DESCRIPTION

The MC200 microcontroller is an environmentally-hardened device designed to act as a stand-alone controller for small to medium sized mobile machine control systems. Its primary application is as a dual axis valve driver used in conjunction with theJS series of electronic joystick, but it is also an ideal platform for software applications such as simple open loop dual path drive control and hydrostatic transmission automotive control with pump and motor electronic phasing.

The MC200 consists of a circuit board assembly inside a rugged die-cast zinc housing. The controller can interface with a wide variety of input devices including potentiometers, Hall-effect sensors, pressure sensors, pulse pickups and encoders and has output options that interface with high current proportional solenoid valves and low current pressure control pilot servo valves.

Standard, preprogrammed application solution software, called the Personalities, make the MC200 a cost effective solution for OEMs wishing to replace analog controls or to introduce microelectronic controls on their machines. the Personalities are available for most common machine control applications, isolating OEMs from the need to write application software code. The Personalities are readily tailored to specific machines by changing application tuning parameters through the use of WebGPI graphical set-up

software. Specifically, the joystick characterization personality allows for the adjustability of parameters such as output thresholds, maximum currents, PWM frequency, ramping and input profiling.

The MC200 is also an extremely cost effective platform for machine control solutions requiring software engineered for a specific machine. EEPROM memory allows engineered application software code and tuning parameters to be changed in the field using WebGPI.

FEATURES

• Robust electronics operate over a range of 9 to 32 volts with reverse battery, negative transient and load dump protection

• Environmentally hardened design including coated die cast zinc housing that withstands harsh mobile machine operating conditions including shock, vibration EMI/RFI, high pressure washdown, temperature and humidity extremes

• Compact footprint

• Motorola 8 bit H68HC908AZ60 microprocessor

• Versatile I/O—Hardware configurable inputs and outputs

• Standard Danfoss (4) LED configuration for diagnostics

• EEPROM memory allows factory shipment of pre-programmed the Personalities or field programming of engineered application software and tuning parameters

• The Kernel operating system facilitates application software transportability across ᴧ୨ᴧ ᴑᴧ⨂micro electronic platforms

• RS232 communications for WebGPI user interface

APPLICATION SOFTWARE

MC200 is designed to run Personalities or control solution software engineered for a specific machine.

Consult Danfoss Customer Service for a list of available Personalities.

ORDERING AND REPAIR INFORMATION

The MC200 ordering part number designates both hardware and application software. The software component includes both application software (the Personalities or Engineered) and tuning parameters associated with the application. For complete product ordering information, including part number, consult Danfoss Customer Service.

The MC200 is not repairable and must be replaced if a failure occurs. Consult Danfoss Customer Service for replacement part information.

RELATED LITERATURE

THE PERSONALITY USER'S MANUALS
Each Personality User's Manual includes necessary information required to apply, start-up and provide diagnostic support for a specific personality.

TECHNICAL DATA

POWER SUPPLY
9-36 Vdc
Power consumption: 2 W (With Valve Outputs Off)

SENSOR POWER SUPPLY
Internal 5Vdc regulator for external sensor power (0.03 A, max)

INPUTS

(3) GENERAL PURPOSE SWITCHING DIGITAL INPUTS
Hardware configurable to be switch to ground or switch to batt+
Input resistance: 15 Kohm ±5%
Pull-up resistance: 15 Kohm ±5%
(3) 0-5 VDC GENERAL PURPOSE ANALOG INPUTS
8 bit resolution
(2) 0-5 VDC ANALOG OR TIMING INPUT
Hardware configurable to be PPU input or analog input
If configured as a PPU input, can be biased to +5 Vdc or to ground
PPU Count frequency: 1-6000 HZ

OUTPUTS

(4) HIGH SIDE PROPORTIONAL PWM VALVE DRIVERS WITH INTERNAL CURRENT FEEDBACK (2.5A MAX)
Configured in 2 pairs - only 2 available at one time
Feedback sample resistor (output max. current) is hardware configurable
Software configurable PWM frequency from 33 to 200 Hz

COMMUNICATION

RS232

LEDs

(1) Green system power indicator
(1) Green 5Vdc power indicator
(1) Yellow mode indicator (software configurable)
(1) Red status indicator (software configurable)

CONNECTOR

18 pin MetriPack connector

MATING CONNECTOR BAG ASSEMBLY

Danfoss part number K23334

ENVIRONMENTAL

OPERATING TEMPERATURE
-40° C to + 70° C (-40° F to 158° F)

MOISTURE
Protected against 95% relative humidity, high pressure wash downs and salt spray

VIBRATION
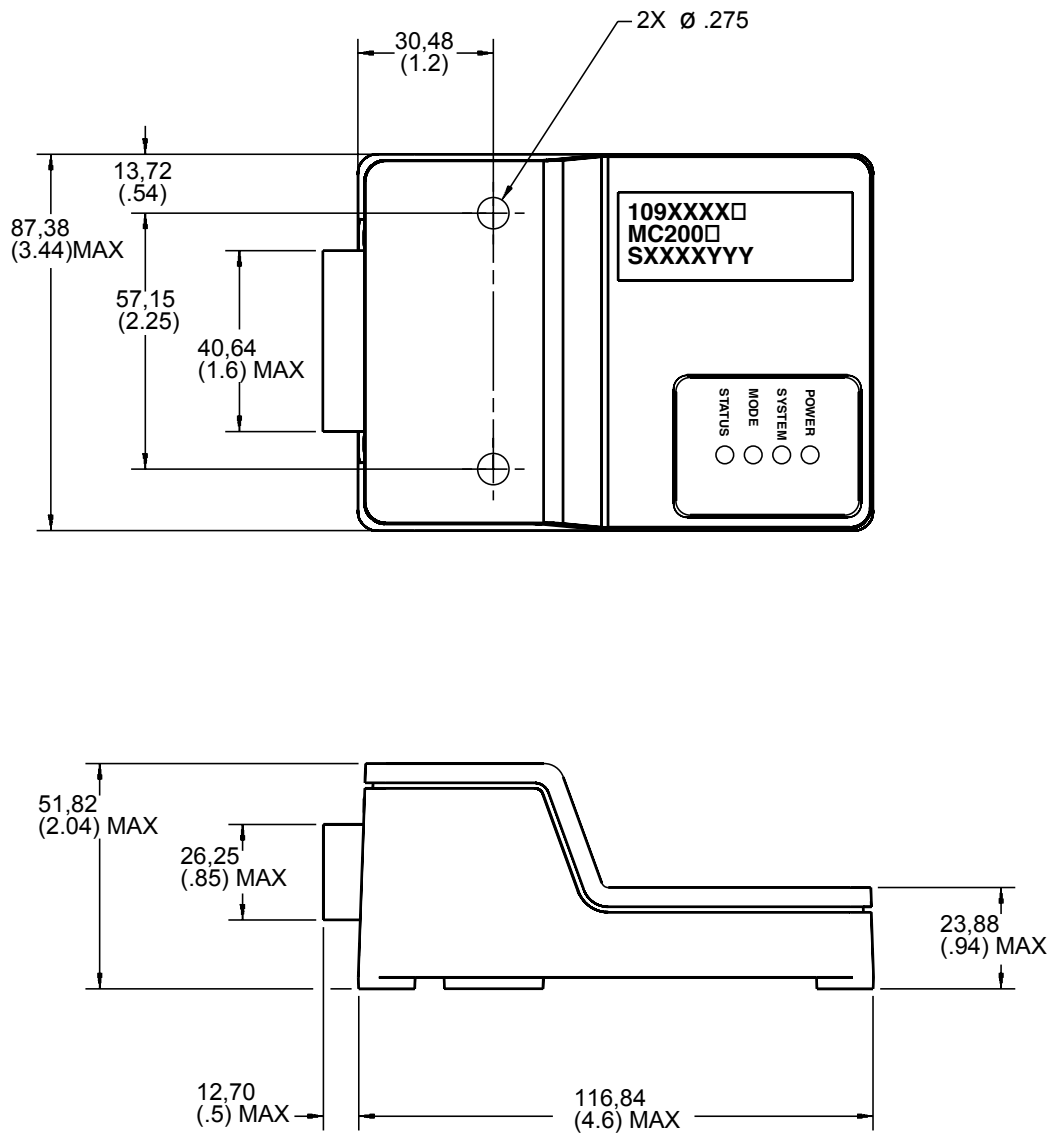5 to 2000Hz with resonant dwell for 1 million cycles for each resonant point run from 1 to 10 Gs

SHOCK
50 Gs for 11 ms in all three axes for a total of 18 shocks

EMI/RFI
100V/M in range of 1 MHz to 1 GHz

DIMENSIONS

30,48
(1.2)

2X Ø .275

13,72
(.54)

87,38
(3.44)MAX

57,15
(2.25)

40,64
(1.6) MAX

109XXXX☐
MC200☐
SXXXXYYY

POWER
SYSTEM
MODE
STATUS

51,82
(2.04) MAX

26,25
(.85) MAX

23,88
(.94) MAX

12,70
(.5) MAX

116,84
(4.6) MAX

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Dimensions of the MC200 Microcontroller in Millimeters (Inches).

CONNECTOR PINOUTS

Pin	Signal
A1	Battery +
A2	Sensor Power
A3	Battery -
B1	Valve Drive 0a
B2	Valve Drive 0b
B3	Valve Drive 1a
C1	RS232 TxD
C2	RS232 RxD
C3	BOOT
D1	Analog In0
D2	Analog In1
D3	Analog In3 / PPU0
E1	Analog In4 / PPU1
E2	Analog In2
E3	Valve Drive 1b
F1	Digital In0
F2	Digital In1
F3	Digital In2
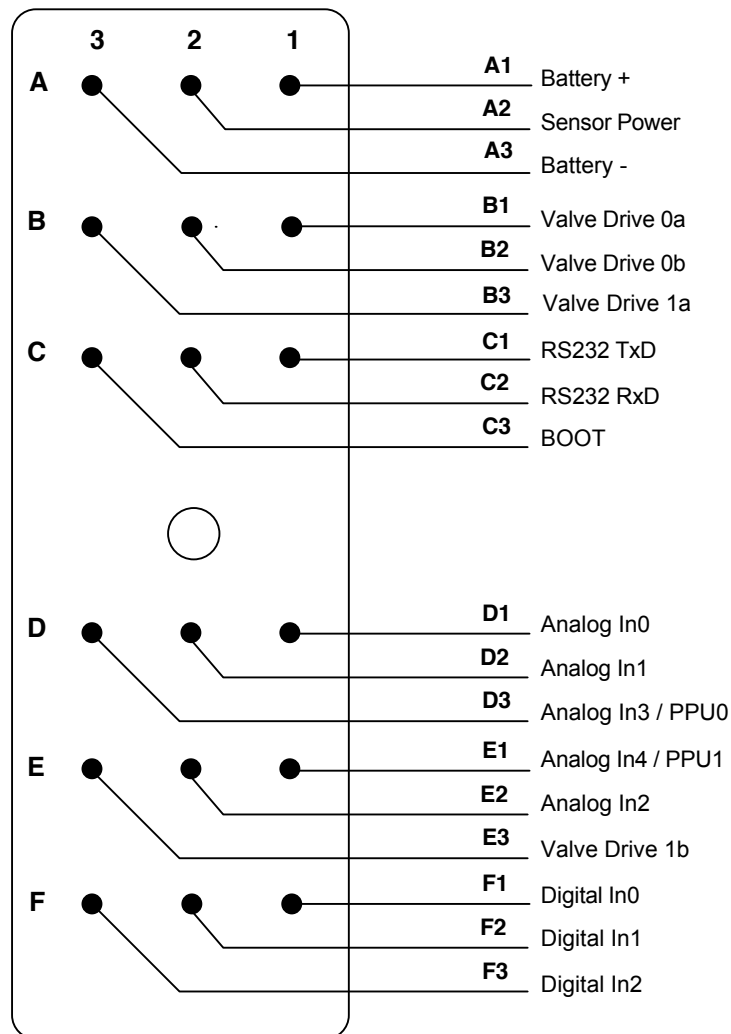
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MACHINE WIRING GUIDELINES

1. All wires must be protected from mechanical abuse. Wire can be run in flexible metal or plastic conduits.

2. Use 85° C wire with abrasion resistant insulation. 105° C wire should be considered near hot surfaces.

3. Use 18AWG wire.

4. Separate high current wires such as solenoids, lights, alternators or fuel pumps from control wires.

5. Run wires along the inside of, or close to, metal machine frame surfaces where possible. This simulates a shield which will minimize the effects of EMI/RFI radiation.

6. Do not run wires near sharp metal corners. Consider running the wire through a grommet when rounding a corner.

7. Do not run wires near hot machine members.

8. Provide strain relief for all wires.

9. Avoid running wires near moving or vibrating components.

10. Avoid long, unsupported wire spans.

11. All sensors and valve drive circuit grounds should be wired to a common terminal. Separate chassis grounds can lead to erratic functionality.

12. Sensor lines should be twisted about one turn every 10 cm (4 inches).

13. It is better to use wire harness anchors that will allow wires to float with respect to the machine frame rather than rigid anchors.

CUSTOMER SERVICE

NORTH AMERICA

ORDER FROM

Danfoss (US) Company
Customer Service Department
3500 Annapolis Lane North
Minneapolis, Minnesota 55447
Phone: (763) 509-2084
Fax: (763) 559-0108

DEVICE REPAIR

For devices in need of repair or evaluation, include a description of the problem and what work you believe needs to be done, along with your name, address and telephone number.

RETURN TO

Danfoss (US) Company
Return Goods Department
3500 Annapolis Lane North
Minneapolis, Minnesota 55447

EUROPE

ORDER FROM

Danfoss (Neumünster) GmbH& Co.
Order Entry Department
Krokamp 35
Postfach 2460
D-24531 Neumünster
Germany
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Fax: +49 4321 871-284