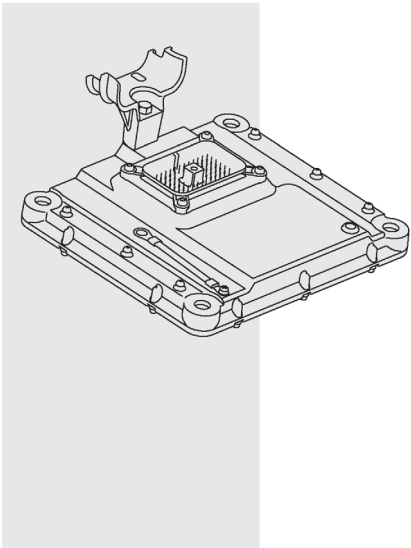


## ECU-MS Heavy-Duty Machine Controller



### FEATURES

- Advanced electronic design for reliability and accuracy.
- Reliable operation in extreme temperature conditions from -40° to +105°C.
- Ruggedly designed, fully-sealed aluminum housing.
- Inputs and Outputs have both protection and diagnostics.
- Regulated power supplies are provided for external sensors.
- No special power is required.
- No external cooling or heat dissipation required.
- Low cost/compact size.
- Fully programmable for application versatility.
- Software developed with *Composer™*.

### DESCRIPTION

The ECU-MS Machine Control is a heavy-duty general-purpose programmable controller designed to withstand the extreme environmental demands of the agricultural, marine, mining and construction industries. Based on a 32-bit MPC555 microprocessor running at 40MHz, the ECU-MS is a monitor and controller for use as a stand alone system, or for working together in a large complex network with other devices using its onboard CAN communications. The ECU-MS is equipped with 25 inputs and 12 or 20 outputs to interface with HydraForce joysticks, sensors, displays and valves.

**Note:** Refer to ECU Technical Reference pages for specific data and ratings of individual inputs and outputs.

### RATINGS

#### POWER REQUIREMENTS:

Operating Voltage: 9 to 32 VDC Battery is internally monitored by the CPU.

Operating Current: 450 mA +13 Amp Maximum Load.

Non-Destructive Voltage: -32 to +80 VDC

#### SENSOR POWER SUPPLIES:

2, configurable for 5 VDC or 8 VDC @ 330 mA each.

#### COMMUNICATION:

J1939 (CAN) Data Link: 2

J1708 ATA: 1

#### INPUTS:

Key Switch (+Batt): 1

Configurable SWG/SWB: 6

PWM / Frequency/SWG: 6

Differential Frequency/PWM: 4

Active/Passive Analog: 8

#### OUTPUTS:

2A Configurable: 8 PWM Drivers, each of which can be used as 1 High Side and 1 Low Side On/Off Driver, for a total of 16 Drivers. No restrictions on the number of possible combinations.

2A Low-Side Drivers: 4

**Note:** Diagnostic current of 20 mA may prevent solenoid valve from turning off.

#### PROCESSING and MEMORY:

Microprocessor: 32 bit @ 40 MHz

Flash ROM: 512 KByte

SRAM: 128 KByte

EEPROM: 8 KBytes

#### ENVIRONMENTAL RATINGS:

Operating Temperature Range: -40°C to 105°C

Storage Temperature Range: -55°C to 125°C

Radiated Immunity: 15.0 KHz to 1.0 GHz at 100 V/M

Humidity Tolerance: 115% of nominal system voltage at 90% relative humidity over operating temperature range.

Salt Spray Tolerance: 115% of nominal system voltage with 5% salt spray for 48 hours at 35°C.

Chemical Splash Immunity: Diesel Fuel, engine/machine oil, SAE J1455 chemical agents.

Vibration (Shock-isolated components): 8.0 Grms random vibration from 24 Hz to 2000 Hz in three orthogonal planes.

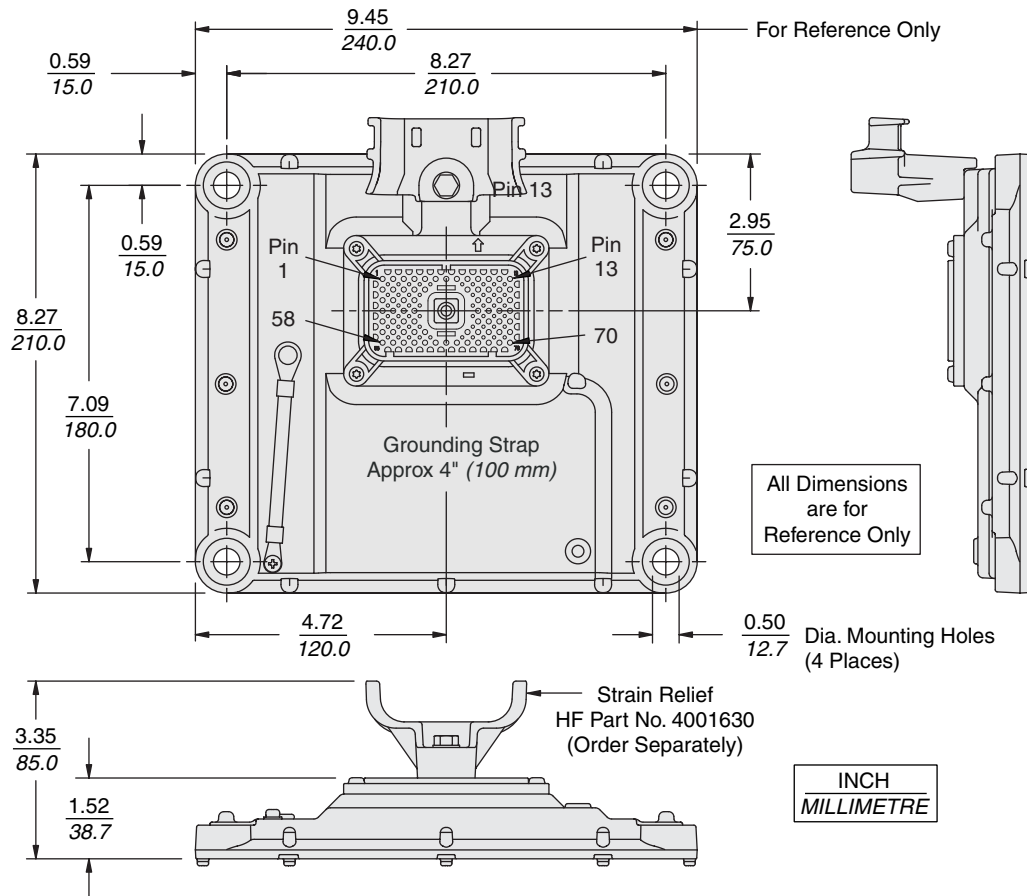
Moisture Leakage (sealant pressure tolerance): ±0.35 bar (5 psi) against water and water vapor; meets IP68 standards.

Electrostatic Environment: Zero damage during exposure to electrostatic painting process.

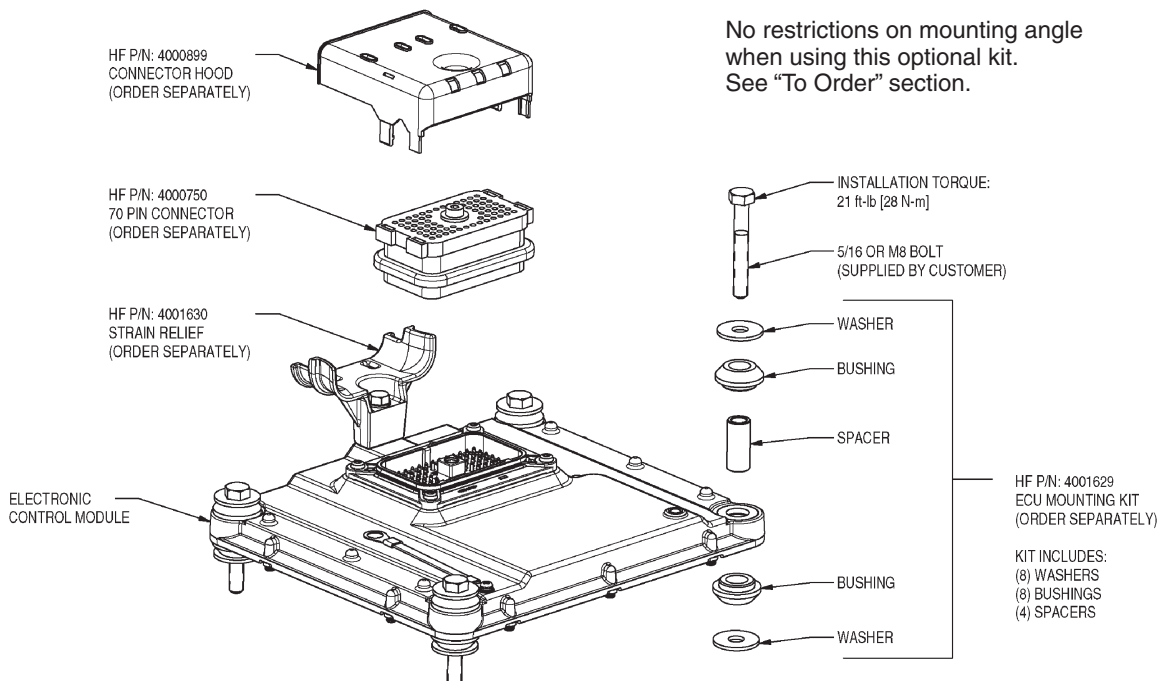
Material: Aluminum Housing; Gold-Plated Contacts.

# ECU-MS Heavy-Duty Machine Controller

## DIMENSIONS



## MOUNTING



# ELECTRONIC CONTROLS

## ECU-MS Heavy-Duty Machine Controller

### CONNECTOR PIN ASSIGNMENTS

Pin No.	Connector Function	Type	Pin No.	Connector Function	Type
1	+Battery	—	36	Active/Passive Analog 1 (AIN)	Input
2	-Battery	—	37	Active/Passive Analog 2 (AIN)	Input
3	Key Switch	Input	38	Active/Passive Analog 3 (AIN)	Input
4	Not Used	—	39	Active/Passive Analog 4 (AIN)	Input
5	Differential Speed Sensor 1+	Input	40	DRVR 4 HS	Output
6	Differential Speed Sensor 1-	Input	41	DRVR 4 LS	Output
7	SWG/SWB 1	Input	42	DRVR 5 HS	Output
8	SWG/SWB 2	Input	43	DRVR 5 LS	Output
9	SWG/SWB 3	Input	44	Active/Passive Analog 5 (AIN)	Input
10	Drvr 1 LS (ON/OFF_DRVR_LS)	Output	45	Active/Passive Analog 6 (AIN)	Input
11	Drvr 2 LS (ON/OFF_DRVR_LS)	Output	46	Active/Passive Analog 7 (AIN)	Input
12	Drvr 3 LS (ON/OFF_DRVR_LS)	Output	47	Active/Passive Analog 8 (AIN)	Input
13	Drvr 4 LS (ON/OFF_DRVR_LS)	Output	48	DRVR 6 HS	Output
14	+Battery	—	49	DRVR 6 LS	Output
15	-Battery	—	50	DRVR 7 HS	Output
16	Extra Switch/Sensor Returns	Input	51	DRVR 7 LS	Output
17	Extra Switch/Sensor Returns	Input	52	Differential Speed Sensor 2-	Input
18	Differential Speed Sensor 2+	Input	53	CAN A Shield (CAN A SHIELD)	I/O
19	SWG/SWB 4	Input	54	CAN B Shield (CAN B SHIELD)	I/O
20	SWG/SWB 5	Input	55	Sensor Return (VS_RETURN)	Input
21	SWG/SWB 6	Input	56	Sensor Return (VS_RETURN)	Input
22	PWM/FREQ 1	Input	57	CAT Data Link+ (CDL_HI)	—
23	PWM/FREQ 2	Input	58	DRVR 8 HS	Output
24	+Battery	—	59	DRVR 8 LS	Output
25	-Battery	—	60	Differential Speed Sensor 3+	Input
26	DRVR 1 HS	Output	61	Differential Speed Sensor 3-	Input
27	DRVR 1 LS	Output	62	Differential Speed Sensor 4+	Input
28	PWM/FREQ 3	Input	63	Differential Speed Sensor 4-	Input
29	PWM/FREQ 4	Input	64	CAN A+ (CAN_A_HI)	I/O
30	PWM/FREQ 5	Input	65	CAN A- (CAN_A_LO)	I/O
31	PWM/FREQ 6	Input	66	CAN B+ (CAN_B_HI)	I/O
32	DRVR 2 HS	Output	67	CAN B- (CAN_B_LO)	I/O
33	DRVR 2 LS	Output	68	Sensor Power 1 (VS_5_8_330MA)	Output
34	DRVR 3 HS	Output	69	Sensor Power 2 (VS_5_8_330MA)	Output
35	DRVR 3 LS	Output	70	CAT Data Link- (CDL_LO)	I/O

### TO ORDER

**Controller Model** ECU-MS

**Composer™ Software:** Part No. 4100001

**70 Pin Connector:** Part No. 4000750

**90° Harness Hood:** Part No. 4000899

**Socket** Part No. 4002063

**Strain Relief** Part No. 4001630

**Seal Plug** Part No. 4001465

**Mounting Kit** Part No. 4001629