



## POWER PARAMETERS

### Generating Rates

STANDBY POWER			PRIME POWER		
<b>110</b>	kva	88 kW	<b>100</b>	kva	80 kW
		159 A			144 A
Standard Voltage			400/230 VAC		
Rated at power factor Cos Ø			0,8		



#### Standby Rating (ESP)

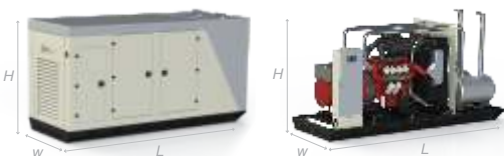
According to ISO 8528-1:2005, Emergency standby power is the maximum power available during a variable electrical power sequence, under the stated operating conditions, for which a generating set is capable of delivering in the event of a utility power outage or under test conditions for up to 200h of 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.

#### Prime Rating (PRP)

According to ISO 8528-1:2005, 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.

G2 class load acceptance in accordance with ISO 8528-5:2005

## DIMENSION / WEIGHT / FUEL TANK



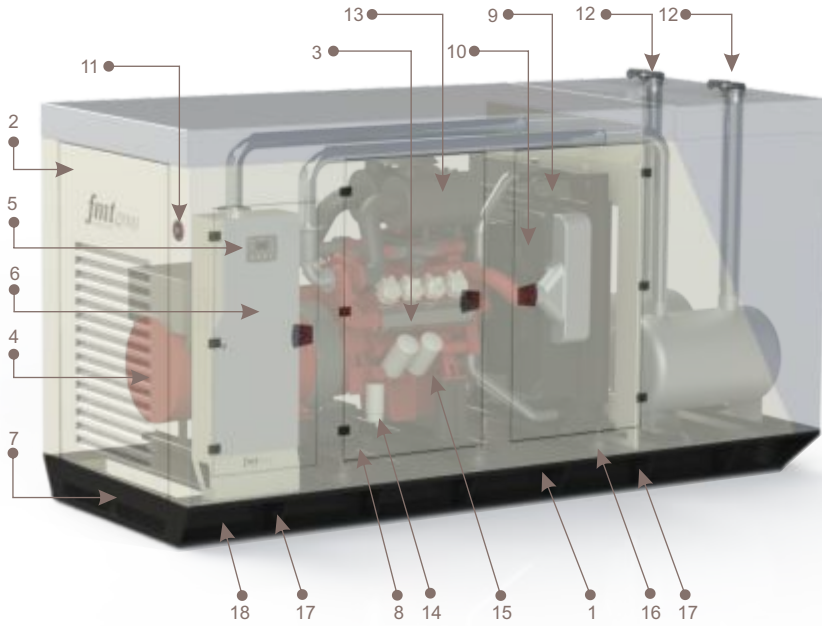
	Dimension W x L x H (mm)	Weight (kg)	Tank Capacity (lt)
<b>Canopy</b>	1100 x 2500 x 1470	1,307	190
<b>Open Type</b>	1100 x 2500 x 1370	1,108	190

NOTE: For reference only, do not use for installation design. Please contact your local dealer for exact weight and dimensions.

NOISE LEVEL db(A)

**7mt@70-75 db(A)**

TBA: To Be Asked, N/A: Not Applicable



Low fuel consumption



High efficiency



Easy lift



Low noise

1	Base Frame	10	Cooling fan
2	Canopy	11	Emergency stop button
3	Engine	12	Exhaust Outlet
4	Alternator	13	Air Filter
5	Control Panel	14	Fuel filter
6	Connection Box	15	Oil Filter
7	Fuel Tank	16	Vibration Isolators
8	Battery	17	Lifting Lug
9	Radiator	18	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

- Diesel 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
- Antivibration shock absorbers
- Flexible 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

## SAFETY FEATURES



HIGH WATER TEMPERATURE



PROTECTIVE EARTH POINT



LOW LUBE OIL PRESSURE



EMERGENCY STOP PUSH-BUTTON

**TY...! 2 YEARS WARRANTY...! 2 YEARS WARRANTY...! 2 YEARS WARRANTY...!**

# HORSE POWER

## Durable Energy

Unique design



The diesel engine is the most important part of the genset. Is the prime mover that drives the generator (alternator) to produce electricity. All diesel engines are similar to each other in the concept but they different in many aspects such as the number of cylinders, if the cylinders are inline or Vtype, how the fuel is delivered to the cylinders, governing system, cooling system, air charging system, air intake system. All these details affect the decision of which engine to use and which performance is expected. Engines are rated in KW or HP. Their performance is measured in their fuel consumption in liters or gallons per KWh produced, its thermal efficiency, noise level, lube oil consumption and exhaust gas emissions.

## ENGINE SPECIFICATION



### GENERAL DATA

<b>Model</b>	N45 TM2A
<b>No. of cylinder / Configuration</b>	In-Line 4
<b>Displacement</b>	4.5 lt
<b>Bore / Stroke</b>	104x132 mm
<b>Compression ratio</b>	17.5:1
<b>Aspiration</b>	Turbocharged - Intercooler
<b>Governor type</b>	Mechanic
<b>Cooling system</b>	Water
<b>Coolant capacity</b>	18.5 lt
<b>Speed / Frequency</b>	1500 rpm / 50Hz
<b>Fuel consumption</b> 100% power used	22.0 lt/h
<b>Fuel consumption</b> 75% power used	16.2 lt/h
<b>Fuel consumption</b> 50% power used	11.0 lt/h

### LUBRICATION SYSTEM

<b>Oil capacity</b>	12.8 lt
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### VENTILATION SYSTEM

<b>Intake air flow</b>	7.11 m <sup>3</sup> /min
<b>Radiator cooling air</b>	132 m <sup>3</sup> /min

### EXHAUST SYSTEM

<b>Exhaust outlet temperature</b>	535 °C
<b>Exhaust gas flow</b>	16.9 m <sup>3</sup> /min

### ELECTRICAL SYSTEM

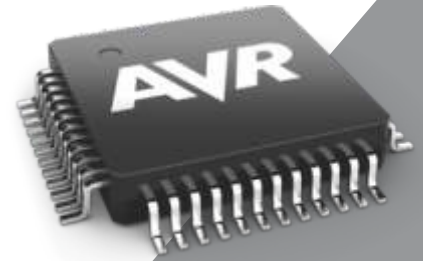
<b>VDC</b>	12 V
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Fuel consumption refers to prime power

## SELF EXCITED STRONG ROTOR

*Isolated Stator*

**WEG 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. **WEG alternator** is protected by a special cabin that enables the electrical connections.



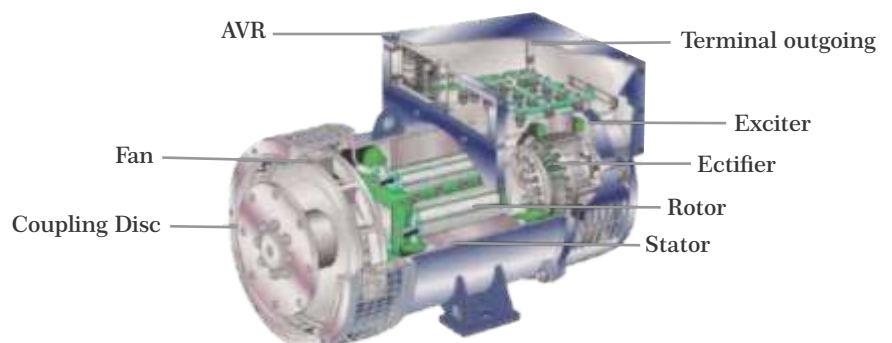
## ALTERNATOR SPECIFICATION



### GENERAL DATA

<b>Model</b>	GTA-202AIVJ
<b>No. of Phase</b>	3
<b>Power Factor</b>	0.8
<b>No of Bearing</b>	SINGLE
<b>No of Poles</b>	4
<b>No of Leads</b>	12
<b>Insulations Class</b>	H
<b>Voltage Regulation (Steady State)</b>	± 1%
<b>Degree of Protection</b>	IP 23
<b>Excitation System</b>	Self excited, AVR, Brushless
<b>Connection System</b>	STAR
<b>Frequency</b>	50 Hz
<b>Voltage Output</b>	400/230 VAC
<b>Rated Power (standby)</b>	110 kVA
<b>Efficiency</b>	89.4 %

### Alternator Structure



**SINGLE GEN-SET**  
AMF AUTOMATIC MAINS FAILURE



fmt control panel  
energy power

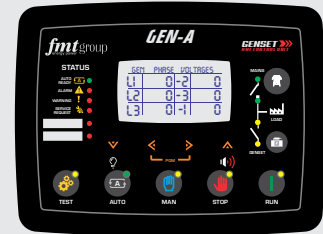
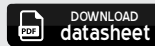
**STANDARD**

**GENA**

3P5-V400-GENA

GENA is a next generation genset controller combining multi-functionality and wide communication capabilities together with a reliable and low-cost design. The same controller provides synchronization, load share, AMF, ATS, Remote Start, Engine Control and Remote Display Panel functionalities. The module comes ready for remote monitoring over GSM or Ethernet with plug-in communication modules. Various plug-in modules provide unlimited expansion capabilities allowing to meet any special requirement. The unit complies and mostly exceeds world's tightest safety, vibration and environmental standards for the industrial category. Software features are complete with easy firmware upgrade process through USB port. The Windows based PC software allows monitoring and programming through USB, RS-485, Ethernet and GPRS.

The Rainbow Scada web monitoring service allows monitoring and control of an unlimited number of gensets through any web browser.



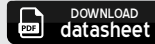
**ComAp**

**OPTIONAL**

**InteliLiteNT AMF9**

3P5-V400-CA9

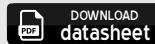
The InteliLiteNT AMF 9 is integrated controller for gen-sets operating in single standby mode. The controller meets all requirements for Auto Mains Failure (AMF) applications including remote communication and internet control, user configuration and complete gen-set monitoring and protection. InteliLiteNT AMF 9 is easy to use with a simple intuitive user interface and graphic display. Unit is designed for quick and cost saving commissioning and bring seamless integration with the latest breed of EFI diesel engines from all major manufacturers. This offers a higher level of functionality with users able to display a comprehensive range of values from the EFI engine on standard analog gauges and true RMS measurement of electric values.



**InteliLite AMF25**

3P5-V400-CA25

InteliLite® AMF 25 is new integrated controller for gen-sets operating in single standby mode. It meet all possible requirements for AMF applications, including modem control, user configuration and full gen-set monitoring and protection. InteliLite® controllers are equipped with a powerful graphic display. Icons, symbols and bar graphs for intuitive operation together with high functionality set new standards in gen-set control. Special low temperature (IL-AMF 20-LT or IL-AMF 25-LT) version is also available, allowing the display to work up to -30 °C.



DSE

**OPTIONAL**

**DSE6120**

3P5-V400-DSE6120

The DSE6120 is an Auto Mains (Utility) Failure Control Module suitable for a wide variety of single gen-set applications. Monitoring speed, frequency, voltage, current, oil pressure, coolant temperature and fuel level, the modules will display warnings, shutdown and engine status information on the back-lit LCD screen and illuminated LED. Both modules offer electronic (CAN) and non-electronic (magnetic pick-up/alternator sensing) engine versions and offer a number of flexible inputs, outputs and engine protections so the system can be easily adapted to suit a wide range of application demands. The modules can be easily configured using the DSE Configuration Suite PC software. Selected front panel editing is also available.



**DSE7320**

3P5-V400-DSE7320

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. Is 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.



## SYNCHRONIZE SYSTEM

### AMF AUTOMATIC MAINS FAILURE



fmt control panel

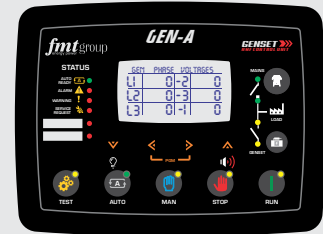
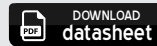
## STANDARD

### GENA-SYC

3P5-V400-GENA

GENA is a next generation genset controller combining multi-functionality and wide communication capabilities together with a reliable and low-cost design. The same controller provides synchronization, load share, AMF, ATS, Remote Start, Engine Control and Remote Display Panel functionalities. The module comes ready for remote monitoring over GSM or Ethernet with plug-in communication modules. Various plug-in modules provide unlimited expansion capabilities allowing to meet any special requirement. The unit complies and mostly exceeds world's tightest safety, vibration and environmental standards for the industrial category. Software features are complete with easy firmware upgrade process through USB port. The Windows based PC software allows monitoring and programming through USB, RS-485, Ethernet and GPRS.

The Rainbow Scada web monitoring service allows monitoring and control of an unlimited number of gensets through any web browser.



fmt control panel

## OPTIONAL

### FSYNCH-7

3P5-V400-FSYNCH-7

The FSYNCH-7 is a next generation synchronizing genset controller combining multi-functionality and wide communication capabilities together with a reliable and low cost design. The unit offers auto-genset learning capability, a first in the industry. The multi-functionality of the unit allows it to be a genset or mains synchronizer, even a parallel to mains controller with soft transfer in both directions. The unit is available with 4.3" TFT color display or 128x64 pixels B/W display. The unit complies and mostly exceeds world's tightest safety, EMC, vibration and environmental standards for the industrial category. Software features are complete with easy firmware upgrade process through USB port. The Windows based PC software allows monitoring and programming through USB, RS-485, Ethernet and GPRS. Scada web monitoring service allows monitoring and control of an unlimited number of gensets through any web browser.



ComAp

## OPTIONAL

### InteliGen 200

3P5-V400-CI200

The new ComAp InteliGen 200 introduces a new era in parallel genset control. The power and reliability of InteliGen, combined with the design and flexibility of the InteliLite gives you the best paralleling controller ComAp have ever made. The InteliGen 200 allows you to choose the configuration that best suits your application. Add more inputs and outputs, add GPS or 4G/LTE communications – it's up to you. Configuration and monitoring is supported by InteliConfig – a new version of ComAp's PC software offering the possibility to control and monitor either one, or multiple gen-sets. Thanks to manuals incorporated directly into InteliConfig and a context sensitive hint feature, customers have always help at hand.



DSE

## OPTIONAL

### DSE8610

3P5-V400-DSE8610

The DSE8610 MKII is a marketleading Synchronising Auto Start Control Module suitable for use in a multi-generator loadshare system, designed to synchronise up to 32 generators including electronic and non-electronic engines. The DSE8610 MKII monitors the generator and indicates operational status and fault conditions, automatically starting or stopping the engine on load demand or fault conditions. System alarms are annunciated on the LCD screen (multiple language options available), illuminated LED and audible sounder. The event log records 250 events to facilitate easy maintenance, and an extensive number of fixed and flexible monitoring, metering and protection features are included.



SMART LOGIC  
SUPER CONTROL  
FULL PROTECTION



# HIGH TECHNOLOGY FOR EVERYONE

## GEN-A

- BOTH AMF AND SYNCHRONIZING
- SAME UNIT FOR ALL FUNCTIONS
- INTERNET BASED
- MULTI-PROTOCOL
- FLEXIBLE WITH PLUG-IN MODULES
- AUTO LEARNING

BUTTON	FUNCTION DESCRIPTION	GENSET AMF CONTROL UNIT GEN-A
	<b>Selects TEST mode</b> The genset runs and takes the load	
	<b>Selects MANUAL mode</b> The RUN push button is enabled. The genset will run when RUN mode is selected. It can be stopped anytime by depressing the OFF button	
	<b>Selects RUN mode</b> Runs the genset off load. Applicable only in MANUAL mode	
	<b>Selects AUTO mode</b> The genset runs when necessary and takes the load	
	<b>Selects OFF mode</b> The genset stops after cooldown. If depressed again, the genset will immediately stop	
	Selects next display screen in the same display group LAMP TEST when held pressed	
	Selects previous display group	
	Selects next display group	
	Selects previous display screen in the same display group Resets the ALARM RELAY	
	Manual MAINS CONTACTOR (or Busbar contactor) control in RUN mode	
	Manual GENSET CONTACTOR (or Busbar contactor) control in RUN mode	
	When held pressed for 5 seconds, enters PROGRAMMING mode	
	Makes factory reset. Please review chapter RESETTING TO FACTORY DEFAULTS for more details.	
	When held pressed for 5 seconds, resets service request counters. Please review chapter SERVICE REQUEST ALARM for more details	

## FEATURES

- Diesel and gas genset support
- 400Hz operation support
- 400 event logs, full snapshot
- All parameters front panel editable
- 3 level configuration password
- 128x64 graphical LCD display
- Downloadable languages
- Waveform display of V & I
- Harmonic analysis of V & I
- Synchroscope & check synch
- Allows closed transfers
- 16Amp MCB & GCB outputs
- 8 configurable digital inputs
- Inputs expandable to 40
- 8 configurable digital outputs
- Outputs expandable to 40
- 7 configurable analog inputs
- Both CANBUS-J1939 & MPU
- 3 configurable service alarms
- Multiple topologies
- 6xCT, true mains metering
- Supports up to 48 gensets
- Automatic learning/self adjust
- Direct governor & AVR control
- Voltage and phase matching
- kW & kVA load sharing
- True soft transfer in both ways
- PLC functions
- Peak Lopping / peak shaving
- Mains de-coupling protection
- R.O.C.O.F protection
- Vector shift protection
- Reverse power protection
- Over/under freq. Protection
- Over/under voltage protection
- Smart load management
- Smart genset sequencing
- Run/stop priority support
- Equal aging of gensets
- Base load (power export)
- Unmanaged distributed power export support
- AVR & GOV droop support
- Dead bus sensing
- Multiple automatic exerciser
- Weekly operation schedule
- Dual mutual standby with equal aging of gensets
- Manual "speed fine adjust" on selected ECUs
- Automatic fuel pump control
- Disable protections feature
- Excess power protection
- Reverse power protection
- Overload IDMT protection
- Load shedding, dummy load
- Multiple load management
- Current unbalance protection
- Voltage unbalance protection
- Fuel filling & fuel theft alarms
- Contactor & MCB drive
- Battery back-up real time clock
- Idle speed control
- Battery charge run enabled
- Combat mode support
- Multiple nominal conditions
- 4 quadrant genset power counters
- Mains power counters
- Fuel filling counter
- Fuel consumption counter
- Modem & ethernet diagnostics
- Configurable through USB, RS-485, Ethernet and GPRS
- Free configuration program
- Allows SMS controls
- Ready for central monitoring ethernet & GPRS
- Mobile genset support
- Automatic GSM geo-location
- GPS connectivity (USB&RS232)
- Dynamic DNS support
- Easy USB firmware upgrade
- IP65 rating with standard gasket



**PLUG-IN MODULES**

- 2G GSM Modem
- 3G GSM Modem
- 4G GSM Mode
- Wi-Fi (802.11 b/g/n)
- Ethernet 10/100 Mbits
- USB Host
- RS-232 (isolated)
- RS-485 (isolated)
- Synchro/LoadShare Module
- 3x AC Current Inputs
- 3x Analog Inputs

**FUNCTIONALITIES**

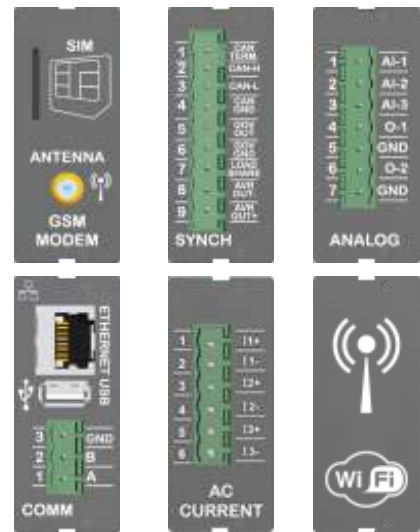
- Multi genset synch & load share
- Single genset parallel with mains
- AMF unit (uninterrupted transfer)
- ATS unit (uninterrupted transfer)
- Remote start controller
- Manual start controller
- Engine controller
- Remote display panel

**COMMUNICATIONS**

- Central Monitoring
- Embedded Web Server
- USB
- GPS (geo-location)
- SMS
- E-mail
- Modbus
- Modbus TCP/IP
- SNMP I.0 with trap
- HTML
- UDP
- SNMP



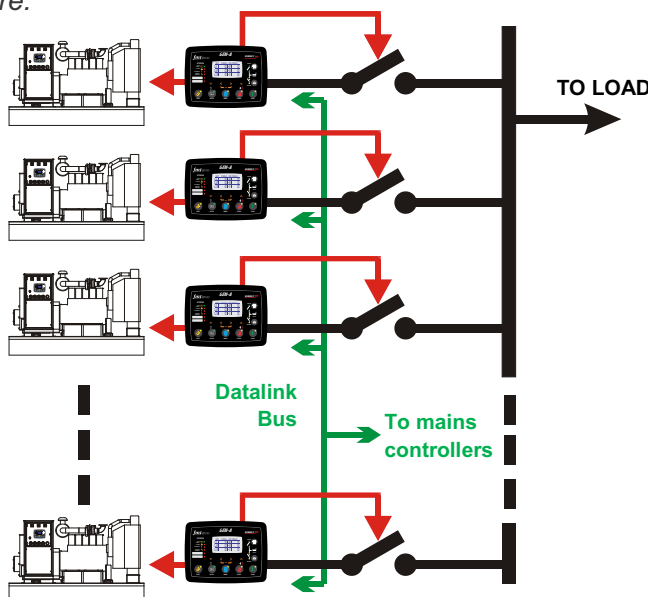
Backpanel view



Plug-in modules

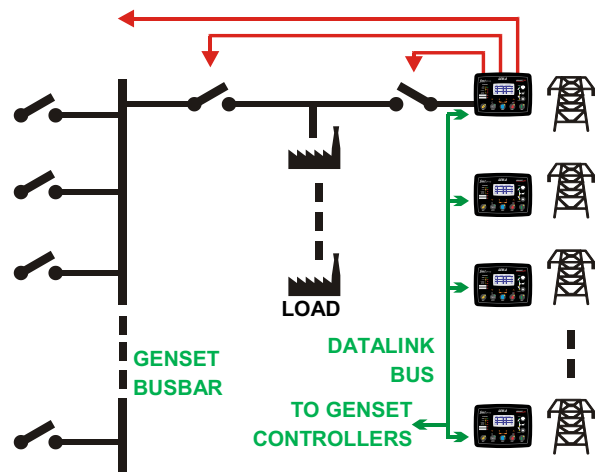
**MULTI GENSET SYNCHRONIZATION**

Up to 48 gensets may be paralleled on the same busbar. Smart load management is a standard feature.



**MAINS SYNCHRONIZATION**

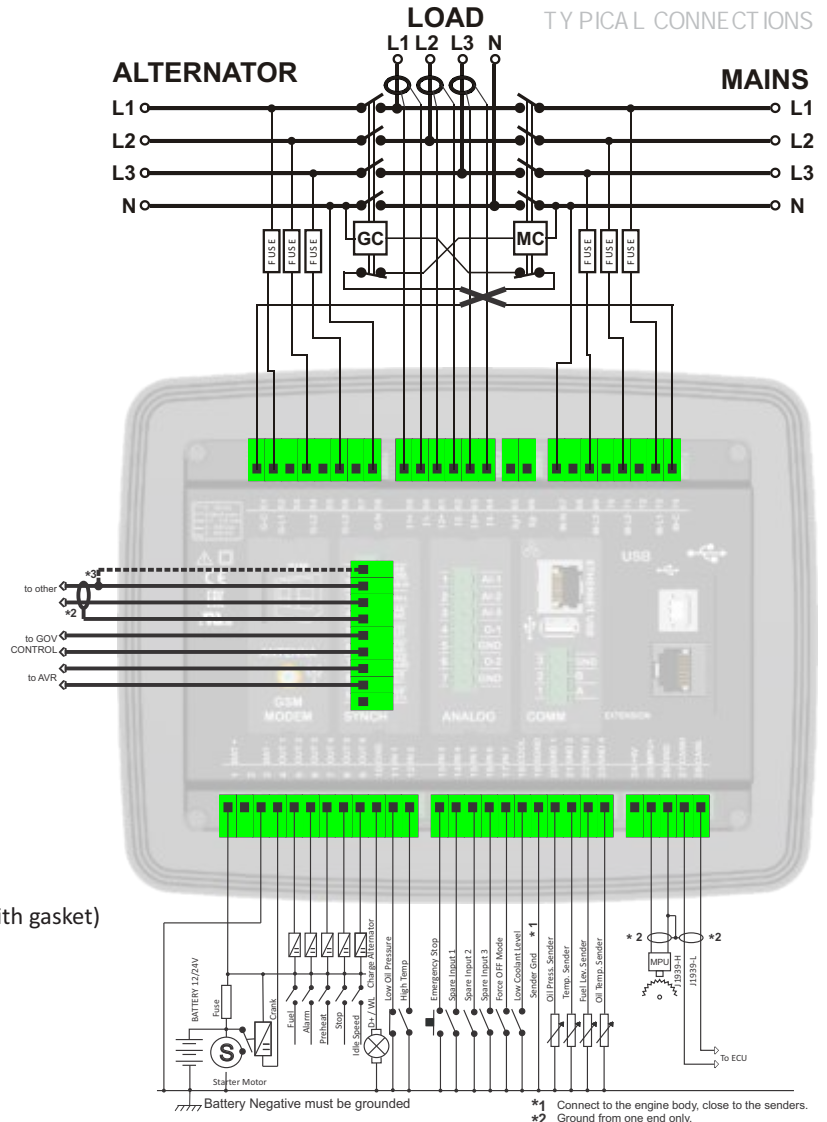
Up to 16 mains controller per system are supported. Mains controllers provide the REMOTE START signal and handle synchronization of the complete genset system with mains.





**TECHNICAL SPECIFICATIONS**

**Alternator voltage:** 0 to 300 V-AC (Ph-N)  
**Alternator frequency:** 0-600 Hz.  
**Mains voltage:** 0 to 300 V-AC (Ph-N)  
**Mains frequency:** 0-600 Hz.  
**Topology:** 1-2-3 phases, with or without neutral  
**DC Supply Range:** 8.0 to 36.0 V-DC.  
**V-A-cos Accuracy:** 0.5% + 1 digit  
**kW-kVA-kVAr Accuracy:** 1.0% + 1 digit  
**Current consumption:** 500 mA-DC max.  
**Current Inputs:** from current transformers. ../5A or ../1A.  
**Digital inputs:** input voltage 0 to 36 V-DC.  
**Analog input range:** 0-5000 ohms.  
**Mains and genset contactor outputs:** 16Amps@250V  
**DC Outputs:** Protected mosfet semiconductor outputs, rated 1Amp@28V-DC  
**Cranking dropouts:** survives 0V for 100ms.  
**Magnetic pickup voltage:** 0.5 to 50Vpk.  
**Magnetic pickup frequency:** 0 to 20000 Hz.  
**Charge Alternator Excitation:** 2W.  
**Display Screen:** 2.9", 128x64 pixels  
**Ethernet Port:** 10/100 Mbits  
**USB Device:** USB 2.0 Full speed  
**USB Host:** USB 2.0 Full speed  
**RS-485 Port:** selectable baud rate (2400-115200baud)  
**RS-232 Port:** selectable baud rate (2400-115200baud)  
**Operating temperature:** -20°C to 70°C (-4 to +158 °F)  
**Storage temperature:** -40°C to 80°C (-40 to +176°F)  
**Maximum humidity:** 95% non-condensing.  
**IP Protection:** IP65 from front panel, IP30 from the rear (with gasket)  
**Dimensions:** 211 x 162 x 42mm (WxHxD)  
**Panel Cut-out Dimensions:** 176 x 121 mm minimum.  
**Weight:** 500 g (approx.)  
**Case Material:** High Temperature, non-flammable ABS/PC  
**Installation:** Flat surface mounting on a Type 1 enclosure.  
 Rear retaining plastic brackets.



**CONFORMITY**

**EU Directives Conformity**

- 2014/35/EC (low voltage)
- 2014/30/EC (electro-magnetic compatibility)

**Norms of reference:**

- EN 61010 (safety requirements)
- EN 61326 (EMC requirements)

**UL & CSA Compatibility:**

- UL 6200, Controls for Stationary Engine Driven Assemblies (File# - 20140725-E314374)
- CAN/CSA C22.2 No. 14-13 – Industrial Control Equipment

**SCOPEMETER & HARMONICS**

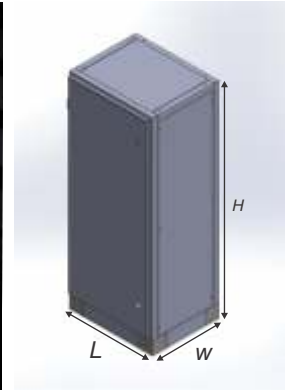
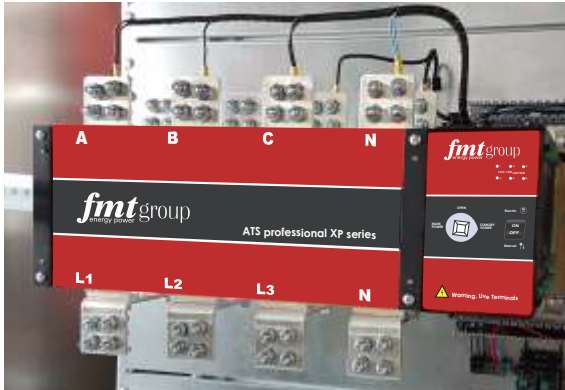
**RAINBOW SCADA CENTRAL MONITORING**

**WEB SERVER**

**fmt**electric ats system

**AUTOMATIC TRANSFER SWITCHES**

An ATS is a device that interfaces with a generator and the yours electrical system. It monitors the utility power and signals the generator to start if the utility power goes out of spec or drops out entirely (blackout). Backup power is now fed to the main utility panel or an emergency panel via the ATS. 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-GENA	ATSXP 160A 4P	160A 4P	275 x 500 x 605

**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".



\*Image for guidance purposes

**note:**

- All information given in this data sheet is intended for guidance only
- FMT GROUP reserves the right to change the details without prior notice
- Producing with ISO9001, ISO14001, OHSAS18001, CE standards
- TBA: To Be Asked, N/A: Not Applicable





**fmt** group  
energy power

**ALBANIA** (factory headquarter)  
Address: "Rruga e Aeroportit SH60",  
2km from Tirana International Airport,  
Rinas - Fushe Kruje

Tel: +355 (0) 69 70 66 835  
e-mail: info@fmtgroup.al

**KOSOVO**  
Address: Street Magjitrilja Prishtine - Ferizaj, Km5  
Cagllavice-Prishtine

**MONTENEGRO**  
Address: Street Tuzi BB - Podgorice

**TURKEY**  
Address: Eski Londra Asfaltı Caddesi No:41-43A  
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mob: +90 543 368 47 87  
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