

FCA – 90 & 180 AR-1x600D

Diesel Ground power units (DGPU)



Contact details:



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Compliance

- DFS 400:1997 Specifications for 400 Hz aircraft power
- ISO 6858:2017 Aircraft. Ground support electrical supplies. General requirements.
- BS 2G 219:1983 Specification for general requirements for ground support electrical supplies for aircraft.
- MIL 704E:1991 Aircraft electric power characteristics.
- EN 61000 6 2:2019 Electromagnetic compatibility. Generic immunity standard
- EN 61000 6 4:2019 Electromagnetic compatibility. Generic emission standard.
- EN 2282:2000 Characteristics of aircraft electrical supplies.
- SAE ARP 5015:1996 Ground equipment 400 Hz ground power performance requirements.
- EN62040 1 1 General & safety requirement.
- EN 61558 2 6:2009 General & safety requirement.

Uses

- DGPU is designed to power the on board aircraft systems during preparation for flight and maintenance, as well as for starting aircraft engines.

General Specifications

- **DGPU is designed to power the on board network:**
 - 3x115 / 200 V at 400 Hz;
 - 28 V DC voltages.
- **DGPU consist of three modules:**
 - Diesel generator.
 - Converter FCA - 90/180 - 400 Hz power module.
 - Rectifier AR 1x600 28 VDC power module.
- **DGPU can operate in two modes:**
 - From a diesel generator.
 - From an external grid 3x400V, 50 Hz.
- **Environment shall be non explosive, without current conducting dust in concentrations lowering the converter parameters.**

Technical Specifications

Parameter	FCA-90	FCA-180
Output parameters 400Hz module		
Rated output power, kVA (at PF = 0,8)	90	180*
Rated output voltage phase/line, V	3x115/200	3x115/200
Output voltage frequency, Hz	400	400
Frequency stabilization accuracy, %	± 0.1	± 0.1
Output voltage regulation accuracy, %	± 0.5	± 0.5
Total harmonic content THDU, %	≤ 2	≤ 2
Voltage modulation, %	≤ 1	≤ 1
Phase symmetry, electrical degree:		
·for balanced load	120 ± 1 %	120 ± 1 %
·for 30% unbalanced load	120 ± 1 %	120 ± 1 %
Power factor	0.7 - 1.0	0.7 - 1.0
Load range, %	0 - 100	0 - 100
Crest factor	1.414 ± 0.05	1.414 ± 0.05
Permissible overload (static mode – overloads only when operating from an external voltage of 3x400V, 50Hz),%:		
·within 2 h, at cosφ = 1	100	100
·within 600 s	150	150
·within 30 s	200	200
·within 10 s	250	250
·within 5 s	300	300
·within 2 s	400	400
Quantity of output	1	2 x 90 kVA

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Parameter	FCA-90	FCA-180
Output parameters 28VDC module		
Rated output voltage, V	28	28
Output voltage stabilization accuracy,%	0.85	0.85
Voltage ripple, %	1	1
Nominal output current, A	600	600
Voltage compensation, V	0 - 5	0 - 5
Output voltage adjustment range, V	19 - 33	19 - 33
Permissible current load, A:		
within 30 s	1200	1200
-within 10 s	1800	1800
-within 5 s	2100	2100
-within 2 s	2400	2400
Quantity of output	1	1
Parameter	FCA-90	FCA-180
Input parameters (static mode)		
Rated Supply voltage, V	3×400, PE	3×400, PE
Supply voltage permitted deviation, %	± 15	± 15
Supply voltage frequency, Hz	50	50
Frequency permitted deviation, %	± 10	± 10
Overall efficiency at 30-100% load, %	≥ 0.95	≥ 0.95
Parameter	FCA-90	FCA-180
Diesel generator set		
Type	IG188C	IG313C
Rated output power, kW / kVA	150 / 188	250 / 313
Stand-by, kW / kVA	165 / 206	275 / 344
Voltage, V	3 x 400	3 x 400
Frequency, Hz	50	50
Output current, A	271	451
P.F.	0,8	0,8
RPM	1500	1500
Engine model	QSB6.7-G32	QSL8.9-G30
Alternator model	IA274G	IA444ES
Parameter	FCA-90	FCA-180
Engine technical data		
Manufacturer	CUMMINS	CUMMINS
Engine model	QSB6.7-G32	QSL8.9-G30
Configuration	6-cylinder	6-cylinder
Aspiration method	Turbocharged	Turbocharged
Governing type	Electronic	Electronic
Cooling method	Liquid	Liquid
Coolant capacity (engine only), L	30,3	11,1
Coolant ratio	50% ethylene glycol, 50% water	50% ethylene glycol, 50% water
Lube oil capacity, L	19.5	28.1

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Parameter	FCA-90	FCA-180
Alternator technical data		
Alternator model	IA274G	IA444ES
Rated output, kW	150	250
Voltage, V	3x400	3x400
Frequency, Hz	50	50
Current, A	271	451
RPM	1500	1500
Automatic voltage regulator (AVR)	SX460	SX440B
P.F	0.8	0.8
Duty	S1	S1
Parameter	FCA-90	FCA-180
Additional information		
Overall dimensions (W x H x D), max	1490x1755x3105	1695x1750x3550
Weight, max, kg	≤ 3000	≤ 4000
Ingress protection (converter module)	IP 55	IP 55
Maximum ambient temperature, °C	plus 40	plus 40
Minimum ambient temperature, °C	minus 40	minus 40
Audible noise, dB(A) (of 1 meter / of 7 meter)	95...105 / 75	95...105/75
Relative humidity, %	0 - 100	0 - 100
Maximum speed, km / h	25	25
Color	RAL 7035	RAL 7035
Fuel tank, L	2 x 150	2 x 300
Battery, V	2 x 12 / 2 x 60	2 x 12

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