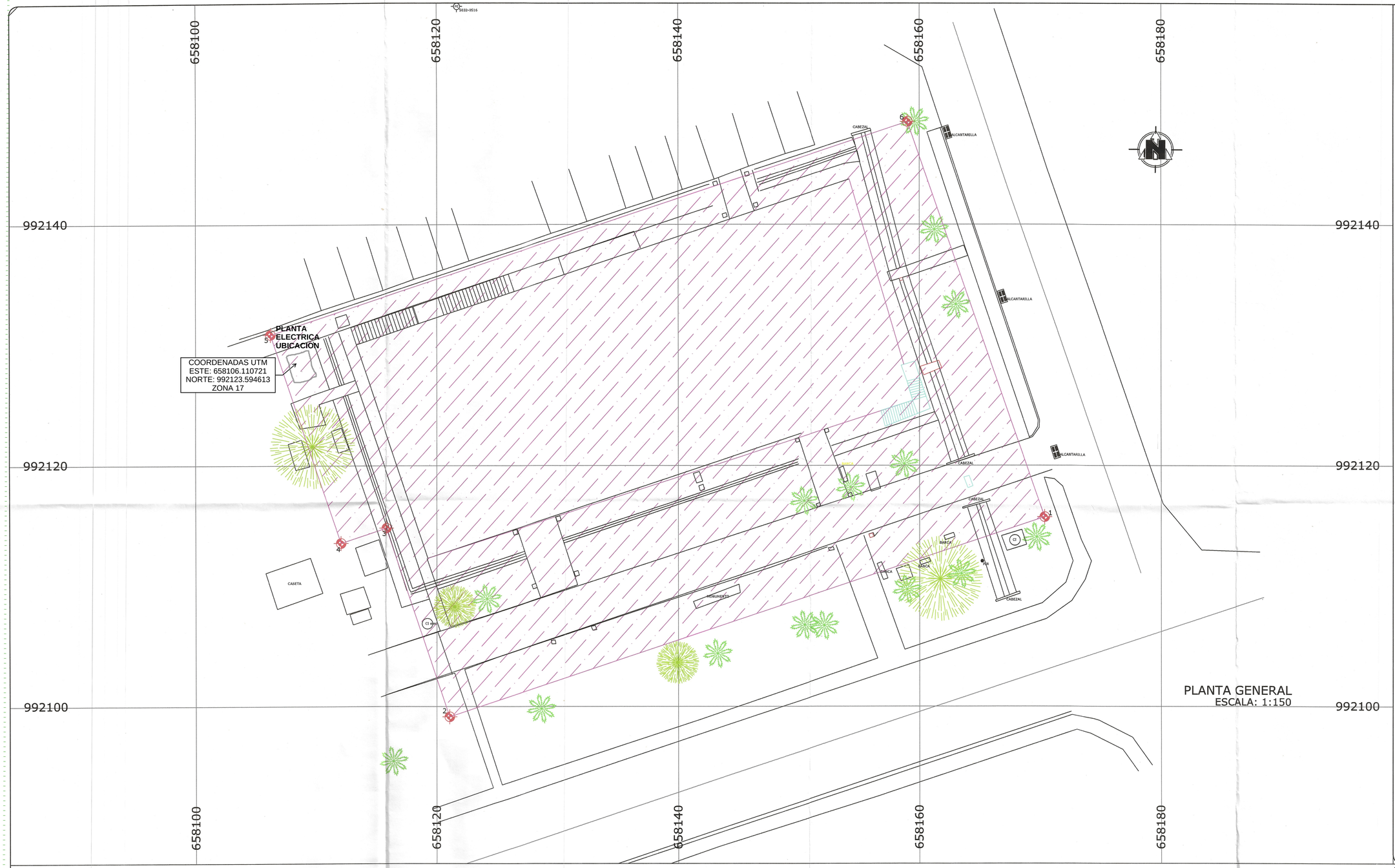


PLANTA GENERAL
ESCALA: 1:150

NOTAS TÉCNICAS:

1. EL TRABAJO SE REALIZÓ BAJO EL SISTEMA MÉTRICO INTERNACIONAL (DISTANCIAS EN METROS).

2. PARA EL POSICIONAMIENTO SE UTILIZÓ UN DGPS SOUTH MODELO GALAXY 3, EN CONFIGURACIÓN RTK CON SEÑAL DE AMARRE CON EL PUNTO AUX-2.

NORTE: 992126.15
ESTE: 658168.24
ELEVACION: 16.609m

3. COORDENADAS DEL POLIGONO EN ESCRITURA

1	658170.359,	992115.711
2	658121.063,	992099.160
3	658115.812,	992114.801
4	658112.020,	992113.528
5	658106.195,	992130.876
6	658159.010,	992148.523

POLIGONO BAJO ESCRITURA
AREA: 1,874.29m2

4. EL TIPO DE NORTE ES DE CUADRICULA.

5. FECHA DEL LEVANTAMIENTO: 28 DE ENERO 2023.

6. SIMBOLOGIA

- PE — POSTE ELECTRICO
- VERTICE POLIGONO
- LE — LETRERO
- PALMA (ALTURA, DIAMETRO)
- CI PLUVIAL (ELEV. TAPA, ELEV. FONDO)
- ARBOL (ALTURA, DIAMETRO)
- EC — MONUMENTO
- CERCA

REPÚBLICA DE PANAMÁ

PROVINCIA: PANAMA
DISTRITO: PANAMA
CORREG: ANCON
LUGAR: ALBROOK

PLANO TOPOGRAFICO AREA TERRESTRE COLINDANTE AL EDIFICIO 809 UBICADO EN ALBROOK

CONSORCIO CONSTRUCTION BUILDINGS

LEVANTADO:
TANIA ROWE

DIBUJADO:
ADALBERTO ALGUERO

FECHA: FEBRERO 2024
ESCALA: 1:250

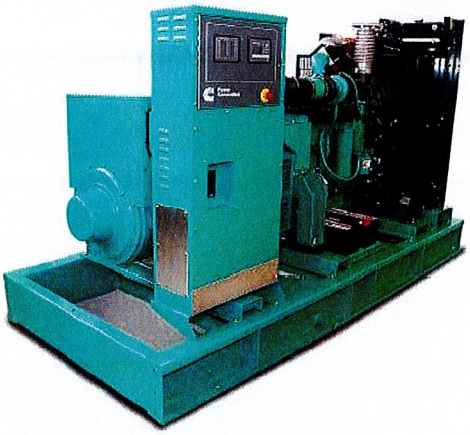
ADALBERTO A. ALGUERO MENDEZ
INGENIERO CIVIL
IDONEIDAD No. 2009-006-098
FIRMA
Ley 15 de 26 de enero de 1959
Junta Técnica de Ingeniería y Arquitectura

Specification sheet

Diesel generator set QSL9 series engine

275 kVA - 330 kVA 50 Hz

250 kWe - 300 kWe 60 Hz



Description

This Cummins® commercial generator set is a fully integrated power generation system, providing optimum performance, reliability and versatility for stationary Standby and Prime Power applications.

Features

Cummins heavy-duty engine - Rugged 4-cycle industrial diesel delivers reliable power, low emissions and fast response to load changes.

Optional Permanent Magnet Generator (PMG) - Offers enhanced motor starting and fault clearing short circuit capability.

Alternator - Several alternator sizes offer selectable motor starting capability with low reactance 2/3 pitch windings, low waveform distortion with non-linear loads and fault clearing short-circuit capability.

Cooling system - Standard integral set-mounted radiator system, designed and tested for rated ambient temperatures, simplifies facility design requirements for rejected heat.

Control system - The PowerCommand® electronic control is standard equipment and provides total system integration, including auto remote start/stop, alarm and status message display.

Enclosures - Optional sound attenuated enclosures.

Warranty - Backed by a comprehensive warranty and worldwide distributor network.

Genset model	Engine model	Standby		Prime		Emissions	Data sheets	
		50 Hz kVA (kWe)	60 Hz kWe (kVA)	50 Hz kVA (kWe)	60 Hz kWe (kVA)	TA Luft/ EU Stage/EPA	50 Hz	60 Hz
C275 D5e	QSL9-G3	275 (220)		250 (200)		Tier 3	D-6375	
C250 D6e	QSL9-G3		250 (313)		225 (281)	Tier 3		D-6378
C330 D5	QSL9-G5	330 (264)		300 (240)			D-6376	
C300 D6	QSL9-G5		300 (375)		270 (338)			D-6379
C330 D5e	QSL9-G7	330 (264)		300 (240)		Tier 3	D-6377	
C300 D6e	QSL9-G7		300 (275)		270 (338)	Tier 3		D-6380

Generator set specifications

Voltage regulation, no load to full load	± 1%
Random voltage variation	± 1%
Frequency regulation	Isochronous
Random frequency variation	± 0.5%

Engine specifications

Design	4 cycle, in-line, turbocharged, charge air cooled
Bore	114 mm (4.5 in.)
Stroke	145 mm (5.7 in.)
Displacement	8.8 liter (543 in^3)
Cylinder block	Cast iron, 6 cylinders
Battery capacity	100 AH
Battery charging alternator	70 amps
Starting voltage	24 volts, negative ground
Fuel system	Bosch HPCR
Fuel filter	Dual filter spin-on with water separator
Air cleaner type	OptiAir™ technology, 2-stage air filters
Lube oil filter type(s)	Venturi Combo Filter Stratapore
Standard cooling system	Cooling system for high ambient temperature

Alternator specifications

Design	Brushless, revolving field
Stator	2/3 pitch
Rotor	Single bearing, flexible disc
Insulation system	Class H
Level of protection	IP23
Exciter type	Self-excited or separately excited by PMG
Phase rotation	A (U), B (V), C (W)
Alternator cooling	Direct drive centrifugal blower fan
AC waveform Total Harmonic Distortion (THDV)	No load <1.5%. Non-distorting balanced linear load <5%
Telephone Influence Factor (TIF)	< 50 per NEMA MG1-22.43
Telephone Harmonic Factor (THF)	<2%

Available voltages

50 Hz Line-Neutral/Line-Line	60 Hz Line-Neutral/Line-Line
• 255/440 • 230/400 • 220/380 • 127/220	• 277/480 • 255/440 • 220/380 • 127/220

Note: Consult factory for other voltages.

Generator set options and accessories[1]

Engine
- 220 ~ 240V thermo-statically controlled coolant heater
- Heavy duty air cleaner

Alternator
- 105 °C rise[2]
- 125 °C rise[2]
- 150 °C rise[2]
- Anti-condensation heater

Control panel
- PowerCommand 1.1 with/ without bargraf
- PowerCommand 2.3 without bargraf
- PowerCommand 3.3 with bargraf

Switch Gear
- ATS Outside of generator (Gtec)

Exhaust system
- Residential grade exhaust silencer (9 dB)
- Critical grade exhaust silencer (29 dB)

Generator set
- Battery
- Battery charger
- Circuit breaker
- In-skid AVM
- Manual / Labels language – English, Portuguese and Spanish

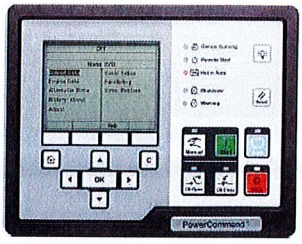
Sound Attenuation
- Enclosure for 85dB
- Inlet / outlet room attenuator for:
  - 65dB
  - 75dB
  - 85dB
- Acoustic door

Remote Monitoring System
- PC500/550 remote monitoring system

Notes:
[1] Some options may not be available on all models - consult factory for availability.
[2] Consult the factory to see available temperature raise for each genset model.

DIRECCION DE INFRAESTRUCTURA DE SALUD
INSPECCIÓN DAI-DIS-MINSA
REVISION PRELIMINAR
APROBADO
Fecha 16.03.2022
Firma

PowerCommand 3.3 control system



The PowerCommand control system is an integrated microprocessor based generator set control system providing voltage regulation, engine protection, alternator protection, operator interface and isochronous governing. Refer to document S-1567 and S-1570 for more detailed information on the control

Masterless Load Demand (MLD) - The controller is capable of smartly managing power from paralleled generators to match varying load patterns.

Power management - Control function provides battery monitoring and testing features and smart starting control system.

Advanced control methodology - Three phase sensing, full wave rectified voltage regulation, with a PWM output for stable operation with all load types.

Regulation compliant - Prototype tested: UL, CSA and CE compliant.

Service - InPower™ PC-based service tool available for detailed diagnostics, setup, data logging and fault simulation.

Easily upgradeable - PowerCommand controls are designed with common control interfaces.

Reliable design - The control system is designed for reliable operation in harsh environment.

Operator panel features

Operator/display functions

- Displays paralleling breaker status
- Provides direct control of the paralleling breaker
- 320 x 240 pixels graphic LED backlight LCD
- Auto, manual, start, stop, fault reset and lamp test/panel lamp switches
- Alpha-numeric display with pushbuttons
- Heated HMI
- LED lamps indicating genset running, remote start, not in auto, common shutdown, common warning, manual run mode, auto mode and stop

Paralleling control functions

- First Start Sensor™ system selects first genset to close to bus
- Phase lock loop synchronizer with voltage matching
- Sync check relay
- Isochronous kW and kVar load sharing
- Enhanced safety features for paralleling generators

Alternator data

- Line-to-Neutral and Line-to-Line AC volts
- 3-phase AC current
- Frequency

  kW, kVar, power factor kVA (three phase and total)

Engine data

- DC voltage
- Lube oil pressure
- Coolant temperature
- Comprehensive FAE data (where applicable)

Other data

- Fault history
- Data logging and fault simulation (requires InPower)

Standard control functions

Digital governing

- Integrated digital electronic isochronous governor
- Temperature dynamic governing

Digital voltage regulation

- Integrated digital electronic voltage regulator
- 3-phase, 4-wire Line-to-Line sensing
- Configurable torque matching

AmpSentry™ AC protection

- AmpSentry protective relay
- Over current and short circuit shutdown
- Over current warning
- Single and three phase fault regulation
- Over and under voltage shutdown
- Over and under frequency shutdown
- Overload warning with alarm contact
- Reverse power and reverse Var shutdown
- Field overload shutdown

Engine protection

- Battery voltage monitoring, protection and testing
- Overspeed shutdown
- Low oil pressure warning and shutdown
- High coolant temperature warning and shutdown
- Low coolant level warning or shutdown
- Low coolant temperature warning
- Fail to start (overcrank) shutdown
- Fail to crank shutdown
- Cranking lockout
- Sensor failure indication
- Full authority electronic engine protection

Control functions

- Time delay start and cool down
- Real time clock for fault and event time stamping
- Cycle cranking
- Load shed
- Remote emergency stop

Ratings definitions

Emergency Standby Power (ESP):

Applicable for supplying power to varying electrical load for the duration of power interruption of a reliable utility source. Emergency Standby Power (ESP) is in accordance with ISO 8528. Fuel Stop power in accordance with ISO 3046, AS 2789, DIN 6271 and BS 5514

Limited-Time Running Power (LTP):

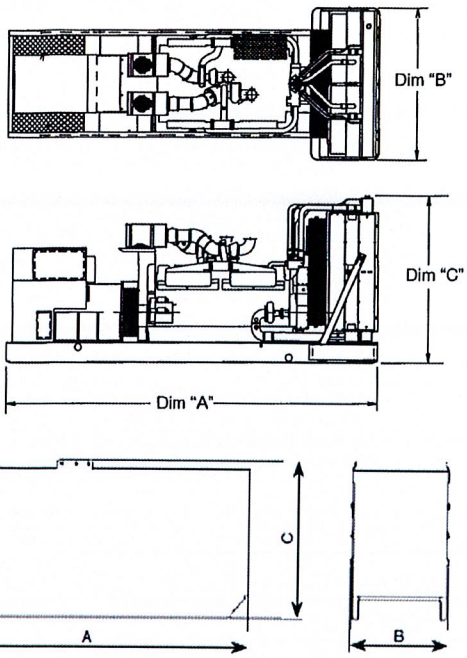
Applicable for supplying power to a constant electrical load for limited hours. Limited Time Running Power (LTP) is in accordance with ISO 8528.

Prime Power (PRP):

Applicable for supplying power to varying electrical load for unlimited hours. Prime Power (PRP) is in accordance with ISO 8528. Ten percent overload capability is available in accordance with ISO 3046, AS 2789, DIN 6271 and BS 5514.

Base Load (Continuous) Power (COP):

Applicable for supplying power continuously to a constant electrical load for unlimited hours. Continuous Power (COP) in accordance with ISO 8528, ISO 3046, AS 2789, DIN 6271 and BS 5514.



Those outlines drawings are to provide representative configuration details for model series only. See respective model data sheet for specific model outline drawing number.

Do not use for installation design.

Open Set model	Dim "A" mm	Dim "B" mm	Dim "C" mm	Set weight dry* kg	Set weight wet* kg
C275D5e	3000	1360	1874	1983	2031
C250D6e	3000	1360	1874	1983	2031
C330D5	3000	1360	1874	2328	2381
C300D6	3000	1360	1874	2328	2381
C330D5e	3000	1360	1874	2333	2380
C300D6e	3000	1360	1874	2294	2341

*Note: Weights represent a set with standard features. See outline drawings for weights of other configurations.

Enclosure model	Dim "A" mm	Dim "B" mm	Dim "C" mm	Set weight dry* kg	Set weight wet* kg
C275D5e	4251	1414	2316	2888	2936
C250D6e	4251	1414	2316	2888	2936
C330D5	4251	1414	2316	3360	3410
C300D6	4251	1414	2316	3360	3410
C330D5e	4251	1414	2316	3238	3285
C300D6e	4251	1414	2316	3199	3246

*Note: Weights represent a set with standard features. See outline drawings for weights of other configurations.

Codes and standards

Codes or standards compliance may not be available with all model configurations – consult factory for availability.

ISO 9001 ISO 14001 BUREAU VERITAS Certification	This product designed and manufactured in facilities certified to ISO 9001 and ISO 14001	**ISO 8528**	Reciprocating internal combustion engine driven generating sets
		NR12	Safety at Work in Machinery and Equipment
TÜVRheinland RETIE CERTIFIED	Colombia's Certification	**ISO 3046**	Reciprocating Internal Combustion Engines
SEC SUPERINTENDENCIA DE ELECTRICIDAD Y COMBUSTIBLES	Chile's Certification	**IEC 60034**	Rotating electrical machines

Warning: Back feed to a utility system can cause electrocution and/ or property damage. Do not connect to any building's electrical system except through an approved device or after building main switch is open.

For more information contact your local Cummins distributor or visit power.cummins.com

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S-6381-EN

REV0619

Generator set data sheet

Model:	**C300D6e**
Frequency:	**60 Hz**
Fuel type:	**Diesel**
kW rating:	**300 Standby** **270 Prime** **218 Continuous**
Emissions level:	**Tier 3**

Exhaust emission data sheet:	
Sound performance data sheet:	
Cooling performance data sheet:	
Genset outline:	**A055D124/A057Y796**

Fuel consumption	**Standby**				**Prime**				**Continuous**			
	kW (kVA)				**kW (kVA)**				**kW (kVA)**			
Ratings	300 (375)				270 (338)				218 (273)			
Load	**1/4**	**1/2**	**3/4**	**Full**	**1/4**	**1/2**	**3/4**	**Full**	**1/4**	**1/2**	**3/4**	**Full**
US gph	7,4	13,7	19,0	23,5	6,3	12,7	17,4	21,1	6,1	11,1	16,1	19,3
L/h	28,0	52,0	72,0	89	24	48	66	80	23	42	61	73

Engine	**Stanby rating**	**Prime rating**	**Continuous rating**
Engine manufacturer	Cummins Inc.		
Engine model	QSL9-G7		
Configuration	6-Cylinder		
Aspiration	Turbocharged/ Charge Air Cooled		
Gross engine power output, kWm (bhp)	346 (464)	312 (419)	263 (353)
BMEP at set rated load, kPa (psi)	2606 (378)	2351 (341)	
Bore, mm (in.)	114 (4,49)		
Stroke, mm (in.)	145 (5,69)		
Rated speed, rpm	1800		
Piston speed, m/s (ft/min)	8,7 (1707)		
Compression ratio	16,1:1		
Lube oil capacity, L (US gal)	26,5 (7)		
Overspeed limit, rpm	2100 ±50		

Fuel flow

Maximum fuel flow, L/hr (US gph)	159 (42)
Maximum fuel inlet restriction, kPa (in Hg)	33,86 (10)
Maximum fuel inlet temperature, °C (°F)	70 (160)
Maximum fuel return line restriction, kPa (in Hg)	33,86 (10)

Air

	Stanby rating	Prime rating	Continuous rating
Combustion air, CFM (L/s)	898,41 (424)	866,62 (409)	
Maximum air cleaner restriction, kPa (in H2O)	6,23 (25)		
Alternator cooling air, m³/min (cfm)	59,4 (2100)		

Exhaust

Exhaust flow at set rated load, CFM (L/s)	2341,36 (1105)	2199,4 (1038)	
Exhaust temperature, °C (°F)	525 (977)	493 (919)	
Maximum back pressure, kPa (in H2O)	6,23 (25)		

Standard set-mounted radiator cooling

Ambient design, °C (°F)	56 (132,8)		
Fan load, kWm (HP)	23,4 (31,36)		
Coolant capacity (with radiator), L (US gal)	29 (7,66)		
Cooling system air flow, m³/min (scfm)	564 (19796,4)		
Total heat rejection, MJ/min (Btu/min)	8,72 (8262)	7,88 (7469)	
Maximum cooling air flow static restriction, kPa (in H2O)	0,12 (0,5)		

Weights

Unit Open dry weight, kgs	2294
Unit Open wet weight, kgs	2341
Unit Enclosed dry weight, kgs	3199
Unit enclosed wet weight, kgs	3246

Derating factors

Standby	Full rated power available up to 1036 m (3400 ft) elevation at ambient temperature of 25 °C (77 °F). Above these conditions, derate by an additional 7% per 305 m (1000 ft), and 12% per 16 °C (18 °F). For other temperature and altitude limits, consult your local Cummins distributor.
Prime	Full rated power available up to 1036 m (3400 ft) elevation at ambient temperature of 25 °C (77 °F). Above these conditions, derate by an additional 7% per 300 m (984 ft), and 19% per 16 °C (18 °F). For other temperature and altitude limits, consult your local Cummins distributor.
Continuous	Full rated power available up to 1829 m (6000 ft) elevation at ambient temperature of 25 °C (77 °F). Above these conditions, derate by an additional 9% per 305 m (1000 ft), and 25% per 16 °C (18 °F). For other temperature and altitude limits, consult your local Cummins distributor.

Ratings definitions

Emergency Standby Power (ESP):	**Limited-Time Running Power (LTP):**	**Prime Power (PRP):**	**Base Load (Continuous) Power (COP):**
Applicable for supplying power to varying electrical load for the duration of power interruption of a reliable utility source. Emergency Standby Power (ESP) is in accordance with ISO 8528. Fuel stop power in accordance with ISO 3046, AS 2789, DIN 6271 and BS 5514.	Applicable for supplying power to a constant electrical load for limited hours. Limited-Time Running Power (LTP) is in accordance with ISO 8528.	Applicable for supplying power to varying electrical load for unlimited hours. Prime Power (PRP) is in accordance with ISO 8528. Ten percent overload capability is available in accordance with ISO 3046, AS 2789, DIN 6271 and BS 5514.	Applicable for supplying power continuously to a constant electrical load for unlimited hours. Continuous Power (COP) is in accordance with ISO 8528, ISO 3046, AS 2789, DIN 6271 and BS 5514.

Alternator data

Voltage	Connection	Temp rise degrees C	Duty[1]	Winding No.	Frame Size
220	Wye, 3Phase	150	S/P/C	311	HC4D
380	Wye, 3Phase	150	S/P/C	311	HC4E
440	Wye, 3Phase	150	S/P/C	311	HC4D
480	Wye, 3Phase	150	S/P/C	311	HC4D

Notes:

[1] Standby (S), Prime (P) and Continuous ratings (C).

Formulas for calculating full load currents:

Three phase output

$$\frac{kW \times 1000}{Voltage \times 1.73 \times 0.8}$$

Warning: Back feed to a utility system can cause electrocution and/or property damage. Do not connect to any building's electrical system except through an approved device or after building main switch is open.

For more information contact your local Cummins distributor or visit power.cummins.com

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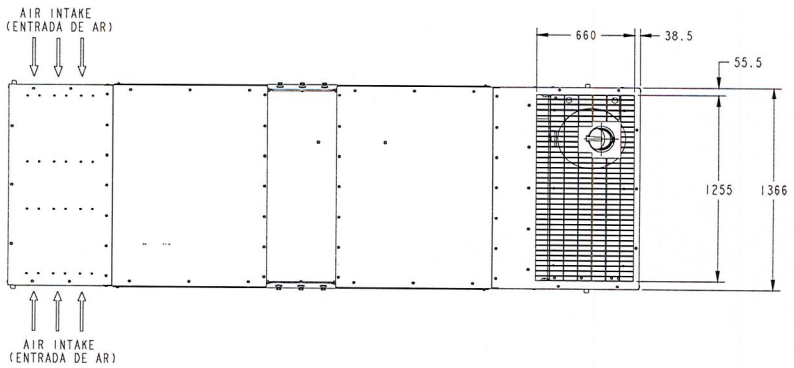
REL NO	REV	NO	REVISION	DRN	CHKR	APVD	DATE
ECO-170163	A	1	PRODUCTION RELEASE	JR	LEP	E.MATSUMURA	31AUG18

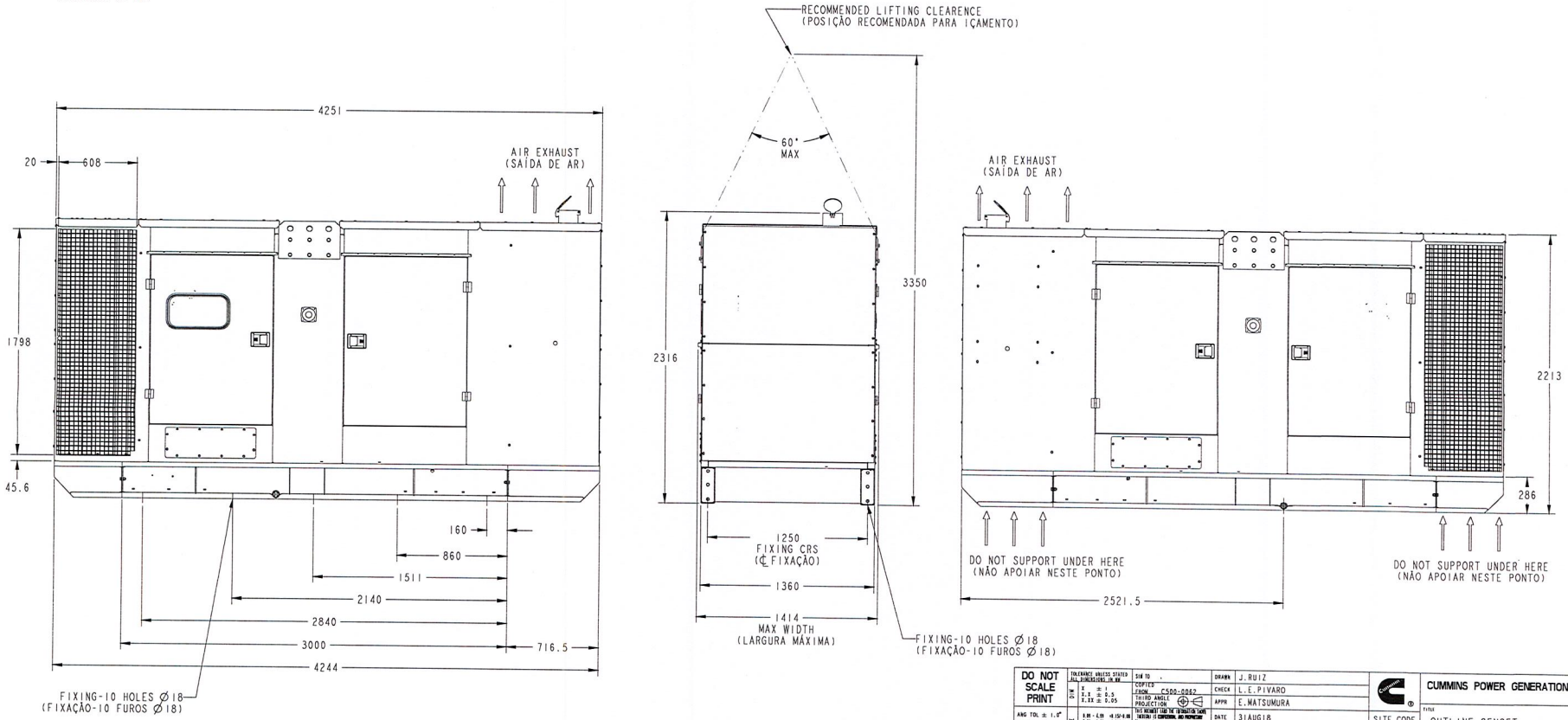


NOTES:

1. DIMENSIONS SHOWN IN "mm".
   (DIMENSÕES INDICADAS EM "mm")
2. FUEL TANK CAPACITY: 400litres.
   (CAPACIDADE DO TANQUE DE COMBUSTÍVEL: 400 litros)
3. WET WEIGHT IN THE TABLES IS WITHOUT FUEL IN TANK.
   (O PESO ÚMIDO APRESENTADO NA TABELA NÃO CONSIDERA O COMBUSTÍVEL)

TABULATION

MODEL (MODELO)	ENGINE (MOTOR)	GENERATOR (GERADOR)	FUEL TANK (TANQUE DE COMBUSTÍVEL)	DRY WEIGHT (PESO SECO) (kg)	WET WEIGHT (PESO ÚMIDO) (kg)	TOTAL WEIGHT-FULL TANK (PESO TOTAL-TANQUE CHEIO) (kg)	CG	
							A	B
C250D6E	QSL9-G3	UC274K	400 L	2888	2936	3276	2760	868
C275D5E	QSL9-G3	UC274K	400 L	2888	2936	3276	2760	868
C300D6E	QSL9-G7	HC4E	400 L	3199	3246	3586	2692	861
C330D5E	QSL9-G7	HC4D	400 L	3238	3285	3625	2715	864

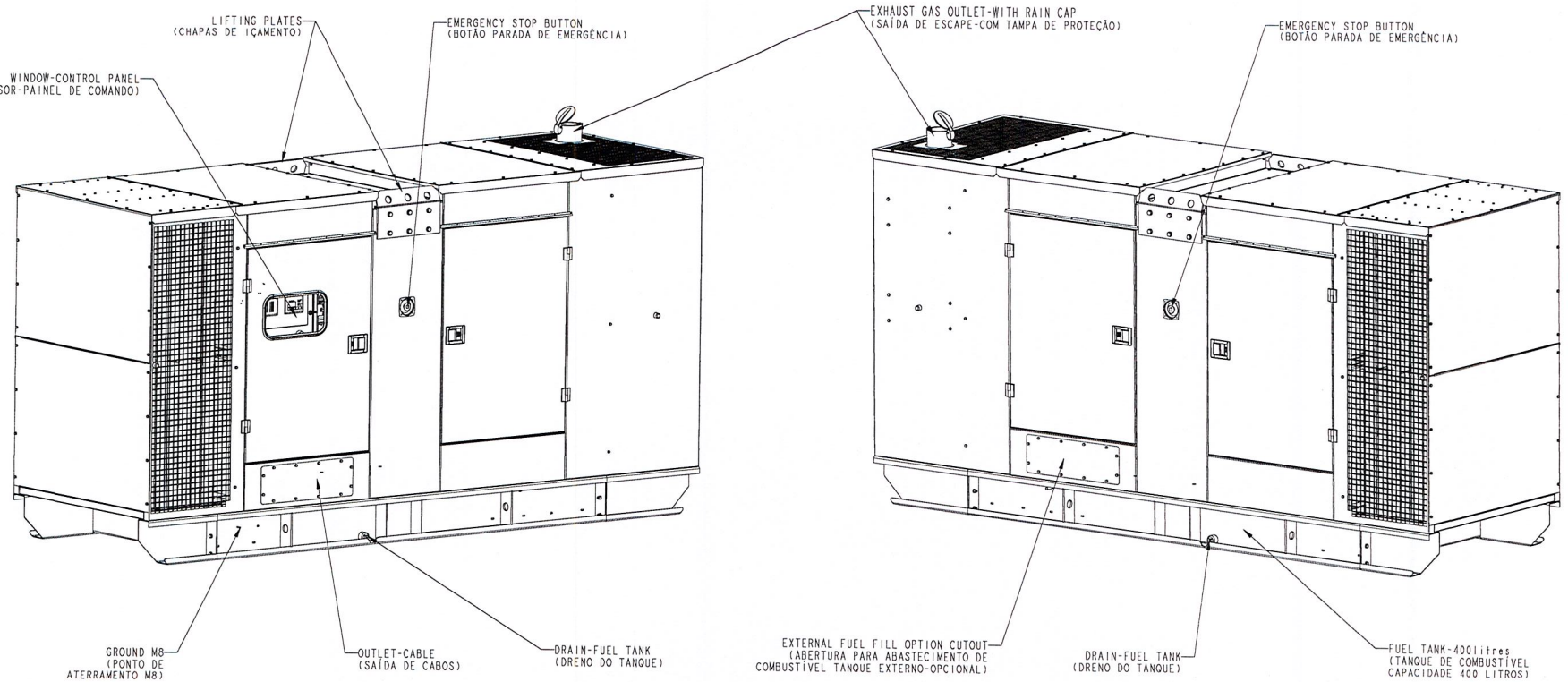


DO NOT SCALE PRINT	TOLERANCE UNLESS STATED ALL DIMENSIONS IN MM	SIM TO .	DRAWN	J.RUIZ	CUMMINS POWER GENERATION
	X ± 1 X.X ± 0.5 X.XX ± 0.05	COPIED FROM C500-0062	CHECK	L.E.PIVARO	
ANG TOL ± 1.0°	0.5 - 3.15 +0.15/-0.00 3.16 - 9.99 +0.20/-0.00 10.00 - 17.99 +0.25/-0.00 18.00 - 31.50 +0.30/-0.00	THIRD ANGLE PROJECTION	APPR	E.MATSUMURA	TITLE OUTLINE,GENSET
DRAWN TO SCALE OF:0.065		THIS DRAWING AND THE INFORMATION CONTAINED IS CONFIDENTIAL AND PROPRIETARY AND SHALL NOT BE DISCLOSED IN WHOLE OR IN PART TO ANY THIRD PARTY, REPRODUCED BY ANY MEANS, OR USED FOR ANY PURPOSE WITHOUT WRITTEN CONSENT OF CUMMINS INC.	DATE	31AUG18	
			FIRST USED ON	QSL9	SITE CODE
					PGB A1 DRW NO A057Y796 CAD SHEET 1 OF 2

Drawing Name: A057Y797 Revision: A
Part Name: A057Y796 Revision: A
ECO-170163 Sheet 1 of 3

PTC® Creo® Parametric

REL NO	REV	NO	REVISION	DRN	CHKR	APVD	DATE
ECO-170163	A	1	PRODUCTION RELEASE	JR	LEP	E.MATSUMURA	31AUG18



DO NOT SCALE PRINT	TOLERANCE UNLESS STATED ALL DIMENSIONS IN MM	SIM TO .	DRAWN	J.RUIZ	CUMMINS POWER GENERATION
	X ± 1 X.X ± 0.5 X.XX ± 0.05	COPIED FROM C500-0062	CHECK	L.E.PIVARO	
ANG TOL ± 1.0°		THIRD ANGLE PROJECTION	APPR	E.MATSUMURA	TITLE OUTLINE,GENSET
DRAWN TO SCALE OF: 0.065	0.05 - 6.00 ±0.15 (±0.06) 6.00 - 10.00 ±0.20 (±0.08) 10.00 - 17.00 ±0.25 (±0.10) 17.00 - 26.00 ±0.30 (±0.12)	THIS DRAWING IS CONFIDENTIAL AND PROPRIETARY AND SHALL NOT BE DISCLOSED TO OTHERS IN WHOLE OR IN PART, OR USED FOR ANY PURPOSE WITHOUT WRITTEN CONSENT OF CUMMINS INC.	DATE	31AUG18	SITE CODE
			FIRST USED ON	QSL9	PGB DRW SIZE A1 DRW NO A057Y796 CAD SHEET 2 of 2

Drawing Name: A057Y797 Revision: A
Part Name: A057Y796 Revision: A
ECO-170163 Sheet 2 of 3

Part A057Y796 A

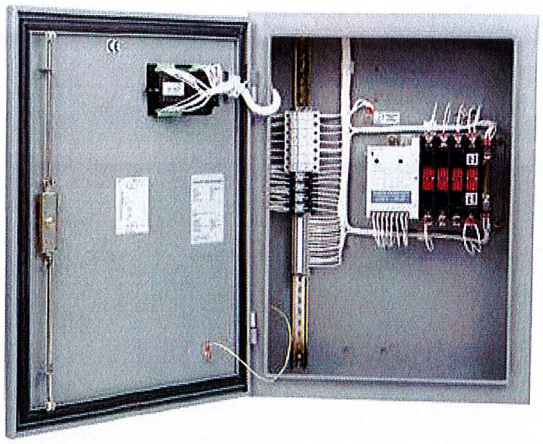
Description	Legacy Name	External Regulations	Application Status	Release Phase Code	Security Classification	Alternates
OUTLINE,GENSET	A057Y796	No External Regulations Apply	Production Only	Production	Confidential	

Part Specifications :A057Y796 A

Name	Description	Legacy Name
A030B356	SPECIFICATION,MATERIAL	CES10903
A057Y797	DRAWING,ENGINEERING	A057Y797

Specification sheet

GTEC
Transfer switch open transition
40 – 2000 amp



Description

GTEC transfer switches combine reliability and flexibility in a small, economical package for transferring loads between a utility and a generator set, or between two generators.

The microprocessor control monitors utility and emergency Standby generator power. When utility power fails or is unsatisfactory, the control starts the generator, then transfers the load from the utility to the generator. When stable utility power returns, the switch automatically transfers the load back to the utility.

For genset-to-genset applications, the generator set that is connected to the utility side of the control is the lead genset. If the lead generator set goes down or is taken offline, the transfer switch starts the second generator set and transfers the load. The control can be programmed to alternate between the two generator set at a set interval up to 300 hours.

The fully integrated controller is designed for practical functionality, with LED indicators and digital push-buttons for ease of operator use.

Features

Microprocessor control: Easy-to-use, standard control. LED displays indicate transfer switch status. Pushbuttons allow operator to activate test, exercise timing and transfer mode.

Programmed transition: Open transition timing can be adjusted to completely disconnect the load from both sources for a programmed time period. Recommended for inductive loads to prevent nuisance tripping.

Advanced transfer switch mechanism: True transfer switch mechanism with break-before-make action.

Manual operation: Standard removable handle can be used to manually operate the switch after the power source has been completely disconnected.

Multi-voltage rating: The multiple selectable voltage setting is field adjustable, and allows GTEC to be applied to voltage ranging from 110 V to 277 V without using external transformers.

Positive interlocking: Mechanical and electrical interlocking prevent source-to-source connection through the power or control wiring.

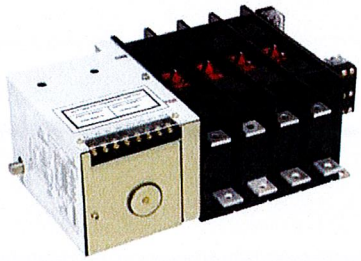
Main contacts: Silver alloy contacts with multi-leaf arc chutes are rated for 100% load interruption. They require no routine contact maintenance and provide 100% Continuous current ratings.

Easy to service: Single-plug harness connection and compatible terminal markings simplify servicing. Access space is ample. Door-mounted controls are field-programmable; no tool is required.

Complete product line: Cummins® offers a wide range of equipment, accessories and services to suit virtually any backup power application.

Warranty and service: Products are backed by a comprehensive warranty and a worldwide network of distributors with factory-trained service technicians.

Transfer switch mechanism



- A powerful, economical AC solenoid operates GTEC transfer switches.
- Independent break-before-make action is used for 2-pole, 3-pole and 4-pole switches. On 4-pole/switched neutral switches, this action prevents the objectionable ground currents and nuisance ground fault tripping that can result from overlapping designs.
- A mechanical interlock prevents simultaneous closing of normal and emergency contacts.
- Electrical interlocks prevent simultaneous closing signals to normal and emergency contacts and interconnection of normal and emergency sources through the control wiring.
- High-pressure silver alloy contacts resist burning and pitting. Separate arcing surfaces further protect the main contacts. Contacts are mechanically held in both normal and emergency positions for reliable, quiet operation.
- Contact wear is reduced by multiple leaf arc chutes that cool and quench the arcs. Barriers separate the phases to prevent interphase flashover. Protective covers for lugs are available.

Specifications

Voltage rating	Up to 480 V AC, 50 or 60 Hz.
Arc interruption	Multiple leaf arc chutes provide dependable arc interruption.
Neutral bar	A full current-rated neutral bar is Standard on enclosed 3-pole transfer switches.
Auxiliary contacts	Two isolated contacts (one for each source) indicating switch position are provided for customer use. Contacts are normally open, and close to indicate connection to the source. Wired to terminal block for easy access. Rated at 5 amps Continuous at 100 V AC or 2.5 amps Continuous at 200 V AC.
Operating temperature	-30° C (-22° F) to 60° C (140° F).
Storage temperature	-40° C (-40° F) to 60° C (140° F).
Humidity	Up to 95% at 20° C.
Altitude	Up to 2,000 m (6,561 ft) without derating.
Total transfer time (source-to-source)	Will not exceed 100 msec with normal voltage applied to the actuator and without programmed transition enabled.
Manual operating handle	Transfer switches are equipped with a removable operating handle which allows operation during servicing to facilitate troubleshooting with sources of power disconnected.

Certifications

40-2000 amp switches are third-party certified as meeting IEC 60947-6-1 AC31A.

All switches bear the CE mark.

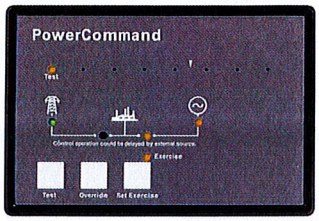
40-1250 amp switches are CCC certified by the China Quality Certification Centre.

This transfer switch is designed and manufactured in facilities certified to ISO9001.

Our energy working for you.™

Microprocessor control

- Simple, easy-to-use control provides transfer switch information and operator controls.
- LED lamps for source availability and source connected indication, exercise mode, and test mode. LED status lamps also provided for control set-up and configuration.
- Pushbutton controls for initiating test, overriding time delays and setting exercise time.
- Field-configurable for open or programmed transition.
- Integral exerciser clock.
- Control is prototype-tested to withstand voltage surges per EN60947-6-1.
- Gold-flashed generator start contacts.



Control functions

Under-voltage sensing: All phases on the normal source, and single phase on generator source.

Normal source pickup: adjustable 80-95%

Dropout: adjustable 70-90% of nominal voltage

Generator source pickup: 90%

Dropout: 75% of nominal voltage

Over-voltage sensing: All phases on the normal source.

Source pickup: 120%

Dropout: 125%

Under-frequency sensing: Default setting is OFF.

Generator source pickup: 90% of nominal frequency

Dropout: 85% of nominal frequency

Normal source pickup: 80%

Dropout: 70%

Over-frequency sensing: Default setting is OFF

Normal source pickup: 130%

Dropout: 140%.

Genset-to-genset sensing: Same functions as above, for lead and secondary generators.

Exercise mode: The control exerciser clock can be set to operate on a 7, 14, 21 or 28-day cycle with a fixed exercise period duration of 20 minutes. A convenient 12-hour offset feature offsets the exercise time by 12 hours, without having to reprogram the timer. The control can be programmed to exercise the generator with or without load.

Test mode: When manually or remotely activated from the control panel, the control will start the generator and run until stopped. Can be configured to test with or without load.

Transition modes

Open transition/programmed: Controls the time required for the device to switch from source to source, so load-generated voltages decay to a safe level before connecting to an energized source. Recommended method of dealing with significantly inductive loads to prevent nuisance tripping. Adjustable 0-10 seconds, default 0 seconds.

Open transition/in-phase: Initiates open transition transfer when in-phase monitor senses both sources are in phase. Operates in a break-before-make sequence. Includes ability to enable programmed transition as a back-up. If sources are not in phase within 120 seconds, the system will transfer using programmed transition.

Time-delay functions

Engine start: Prevents nuisance genset starts due to momentary power variation or loss.

Adjustable 0-10 seconds, default 3 seconds.

Transfer normal to emergency: Allows genset to stabilize before application of load. Prevents power interruption if normal source variation or loss is momentary. Allows staggered transfer of loads in multiple transfer switch systems. For genset-to-genset applications, delays transfer of load from lead to secondary generator. Adjustable 0-300 seconds, default 5 seconds.

Re-transfer emergency to normal: Allows the utility to stabilize before re-transfer of load. Prevents needless power interruption if return of normal source is momentary. Allows staggered transfer of loads in multiple transfer switch systems. For genset-to-genset applications, delays re-transfer of load from secondary back to lead generator.

Adjustable 0-30 minutes, default 10 minutes.

Engine stop: Maintains availability of the genset for immediate reconnection if the normal source fails shortly after transfer. Allows gradual genset cool down by running unloaded.

Adjustable 0-30 minutes, default 10 minutes.

Elevator signal relay: Requires optional elevator signal relay (M032). Delays transfer for specified interval to prevent a power interruption during elevator operation.

Options

Elevator signal relay (M032): Provides relay output contacts for sending a load-disconnect warning signal to the elevator control. Transfer/re-transfer delay time is selectable for 0, 1, 2, 3, 5, 30, 120 or 300 seconds.

Programmable exerciser clock (J030): Provides a fully-programmable 7-day clock to provide greater flexibility in scheduling exercise periods than standard integral exerciser. Peaking function feature allows for generator operation during periods of high utility rates.

Manual restore (S006): Provides a key switch on the front door to allow the operator to control when the switch transfers to the available normal source.

Electrical performance

The transfer switches listed below must be protected by either circuit breakers or fuses. The following WCR ratings are available when protecting the transfer switch with a circuit breaker or fuse. Short circuit ratings are stated in symmetrical RMS ampere.

Fuse protection

Transfer switch ampere	Overload current (make-break test)	Endurance cycles at current (operational performance capability)	WCR at 480 V max with current limiting fuse	Max fuse, size and type
40, 63	95 amps	6000 at 63 amps	26,000 amps	RT16NT-00 63 amp IEC NH Fuse type
100, 125	188 amps	6000 at 125 amps	26,000 amps	RT16NT-00 125 amp IEC NH Fuse type
160, 200, 225, 250	375 amps	6000 at 125 amps	38,000 amps	RT16NT-2 250 amp IEC NH Fuse type
350, 400, 500	750 amps	1000 at 0 amps 2000 at 500 amps	50,000 amps	RT16NT-3 500 amp IEC NH Fuse type
630, 800	1200 amps	1000 at 0 amps 2000 at 800 amps	55,000 amps	RT16NT-4 800 amp IEC NH Fuse type
1000, 1250	1875 amps	1500 at 0 amps 1500 at 1250 amps	65,000 amps	RT16NT-4 1250 amp IEC NH Fuse type
1600, 2000	3000 amps	500 at 0 amps 500 at 2000 amps	120,000 amps	KRP-C 3000 amp Class L Fuse type

Transfer switch ampere	Max breaker rating	Specified circuit breaker protection manufacturer, model and type
40, 63	63 A	Schneider: NSX160FTM, EZD100, NSD100F, NSD100K Siemens: 3VU, 3RV1, 3VT1 ABB: Isomax S1, S2X80, Sim100
100, 125	125 A	Schneider: NSX160FTM, NSD160K Siemens: 3VL, 3VT1 ABB: Isomax S2, Isomax S3, S3X, Sim250
160, 200, 225, 250	250 A	Schneider: NSX250NTM, NSD250K Siemens: 3VL, 3VT2 ABB: Isomax S3, S4X, Sim250
350, 400, 500	500 A	Schneider: NSX630NTM, NSD630K Siemens: 3VL,3VT3 ABB: Isomax S4, S6X, Sim500
630, 800	800 A	Schneider: MT08, MT10, NW08 Siemens: 3VL, 3WT, 3VT4 ABB: Isomax S6, E1B, E1N, E1S
1000, 1250	1250 A	Schneider: MT12, NW16 Siemens: 3VL, 3WT, 3VT5 ABB: Isomax S7, E2B, E2L
1600, 2000	2000 A	Schneider: MT20, MT25, NW20, NW25 Siemens: 3WT ABB: E1N, E2N, E2S, E3S

Enclosures

The transfer switch and control are mounted in a key-operated locked enclosure. Enclosures meet IEC 60947-6-1 standard. 40-500 amp switches are front-connected. 630-2000 amps are rear-connected. Standard enclosure is grey. Green is available as an option (P152).

Cable tie bars are available to relieve stress on lugs for switches smaller than 500 amps.

Dimensions: IP32

Amp rating	Height		Width		Door closed		Door open		Weight		Outline drawing
	in.	mm	in.	mm	in.	mm	in.	mm	lb	kg	
40, 63	31.4	800	23.6	600	8.8	226	31.4	800	101.4	46	0300-6004
100, 125	31.4	800	23.6	600	8.8	226	31.4	800	105.8	48	0300-6004
160, 200, 225, 250	39.3	1000	31.4	800	8.8	226	39.3	1000	125.6	57	0300-6005
350, 400, 500	39.3	1000	31.4	800	8.8	226	39.3	1000	143.3	65	0300-6005
630, 800	53.9	1370	29.2	742	24.8	631	53.0	1348	385.8	175	0300-6006
1000, 1250	53.9	1370	29.2	742	24.8	631	53.0	1348	405.6	184	0300-6006
1600, 2000	78.7	2000	39.4	1000	44.3	1126	83.7	2126	888.9	400	A0281839

Dimensions: IP54

Amp rating	Height		Width		Door closed		Door open		Weight		Outline drawing
	in.	mm	in.	mm	in.	mm	in.	mm	lb	kg	
40, 63	34.0	864	23.5	598	11.6	296	31.0	788	110	50	0300-4559
100, 125	34.0	864	23.5	598	11.6	296	31.0	788	110	52	0300-4559
160, 200, 225, 250	41.9	1064	31.6	804	11.6	296	39.0	991.8	143.3	65	0300-4560
350, 400, 500	41.9	1064	31.6	804	11.6	296	39.0	991.8	160.9	73	0300-4560
630, 800	53.9	1370	29.5	750	26.6	676	51.9	1319		188	0300-4561
1000, 1250	53.9	1370	29.5	750	26.6	676	51.9	1319	414.5	188	0300-4561
1600, 2000	78.9	2004	39.2	996	45.3	1150	83.7	2126	892.9	405	A026M050

Submittal detail: options

Current ratings:

- 40
- 63
- 100
- 125
- 160
- 200
- 225
- 250
- 350
- 400
- 500
- 630
- 800
- 1000
- 1250
- 1600
- 2000

Voltage ratings:

- R060* 110 to 139
- R061* 220 to 240
- R062* 255 to 277
- R063 110 to 277

Pole configuration:

- A027 Poles - 2 (solid neutral)
- A028 Poles - 3 (solid neutral)
- A029 Poles - 4 (switched neutral)

Frequency:

- A044 60 Hertz
- A045 50 Hertz
- A086-7 50/60 Hertz

Application:

- A035 Utility-to-genset
- A037 Genset-to-genset

* Only available with L-L controller option.

System Options:

- A041 Single phase, 2-wire or 3-wire
- A042 Three phase, 3-wire or 4-wire

Enclosure:

- B004 Open construction: no enclosure - includes automatic transfer switch and controls (1600— 2000 amp open construction not available)
- B901 IP32 general purpose indoor
- B014 IP54 general purpose outdoor
- P152 Optional paint colour: Onan green
- M048 Protective shield

Control voltage:

- M033 12V, Genset starting voltage
- M034 24V, Genset starting voltage

Control options:

- J030 Add-on programmable exercisor clock
- M032 Relay signal module
- S006 Manual restore switch

Battery chargers:

- K001 2 amps, 12/24 volts

Auxiliary relays:

Relays are factory installed. All relays provide two sets of form C (DPDT) contacts rated 5 amps at 250VAC. Relay terminals accept one 0.75 mm to two 4 mm wires per terminal.

- L101 24 V DC coil: installed, not wired (for customer use).
- L102 24 V DC coil: emergency position - relay energized when GTEC in Source 2 (emergency) position.
- L103 24 V DC coil: normal position - relay energized when GTEC in Source 1 (normal) position
- L201 12 V DC coil: installed, not wired (for customer use)
- L202 12 V DC coil: emergency position - relay energized when GTEC in Source 2 (emergency) position
- L203 12 V DC coil: normal position - relay energized when GTEC in Source 1 (normal) position

Warranty:

- Warranty: 12 months from commissioning to a maximum 18 months after date of sale.

Accessories:

- AC-176 Specification sheet

For more information contact your local Cummins distributor or visit power.cummins.com

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SG-1478 (10/17)