Danfoss BLN-95-9067 SX Microcontroller Instruction Manual

Contents

Danfoss BLN-95-9067 SX Microcontroller

Specifications:

- **Power Supply:** 9-32 Vdc
- **Power Consumption:** 2 W (With Digital and Valve Outputs Off)
- **Sensor Power Supply:** Internal 5 Vdc regulator for external sensor power (0.03 A, max)
- **Communication:** RS232 (Optional), CAN 2.0b compliant
- **LEDs:** (1) green system power indicator, (1) green 5 Vdc sensor power indicator, (1) yellow mode indicator, (1) red status indicator
- **Connector: 1**8 pin Metri-Pack connector
- **Mating Connector:** Danfoss part number K23334
- **Environmental:**
  - **Moisture:** Protected against 95% relative humidity, high pressure wash downs, and salt spray
  - **Vibration:** 12 Gs swept sine, 0.765 octave/min in the range of 10 Hz to 2 Khz, 24 hours per axis in three axes
  - **Shock:** 50 Gs for 11 ms waveform in all three axes for a total of 18 shocks
  - **EMI/RFI:** 100 V/M in range of 1 MHz to 1 GHz
- **Inputs:**
  - (2) 0 TO 5 VDC GENERAL PURPOSE ANALOG INPUTS, 8 bit resolution
  - (1) 0 TO 5 VDC ANALOG OR TIMING INPUT, Hardware configurable to be PPU input or analog input

Product Usage Instructions

1. **Power Supply:**
   Ensure the power supply voltage is within the range of 9-32 Vdc for proper operation.
2. **Sensor Connection:**
   Connect external sensors to the internal 5 Vdc regulator for sensor power supply. Make sure the sensors draw no more than 0.03 A.
3. **Communication:**
   If using RS232 communication, ensure the optional module is installed. For CAN communication, ensure compliance with version 2.0b standards.

4. **LED Indicators:**
   Monitor the LED indicators – green for system power, green fo sensor power, yellow for mode indication, and red for status. These indicators provide essential information about the controller's operation.
5. **Connector**:
   Use the provided 18 pin Metri-Pack connector to interface with external devices.
6. **Environmental Considerations:**
   Ensure the controller is protected against moisture, vibration, shock, and EMI/RFI as per the specifications provided.
7. **Input Configuration:**
   Configure the analog inputs as needed for your application, keeping in mind the resolution and compatibility with different types of sensors.

Frequently Asked Questions (FAQ):

1. **Q: Is the SX microcontroller repairable?**
   A: No, the SX microcontroller is not repairable. In case of a failure, it needs to be replaced. Contact Danfoss Minneapolis Customer Service for replacement part information.
2. **Q: What kind of application software can run on the SX microcontroller?**
   A: The SX microcontroller is designed to run Personalities or control solution software engineered for specific machines. Contact Danfoss Minneapolis Customer Service for a list of available Personalities.

SX Microcontroller

- BLN-95-9067-2
- **Issue:** October 2002

DESCRIPTION

- Danfoss SX microcontroller is an environmentally hardened device that is an ideal platform for mobile machine software applications such as hydrostatic transmission automotive control, closed loop speed control, engine load control, and leader-follower control.
- The SX 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 valves.
- Standard, preprogrammed application solution software, called Personalities, make the SX a cost effective solution for OEMs looking to replace analog controls or to introduce micro electronic controls on their machines. Personalities are available for most common machine control applications, isolating OEMs from the need to write application software code. Personalities are readily tailored to specific machines by changing application tuning parameters through the use of Danfoss set-up software.

FEATURES

- Robust electronics operates 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 MCH68HC908 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 Danfoss micro electronic platforms
- WebGPI user interface
- Optional CAN 2.0b-compatible network communication

APPLICATION SOFTWARE

- SX is designed to run Personalities or control solution software engineered for a specific machine. Consult
- Danfoss Minneapolis Customer Service for a list of available Personalities.

ORDERING AND REPAIR INFORMATION

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

RELATED LITERATURE

- **UNIT SPECIFICATION SHEETS**
  - Unit specification sheets are specific to SX part numbers. Each unit specification sheet includes SX hardware I/O configuration, installation and pinout information.
- **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.

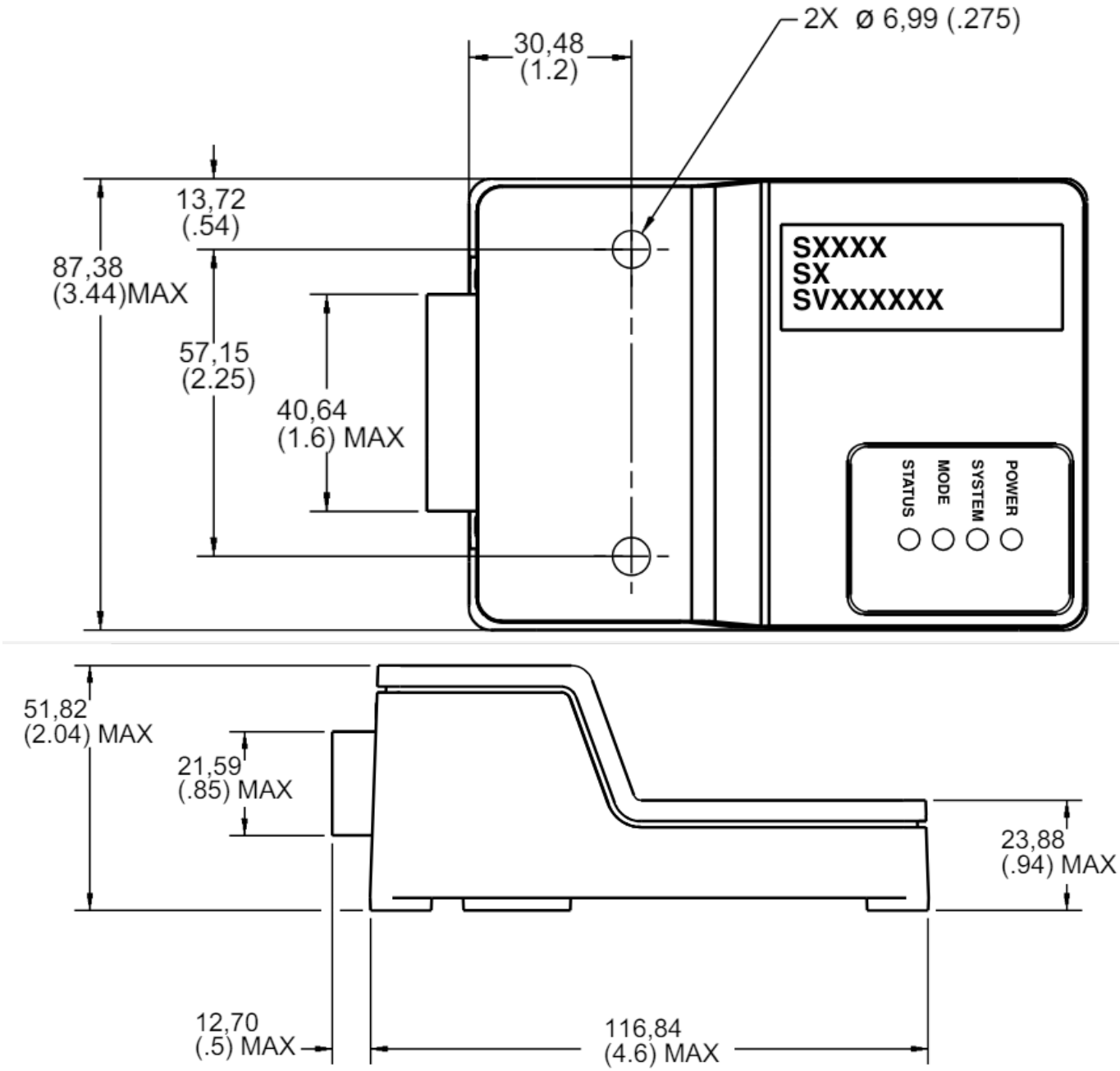
TECHNICAL DATA

- **POWER SUPPLY**
  - 9-32 Vdc
- **Power consumption:**
  - 2 W (With Digital and Valve

- Outputs Off)

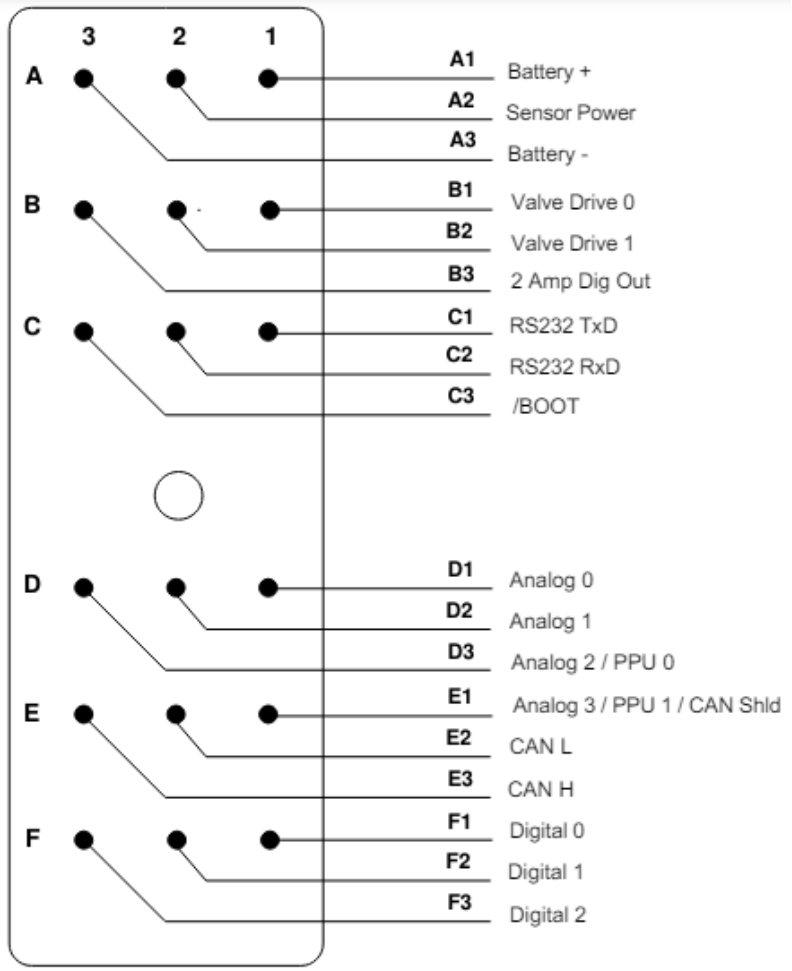
- **SENSOR POWER SUPPLY**
  - Internal 5 Vdc regulator for external sensor power (0.03 A, max)
- **COMMUNICATION**
  - RS232 (Optional) CAN, 2.0b compliant
- **LEDs**
  - (1) green system power indicator
  - (1) green 5 Vdc sensor power indicator
  - (1) yellow mode indicator (software configurable)
  - (1) red status indicator (software configurable)
- **CONNECTOR**
  - 18 pin Metra-Pack connector
  - MATING CONNECTOR BAG ASSEMBLY
  - Danfoss part number K23334
- **ENVIRONMENTAL**
  - OPERATING TEMPERATURE
  - -40° C to + 70° C
- **MOISTURE**
  - Protected against 95% relative humidity, high pressure wash downs and salt spray
- **VIBRATION**
  - 12 Gs swept sine, 0.765 octave/min in the range of 10 Hz to 2 Khz, 24 hours per axis in three axes
- **SHOCK**
  - 50 Gs for 11 ms waveform in all three axes for a total of 18 shocks EMI/RFI
  - 100 V/M in range of 1 MHz to 1 GHz
- **INPUTS**
  - (3) GENERAL PURPOSE SWITCHING DIGITAL INPUTS Hardware configurable to be switch to ground or switch to batt+
  - **Input resistance:** 15 ohm (± 5%)
  - **Pull-up resistance:** 15 ohm (± 5%)
  - (2) 0 TO 5 VDC GENERAL PURPOSE ANALOG INPUTS 8 bit resolution
  - (1) 0 TO 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
  - **Count frequency: 1** to 6000 HZ
  - Compatible with variable reluctance or active open collector PPU powered by 12 V or 24 V system
  - (1) 0 TO 5 VDC ANALOG OR TIMING INPUT OR CAN SHIELD
  - Hardware configurable
  - If configured as a PPU input, can be biased to + 5 Vdc or to ground
  - **Count frequency:** 1 to 6000 Hz
  - Compatible with variable reluctance or active open collector PPU powered by 12 V or 24 V system
- **OUTPUTS**
  - (2) HIGH SIDE PROPORTIONAL PWM VALVE DRIVERS WITH INTERNAL CURRENT FEEDBACK (2A MAX) Feedback sample resistor is hardware configurable
  - (1) HIGH CURRENT DIGITAL OUTPUT (2A MAX)

DIMENSIONS



Dimensions of the SX Microcontroller in Millimeters (Inches).

CONNECTOR PINOUTS



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 18 AWG 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 circuits have dedicated wired power sources and ground returns. They should be used.
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

Documents / Resources

	Danfoss BLN-95-9067 SX Microcontroller [pdf] Instruction Manual BLN-95-9067 SX Microcontroller, BLN-95-9067, SX Microcontroller, Microcontroller

References

- User Manual