

# CUMMINS GENERATOR

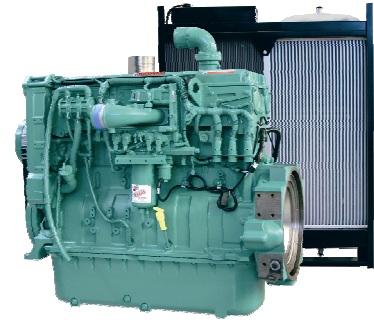
563 KVA ( 450 KW )

(USA)



# QSX15-G9

Emissions Compliance:  
EPA Tier 2 at 60 Hz



> Specification sheet

Our energy working for you.™



## Description

The QSX15-Series is the first heavy-duty diesel with 24-valve dual overhead camshaft technology. Yet it has an impressive 30% fewer parts than comparable diesels and a utilised design, which eliminates external lube, coolant and fuel lines leading to higher reliability for such a high power output.

The 15 litre, six-cylinder QSX15 engine is ideally suited to both open and containerised applications in static or portable genset equipment. It can be matched to meet specific duty cycle and operating conditions of any genset.



This engine has been built to comply with CE certification.



This engine has been designed in facilities certified to ISO9001 and manufactured in facilities certified to ISO9001 or ISO9002.

## Features

**Holset HX82 Turbocharging** - Wastegated design optimizes operation across the torque curve with improved response.

**Integrated Block Design** - Integrated fluid circuits replace hoses and eliminate potential leaks.

**High-Pressure Fuel Injection** - Capable of over 1,900 bar (28,000 psi) for cleaner, more fuel-efficient combustion.

**24-Valve Cylinder Head** – Four valves per cylinder for increased power with faster response at every rpm.

**Coolpac Integrated Design** - Products are supplied complete with cooling package and air cleaner kit for a complete power package. Each component 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
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

## 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
563/755	507/680	354/475	526/705	476/638	323/433	500	625	450	563	303	379

Our energy working for you.™

[www.cumminsdrive.com](http://www.cumminsdrive.com)

©2008 | Cummins G-Drive Engines | Specifications Subject to Change Without Notice | Cummins is a registered trademark of Cummins Inc. (01/09)



## General Engine Data

Type	4 Cycle, In-line, Turbo Charged, Air Cooled
Bore mm	137 mm (5.39 in.)
Stroke mm	169 mm (6.65 in.)
Displacement Litre	15 litre (912 in. <sup>3</sup> )
Cylinder Block	Cast iron, 6 cylinder
Battery Charging Alternator	35 amps
Starting Voltage	24 volt
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)	91.0
Flywheel Dimensions	SAE1

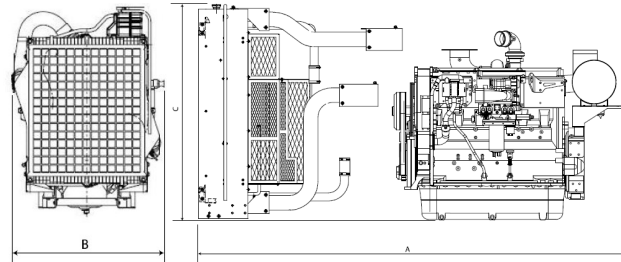
## Coolpac Performance Data

Cooling System Design	Air-Air Charge Cooled
Coolant Ratio	50% ethylene glycol; 50% water
Coolant Capacity (l)	42.0
Limiting Ambient Temp.** (°C)	55
Fan Power (kWm)	16
Cooling System Air Flow (m <sup>3</sup> /s)**	11.8
Air Cleaner Type	Light duty dry replaceable element with restriction indicator

\*\* @ 13 mm H<sub>2</sub>O Duct Restriction

## Weight & Dimensions

Length mm	Width mm	Height mm	Weight (dry) kg
2269	1332	1669	1658



## Fuel Consumption 1500 (50 Hz)

%	kWm	BHP	L/ph	US gal/ph
<b>Standby Power</b>				
100	N/A	N/A	N/A	N/A
<b>Prime Power</b>				
100	N/A	N/A	N/A	N/A
75	N/A	N/A	N/A	N/A
50	N/A	N/A	N/A	N/A
25	N/A	N/A	N/A	N/A
<b>Continuous Power</b>				
100	N/A	N/A	N/A	N/A

## Fuel Consumption 1800 (60 Hz)

%	kWm	BHP	L/ph	US gal/ph
<b>Standby Power</b>				
100	563	755	135.9	35.9
<b>Prime Power</b>				
100	507	680	117.8	31.1
75	380	510	90.5	23.9
50	254	340	65.3	17.2
25	127	170	37.4	9.9
<b>Continuous Power</b>				
100	354	475	85.3	22.5

## 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 Potosi, 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.cumminsdrive.com](http://www.cumminsdrive.com)

©2008 | Cummins G-Drive Engines | Specifications Subject to Change Without Notice | Cummins is a registered trademark of Cummins Inc. (01/09)



## 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 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) is in accordance with ISO 8528, ISO 3046, AS 2789, DIN6271 and BS 5514.



**TAL 047**

## **Low Voltage Alternator - 4 pole**

410 to 660 kVA - 50 Hz / 510 to 825 kVA - 60 Hz  
Electrical and mechanical data

**LEROY-SOMER**<sup>™</sup>

***Nidec***  
All for dreams

## Adapted to needs

The TAL alternator range is designed to meet the needs of general applications such as prime power and stand-by.

## Compliant with international standards

The TAL range complies with international standards and regulations: IEC 60034 and derivative.

The range is designed, manufactured and marketed in an ISO 9001 and 14001 environment.

## Electrical design

- Class H insulation
- Shunt excitation
- Low voltage winding:
  - Three-phase 50 Hz: 380V - 400V - 415V - 440V / 220V - 230V - 240V
  - 60 Hz: 380V - 416V - 440V - 480V / 220V - 208V - 240V
- 6-terminal plates in 6-wire version or suitable for 12-wire option
- Optimized performance

## Robust design

- Compact and rugged assembly to withstand engine vibrations
- Steel frame
- Cast iron flanges and shields
- Single bearing design to be suitable with most diesel engines
- Sealed for life bearing
- Standard direction of rotation: clockwise when looking at the drive end view (for anti-clockwise, derate the machine by 5%)



## Excitation and regulation system suited to the application

	Excitation system				Regulation options		
	AVR	Shunt	AREP	PMG	ULc/us	Remote voltage potentiometer	C.T. for paralleling
Three-phase 6-wire	R150	Standard				√	
	R180		Standard	Standard		√	√
	R450		Option	Option	√	√	√
Three-phase 12-wire*	R250	Standard			√	√	
	R180		Standard	Standard		√	√
	R450		Option	Option	√	√	√

√ : Possible option      \*with larger terminal box

## Compact terminal box

- Easy access to AVR and terminals
- Standard terminal box with possibility of mounting measurement CTs
- Possibility of current transformer for parallel operation

## Environment and protection

- IP Code IP 23
- Standard winding protection for non-harsh environments with relative humidity ≤ 95%

## Available options

- Three-phase 12-wire with 9-terminal plates
- AREP or PMG excitation
- ULc/us
- Customized painting
- Space heaters
- Droop kit for alternator paralleling
- Stator sensors
- Winding 8 optimized for three-phase 380V - 416 V / 60 Hz
- Winding protection for harsh environments and relative humidity greater than 95% (system 2 - 4): for TAL 047 F apply a derating coefficient of 0.97

# TAL 047 - 410 to 660 kVA - 50 Hz / 510 to 825 kVA - 60 Hz

## General characteristics

Insulation class	H	Excitation system 6-wire	SHUNT	AREP / PMG
Winding pitch	2/3 (wind.6S - 6-wire / wind.6 - 12-wire)	AVR type	R150	R180
Number of wires	6-wire (12-wire option)	Excitation system 12-wire (option)	SHUNT	AREP / PMG
Protection	IP 23	AVR type	R250	R180
Altitude	≤ 1000 m	Voltage regulation (*)	± 1 %	
Overspeed	2250 R.P.M.	Total Harmonic Distortion THD (**) in no-load	< 1.5 %	
Air flow (m <sup>3</sup> /s)	0.9	Total Harmonic Distortion THD (**) in linear load	< 5 %	
Air flow (m <sup>3</sup> /s)	1.1	Waveform: NEMA = TIF (**)	< 50	
AREP Short-circuit current = 2.7 In : 5 second		Waveform: I.E.C. = THF (**)	< 2%	

(\*) Steady state (\*\*) Total harmonic distortion between phases, no-load or on-load (non-distorting)

## Ratings 50 Hz - 1500 R.P.M.

kVA / kW - P.F. = 0.8																
Duty / T° C	Continuous / 40 °C				Continuous / 40 °C				Stand-by / 40 °C				Stand-by / 27 °C			
Class / T° K	H / 125° K				F / 105° K				H / 150° K				H / 163° K			
Phase	3 ph.				3 ph.				3 ph.				3 ph.			
Y	380V	400V	415V	440V	380V	400V	415V	440V	380V	400V	415V	440V	380V	400V	415V	440V
Δ	220V	230V	240V		220V	230V	240V		220V	230V	240V		220V	230V	240V	
YY (*)				220V				220V				220V				220V
<b>TAL 047 A</b> kVA	390	<b>410</b>	410	385	355	<b>375</b>	375	350	415	<b>435</b>	435	410	430	<b>450</b>	450	425
kW	312	328	328	308	284	300	300	280	332	348	348	328	344	360	360	340
<b>TAL 047 B</b> kVA	430	<b>455</b>	455	430	390	<b>415</b>	415	390	455	<b>480</b>	480	455	475	<b>500</b>	500	475
kW	344	364	364	344	312	332	332	312	364	384	384	364	380	400	400	380
<b>TAL 047 C</b> kVA	475	<b>500</b>	500	460	430	<b>455</b>	455	420	505	<b>530</b>	530	490	525	<b>550</b>	550	505
kW	380	400	400	368	344	364	364	336	404	424	424	392	420	440	440	404
<b>TAL 047 D</b> kVA	525	<b>550</b>	550	535	480	<b>500</b>	500	485	555	<b>585</b>	585	565	580	<b>600</b>	600	590
kW	420	440	440	428	384	400	400	388	444	468	468	452	464	480	480	472
<b>TAL 047 E</b> kVA	585	<b>600</b>	600	570	530	<b>545</b>	545	520	620	<b>635</b>	635	605	645	<b>660</b>	660	625
kW	468	480	480	456	424	436	436	416	496	508	508	484	516	528	528	500
<b>TAL 047 F (**)</b> kVA	645	<b>660</b>	660	620	585	<b>600</b>	600	565	685	<b>700</b>	700	655	710	<b>730</b>	730	680
kW	516	528	528	496	468	480	480	452	548	560	560	524	568	584	584	544

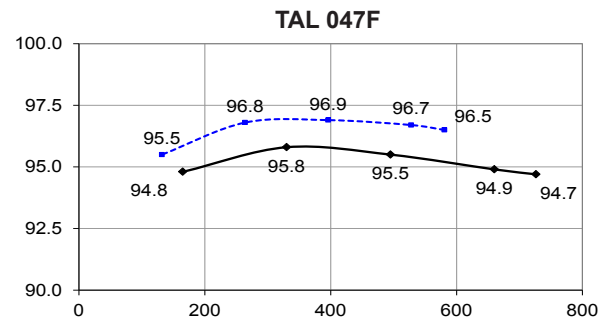
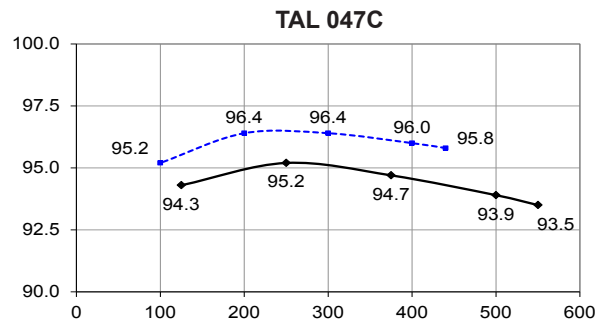
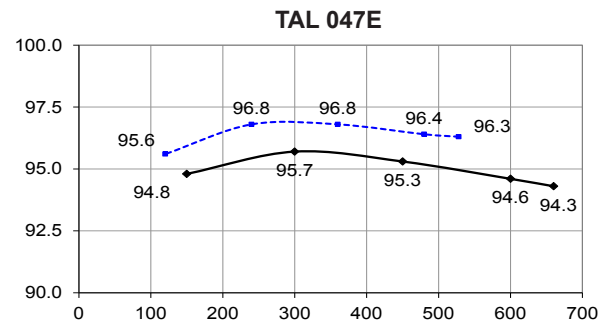
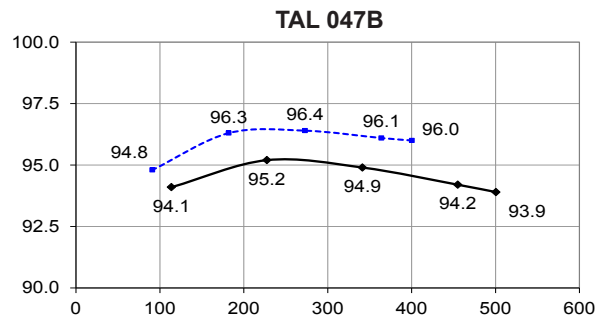
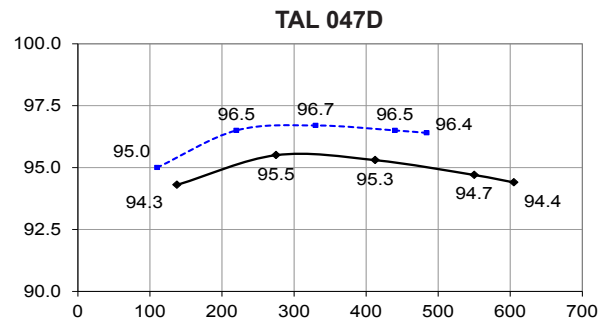
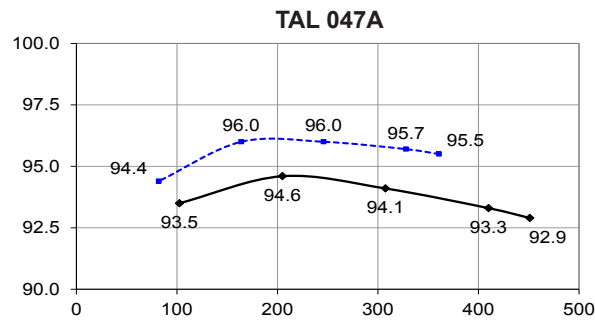
(\*) 12-wire option (\*\*) 6-wire only

## Ratings 60 Hz - 1800 R.P.M.

kVA / kW - P.F. = 0.8																
Duty / T° C	Continuous / 40 °C				Continuous / 40 °C				Stand-by / 40 °C				Stand-by / 27 °C			
Class / T° K	H / 125° K				F / 105° K				H / 150° K				H / 163° K			
Phase	3 ph.				3 ph.				3 ph.				3 ph.			
Y	380V	416V	440V	480V	380V	416V	440V	480V	380V	416V	440V	480V	380V	416V	440V	480V
Δ	220V	240V	240V		220V	240V	240V		220V	240V	240V		220V	240V	240V	
YY (*)		208V	220V	240V		208V	220V	240V		208V	220V	240V		208V	220V	240V
<b>TAL 047 A</b> kVA	450	480	500	<b>510</b>	410	435	455	<b>465</b>	475	510	530	<b>540</b>	495	530	550	<b>580</b>
kW	360	384	400	408	328	348	364	372	380	408	424	432	396	424	440	464
<b>TAL 047 B</b> kVA	475	510	530	<b>570</b>	430	465	480	<b>520</b>	505	540	560	<b>605</b>	525	560	585	<b>625</b>
kW	380	408	424	456	344	372	384	416	404	432	448	484	420	448	468	500
<b>TAL 047 C</b> kVA	520	555	590	<b>625</b>	475	505	535	<b>570</b>	550	590	625	<b>665</b>	570	610	650	<b>690</b>
kW	416	444	472	500	380	404	428	456	440	472	500	532	456	488	520	552
<b>TAL 047 D</b> kVA	560	610	630	<b>690</b>	510	555	575	<b>630</b>	595	645	670	<b>730</b>	615	670	695	<b>750</b>
kW	448	488	504	552	408	444	460	504	476	516	536	584	492	536	556	600
<b>TAL 047 E</b> kVA	600	660	685	<b>750</b>	545	600	625	<b>685</b>	635	700	725	<b>795</b>	660	725	755	<b>825</b>
kW	480	528	548	600	436	480	500	548	508	560	580	636	528	580	604	660
<b>TAL 047 F (**)</b> kVA	650	715	755	<b>825</b>	590	650	685	<b>750</b>	690	760	800	<b>875</b>	720	785	830	<b>910</b>
kW	520	572	604	660	472	520	548	600	552	608	640	700	576	628	664	728

(\*) 12-wire option (\*\*) 6-wire only

Efficiencies 400 V 50 Hz (— P.F.: 0.8) (..... P.F.: 1)



Reactances (%). Time constants (ms) - Class H / 400 V

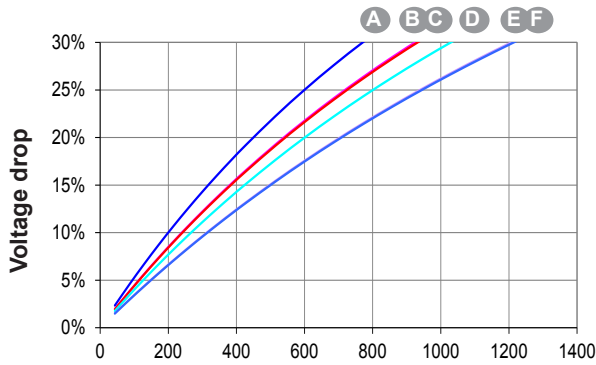
	A	B	C	D	E	F
<b>Kcc</b> Short-circuit ratio	0.35	0.34	0.31	0.39	0.32	0.36
<b>Xd</b> Direct-axis synchro. reactance unsaturated	347	338	372	310	361	328
<b>Xq</b> Quadrature-axis synchro. reactance unsaturated	177	172	189	158	184	167
<b>T'do</b> No-load transient time constant	1601	1705	1705	1773	1797	1832
<b>X'd</b> Direct-axis transient reactance saturated	21.6	19.8	21.8	17.5	20	17.9
<b>T'd</b> Short-circuit transient time constant	100	100	100	100	100	100
<b>X''d</b> Direct-axis subtransient reactance saturated	15.1	13.9	15.2	12.2	14	12.5
<b>T''d</b> Subtransient time constant	10	10	10	10	10	10
<b>X''q</b> Quadrature-axis subtransient reactance saturated	16.6	17.4	19.1	16.5	19.5	18
<b>Xo</b> Zero sequence reactance	0.9	0.82	0.9	0.72	0.83	0.74
<b>X2</b> Negative sequence reactance saturated	15.91	15.66	17.21	14.41	16.8	15.31
<b>Ta</b> Armature time constant	15	15	15	15	15	15

Other class H / 400 V data

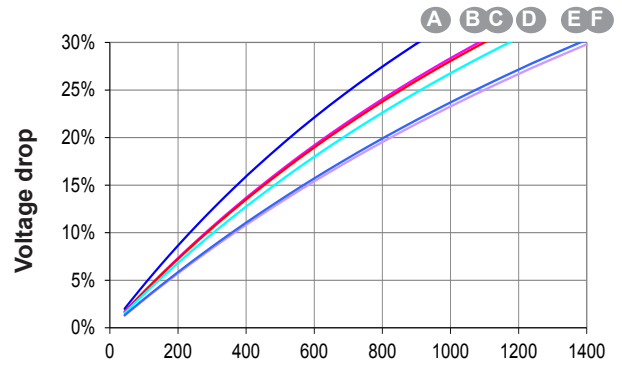
<b>io (A)</b> No-load excitation current SHUNT/AREP	0.97	0.87	0.87	0.97	0.85	0.93
<b>ic (A)</b> On-load excitation current SHUNT/AREP	4.24	3.72	4.06	3.79	3.89	3.87
<b>uc (V)</b> On-load excitation voltage SHUNT/AREP	44.2	38.7	42.2	39.4	40.3	40.1
<b>ms</b> Response time ( $\Delta U = 20\%$ transient)	500	500	500	500	500	500
<b>kVA</b> Start ( $\Delta U = 20\%$ cont. or $\Delta U = 30\%$ trans.) SHUNT*	612	743	742	947	970	1105
<b>kVA</b> Start ( $\Delta U = 20\%$ cont. or $\Delta U = 30\%$ trans.) AREP*	738	891	894	1135	1162	1324
<b>%</b> Transient $\Delta U$ (on-load 4/4) SHUNT - P.F.: 0.8 <sub>LAG</sub>	18.6	17.5	18.7	18.7	17.6	18.9
<b>%</b> Transient $\Delta U$ (on-load 4/4) AREP - P.F.: 0.8 <sub>LAG</sub>	16.3	15.3	16.4	16.8	15.4	17
<b>W</b> No-load losses	4261	4376	4376	5192	4831	5487
<b>W</b> Heat dissipation	23451	22295	25923	24391	27055	27875

\* P.F. = 0.6

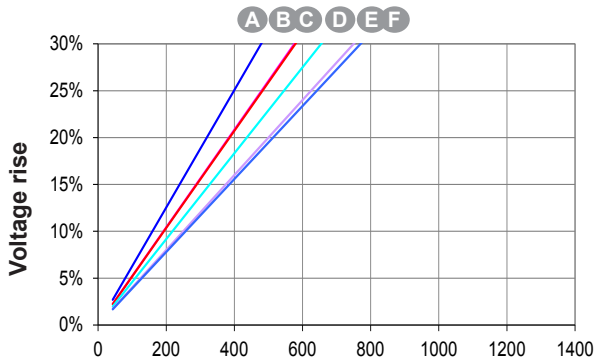
Transient voltage variation 400 V - 50 Hz



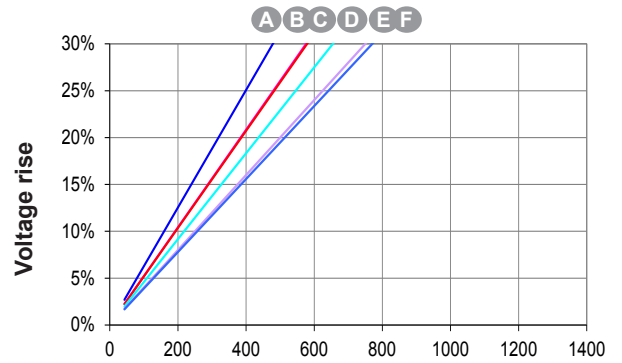
Phase loading (SHUNT) - kVA at P.F. = 0.8



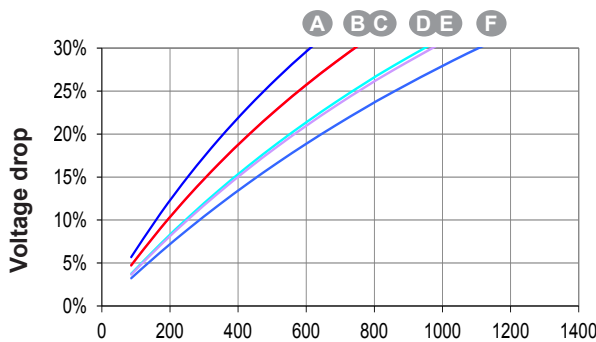
Phase loading (AREP) - kVA at P.F. = 0.8



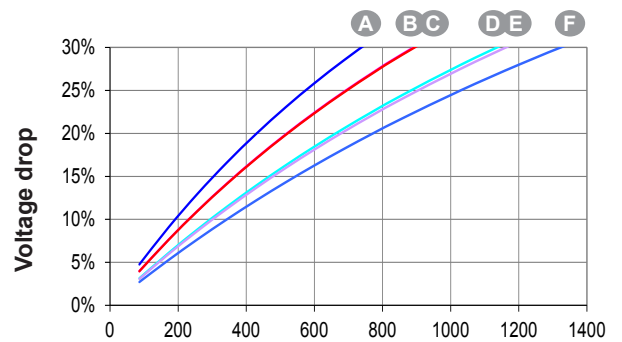
Load shedding (SHUNT) - kVA at P.F. = 0.8



Load shedding (AREP) - kVA at P.F. = 0.8



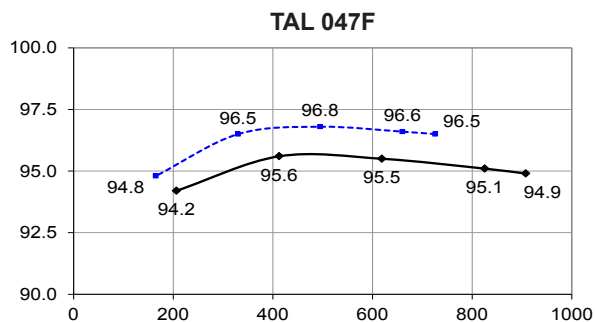
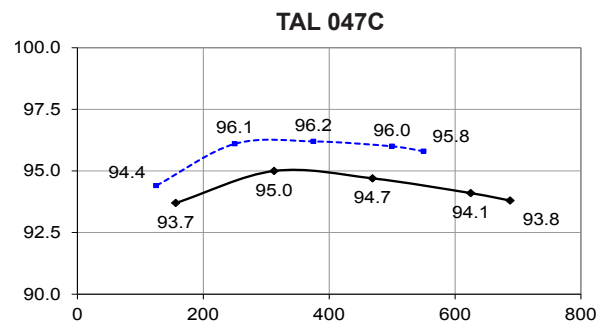
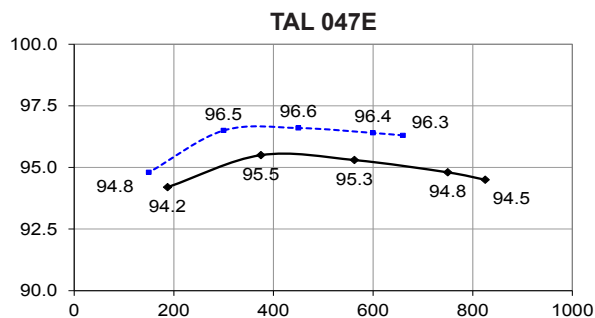
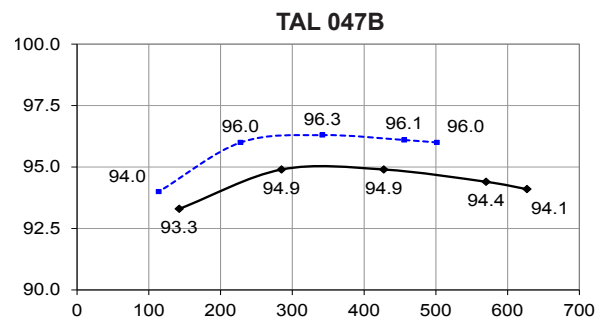
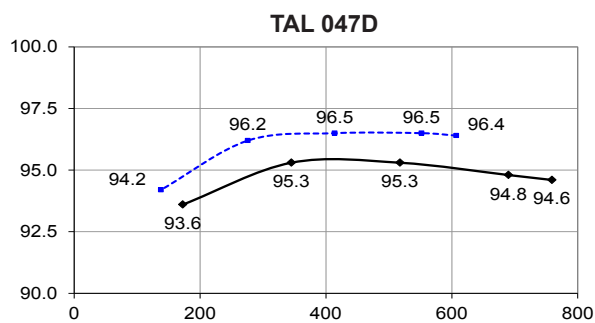
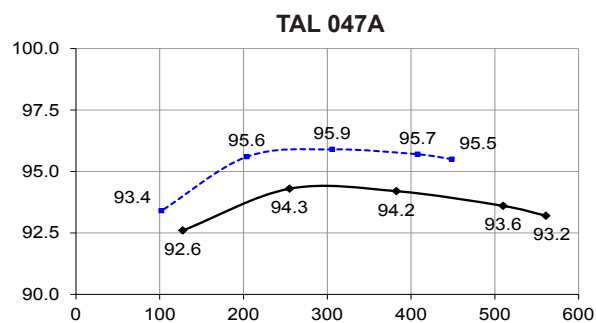
Motor starting (SHUNT)  
Locked rotor kVA at P.F. = 0.6



Motor starting (AREP)  
Locked rotor kVA at P.F. = 0.6

- 1) For a starting P.F. other than 0.6, the starting kVA must be multiplied by  $K = \text{Sine P.F.} / 0.8$
- 2) For voltages other than 400V (Y), 230V ( $\Delta$ ) at 50 Hz, then kVA must be multiplied by  $(400/U)^2$  or  $(230/U)^2$ .

Efficiencias 480 V - 60 Hz (— P.F.: 0.8) (..... P.F.: 1)



Reactances (%). Time constants (ms) - Class H / 480 V

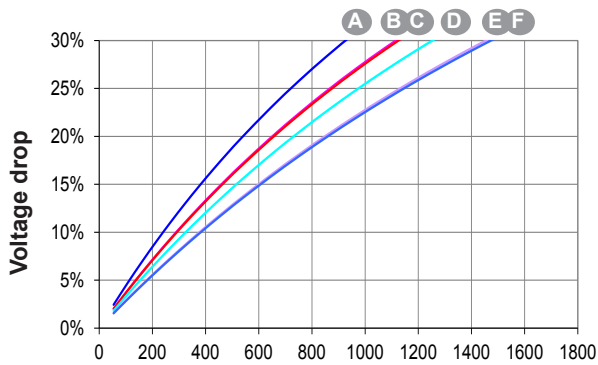
	A	B	C	D	E	F
<b>Kcc</b> Short-circuit ratio	0.34	0.32	0.3	0.37	0.3	0.35
<b>Xd</b> Direct-axis synchro. reactance unsaturated	359	353	387	324	376	342
<b>Xq</b> Quadrature-axis synchro. reactance unsaturated	183	180	197	165	191	174
<b>T'do</b> No-load transient time constant	1601	1705	1705	1773	1797	1832
<b>X'd</b> Direct-axis transient reactance saturated	22.4	20.7	22.7	18.3	20.9	18.6
<b>T'd</b> Short-circuit transient time constant	100	100	100	100	100	100
<b>X''d</b> Direct-axis subtransient reactance saturated	15.7	14.5	15.9	12.8	14.6	13
<b>T''d</b> Subtransient time constant	10	10	10	10	10	10
<b>X''q</b> Quadrature-axis subtransient reactance saturated	17.2	18.1	19.9	17.3	20.3	18.8
<b>Xo</b> Zero sequence reactance	0.93	0.86	0.94	0.76	0.87	0.77
<b>X2</b> Negative sequence reactance saturated	16.5	16.35	17.92	15.07	17.5	15.95
<b>Ta</b> Armature time constant	15	15	15	15	15	15

Other class H / 480 V data

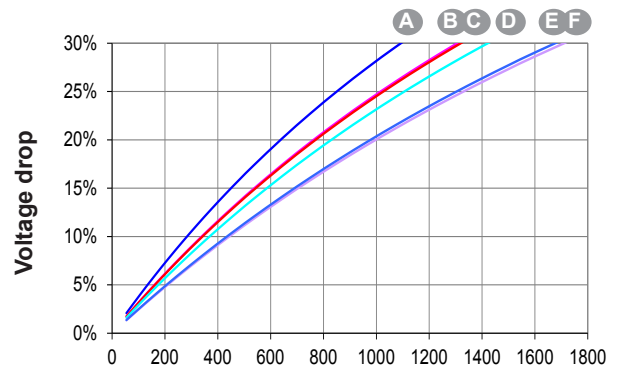
<b>io (A)</b> No-load excitation current SHUNT/AREP	0.97	0.87	0.87	0.97	0.85	0.93
<b>ic (A)</b> On-load excitation current SHUNT/AREP	4.31	3.81	4.15	3.88	3.97	3.94
<b>uc (V)</b> On-load excitation voltage SHUNT/AREP	45.1	39.8	43.3	40.5	41.3	41
<b>ms</b> Response time ( $\Delta U = 20\%$ transient)	500	500	500	500	500	500
<b>kVA</b> Start ( $\Delta U = 20\%$ cont. or $\Delta U = 30\%$ trans.) SHUNT*	738	890	889	1135	1162	1324
<b>kVA</b> Start ( $\Delta U = 20\%$ cont. or $\Delta U = 30\%$ trans.) AREP*	883	1074	1071	1360	1391	1597
<b>%</b> Transient $\Delta U$ (on-load 4/4) SHUNT - P.F.: 0.8 <sub>LAG</sub>	19.1	18	19.3	19.2	18.2	19.4
<b>%</b> Transient $\Delta U$ (on-load 4/4) AREP - P.F.: 0.8 <sub>LAG</sub>	16.7	15.8	16.9	17.2	15.9	17.4
<b>W</b> No-load losses	6583	6766	6766	7888	7408	8312
<b>W</b> Heat dissipation	27879	27031	31057	29695	32579	33674

\* P.F. = 0.6

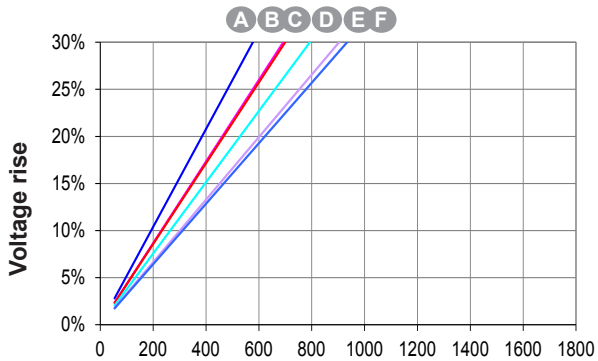
Transient voltage variation 480 V - 60 Hz



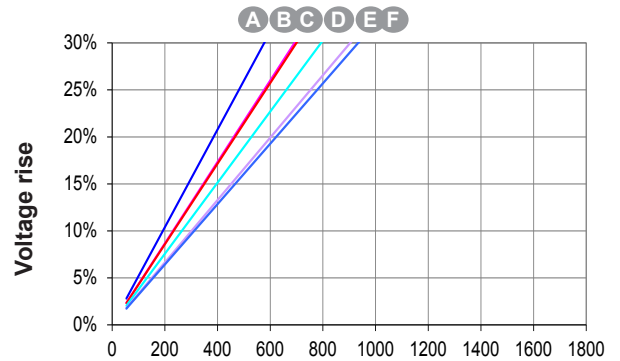
Phase loading (SHUNT) - kVA at P.F. = 0.8



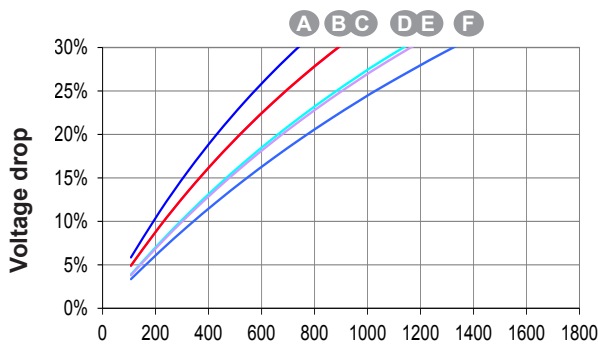
Phase loading (AREP) - kVA at P.F. = 0.8



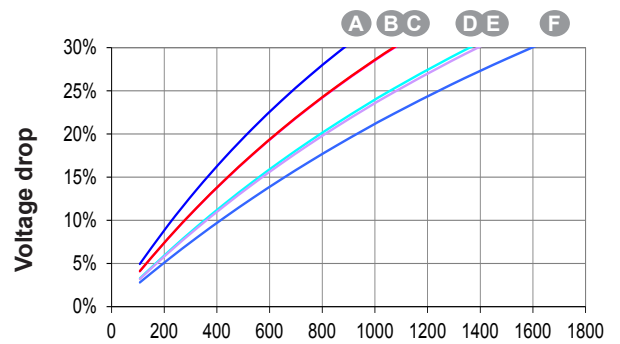
Load shedding (SHUNT) - kVA at P.F. = 0.8



Load shedding (AREP) - kVA at P.F. = 0.8



Motor starting (SHUNT)  
Locked rotor kVA at P.F. = 0.6



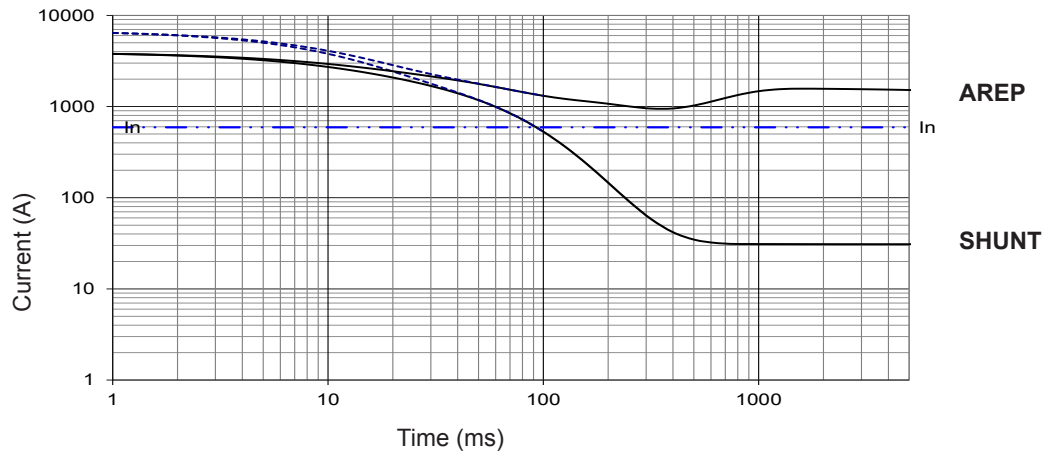
Motor starting (AREP)  
Locked rotor kVA at P.F. = 0.6

- 1) For a starting P.F. other than 0.6, the starting kVA must be multiplied by  $K = \text{Sine P.F.} / 0.8$
- 2) For voltages other than 480V (Y), 277V ( $\Delta$ ), 240V (YY) at 60 Hz, then kVA must be multiplied by  $(480/U)^2$  or  $(277/U)^2$  or  $(240/U)^2$ .

3-phase short-circuit curves at no load and rated speed (star connection Y)

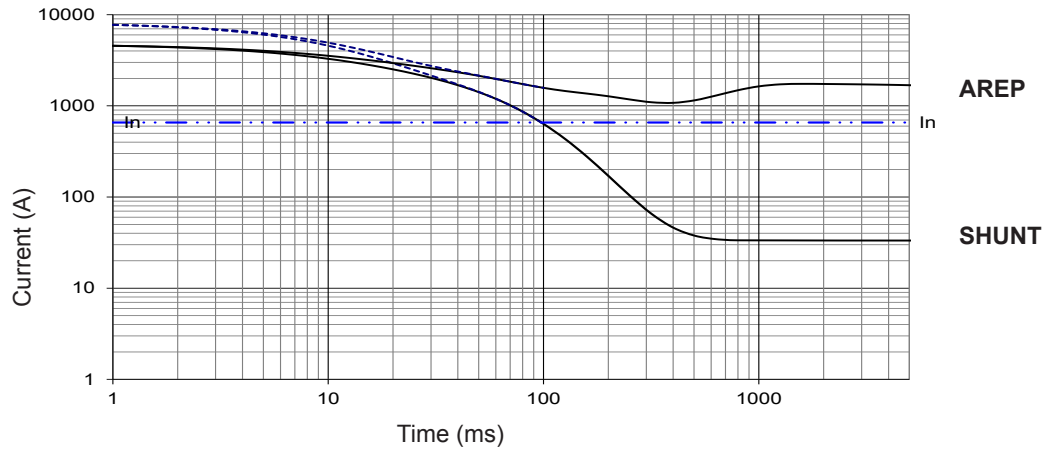
**TAL 047 A**

Symmetrical —  
Asymmetrical - - -



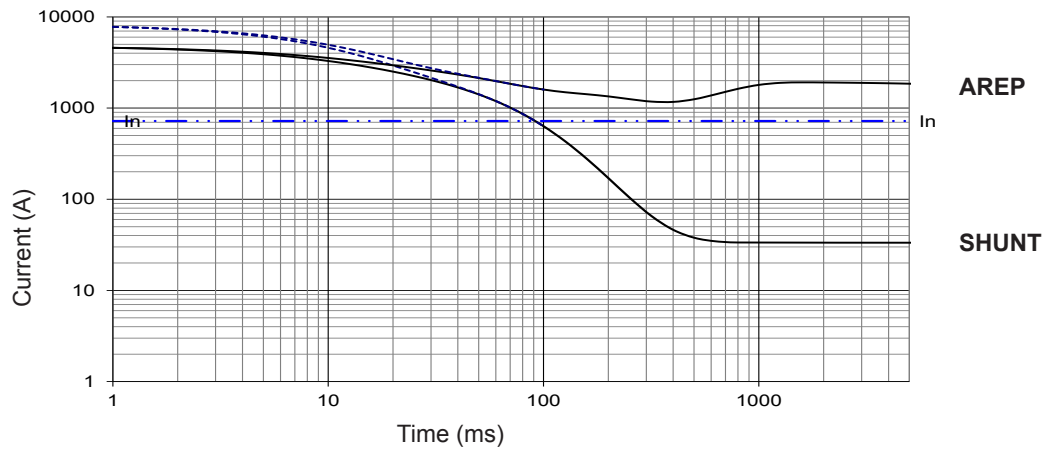
**TAL 047 B**

Symmetrical —  
Asymmetrical - - -



**TAL 047 C**

Symmetrical —  
Asymmetrical - - -



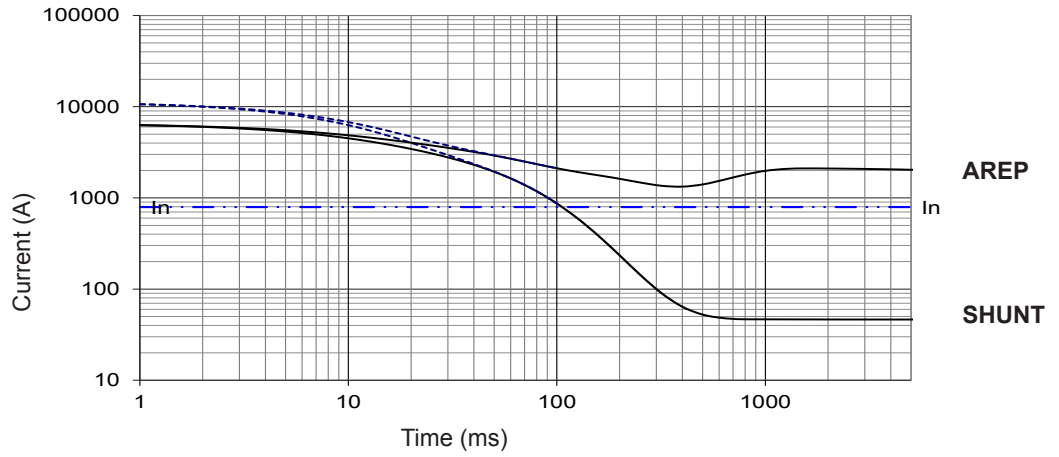
**Influence due to connection**

For (Δ) connection, use the following multiplication factor:  
- Current value x 1.732.

3-phase short-circuit curves at no load and rated speed (star connection Y)

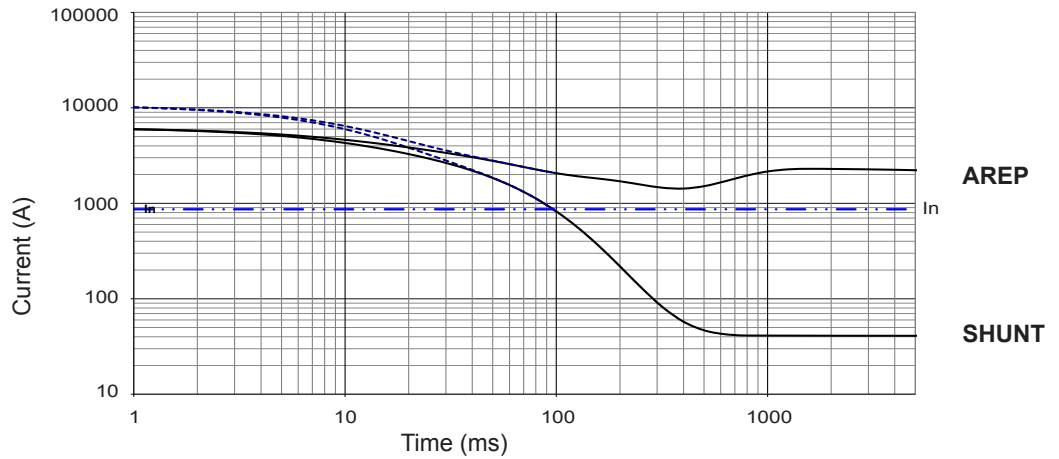
**TAL 047 D**

Symmetrical —  
Asymmetrical - - -



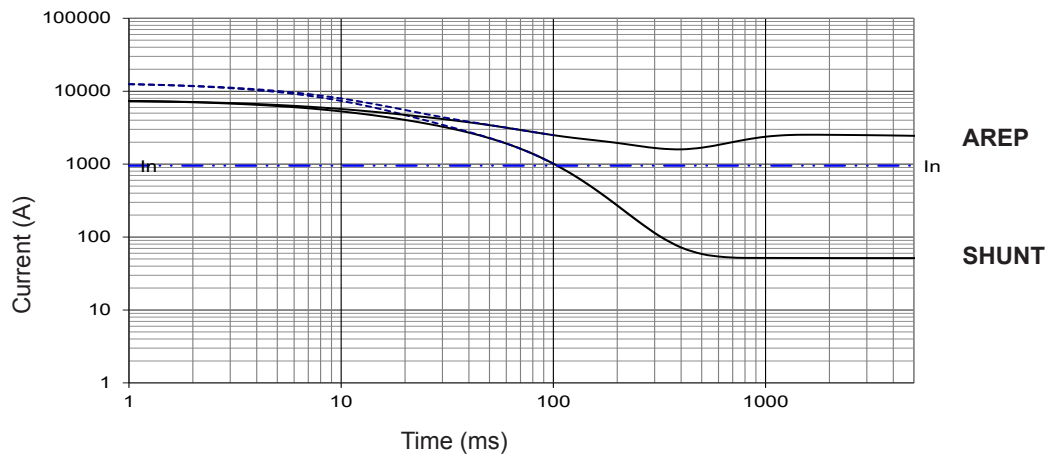
**TAL 047 E**

Symmetrical —  
Asymmetrical - - -



**TAL 047 F**

Symmetrical —  
Asymmetrical - - -

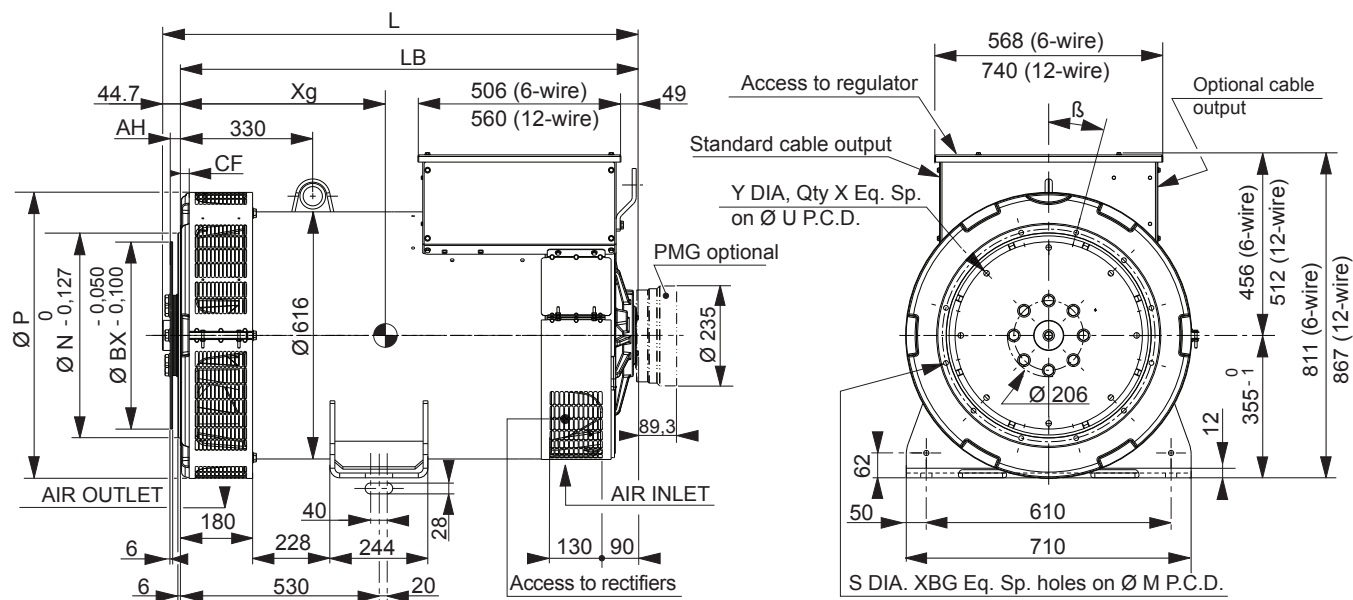


**Influence due to short-circuit**

Curves are based on a three-phase short-circuit. For other types of short-circuit, use the following multiplication factors.

	3 - phase	2 - phase L / L	1 - phase L / N
Instantaneous (max.)	1	0.87	1.3
Continuous	1	1.5	2.2
Maximum duration		1.5	

### Single bearing general arrangement



#### Dimensions (mm) and weight

Type	L without PMG	LB	Xg	Weight (kg)
TAL 047 A	1041	996	437	976
TAL 047 B	1101	1056	471	1113
TAL 047 C	1101	1056	471	1113
TAL 047 D	1201	1156	511	1240
TAL 047 E	1201	1176	520	1289
TAL 047 F	1221	1176	545	1372

#### Coupling

Flex plate	14	18
Flange S.A.E 1	X	
Flange S.A.E 1/2	X	
Flange S.A.E 0	X	X

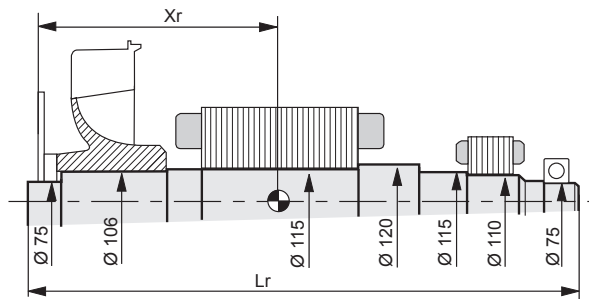
#### Flange (mm)

S.A.E.	P	N	M	XBG	S	β°	CF
1	713	511.175	530.225	12	12	15°	15
1/2	713	584.2	619.125	12	14	15°	22
0	713	647.7	679.45	16	14	11° 15'	42

#### Flex plate (mm)

S.A.E.	BX	U	X	Y	AH
11 1/2	352.42	333.38	8	11	39.6
14	466.72	438.15	8	14	25.4
18	571.5	542.92	6	17	15.7

### Torsional data



#### Centre of gravity: Xr (mm), Rotor length: Lr (mm), Weight: M (kg), Moment of inertia: J (kgm²): (4J = MD²)

Type	Flex plate S.A.E. 14				Flex plate S.A.E. 18			
	Xr	Lr	M	J	Xr	Lr	M	J
TAL 047 A	418.3	1020	374.9	5.92	408.5	1020	376	6.18
TAL 047 B	456	1080	426.6	6.77	446	1080	427.7	7.03
TAL 047 C	456	1080	426.6	6.77	446	1080	427.7	7.03
TAL 047 D	496	1180	477	7.5	486	1180	478.1	7.76
TAL 047 E	507	1180	493.8	7.8	497	1180	494.9	8.06
TAL 047 F	528	1200	525.2	8.32	518	1200	526.3	8.58

**NOTE :** Dimensions are for information only and may be subject to modifications. The torsional analysis of the transmission is imperative. All values are available upon request.



**LEROY-SOMER**<sup>™</sup>

[www.leroy-somer.com/epg](http://www.leroy-somer.com/epg)

[Linkedin.com/company/Leroy-Somer](https://www.linkedin.com/company/Leroy-Somer)  
[Twitter.com/Leroy\\_Somer\\_en](https://twitter.com/Leroy_Somer_en)  
[Facebook.com/LeroySomer.Nidec.en](https://www.facebook.com/LeroySomer.Nidec.en)  
[YouTube.com/LeroySomerOfficiel](https://www.youtube.com/LeroySomerOfficiel)



***Nidec***  
**All for dreams**

© Nidec 2017. The information contained in this brochure is for guidance only and does not form part of any contract. The accuracy cannot be guaranteed as Nidec have an ongoing process of development and reserve the right to change the specification of their products without notice.

Moteurs Leroy-Somer SAS. Siège : Bd Marcellin Leroy, CS 10015, 16915 Angoulême Cedex 9, France.  
Capital social : 65 800 512 €, RCS Angoulême 338 567 258.

# 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

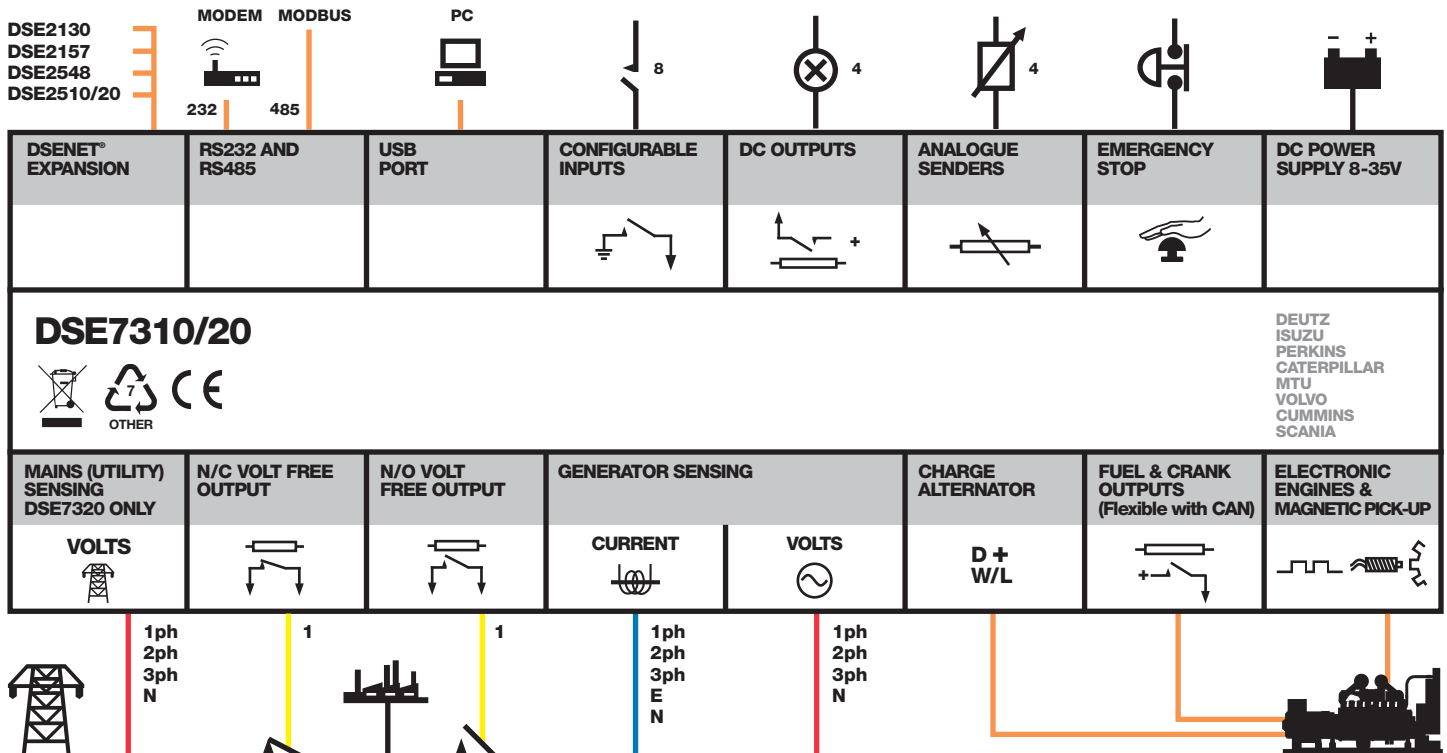
#### SHOCK

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



# DSE7310/20

## AUTO START & AUTO MAINS FAILURE CONTROL MODULES

### FEATURES



#### DSE7310



#### 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

#### DSE7320



- 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

DSE7310 Installation Instructions  
DSE7320 Installation Instructions  
DSE7200/7300 Quick Start Guide  
DSE7200/7300 Operator Manual  
DSE7200/7300 Configuration Suite PC Manual

#### PART NO'S

053-028  
053-029  
057-101  
057-074  
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@deepseapl.com **WEBSITE** www.deepseapl.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