DESERT MACHINERY
آليات الصحراء

CUMMINS GENERATOR

Stand by: 250 kva (200 kw)

Prime: 225 KVA (180 KW)

QSB7-G5

Emissions Compliance:
EU Stage IIIA at 50 Hz
EPA NSPS Stationary Emergency Tier 3

> Specification sheet

Our energy working for you.™

Description

The QSB7 incorporates the latest diesel engine technology, including a high pressure common rail fuel system for greater fuel efficiency, lower noise and reduced emissions.

CE	This engine has been built to comply with CE certification.
ISO 9001	This engine has been designed in facilities certified to ISO9001 and manufactured in facilities certified to ISO9001 or ISO9002.

Features

Full-Authority Electronic Controls - Optimize engine operation and deliver critical information for controlling costs, reducing maintenance and seamless integration with other components.

Holset HX35 Wastegated Turbo - Wastegated design optimizes transient response.

Low-Maintenance Fuel Filter Assembly - The fuel filter incorporates an integral water separator and water-in-fuel sensor; 500-hour filter life with easy top-load replacement using standard Fleetguard® filters.

Coolpac Integrated Design - Products are supplied complete with cooling package and air cleaner kit for a complete power package. Each component has been has been specifically developed and rigorously tested for G-Drive products, ensuring high performance, durability and reliability.

Service and Support - G-Drive products are backed by an uncompromising level of technical support and after sales service, delivered through a world class service network.

1500 rpm (50 Hz Ratings)

Gross Engine Output			Net Engine Output			Typical Generator Set Output					
Standby	Prime	Base	Standby	Prime	Base	Standby (ESP)		Prime (PRP)		Base (COP)	
kWm/BHP			kWm/BHP			kWe	kVA	kWe	kVA	kWe	kVA
213/285	182/224	152/204	197/264	168/225	138/185	176	220	160	200	128	160

1800 rpm (60 Hz Ratings)

Gross Engine Output			Net Engine Output			Typical Generator Set Output					
Standby	Prime	Base	Standby	Prime	Base	Standby (ESP)		Prime (PRP)		Base (COP)	
kWm/BHP			kWm/BHP			kWe	kVA	kWe	kVA	kWe	kVA
242/324	208/279	164/220	225/302	194/260	150/201	200	250	180	225	140	175

Our energy working for you.™

www.cumminsgdrive.com

General Engine Data

Type	4-cycle, in-line, 6-cylinder diesel
Bore mm	107 mm (4.21 in.)
Stroke mm	124 mm (4.88 in.)
Displacement Litre	6.69 litre (408 $in.^3$)
Cylinder Block	Cast iron, 6 cylinder
Battery Charging Alternator	100 amps
Starting Voltage	12 volt, negative ground
Fuel System	Direct injection
Fuel Filter	Spin on fuel filters with water separator
Lube Oil Filter Type(s)	Spin on full flow filter
Lube Oil Capacity (l)	18.9
Flywheel Dimensions	SAE2

Coolpac Performance Data

Cooling System Design	Air-Air Charge Cooled
Coolant Ratio	50% ethylene glycol; 50% water
Coolant Capacity (l)	26
Limiting Ambient Temp.** (°C)	60 (50 Hz); 60 (60 Hz)
Fan Power (kWm)	6.9 (50Hz); 12.7 (60Hz)
Cooling System Air Flow (m^3/s)**	5.3 (50 Hz); 6.32 (60 Hz)
Air Cleaner Type	Light duty dry replaceable element with restriction indicator

** @ 13 mm H^20

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, DIN6271 and BS 5514.

Weight & Dimensions

Length	Width	Height	Weight (dry)
mm	mm	mm	kg
1688	862	1190	585

Fuel Consumption 1500 (50 Hz)

%	kWm	BHP	L/ph	US gal/ph
Standby Power				
100	213	285	51	13.4
Prime Power				
100	182	244	45	11.9
75	137	183	36	9.5
50	91	122	26	6.9
25	46	61	13	3.4
Continuous Power				
100	152	204	40	10.5

Fuel Consumption 1800 (60 Hz)

%	kWm	BHP	L/ph	US gal/ph
Standby Power				
100	242	324	59	15.5
Prime Power				
100	208	279	50	13.3
75	156	209	40	10.6
50	104	140	30	7.8
25	52	70	15	4
Continuous Power				
100	164	220	42	11

Cummins G-Drive Engines

Asia Pacific
10 Toh Guan Road
#07-01
TT International Tradepark
Singapore 608838
Phone 65 6417 2388
Fax 65 6417 2399

Europe, CIS, Middle East and Africa
Manston Park Columbus Ave
Manston Ramsgate
Kent CT12 5BF. UK
Phone 44 1843 255000
Fax 44 1843 255902

Latin America
Rua Jati, 310, Cumbica
Guarulhos, SP 07180-900
Brazil
Phone 55 11 2186 4552
Fax 55 11 2186 4729

Mexico
Cummins S. de R.L. de C.V.
Eje 122 No. 200 Zona Industrial
San Luis Potosí, S.L.P. 78090
Mexico
Phone 52 444 870 6700
Fax 52 444 870 6811

North America
1400 73rd Avenue N.E.
Minneapolis, MN 55432
USA
Phone 1 763 574 5000
USA Toll-free 1 877 769 7669
Fax 1 763 574 5298

Our energy working for you.™

www.cummingsgdrive.com

Date: 09/03/2021 V6.05 - 02/2021

Project Manager : NHS

Moteurs Leroy-Somer
Electric Power Generation - Orleans
Rue de la Burelle - 45800 - Saint Jean de Braye - France

NS

Main data

TAL 0 C

Generator type:	**TAL044 M / 4p**				
Power:	228,0	kVA	182,4 kWe	195,3	kWm
Voltage:	380	V	Star serial		
Rated voltage range:	+5/-5%				
Power factor - Lagging:	0,8				
Frequency:	60	Hz			
Speed:	1800	rpm			
Nominal current:	346	A			
Winding type:	p2/3				
Classes (Insulation / Temperature Rise):	H / H				
Ambient temperature:	40	°C			
Altitude:	1 000	m			

Installation

IEC Quantity **1**

Client:	**DESERT MACHINERY**
Prime mover:	Reciprocating engine
Manufacturer:	John Deere
Type:	TBC
Duty:	Base Rating

Mechanical construction

IM1201

Type of construction:	Single bearing
Mounting arrangement:	Horizontal Axis
Direction of rotation:	Clockwise (seen when facing the drive end - DE)
Bearing type:	Anti-friction
Bearing Lubrication:	Greased for life
Bearing insulation:	Not insulated
Flector type:	Cylindrical with keyway
Balancing - Class (ISO 1940/1):	Half key - G2,5 (std)
Flange:	SAE 1
Shaft height:	225 mm
Width:	279 mm

Additional specificities

Stabilized Runaway speed:	2 250	rpm - 2 min.

Cooling Method

IC01

Degree of protection:	IP23
Coolant:	Air / Temperature: 40 °C
Air quality:	Clean
Ventilation (internal):	Self-ventilated
Filters:	Without
Ducting for air inlet:	No
Ducting for air outlet:	No

ALTERNATOR TECHNICAL DESCRIPTION
TAL044 M / 4p

LS Reference: NS673-03-2021-1

Connection, Excitation & Regulation

Parallel operation:	Island mode (0F) - no //CT
Excitation:	Self-excited - Brushless - Type: Shunt
Sustained 3-phase Isc:	No
AVR type:	R120
AVR location:	In terminal box
Alternator Voltage sensing:	In terminal box

Terminal box

Power connection:	4 connectors (brought out neutral)
Main Terminal box location:	1 terminal box on the top
Line side outlet:	Left hand side (seen when facing the drive end - D)
Gland plate:	Standard, Undrilled
	-

Protection and measurement accessories

Temperature detection

Various items

Paint:	Other - John Deere beige
Documentation:	PDF manual
Documentation Language:	English

Controls

ALTERNATOR ELECTRICAL DATA
TAL044 M / 4P

LS Reference: NS673-03-2021-1

Date: 09/03/2021 V6.05 - 02/2021

Main data: C

Power:	**228,0**	kVA	**182,4**	kWe	**195,3**	kWm
Voltage:	**380**	V	Frequency:		**60**	Hz
Rated voltage range:	+5% / -5%		Speed:		1800	rpm
Power factor - Lagging:	0,8					
Nominal current:	346	A	Phases		3	
Insulation / Temperature rise:	H / H		Connexion		Star serial	
Cooling:	**IC01**		Winding type:		p2/3	
			Winding:		8S - 6 Wires	
Ambient temperature:	40	°C				
Altitude:	1000	m	Overspeed (rpm)		2250	
Duty: Base Rating			Total Harmonic Distortion (THD) < 5%			

Efficiency (Base 182,4 kWe) IEC

	25%	50%	75%	**100%**	110%
Power factor - Lagging: 0,8	92,24	94,11	93,99	**93,38**	93,07
Power factor - Lagging: 1	93,05	95,31	95,60	**95,41**	95,27

Reactances (%) - (Base 228 kVA)

Unitary impedance (1 per unit) = 0,633333 ohms

		Direct axis *Unsaturated*	Direct axis *Saturated*	Quadrature axis *Unsaturated*	Quadrature axis *Saturated*
Synchronous reactance	Xd	402	348	Xq 205	177
Transient reactance	X'd	32,9	19,7	X'q 205	177
Subtransient reactance	X"d	19,9	11,9	X"q 38,5	23,1
Negative sequence reactance	X2	29,2	17,5		

X0	0,8	Zero sequence reactance
Xl	9,9	Stator leakage reactance
Xr	24,4	Rotor leakage reactance
Kc	**0,29**	Short-circuit ratio

Time constants (s)

		Direct axis	Quadrature axis
Open circuit transient time constant	T'do	2,03	T'qo NA
Short-circuit transient time constant	T'd	0,166	T'q NA
Open circuit subtransient time constant	T"do	0,017	T"qo 0,048
Subtransient time constant	T"d	0,010	T"q 0,009

Ta 0,015 Armature time constant

Resistances (%)

Ra	5,2	Armature resistance	R0	0,3 Zero sequence resistance
X/R		X/R ratio (without unit)	R2	5,8 Negative sequence resistance

#VALEUR!

Rating is provided for the specified temperature rise, by resistance measurement according to IEC60034-1

According to: I.E.C. 60034.1 - 60034.2 - NEMA MG 1-32

Products and materials shown in this catalogue may, at any time, be modified in order to follow the latest technological developments,

#REF!

ALTERNATOR MAIN CURVES
TAL044 M / 4P

LS Reference: NS673-03-2021-1

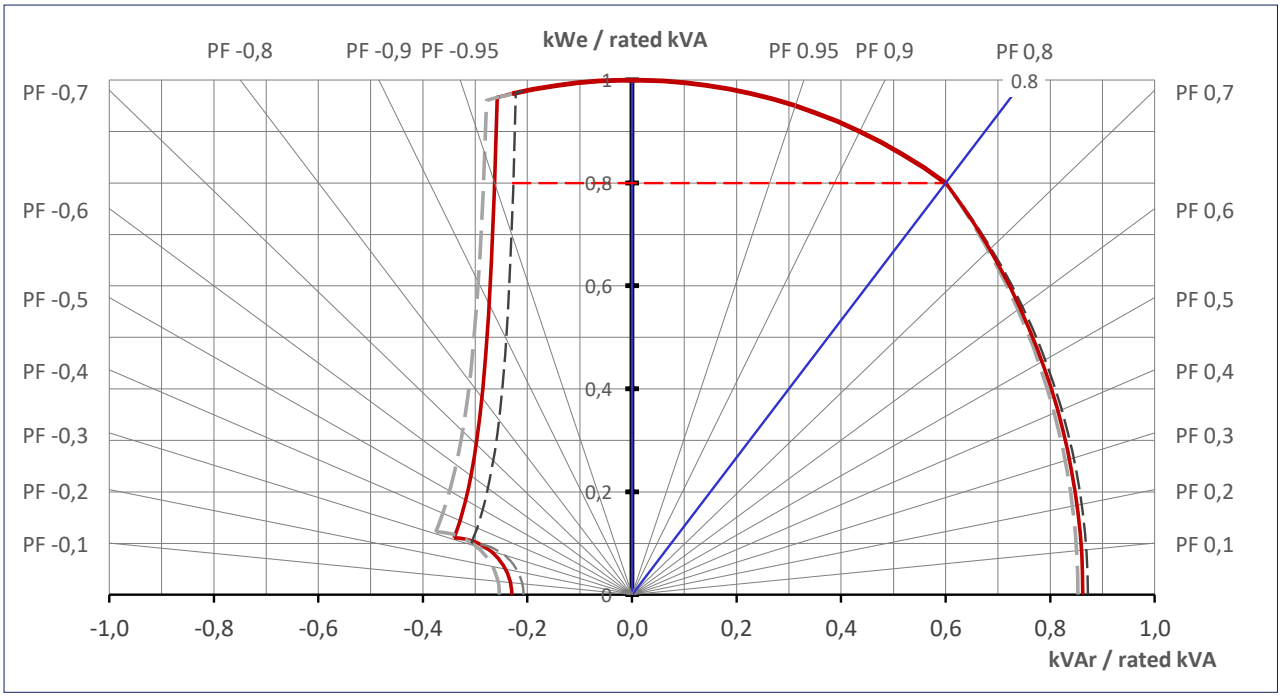
Date: 09/03/2021

228kVA - 380V - 60 Hz

V6.05 - 02/2021

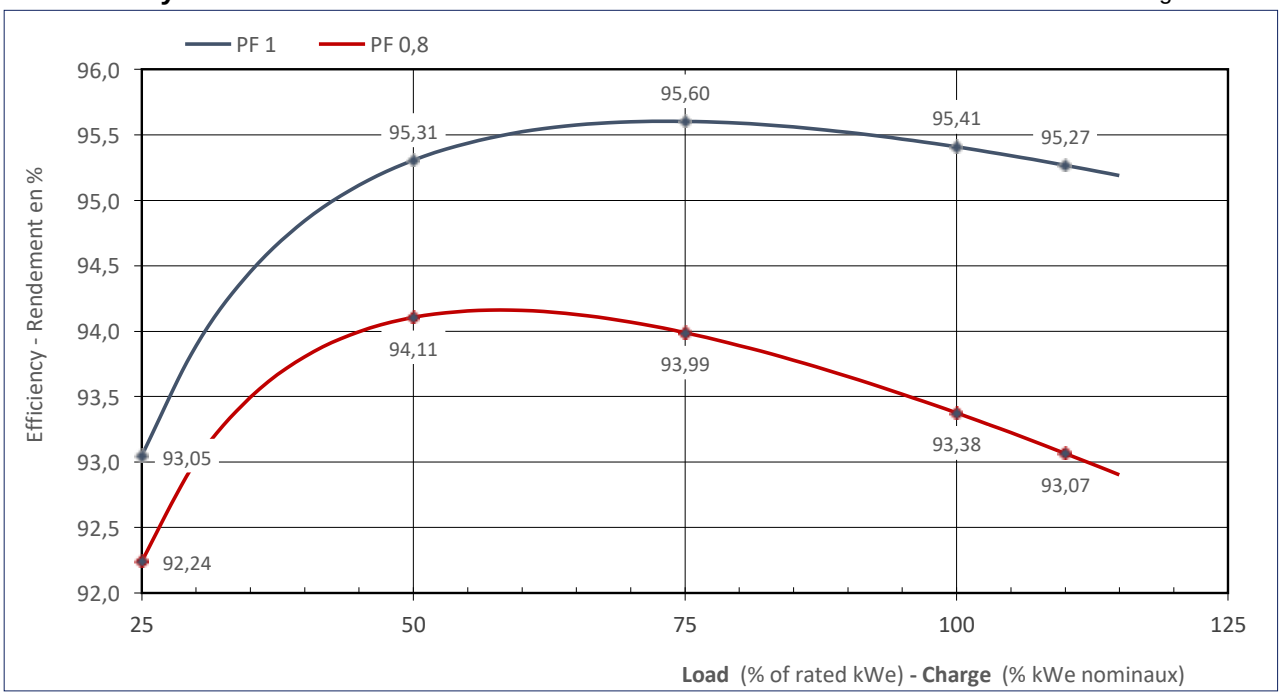
Capability Curve

Umax	+ 5%	399	V
Un		**380**	V
Umin	- 5%	361	V



Efficiency Curves

According to: IEC

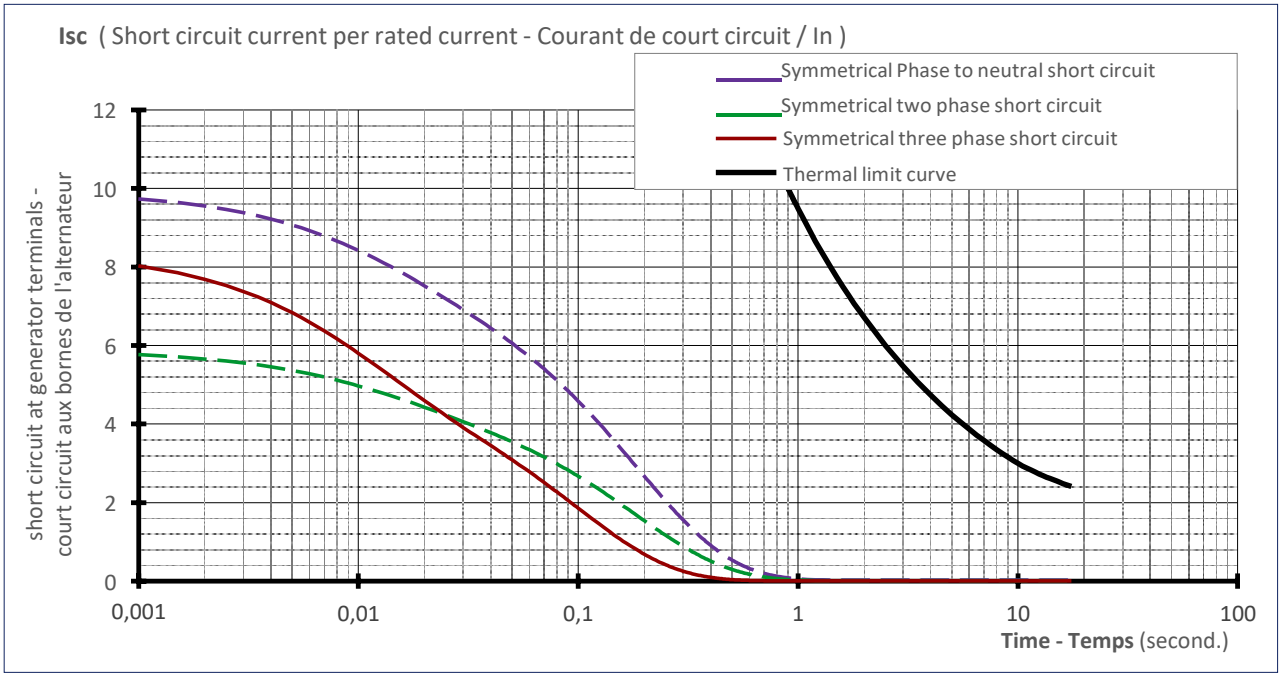


ALTERNATOR MAIN CURVES
TAL044 M / 4P

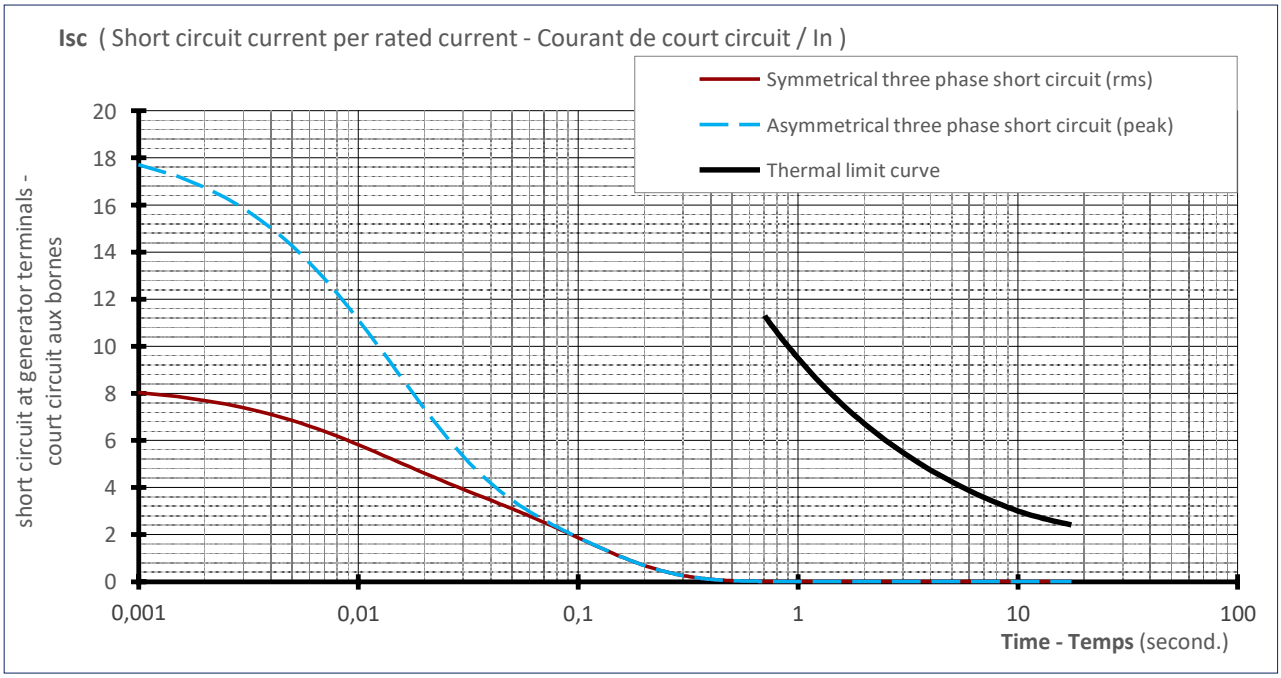
LS Reference: NS673-03-2021-1

Stator Current decrement curves

Symmetrical phase to neutral short-circ	initial	3 367	A	9,7 x In			
Symmetrical two phase short-circuit	max	1 997	A	5,8 x In	In =	**346**	A
Symmetrical three phase short-circuit	value	2 777	A	8 x In			
Thermal Limit							



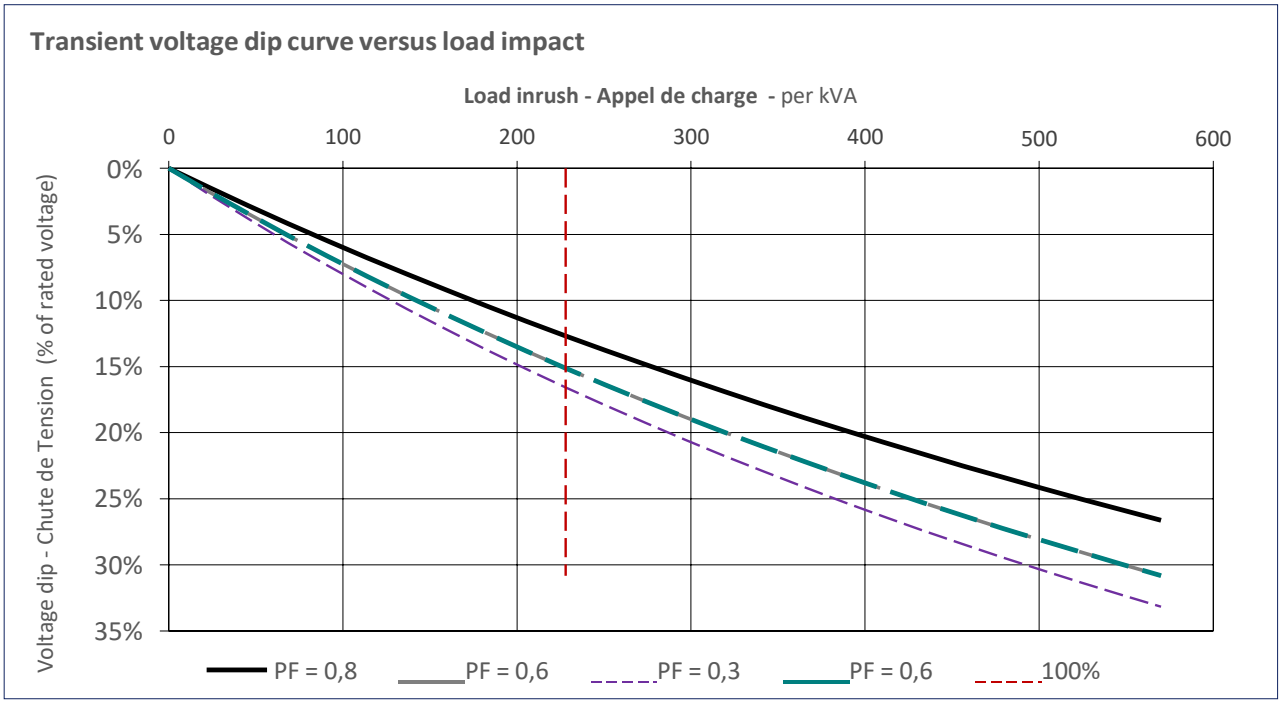
Asymmetrical three phase short-circuit — IP — 6 145 A 17,8 x In

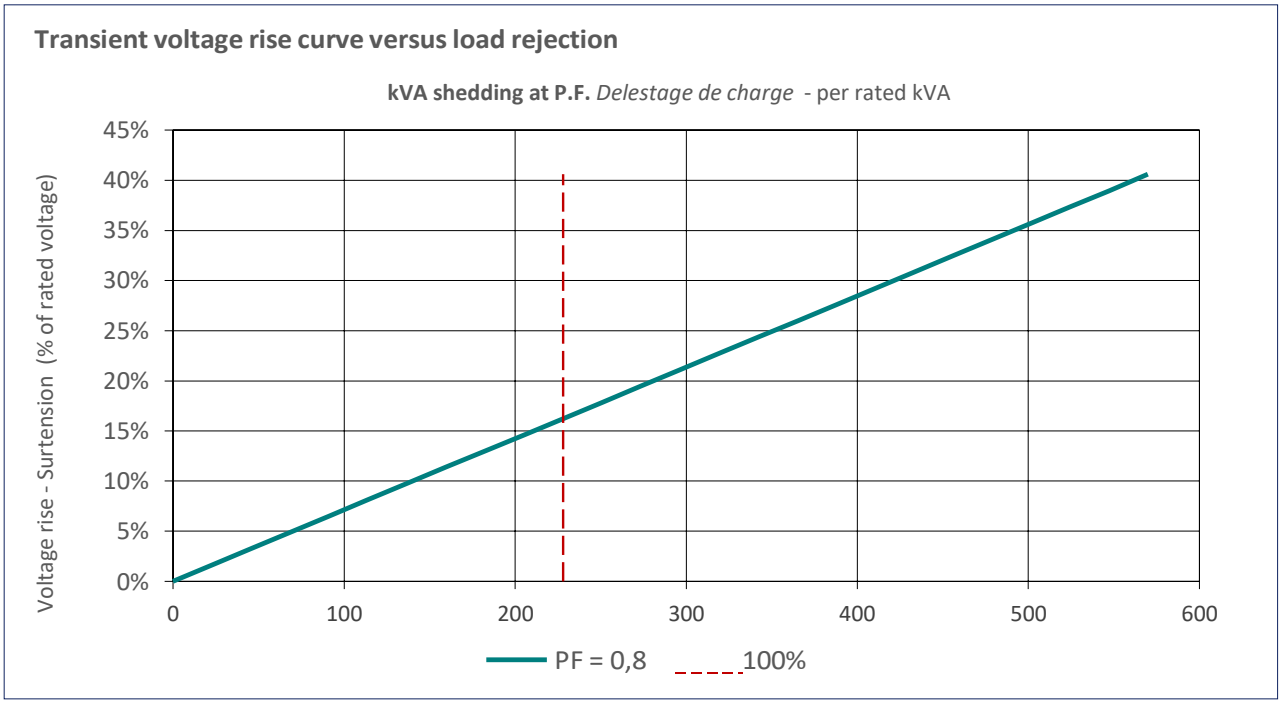


ALTERNATOR MAIN CURVES
TAL044 M / 4P

LS Reference: NS673-03-2021-1

Transient Voltage Variation

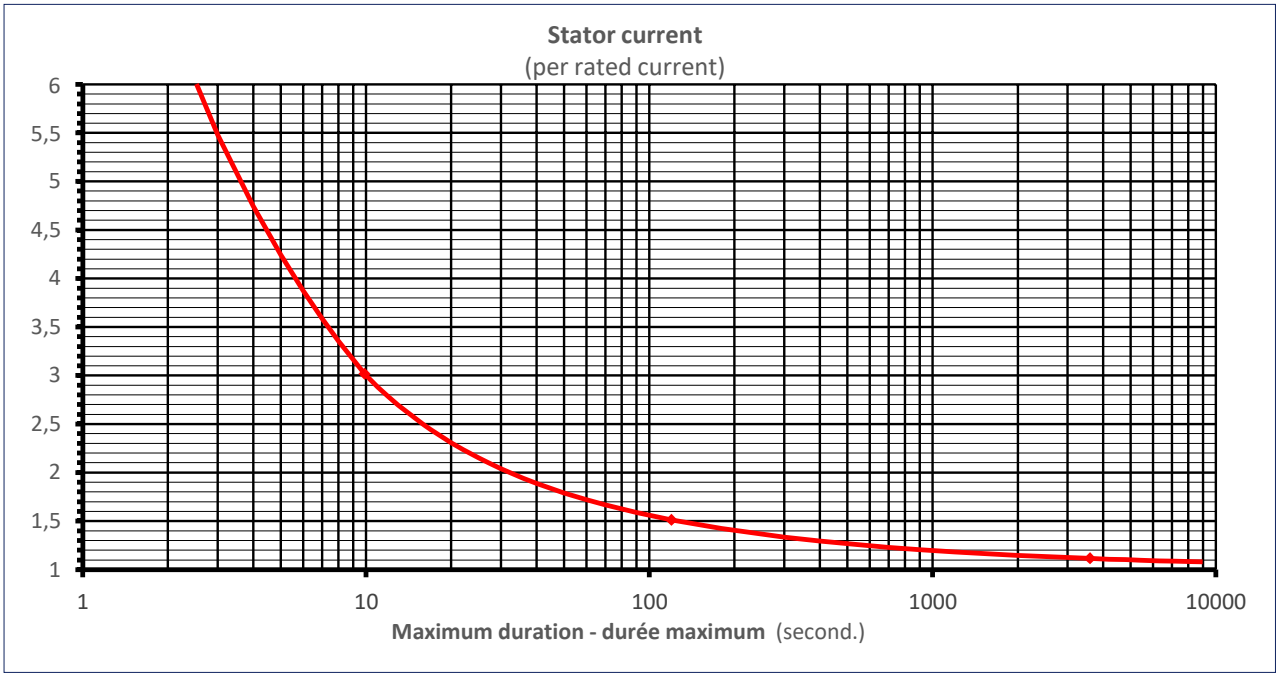




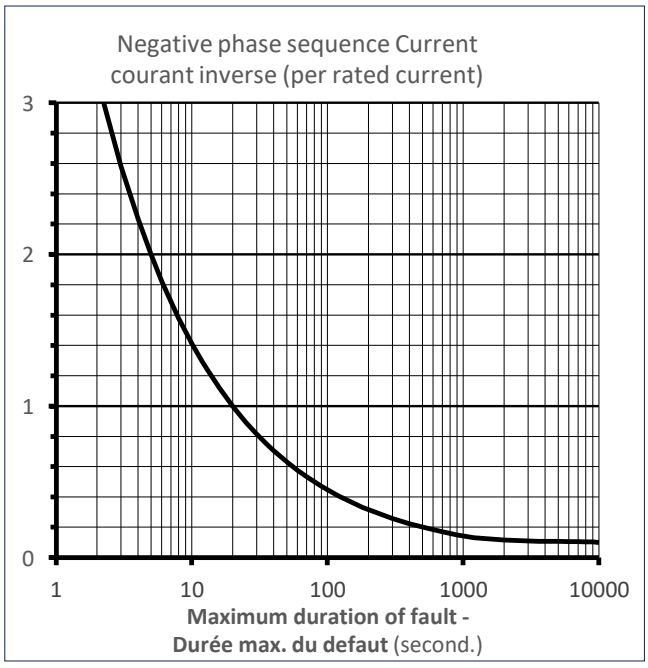
ALTERNATOR MAIN CURVES
TAL044 M / 4P

LS Reference: NS673-03-2021-1

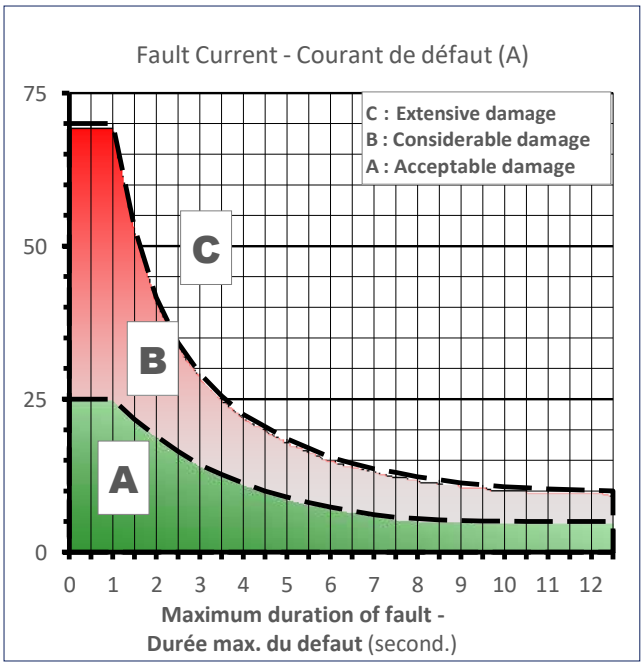
Thermal Damage Curve



Unbalance Load Curve



Stator Earth Fault Current



DSEGenset

DSE

DSE7310/20

AUTO START & AUTO MAINS FAILURE CONTROL MODULES

FEATURES

The DSE7310 is an Auto Start Control Module and the DSE7320 is an Auto Mains (Utility) Failure Control Module suitable for a wide variety of single, diesel or gas, 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, remote PC and via SMS text alerts (with external modem).

The DSE7320 will also monitor the mains (utility) supply. The modules include USB, RS232 and RS485 ports as well as dedicated DSENet® terminals for system expansion.

Both modules are 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 and dual mutual standby (DSE7310 only) to reduce engine wear.

The modules can be easily configured using the DSE Configuration Suite PC software. Selected front panel editing is also available.

ENVIRONMENTAL TESTING STANDARDS

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

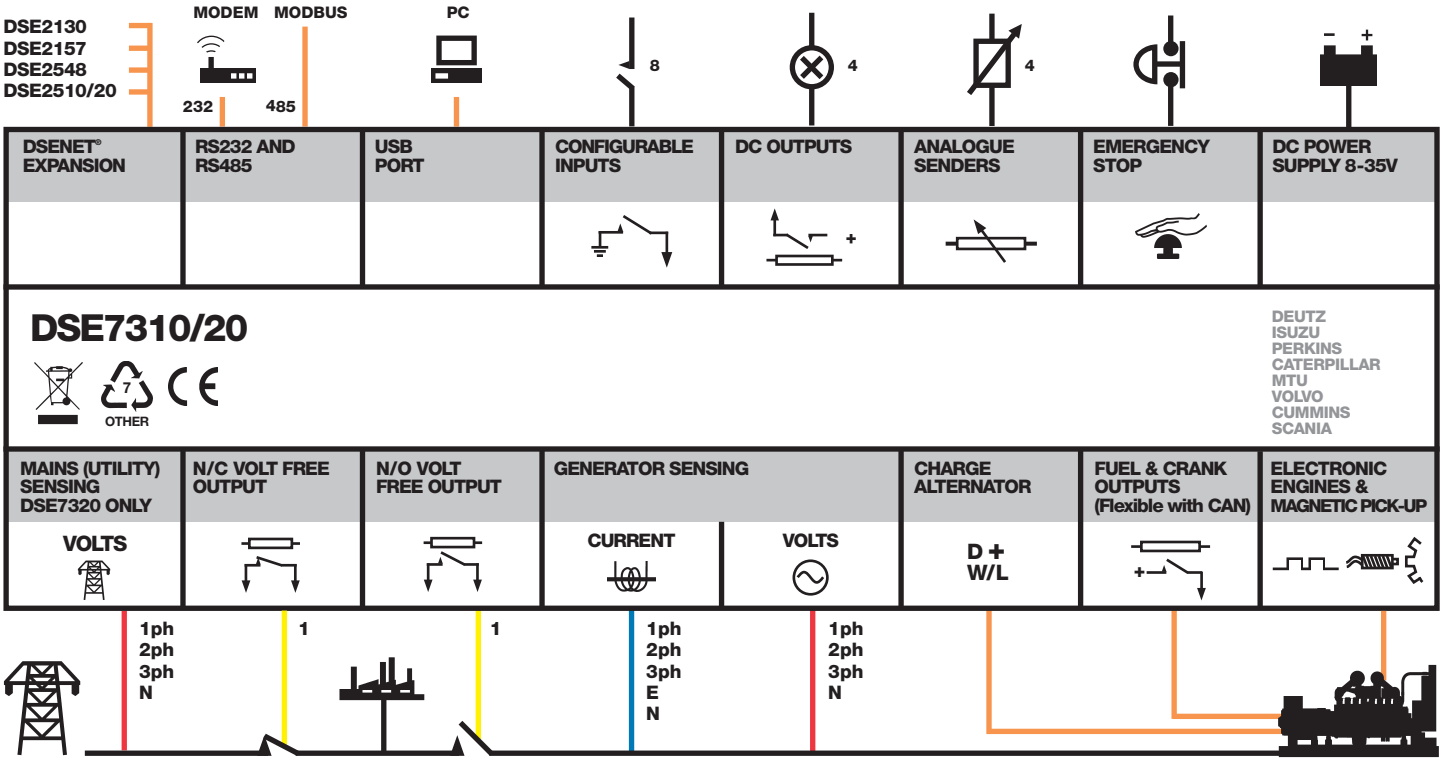
VIBRATION
BS EN 60068-2-6
Ten sweeps in each of three major axes
5 Hz to 8 Hz @ +/-7.5 mm,
8 Hz to 500 Hz @ 2 gn

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

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

DEGREES OF PROTECTION PROVIDED BY ENCLOSURES
BS EN 60529
IP65 - Front of module when installed into the control panel with the supplied sealing gasket.

COMPREHENSIVE FEATURE LIST TO SUIT A WIDE VARIETY OF GEN-SET APPLICATIONS



ISSUE 6

DSEGenset

DSE7310/20

AUTO START & AUTO MAINS FAILURE CONTROL MODULES

FEATURES

DSE**7310**

DSE**7320**

KEY FEATURES

- 4-Line back-lit LCD text display
- Five key menu navigation
- Front panel editing with PIN protection
- Customisable status screens
- Power save mode
- Support for up to three remote display units
- 9 configurable inputs
- 8 configurable outputs
- Flexible sender inputs
- Configurable timers and alarms
- 3 configurable maintenance alarms
- Multiple date and time scheduler
- Configurable event log (250)
- Tier 4 CAN engine support
- Integral PLC editor
- Easy access diagnostic page
- CAN and Magnetic Pick-up/Alt. sensing
- Fuel usage monitor and low fuel alarms
- Charge alternator failure alarm
- Manual speed control (on compatible CAN engines)
- Manual fuel pump control
- Engine exerciser
- “Protections disabled” feature
- kW & kV Ar protection
- Reverse power (kW & kV Ar) protection
- LED and LCD alarm indication
- Power monitoring (kW h, kV Ar, kV A h, kV Ar h)
- Load switching (load shedding and dummy load outputs)
- Automatic load transfer (DSE7320)
- Unbalanced load protection
- Independent Earth Fault trip
- True dual mutual standby with load balancing timer (DSE7310 only)
- USB connectivity
- Backed up real time clock
- Fully configurable via DSE Configuration Suite PC software
- Configurable display languages
- Remote SCADA monitoring via DSE Configuration Suite PC software
- User selectable RS232 and RS485 communications
- Configurable Gencomm pages
- Advanced SMS messaging (additional external modem required)
- Start & stop capability via SMS messaging
- Additional display screens to help with modem diagnostics
- Idle control for starting & stopping.
- DSENet® expansion compatible

KEY BENEFITS

- 132 x 64 pixel ratio display for clarity
- Real-time clock provides accurate event logging
- Multiple date and time scheduler
- Set maintenance periods can be configured to maintain optimum engine performance
- Ethernet communications (via DSE860/865 modules), provides advanced remote monitoring at low cost
- Modules can be integrated into building management systems (BMS)
- Increased input and output expansion capability via DSENet®
- Licence-free PC software
- IP65 rating (with supplied gasket) offers increased resistance to water ingress
- PLC editor allows user configurable functions to meet specific application requirements

SPECIFICATION

DC SUPPLY

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
340 mA at 12 V, 160 mA at 24 V

MAXIMUM STANDBY CURRENT
160 mA at 12 V, 80 mA at 24 V

CHARGE FAIL/EXCITATION RANGE
0 V to 35 V

MAINS (UTILITY) DSE7320 ONLY

VOLTAGE RANGE
15 V - 333 V AC (L-N)

FREQUENCY RANGE
3.5 Hz to 75 Hz

OUTPUTS

OUTPUT A (FUEL)
15 A DC at supply voltage

OUTPUT B (START)
15 A DC at supply voltage

OUTPUTS C & D
8 A 250 V (Volt free)

AUXILIARY OUTPUTS E,F,G,H
2 A DC at supply voltage

GENERATOR

VOLTAGE RANGE
15 V - 333 V AC (L-N)

FREQUENCY RANGE
3.5 Hz to 75 Hz

MAGNETIC PICK UP

VOLTAGE RANGE
+/- 0.5 V to 70 V

FREQUENCY RANGE
10,000 Hz (max)

DIMENSIONS

OVERALL
240 mm x 181 mm x 42 mm
9.4” x 7.1” x 1.6”

PANEL CUT-OUT
220 mm x 160 mm
8.7” x 6.3”

MAXIMUM PANEL THICKNESS
8 mm
0.3”

RELATED MATERIALS

TITLE	PART NO’S
DSE7310 Installation Instructions	053-028
DSE7320 Installation Instructions	053-029
DSE7200/7300 Quick Start Guide	057-101
DSE7200/7300 Operator Manual	057-074
DSE7200/7300 Configuration Suite PC Manual	057-077

DEEP SEA ELECTRONICS PLC UK
Highfield House, Hunmanby Industrial Estate, Hunmanby YO14 0PH
TELEPHONE +44 (0) 1723 890099 **FACSIMILE** +44 (0) 1723 893303
EMAIL sales@deepseaplc.com **WEBSITE** www.deepseaplc.com

DEEP SEA ELECTRONICS INC USA
3230 Williams Avenue, Rockford, IL 61101-2668 USA
TELEPHONE +1 (815) 316 8706 **FACSIMILE** +1 (815) 316 8708
EMAIL sales@deepseausa.com **WEBSITE** www.deepseausa.com

Registered in England & Wales No.01319649
VAT No.316923457

055-051/10/11 (11) US