0.6 miles).

The Annunciator will consist of two modules to provide a 16 Channel Fault annunciation.

It is presented in a vertical enclosure. It includes an alarm sounder that is triggered when the host controller detects an alarm condition. The alarm can be muted using the front push button.

The Panels will be fitted with removable label cards which can be used to identify the standard NFPA alarms if desired.

It includes individual LEDs for each channel and a 'Power On' LED that flashes when the link with the host controller is lost.

Features

- The Remote annunciator has an integral Sounder/Horn
- Eight configurable LEDs (per module)
- Works up to 1 KM (0.6 miles) from the host controller
- A single controller can support five Caterpillar configured remote annunciator control boxes

ENVIRONMENTAL TESTING STANDARD

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

ELECTRICAL SAFETY

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

TEMPERATURE

BS EN 60068-2-1
Ab/Ae Cold Test -30 °C BS EN 60068-2-2
Bb/Be Dry Heat +70°C

VIBRATION

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

SHOCK

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

HUMIDITY

BS EN 60068-2-30
Db Damp Heat Cyclic 20/55 °C @ 95% RH 48 Hours
BS EN 60068-2-78
Cab Damp Heat Static 40 °C @ 93% RH 48 Hours

DEGREES OF PROTECTION PROVIDED BY ENCLOSURES BS EN 60529

IP65 – Front of module when installed into the control panel with the supplied sealing gasket.

SPECIFICATION

CONTINUOUS VOLTAGE RATING

8 V to 35 V Continuous

CRANKING DROPOUTS

Able to survive 0 V for 50 mS, providing supply was at least 10 V before dropout and supply recovers to 5 V. This is achieved without the need for internal batteries. LEDs and backlight will not be maintained during cranking.

MAXIMUM OPERATING CURRENT

112 mA at 12 V, 53 mA at 24 V

MAXIMUM STANDBY CURRENT

74 mA at 12 V, 35 mA at 24 V

DIMENSIONS OVERALL

355 mm x 369 mm x 90 mm
13.6" x 14.5" x 3.5"

PANEL CUT-OUT

286 mm x 326 mm x 93 mm
11.2" x 12.8" x 3.6"

MAXIMUM PANEL THICKNESS

8 mm
0.3"

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INSTALLATION INSTRUCTIONS GCCP REMOTE ANNUNCIATOR



POWER SUPPLY

Minimum supply voltage	8V continuous, 4V for up to 5 minutes.
Cranking dropouts	Able to survive 0V for 50mS providing the supply was at least 10V before the dropout and recovers to 5 volts afterwards.
Maximum supply voltage	35V continuous (protection to 60V)
Maximum operating current	112mA at 12V, 53mA at 24V Conditions: all LED's lit and sounder active.
Maximum standby current	74mA at 12V, 35mA at 24V Conditions: all LED's off and sounder inactive.

TERMINAL SPECIFICATIONS

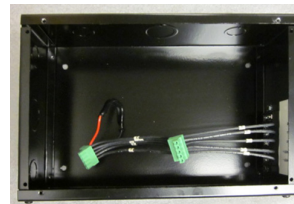
Connection Type	Screw Terminal, rising clamp, no internal spring
Min. cable size	AWG 20
Max. cable size	AWG 14
Recommended cable size	Refer to next table.

NETWORK CONNECTIONS

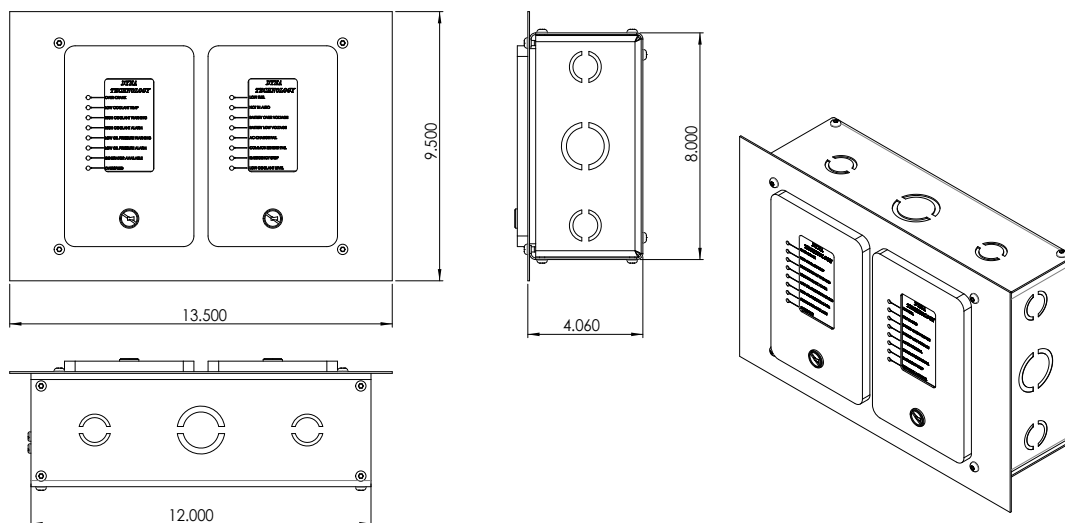
Cable type	Two core screened twisted pair
Cable characteristic impedance	120 Ohms
Recommended Cable	Belden 9841 or Belden 9271
Maximum cable length	0.6miles (1km) when using Belden 9841 or direct equivalent.
DSEnet topology	Bus with no stubs (spurs)
DSEnet termination	120 Ohms. Fitted internally to host controller. Must be fitted externally to the "last" expansion module by the customer.
Maximum expansion modules	Refer to host controller documentation.

INSTALLATION

- Remove 4 torx screws holding the panel on.
- Unplug the connectors on the two modules.
- Mount the box assembly in a suitable location for your application.
- Knockouts are provided for various size conduit connections.



ANNUNCIATOR DIMENSIONS



USER CONNECTIONS

Terminal	Function	Recommended Size	
1	DC supply positive	AWG 18	CAT Generator
2	DC supply negative	AWG 18	CAT Generator
3	Screen		Network only
4	A	AWG 20	Network only
5	B	AWG 20	Network only

LED INDICATIONS

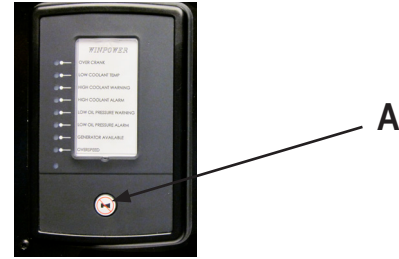
FUNCTION	COLOR	ACTION
Power on / Link Lost	Red	Steady when DC supply is connected and data is being received from the host controller. Flashing when the DC supply is connected and the data connection to the host controller is not operating.
Status 1-8	Red	Lit when the corresponding channel is active.

SOUNDER

The GCCP Remote Annunciator has an integral sounder, activated upon a signal from the 'Genset controller'. The controller will activate the sounder when an alarm becomes active and silence the sounder when the alarm mute button (local or remote) is pressed.

PUSH BUTTON

Pressing the button will signal to the host controller that the button is pressed. The controller will respond by lighting all LEDs on the 2548 module (lamp test) and silencing the sounder (alarm mute). If configured to do so, the host controller will also perform a lamp test and alarm mute function.



ID SWITCH

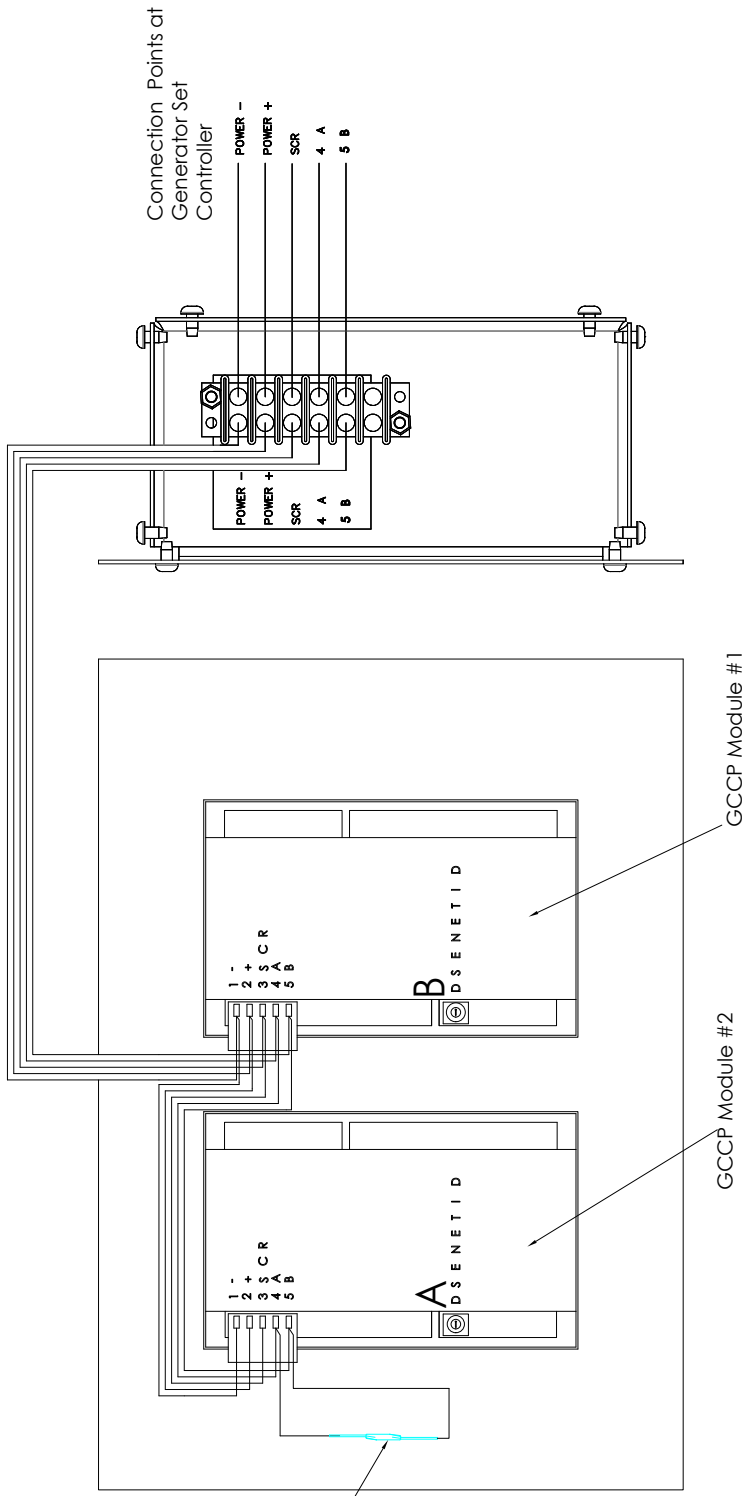
The rotary ID switch is used to select the 'Identification' of the GCCP Remote Annunciator as the host controller is capable of giving instructions to a number of 2548 expansion modules at the same time. The switch (located at the rear of the module) should be operated using a small screwdriver and set to match the required ID.

NOTE: The ID MUST be a unique number, different from the ID of any other modules connected to the host controller. If two or more 2548 controllers are required to 'mimic' each other they should be configured with different IDs, and both configured the same in the host controller.

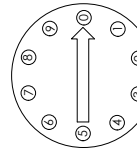
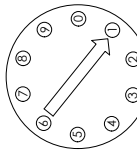
FAULT DIAGNOSIS

Nature of Problem	Suggestion
LEDs don't activate on the 2548 module	Ensure the host controller is correctly configured to send signals to the 2548.
Power LED indication does not illuminate	Check polarity and size of the connected DC supply are within the specifications of the DSE2548.
Power LED flashes	This means that the communications link to the host controller has been lost. Check the connection of the DSEnet paying particular attention to the cable type being used and the positioning of the termination resistors.

REMOTE ANNUNCIATOR WIRING DIAGRAM



RESISTOR ASSEMBLY (62029-004) MUST BE INSTALLED BETWEEN TERMINALS 4 AND 5





Product: [9842](#)

RS-485, (2 pr) 24 AWG (7x32) TC, PE/PVC, Foil+TC Braid Shld, CM, 120Ω

Product Description

Two 24 AWG pairs stranded (7x32) tinned copper conductors, polyethylene insulation, twisted pairs, overall Beldfoil® (100% coverage) + tinned copper braid shield (90% coverage), 24 AWG stranded tinned copper drain wire, PVC jacket.

Technical Specifications

Product Overview

Suitable Applications:	RS-485, DMX-512
------------------------	-----------------

Physical Characteristics (Overall)

Conductor

AWG	Stranding	Material	No. of Conductors	No. of Pairs
24	7x32	TC - Tinned Copper	4	2

Conductor Count:	4
Total Number of Pairs:	2

Insulation

Material
PE - Polyethylene

Color Chart

Number	Color
1	White/Blue & Blue/White
2	White/Orange & Orange/White

Outer Shield Material

Type	Layer	Material	Material Trade Name	Coverage [%]	Drainwire Material	Drainwire AWG
Tape	1	Aluminum/Polyester	Beldfoil®	100 %	TC - Tinned Copper	24
Braid	2	TC - Tinned Copper		90 %		

Outer Jacket Material

Material	Nominal Diameter
PVC - Polyvinyl Chloride	0.34 in

Electrical Characteristics

Conductor DCR

Nominal Conductor DCR	Nominal Outer Shield DCR
24 Ohm/1000ft	2.2 Ohm/1000ft

Capacitance

Nom. Capacitance Conductor to Conductor	Nom. Capacitance Conductor to Other Conductor to Shield
12.8 pF/ft	23 pF/ft

Impedance

Nominal Characteristic Impedance
120 Ω

120 Ohm

High Frequency (Nominal/Typical)

Frequency [MHz]	Nom. Insertion Loss
1 MHz	0.6 dB/100m

Delay

Max. Delay Skew	Nominal Delay	Nominal Velocity of Propagation (VP) [%]
66 ns/100m	1.54 ns/ft	66 %

Current

Max. Recommended Current [A]
Per conductor @ 25°C: 2.1 A

Voltage

UL Voltage Rating
300 V RMS

Temperature Range

UL Temp Rating:	80°C
Operating Temp Range:	-30°C To +80°C

Mechanical Characteristics

Bulk Cable Weight:	49 lbs/1000ft
Max Recommended Pulling Tension:	87 lbs
Min Bend Radius/Minor Axis:	3.5 in

Standards

NEC Articles:	800
NEC/(UL) Specification:	CM
CEC/C(UL) Specification:	CM
UL AWM Style:	2919 (30 V 80°C)
CPR Euroclass:	Eca

Applicable Environmental and Other Programs

EU Directive 2000/53/EC (ELV):	Yes
EU Directive 2003/96/EC (BFR):	Yes
EU Directive 2011/65/EU (ROHS II):	Yes
EU Directive 2012/19/EU (WEEE):	Yes
EU Directive 2015/863/EU:	Yes
EU Directive Compliance:	EU Directive 2003/11/EC (BFR)
EU CE Mark:	Yes
EU RoHS Compliance Date (yyyy-mm-dd):	2004-01-01
CA Prop 65 (CJ for Wire & Cable):	Yes
MII Order #39 (China RoHS):	Yes

Suitability

Suitability - Indoor:	Yes
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Flammability, LS0H, Toxicity Testing

ISO/IEC Flammability:	IEC 60332-1-2
UL voltage rating:	300 V RMS

Plenum/Non-Plenum

Plenum (Y/N):	N
Plenum Number:	82842

Part Number

Variants

Item #	Color	UPC	Length	Footnote
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9842.001000	Chrome		1,000 m	
9842.00152	Chrome		152 m	
9842.001525	Chrome		1,525 m	
9842.0030	Chrome		30 m	
9842.00305	Chrome		305 m	
9842.00500	Chrome		500 m	
9842.009999	Chrome		151 m	
9842 060100	Chrome	612825259510	100 ft	
9842 0601000	Chrome	612825259527	1,000 ft	C
9842 06010000	Chrome	612825259534	10,000 ft	
9842 060500	Chrome	612825259541	500 ft	C
9842 0605000	Chrome	612825259558	5,000 ft	
9842.K0305	Chrome		305 m	
9842.K01525	Chrome		1,525 m	

Footnote:	C - CRATE REEL PUT-UP.
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History

Update and Revision:	Revision Number: 0.328 Revision Date: 01-31-2020
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100 Amp Load Center



Image shown may not reflect actual package.

100 Amp Load Center

Specifications	
Number of Spaces	6
System Voltage	120 / 240VAC
Number of Tandem Circuit Breakers	6
Phase	1 Ph
NEMA Degree of Protection	NEMA 3R Outdoor
Electrical Connection	Lugs
Wiring Configuration	3-Wire
Material	Tin Plated Aluminum Busbar
Enclosure Material	Welded Galvanized Steel Gray
Cover Finish	Baked Enamel
Product Certifications	UL E-6294
Gauge	AWG 8...AWG 1 (Aluminium / Copper)

Dimensions and Specifications	
Height / Width / Depth	321 mm / 226 mm / 127 mm
GFCI	20A (120V)
Battery Charger	6A (120V)
Jacket Water Heater	11.25A (240V)
Alternator Heater	1.04A (240V)
Total Load	38.29A Max

L1	
GFCI	20A (120V)
Jacket Water Heater	11.25A (240V)
Alternator Heater	1.04A (240V)
Total Load	32.29A Max

L2	
Battery Charger	6A (120V)
Jacket Water Heater	11.25A (240V)
Alternator Heater	1.04A (240V)
Total Load	18.29A Max

LET'S DO THE WORK.™

www.cat.com/electricpower

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Image shown might not reflect actual configuration

SPECIFICATION

AC SUPPLY

VOLTAGE RANGE 90 V to 305 V (L-N)

FREQUENCY RANGE

48 Hz to 64 Hz (L-N)

DC OUTPUT RATING

10 A DC at 24 V DC

RIPPLE AND NOISE

<1%

EFFICIENCY

>86%

REGULATION LINE

<0.5%

LOAD

2%

TEMPERATURE SENSOR INPUT

PT1000

PROTECTIONS

Short Circuit
DC Over Voltage
DC Over Current
Reverse Polarity
Over Temperature
AC Under & Over Voltage

CHARGE FAILURE RELAY

3 A at 30 V DC volt free relay

DIMENSIONS OVERALL

70 mm x200 mm x 130 mm
2.7" x 7.9" x 5.1"

WEIGHT

0.75 kg

OPERATING TEMPERATURE RANGE

-30 °C to +80 °C
-22 °F to +176 °F

STORAGE TEMPERATURE RANGE

-40 °C to +70 °C
-22 °F to +158 °F

BATTERY CHARGER

The intelligent battery charger has been developed with safety, usability, optimised battery performance and maximum battery lifetimes in mind.

A comprehensive range of input and output protections ensures a continued safe charging environment also enabling the use of the charger as a power supply.

FEATURES

- Intelligent two, three and four stage charging profiles
- Configurable to suit most battery types (12V/24V)
- Adjustable current limit
- Can be used as a battery charger, power supply or both at the same time
- Automatic or Manual boost and storage charge functions to help maintain battery condition
- Digital Microprocessor Technology
- Temperature compensation for battery charging
- Low Output Ripple and superb line regulation
- Three LED Indicators
- AC input Under voltage
- AC input Over voltage
- Battery charger output Over voltage
- Battery charger output Over current
- Optional battery temperature compensation with over temperature protection
- Output short circuit and Inversion polarity with auto recovery
- Configurable charge termination
- UL1236 /UL1564 Compliant

Automatic Boost Mode

- Boosts and equalises cell charge improving battery performance and life

Power Save Mode

- Once the battery is fully charged the chargers switch to Eco-Power to save energy

Communication

- Can be integrated into external systems through MODBUS RTU using RS485
- Fully configurable via PC Software

BENEFITS

- Fully flexible to maximise the life of the battery
- Suitable for a wide range of battery types
- Switched mode design
- Minimum 86% efficiency throughout full operating range
- No external intervention for boost mode
- Multiple chargers can be linked together to provide larger current output
- Can be permanently connected to battery and mains (utility) supply. No need to disconnect through high load conditions.

LEHE2022-02 (10-20)



Jacket Water Heater (WHHH01/WHHH03)

Appropriate when the generator set is to be sited in a low ambient environment, the heater maintains the engine coolant at a temperature [typically 38°C (100°F)] which facilitates rapid starting and load acceptance. The heater assembly uses UL compliant components (to UL1030) and has CSA certification which is to both CSA and UL Standards.

The heater itself is powered by a 240V for 60 Hz AC auxiliary supply. A thermostatic controller is included to regulate the output temperature to within safe limits. When the generator set is not running the heater is automatically connected to the AC supply through a power relay mounted in the control panel.

Upon receiving a start signal the AC supply is automatically disconnected by the power relay and automatically reconnected when the start signal is removed, and the engine has stopped.

Features

- Uniform heat distribution
- Reduces wear from cold spots
- Improves startability
- Thermostatically controlled and protected
- 6' (1.8m) cord length (577-1758)
- 16.4' (5.0m) cord length (578-9355).
- Ensures generator is at optimal starting temperature and ready to accept load
- Durable pump with non-magnetic impeller that does not attract metal debris
- Robust die cast aluminum housing improves sealing of the hoses, eliminates leaking and breakage
- Corrosion resistant steel brackets for superior strength and durability
- Reduces thermal stress on coolant hoses
- Element designed for long life with maximum heat transfer
- IP44 Ingress Protection Rating
- No evaporation of coolant from hoses
- Reduces low coolant level alarms because coolant does not boil

Part No	Outlet Location	Watts	Volts	Amps	Regulating Thermostat	Safety Thermostat
577-1758/578-9355	Right	2700	240	11.25	On 90°F (32°C) Off 115°F (46°C)	210°F (98°C)

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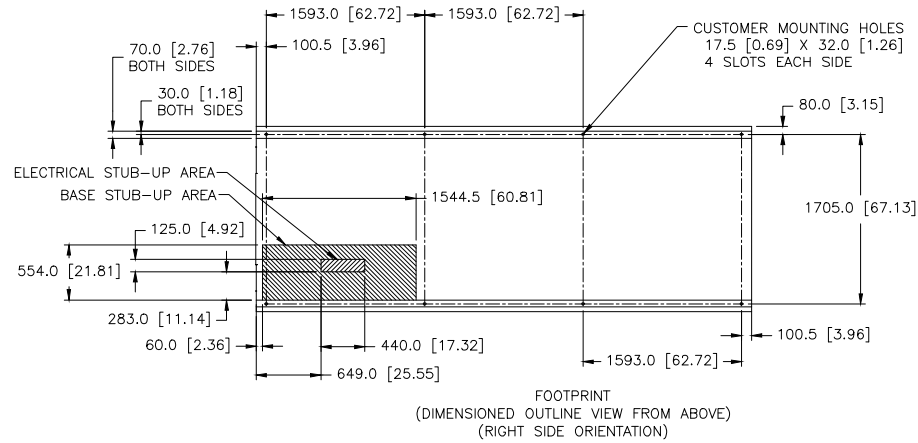
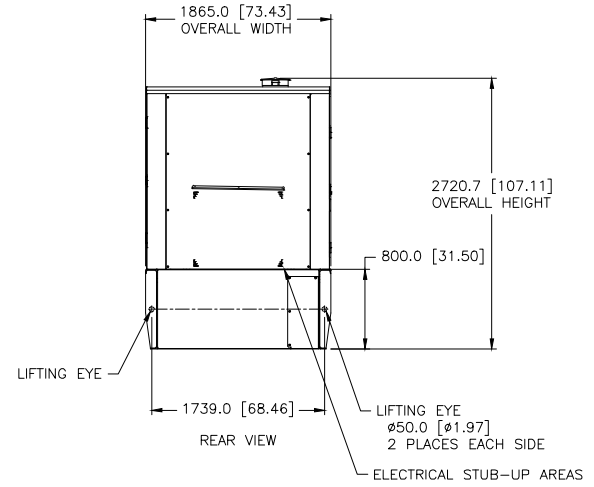
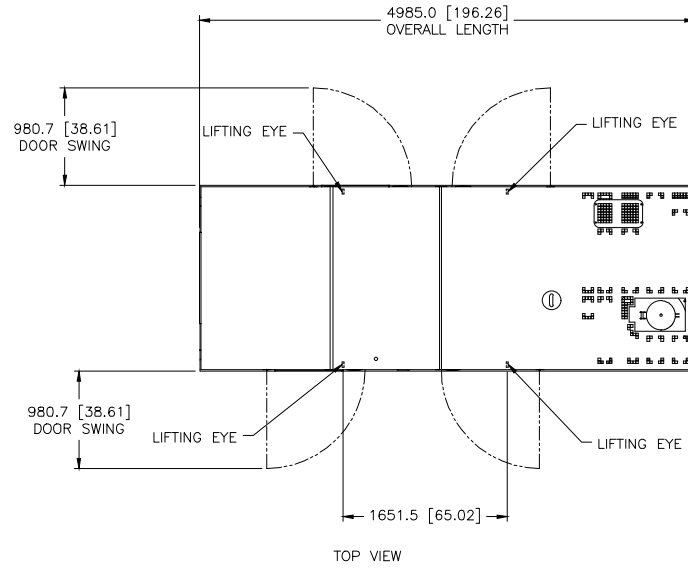
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QTY	ENGINE CONNECTIONS	SIZE	SHEET
1	COOLANT DRAIN	ø19.1 [ø0.75] ID	2
1	EXHAUST	ø254.0 [ø10.00] OD	2

QTY	POSSIBLE TANK CONNECTIONS	SIZE	SHEET
1	FUEL FILLER	4" NPTF	3
2	SPARE PORTS	2" NPTF	3
1	MAIN TANK EMERGENCY VENT	5" NPTF	3
1	BASIN TANK EMERGENCY VENT	5" NPTF	3
1	NORMAL VENT	2" NPTF	3

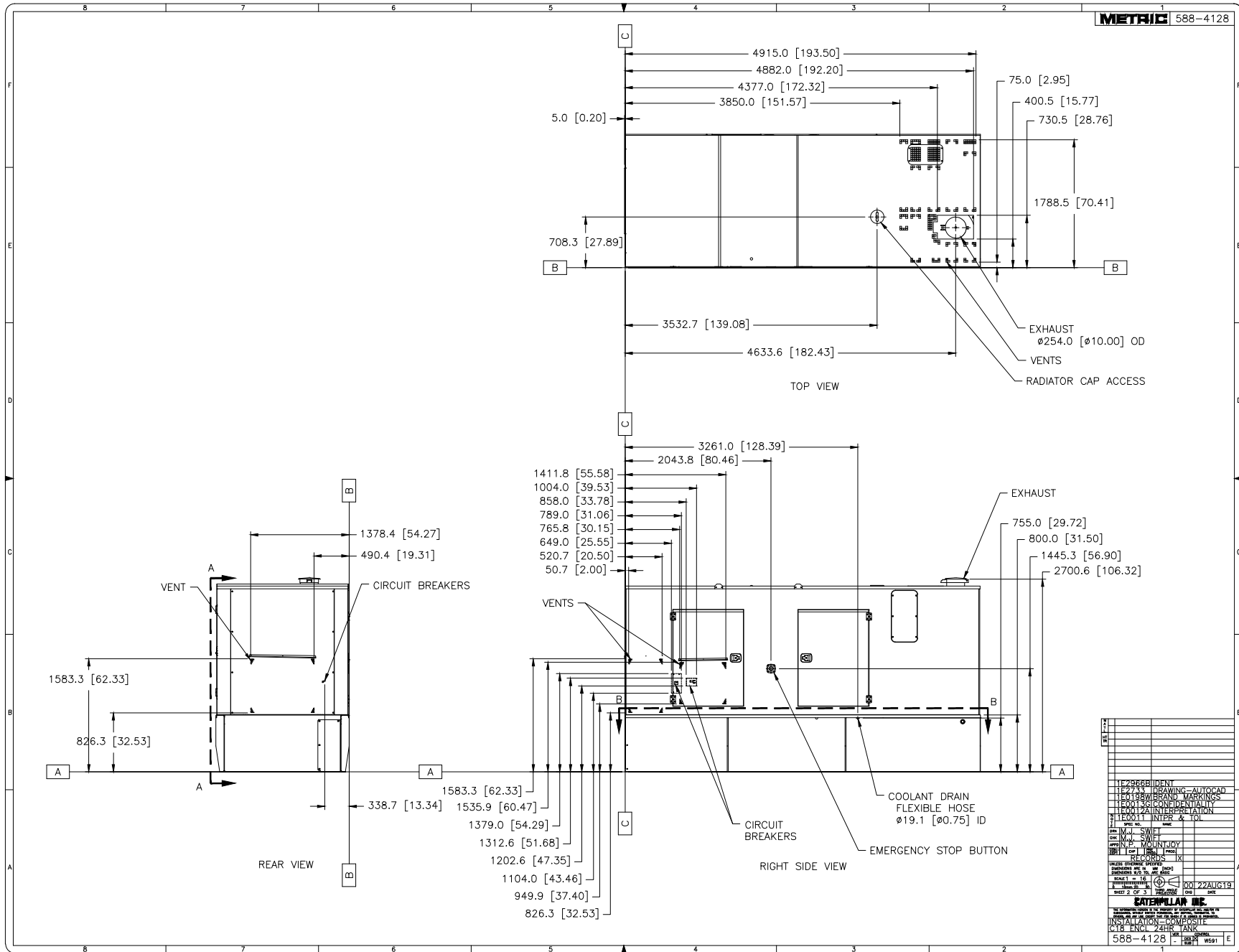


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MODEL	TYPE	PRICING AR	TANK	ENCLOSURE
C18	-	LS-3981 CHG 00	LS-3872 CHG 00	LS-3860 CHG 00
		LS-3982 CHG 00		

PACKAGE LIFTED IN 4 PLACES
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DATEPULLER INC.
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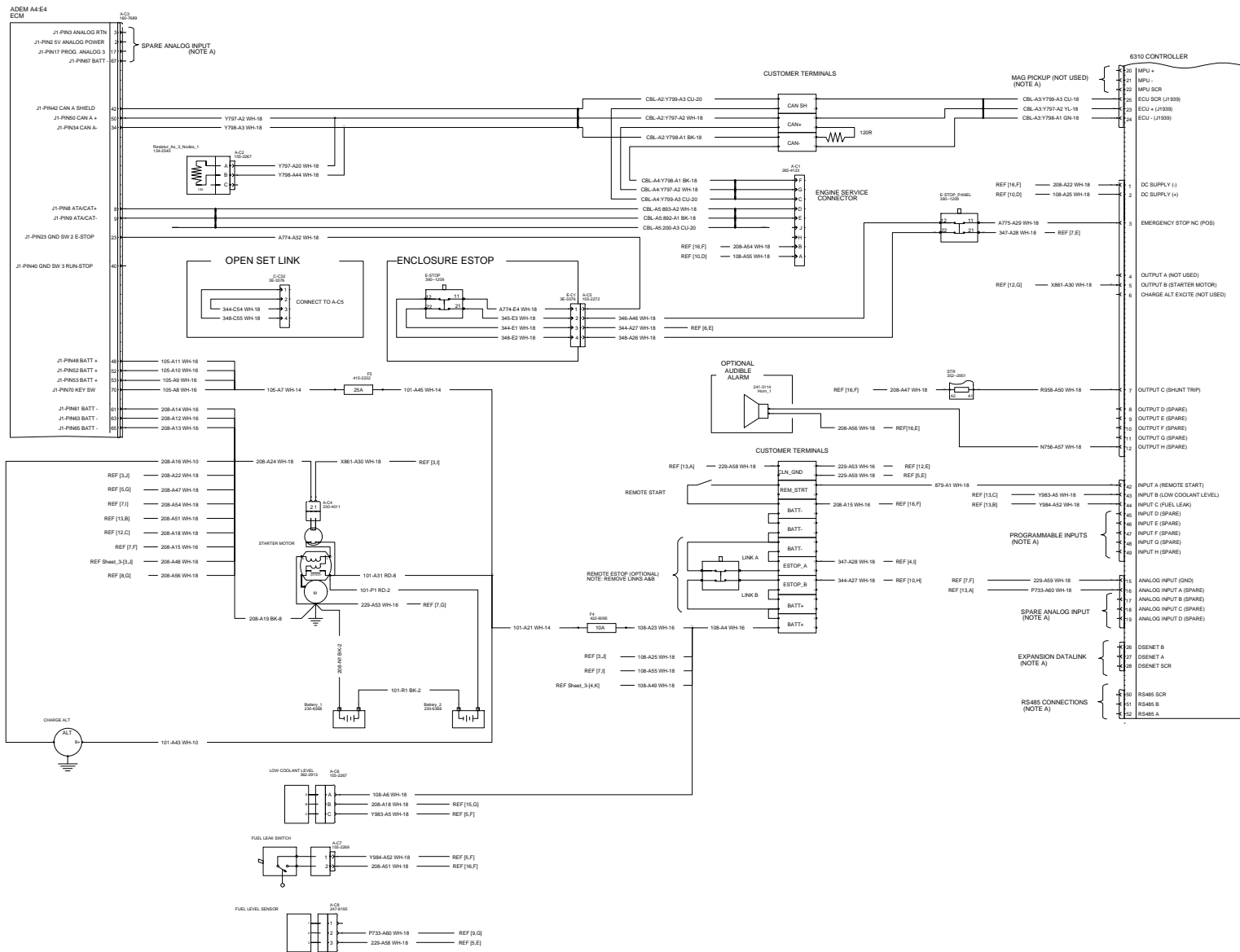


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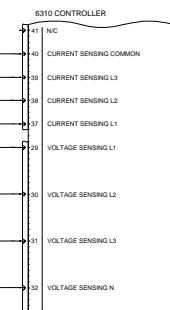
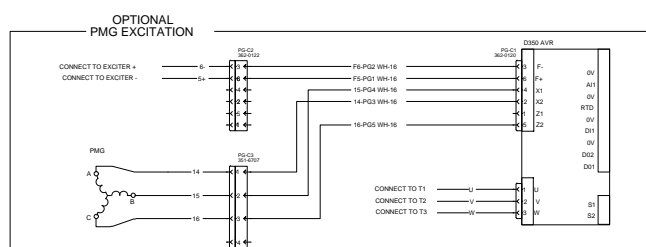
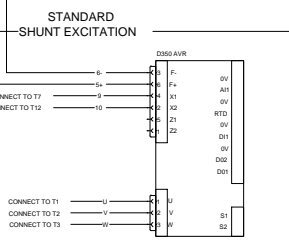
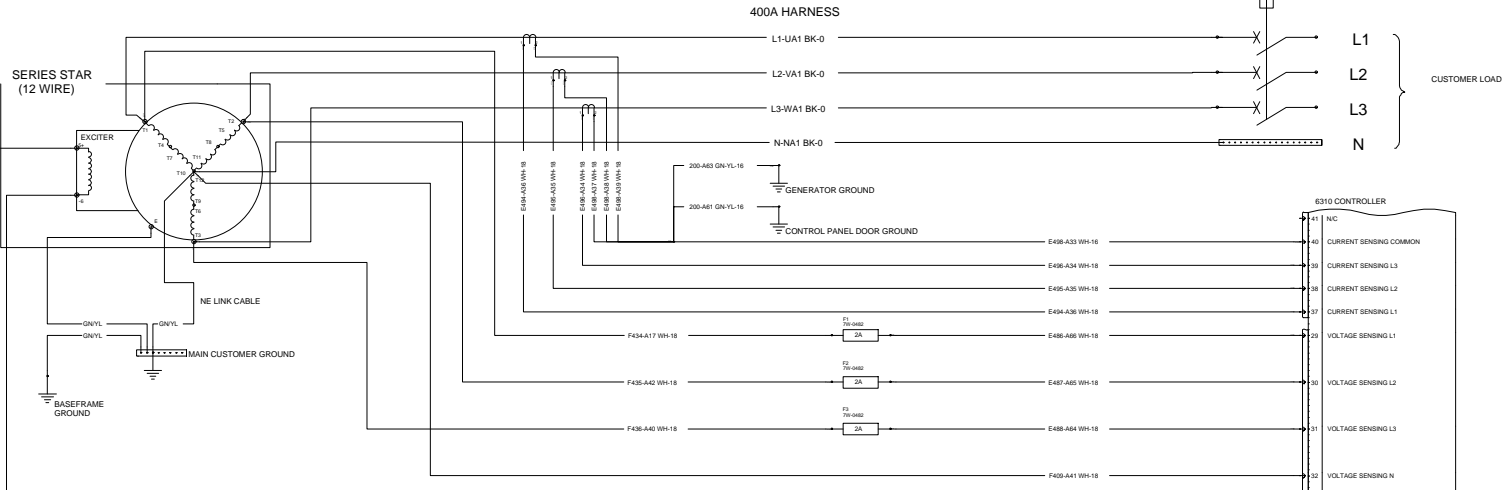
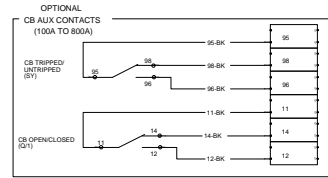
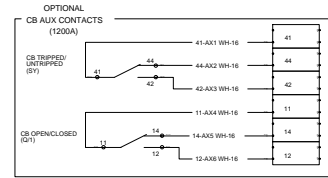
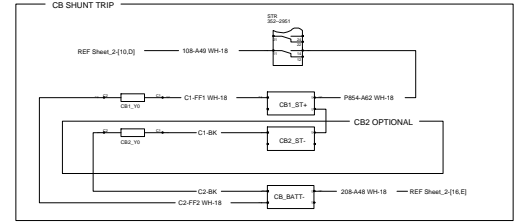
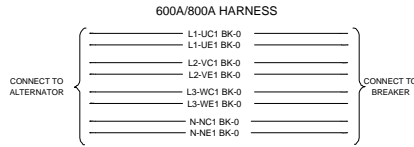
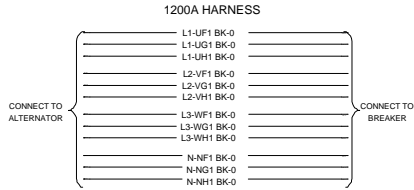
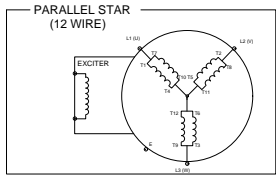
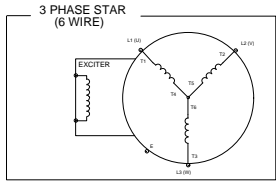
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CONTROL SCHEMATIC (DSE 6310)



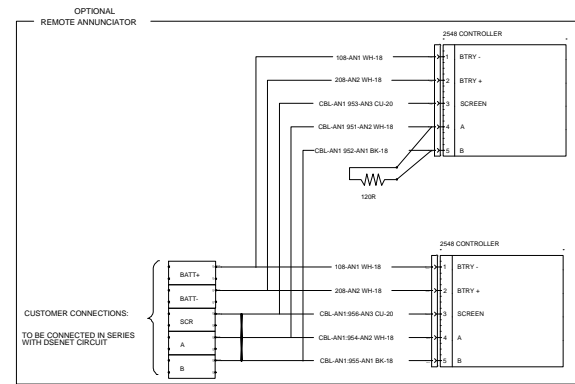
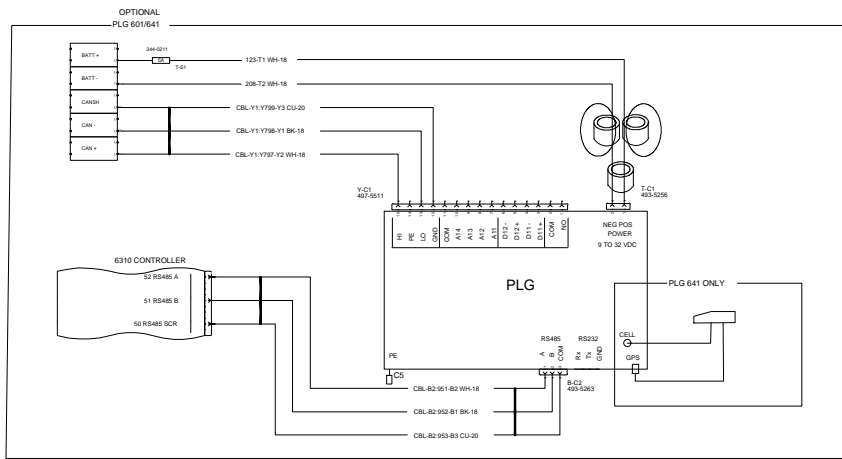
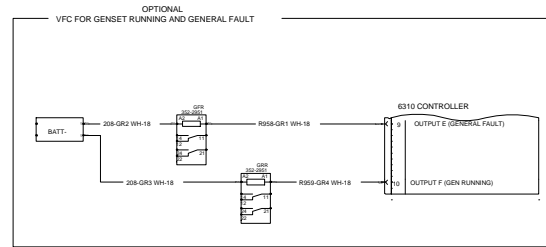
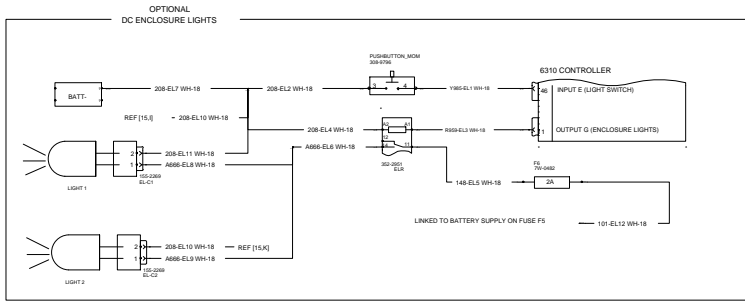
Terminal	Signal	Notes
25	MPU +	
26	MPU -	
27	MPU SCR	
28	ECU SCR (1939)	
29	ECU + (1939)	
30	ECU - (1939)	
31	DC SUPPLY (+)	
32	DC SUPPLY (-)	
33	EMERGENCY STOP NC (POS)	
34	OUTPUT A (NOT USED)	
35	OUTPUT B (STARTER MOTOR)	
36	CHARGE ALT EXCITE (NOT USED)	
37	OUTPUT C (SHUNT TRIP)	
38	OUTPUT D (SPARE)	
39	OUTPUT E (SPARE)	
40	OUTPUT F (SPARE)	
41	OUTPUT G (SPARE)	
42	OUTPUT H (SPARE)	
43	INPUT A (REMOTE START)	
44	INPUT B (LOW COOLANT LEVEL)	
45	INPUT C (FUEL LEAK)	
46	INPUT D (SPARE)	
47	INPUT E (SPARE)	
48	INPUT F (SPARE)	
49	INPUT G (SPARE)	
50	INPUT H (SPARE)	
51	ANALOG INPUT (GND)	
52	ANALOG INPUT A (SPARE)	
53	ANALOG INPUT B (SPARE)	
54	ANALOG INPUT C (SPARE)	
55	ANALOG INPUT D (SPARE)	
56	DSENET B	
57	DSENET A	
58	DSENET SCR	
59	RS485 SCR	
60	RS485 B	
61	RS485 A	

POWER SCHEMATIC



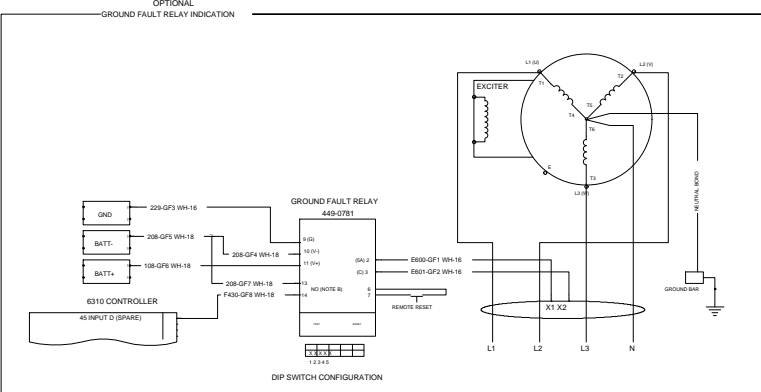
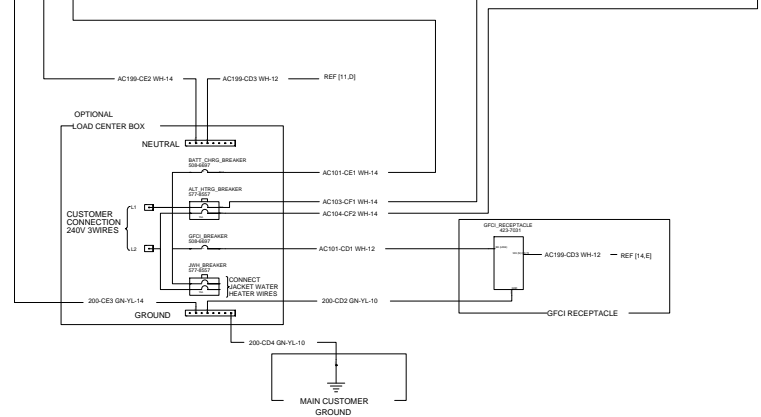
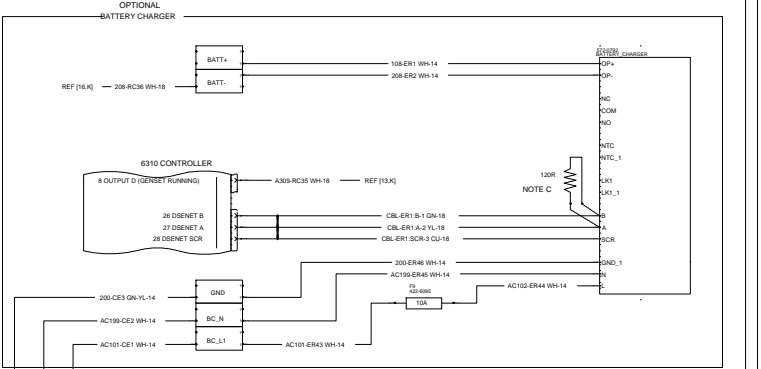
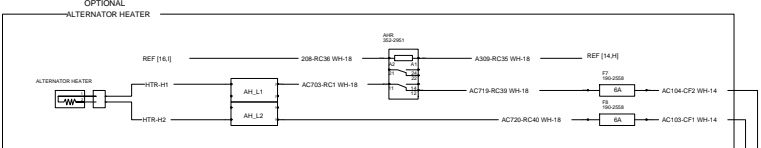
WIRE NO.	DESCRIPTION	TERMINAL
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		
17		
18		

ADDITIONAL OPTIONS



1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	
A	B	C	D	E	F	G	H	I	J	K	L							

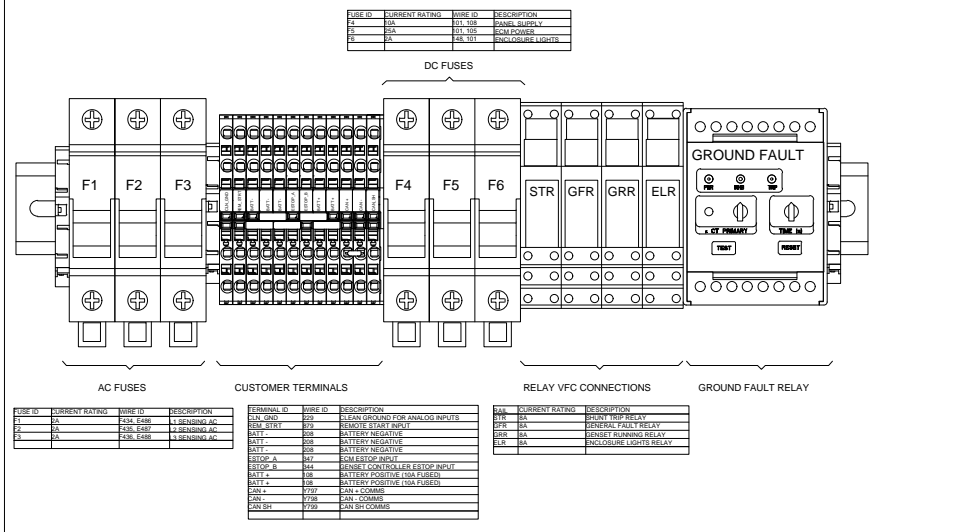
ADDITIONAL OPTIONS



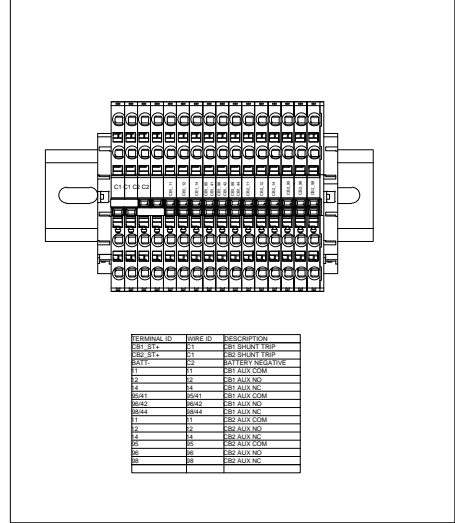
NO.	DESCRIPTION	QTY.
1	300-RC35 WH-18	1
2	300-CE3 GN-VL-14	1
3	300-CE3 GN-VL-14	1
4	300-CE3 GN-VL-14	1
5	300-CE3 GN-VL-14	1
6	300-CE3 GN-VL-14	1
7	300-CE3 GN-VL-14	1
8	300-CE3 GN-VL-14	1
9	300-CE3 GN-VL-14	1
10	300-CE3 GN-VL-14	1
11	300-CE3 GN-VL-14	1
12	300-CE3 GN-VL-14	1
13	300-CE3 GN-VL-14	1
14	300-CE3 GN-VL-14	1
15	300-CE3 GN-VL-14	1
16	300-CE3 GN-VL-14	1
17	300-CE3 GN-VL-14	1
18	300-CE3 GN-VL-14	1

ADDITIONAL INFORMATION - COMPONENT DETAILS & CUSTOMER CONNECTIONS

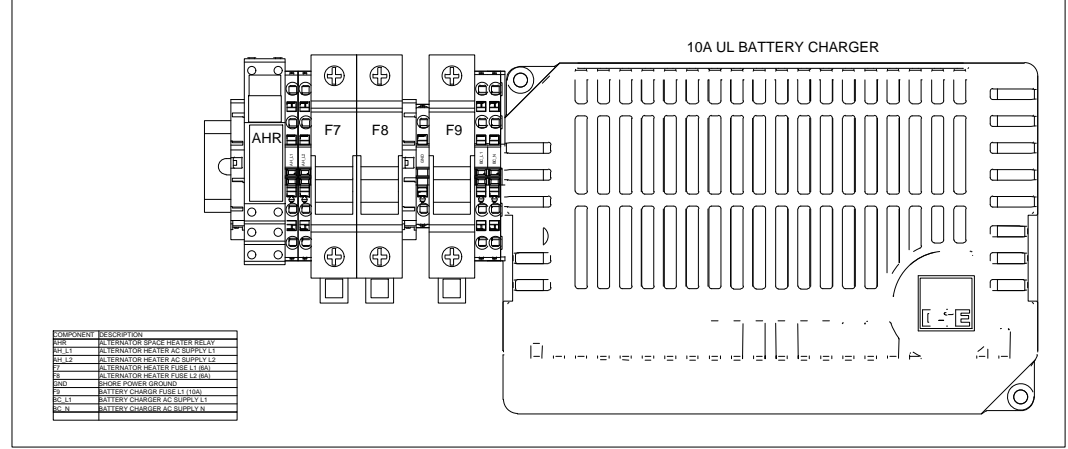
MAIN CUSTOMER RAIL (OPTIONS INCLUDED)



CIRCUIT BREAKER RAIL (OPTIONS INCLUDED)



SHORE POWER RAIL (OPTIONS INCLUDED)



TERMINAL ID	DESCRIPTION
SEN_GND	SEN GROUND FOR ANALOG INPUTS
SEN_STRT	SEN START INDIC
BATT+	BATTERY POSITIVE
BATT-	BATTERY NEGATIVE
BATT	BATTERY POSITIVE 10A FUSED
BATT -	BATTERY NEGATIVE 10A FUSED
STOP_A	STOP AN INDIC
STOP_B	STOP BN INDIC
BATT+	BATTERY POSITIVE 10A FUSED
BATT -	BATTERY NEGATIVE 10A FUSED
PAN+	PAN + COMMB
PAN-	PAN - COMMB
PAN SH+	PAN SH COMMB