



# Integrated Generator Control Unit “GCU100”

## PRODUCT OVERVIEW:

GCU100 is a permanent magnet generator/motor designed for medium duty electric and hybrid vehicles and mobile generator applications. High torque and power density with excellent energy efficiency. It can operate in either torque or speed control mode with full control of DC current, power and operating voltage. The system offers extensive J1939 CAN compliance and RS232 diagnostics. GCU100 has been designed for direct engine mounting with SAEII, bell housing compliance. It can regulate either torque or the DC voltage, current or power via CAN/J1939. The unique design and control allow wide dynamic speed operation. The motor is offered for both medium voltage of 250-450V<sub>DC</sub> or high voltage of 450-700V<sub>DC</sub>.

## FEATURES:

- Input voltage: 250 - 450V<sub>DC</sub> or 450 - 700V<sub>DC</sub>
- High Torque/power Density,
- Efficiency: 96% Generator / Motor, 98% Controller.
- CAN command, control and diagnostics.
- Output voltage can be regulated via CAN/Analog command.
- Vector controlled Torque or Speed Command.
- 4-Quadrant Operation, Motoring and Generation Capability
- Dual CAN bus, J1939 compatible
- Short Circuit, OC, O/U V and OT protection.
- Configuration management via CAN and RS232 interface.



## APPLICATIONS:

Hybrid system APU for class 4-6 commercial vehicles, Medium duty off-road applications and alt-fuel stationary power.

## MODEL NUMBER:

**GCU100** □ □ □ □

Input Voltage  
M: 250-450V<sub>DC</sub>  
H: 450-700V<sub>DC</sub>

Rsvd

Motor Type	Permanent Magnet Motor
Torque	400 Nm
Power	80kW continuous
Speed	3000 RPM max
Weight (Generator) Weight (Controller)	65 kg 19kg
Input Voltage	M: 250-450 Vdc; H: 450-700 Vdc
Cooling	-40 °C to 65°C (50/50 WEG)
Efficiency (Generator) Efficiency (Controller)	96% 97%
Isolation resistance	> 2 MΩ at 700V <sub>DC</sub>
Environment	IP65 rated (IP-67 optional)
Mounting	SAE-II Bell Housing
Shaft Interface	SAE / ANSI (Custom-Optional)

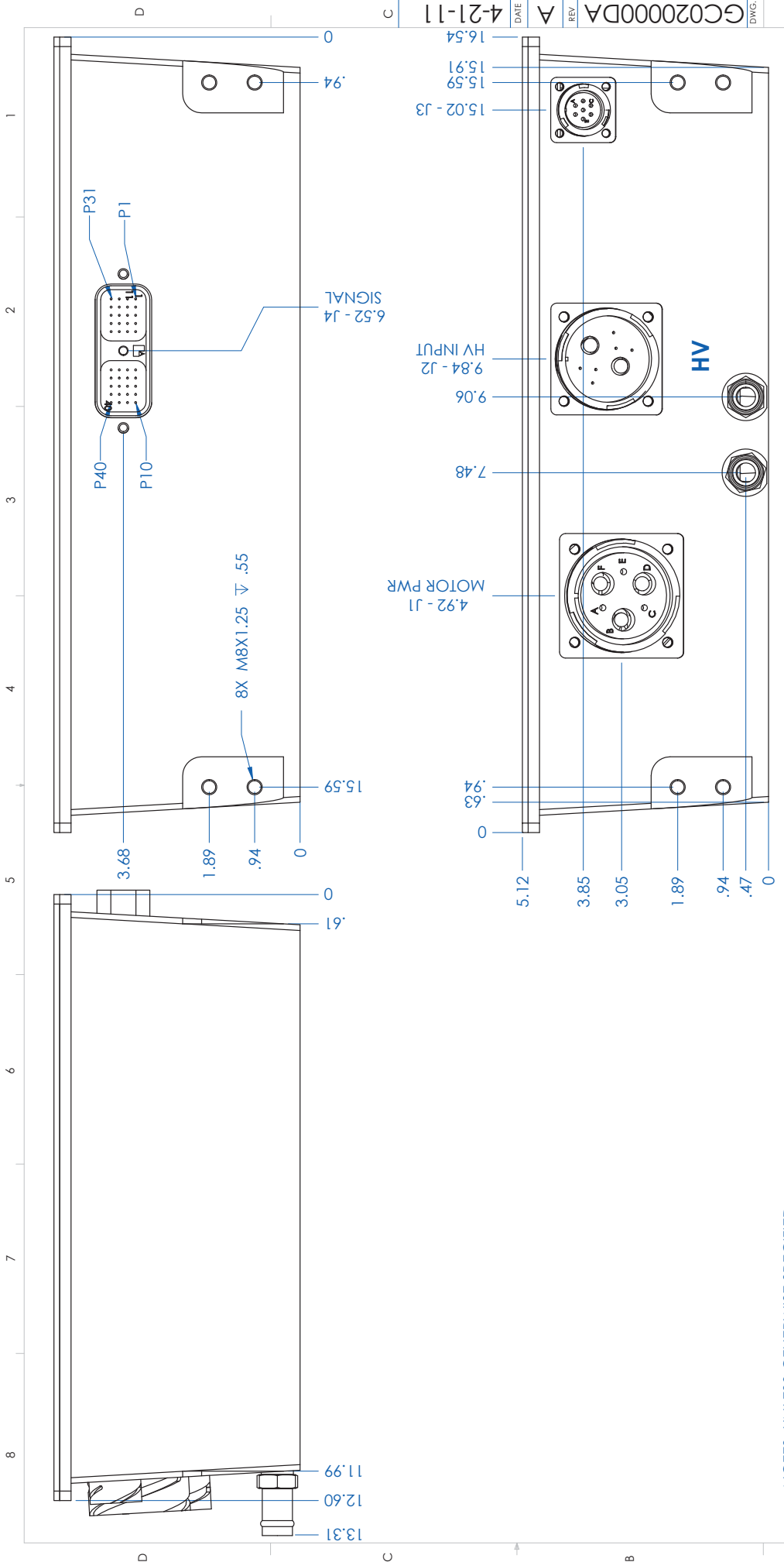
DATA SHEET REV: 130302, Specifications subject to change.

[www.ushybrid.com](http://www.ushybrid.com)

Integrated Solutions for Clean Mobility & Energy Conservation

DATA SHEET REV: 1302, Specifications subject to change.

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NOTES: UNLESS OTHERWISE SPECIFIED

- DC/DC CONVERTER WEIGHT: 10.0 kg (22 LBS.).
- COOLANT: 50/50 ETHYLENE GLYCOL / WATER.
- MIN FLOW: 1.14L / MIN (3.0 GPM)
- PRESSURE DROP: 9.65 kPa (1.6 PSI) @ MINIMUM FLOW.
- PRESSURE DROP: 14.05 kPa (2.1 PSI) @ 40 °C.
- INLET TEMP: -20 °C TO 60 °C.
- OPTIONAL 3/8 NPT HOSE FITTINGS: 3/4" OR 90 DEG. FITTINGS.
- INPUT MATING CONNECTOR: TYCO HVA280 (P/N# 1587902-9).
- INPUT MATING CONNECTOR: TYCO HVA280 (P/N# 1587902-9).
- SIGNAL MATING CONNECTOR: DEUTSCH P/N# DRC23-40PA.

NAME	DATE				
DRAWN	FERICKSON	4-21-11			
CHECKED					
ENG APPR:					
MFG APPR:					
Q.A.					

US HYBRID

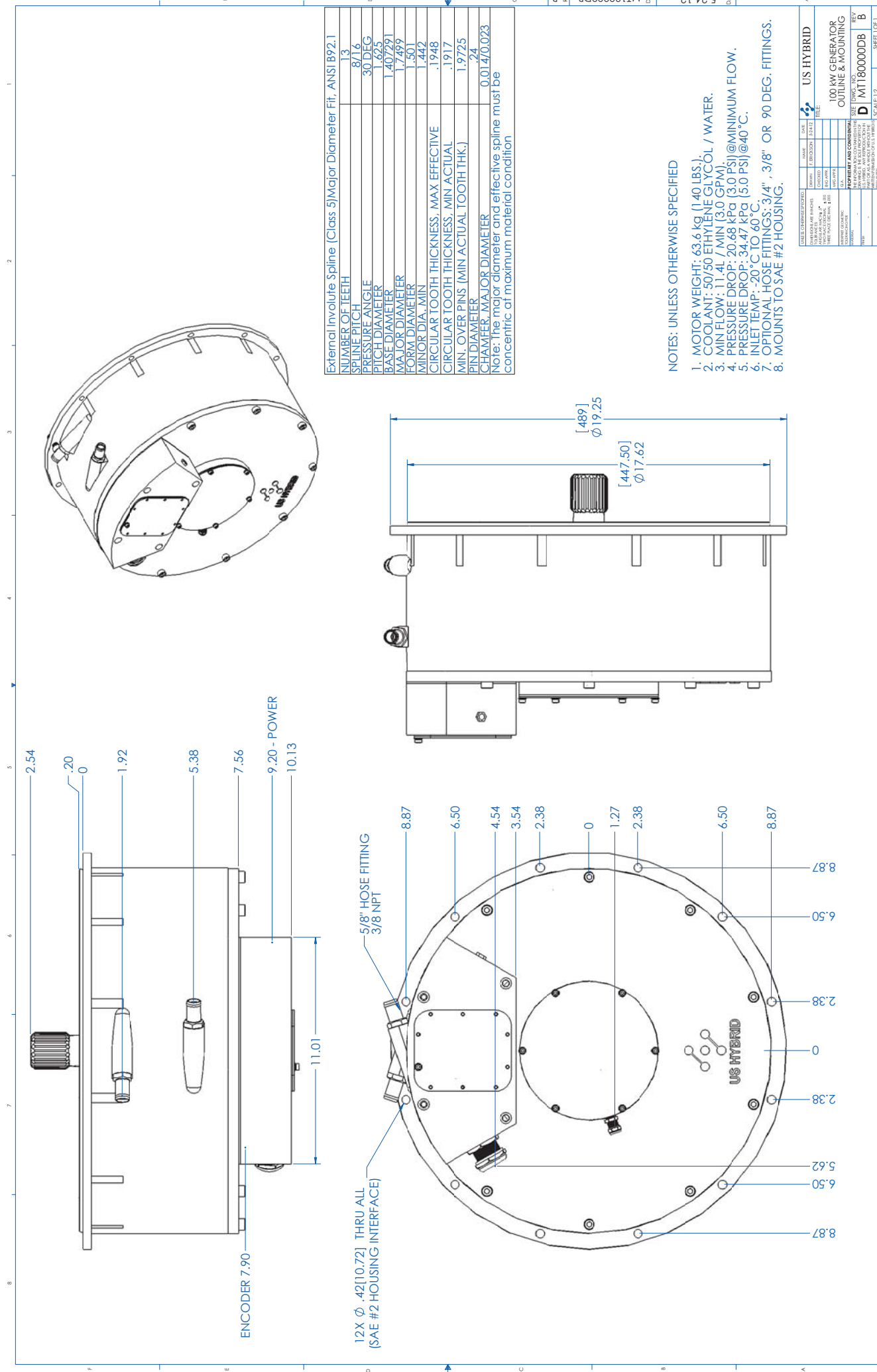
TITLE: GCU OUTLINE & MOUNTING

SIZE: DWG. NO. REV  
**B** GC020000DA **A**

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SCALE: 1:2

SHEET 1 OF 1



External Involute Spline (Class 5) Major Diameter Fit, ANSI B92.1

NUMBER OF TEETH	13
SPLINE PITCH	8/16
PRESSURE ANGLE	30 DEG
PITCH DIAMETER	1.625
BASE DIAMETER	1.407291
MAJOR DIAMETER	1.489
FORM DIAMETER	1.501
MINOR DIA. MIN	1.442
CIRCULAR TOOTH THICKNESS, MAX EFFECTIVE	.1948
CIRCULAR TOOTH THICKNESS, MIN ACTUAL	.1917
MIN. OVER PINS (MIN ACTUAL TOOTH THK.)	1.9725
PIN DIAMETER	.24
CHAMFER MAJOR DIAMETER	0.014(0.023)

Note: The major diameter and effective spline must be concentric at maximum material condition

- NOTES: UNLESS OTHERWISE SPECIFIED
1. MOTOR WEIGHT: 63.6 kg (140 LBS).
  2. COOLANT: 50/50 ETHYLENE GLYCOL / WATER.
  3. MIN FLOW: 11.4L / MIN (3.0 GPM).
  4. PRESSURE DROP: 20.68 kPa (3.0 PSI) @ MINIMUM FLOW.
  5. PRESSURE DROP: 34.47 kPa (5.0 PSI) @ 40 °C.
  6. INLET TEMP: -20 °C TO 60 °C.
  7. OPTIONAL HOSE FITTINGS: 3/4", 3/8" OR 90 DEG. FITTINGS.
  8. MOUNTS TO SAE #2 HOUSING.

DATE	2/24/12
DESIGNED BY	...
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DATE	...
REV	...
DESCRIPTION	...
SCALE	1:2
SHEET	1 OF 1

UNIT	US HYBRID
DESCRIPTION	100 kW GENERATOR OUTLINE & MOUNTING
REV	B
DATE	...
BY	...
CHECKED	...
DATE	...
REV	...
DESCRIPTION	...
SCALE	1:2
SHEET	1 OF 1