

Generator Set Data Sheet
1000 kW Standby Power



Model: C1000N6
Frequency: 60 Hz
Fuel Type: Pipeline Natural Gas
Emissions NOx: EPA NSPS & Non-Road Mobile Factory Certified
LT water inlet temp: 50°C (122°F)
HT water outlet temp: 90°C (194°F)

Measured sound performance data sheet:	MSP-1089
Prototype test summary data:	PTS-640
Remote radiator cooling outline:	0500-5090

Fuel Consumption (ISO3046/1)	See Note	100% of Rated Load	90% of Rated Load	75% of Rated Load	50% of Rated Load
Fuel Consumption (LHV) ISO3046/1, kW (MMBTU/hr)	2,3,5	2885 (9.85)	2630 (8.98)	2248 (7.68)	Below Minimum
Electrical Efficiency ISO3046/1, percent	2,5,10	36.4%	35.9%	35.0%	Tested
Thermal Efficiency ISO3046/1, percent	2,5,17	52.4%	52.6%	53.0%	Power

Engine

Engine Manufacturer	Cummins
Engine Model	QSK60G
Configuration	V16
Displacement, L (cu.in)	60 (3672)
Aspiration	Turbocharged and Charge Air Aftercooled
Gross Engine Power Output, kWm (hp)	1082 (1451)
BMEP, bar (psi)	12.3 (178)
Bore, mm (in)	159 (6.25)
Stroke, mm (in)	190 (7.48)
Rated Speed, rpm	1800
Piston Speed, m/s (ft/min)	11.4 (2244)
Compression Ratio	11.4:1
Lube Oil Capacity, L (qt)	379 (400)
Full Load Lubricating oil consumption, g/kWe-hr (g/hp-hr)	0.15 (0.11)

Fuel

Gas supply pressure to FSOV inlet, bar (psi) ¹⁸	0.2 - 0.46 (2.9 - 6.7)
Minimum Methane Index	55

Starting System(s)

Electric Starter Voltage, volts	24
Minimum Battery Capacity @ 40°C (104°F), AH	450

Genset dimensions (see Note 1)

Genset Length, m (ft)	5.00 (16.40)
Genset Width, m (ft)	2.33 (7.64)
Genset Height, m (ft)	2.97 (9.74)
Genset Weight (wet), kg (lbs)	13924 (30697)

Energy data

	See Notes	100% of Rated Load	90% of Rated Load	75% of Rated Load	50% of Rated Load
Continuous Generator Electrical Output kWe @ 1.0 pf	2,5,10	1050	945	787.5	Below Minimum Tested Power
Total Heat Rejected in LT Circuit, kW (MMBTU/h)	14	85 (0.29)	80 (0.27)	73 (0.25)	--
Total Heat Rejected in HT Circuit, kW (MMBTU/h)	14	719 (2.45)	653 (2.23)	556 (1.90)	--
Unburnt, kW (MMBTU/h)	14	93 (0.32)	86 (0.29)	75 (0.25)	--
Heat Radiated to Ambient, kW (MMBTU/h)	14	126 (0.43)	115 (0.39)	97 (0.33)	--
Available Exhaust heat to 120°C, kW (MMBTU/h)	14	795 (2.71)	731 (2.49)	635 (2.17)	--

Intake air flow

Intake Air Flow Mass, kg/s (lb/hr)	14	1.83 (14513)	1.67 (13241)	1.43 (11345)	--
Intake Air Flow Volume, m³/s @ 0°C (scfm)	14	1.41 (3150)	1.29 (2880)	1.11 (2480)	--
Maximum Air Cleaner Restriction, mmHG (in H ₂ O)	19	18.3 (9.8)	18.3 (9.8)	18.3 (9.8)	--

Exhaust air flow

Exhaust Gas Flow Mass, kg/s (lb/hr)	14	1.89 (15038)	1.73 (13721)	1.48 (11759)	--
Exhaust Gas Flow Volume, m³/s (cfm)	14	4.15 (8790)	3.82 (8090)	3.32 (7030)	' -
Exhaust Temperature After Turbine, °C (°F)	4	500 (932)	507 (945)	518 (964)	--
Max Exhaust System Back Pressure, mmHG (in H ₂ O)	12	37.3 (20.0)	37.3 (20.0)	37.3 (20.0)	--
Min Exhaust System Back Pressure, mmHG (in H ₂ O)	12	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)	--

HT cooling circuit

HT Circuit Engine Coolant Volume, L (gal)		182 (48)	182 (48)	182 (48)	--
HT Coolant Flow @ Max Ext Restriction, m³/h (gal/min)	13,15	83 (365)	83 (365)	83 (365)	--
Maximum HT Engine Coolant Inlet Temp, °C (°F)	6	81 (179)	82 (180)	83 (182)	--
HT Coolant Outlet Temp, °C (°F)	6	90 (194)	90 (194)	90 (194)	--
Max Pressure Drop in External HT Circuit, bar (psig)	15	1.5 (21.8)	1.5 (21.8)	1.5 (21.8)	--
HT Circuit Maximum Pressure, bar (psig)		4.5 (65)	4.5 (65)	4.5 (65)	--
Minimum Static Head - Pump Inlet, bar (psig)		0.5 (7)	0.5 (7)	0.5 (7)	--

LT Cooling Circuit	See Notes	100% of Rated Load	90% of Rated Load	75% of Rated Load	50% of Rated Load
LT Circuit Engine Coolant Volume, L (gal)		34 (9)	34 (9)	34 (9)	--
LT Coolant Flow @ Max Ext Restriction, m ³ /h (gal/min)	13,15	23 (101)	23 (101)	23 (101)	--
Maximum LT Engine Coolant Inlet Temp, °C (°F)	7	50 (122)	50 (32)	50 (32)	--
Nominal LT Coolant Outlet Temp, °C (°F)	7	54 (129)	54 (32)	54 (32)	--
Max Pressure Drop in External LT Circuit, bar (psig)	15	1.0 (14.5)	1.0 (14.5)	1.0 (14.5)	--
LT Circuit Maximum Pressure, bar (psig)		4.5 (65)	4.5 (65)	4.5 (65)	--
Minimum Static Head - Pump Inlet, bar (psig)		0.5 (7)	0.5 (7)	0.5 (7)	--

Emissions

NO _x Emissions dry, ppm		This rating is EPA NSPS Certified. Please refer to EPA emissions datasheet for regulation limits.
NO _x Emissions, mg/Nm ³ @5% O ₂ (g/hp-h)		
THC Emissions wet, ppm	11	
THC Emissions, mg/Nm ³ @5% O ₂ (g/hp-h)	11	
CO Emissions dry, ppm	14	
CO Emissions, mg/Nm ³ @5% O ₂ (g/hp-h)	14	
CO ₂ Emissions dry, percent	14	
CO ₂ Emissions, mg/Nm ³ @5% O ₂ (g/hp-h)	14	
O ₂ Emissions dry, percent	14	
Particulates PM ₁₀ , g/hp-h	14	

Genset De-rating

Altitude and Temperature Derate Multiplication Factor - On Grid, Soft Start

Barometer		Altitude		Table A									
In Hg	mbar	Feet	Meters	Derate Multiplier									
20.7	701	9843	3000	0.90	0.89	0.87	0.85	0.83	0.80	0.76	0.72	0.69	
21.4	723	9022	2750	0.94	0.93	0.91	0.89	0.88	0.84	0.80	0.77	0.73	
22.1	747	8202	2500	0.99	0.97	0.95	0.93	0.92	0.88	0.84	0.81	0.77	
22.8	771	7382	2250	1.00	1.00	0.99	0.98	0.96	0.92	0.88	0.85	0.81	
23.5	795	6562	2000	1.00	1.00	1.00	1.00	1.00	0.96	0.93	0.89	0.85	
24.3	820	5741	1750	1.00	1.00	1.00	1.00	1.00	1.00	0.97	0.93	0.89	
25.0	846	4921	1500	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.97	0.94	
25.8	872	4101	1250	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.98	
26.6	899	3281	1000	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
27.4	926	2461	750	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
28.3	954	1640	500	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
29.1	983	820	250	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
29.5	995	492	150	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
30.0	1012	0	0	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
				°C	20	25	30	35	40	45	50	55	60
				°F	68	77	86	95	104	113	122	131	140
Air Filter Inlet Temperature													

Altitude and Temperature Derate Multiplication Factor - Off Grid

Barometer		Altitude		Table A									
In Hg	mbar	Feet	Meters	Derate Multiplier									
20.7	701	9843	3000	0.88	0.86	0.85	0.83	0.81	0.77	0.73	0.68	-	
21.4	723	9022	2750	0.92	0.91	0.89	0.87	0.85	0.81	0.77	0.72	0.68	
22.1	747	8202	2500	0.96	0.95	0.93	0.91	0.89	0.85	0.81	0.77	0.72	
22.8	771	7382	2250	1.00	0.99	0.97	0.95	0.94	0.89	0.85	0.81	0.77	
23.5	795	6562	2000	1.00	1.00	1.00	0.99	0.98	0.93	0.89	0.85	0.81	
24.3	820	5741	1750	1.00	1.00	1.00	1.00	1.00	0.98	0.93	0.89	0.85	
25.0	846	4921	1500	1.00	1.00	1.00	1.00	1.00	1.00	0.97	0.93	0.89	
25.8	872	4101	1250	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.97	0.93	
26.6	899	3281	1000	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.97	
27.4	926	2461	750	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
28.3	954	1640	500	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
29.1	983	820	250	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
29.5	995	492	150	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
30.0	1012	0	0	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
				°C	20	25	30	35	40	45	50	55	60
				°F	68	77	86	95	104	113	122	131	140
Air Filter Inlet Temperature													

Temperature & altitude derate

- Determine derate multiplier vs. temperature and altitude in Table A.
- Assumes the LT return temperature is 10 °C above the air filter inlet with a maximum LT temperature of 50 °C.
- If the LT temperature exceeds 50°C, consult factory for recommendations.
- Altitude is based upon SAE standard ambient pressure vs. altitude. For low barometric conditions add 150 m (500 ft) to site altitude.

Genset De-rating

Heat Rejection Factor (altitude and ambient) for HT and LT Circuits

Barometer		Altitude		Table B									
In Hg	mbar	Feet	Meters	Multiplier for HT & LT (1/4) Heat Rejection vs Alt & Temp.									
20.7	701	9843	3000	1.11	1.13	1.14	1.15	1.17	1.18	1.19	1.20	1.22	
21.4	723	9022	2750	1.10	1.12	1.13	1.14	1.15	1.17	1.18	1.19	1.21	
22.1	747	8202	2500	1.09	1.10	1.12	1.13	1.14	1.16	1.17	1.18	1.20	
22.8	771	7382	2250	1.08	1.09	1.11	1.12	1.13	1.14	1.16	1.17	1.18	
23.5	795	6562	2000	1.07	1.08	1.09	1.11	1.12	1.13	1.15	1.16	1.17	
24.3	820	5741	1750	1.06	1.07	1.08	1.10	1.11	1.12	1.14	1.15	1.16	
25.0	846	4921	1500	1.05	1.06	1.07	1.09	1.10	1.11	1.12	1.14	1.15	
25.8	872	4101	1250	1.04	1.05	1.06	1.07	1.09	1.10	1.11	1.13	1.14	
26.6	899	3281	1000	1.02	1.04	1.05	1.06	1.08	1.09	1.10	1.12	1.13	
27.4	926	2461	750	1.01	1.03	1.04	1.05	1.07	1.08	1.09	1.10	1.12	
28.3	954	1640	500	1.00	1.02	1.03	1.04	1.05	1.07	1.08	1.09	1.11	
29.1	983	820	250	0.99	1.00	1.02	1.03	1.04	1.06	1.07	1.08	1.10	
29.5	995	492	150	0.99	1.00	1.01	1.03	1.04	1.05	1.06	1.08	1.09	
30.0	1012	0	0	0.98	0.99	1.01	1.02	1.03	1.05	1.06	1.07	1.08	
				°C	20	25	30	35	40	45	50	55	60
				°F	68	77	86	95	104	113	122	131	140
Air Filter Inlet Temperature													

LT & HT Circuit Heat Rejection Calculation

1. Determine derate multiplier vs. temperature and altitude in Table A.
2. Using the multiplier from #1 above as the percent load factor determine the heat rejection from the previous page.
3. From Table B find the LT circuit multiplier. *The HT circuit multiplier is 1/4 of the multiplier shown in the table e.g. if the table says 1.04, the actual factor for HT is 1.01.
4. Multiply the result of step 2 by the result of step 3 to obtain the heat rejection at your altitude and temperature.

Methane Index Derate Multiplication Factor*

Table C

Derate Multiplier

LT Inlet Temp		Derate Factor			
°F	°C	1.00	0.90	0.75	0.50
122	50	55	52	48	-
131	55	59	56	52	-
140	60	63	60	56	-
149	65	67	64	60	-
158	70	71	68	64	-

Methane Index Derate

1. Determine derate multiplier vs. Methane Number in Table C based on MN given your gas analysis input into the Cummins Gas Analysis Tool.
2. Using the multiplier from #1 above as the percent load factor determine the max load in kW using the nominal max rated load.

Alternator Data

Voltage Range	Connection Configuration	Temp Rise Degrees C	Duty ⁹ Cycle	Winding No.	Alternator Data Sheet
380-480	Wye, 3 Phase	80	S	N/A	See Note 16
600	Wye, 3 Phase	80	S	N/A	See Note 16
4160	Wye, 3 Phase	80	S	N/A	See Note 16
12470-13800	Wye, 3 Phase	80	S	N/A	See Note 16
4160	Wye, 3 Phase	105	S	N/A	See Note 16
380-416	Wye, 3 Phase	125	S	N/A	See Note 16
440-480	Wye, 3 Phase	125	S	N/A	See Note 16

Emergency Standby Power (ESP) Rating Definition

Applicable for supplying power to varying electrical load for the duration of power interruption of a reliable utility source. Emergency Standby Power (ESP) is in accordance with ISO 8528.

Note:

- 1) Weights and set dimensions represent a generator set with its standard features only. See outline drawing for other configurations.
- 2) At ISO3046 reference conditions, altitude 1013 mbar (30in Hg), air inlet temperature 25°C (77°F)
- 3) According to ISO 3046/l with fuel consumption tolerance of +5%, -0%
- 4) With air intake at 25°C (77°F). Tolerance ± 10°C.
- 5) Tested using pipeline natural gas with LHV of 35.64MJ/Nm³ (905BTU/scf).
- 6) Outlet temperature controlled by thermostat. Inlet temperature for reference only. Data taken with 50% Glycol and with outlet temperature at max allowance.
- 7) Inlet temperature controlled by thermostat, outlet temperature for reference only. Data taken with 50% Glycol.
- 8) Without engine driven coolant pumps
- 9) Standby (S), Prime (P), Continuous (C)
- 10) At electrical output of 1.0 Power Factor, 97% Alternator Efficiency
- 11) Tolerance ±15%. Values shown are measured using fuel with less than 1% NMHC by volume. Values can vary significantly depending on NMHC found in the fuel.
- 12) Exhaust system back pressure is at rated load and will decrease at lower loads. Minimum restriction/back pressure is 0 mm H₂O.
- 13) Flow including off engine thermostats.
- 14) Tolerance +/- 10%
- 15) Pressure drop external to genset.
- 16) Alternator model and data sheet information available on www.powersuite.cummins.com
- 17) Exhaust gas cooled to 120 °C.
- 18) Fuel pressure capability will vary depending on fuel quality and site conditions.
- 19) Maximum Air Cleaner Restriction based on intake air temperature below 35 °C. If intake air temperature rises above 35 °C, contact Application Engineering for guidance.

For more information contact your local Cummins distributor
or visit power.cummins.com

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