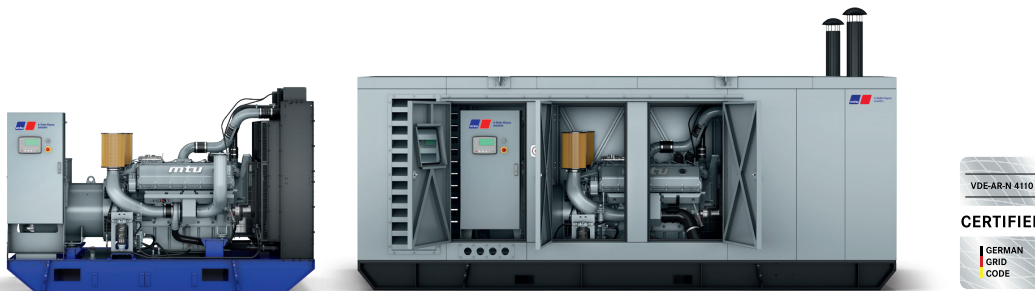




Diesel Generator Set

mtu 12V1600 DS650

380 - 415 V/590 kVA/50 Hz/prime power/12V1600G10F



Optional equipment shown. Standard equipment may vary.

Product highlights

Benefits

- Approved for renewable fuels (e.g. HVO)
- Industry-leading average load factor
- Low fuel consumption
- Emission optimizations available
- High availability and reliability
- High load acceptance
- Long maintenance intervals
- Best-in-class low load capability

Support

- Global product support offered
- Attractive overhaul solutions

Standards

- Engine-generator set is designed and manufactured in facilities certified to standards ISO 2008:9001
- Generator set complies to ISO 8528 and fullfills performance level G3
- Generator meets BS 5000, ISO, DIN EN and IEC standards
- NFPA 110

Available emissions optimizations

- Fuel consumption optimized
- NEA Singapore for Off Road Diesel Engines (ORDE)
- NOx optimized

Wide standard scope of supply

- 4P circuit breaker
- Island operation control panel
- Battery charger

Complete range of accessories available

- Sound attenuated enclosures
- Fuel system accessories
- AMF/parallel operation control panel
- Range of additional electronical options
- Radiator for hot ambient condition
- VDE certification

Warranty

- Standard 36 months warranty after shipment

For a comprehensive listing of features, please refer to standard and optional features beginning on page 2.

Application data ¹⁾

Engine

Manufacturer	mtu
Model	12V1600G10F
Type	4-cycle
Arrangement	12V
Displacement: l	21
Bore: mm	122
Stroke: mm	150
Compression ratio	17.5
Rated: rpm	1,500
Engine governor	ECU 8
Gross power: kWm	524
Air cleaner	dry

Fuel system

Fuel specification	EN 590, Grade No.1-D/2-D (ASTM D975-00), EN 15940 (e.g. HVO)
Max. fuel flow: l/h	342
Fuel tank capacity: OPU (EPU) in l	470 (800)
Autonomy: OPU (EPU) h calculated @100% load	4 (6.83)

Fuel consumption

At 100% of power rating: l/h	116.99
At 75% of power rating: l/h	90.94
At 50% of power rating: l/h	63.06

Liquid capacity

Total oil system: l	72.5
Total coolant capacity: l	99

Generator

Generator brand	Leroy Somer
Generator type	LSA 47.3 L10
Insulation class	H-class
Bearing	single bearing
Enclosure	IP23
Voltage regulation	digital (D350)
Exciting system	self-excited, brushless (AREP)

Electrical	
Electric system volts DC	24
Number of batteries (optional)	2
Capacity: Ah	100 AH, 12 VDC

Air requirements ²⁾

Aspirating: m ³ /min	36
Cooling air flow: m ³ /s	11.7

Exhaust system ²⁾

Gas temp. (stack): °C	482
Gas volume at stack temp.: m ³ /min	90
Maximum allowable back pressure: kPa	8.5

Cooling/radiator system

Ambient capacity of radiator: OPU (EPU) in °C	50 (50)
Pressure on rad. exhaust: kPa	0.2
Heat rejection to coolant: kW	236

Standard and optional features

System ratings (kW/kVA)

Generator model	Voltage	mtu 12V1600 DS650 - prime operation		
		kW ¹	kVA ²	AMPS
Leroy Somer 47.3 L10 (Low voltage Leroy Somer standard) ³	380 V	472	590	896,5
	400 V	472	590	851,6
	415 V	472	590	820,8
Leroy Somer LSA 493 M8 (Low voltage Leroy Somer oversized - VDE) ⁴	380 V	472	590	896,5
	400 V	472	590	851,6
	415 V	472	590	820,8

- 1 cos phi = 1,0 3 with D350 voltage regulator
 2 cos phi = 0.8 4 with D550 voltage regulator

1 Technical data is for a fuel-optimized unit.
 2 Technical data is for 100% power

Standard and optional features

Engine

- **mtu** Series 1600 diesel engine
- Battery charge alternator
- Coolant circulation pump
- Engine mounted fan drive

Alternator

- Premium high efficiency alternator
- 3-Phase, single bearing, synchronous, brushless, self regulating, self ventilating, self exciting (AREP)
- Digital voltage regulation (DVR)
- Insulation class: H
- Protection class: IP 23
- Low voltage 400V
- Low voltage 380V
- Low voltage 415V
- Anti-condensation heater
- Oversized alternator (only for VDE option in OPU)

Cooling system

- 50°C base frame mounted front-type radiator for jacket water and charge air cooling
- Integrated air-to-air charge air cooling unit (A2A)
- Low coolant level sensor
- Integrated expansion tank
- Duct flange

Genset controller & control panel

- Control panel with measurement devices and genset controller (B-Side)
- Genset controller for island operation
- Control panel with measurement devices and genset controller (A-Side, only for OPU)
- Genset controller for island parallel operation
- Genset controller for mains parallel operation
- Modbus RTU-TCP Gateway/Ethernet or bus system
- Without genset controller (only for OPU)

Circuit breaker

- 4 pole circuit breaker, motorized with controller (inside control panel)
- Without circuit breaker (only for VDE option in OPU)

Starting and charging system

- 1 x 24V electrical starter
- Electric battery charger (inside control panel)
- 2 x 24V redundant electric starters
- Starting batteries with battery rack, battery disconnecter and cabling
- Jacket water preheating system

Fuel system

- Common rail fuel injection system
- Fuel main filter
- Standard engine interface
- Heavy duty fuel prefilter with water separator
- Fuel cooler radiator mounted
- Removable fuel tank (only for OPU)

Oil system

- Oil dip stick
- Oil drain
- Pre-filled with premium engine oil
- Lube oil extraction handpump

- Represents standard features
- Represents optional features

Standard and optional features

Air intake system

- Exhaust turbochargers
- Standard dry type air filters
- Charge air intercooler
- Air intake pipework
- Heavy-duty two stage air filters with mechanic dust evacuation

Exhaust system (OPU)

- Standard engine interface
- Exhaust elbows
- Exhaust bellows
- Exhaust silencers 10 db(A)
- Exhaust silencers 30 db(A)
- Exhaust silencers 40 db(A)

Base frame (OPU)

- Resilient mounting for engine and alternator
- Lifting lugs
- Forklift pockets
- Fits in 20" ISO standard container
- Integrated spill-proof design

Enclosure (EPU) - optional

- Protection class: IP23
- Forklift pockets
- Fits in 20" ISO high cube container
- Integrated fuel tank
- Integrated spill-proof design
- Control panel with genset controller (B-Side)
- Circuit breaker (integrated in control panel, B-Side)
- Basic sound attenuation "Silent" 77 db(A)
- Integrated exhaust system with silencers inside the enclosure
- Advanced sound attenuation "Super-Silent" 70db(A)

Certificates & documentation

- CE certificate
- Maintenance schedule, fluids & lubricants specification, genset & components manuals
- VDE-AR-4110 German Grid Code compliance (only for OPU, no circuit breaker)

Packing

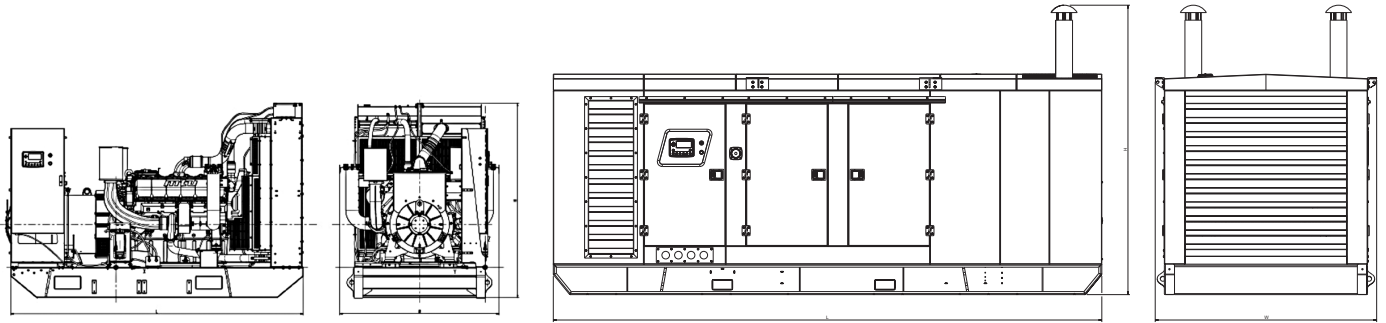
- Standard packing
- Long term/seaworthy packing

Accessories

- Spare parts package

- Represents standard features
- Represents optional features

Weights and dimensions



Outline drawing above is for reference only. Do not use for installation design. For unit-specific template drawings, please see our website.

System	Dimensions (LxWxH)	Weight (wet/with standard accessories)
Open power unit (OPU)	3345 x 1808 x 2228 mm	5340 kg
Enclosed power unit (EPU) without tail pipe	5400 x 2180 x 2175 mm	8125 kg
Enclosed power unit (EPU) with tail pipe*	5400 x 2180 x 2850 mm	8155 kg

Consult the factory for accurate weights and dimensions for your specific engine-generator set. Lengths may vary with other voltages. Do not use for installation design.

* Tail pipe will be supplied loose

Sound data

Unit type	Prime 75% load
Open power unit (dB(A) at 1m)	109
Enclosed power unit (dB(A) at 7m)	77

Sound data is provided at 7 m (23 ft).

Rating definitions and conditions

- Prime power ratings apply to installations where utility power is unavailable or unreliable. At varying load, the number of generator set operating hours is unlimited. A 10% overload capacity is available for one hour in twelve. Ratings are in accordance with ISO 8528-1, ISO 3046-1, BS 5514, AS 2789 and DIN 6271. Average load factor: < 75%.
- Consult your local **mtu** distributor for derating information.

Materials and specifications subject to change without notice.