DAR AL-EBDA'A
POWER GENERATORS COMPANY

Perkins® TECHNICAL DATA SHEET

PL200

Prime Power	Standby Power	Voltage/Ph	Hz/RPM	PF
200 kVA/160 kW	220kVA/175 kW	400/3Ph	50/1500	0.8

Prime power
unlimited hours usage with an average load factor of 80% of the published prime power over each 24 hours period. a 10% overload is
available for1 hour in every 12 hours operaton.
The generator is working normally at 55 degrees with derating
Standby power
Limited to 500 hours annual usage with an average load factor of 80% of the published Standby power rating over each 24 hour
period. Up to 300 hours of annual usage may be run continuously. No overload is permitted on Standby power.
Available in 60HZ for all voltage ratings.
Standard Reference Condition
Note: Standard reference conditions 40°C (104°F) Air Inlet Temp, 100m (328 ft) A.S.L. 30% relative humidity.

Diesel Generator Set

Engine Make /Model	PERKINS 1106A-70TAG4
Alternator Make /Model	Leroy Somer TAL-044-M
Control Panel	DSE 7110 MKII
Base Frame / Silent Canopy	Robust Structure/ Corrosion Resistant
Circuit Breaker Type	3 Pole MCCB (4P Available as optional)
Built in Base Fuel Tank Capacity	460L
Battery	Maintenance free Lead Acid

Dimensions	Length (cm)	Width (cm)	Height (cm)	Weight (KG)
Close Type	320	120	198	2400
Open Type	290	100	180	2160

ENGINE SPECIFICATIONS

Engine Make Model	PERKINS 1106A-70TAG4
No. of Cylinders	6 vertical in-line
Cycle	4 Stroke
Aspiration	Turbocharged
Cooling Method	Water cooled
Governing Type	Electronic
Governing Class	G2 - ISO 8528 Part 1
Compression Ratio	16.1
Displacement	7.01 L
Bore/Stroke	105 x 135 mm
Dynamic Charging Alter nator	65AMP, 12V

LUBRICATION SYSTEM

Oil Filter Type	Spin-On Full Flow
Total Oil Capacity	16.5 L
Oil Type	API-CH-4 or ACEA E5

AIR SYSTEM

Air Filter Type	Dry Element
Combustion Air Flow (PRP)	12.6 m³/min
Combustion Air Flow (ESP)	13.2 m³/min
Max Air Filter Intake Restriction	5 kPA

COOLING SYSTEM

Total Coolant Capacity (L)	21 L
Cooling Fan Air Flow	282 m³/ min
Radiator Fan Load	5 kW
Cooling system design	Above 50ºC
Heat Radiation to Room (PRP)	13.2 kW

Exhaust System

Muffler Type	Industrial Grade
Max. Back Pressure	6 kPa
Exhaust Gas Flow (PRP/ESP)	34.9/36.8 m³/ min
Exhaust Gas Tempera ture	< 550ºC

Comply with Standards

ISO 3046, BS 5514, DIN 6271, NEMA-MGI, DIN EN, BS 5000, IEC 60034,IEC 60947-2

PL Generator Set Reliable, Premium Power Supply

Features & Benefits:

- PL Gen set is driven by Perkins Engine, a world-renowned manufacturer with over 85 years of experience and a strong reputation for innovation, quality, and customer support across 182 countries through 3,500 outlets.
- PL Gen set is equipped with a Leroy Somer Alternator, one of the leading global alternator manufacturers, offering more than 99 years of experience, over 120 active patents, operations in more than 40 countries, and over 80 service centers.
- PL Gen set comes with a DSE Control System, supplied by one of the UK's leading manufacturers, with more than 40 years of expertise in advanced, reliable, and user-friendly generator controllers.
- Low fuel consumption, providing greater efficiency and reducing overall fuel operating costs.
- Compact and durable construction, minimizing transportation requirements and reducing storage expenses.
- Engineered with a space-efficient configuration, making it suitable for critical applications where installation space comes at a premium.
- Low noise and reduced vibration levels, ideal for sensitive and critical environments where noise control is essential.
- Easy servicing and extended operating life, helping reduce maintenance requirements and associated service costs.
- Every unit is rigorously tested, including load, cooling, vibration, and noise testing, before being delivered to the customer.
- Designed for simple operation and reliable performance, even under demanding environmental and harsh operating conditions.
- Fitted with a built-in fuel tank providing sufficient capacity for approximately 8 to 10 hours of operation.
- Fully engineered with a wide selection of optional accessories available to meet different operational requirements.

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Branch 2 - Iraq - Baghdad - Khalid Ibn Al-Walid Street - Opposite the Martyrs Foundation

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PL200

Perkins Engine
1106A-70TAG4

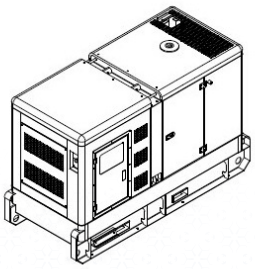
Engine Fuel System	
Recommended Fuel	Class A2 Diesel
Fuel Consumption Standby	49.4 L/hr
Fuel Consumption 100% PRP	45.8 L/hr
Fuel Consumption 75% PRP	34.7 L/hr
Fuel Consumption 50% PRP	23.1 L/hr

Leroy Somer
TAL 044-M

ALTERNATOR SPECIFICATIONS	
Alternator Make /Model	Leroy Somer TAL-044-M
AVR Model	R150
Number of Poles	4
Number of Winding Leads	6
Type of Bearing	Single Bearing
Insulation Class - Temp Rise	Cont. H - 125/40ºC
Ingress Protection Rating	IP 23
Excitation System	Self Excited
Voltage Regulation	±1%
Harmonic Coefficient THF	< 2.5%
Tel. influence TIF	< 50
Cooling air flow	0.48 m³/ Sec

DSE 7110MKII

Controller Make & Model | DeepSea 7110MKII	
Operation Mode	AMF
Display	Graphic Back-lit LCD (128x64) pixles
Ingress Protection Rating	IP65
Binary Inputs/Outputs	6 / 4
Analog Inputs	4
Measurement	Vac, A, Hz, kVA, kW, Vdc
Event Log	Alarms log, Hrs log
Communication	USB



Enclosure Type	
Drainage	Fuel and Water Drainage Provision
Transportation	Tested Single Point Lifting Facility & Forklift Pockets
Ingress Protection	IP 23
Lifting	ISO Standard Lifting
Canopy RAL Color	RAL 9010 - Powder coated
Base frame RAL Color	RAL 9005 - Powder coated
Noise Pressure level	85 dBA @ 1 to 3 m

WARRANTY

1. WARRANTY POLICY

DPG generators are covered for 1,000 operating hours or one year, whichever comes first, against manufacturing defects. Warranty excludes improper fuel, misuse, incorrect operation, and maintenance-related failures. Minimum operating load: 60%.

2. DOCUMENTATION

Each generator is supplied with Operation & Maintenance Manual, GAD, Wiring Diagram, and FAT Report.

3. OPTIONAL FEATURES

Engine: Heavy-Duty Air Filter, Coolant/Oil Heater, Fuel & Water Separator, Oil Rotary Pump.
Alternator: Anti-Condensation Heater, PMG + AVR, Double Bearing, RTD Sensors.

Cooling & Control: 55°C or Remote Radiator, AMF/Parallel Operation, Remote Annunciator, 4-Pole Manual/Motorized Breaker.
ATS & Battery: Contactor or Motorized ATS, Nickel-Cadmium or Maintenance-Free Battery, Charger, Selector Switch and Current Meter.
Exhaust: Residential, Critical or Hospital Grade Mufflers.

Available Voltages:400/230V, 480/277V, 380/220V, 440/254V, 416/240V, 220/127V, 208/120V.

Due to continuous research & product development, we reserve the right to change specification with out notice

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1100 Series 1106A-70TAG4 Diesel Engine – ElectropaK

200 kVA Prime Power / 220 kVA Standby Power

Building upon Perkins proven reputation within the power generation industry, the 1100 Series range of ElectropaK engines now fit even closer to customers needs.

In the world of power generation success is only gained by providing more for less. With the 1106A-70TAG Perkins has engineered even higher levels of reliability, yet lowered the cost of ownership.

1100A units are designed for territories that do not require compliance to EPA or EU emissions legislation. These engines are assembled around optimal, efficient manufactuing processes with state-of-the-art technology. They are built to provide the exact power solution for customers who sell their applications into lesser regulated countries.

Focusing on our common platform theme, changes to engine envelope dimensions and connection points have been kept to a minimum.

Dependable power

- The Perkins 1106A-70TAG delivers up to 220 kVA standby at 50 Hz, providing greater productivity through an improved power to weight ratio
- This world-class power density has been achieved in a 7 litre engine, using a mechanical fuel injection system; making this engine robust for all markets, with the ability to cope with the variation of fuel qualities around the world

  The 1106A has been designed for excellent load acceptance to ensure your facility is powered quickly at all conditions

Low operating costs

- Service intervals are set at 500 hours as standard.
- Perkins provides comprehensive warranty cover for two years (up to 3,000 hours), with three years on major engine components
- A low usage warranty package is also available

World class product support

- Through an experienced global network of distributors and dealers, fully trained engine experts deliver total service support around the clock, 365 days a year. They have a comprehensive suite of web based tools at their finger tips, covering technical information, parts identification and ordering systems, all dedicated to maximising the productivity of your engine
- Perkins actively pursues product support excellence by insisting our distribution network invest in their territory to provide you with a consistent quality of support across the globe
- Throughout the entire life of a Perkins engine, we provide access to genuine OE specification parts giving 100% reassurance that you receive the very best in terms of quality for lowest possible cost… wherever your Perkins powered machine is operating in the world

Discover more
www.perkins.com
www.perkins.com/esc

www.perkins.com/distributor
To find your local distributor

Engine Speed rpm	Type of Operation	Typical Generator Output (Net)		Engine Power			
				Gross		Net	
		kVA	kWe	kWm	hp	kWm	hp
1500	Prime Power	200	160	178.9	240	173.9	240
	Standby (maximum)	220	176	196.3	263	191.3	256

Perkins®
THE HEART OF EVERY GREAT MACHINE

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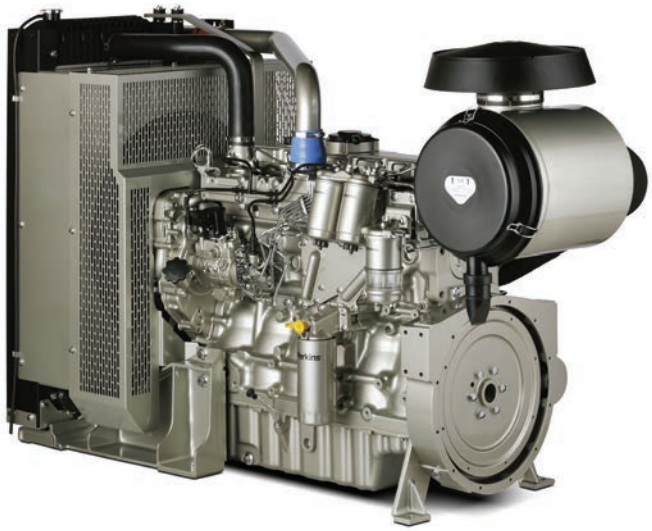
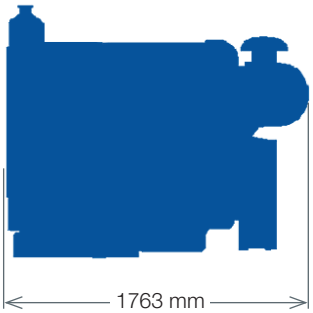
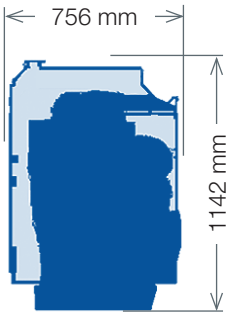
1100 Series 1106A-70TAG4 Diesel Engine – ElectropaK

200 kVA Prime Power / 220 kVA Standby Power







Engine specification

- Tropical radiator pipes and guards
- Flywheel housing
- Flywheel and starter ring
- Oil filters
- Starter motor
- Air cleaners and brackets
- Lubricating oil sump
- Alternator
- Induction manifolds
- Exhaust manifolds
- Fuel filter
- Cold start aid
- Engine mountings

Engine data

Number of cylinders	Vertical in-line 6 cylinder
Bore and stroke	105 x 135 mm (4.13 x 5.31 in)
Displacement	7.01 litres (428 in^3)
Aspiration	Turbocharged aftercooled
Cycle	4 stroke
Combustion system	Direct injection
Compression ratio	16:1
Engine rotation	Anti-clockwise viewed on flywheel
Cooling system	Liquid
Total lubrication capacity	16.5 litres (4.36 US gal)
Total coolant capacity	21 litres (5.5 US gal)
Dimensions – Length	1763 mm (69.4 in) with air cleaner
Width	756 mm (29.8 in)
Height	1142 mm (45 in)
Dry weight	788 kg (1737 lbs)

Final weight and dimensions will depend on completed specification

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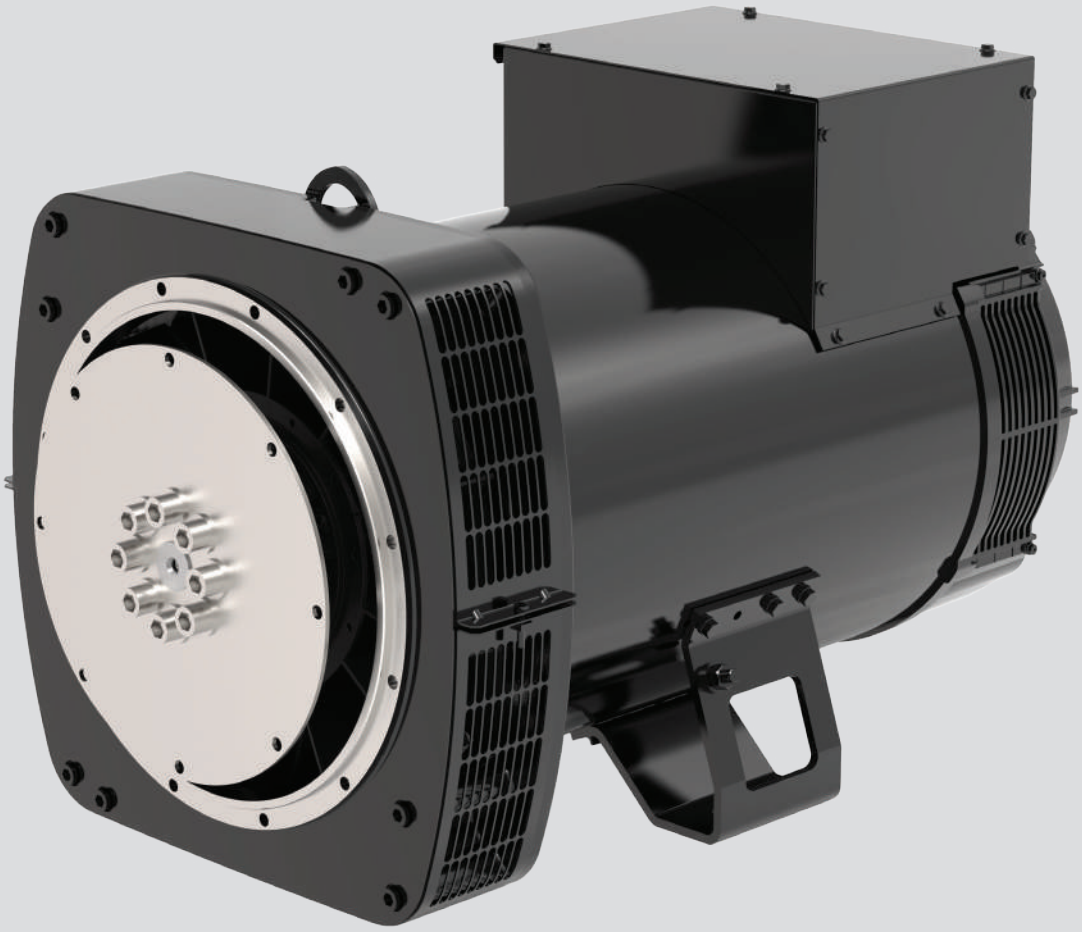


TAL 044

Low Voltage Alternator - 4 pole

Three-phase 70 to 200 kVA - 50 Hz / 88 to 250 kVA - 60 Hz
Dedicated single-phase 57 to 82 kVA - 50 Hz / 80 to 125 kVA - 60 Hz
Electrical and mechanical data

LEROY-SOMER™

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
  Single-phase 50 Hz: 230V
  60 Hz: 240V
- 4-terminal plates in 6-wire version
- Optimized performance
- Complies with EN 61000-6-3, EN 61000-6-2, EN 55011, group 1 class B for European zone (EC marking)

Robust design

- Compact and rugged assembly to withstand engine vibrations
- Steel frame
- Aluminum flanges and shields
- Single bearing design compatible with most diesel engines
- Sealed for life single bearing
- Direction of rotation: clockwise and counterclockwise without derating

Excitation and regulation system suited to the application

	Excitation system				Regulation options		
	AVR	**SHUNT**	**AREP+** (option)	**PMG** (option)	**ULc/us**	**Remote voltage potentiometer**	**C.T. for paralleling**
Three-phase 6-wire	**R120**	Standard					
	R150	Option				√	
	R180		Standard	Standard		√	√
	D350	Option	Option	Option	√	√	√
Three-phase 12-wire	**R120**	Standard					
	R250	Option			√	√	
	R180		Standard	Standard		√	√
	D350	Option	Option	Option	√	√	√
Single-phase	**R121**	Standard				√	
	R250	Option			√	√	

√ : Possible option

Compact terminal box

- Easy access to AVR and terminals
- Possibility of current transformer for parallel operation

Environment and protection

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

Available options

- Three-phase 12-wire with 8-terminal plates
- AREP+ or PMG excitation
- ULc/us
- Customized painting (machine not painted as standard)
- Space heaters
- Flying leads
- Droop kit for alternator paralleling
- Dedicated single-phase
- Stator sensors
- Winding 8 optimized for three-phase 380V / 416V - 60Hz
- Winding protection for harsh environments and relative humidity greater than 95% (system 2 - 4 without derating): for TAL 044 K apply a derating coefficient of 0.97

TAL 044 - Three-phase 70 to 200 kVA - 50 Hz / 88 to 250 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	R120	R180
Number of wires	6-wire (12-wire option)	Excitation system 12-wire (option)	SHUNT	AREP+ / PMG
Protection	IP 23	AVR type	R120	R180
Altitude	≤ 1000 m	Voltage regulation (*)	± 1 %	
Overspeed	2250 R.P.M.	Total Harmonic Distortion THD (**) in no-load	< 2 %	
Air flow 50 Hz (m³/s)	0.29	Total Harmonic Distortion THD (**) in linear load	< 5 %	
Air flow 60 Hz (m³/s)	0.34	Waveform: NEMA = TIF (**)	< 50	
AREP+ Short-circuit current = 2.7 In : 5 second		Waveform: I.E.C. = FHT (**)	< 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.**				**1 ph.**	**3 ph.**				**1 ph.**	**3 ph.**				**1 ph.**	**3 ph.**				**1 ph.**
Y		380V	400V	415V	440V		380V	400V	415V	440V		380V	400V	415V	440V		380V	400V	415V	440V	
Δ		220V	230V	240V		230V	220V	230V	240V		230V	220V	230V	240V		230V	220V	230V	240V		230V
YY (*)					220V					220V					220V					220V	
ΔΔ (*)						230V					230V					230V					230V
TAL 044 A	kVA	70	**70**	70	63	42	64	**64**	64	57	38	74	**74**	74	67	45	77	**77**	77	69	46
	kW	*56*	*56*	*56*	*50*	*33.5*	*51*	*51*	*51*	*46*	*30.5*	*59*	*59*	*59*	*54*	*36*	*62*	*62*	*62*	*55*	*37*
TAL 044 B	kVA	80	**80**	80	72	48	73	**73**	73	66	44	85	**85**	85	76	51	88	**88**	88	79	53
	kW	*64*	*64*	*64*	*58*	*38.5*	*58*	*58*	*58*	*53*	*35*	*68*	*68*	*68*	*61*	*41*	*70*	*70*	*70*	*63*	*42*
TAL 044 C	kVA	90	**90**	90	81	54	82	**82**	82	74	49	95	**95**	95	86	57	100	**100**	100	89	59
	kW	*72*	*72*	*72*	*65*	*43*	*66*	*66*	*66*	*59*	*39*	*76*	*76*	*76*	*69*	*46*	*80*	*80*	*80*	*71*	*47*
TAL 044 D	kVA	100	**100**	100	90	60	91	**91**	91	82	55	106	**106**	106	95	64	110	**110**	110	99	66
	kW	*80*	*80*	*80*	*72*	*48*	*73*	*73*	*73*	*66*	*44*	*85*	*85*	*85*	*76*	*51*	*88*	*88*	*88*	*79*	*53*
TAL 044 E	kVA	125	**125**	125	113	67	114	**114**	114	103	61	133	**133**	133	120	71	138	**138**	138	124	74
	kW	*100*	*100*	*100*	*90*	*54*	*91*	*91*	*91*	*82*	*49*	*106*	*106*	*106*	*96*	*57*	*110*	*110*	*110*	*99*	*59*
TAL 044 H	kVA	135	**135**	135	122	73	123	**123**	123	111	66	143	**143**	143	129	77	150	**150**	150	134	80
	kW	*108*	*108*	*108*	*98*	*58*	*98*	*98*	*98*	*89*	*53*	*114*	*114*	*114*	*103*	*62*	*120*	*120*	*120*	*107*	*64*
TAL 044 J	kVA	150	**150**	150	135	80	137	**137**	137	123	73	159	**159**	159	143	85	165	**165**	165	149	88
	kW	*120*	*120*	*120*	*108*	*64*	*110*	*110*	*110*	*98*	*58*	*127*	*127*	*127*	*114*	*68*	*132*	*132*	*132*	*119*	*70*
TAL 044 K	kVA	165	**165**	165	138	88	150	**150**	150	126	80	175	**175**	175	150	93	182	**182**	182	157	97
	kW	*132*	*132*	*132*	*110*	*70*	*120*	*120*	*120*	*101*	*64*	*140*	*140*	*140*	*120*	*74*	*146*	*146*	*146*	*126*	*78*
TAL 044 L	kVA	180	**180**	180	171	90	164	**164**	164	156	82	191	**191**	191	181	95	200	**200**	200	188	99
	kW	*144*	*144*	*144*	*137*	*72*	*131*	*131*	*131*	*125*	*66*	*153*	*153*	*153*	*145*	*76*	*160*	*160*	*160*	*150*	*79*
TAL 044 M	kVA	192	**200**	200	192	100	175	**182**	182	175	91	204	**212**	212	204	106	211	**220**	220	211	110
	kW	*154*	*160*	*160*	*154*	*80*	*140*	*146*	*146*	*140*	*73*	*163*	*170*	*170*	*163*	*85*	*169*	*176*	*176*	*169*	*88*

(*) 12-wire option

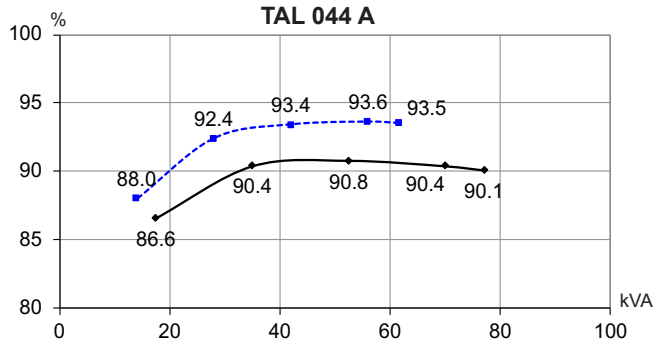
Ratings 60 Hz - 1800 R.P.M.

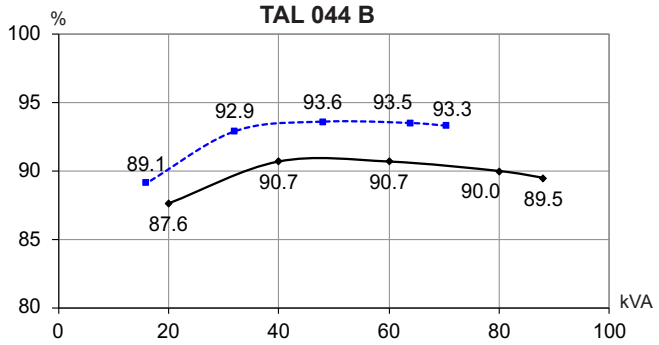
kVA / kW - P.F. = 0.8

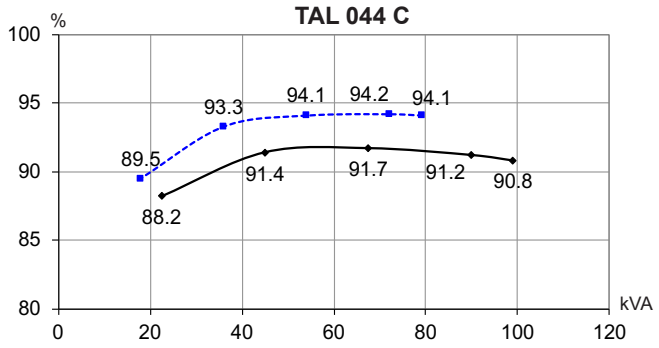
Duty / T° C		Continuous / 40 °C					Continuous / 40 °C					Stand-by / 40 °C					Stand-by / 27 °C				
Class / T° K		H / 125° K					F / 105° K					H / 150° K					H / 163° K				
Phase		**3 ph.**				**1 ph.**	**3 ph.**				**1 ph.**	**3 ph.**				**1 ph.**	**3 ph.**				**1 ph.**
Y		380V	416V	440V	480V		380V	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	
ΔΔ (*)						240V					240V					240V					240V
TAL 044 A	kVA	69	76	80	**88**	46	63	69	73	**80**	42	73	81	85	**93**	49	76	84	88	**97**	51
	kW	*55*	*61*	*64*	*70*	*37*	*50*	*55*	*58*	*64*	*33.5*	*58*	*65*	*68*	*74*	*39*	*61*	*67*	*70*	*78*	*41*
TAL 044 B	kVA	79	87	92	**100**	52	72	79	84	**91**	47	84	92	98	**106**	55	87	96	101	**110**	57
	kW	*63*	*70*	*74*	*80*	*42*	*58*	*63*	*67*	*73*	*37.5*	*67*	*74*	*78*	*85*	*44*	*70*	*77*	*81*	*88*	*46*
TAL 044 C	kVA	89	98	103	**113**	59	81	89	94	**103**	54	94	104	109	**120**	63	98	108	113	**124**	65
	kW	*71*	*78*	*82*	*90*	*47*	*65*	*71*	*75*	*82*	*43*	*75*	*83*	*87*	*96*	*50*	*78*	*86*	*90*	*99*	*52*
TAL 044 D	kVA	99	108	115	**125**	65	90	98	105	**114**	59	105	114	122	**133**	69	109	119	127	**138**	72
	kW	*79*	*86*	*92*	*100*	*52*	*72*	*78*	*84*	*91*	*47*	*84*	*91*	*98*	*106*	*55*	*87*	*95*	*102*	*110*	*58*
TAL 044 E	kVA	124	135	143	**156**	76	113	123	130	**142**	69	131	143	152	**165**	81	136	149	157	**172**	84
	kW	*99*	*108*	*114*	*125*	*61*	*90*	*98*	*104*	*114*	*55*	*105*	*114*	*122*	*132*	*65*	*109*	*119*	*126*	*138*	*67*
TAL 044 H	kVA	134	146	155	**169**	81	122	133	141	**154**	74	142	155	164	**179**	86	147	161	171	**186**	89
	kW	*107*	*117*	*124*	*135*	*65*	*98*	*106*	*113*	*123*	*59*	*114*	*124*	*131*	*143*	*69*	*118*	*129*	*137*	*149*	*71*
TAL 044 J	kVA	148	163	172	**188**	95	135	148	157	**171**	86	157	173	182	**199**	101	163	179	189	**207**	105
	kW	*118*	*130*	*138*	*150*	*76*	*108*	*118*	*126*	*137*	*69*	*126*	*138*	*146*	*159*	*81*	*130*	*143*	*151*	*166*	*84*
TAL 044 K	kVA	165	179	189	**206**	105	150	163	172	**187**	96	175	190	200	**218**	111	182	197	208	**227**	116
	kW	*132*	*143*	*151*	*165*	*84*	*120*	*130*	*138*	*150*	*77*	*140*	*152*	*160*	*174*	*89*	*146*	*158*	*166*	*182*	*93*
TAL 044 L	kVA	180	195	210	**225**	113	164	177	191	**205**	102	191	207	223	**239**	119	200	215	231	**250**	124
	kW	*144*	*156*	*168*	*180*	*90*	*131*	*142*	*153*	*164*	*82*	*153*	*166*	*178*	*191*	*95*	*160*	*172*	*185*	*200*	*99*
TAL 044 M	kVA	200	215	230	**250**	125	182	196	209	**228**	114	212	228	244	**265**	133	220	237	253	**275**	136
	kW	*160*	*172*	*184*	*200*	*100*	*146*	*157*	*167*	*182*	*91*	*170*	*182*	*195*	*212*	*106*	*176*	*190*	*202*	*220*	*109*

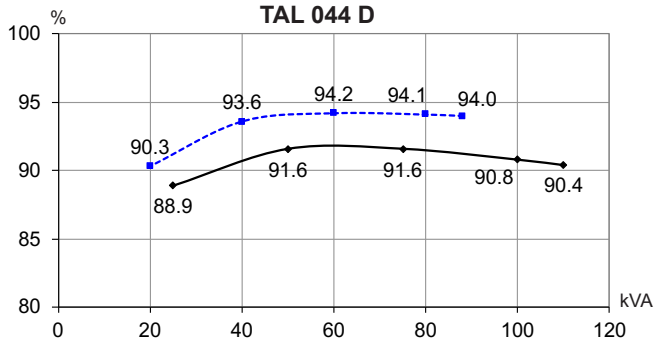
(*) 12-wire option

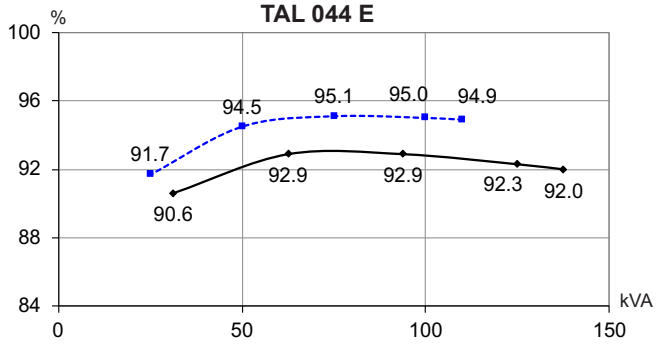
Efficiencies 400 V - 50 Hz (— P.F.: 0.8) (····· P.F.: 1)

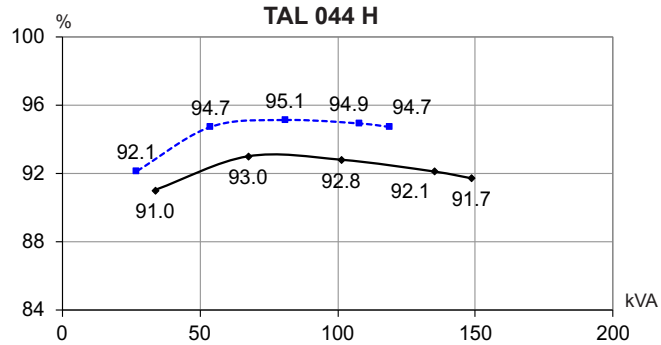


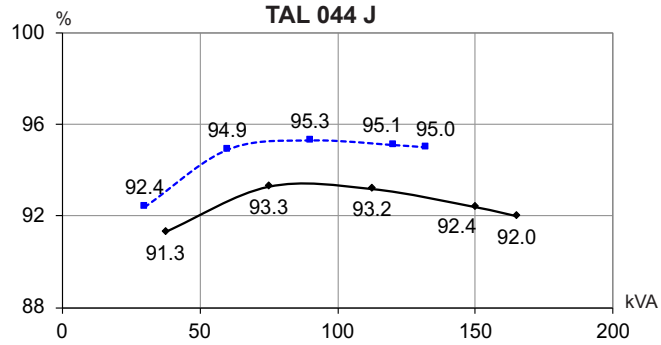


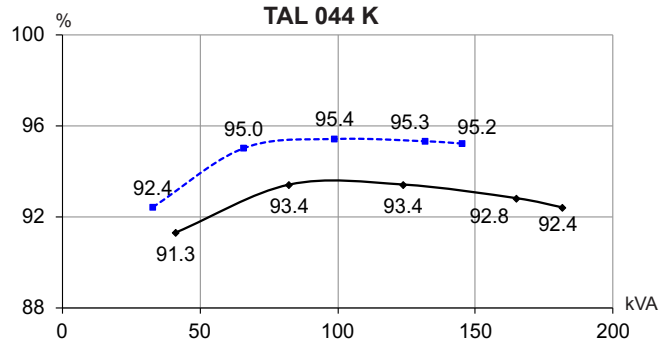


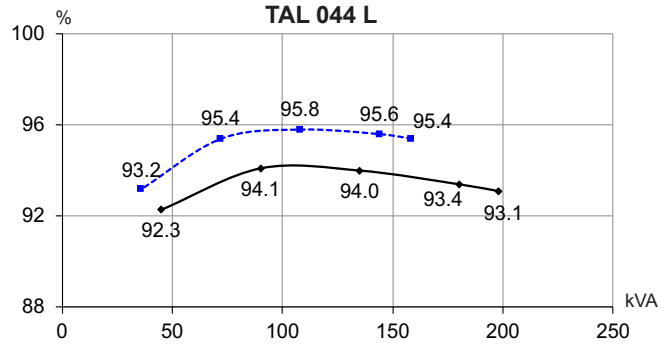


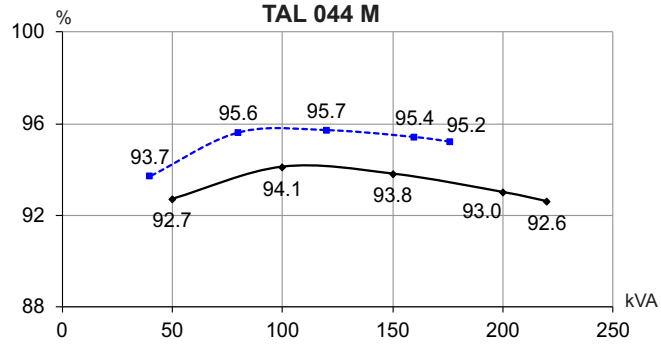




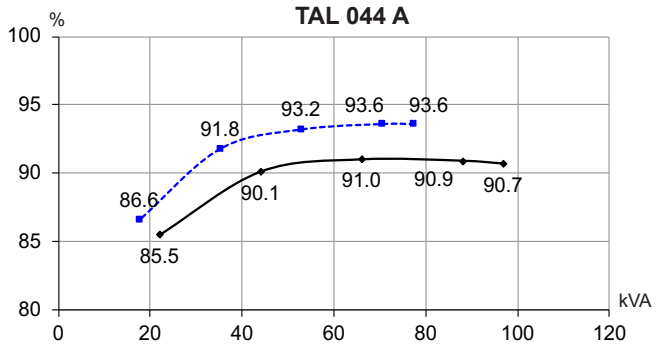


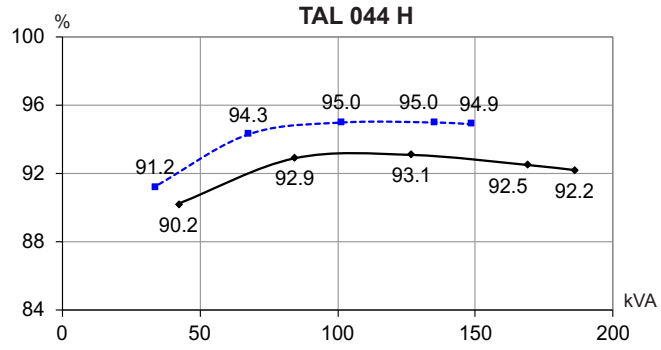


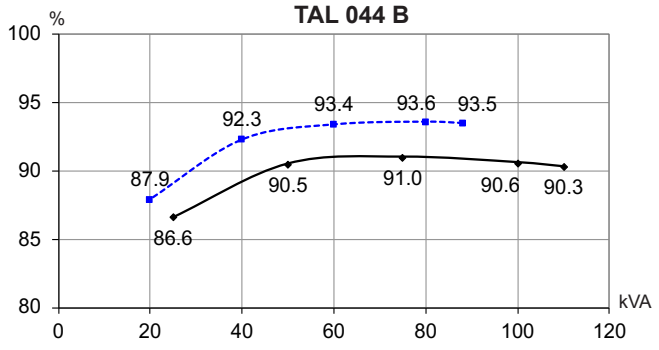


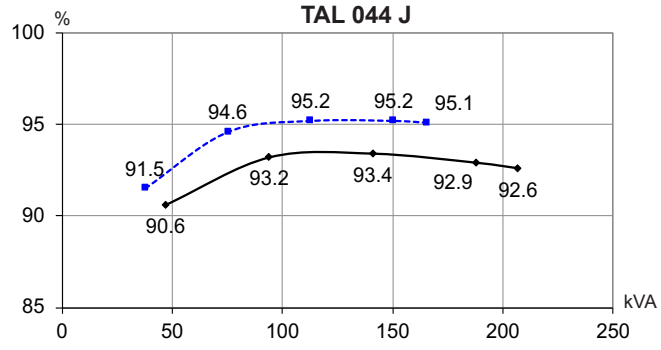


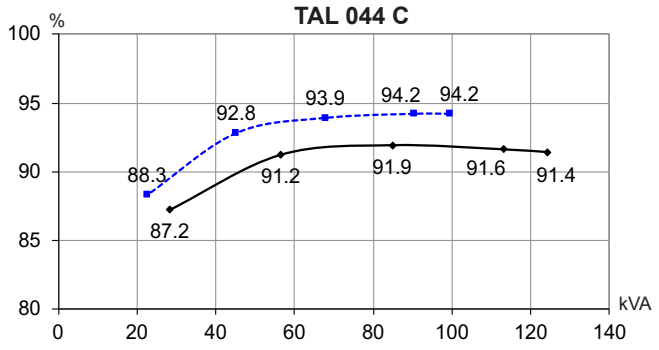
Efficiencies 480 V - 60 Hz (— P.F.: 0.8) (····· P.F.: 1)

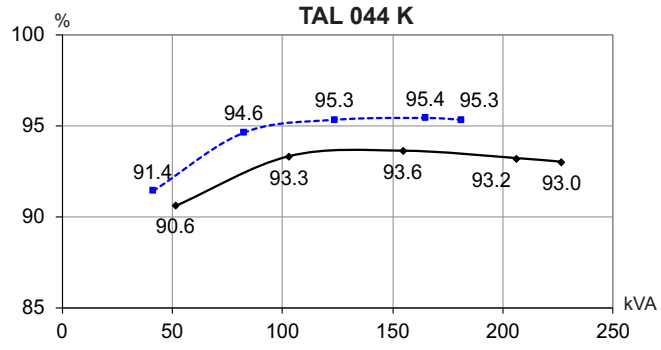


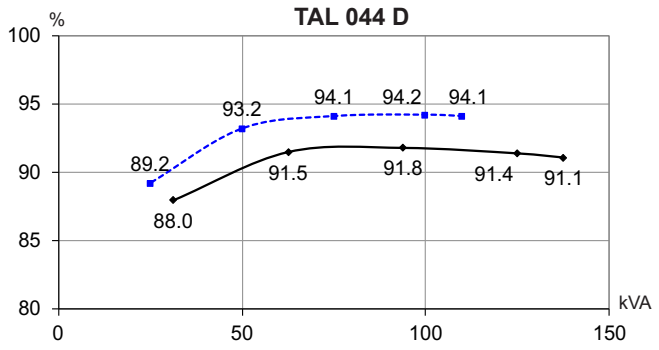


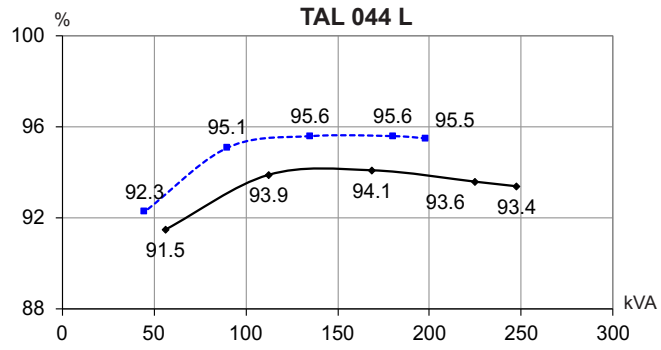


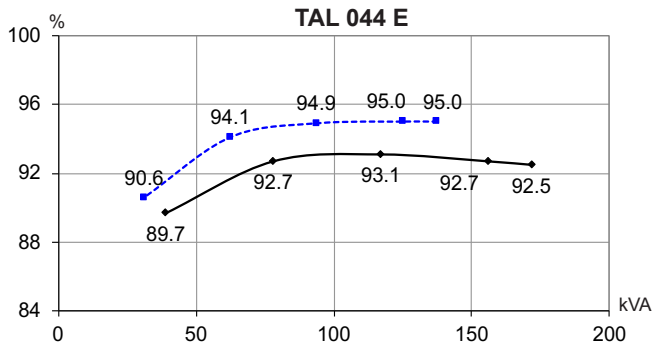


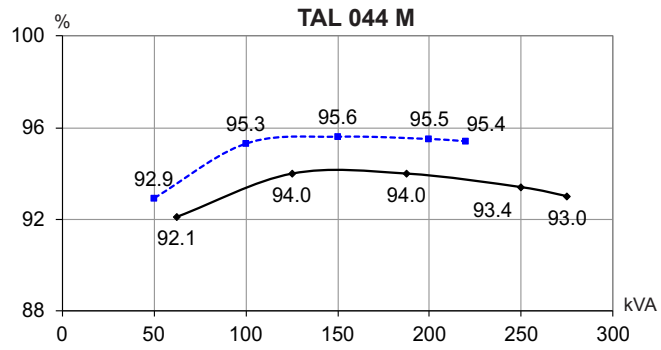












Reactances (%). Time constants (ms) - Class H / 400 V

		A	B	C	D	E	H	J	K	L	M
Kcc	Short-circuit ratio	0.57	0.5	0.53	0.48	0.43	0.4	0.4	0.42	0.37	0.33
Xd	Direct-axis synchro. reactance unsaturated	294	336	307	341	334	361	359	343	343	381
Xq	Quadrature-axis synchro. reactance unsaturated	150	171	156	174	170	184	183	175	175	194
T'do	No-load transient time constant	2475	2475	2308	2308	2154	2154	2112	2077	2025	2025
X'd	Direct-axis transient reactance saturated	11.9	13.6	13.3	14.7	15.5	16.7	17	16.5	16.9	18.8
T'd	Short-circuit transient time constant	100	100	100	100	100	100	100	100	100	100
X"d	Direct-axis subtransient reactance saturated	7.1	8.1	7.9	8.8	9.3	10	10.2	9.9	10.1	11.3
T"d	Subtransient time constant	10	10	10	10	10	10	10	10	10	10
X"q	Quadrature-axis subtransient reactance saturated	16.1	18.3	17	18.9	18.9	20.4	20.4	19.5	19.7	21.9
Xo	Zero sequence reactance	0.49	0.56	0.55	0.61	0.64	0.69	0.7	0.68	0.7	0.78
X2	Negative sequence reactance saturated	11.62	13.28	12.53	13.92	14.12	15.25	15.31	14.74	14.96	16.62
Ta	Armature time constant	15	15	15	15	15	15	15	15	15	15

Other class H / 400 V data

io (A)	No-load excitation current SHUNT	0.84	0.84	0.80	0.80	0.67	0.67	0.66	0.68	0.64	0.64
io (A)	No-load excitation current AREP+	1.08	1.08	1.03	1.03	0.87	0.87	0.85	0.88	0.82	0.82
ic (A)	On-load excitation current SHUNT	2.60	2.95	2.75	3.08	2.57	2.78	2.79	2.82	2.69	3.01
ic (A)	On-load excitation current AREP+	3.35	3.80	3.54	3.96	3.31	3.59	3.60	3.63	3.46	3.88
uc (V)	On-load excitation voltage SHUNT	28.9	32.5	30.1	33.2	31.9	34.3	34.1	34.1	20.1	22.2
uc (V)	On-load excitation voltage AREP+	23.2	26.1	24.1	26.7	25.6	27.5	27.4	27.4	15.8	17.5
ms	Response time (ΔU = 20% transient)	500	500	500	500	500	500	500	500	500	500
kVA	Start (ΔU = 20% cont. or ΔU = 30% trans.) SHUNT*	124	124	143	143	204	205	225	254	318	318
kVA	Start (ΔU = 20% cont. or ΔU = 30% trans.) AREP+*	203	203	233	233	333	334	366	413	542	543
%	Transient ΔU (on-load 4/4) SHUNT - P.F.: 0.8 $_{LAG}$	17.2	18.8	18.5	19.9	18.2	19.1	19.3	18.9	17.3	18.6
%	Transient ΔU (on-load 4/4) AREP+ - P.F.: 0.8 $_{LAG}$	12.5	13.6	13.4	14.4	13.2	13.8	13.9	13.7	12.2	13
W	No-load losses	1980	1980	2175	2175	2322	2322	2478	2785	2665	2665
W	Heat dissipation	5903	7091	6931	8053	8255	9254	9769	10184	10134	11898

* P.F. = 0.6

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

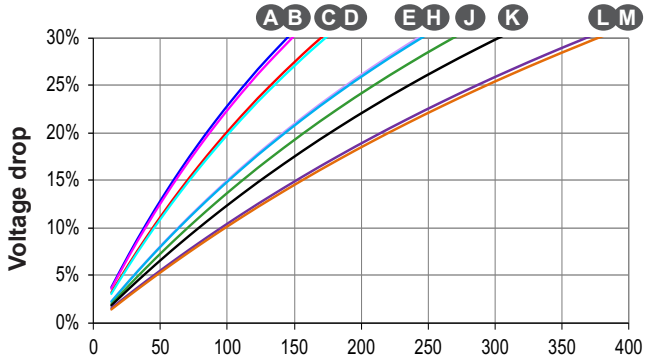
		A	B	C	D	E	H	J	K	L	M
Kcc	Short-circuit ratio	0.55	0.48	0.5	0.46	0.41	0.38	0.38	0.41	0.36	0.32
Xd	Direct-axis synchro. reactance unsaturated	308	350	321	355	348	377	375	356	358	397
Xq	Quadrature-axis synchro. reactance unsaturated	157	178	164	181	177	192	191	182	182	202
T'do	No-load transient time constant	2475	2475	2308	2308	2154	2154	2112	2077	2025	2025
X'd	Direct-axis transient reactance saturated	12.4	14.1	13.9	15.4	16.1	17.5	17.7	17.1	17.6	19.6
T'd	Short-circuit transient time constant	100	100	100	100	100	100	100	100	100	100
X"d	Direct-axis subtransient reactance saturated	7.4	8.5	8.3	9.2	9.7	10.5	10.6	10.3	10.6	11.7
T"d	Subtransient time constant	10	10	10	10	10	10	10	10	10	10
X"q	Quadrature-axis subtransient reactance saturated	16.8	19.1	17.8	19.7	19.6	21.3	21.3	20.3	20.5	22.8
Xo	Zero sequence reactance	0.51	0.59	0.58	0.64	0.67	0.72	0.74	0.71	0.73	0.81
X2	Negative sequence reactance saturated	12.17	13.83	13.1	14.49	14.69	15.91	15.99	15.34	15.59	17.32
Ta	Armature time constant	15	15	15	15	15	15	15	15	15	15

Other class H / 480 V data

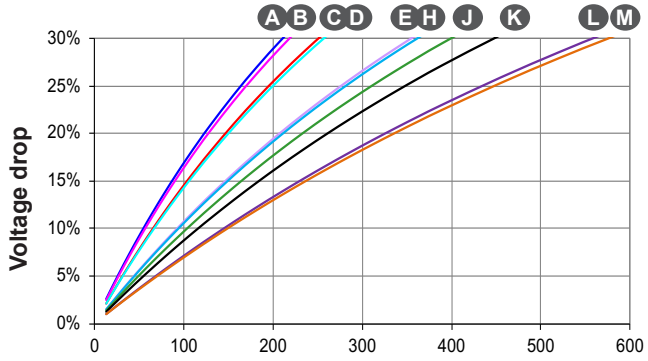
io (A)	No-load excitation current SHUNT	0.84	0.84	0.79	0.79	0.67	0.67	0.66	0.68	0.63	0.63
io (A)	No-load excitation current AREP+	1.08	1.08	1.02	1.02	0.87	0.87	0.85	0.87	0.82	0.82
ic (A)	On-load excitation current SHUNT	2.60	2.91	2.72	3.01	2.58	2.79	2.79	2.79	2.69	3.00
ic (A)	On-load excitation current AREP+	3.34	3.76	3.51	3.88	3.32	3.59	3.60	3.59	3.47	3.87
uc (V)	On-load excitation voltage SHUNT	29.3	32.6	30.3	33.3	32.4	34.8	34.7	34.4	20.4	22.6
uc (V)	On-load excitation voltage AREP+	23.5	26.2	24.4	26.7	26	28	27.8	27.6	16.1	17.8
ms	Response time (ΔU = 20% transient)	500	500	500	500	500	500	500	500	500	500
kVA	Start (ΔU = 20% cont. or ΔU = 30% trans.) SHUNT*	149	150	172	172	246	246	270	304	381	381
kVA	Start (ΔU = 20% cont. or ΔU = 30% trans.) AREP+*	244	244	279	281	401	402	438	498	648	650
%	Transient ΔU (on-load 4/4) SHUNT - P.F.: 0.8 $_{LAG}$	17.7	19.3	19.1	20.4	18.6	19.7	19.9	19.4	17.8	19.1
%	Transient ΔU (on-load 4/4) AREP+ - P.F.: 0.8 $_{LAG}$	12.9	14	13.8	14.7	13.5	14.2	14.3	14	12.5	13.4
W	No-load losses	2905	2905	3189	3189	3417	3417	3639	4070	3923	3923
W	Heat dissipation	7042	8265	8222	9378	9683	10805	11438	11913	12145	14130

* P.F. = 0.6

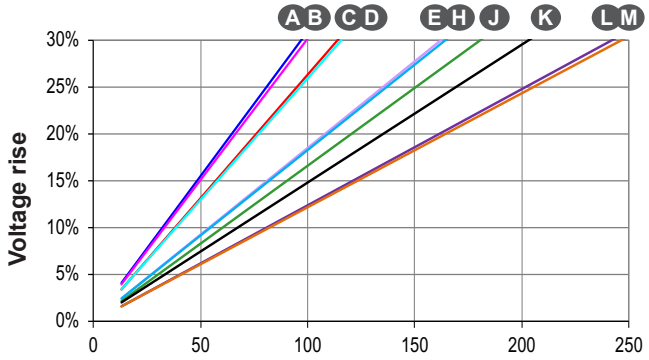
Transient voltage variation 400V - 50 Hz



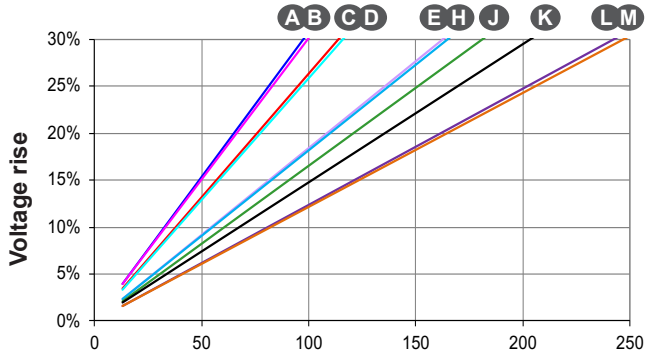
Phase loading (SHUNT) - kVA at P.F. = 0.8



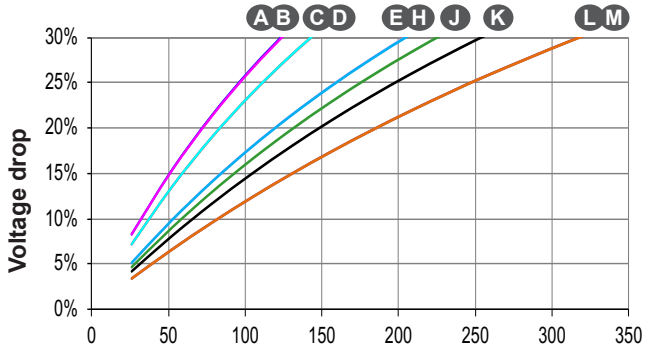
Phase loading (AREP+) - kVA at P.F. = 0.8



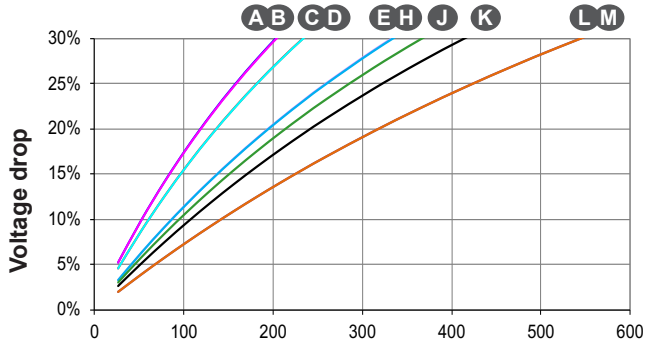
Load shedding (SHUNT) - kVA at P.F. = 0.8



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



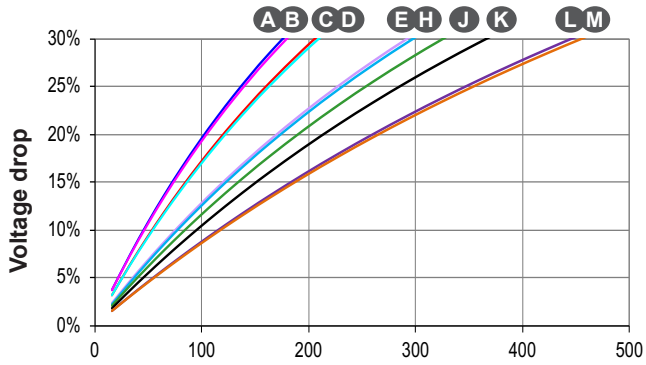
Motor starting (SHUNT)
Locked rotor kVA at P.F. = 0.6



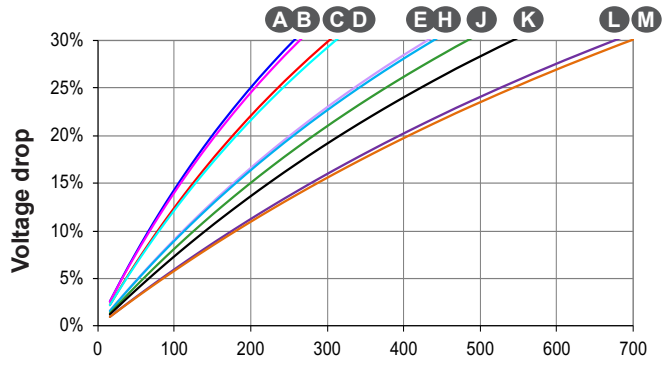
Motor starting (AREP+)
Locked rotor kVA at P.F. = 0.6

- For a starting P.F. other than 0.6, the starting kVA must be multiplied by K = Sine P.F. / 0.8
- For voltages other than 400V (Y), 230V (Δ) at 50 Hz, then kVA must be multiplied by $(400/U)^2$ or $(230/U)^2$.
- Transient performance of the PMG option, consult us.

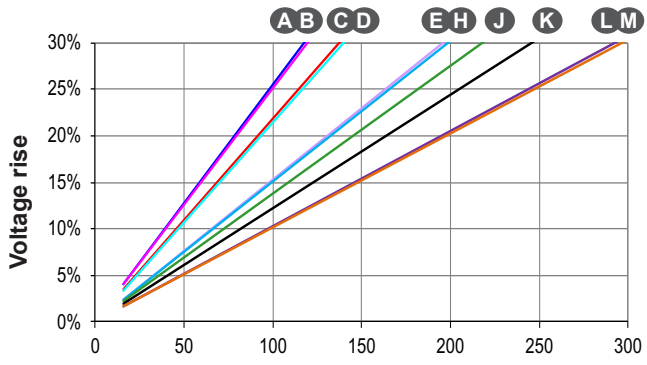
Transient voltage variation 480V - 60 Hz



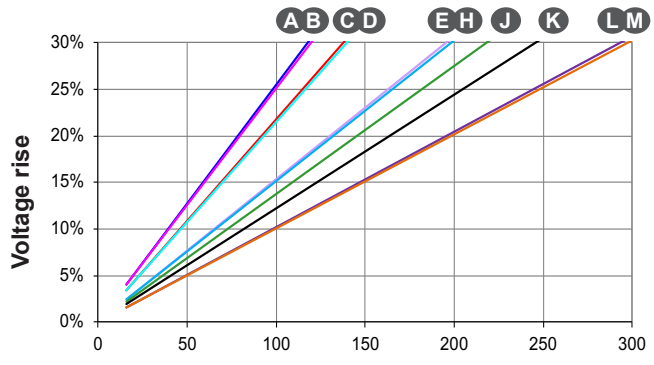
Phase loading (SHUNT) - kVA at P.F. = 0.8



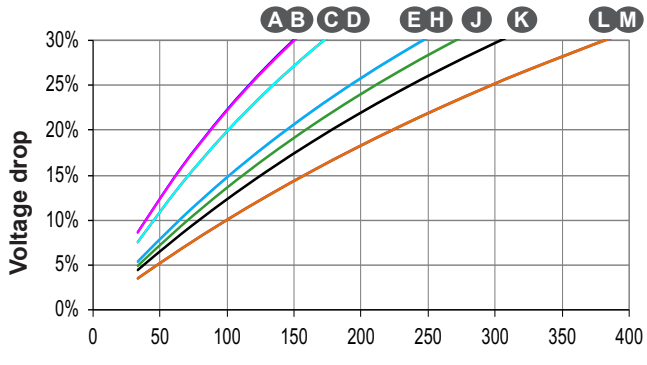
Phase loading (AREP+) - kVA at P.F. = 0.8



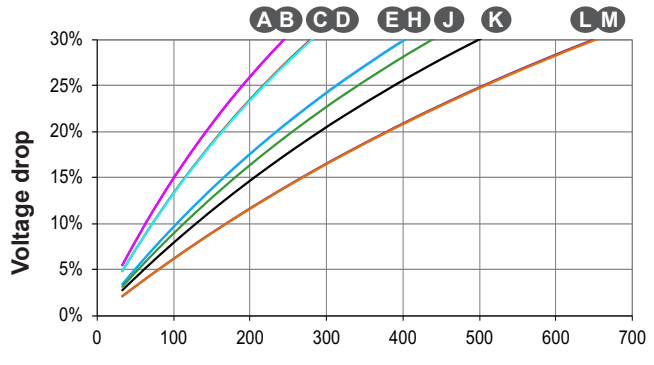
Load shedding (SHUNT) - kVA at P.F. = 0.8



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



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



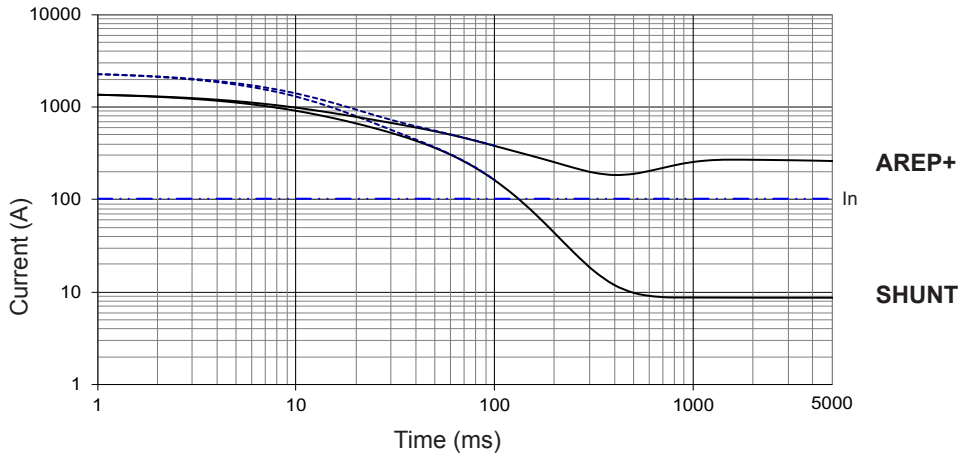
Motor starting (AREP+)
Locked rotor kVA at P.F. = 0.6

- For a starting P.F. other than 0.6, the starting kVA must be multiplied by K = Sine P.F. / 0.8
- For voltages other than 480V (Y), 277V (Δ), 240V (YY) at 60 Hz, then kVA must be multiplied by $(480/U)^2$ or $(277/U)^2$ or $(240/U)^2$.
- Transient performance of the PMG option, consult us.

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

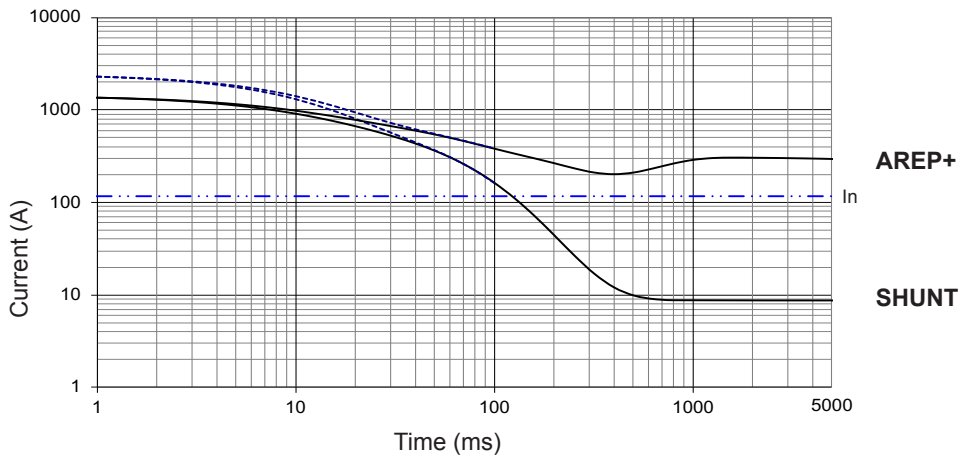
TAL 044 A

Symmetrical ——
Asymmetrical - - -



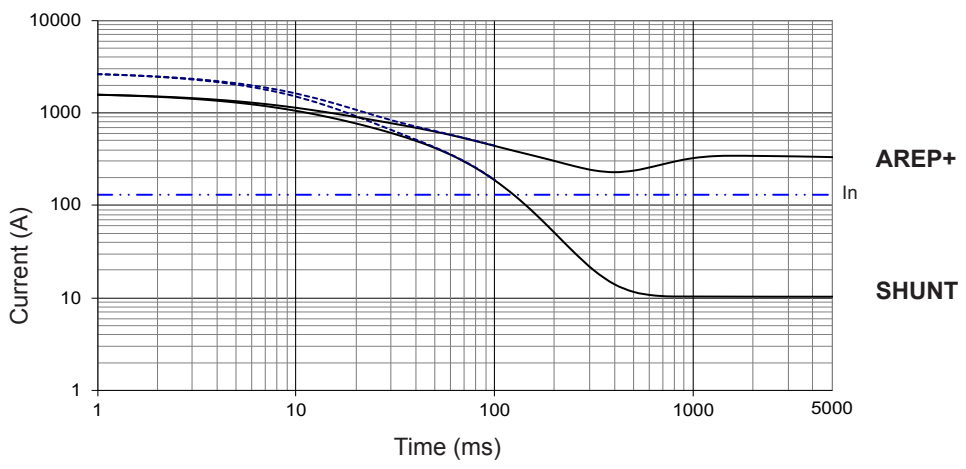
TAL 044 B

Symmetrical ——
Asymmetrical - - -



TAL 044 C

Symmetrical ——
Asymmetrical - - -

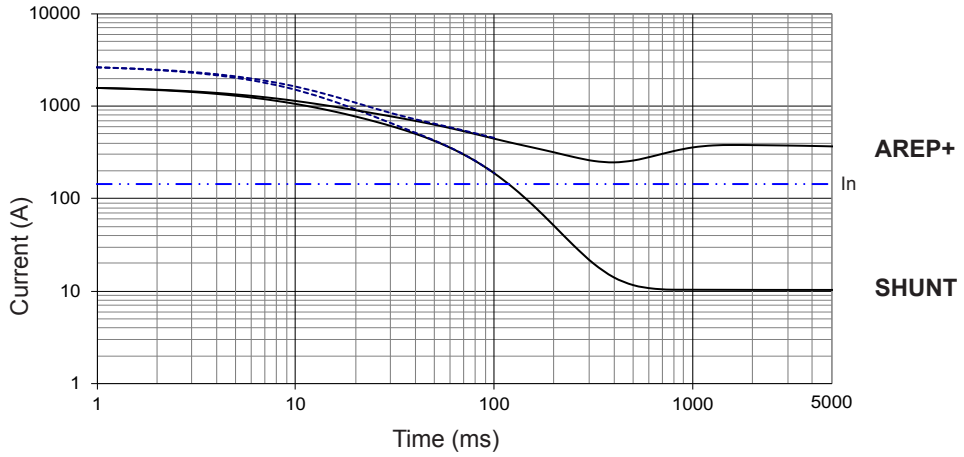


Influence due to connection
For (Δ) connection, use the following multiplication factor:
- Current value x 1.732.

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

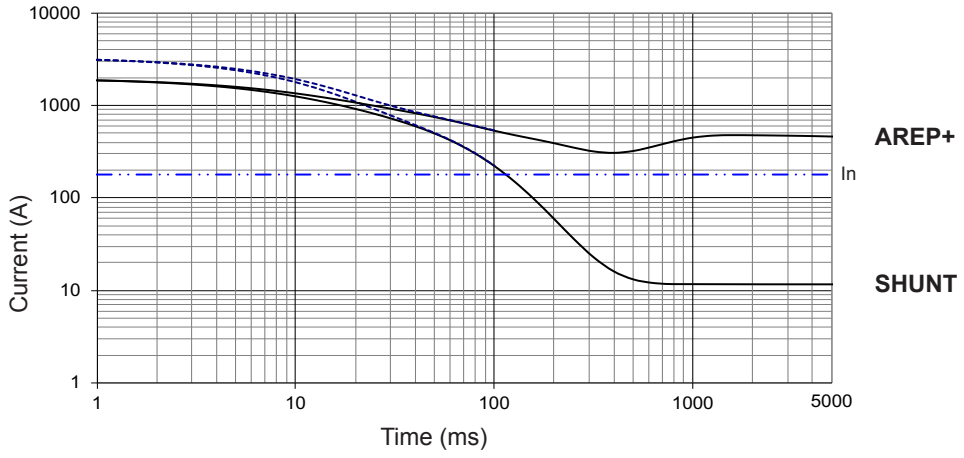
TAL 044 D

Symmetrical ——
Asymmetrical - - -



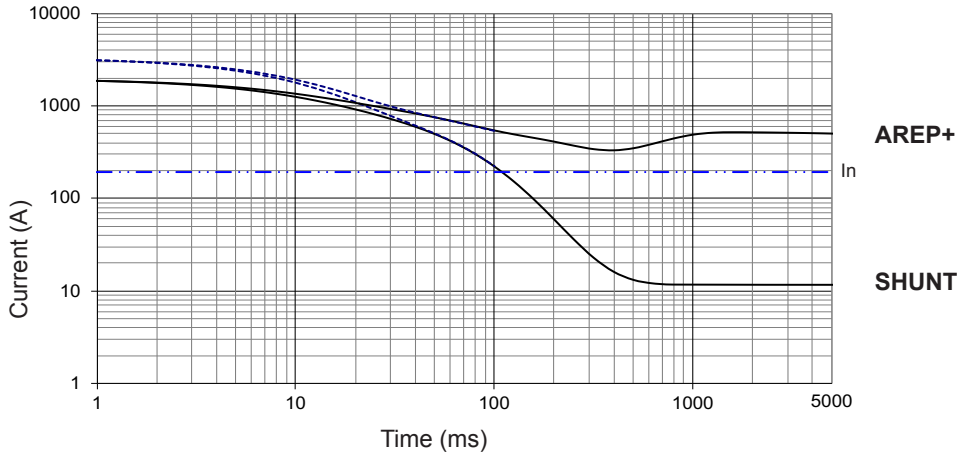
TAL 044 E

Symmetrical ——
Asymmetrical - - -



TAL 044 H

Symmetrical ——
Asymmetrical - - -



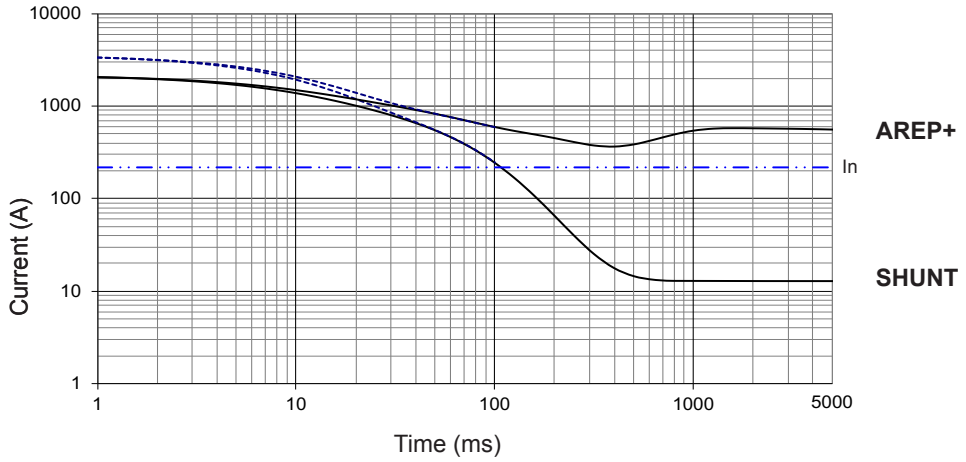
Influence due to short-circuit
Curves are based on a three-phase short-circuit.
For other types of short-circuit,
use the following multiplication factors.

	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	

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

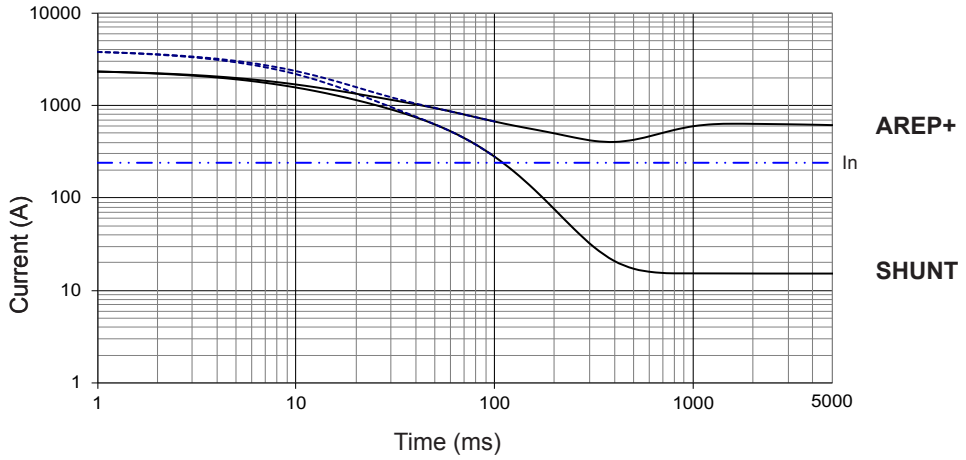
TAL 044 J

Symmetrical ——
Asymmetrical - - -



TAL 044 K

Symmetrical ——
Asymmetrical - - -

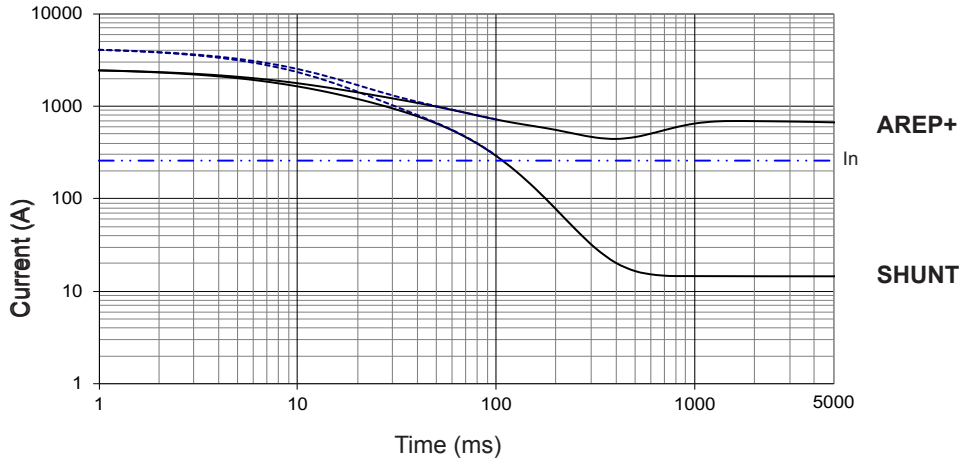


Influence due to connection
For (Δ) connection, use the following multiplication factor:
- Current value x 1.732.

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

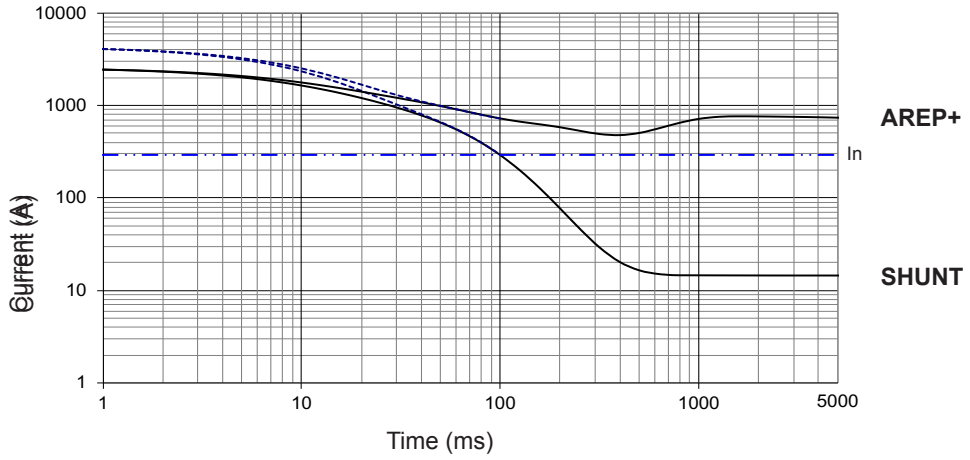
TAL 044 L

Symmetrical ——
Asymmetrical - - -



TAL 044 M

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	

General characteristics

Insulation class	H	Excitation system	SHUNT
Winding pitch	2/3 (wind. M 50Hz, M1 60Hz)	AVR type	R121
Number of wires	4	Voltage regulation (*)	± 1 %
Protection	IP 23	Total Harmonic Distortion THD (**) in no-load	< 3.5 %
Altitude	≤ 1000 m	Total Harmonic Distortion THD (**) in linear load	< 5 %
Overspeed	2250 R.P.M.	Waveform: NEMA = TIF (**)	< 100
Air flow (m^3/s)	**50 Hz:** 0.25 - **60 Hz:** 0.30	Waveform: I.E.C. = FHT (**)	< 2 %

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

Ratings / Efficiencies 50 Hz - 1500 R.P.M. - Winding M

kVA / kW - P.F. = 1(*)						
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	
Serie (SE)	230 V	η %	230 V	230 V	230V	η %
TAL 044 C	57	91	52	60	63	90.7
TAL 044 D1	69	91.5	63	73	76	91.1
TAL 044 E	-	-	-	-	-	-
TAL 044 J	82	92.3	75	87	90	92
TAL 044 K	-	-	-	-	-	-

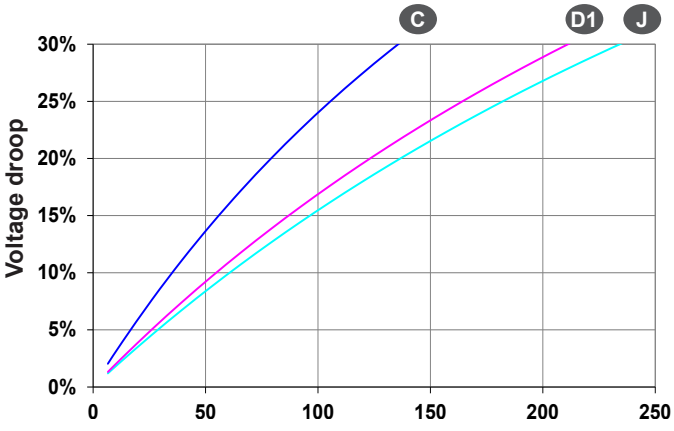
(*) For P.F. 0.8: derating 15%

Ratings / Efficiencies 60 Hz - 1800 R.P.M. - Winding M1

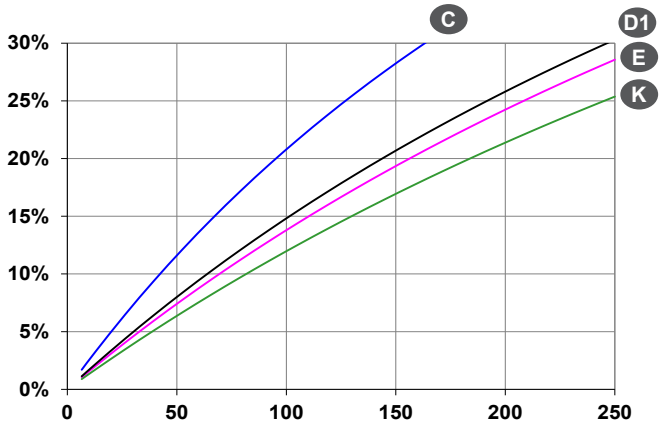
kVA / kW - P.F. = 1(*)						
Duty / T° C	Continuous / 40 °C		Continuous / 40 °C	Stand-by / 40 °C	Stand-by / 27 °C	
Class / T° K	H / 125° K		F / 105° K	H / 150° K	H / 163° K	
Serie (SE)	240 V	η %	240 V	240 V	240V	η %
TAL 044 C	80	90	73	85	88	89.7
TAL 044 D1	100	90	91	106	110	89.7
TAL 044 E	115	90.7	105	122	127	90.2
TAL 044 J	-	-	-	-	-	-
TAL 044 K	125	91.7	114	133	138	91.4

(*) For P.F. 0.8: derating 15%

Starting motor 230V - 50Hz

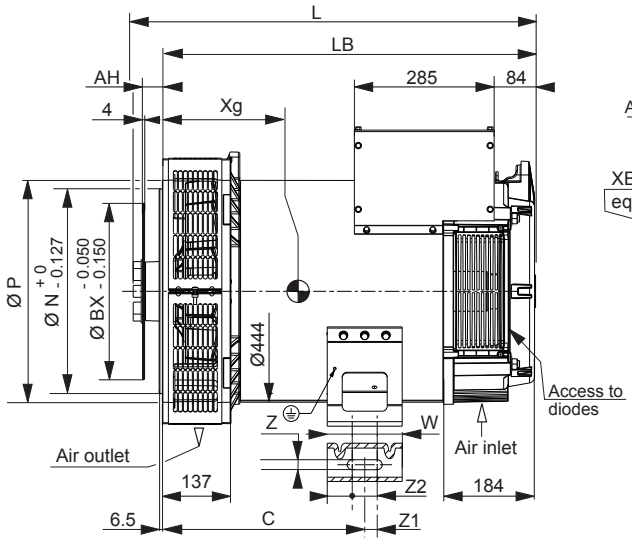


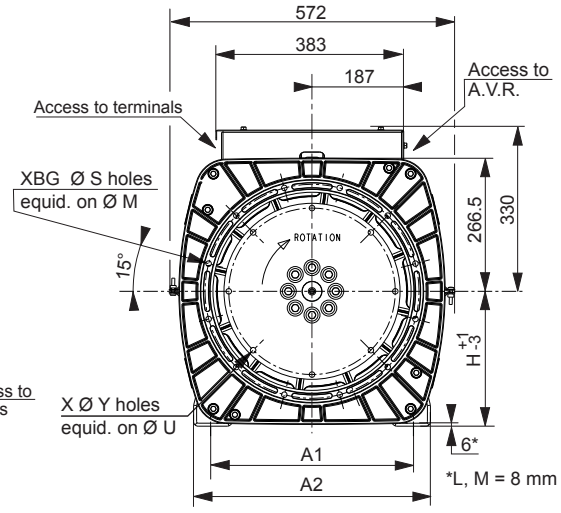
Starting motor 240V - 60Hz



Locked rotor kVA at PF : 0.9

Single bearing general arrangement





Dimensions (mm) and weight				
Type	L max.	LB max.	Xg	Weight (kg)
TAL 044 A	750	677	293	247
TAL 044 B	750	677	293	247
TAL 044 C	750	677	313	280
TAL 044 D	750	677	313	280
TAL 044 D1	750	677	313	280
TAL 044 E	820	747	353	353
TAL 044 H	820	747	353	353
TAL 044 J	820	747	365	383
TAL 044 K	860	787	383	418
TAL 044 L	930	872	416	539
TAL 044 M	930	872	416	539

Shaft height (mm)			
	Standard	Option	
H	**270**	225(*)	280(**)
	Feet length		
C	405	332.5	429
A1	406	356	457
A2	474	474	541
Z	20	14.5	20
Z1	25	20	25
Z2	50	40	50
W	150	120	150

(*) not available for L and M
(**) available only for L and M

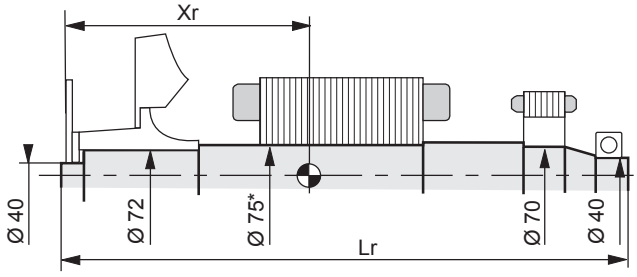
Coupling				
Flange	**1**	**2**	**3**	**4**
Flex plate				
14	x	-	-	-
11 1/2	x	x	x	-
10	x	x	x	x
8	-	-	x	x

Flange (mm)					
S.A.E.	P	N	M	S	XBG
4	400	361.95	381	11	12
3	445	409.58	428.62	11	12
2	485	447.68	466.72	11	12
1	560.5(*)	511.18	530.23	12	10

(*) L and M = 550 mm

Flex plate (mm)					
S.A.E.	BX	U	X	Y	AH
14	466.72	438.15	8	14	25.4
11 1/2	352.42	333.38	8	11	39.6
10	314.32	295.28	8	11	53.8
8	263.52	244.48	6	11	62

Torsional data



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

Flex plate	S.A.E. 8				S.A.E. 10	S.A.E. 10			S.A.E. 11 1/2				S.A.E. 11 1/2	S.A.E. 14		
Type	Xr	Lr	M	J	Xr	Lr	M	J	Xr	Lr	M	J	Xr	Lr	M	J
TAL 044 A	352.4	727	107.1	0.739	362.4	719	107.2	0.753	349.3	704	106.8	0.769	298.6	711	113.8	0.899
TAL 044 B	352.4	727	107.1	0.739	362.4	719	107.2	0.753	349.3	704	106.8	0.769	298.6	711	113.8	0.899
TAL 044 C	362.5	727	120.9	0.863	353.2	719	121.0	0.877	340.3	704	120.6	0.893	310.0	711	127.6	1.023
TAL 044 D	362.5	727	120.9	0.863	353.2	719	121.0	0.877	340.3	704	120.6	0.893	310.0	711	127.6	1.023
TAL 044 D1	362.5	727	120.9	0.863	353.2	719	121.0	0.877	340.3	704	120.6	0.893	310.0	711	127.6	1.023
TAL 044 E	408.5	797	153.6	1.137	398.5	789	153.7	1.151	385.4	774	153.3	1.167	357.3	781	160.2	1.297
TAL 044 H	408.5	797	153.6	1.137	398.5	789	153.7	1.151	385.4	774	153.3	1.167	357.3	781	160.2	1.297
TAL 044 J	419.4	797	165.4	1.244	409.3	789	165.5	1.258	396.2	774	165.1	1.274	368.8	781	172.0	1.404
TAL 044 K	439.4	837	180.7	1.379	429.2	829	180.8	1.393	416.0	814	180.4	1.409	389.2	821	187.4	1.539
TAL 044 L	480.9	922	221.1	1.713	471.3	914	221.2	1.727	458.3	899	220.8	1.743	449.6	906	227.8	1.873
TAL 044 M	480.9	922	221.1	1.713	471.3	914	221.2	1.727	458.3	899	220.8	1.743	449.6	906	227.8	1.873

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™

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Nidec
All for dreams

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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.

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DSEGenset

DSE®

DSE7110/20 MKII

AUTO START & AUTO MAINS FAILURE CONTROL MODULES

FEATURES

The DSE7110 MKII Auto Start Control Module and the DSE7120 MKII Auto Mains (Utility) Failure Control Module are suitable for a wide variety of single gen-set applications.

Monitoring engine speed, oil pressure, coolant temperature, frequency, voltage, current, power and fuel level, the modules will give comprehensive engine and alternator protection. This will be indicated on a large back-lit LCD icon display via an array of warning, electrical trip and shutdown alarms.

Electronic J1939 (CAN) and non-electronic MPU and alternator sensing engine support for diesel, gas and petrol engines all in one variant. With a number of flexible inputs, outputs and protections, the modules can be easily adapted to suit a wide range of applications.

Compehensive power metering for both generator and load is available (kW, kV A, kV Ar, pf). A real time clock allows scheduling while a 50 event log provides extensive event interrogation.

Through USB Communication both modules can be easily configured using the DSE Configuration Suite PC Software or can be fully configured through the module's front panel editor.

All DSE products are supported by the DSE global technical support team which gives our customers and end users access to 24 hour system help and advice.

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

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

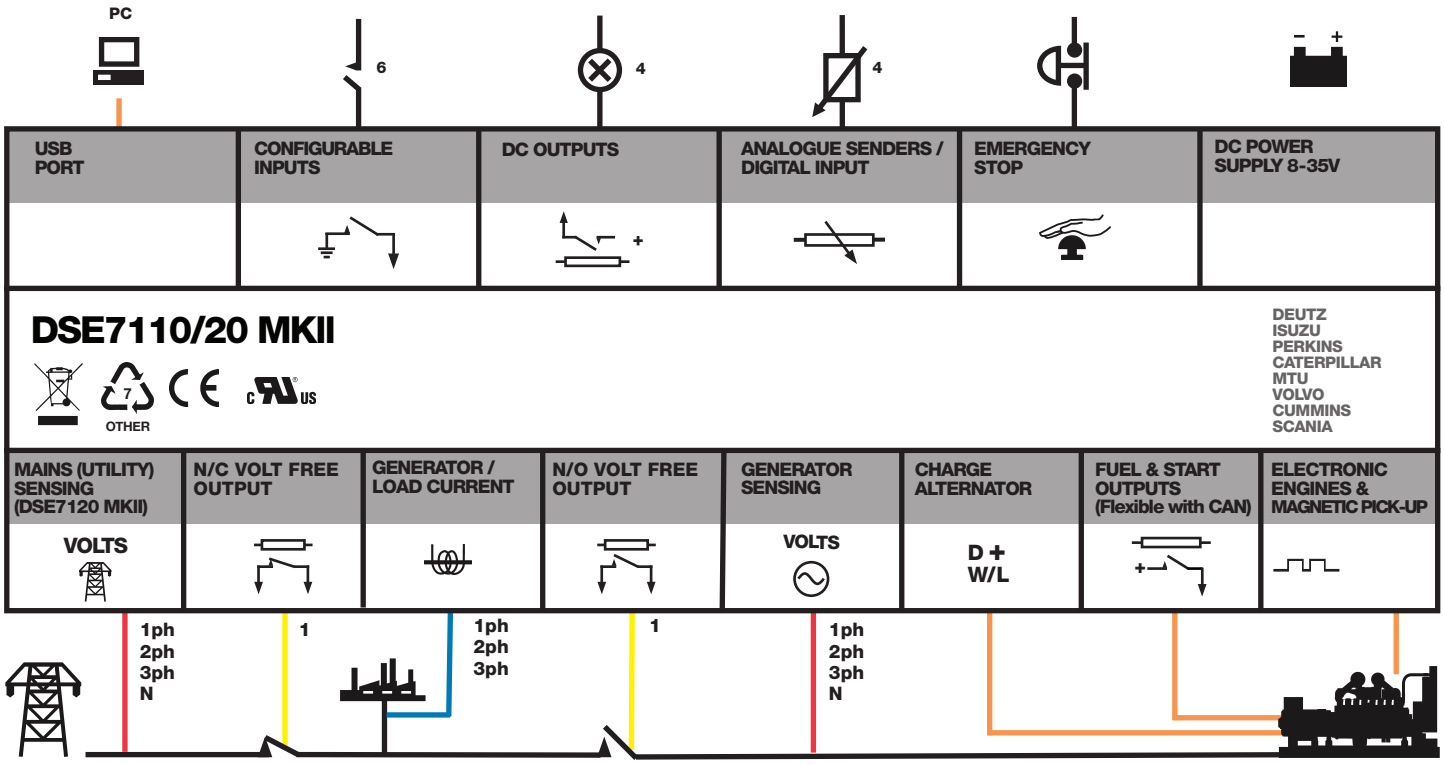
VIBRATION
BS EN 60068-2-6
Ten sweeps in each of three major axes
5 Hz to 8 Hz @ +/-7.5 mm,
8 Hz to 500 Hz @ 2 gn

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 1

DSEGenset

DSE7110/20 MKII

AUTO START & AUTO MAINS FAILURE CONTROL MODULES

FEATURES

DSE7120 MKII

DSE7110 MKII

KEY BENEFITS

- Automatically transfers between mains (utility) and generator (DSE7120 MKII only)
- Hours counter provides accurate information for monitoring and maintenance periods
- User-friendly set-up and button layout for ease of use
- Multiple parameters are monitored & displayed simultaneously
- The module can be configured to suit a wide range of applications
- Compatible with a wide range of CAN engines, including tier 4 engine support
- Uses DSE Configuration Suite PC Software for simplified configuration
- Licence-free PC software
- IP65 rating (with supplied gasket) offers increased resistance to water ingress

KEY FEATURES

- Large back-lit icon display
- Heated display option available
- Fully configurable via the fascia or PC using USB communication
- Extremely efficient power save mode
- 3 phase generator sensing
- 3 phase mains (utility) sensing (DSE7120 MKII only)
- Generator/load power monitoring (kW, kV A, kV Ar, pf)
- Generator overload protection (kW)
- Generator/load current monitoring and protection
- Fuel and start outputs (configurable when using CAN)
- 4 configurable DC outputs
- 2 configurable volt-free outputs
- 4 configurable analogue/digital inputs
- 6 configurable digital inputs
- Support for 0-10 V & 4-20 mA oil pressure sensors
- Configurable staged loading outputs
- CAN, MPU and alternator speed sensing in one variant
- 3 engine maintainance alarms
- Engine speed protection
- Engine hours counter
- Engine pre-heat
- Engine run-time scheduler
- Engine idle control for starting & stopping
- Battery voltage monitoring
- Start on low battery voltage
- Real time clock
- Fuel pump control
- Configurable remote start input
- 1 alternative configuration
- Comprehensive warning, electrical trip or shutdown protection upon fault condition
- LCD and LED alarm indication
- Event log (50)

RELATED MATERIALS

TITLE	PART NO'S
DSE7110/20 MKII Installation Instructions	053-151
DSE7110/20 MKII Operator Manual	057-182
DSE7110/20 MKII Configuration Suite PC Manual	057-185

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
290 mA at 12 V, 140 mA at 24 V

MAXIMUM STANDBY CURRENT
75 mA at 12 V, 40 mA at 24 V

CHARGE FAIL/EXCITATION RANGE
0 V to 35 V

GENERATOR & MAINS (UTILITY)

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

FREQUENCY RANGE
3.5 Hz to 75 Hz

MAGNETIC PICKUP

VOLTAGE RANGE
+/- 0.5 V to 70 V

FREQUENCY RANGE
10,000 Hz (max)

INPUTS

DIGITAL INPUTS A TO F
Negative switching

ANALOGUE INPUTS A TO C
Configurable as:
Negative switching digital input
0 Ω to 480 Ω

ANALOGUE INPUT D
Configurable as:
Negative switching digital input
0 V to 10 V
4 mA to 20 mA
0 Ω to 480 Ω

OUTPUTS

OUTPUT A & B (FUEL & START)
10 A short term, 5 A continuous, at supply voltage

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

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

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"

STORAGE TEMPERATURE RANGE
-40°C to +85°C
-40 °F to +185 °F

OPERATING TEMPERATURE RANGE
-30°C to +70°C
-22 °F to +158 °F

HEATED DISPLAY VARIANT
-40 °C to +70 °C
-40 °F to +158 °F

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