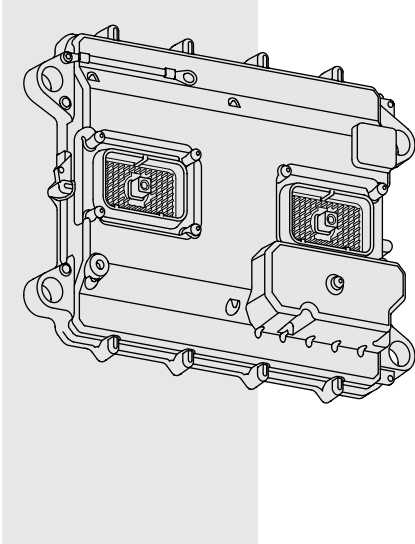


ECU-MM Heavy-Duty Machine Controller



FEATURES

- Advanced electronic design for reliability and accuracy.
- Reliable operation in extreme temperature conditions from -40° to +85°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-MM 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-MM 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.

ECU-MM is equipped with ample inputs and outputs to interface with HydraForce joysticks, sensors, displays and valves. There are 44 inputs consisting of digital switch to ground, analog signals, PWM signals, and frequency/speed types. A total of 20 outputs consist of sinking drivers of 300mA, sourcing drivers of 2.0 Amps, a neutral start driver, and PWM drivers of 2.0 Amps.

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 + 30 Amp Maximum Load

Non-Destructive Voltage: -32 to +80 VDC

SENSOR POWER SUPPLIES:

One 5V Sensor Supply: 200 mA DC

One 8V Sensor Supply: 400 mA DC

COMMUNICATION:

J1939 (CAN) Data Link

PROCESSING and MEMORY:

MPC555 Microprocessor: 40 MHz

Flash ROM: 2 MByte

SRAM: 256 KByte

EEPROM: 32 KBytes

ENVIRONMENTAL RATINGS:

Operating Temperature Range: -40°C to 85°C

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

Storage Temperature Range: -50°C to 120°C

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 IP67 standards

Electrostatic Environment: Zero damage during exposure to electrostatic painting process

INPUTS:

Switch to Ground: 21

Key Switch (+Batt): 1

Neutral Start Input: 1

Analog Inputs: 5

PWM / Frequency Input: 11

Speed Input: 4

Alternator Input: 1

Internal Battery Monitor: 1

OUTPUTS:

On/Off Sinking Driver (0.5 to 300 mA): 8

On/Off Sourcing Driver (10 mA to 2A): 3

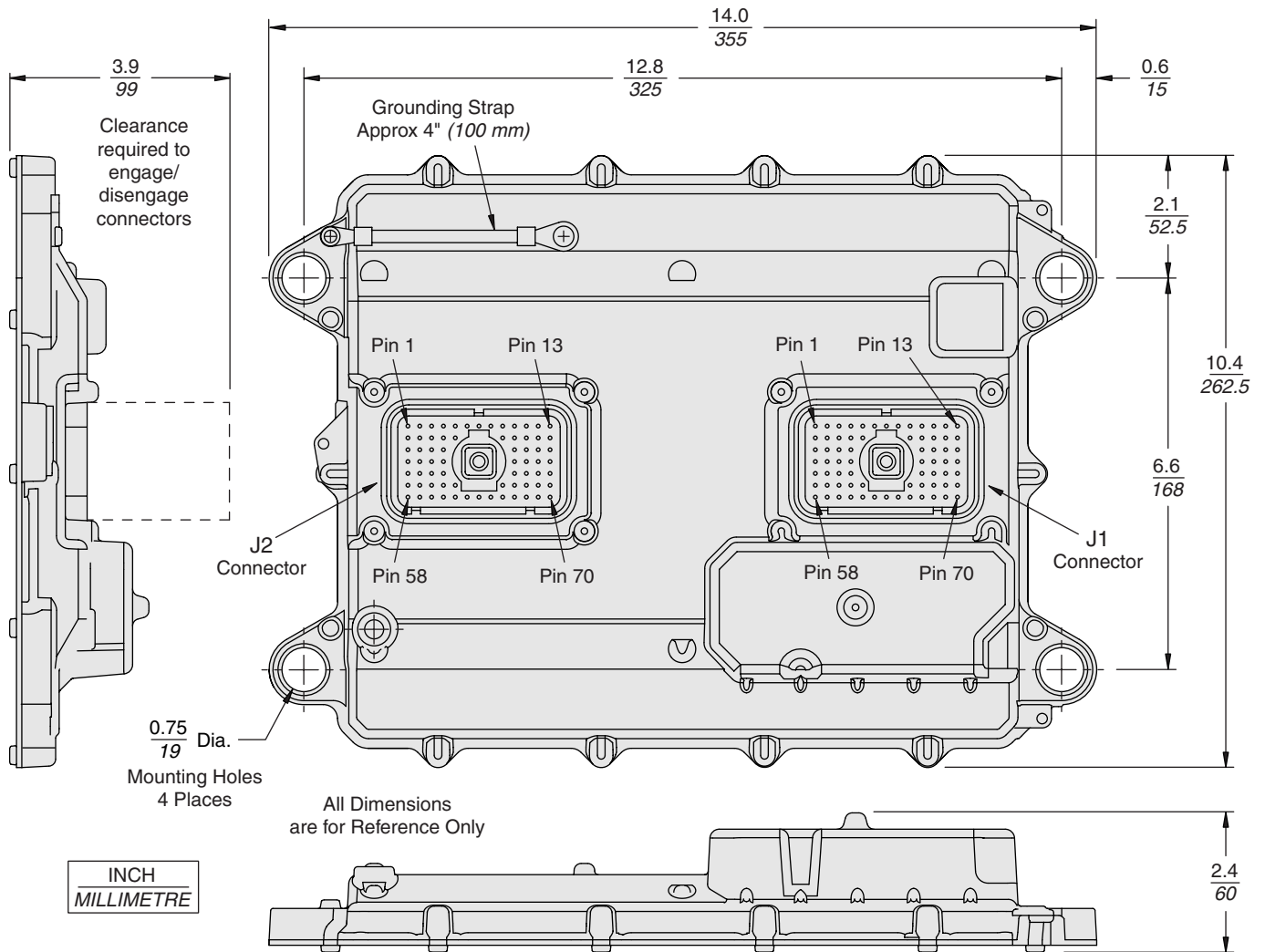
On/Off Neutral START Driver (10 mA to 2A): 1

PWM Driver (50 mA to 2A): 8

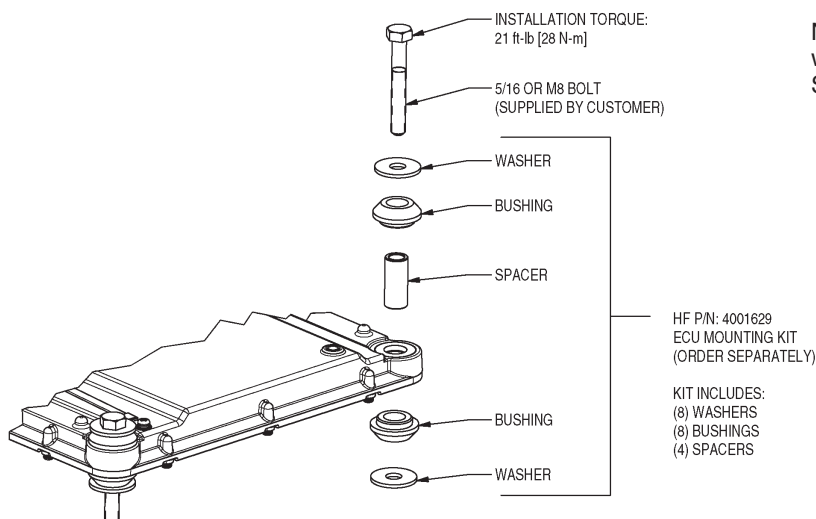
Note: Diagnostic current of 20 mA may prevent solenoid valve from turning off.

ECU-MM Heavy-Duty Machine Controller

DIMENSIONS



MOUNTING



No restrictions on mounting angle when using this optional kit. See "To Order" section.

ECU-MM Heavy-Duty Machine Controller

J1 CONNECTOR PIN ASSIGNMENTS

Pin No.	J1 Connector Function	Type	Pin No.	J1 Connector Function	Type
1	Key-on	Input	36	Analog Active 1	Input
2	Differential Speed 1 (+)	Input	37	Analog Active 2	Input
3	Differential Speed 1 (-)	Input	38	Battery (+)	—
4	Differential Speed 2 (+)	Input	39	Battery (+)	—
5	Differential Speed 2 (-)	Input	40	Switch to Ground 8	Input
6	Differential Speed 3 (+)	Input	41	Switch to Ground 9	Input
7	Differential Speed 3 (-)	Input	42	Switch to Ground 10	Input
8	Differential Speed 4 (+)	Input	43	Switch to Ground 11	Input
9	Differential Speed 4 (-)	Input	44	8V Sensor PS	—
10	—	—	45	8V Sensor Return	—
11	5V Sensor PS	—	46	Battery (+)	—
12	—	—	47	Battery (+)	—
13	Battery (-)	—	48	PWM Driver 1 (+)	Output
14	—	—	49	PWM Driver 2 (+)	Output
15	—	—	50	PWM Driver Return 1-4	Output
16	—	—	51	PWM Driver 3 (+)	Output
17	—	—	52	PWM Driver 4 (+)	Output
18	—	—	53	—	—
19	CAN Shield	I/O	54	—	—
20	—	—	55	—	—
21	5V Sensor Return	—	56	Battery (-)	—
22	Analog Passive 1	Input	57	Battery (-)	—
23	Battery (-)	—	58	PWM Driver 5 (+)	Output
24	—	—	59	PWM Driver 6 (+)	Output
25	—	—	60	PWM Driver Return 5-8	Output
26	Switch to Ground 1	Input	61	PWM Driver 7 (+)	Output
27	Switch to Ground 2	Input	62	PWM Driver 8 (+)	Output
28	Switch to Ground 3	Input	63	Switch to Ground 12	Input
29	Analog Passive 2	Input	64	Switch to Ground 13	Input
30	Analog Passive 3	Input	65	—	—
31	Battery (+)	—	66	—	—
32	Switch to Ground 4	Input	67	—	—
33	Switch to Ground 5	Input	68	—	—
34	Switch to Ground 6	Input	69	—	—
35	Switch to Ground 7	Input	70	Battery (-)	—

ECU-MM Heavy-Duty Machine Controller

J2 CONNECTOR PIN ASSIGNMENTS

Pin No.	J2 Connector Function	Type	Pin No.	J2 Connector Function	Type
1	Neutral Start	Input	36	Switch to ground 19	Input
2	2A On/Off 1	Output	37	Switch to ground 20	Input
3	—	—	38	Switch to ground 21	Input
4	2A Load Return 1	Output	39	Switch to ground 22	Input
5	2A On/Off 3	Output	40	PWM In 13	Input
6	2A On/Off 4	Output	41	PWM In 14	Input
7	2A Neutral Start	Output	42	PWM In 15	Input
8	2A Load Return 2	Output	43	—	—
9	300mA Sink 1	Output	44	—	—
10	300mA Sink 2	Output	45	—	—
11	300mA Sink 3	Output	46	—	—
12	300mA Sink 4	Output	47	—	—
13	300mA Sink 5	Output	48	—	—
14	R-terminal	Input	49	—	—
15	—	—	50	—	—
16	—	—	51	—	—
17	—	—	52	—	—
18	—	—	53	—	—
19	300mA Sink 6	Output	54	—	—
20	300mA Sink 7	Output	55	—	—
21	300mA Sink 8	Output	56	CAN A (+)	I/O
22	Digital Return	—	57	CAN A Shield	I/O
23	Switch to ground 14	Input	58	—	—
24	PWM In 5	Input	59	—	—
25	PWM In 6	Input	60	—	—
26	PWM In 7	Input	61	—	—
27	PWM In 8	Input	62	—	—
28	Switch to ground 15	Input	63	Ground Pin	—
29	Switch to ground 16	Input	64	—	—
30	Switch to ground 17	Input	65	—	—
31	Switch to ground 18	Input	66	—	—
32	PWM In 9	Input	67	—	—
33	PWM In 10	Input	68	—	—
34	PWM In 11	Input	69	—	—
35	PWM In 12	Input	70	CAN A (-)	I/O

TO ORDER

Controller Model ECU-MM

Composer™ Software: Part No. 4100001

70 Pin Connector: J2 Part No. 4000979
J1 Part No. 4000980

90° Harness Hood Part No. 4000899

Socket Part No. 4002063

Seal Plug Part No. 4001465

Mounting Kit Part No. 4001629