

POWER PARAMETERS



Generating Rates

STANDBY / PRIME POWER		COP POWER	
1250 kva	1000 kW	1250 kva	1000 kW
	1804 A		1804 A
Voltage		400/230 VAC	
Rated at power factor Cos Ø		0,8	



1500



50



Three phase



Water cooled



Soundproof



Gas

Standby Rating (ESP)

According to ISO 8528-1:2018, Emergency standby power is the maximum power available during a variable electrical power sequence, under the stated operating conditions, for which a generating set is capable of delivering in the event of a utility power outage or under test conditions for up to 200h of operation per year with the maintenance intervals and procedures being carried out as prescribed by the manufacturers. The permissible average power output over 24h of operation shall not exceed 70% of the ESP.

Standby power: According to the standard, the nominal power assigned by the genset is given for 25°C Air Inlet Temperature, of a barometric pressure of 100kPA (100 m A.S.L), and 30% relative humidity.

Prime Rating (PRP)

According to ISO 8528-1:2018, Prime power is the maximum power which a generating set is capable of delivering continuously whilst supplying a variable electrical load when operated for an unlimited number of hours per year under the agreed operating conditions with the maintenance intervals and procedures being carried out as prescribed by the manufacturer. The permissible average power output (Ppp) over 24h of operation shall not exceed 70% of the PRP.



Dimensions / Weight / Fuel tank



	Dimensions W x L x H (mm)	Weight (kg)	Tank Capacity (lt)
Canopy	3,000 x 12,000 x 4,700	TBA	n/a
Open Type	-	-	n/a



note:
Dimensions and weight are for reference only, do not use for installation design.
Please contact your dealer for exact weight and dimensions.

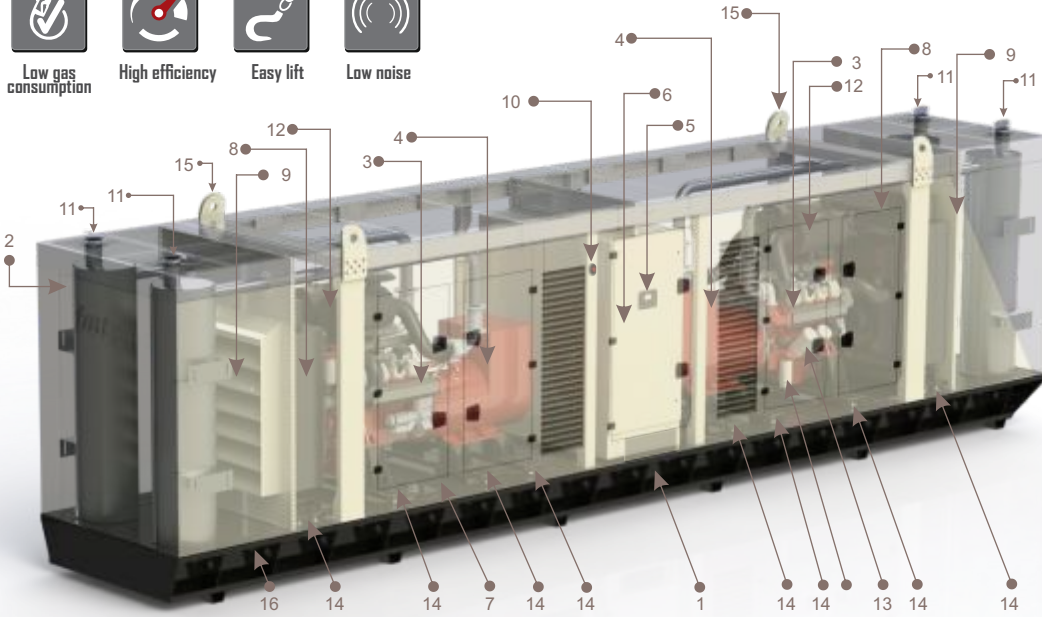


CHP ENCLOSURE NOISE LEVEL db(A)

1mt@<70 db(A)

TBA: To be asked, N/A: Not applicable

Technical data correspond to the available information at the moment of printing.



1	Base Frame
2	Canopy
3	Engine
4	Alternator
5	Control Panel
6	Connection Box
7	Battery
8	Radiator
9	Grilles
10	Emergency stop button
11	Exhaust Outlet
12	Air Filter
13	Oil Filter
14	Vibration Isolators
15	Lifting Lug
16	Earthing Point

**Image for guidance purposes*



FEATURES

- Galvanized steel that provides extra strength, durability and protection
- Tightly structure, excellent design
- Easy access to serviceable parts
- Double swinging doors for ease of service
- Doors have high quality gaskets to avoid leakage of sound
- LCD display shows system status and setup information
- Adequate ventilation to meet air requirement for combustion and heat removal



GENSET STANDARD SPECIFICATION

- Gas engine
- Water cooled
- Radiator with mechanical fan
- ATS automatic transfer switch 4P
- Protective grille for rotating and hot parts
- Electric starter and charge alternator
- Engine coolant heater
- Base frame with integrated fuel tank
- Engine oil filled
- Output circuit breaker 4P
- Anti-vibration shock absorbers
- Rubber fuel connection hoses
- Single bearing, class H alternator
- Industrial exhaust silencer and steel bellows supplied separately
- Static battery charger
- Starting battery (with lead acid) including rack and cables
- Battery isolator
- Manual for application and installation
- Jacket water heater
- Digital fuel level sensor

SAFETY FEATURES



HIGH WATER TEMPERATURE



PROTECTIVE EARTH POINT



LOW LUBE OIL PRESSURE



EMERGENCY STOP PUSH-BUTTON

TY...! 1 YEAR WARRANTY...! 1 YEAR WARRANTY...! 1 YEAR WARRANTY...! 1 YEAR WARRANTY...! 1 YEAR WARRANTY...!

Ratings

Power	kW	125	150	175	200	225	250	1000
Gas consumption	Nm ³ /h	38.7	44.9	51.8	56.8	62.3	65.3	261.2
Total energy	kW	367	425	491	538	591	651	2604
Electrical efficiency	%	34.10	35.30	35.64	37.20	38.10	40.10	*
Air flow	Nm ³ /h	480	600	693	813	893	936	*
Air flow	kg/h	620	774	894	1049	1152	1207	*
Flue gas flow	Nm ³ /h	519	645	745	870	955	1001	*
Flue gas flow	kg/h	649	807	933	1091	1199	1256	*
Flue gas temperature (before cooling)	°C	530 ~ 550						
Flue gas temperature (after cooling)	°C	120						
Exhaust energy (120 °C)	kW	70	84	94	111	127	143	572
Exhaust energy ratio	%	19.11	19.85	19.23	20.72	21.58	21.89	*
Jacket water energy	kW	79	89	144	110	119	129	*
Jacket water energy ratio	%	21.60	21.00	29.39	20.50	20.10	19.80	*
Thermal efficiency	%	40.71	40.85	48.62	41.22	41.68	45.00	*
Total efficiency	%	74.81	76.15	84.26	78.42	79.78	85.10	*
Exhaust resistance	kPA	≤7.5						
Exhaust pipe diameter	mm	≥200						
Exhaust pipe length	There is no requirement and the exhaust resistance needs to be considered together with the waste heat utilization device.							

*Note: This sign tells us that the calculation is made for one engine since the set consists of 4 engines.

General Engine Data

Engine model	RA-6L13L-GAS QUATERNARY
Engine type	6 cylinder, Inline-type, Four-stroke
Speed	1500 rpm
Bore x stroke	130mm x 161mm
Number of valve per cylinder	4
Displacement	12.82 L
Compression ratio	11.5 : 1
Rotation {Looking at flywheel}	Anti-clockwise (facing the power delivery end)
Firing order	1-5-3-6-2-4
Cylinder distance	162 mm
Combustion type	W
Controller system	Woodward PG+
Outstanding dimension	2000 x 946 x 1557 mm
Engine dry weight	1183kg
Rotational inertia	2.9 kgm ²
Flywheel and flywheel housing	SAE 14" flywheel SAE 1# flywheel housing

Note: All data of gas generator sets are measured under the test environment: Methane volume content ≥95%, Gas temperature 10-40 °C, Gas humidity <60%, Negative pressure of air intake >-3kPa, Exhaust back pressure <5kPa, Absolute atmospheric pressure 101.32kPa, Environmental temperature 25 °C, Relative humidity ≤30%, Altitude ≤1000m

Gas Consumption Calculation

Fuel: Natural Gas

		Nm ³ /h
100%	QUATERNARY FULL MODE	261.2

-Standard reference conditions: Atmospheric pressure 100kPa, intake temperature 25°, relative humidity 50%. The deviation range of the data is +/-4%.

Intake & Exhaust System

Max. Exhaust back pressure (kPa)	10 ±1
Max. Exhaust temperature (After Turbo°C)	580
Max. Exhaust flow (Nm³/h)	1165
Max. Intake gas flow (Nm³/h)	65
Max. Intake air flow (Nm³/h)	1100
Max. Intake resistance (Clean filter) (kPa)	3.5
Max. Intake resistance (Dirty filter) (kPa)	6.5
Alarm Value of intake resistance (kPa)	6.3
Inlet pressure of Gas to engine (kPa)	2 - 4

Cooling System

Coolant main content	50:50 (Ethylene Glycol, water)
Total coolant capacity	57.3L (engine coolant 25.3L + Radiator coolant 32L)
Coolant outlet temperature	95 °C
Temperature difference with inlet & outlet	6 ±1 °C
Max. Coolant warning temperature	104 °C
Radiator flow	533 m³/min
Intake air type	Air to air intercooler
Intercooler allowance press drop	11 - 13 kPa
Intercooler heat release	62 kW
Intercooler allowance intake temperature	195 ±5 °C

Lubrication System

Lube oil pressure @ idle speed	Min 100 ±10 kPa
Lube oil pressure @ rated speed	550 ±10 kPa
Max. Permissible oil temperature	120 °C
Oil capacity	33.2-41.6 L

Electrical System

Charging alternator voltage	24V
Unaided cold start average start Speed	130 r/min
Starting aid (Option)	Block heater (Min.Temperature for Unaided)

Exhaust

	value
CH ₄	1069.5 ppm
O ₂	≤5%
N ₂	73%-77%(Standard values)
CO ₂	70654.63 ppm
NO _x	500 mg/Nm ³ @5% O ₂
SO ₂	From your natural gas
CO	705 ppm
DUST	From your local air

CHP Heat Recovery System

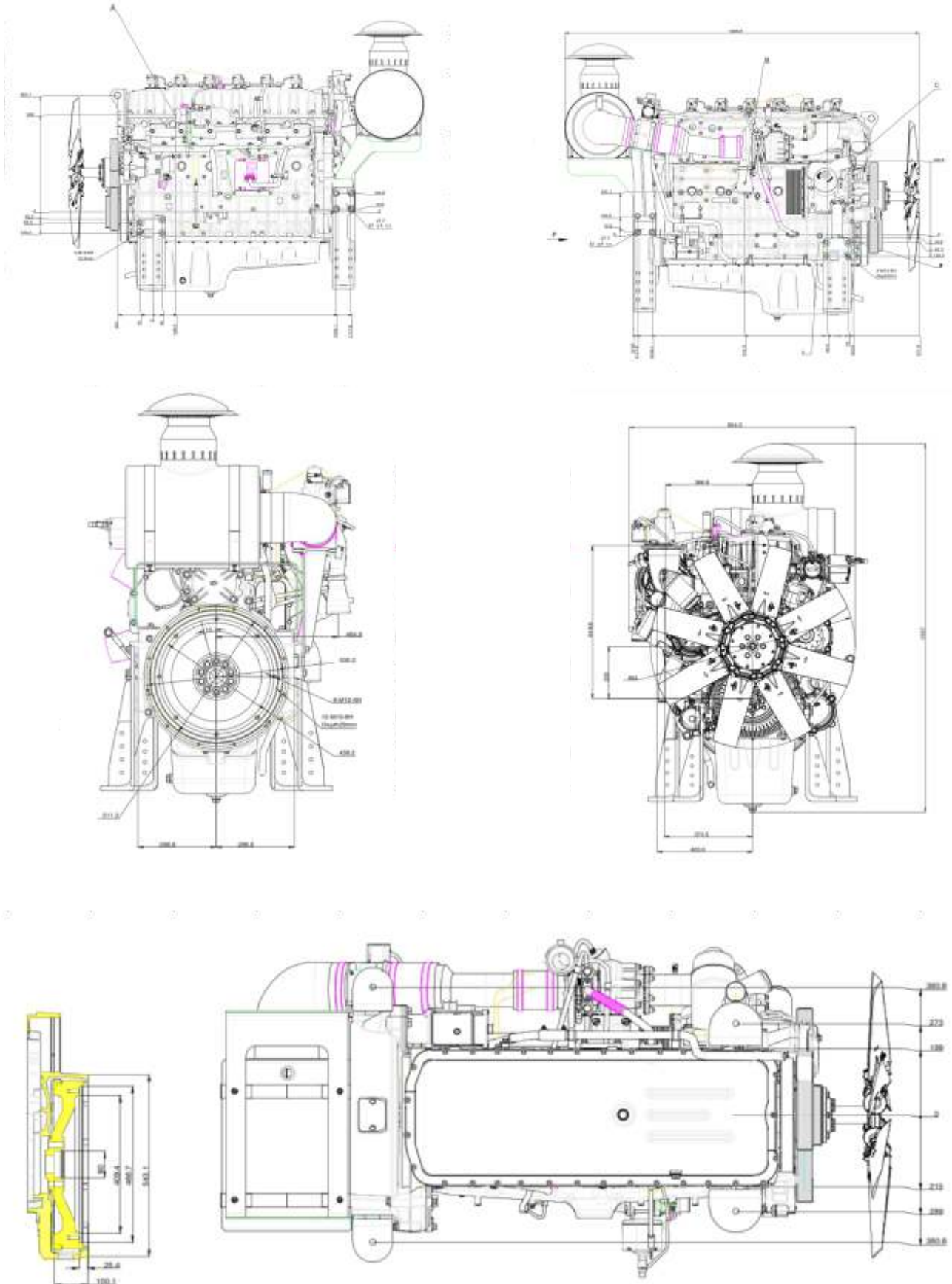
The cogeneration unit includes a complete heat recovery system consisting of plate heat exchangers, circulating pumps, and insulated hot-water piping. Exhaust gas is cooled to ≤120 °C through the integrated exhaust heat exchanger.

A three-way bypass valve ensures stable operation under varying heat demand conditions.

An auxiliary emergency radiator allows continuous engine operation when no heat absorption is available.

Standards and Certifications: The cogeneration unit is manufactured under a certified quality system ISO 9001:2015 (Cert.No: 102026168, Certificate Validity Date: 01.11.2026) and complies with DSTU EN 60204-1:2015, DSTU-N IEC Guide 111:2007 (IEC Guide 111:2004, IDT), the Low Voltage Directive 2014/35/EU, and the EMC Directive 2014/30/EU.

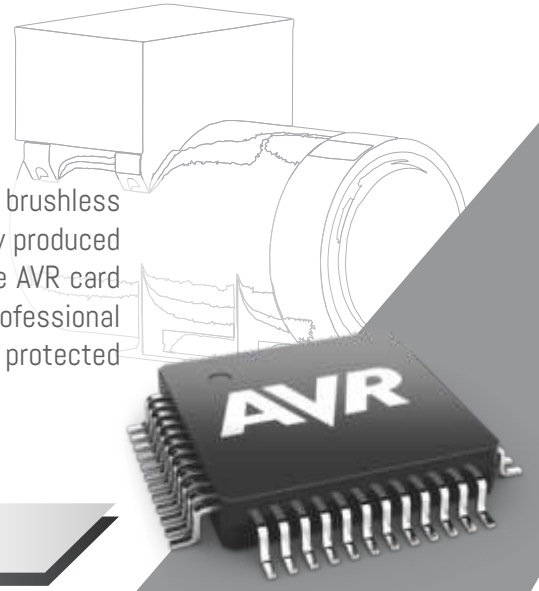
Drawing



SELF EXCITED STRONG ROTOR

Isolated Stator

Alternator has been designed for three phase and mono phase. They are brushless type and are controlled by AVR card. The windings have been industrially produced to give maximum efficiency in the production of energy. Throughout the AVR card system the output voltage is always stable. The smart AVR is a professional controller than enables the whole operation of excitement. Alternator is protected by a special cabin that enables the electrical connections.



ALTERNATOR SPECIFICATION

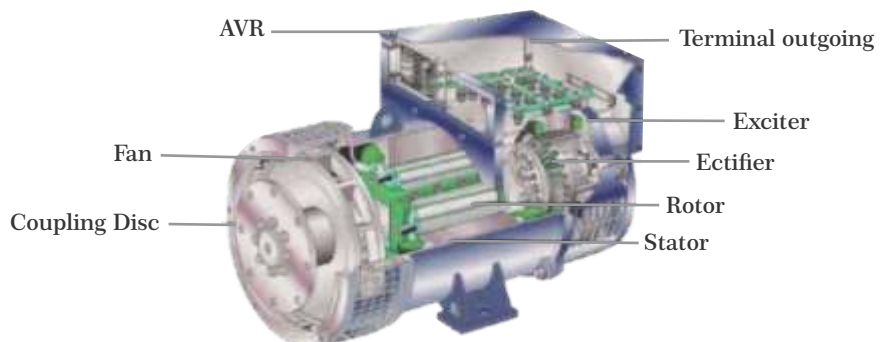


GENERAL DATA

Model	AG10-250MI10AI	QUATERNARY
No. of Phase	3	
Power Factor	0.8	
No of Bearing	SINGLE	
No of Poles	4	
No of Leads	12	
Insulations Class	H	
Voltage Regulation (Steady State)	± 0.5%	
Degree of Protection	IP 23	
Excitation System	Self excited, AVR, Brushless	
Connection System	STAR	
Frequency	50 Hz	
Voltage Output	400/230 VAC	

The alternator is rated at $\cos \Phi = 0.8$ and is suitable for continuous operation in the power factor range 1.0 to 0.90 lagging in grid-parallel mode.

Alternator Structure



Product line		: AG10-250MI10AI																		
Area classification		: Safe																		
General data										Degree of protection : IP23										
Frame (IEC) : 250										Mounting style : B15T										
Insulation Class : 180°C (H)										Number of poles : 4										
THD (L-L, no load) : ≤ 3%										Type of Pole : Salient										
Stator winding pitch : 2/3										Rated speed - 50 Hz : 1500 rpm										
Altitude : up to 1000 m.a.s.l										Nominal rotation - 60 Hz : 1800 rpm										
Number of Leads : 12										Overspeed : 2250 rpm										
Power factor : 0.8 to 1.0										Approx. weight : 843 kg										
Excitation system : Brushless with Auxiliary Coil										Overload : 1.1x In per 1h each 6h										
Cooling : IC01										Momentary Overload : 1.5x In per 30s										
Frequency and number of phases		50 Hz									60 Hz									
		3ph			1ph			3ph						1ph						
Voltages (V)	Y (series star) connection		380	400	415	-			380	416	440	480	-							
	YY (parallel star) connection		190	200	208	-			190	208	220	240	-							
	Δ (series delta) connection		220	230	239	-			220	240	254	277	-							
	ΔΔ (parallel delta) connection		110	115	120	-			110	120	127	138	-							
	Zig-zag or single phase delta		-	-	-	190 - 200			-	-	-	-	220 - 240							
Output power (kVA)	Continuous 80/40		260	260	247	150			260	283	302	324	174							
	Continuous 105/40		298	298	283	172			298	324	346	371	200							
	Continuous 125/40		325	325	309	188			325	354	377	405	218							
	Standby 150/40		350	340	323	202			364	394	412	460	238							
	Standby 163/27		360	350	332	208			380	416	450	470	260							
Electrical data (PF=0.8 / Continuous 125/40 (H)) Saturated reactances values	Xd(%) Dir. axis synchronous reactance		447.7	354.8	305.2	596.9			530.9	460.4	435.1	382.3	580.1							
	X'd(%) Dir. axis transient reactance		17.1	13.5	11.6	22.8			20.3	17.6	16.6	14.6	22.1							
	X''d(%) Dir. axis subtrans. reactance		12.6	10.0	8.6	16.8			15.0	12.9	12.2	10.7	16.3							
	Xq(%) Quad. axis sync. reactance		123.8	98.1	84.4	165.1			146.8	127.3	120.3	105.7	160.4							
	X''q(%) Quad. axis subtrans. react.		10.1	8.0	6.9	13.5			12.0	22.0	9.8	8.5	13.0							
	X2(%) Negative sequence reactance		16.2	12.8	11.0	21.6			19.2	17.4	15.7	13.8	20.9							
	X0(%) Zero sequence reactance		2.1	1.7	1.4	2.8			2.5	2.1	2.0	1.8	2.7							
	T'd(ms) Short Circ. Trans. time const.		61.7	48.9	41.1	82.3			73.2	60.7	60.0	52.7	80.0							
	T''d(ms) Short Circ. Sub. time const.		1.6	1.3	1.1	2.2			1.9	1.6	1.6	1.4	2.1							
	T''do(ms) Open Circ. time const Trans		1231	976	820	1642			1460	1210	1197	1051	1595							
	T''do(ms) Open Circ. time const Subt		2.2	1.8	1.5	3.0			2.6	2.2	2.2	1.9	2.9							
	Ta(ms) Armature time const.		10	8	7	14			12	10	10	9	13							
	uc(V) Full load excitation voltage		63.8	62.7	67.7	63.8			50.9	58.1	54.9	57.8	54.9							
	ic(A) Full load excitation current		3.8	3.8	4.1	3.8			3.1	3.5	3.3	3.5	3.3							
	ic(A) No load excitation current		0.8	0.9	1.0	1.0			0.6	0.8	0.8	0.9	1.0							
Icc(A) Sustained Short-Circ. Current		1481	1407	1290	1407			1481	1463	1484	1461	1360								
Kcc Short-circuit ratio		0.4	0.32	0.33	0.54			0.48	0.42	0.39	0.35	0.52								
Efficiency (%)	Power factor		0.8	1.0	0.8	1.0	0.8	1.0	0.8	1.0	0.8	1.0	0.8	1.0	0.8	1.0	0.8	1.0		
	25% of load		92.6	94.2	92.7	94.3	93	94.6	85.2	86.6	93.1	94.5	93	94.5	93.1	94.5	92.8	94.4	85.7	87
	50% of load		93.7	95.2	93.8	95.4	94.1	95.6	86.2	87.6	94.2	95.5	94.2	95.6	94.4	95.6	94.2	95.6	86.8	88
	75% of load		93.2	95	93.5	95.2	93.8	95.5	85.8	87.4	93.8	95.2	93.9	95.4	94.1	95.5	94.1	95.6	86.6	87.9
	100% of load		92.6	94.5	92.8	94.7	93.1	95	85.2	86.9	93	94.7	93.2	94.9	93.4	95.1	93.6	95.2	86	87.5
	125% of load		91.7	93.8	92.1	94.2	92.4	94.4	83.4	85.5	92.1	94	92.4	94.3	92.6	94.5	93	94.8	85.2	87
Other characteristics										Automatic voltage regulator										
Air flow : 1.7 m³/s										Accuracy (stability) : +/- 0.5%										
Exciter stator winding resistance at 20°C : 12.17 ohm										Rated current : 5 A										
Stator winding resistance at 20°C : 0.01207 ohm										Analog input : Yes										
Rotor winding resistance : 1.92 ohm										Digital input : No										
Stator winding layers : 2										Peak current : 7 A/10 s										
Inertia WR² : 3.23 kgm²										Droop / TC : Yes										
NDE Bearing : 6314 2RS/ZZ										Dynamic recovery : 8 to 500 ms										
DE bearing										U/F : Yes										
Flange : SAE 1										Internal voltage adjustment : +/- 15%										
Coupling disc : SAE 14										External voltage adjustment : +/- 10%										
										Transient recovery time for ΔU=20% : 500 ms										
										According to:										
										IEC 60034										
										NBR 5117										
										NEMA MG1										
										VDE530										
										ISO 8528										
										CSA										

GAS TRAIL SYSTEM



1. Gas supply Input (Ø52)
2. Mechanical valve (On/Off)
3. Gas pressure meter
4. Flow meter model GFM-DN50
5. Gas filter
6. Mechanical valve (to remove air from gas system)
7. Gas pressure regulator
8. Solenoid valve model DN50
9. Solenoid valve model DN50
10. Gas pressure meter

SYNCHRONIZE SYSTEM

SYNCHRONIZE CONTROL UNIT



SMART LOGIC / FULL PROTECTION

The AGC 150 Hybrid is a variant of the well-known and easy-to-use controller, AGC 150. The AGC 150 Hybrid comes with all the necessary functions for protection and control of a hybrid installation with PV and genset. It can be used as a single unit for PV and up to 2 gensets for synchronising projects, in island or parallel to the mains modes. The AGC 150 Hybrid handles the power production from PV and genset to give the highest PV penetration and the lowest CO2 emission, and to ensure safe power production to support the load. The AGC 150 Hybrid can be used as: • Hybrid controller mounted directly on the genset with full control of PV, genset and mains • PV integration controller with power measurement and breaker feedback from existing controller. The AGC 150 contains all necessary 3-phase measuring circuits. All values and alarms are presented on the sun proof LCD display.

STANDARD

DEIF150
3P5-V400-DEIF150

DOWNLOAD
datasheet



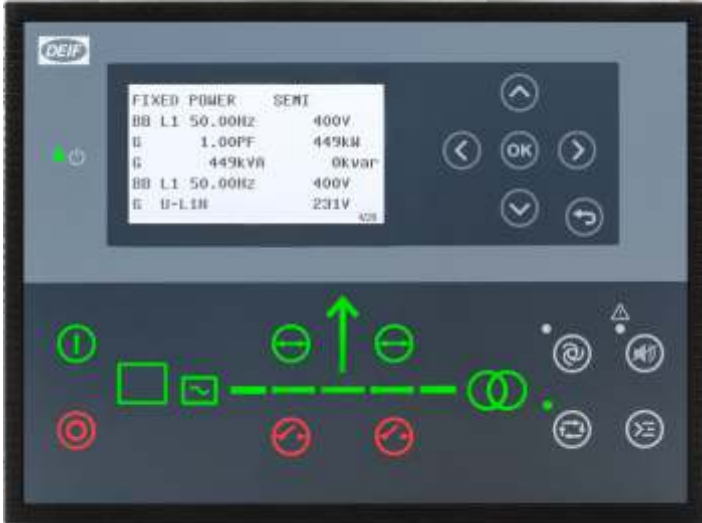
OPTIONAL



IntelliGen4 200
3P5-V400-CI200

DOWNLOAD
datasheet

IntelliGen4 200 is a diesel gen-set control unit for common paralleling applications supporting both single and multiple gen-sets running in grid-tied or island operations.



General description

The AGC 150 Hybrid is a variant of the well-known and easy-to-use controller, AGC 150. All technical information on this variant is found in the AGC 150 documentation on deif.com.

The AGC 150 Hybrid comes with all the necessary functions for protection and control of a hybrid installation with PV and genset. It can be used as a single unit for PV and up to 2 gensets for synchronising projects, in island or parallel to the mains modes.

The AGC 150 Hybrid handles the power production from PV and genset to give the highest PV penetration and the lowest CO emission, and to ensure safe power production to support the load.

The AGC 150 Hybrid can be used as:

- Hybrid controller mounted directly on the genset with full control of PV, genset and mains
- PV integration controller with power measurement and breaker feedback from existing controller.

The AGC 150 contains all necessary 3-phase measuring circuits. All values and alarms are presented on the sun proof LCD display.

Applications

The AGC 150 is a compact all-in-one unit designed for the following hybrid PV and genset applications:

Plant mode	Application
Island mode	Plant with PV inverters and synchronizing generators or a stand-alone generator.
Automatic Mains Failure	Plant with PV inverters, genset(s) and mains. Black start generator
Fixed power	Plant with fixed kW set point for PV inverters.
Peak shaving	Plant with PV inverters, where a generator supplies peak load demand paralleled to the mains.
Load take-over	Plant with PV inverters, where the rest load is moved from mains to generator.
Mains power export	Plant with fixed kW set points for PV inverters and mains.

Main hybrid features

Minimum genset load

- Eliminate the risk of reverse power caused by low load

Perfect for Rooftop installations

- Rebuild your genset with AGC 150 benefits and get PV for free

Load calculation in terms of solar power

Automatic genset start/stop

- Based on threshold set points for PV production and mains import/export

PV included in modes

- MPE (Mains power export/import), AMF (Automatic mains failure), LTO (Load take-over), Fixed power, and Peak shaving

PV inverter communication support

- Support of more PV inverter communication protocols, including Sunspec

Mains voltage and current measurement

- One CT/Phase for balanced load

PV Power emulation

- Try and test the Hybrid functions without a PV plant

Other PV features:

- Energy Counters, Curtailment
- Inverter monitoring
- POA and BOM for calculating P max
- Weather data presentation

Other features

Easy and user-friendly interface

- Adaptive mimic with easy switching between applications
- Only buttons relevant for a function are visible to the user

New design - Easy to mount

- Compact design making it suitable for all applications

Three user levels

- With configurable passwords for each parameter, only relevant parameters are shown

Shortcut menu

- Easy access to frequently used functions (configurable)

PLC functions

- Programmable and user-friendly functions (M-Logic)

Alarm and Event logging

- Up to 500 alarms and 500 events

Graphical Display

- Important information is shown on the easy-to-read display

Built-in analogue AVR and GOV control

- Eliminates the need for external equipment (voltage and PWM)

CIO support

- Support of CANbus based I/Os, increases the number of I/Os

Stage V and Tier 4 Final

- AGC 150 can be used with the latest electrical Tier 4 Final engines and show values requested by Stage V.

Function and features

Key functions and features

- PV power control
- PV active/reactive power counters
- Inverter monitoring
- Weather station support
- Engine start sequences
- Engine and generator protections
- Engine communication via CANbus
- Run coil and crank configurable when using electric engine
- Tier 4 Final support with clear alarm indications
- Diesel and gas genset support
- 3-phase generator and busbar sensing
- Phase compensation for D/Y transformer
- Four current sensing inputs
- Integrated governor and AVR outputs for control
- State-of-the-art synchronisation and load sharing
- Synchroscope and sync check
- Digital voltage regulation support for different DVR
- Voltage and frequency matching
- Three synchronisation methods: Dynamic, Static and Close before excitation
- 12 digital outputs (configurable)
- 12 digital inputs (configurable)
- Two analogue outputs (-10 to 10 V)
- Four multi-inputs:
 - Resistor, 0 to 4000
 - Voltage, 0 to 10 V
 - Current, 4 to 20 mA
 - Digital input
- Deadbus sensing
- Ground relay
- Mains support for stand-alone system (AMF)
- Analogue load sharing with external box
- ROCOF and Vector jump protection
- Fuel usage monitoring
- Maintenance alarms
- Grid support
- Ethernet interface as standard
- PV inverter communication (Modbus Master) on RS-485 port 2

Digital AVR support

Together with DEIF's DVC 310 or DVC 550 digital voltage controllers, the AGC 150 supports features such as Engine AID (for the rental market) and fast and secure CBE critical power start-up (run-up syncing).

Easy overview

- Remote monitoring support with Insight
- Weekly scheduler
- Emulation for testing and frontload commissioning
- Built-in Guided experience to help the user
- PV and engine alarms in clear text on the display
- Graphical display:
 - LCD, back-lit
 - High resolution, 240 x 120 pixels
 - Six lines
 - Operating temperature from -40 to +70 °C (-40 to +158 °F)
- Five-key navigation menu
- Event log with 500 entries (can be exported to a CSV file)
- Alarm log with 500 entries (can be exported to a CSV file)

Highly configurable

- Controller configuration from the front panel (PIN code protected) or with free PC tool via USB, Ethernet & RS485
- PC tool with trending and wizards helping the user with configuration
- 20 configurable display views
- Four fully configurable PID controllers
- CAN flags between controllers
- CANbus based extension module for Inputs/Outputs
- Real time clock
- User configurable logic (lite PLC)
- Ethernet communication for PLC, SCADA or BMS
- Multi-language support (incl. Chinese, Russian and other languages)

Four software packages

The AGC 150 can be equipped with four different software packages:

- **Stand-alone:** Non-sync application
- **Core:** Simple paralleling, like rental and constructions
- **Extended:** Standby power, like simple backup power stations
- **Premium:** Small CHP or similar medium complex sites

Note: The Hybrid functions are only supported by **Stand-alone Core** and **Extended** software packages.

See the data sheet for a more detailed description of each package.

Technical specifications

Power supply

- Nominal voltage: 12/24 V DC
- Operating range: 6.5 to 35 V DC
- Load dump protection (ISO16750-2)
- Measuring range: 0 to 50 V DC (35 V DC continuously)

Operating conditions

- Operating temperature: -40 to +70 °C (-40 to +158 °F)
- Storage temperature: -40 to +85 °C (-40 to +185 °F)

Environment

- Altitude: 0 to 4000 m
- Humidity: 20/55 °C at 95 % RH
- Protection degree: IP65 in panel, IP20 on terminals
- Pollution degree 2
- Self-extinguishing plastic

Measuring

- Voltage range: 100 to 690 V, phase-to-phase
- Max. measured voltage: 10 to 135 % of nominal
- Voltage accuracy: ±1 % of nominal
- Current range: 1 A and 5 A, 2 to 300 %
- Max. measured current: 3/15 A overload
- Current accuracy: ±1 % of nominal
- Frequency range: 3.5 to 75 Hz
- Power accuracy: ±1 % of nominal

Inputs/Outputs

- Digital inputs: 12 (max. +50 V, min. -24 V)
- Digital outputs: 2 (15 A inrush / 3 A continuously)
10 (2 A inrush / 0.5 A continuously)
- Digital common: 12/24 V DC
- Analogue inputs: 4
- Analogue outputs: 2
- CANbus 1 and 2
- RS-485 1 and 2 (PV inverter communication on 2)
- RJ-45 Ethernet
- USB (service-port)

Approvals

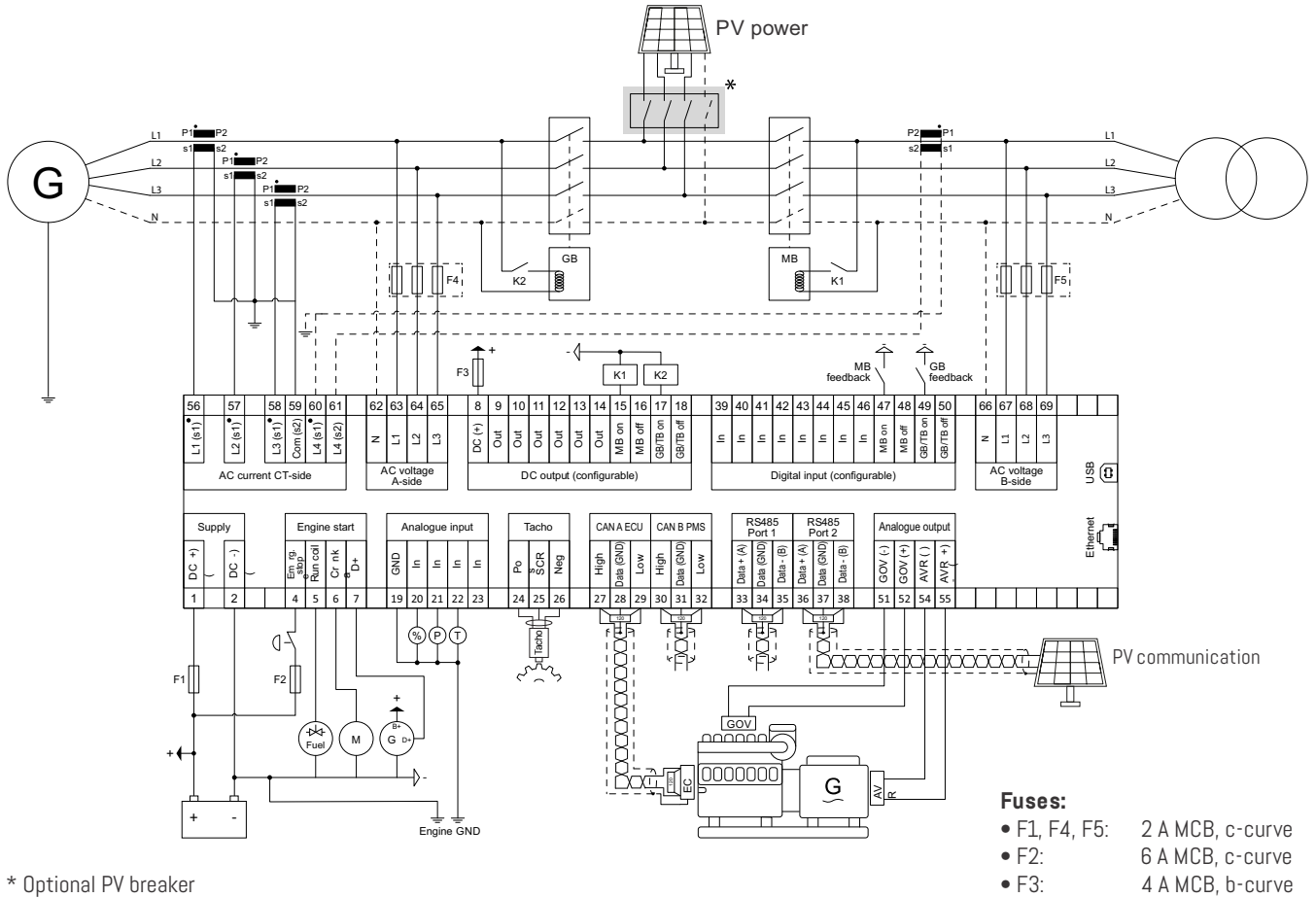
- CE
- cULus recognized to UL6200:2019, 1. ed. controls for stationary engine gensets

Protections

2 x Reverse power	ANSI 32R
2 x Short circuit	ANSI 50P
4 x Over-current	ANSI 51
1 x Voltage-dependent over-current	ANSI 51V
2 x Over-voltage	ANSI 59P
3 x Under-voltage	ANSI 27P
3 x Over-frequency	ANSI 81O
3 x Under-frequency	ANSI 81U
1 x Unbalanced voltage	ANSI 47
1 x Unbalanced current	ANSI 46
1 x Under-excitation or var import	ANSI 32RV
1 x Over-excitation or var import	ANSI 32FV
5 x Overload	ANSI 32F
1 x Earth current	ANSI 51G
1 x Neutral current	ANSI 51N
3 x Busbar/mains over-voltage	ANSI 59P
4 x Busbar/mains under-voltage	ANSI 27P
3 x Busbar/mains over-frequency	ANSI 81O
3 x Busbar/mains under-frequency	ANSI 81U
1 x Emergency stop	ANSI 1
2 x Overspeed	ANSI 12
1 x Low auxiliary supply	ANSI 27DC
1 x High auxiliary supply	ANSI 59DC
1 x Generator breaker external trip	ANSI 5
1 x Tie/mains breaker external trip	ANSI 5
Synchronisation failure alarms	ANSI 25
Breaker open failure	ANSI 52BF
Breaker close failure	ANSI 52BF
Breaker position failure	ANSI 52BF
1 x Close before excitation failure	ANSI 48
1 x Phase sequence error	ANSI 47
1 x De-load error	ANSI 34
1 x Crank failure	ANSI 48
1 x Running feedback error	ANSI 34
1 x MPU wire break	
1 x Start failure	ANSI 48
1 x Hz/V failure	ANSI 53
1 x Stop failure	ANSI 48
1 x Stop coil, wire break alarm	ANSI 5
1 x Engine heater	ANSI 26
2 x Max. ventilation/radiator fan	
1 x Not in Auto	ANSI 34
1 x Fuel fill check	
1 x Vector jump	ANSI 78
1 x df/dt (ROCOF)	ANSI 81R
2 x Under-voltage and reactive power, U and Q	
1 x Positive sequence (mains) voltage low	ANSI 27
2 x Directional over-current	ANSI 67
1 x Negative sequence voltage high	ANSI 47
1 x Negative sequence current high	ANSI 46
1 x Zero sequence voltage high	ANSI 59G
1 x Zero sequence current high	ANSI 50G
1 x Power-dependent reactive power	ANSI 40
1 x IEC/IEEE inverse time over-current	ANSI 51

Wiring and dimensions

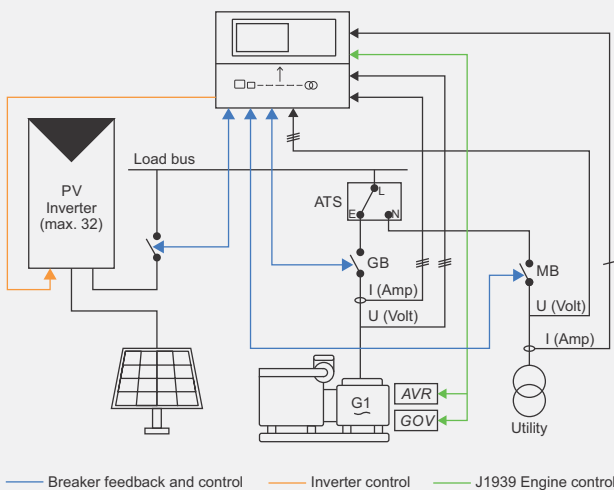
Typical wiring



* Optional PV breaker

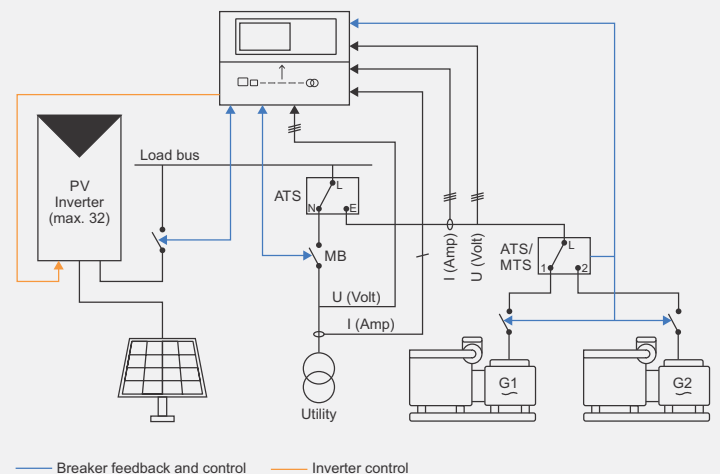
Application examples

Application with PV inverters and a single generator



Full hybrid controller functions

Application with PV inverters and non-synchronising gensets

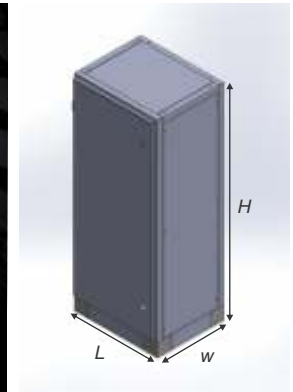
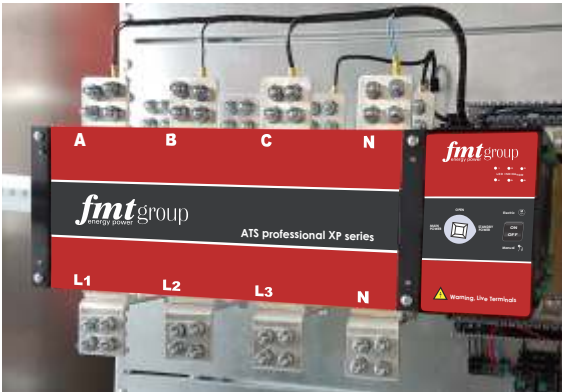


Full hybrid controller functions

fmtelectric ats system

AUTOMATIC TRANSFER SWITCHES

An ATS is a device that interfaces with a generator and the electrical system. It monitors the utility power and signals of generator to start if the utility power goes out of specifications or drops out entirely. Backup power is now fed to the main utility panel or an emergency panel via the ATS. Are sized based on the power requirements of the connected devices and the type of power sources involved. Some ATS units include monitoring features, allowing users to track power status, load levels and other relevant data. All FMT Group generators has the ATS system.



VOLTAGE	MODEL CONFIGURATION*	ATS PANEL MODEL	CAPACITY AMPS	Dimension (mm) W x L x H
400/230 VAC	3P5-V400-DEIF150E	NOT INCLUDED	-	-

*model configuration explanation

3P5-V400-DEIF420

Voltage 5-50Hz / 6-60Hz no. of phase 3P -threephase / 1P -monophase	AMF/Synchronize Control Unit
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PRO-ACB Series
AIR CIRCUIT BREAKER

FMT PRO-ACB Series intelligent type universal circuit breaker is suitable for AC50HZ, rated voltage up to 660V(690) and below, rated current 400A-6300A of the distribution network used to distribute power and protect circuits and power supply equipment against overload, under-voltage, short circuit, single-phase ground fault. Circuit breaker protection with intelligent, selective protection of precision, improve the reliability of power supply, avoid unnecessary power outages. At the same time with an open communication interface for four remote, meet the requirements of the system centers and automation systems. The circuit breaker at an altitude of 2000 meters pulse pressure 8000V (different altitude correction according to the standard, no more than 12000V). The circuit breaker without in Intelligent Release and sensor can be used for isolation, mask as Circuit Breaker meets the requirement specified in GB14048.2 "low-voltage switchgear and control equipment low-voltage circuit breakers" and IEC947-2 "low-voltage switchgear and control equipment circuit breaker".



Producing with CE, ISO 45001-2018, ISO 8528-1, ISO 8528-5, ISO 8528-9, ISO 8528-10, ISO 8528-13, ISO 9001, ISO 9227, ISO 10002-2018, ISO 14001-2015, ISO 14040, ISO 31000-2018, ISO 50001-2018, SA 8000-2014 standards.

note:

- o All information given in this data sheet is intended for guidance only
- o FMT Group reserves the right to make change in any details without prior notice
- o The present documents will not be part of any sales contract

OPTIONAL



fmt group

energy power

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e-mail: info@fmtgroup.al

KOSOVO

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Cagllavice - Prishtine

MONTENEGRO

Address: Tuzi BB - Podgorice

TURKEY

Address: Eski Londra Asfaltlı Caddesi No:41-43A
Güngören / İstanbul

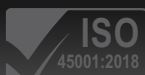
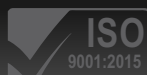
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WE HAVE THE POWER



For more information please visit our websites



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