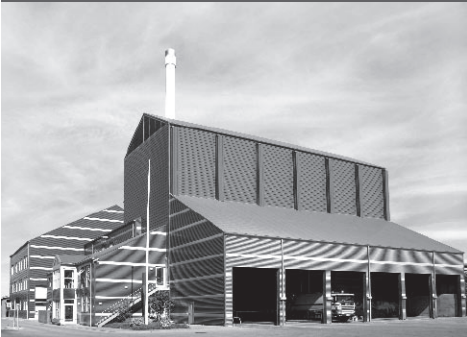




-power in control



DATA SHEET



Advanced Genset Controller, AGC 200

- Operation modes
- Display and unit front
- General
- Engine control
- M-Logic
- Optional applications



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1. Application information

1.1 General information

1.1.1 Application

The Automatic Genset Controller, AGC, is a control unit containing all necessary functions for protection and control of a genset. It can be used as a single unit for one genset, or a number of AGCs can be connected in a complete power management system for synchronising projects, islanded or paralleled to the mains. The AGC contains all necessary 3-phase measuring circuits, and all values and alarms are presented on the display.

The AGC is a compact all-in-one unit designed for the following applications:

Standard plant modes	Applications
Island mode	Power plant with synchronising generators or a stand-alone generator. Can also be used in critical power plants.
Automatic Mains Failure (AMF)	Critical power/emergency standby plants, black start generator. (Mains required).
Fixed power	Power plant with fixed kW set point (including building load). (Mains required).
Peak shaving	Power plant where generator supplies peak load demand paralleled to the mains.
Load takeover	Plant mode where the load is moved from mains to generator, for example peak demand periods or periods with risk of power outages. (Mains required).
Mains power export	Power plant with fixed kW set point (excluding building load). (Mains required).

The plant modes are configurable, and it is possible to change the plant mode on the fly both in single and in power management applications.



All modes can be combined with Automatic Mains Failure mode (AMF).

The plant/genset is easily controlled from the display, or an HMI/scada system can be implemented using one of the communication options. Three display units can be installed per control unit.

1.1.2 Description

AGC 200 variants equipped with power management can handle simple or advanced applications for a great number of power plant projects within synchronising gensets, critical power/emergency standby applications or power producing applications.

The following number of units can be controlled in a power management system:

- 16 mains feeders with mains and tie breaker
- 8 bus tie breakers on the generator bus or load bus
- 16 generators with generator breakers

The complete power management system can easily be monitored from the PC utility SW through a graphical supervision page. Running status, hours in operation, breaker status, condition of mains and busbars and fuel consumption are just some of the values that are presented.

1.1.3 Application emulation

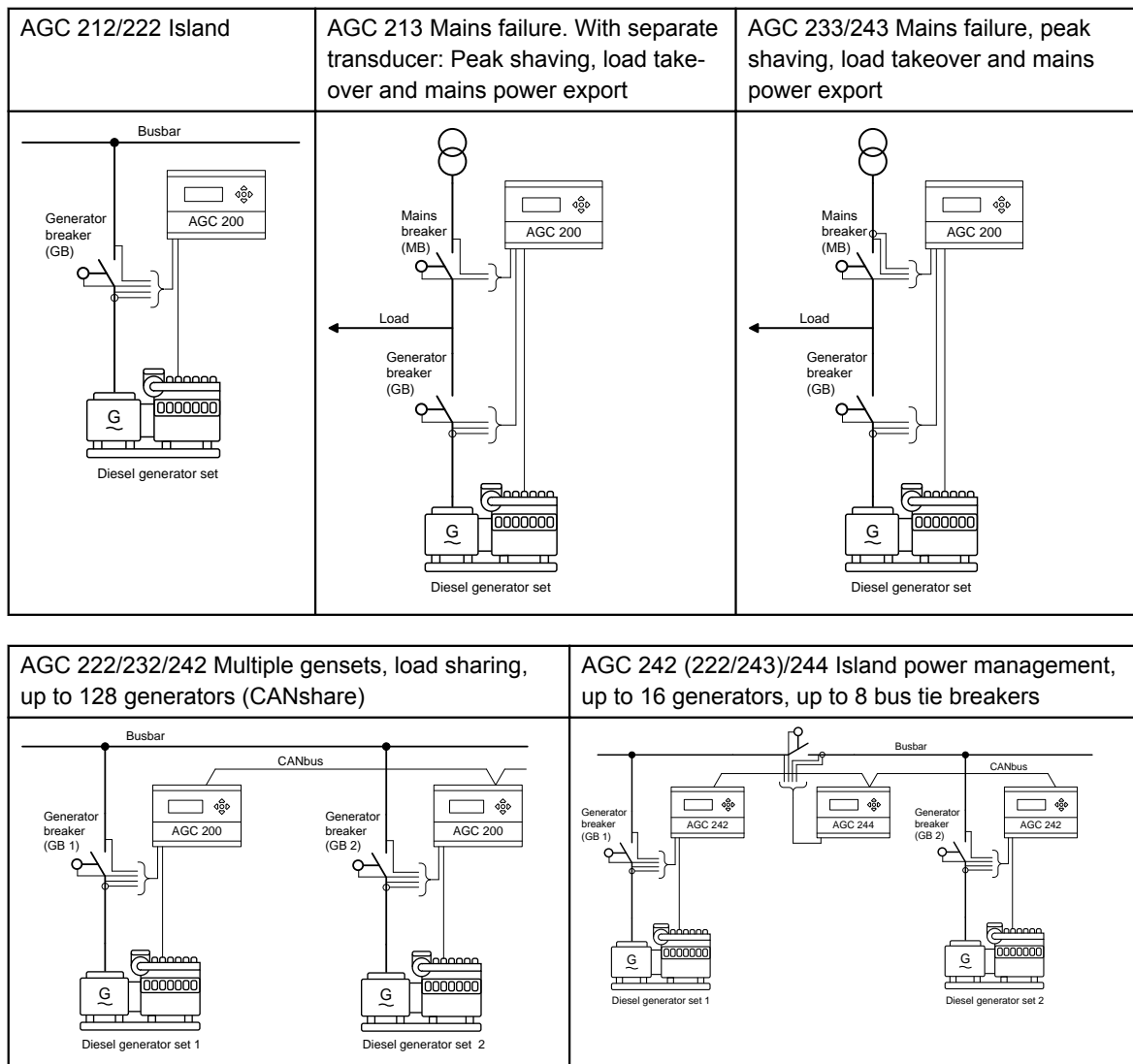
In order to verify and test the functionality of the application, it is possible to use the emulation tool of the AGC. Being connected to the AGC gives the possibility to test a majority of the functionality, for example plant modes and logics, breaker handling, mains and generator operation.

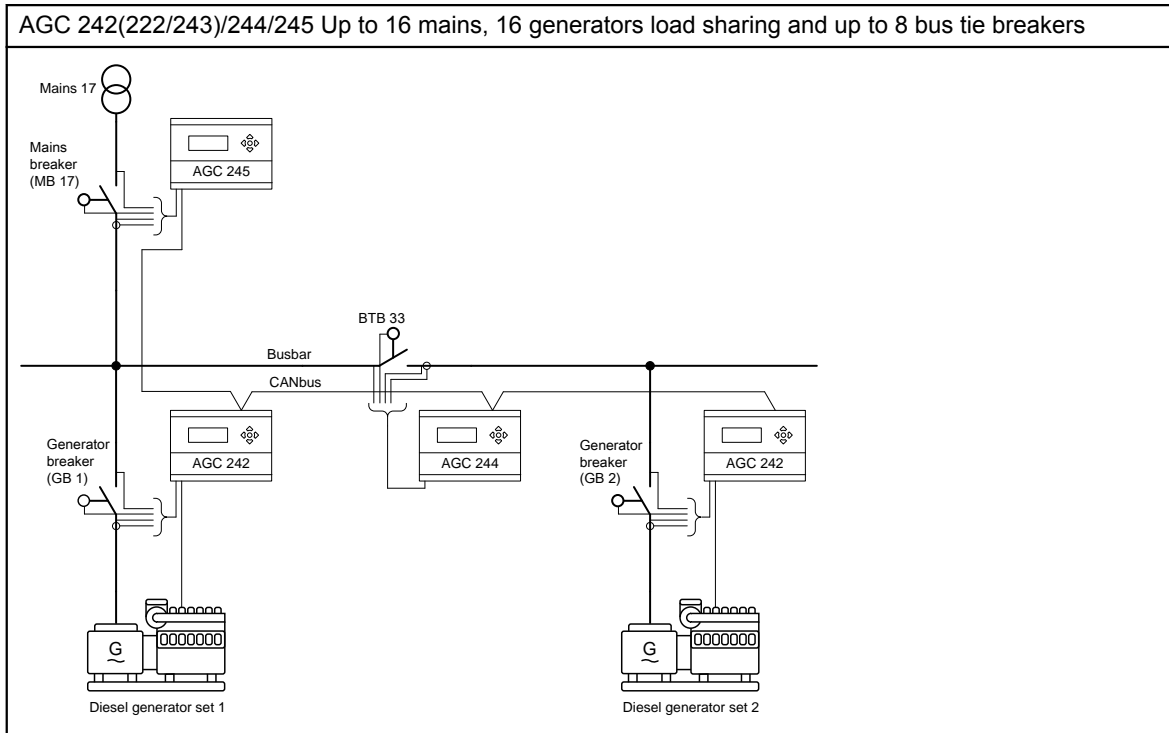
Application emulation is useful for training, customising plant requirements and testing basic functionality that needs to be set up or verified.

In a power management system it is possible to control the entire plant, being connected only to one of the connected AGC controllers.

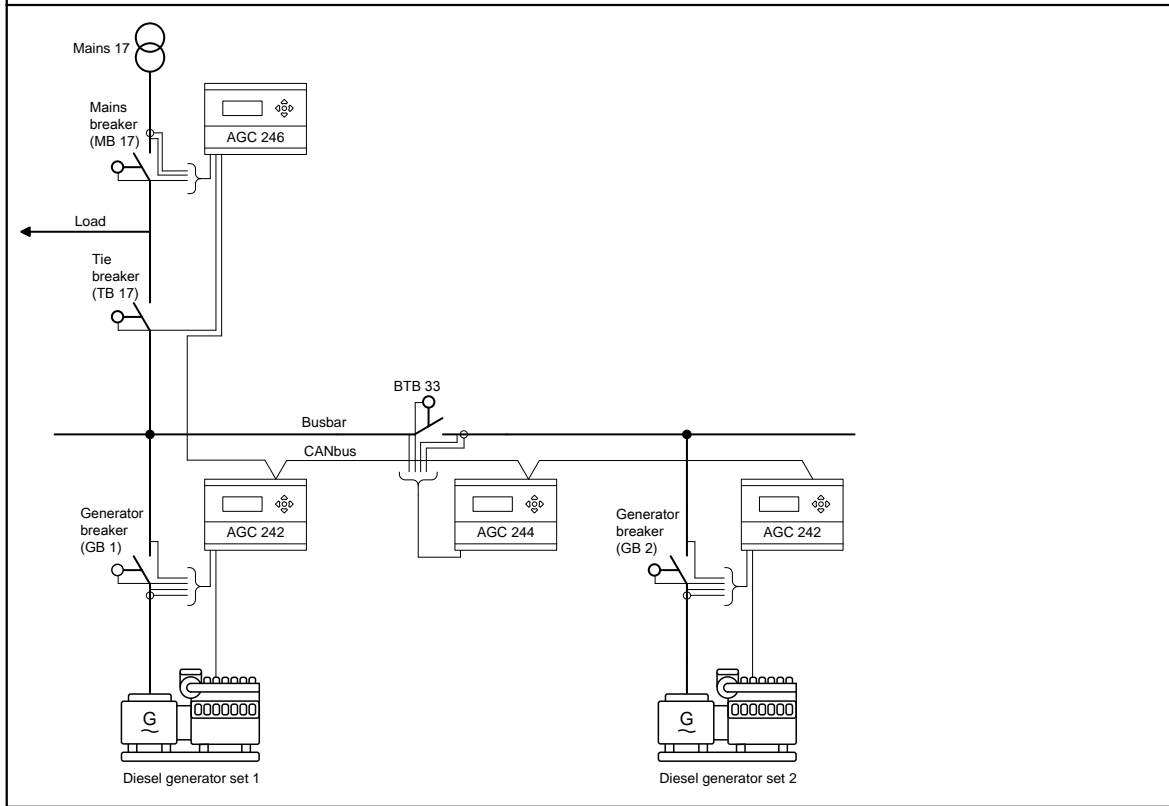
1.2 Single-line diagrams

1.2.1 Single-line application diagrams





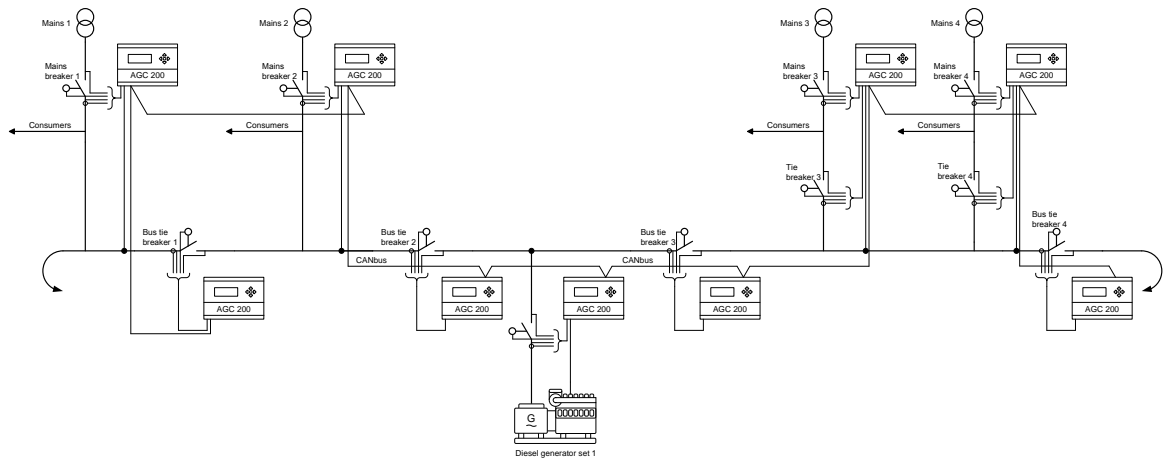
AGC 242(222/243)/244/246 Up to 16 mains with tie breakers, 16 generators load sharing and up to 8 bus tie breakers



1.2.2 Optional power management applications

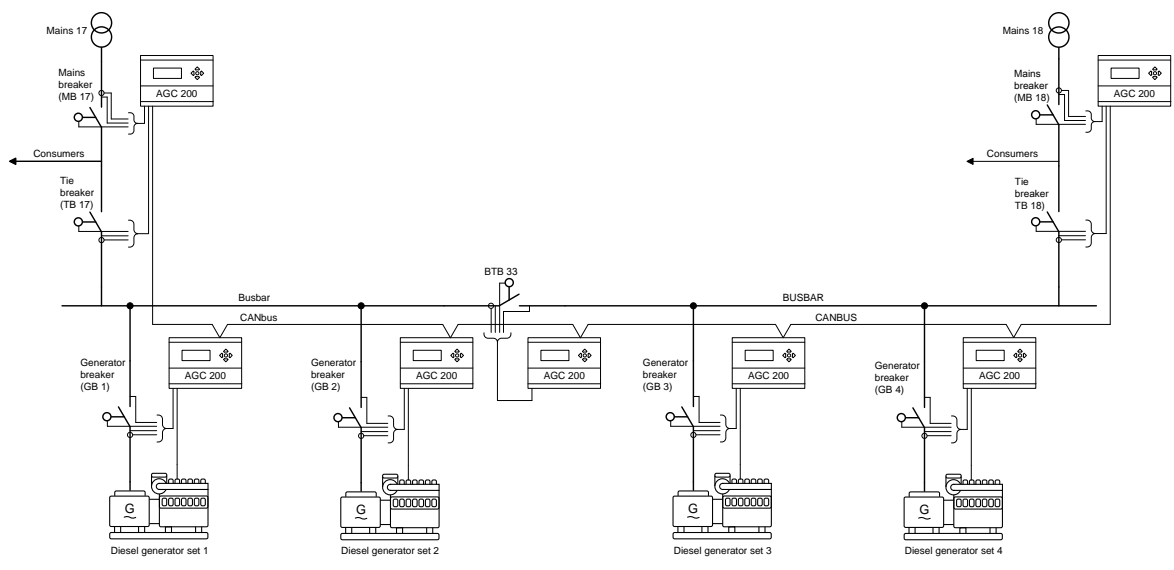
Main - tie - main application.

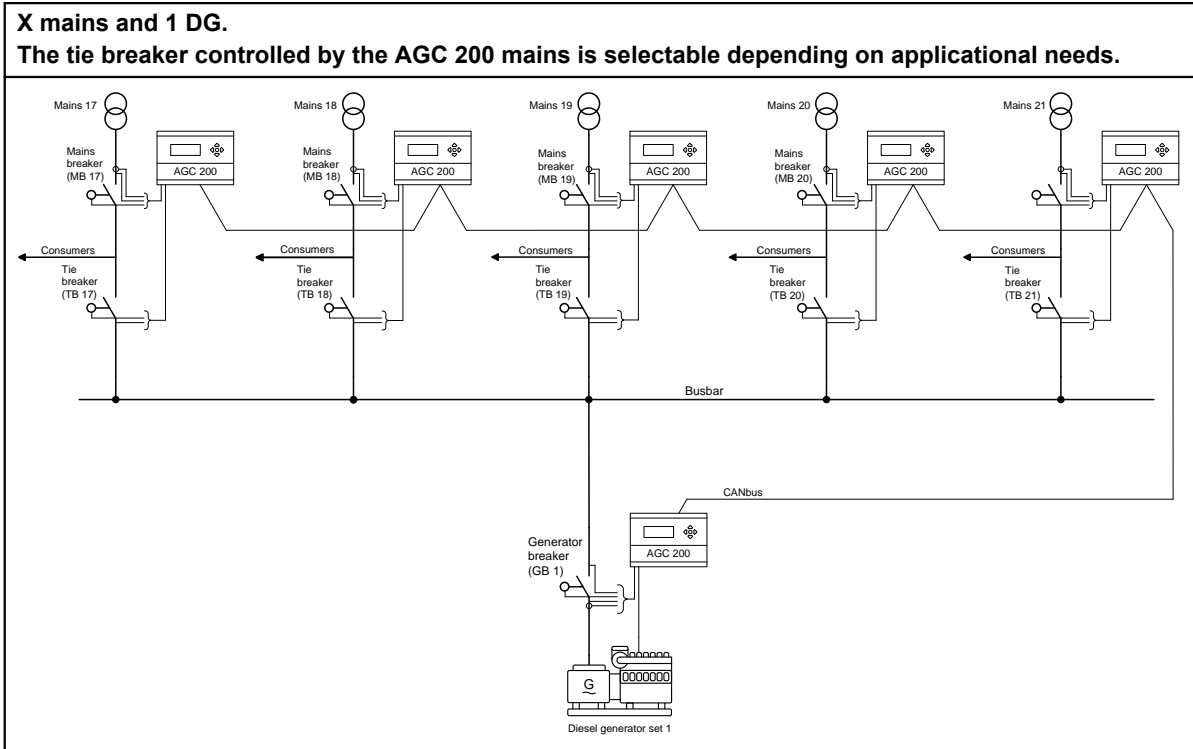
Ring bus may be used depending on applicational needs.



H-coupling.

The tie breaker controlled by the AGC 200 mains is selectable depending on applicational needs. The bus tie breaker can be present without an AGC 200 controller (open/closed feedbacks are needed).





2. Standard functions

2.1 Comparison chart

2.1.1 Comparisons

Model	AGC 212	AGC 213	AGC 222	AGC 232	AGC 233	AGC 242	AGC 243	AGC 244	AGC 245	AGC 246
Measuring										
Generator/busbar voltage (3-phase/4-wire)	X	X	X	X	X	X	X			
Generator current (3 × true r.m.s.)	X	X	X	X	X	X	X			
CT selectable 1/5	X	X	X	X	X	X	X	X	X	X
100 to 690 V AC selectable	X	X	X	X	X	X	X	X	X	X
Mains/busbar voltage (3-phase/4-wire)		X	X	X	X	X	X	X	X	X
Mains current or neutral current (1 × true r.m.s.) or ground current with 3rd harmonic filter				X	X	X	X	X	X	X
Selectable AC configuration 3-phase/3-wire 3-phase/4-wire 2-phase/3-wire L1L3 (180° between phases) 2-phase/3-wire L1L2 (120° between phases) 1-phase/2-wire L1	X	X	X	X	X	X	X	X	X	X
Phase angle compensation gen/busbar/mains synchronising over a D/Y transformer	X	X	X	X	X	X	X	X	X	X
Single genset Genset modes										
Island operation	X	X	X	X	X	X	X			
Fixed power/base load		X			X		X			

Model	AGC 212	AGC 213	AGC 222	AGC 232	AGC 233	AGC 242	AGC 243	AGC 244	AGC 245	AGC 246
AMF & ATS (auto mains failure operation)		X			X		X			
Peak shaving		X			X		X			
Load takeover		X			X		X			
Mains power export		X			X		X			
AMF mode		X			X		X			
Multi-genset Power management plant mode										
Island operation			X			X	X			
Fixed power/base load			X			X	X		X	X
Peak shaving			X			X	X		X	X
Load takeover			X			X	X		X	X
Mains power export			X			X	X		X	X
AMF mode			X			X	X		X	X
General										
Status relay	X	X	X	X	X	X	X	X	X	X
16 A crank and run relay	X	X	X	X	X	X	X			
Lamp test	X	X	X	X	X	X	X	X	X	X
USB interface to PC	X	X	X	X	X	X	X	X	X	X
Temperature-dependent cooling-down Time-based cooling-down Emergency cooling-down	X	X	X	X	X	X	X			
kWh meter Produced kWh meter day Produced kWh meter week Produced kWh meter year Produced kWh meter total	X	X	X	X	X	X	X	X	X	X

Model	AGC 212	AGC 213	AGC 222	AGC 232	AGC 233	AGC 242	AGC 243	AGC 244	AGC 245	AGC 246
Operation hours and emergency hours counter GB and MB operation counter Start attempt counter Maintenance counters, hours and days	X	X	X	X	X	X	X			
Free PC utility software for commissioning	X	X	X	X	X	X	X	X	X	X
Control										
Start/stop sequences	X	X	X	X	X	X	X			
Synchronisation	X	X	X	X	X	X	X	X	X	X
Nos. of breakers/contactors to be controlled	1	2	1	1	2	1	1/2	1	1	2
Run coil	X	X	X	X	X	X	X			
Stop coil with wire break supervision				X	X	X	X			
J1939 regulation governor/AVR	X	X	X	X	X	X	X			
Relay outputs for governor control/AVR	X	X	X	X	X	X	X			
Analogue outputs for governor control/AVR	IOM 220	IOM 220	IOM 220	IOM 220	IOM 220	IOM 220	IOM 220			
Digital load sharing (CANshare), with first up discrimination			X	X	X	X	X			
Use CANshare when PMS is down			X			X	X			
Analogue load sharing	IOM 230	IOM 230	IOM 230	IOM 230	IOM 230	IOM 230	IOM 230			

Model	AGC 212	AGC 213	AGC 222	AGC 232	AGC 233	AGC 242	AGC 243	AGC 244	AGC 245	AGC 246
Event LOG with real-time clock Alarm LOG with real-time clock Battery test LOG with real-time clock Engine diagnostic active alarm LOG Engine diagnostic historical alarm LOG	X	X	X	X	X	X	X	X	X	X
I/Os										
Inputs (configurable)	7	7	9	14	14	14	14	14	14	14
Relay outputs (configurable)	9	9	9	14	14	14	14	14	14	14
Multi-inputs (configurable)	3	3	3	3	3	3	3	3	3	3
Emergency input	1	1	1	1	1	1	1	1	1	1
Pickup MPU/W/PNP/NPN/tacho	1	1	1	1	1	1	1	1	1	1
D+ alternator field flash circuit	X	X	X	X	X	X	X			
CAN bus communication interfaces	1	1	2	3	3	3	3	3	3	3
RS-485/Modbus RTU slave interface(s)	1	1	1	1	1	1	1	1	1	1
TCP/IP Modbus communication	1	1	1	1	1	1	1	1	1	1
SD card				1	1	1	1	1	1	1
USB 2.0 service port	1	1	1	1	1	1	1	1	1	1
M-Logic										
Simple logic configuration tool	X	X	X	X	X	X	X	X	X	X
Selectable input events	X	X	X	X	X	X	X	X	X	X
Selectable output commands	X	X	X	X	X	X	X	X	X	X

Model	AGC 212	AGC 213	AGC 222	AGC 232	AGC 233	AGC 242	AGC 243	AGC 244	AGC 245	AGC 246
Power management functions										
Load-dependent start/stop			X			X	X			
Priority selection Manual Running hours Fuel optimisation			X			X	X			
Ground relay control			X			X	X			
ATS control						X			X	X
Safety stop (fail class = trip and stop)			X			X	X			
Load management			X			X	X		X	X
Secured mode			X			X	X			
Quick setup/broadcast			X			X	X	X	X	X
Base load			X			X	X			
Heavy consumer (HC)			X			X	X		X	X
Asymmetric load sharing (LS)			X			X	X			
Common PF control			X			X	X		X	X
CAN flags			X			X	X	X	X	X

2.1.2 Protections

Protection	No. of alarms	(ANSI)	AGC 212/222/232/242	AGC 213/233/243	AGC 244	AGC 245/246
Reverse power	x2	32R	X	X	X	X
Short-circuit	x2	50P/N	X	X	X	X
Over-current	x4	51	X	X	X	X
Voltage-dependent over-current	x1	51V	X	X	X	X
Over-voltage	x2	59P	X	X	X	X
Under-voltage	x3	27P	X	X	X	X
Over-frequency	x3	81O	X	X	X	X
Under-frequency	x3	81U	X	X	X	X
Unbalanced voltage	x1	47	X	X	X	X
Unbalanced current	x1	46	X	X	X	X
Under-excitation or var import	x1	32RV	X	X	X	X
Over-excitation or var export	x1	32FV	X	X	X	X
Overload	x5	32F	X	X	X	X
Busbar/mains over-voltage	x3	59P	X	X	X	X
Busbar/mains under-voltage	x4	27P	X	X	X	X
Busbar/mains over-frequency	x3	81O	X	X	X	X
Busbar/mains under-frequency	x4	81U	X	X	X	X
Busbar/mains unbalanced voltage	x1	47	X	X	X	X
Load shed via current # levels	x3	51	X	X	X	X
Load shed via busbar freq. # levels	x3	81	X	X	X	X
Load shed via overload # levels	x3	32	X	X	X	X
Load shed via fast overload # levels	x3	32	X	X	X	X
Multi-analogue input 1/ with wire break supervision	x2	NA	X	X	X	X

Protection	No. of alarms	(ANSI)	AGC 212/222/232/242	AGC 213/233/243	AGC 244	AGC 245/246
Multi-analogue input 2/ with wire break supervision	x2	NA	X	X	X	X
Multi-analogue input 3/ with wire break supervision	x2	NA	X	X	X	X
Emergency stop	x1	1	X	X	X	X
Overspeed	x2	12	X	X		
Low battery voltage	x1	27DC	X	X	X	X
High battery voltage	x1	59DC	X	X	X	X
Generator breaker external trip	x1	5	X	X		
Mains breaker external trip	x1	5	X	X		X
GB synchronisation failure	x1	25	X	X	X	X
GB open failure	x1	52BF	X	X	X	X
GB close failure	x1	52BF	X	X	X	X
GB position failure	x1	52BF	X	X	X	X
MB synchronisation failure	x1	25		X		X
MB open failure	x1	52BF		X		X
MB close failure	x1	52BF		X		X
MB position failure	x1	52BF		X		X
Close before excitation failure	x1	48	X	X		
Phase sequence error	x1	47	X	X	X	X
Deload error	x1	34	X	X	X	X
Crank failure	x1	48	X	X		
Running feedback error	x1	34	X	X		
MPU wire break	x1	NA	X	X		
Start failure	x1	48	X	X		
Hz/V failure	x1	53	X	X		
Stop failure	x1	48	X	X		
Stop coil supervision (wire break)	x1	5	X	X		
Engine heater	x1	26	X	X		
Battery test alarm	x1	NA	X	X		

Protection	No. of alarms	(ANSI)	AGC 212/222/232/242	AGC 213/233/243	AGC 244	AGC 245/246
Max. ventilation	x2	NA	X	X	X	X
Not in Auto	x1	34	X	X	X	X
Fuel fill check error	x1	NA	X	X		
EIC warning via J1939/comm. link	x1	NA	X	X		
EIC shutdown via J1939/comm. link	x1	NA	X	X		
EIC coolant temperature via J1939/comm. link	x2	NA	X	X		
EIC oil pressure via J1939/comm. link	x2	NA	X	X		
EIC oil temperature via J1939/comm. link	x2	NA	X	X		
EIC communication error	x1	NA	X	X		

2.1.3 Setup

Setup is secured by three levels of passwords and is easily done via a menu structure on the display or via a PC and the free Multi-line 2 Windows®-based PC utility software. The PC utility software can be downloaded free of charge from www.deif.com. This utility software allows the operator to monitor all relevant information during commissioning, save and upload/download settings, download software updates and even control the genset either from a USB connection local to the unit or over Ethernet from anywhere in the world.

2.1.4 M-Logic

Customise your control system to your specific needs with this Boolean logic included in the AGC. Control functions can be modified or created based on digital inputs, J1939/comm. link data, analogue inputs, alarms, limits, specific functions or operating conditions. This powerful system configuration tool is included in all AGC systems without additional cost and is programmed by the free PC utility software.

2.2 Available variants

Type	Variant	Description	Item no.
AGC 212*	18	AGC 212	2912420010-18
AGC 213*	19	AGC 213	2912420010-19
AGC 222*	20	AGC 222	2912420010-20
AGC 232*	21	AGC 232	2912420010-21
AGC 233*	22	AGC 233	2912420010-22
AGC 242*	23	AGC 242	2912420010-23
AGC 243*	24	AGC 243	2912420010-24
AGC 244	25	AGC 244	2912420010-25
AGC 245	26	AGC 245	2912420010-26
AGC 246	27	AGC 246	2912420010-27



*For all genset variants, it is possible to add IOM 220 (analogue regulation) or IOM 230 (analogue regulation and analogue load-share)

2.3 Available options

In order to perfectly match the product solution to specific applications, the functionality of the AGC 200 can be equipped with a number of available options. The options selected by the customer will be integrated in the standard AGC 200, hereby securing the same user interface unaffected by whether the application needs a highly complex or a more basic genset controller.

Option	Description	ANSI	Option Type	Note
A	Loss of mains protection package			
A1	Vector jump df/dt (ROCOF) Under-voltage with programmable time delay (6 point curve) Ut < Under-voltage and reactive power, U and Q	(78) (81R) (27) (27+32RV)	Software	
A4	Positive sequence (mains) voltage low	(27)	Software	
A5	Directional over-current	(67)	Software	
C	Generator add-on protection package			
C2	Negative sequence voltage high Negative sequence current high Zero sequence voltage high Zero sequence current high Power-dependent reactive power (12 point true field loss emulating the generator capability curve) IEC/IEEE inverse time over-current (curves: 6 fixed, 1 adjustable)	(47) (46) (59G) (50G) (40) (51)	Software	
H	Serial communication			
H2	Modbus RTU (RS-485)		Software	
H13	MTU ADEC M.501 without SAM module		Software	Requires software version 4.51.0 or later
I	Application emulation			
I1	Emulation, PC-controlled emulation of your application		Software	Requires software version 4.21 or later
L	Heatfoil for display			
L2	Display -40 °C (-40 °F)		Hardware	
N	Ethernet communication			
N	Ethernet TCP/IP Modbus RTU		Software	
T	Special applications			
T1	Critical power, redundant controller, short circuit limitation		Software	Requires software version 4.21 or later and power management

T2	Digital AVR: DEIF DVC 310 or Leroy Somer D510C		Software	Requires software version 4.51.0 or later Note: Option T2 is NOT working with MDEC and ADEC engines
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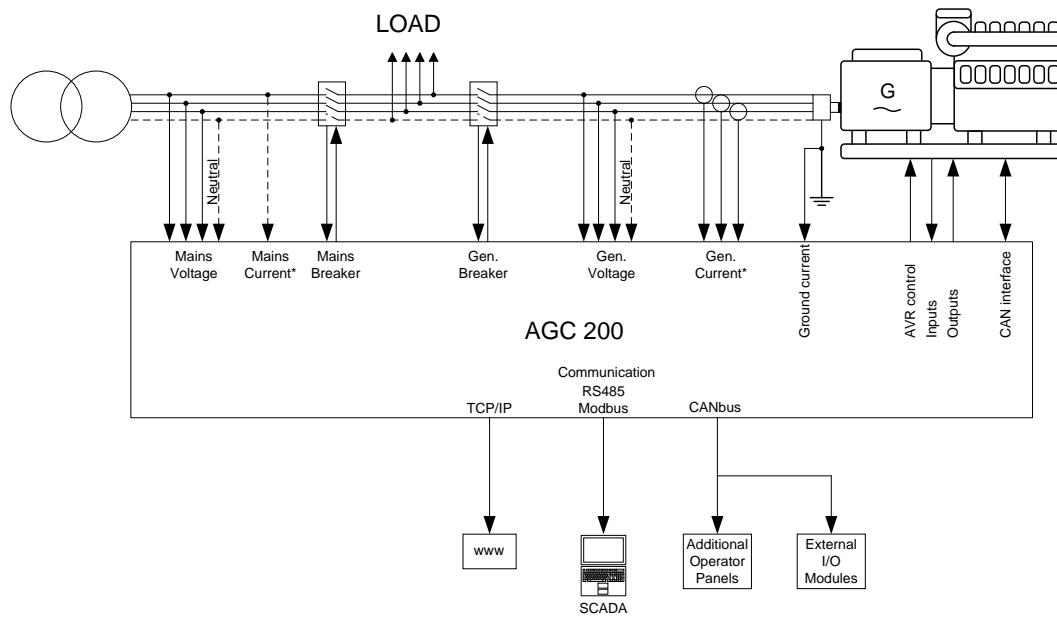
2.4 Available accessories

Accessories	Description	Item no.	Note
Operator panels			
Additional Operator Panel, AOP-2 (X4)	16 configurable LEDs, 8 configurable buttons and 1 status relay. CAN bus comm.	2912411060	Five AOP-2 units can be used with each AGC 200 unit
Display gasket	Display gasket IP66	2912420030	Standard is IP52
Cables			
USB cable, 3 m (J7)	For PC utility software	1022040065	
Ethernet cable, crossed, 3 m (J4)	For option N	1022040055	
Documentation			
Designer's Reference Handbook (K1)		4189340609	
CD-ROM with complete documentation (K2)		2304230002	

3. Functional block diagram

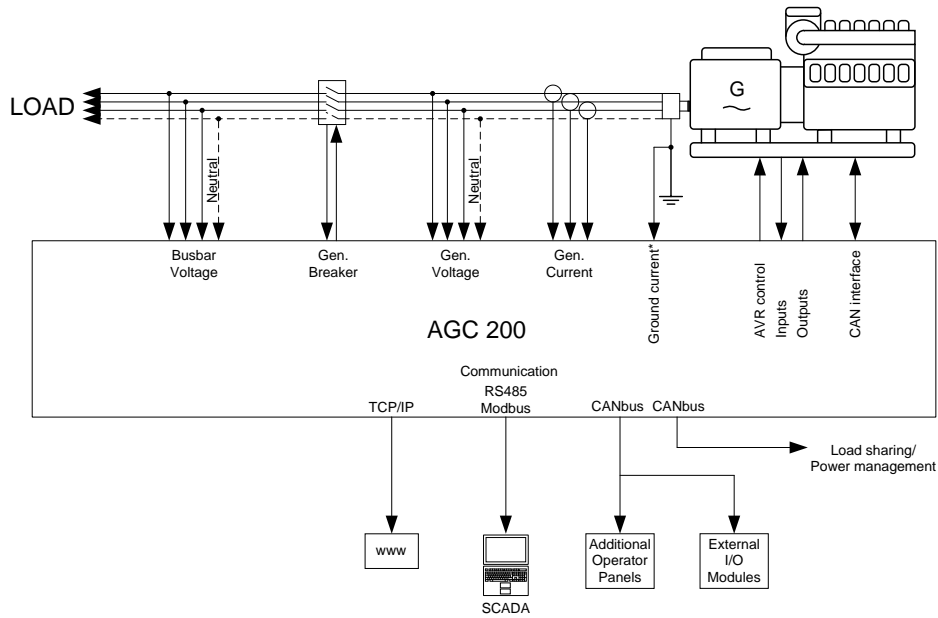
3.1 Functional block diagram

3.1.1 Automatic mains failure/mains power export/peak shaving/load take-over



i *Mains current and ground current use the same AC current input and can therefore not be mounted simultaneously. They may or may not be used.

3.1.2 Single generator/load sharing/power management

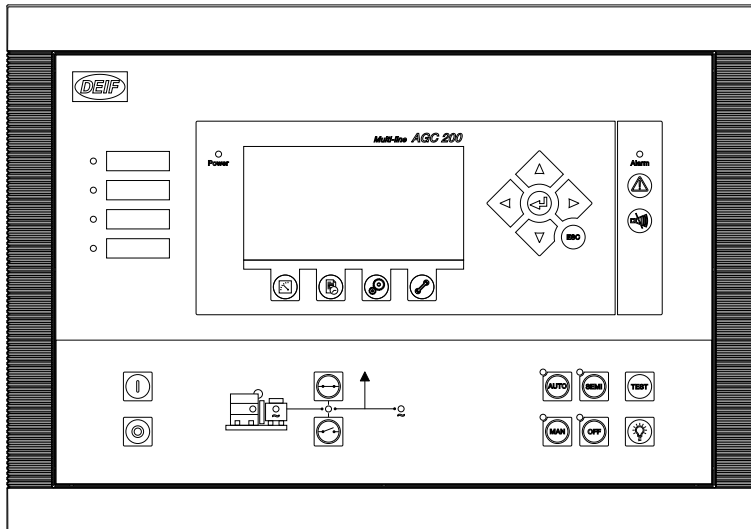


*Ground current may or may not be used.

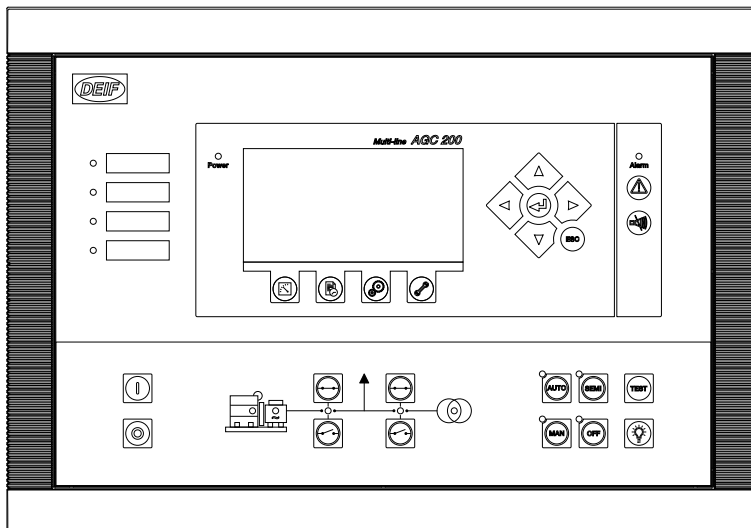
4. Displays

4.1 Display layouts

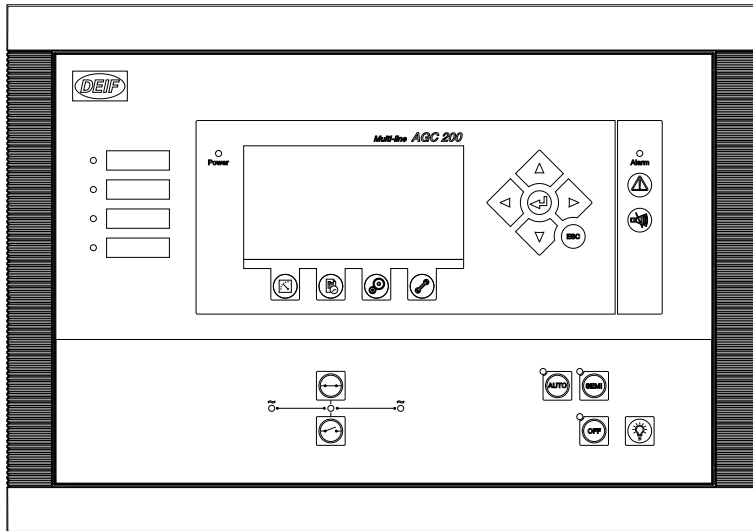
4.1.1 Display layout - AGC 212, 222, 232, 242



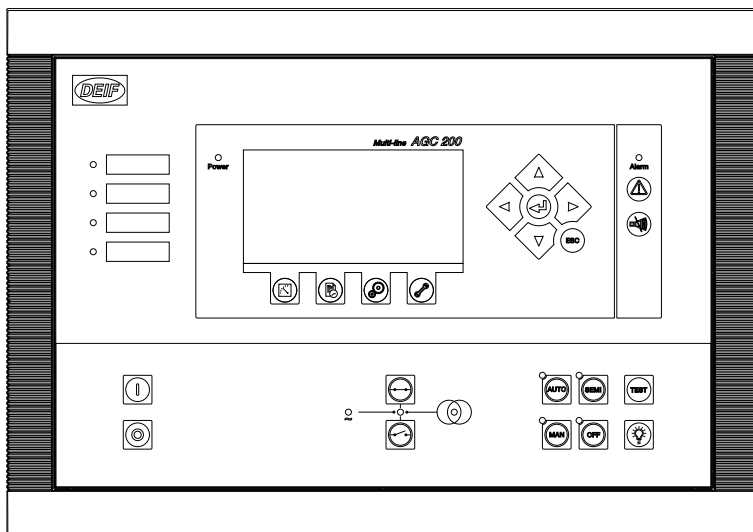
4.1.2 Display layout - AGC 213, 233, 243



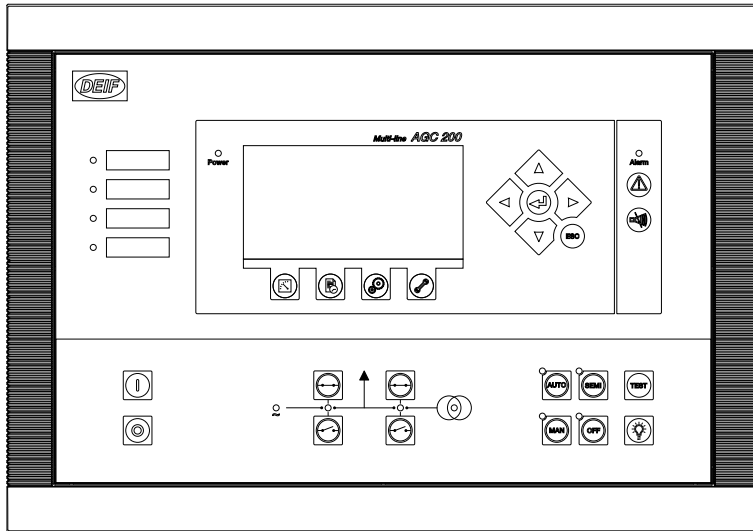
4.1.3 Display layout - AGC 244



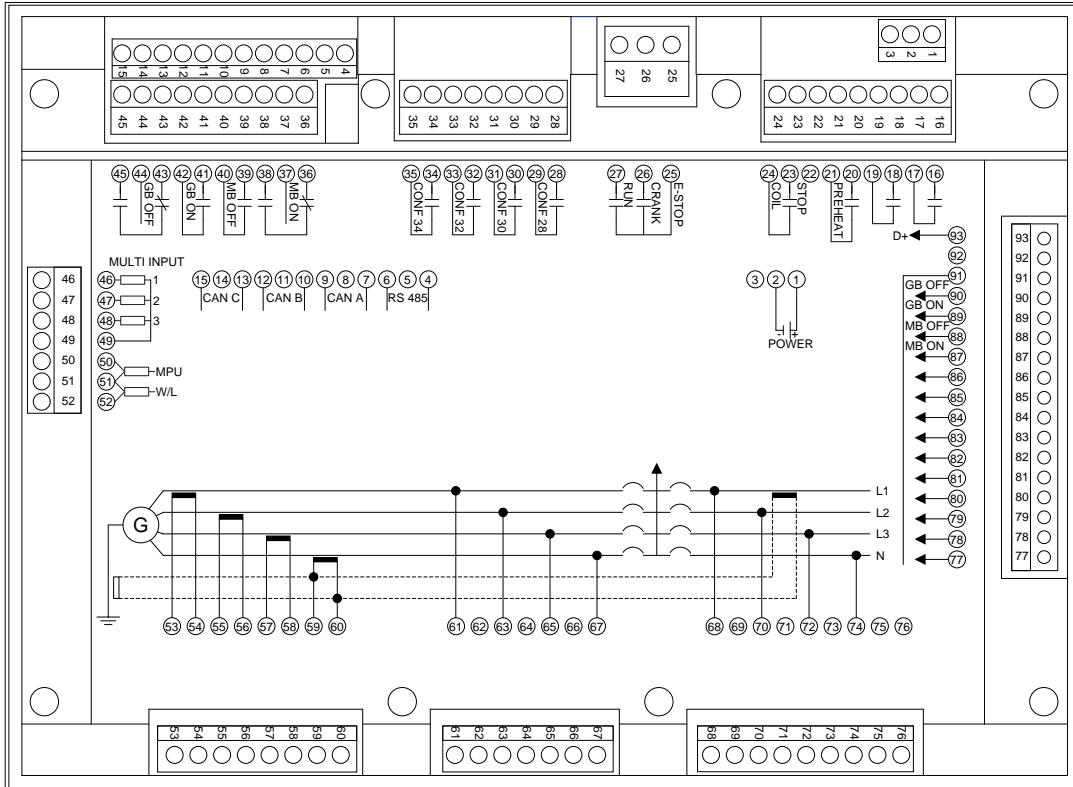
4.1.4 Display layout - AGC 245



4.1.5 Display layout - AGC 246



4.1.6 Rear side view



Available CAN bus lines for the different AGC 200 variants.

	AGC 21x	AGC 22x	AGC 23x	AGC 24x
CAN A			X	X
CAN B		X	X	X
CAN C (engine communication)	X	X	X	X



Terminals 28-35 + 22-24 and 77-83 are not available in AGC 21x and 22x.

5. Technical specifications

5.1 Technical specifications table

Accuracy	<p>Class 1.0</p> <p>-40 to <u>15 to 30</u> to 70 °C</p> <p>Temperature coefficient: +/-0.2 % of full scale per 10 °C</p> <p>Short circuit: 5 % of 3.5*nominal current</p> <p>Earth current: 2 % of 1 A or 5 A To IEC/EN 60688</p>
Operating temperature	<p>-25 to 70 °C (-13 to 158 °F)</p> <p>UL/cUL Listed: Max. ambient temp. 50 °C/122 °F</p> <p>With option L2: -40 to 70 °C (-40 to 158 °F)</p>
Storage temperature	-40 to 70 °C (-40 to 158 °F)
Climate	97 % RH to IEC 60068-2-30
Operating altitude	Up to 3000 m above sea level
Measuring voltage	<p>100 to 690 V AC (+20 %) (above 2000 m max. 480 V AC)</p> <p>UL/cUL Listed: 100 to 600 V AC</p> <p>Phase to phase</p> <p>Load: 1.5 MΩ</p>
Frequency	30 to 70 Hz
Measuring current	<p>1 A or 5 A AC from current transformer</p> <p>Consumption max.: 0.3 VA/phase</p> <p>UL/cUL Listed: Use listed or R/C (XODW2.8) current transformers</p>
Current overload	<p>The unit has been tested with the following currents:</p> <p>I_n 20 A: 60 s</p> <p>I_n 100 A: 10 s</p> <p>I_n 300 A: 1 s</p>

Magnetic pick-up input	<p>Voltage: 2 to 70 V peak</p> <p>Frequency: 10 to 10000 Hz</p> <p>Resistance: 250 to 3000 Ω</p>
Aux. supply	<p>6 to 36 V DC continuously</p> <p>UL/cUL Listed: 9 to 32.5 V DC</p> <p>0 V DC for 50 ms when coming from at least 12 V DC (cranking dropout)</p> <p>Reverse protection: -36 V continuously</p> <p>Battery voltage measurement accuracy: ± 0.8 V within 8 to 30 V DC at -25 °C to 70 °C ± 0.5 V within 8 to 30 V DC at 20 °C</p> <p>Max. 25 W consumption</p> <p>With option L2 -40 °C (-40 °F) Max. 45 W consumption</p> <p>The aux. supply inputs are to be protected by a 12 A slow-blow fuse</p>
Passive binary input voltage	<p>Bi-directional optocoupler</p> <p>ON: 8 to 36 V DC <2 V: OFF</p> <p>Impedance: 4.7 kΩ</p>
Emergency stop input voltage	<p>ON: +8 to 36 V DC (term. 25)</p> <p><2 V: OFF</p> <p>Impedance: 4.7 kΩ</p>
Multi-functional inputs	<p>Current input: 0(4) to 20 mA From active transmitter: 0 to 20 mA, +/-1 % Impedance: 50 Ω</p> <p>Binary input: Dry contact inputs 3 V DC internal supply, with cable supervision Max. resistance for ON detection: 100 Ω</p> <p>Pt100: -40 to 250 °C (-40 to 482 °F) +/-1 % To IEC/EN 60751</p> <p>RMI: 0 to 2500 Ω, +/-1 %</p>

Relay outputs, electrical rating	<p>Relays 16 to 20 and 28 to 43: 250 V AC/30 V DC 8 A (above 2000 m max. 150 V AC) UL/cUL Listed: 250 V AC/30 V DC 6 A General use B300 Pilot duty (above 2000 m max. 150 V AC)</p> <p>Caution: When working voltage is above 150 V AC, do not mix AC and DC voltage inside relay group 16 to 20 or inside relay group 28 to 43</p> <p>Relay 23: 30 V DC 8 A UL/cUL Listed: 24 V DC 8 A General use</p> <p>Relay 26 and 27: 24 V DC 16 A or 30 V DC 8 A UL/cUL Listed: 24 V DC 16 A General use</p>
Galvanic separation AGC 222, 232 AGC 242, 243 AGC 244 AGC 245, 246 AGC 212, 213	<p>Between AC voltage and other I/Os: 3250 V AC, 50 Hz, 1 minute</p> <p>Between AC current and other I/Os: 2200 V AC, 50 Hz, 1 minute</p> <p>Between relay outputs and other I/Os: 2200 V AC, 50 Hz, 1 minute</p> <p>Between aux. supply and other I/Os: 550 V AC, 50 Hz, 1 minute.</p> <p>Between binary input groups and other I/Os: 550 V AC, 50 Hz, 1 minute</p> <p>Between analogue input groups and other I/Os: 550 V AC, 50 Hz, 1 minute</p> <p>The same as above, but with no galvanic separation on analogue input groups</p>
Mounting	Panel-mounted
Front size	312 × 219 mm (122.8 × 86.2 in)
Panel cutout	297 × 204 mm (11.69 × 8.03 in) Tolerance: +0.4/-0 mm
Display	240 × 128 pixel backlight STN
Safety	<p>To EN 61010-1, installation category (over-voltage category) III, 600 V, pollution degree 2</p> <p>To UL508 and CSA22.2 No. 14-05 Installation category (over-voltage category) III, 600 V, pollution degree 2</p>
Protection	<p>Front: IP52/NEMA type 1 (IP66/NEMA type 1 with gasket, option L1)</p> <p>Terminals: IP20/NEMA type 1 To IEC/EN 60529</p>
EMC/CE	<p>To EN 61000-6-2/4</p> <p>IEC 60255-26</p> <p>IEC 60533 power distr. zone</p> <p>IACS UR E10 power distr. zone</p>
Vibration	<p>3 to 13.2 Hz: 2 mm_{pp}, 13.2 to 100 Hz: 0.7 g. To IEC 60068-2-6 and IACS UR E10</p> <p>10 to 60 Hz: 0.15mm_{pp}, 60 to 150 Hz: 1 g. To IEC 60255-21-1 Response (class 2)</p> <p>10 to 150 Hz: 2 g. To IEC 60255-21-1 Endurance (class 2)</p>
Shock	<p>10 g, 11 ms, half sine. To IEC 60255-21-2 Response (class 2)</p> <p>30 g, 11 ms, half sine. To IEC 60255-21-2 Endurance (class 2)</p> <p>50 g, 11 ms, half sine. To IEC 60068-2-27</p>
Bump	20 g, 16 ms, half sine. To IEC 60255-21-2 (class 2)
Material	All plastic materials are self-extinguishing according to UL94 (V1)

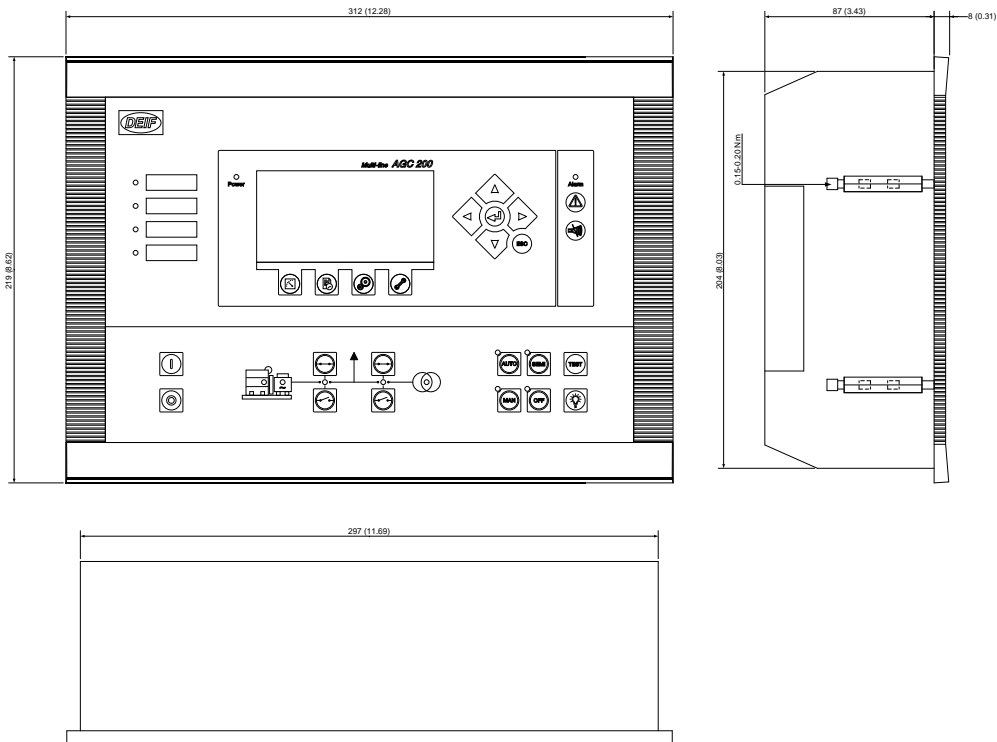
Plug connections	AC voltage/current inputs: 3.5 mm ² (13 AWG) multi-stranded Other: 1.5 mm ² (16 AWG) multi-stranded Service port: USB A-B TCP/IP: RJ 45 For further information, please refer to the "Installation Instructions"
Tightening torque	
Approvals	UL/cUL Listed to UL508 UL/cUL Recognized to UL2200
Weight	AGC 200: 1.6 kg (3.5 lbs) Option J6: 0.2 kg (0.4 lbs) AOP-2: 0.4 kg (0.9 lbs)

Response times (Delay set to minimum)	<p>Busbar:</p> <p>Over-/under-voltage: < 50 ms</p> <p>Over-/under-frequency: < 50 ms</p> <p>Generator:</p> <p>Reverse power: <200 ms</p> <p>Over-current: <200 ms</p> <p>Short circuit: < 40 ms</p> <p>Directional over-current: <100 ms</p> <p>Over-/under-voltage: <200 ms</p> <p>Over-/under-frequency: <300 ms</p> <p>Overload: <200 ms</p> <p>Current unbalance: <200 ms</p> <p>Voltage unbalance: <200 ms</p> <p>React. power import: <200 ms</p> <p>React. power export: <200 ms</p> <p>Negative sequence I: <400 ms</p> <p>Negative sequence U: <400 ms</p> <p>Zero sequence I: <400 ms</p> <p>Zero sequence U: <400 ms</p> <p>Overspeed: <400 ms</p> <p>Digital inputs: <250 ms</p> <p>Analogue input: <250 ms</p> <p>Emergency stop: <200 ms</p> <p>Earth current: <100 ms</p> <p>Mains:</p> <p>df/dt (ROCOF): <130 ms (4 periods)</p> <p>Vector jump: < 40 ms</p>
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	Positive sequence: < 60 ms Time-dependent under-voltage, $U_t < 50$ ms Under-voltage and reactive power low, $U_Q < 250$ ms
UL markings	Wiring: Use 60/75 °C copper conductors only Wire size: AWG 30-12 Terminal tightening torque: 5-7 lb-in Mounting: For use on a flat surface of a type 1 enclosure Installation: To be installed in accordance with the NEC (US) or the CEC (Canada)

6. Unit dimensions

6.1 Unit dimensions in mm (inches)



7. Ordering information

7.1 Order specifications and disclaimer

7.1.1 Variants

Mandatory information			Additional options to the standard variant					
Item no.	Type	Variant no.	Option	Option	Option	Option	Option	Option

7.1.2 Example

Mandatory information			Additional options to the standard variant					
Item no.	Type	Variant no.	Option	Option	Option	Option	Option	Option
2912420060-21	AGC 232	21	C2	H2	L2			

7.1.3 Accessories

Mandatory information		
Item no.	Type	Accessory

7.1.4 Example

Mandatory information		
Item no.	Type	Accessory
1022040055	Accessory for AGC 200	Ethernet cable - 3 m crossed (J4)

7.1.5 Disclaimer

DEIF A/S reserves the right to change any of the contents of this document without prior notice.

The English version of this document always contains the most recent and up-to-date information about the product. DEIF does not take responsibility for the accuracy of translations, and translations might not be updated at the same time as the English document. If there is a discrepancy, the English version prevails.