**PRODUCT DESCRIPTION:**

Direct data-bus instruments (DDBI™) are ideal for electronic engines that broadcast data in an SAE J1939 format over a vehicle bus network. Instruments can be interfaced directly to the bus without using separate instrument controllers or "gateways" (e.g. a tachometer or display that provides inputs for gauges). This results in lower installed-system costs and improved reliability. DDBI™ units are "ruggedized" for extreme environmental use, with anti-fog coated lenses and sealing to +/- 6 psi. Units also feature LED backlighting and integral LED warning lights.

- SAE J1939 interface (also J1708/J1587)
- Digital and analog inputs (D/A and A/D functions)
- Reinforced glass-filled polyester cases, rugged yet lightweight
- Stepper motor drivers; full pointer sweep (270°) with RTZ feature
- LED backlighting (amber std.; red, orange, blue, white optional)
- Lighted pointers for improved night-time visibility
- Standard black dials, optional white

- Low-profile "streamline" bezels, polished stainless steel or black, or SAE step type, polished stainless steel or black anodized
- Domed or flat glass lens, anti-fog coated for all-weather use
- Integral LED warning lights in gauges
- Fully sealed, with integral Deutsch connectors
- #8-32 corrosion-resistant hardware
INSTRUMENT TYPES:

**Direct SAE J1939 Data-Bus Interface**
Information is pulled directly from the data-bus.
- Engine Oil Pressure; Water Temp; Trans Temp;
- Oil Temp; Voltmeter; Boost Pressure; Front Air Pressure;
- Rear Air Pressure; Fuel Level;
- Digital Voltmeter; Digital Hourmeter

**Analog-Resistive Direct To Sender**
Information comes directly from a standard (resistive) sender with an electrical match of 240 - 33.5 Ohm.
- Front Air Pressure; Rear Air Pressure;
  although not resistive, an analog voltmeter is available to match the rest of the DDBI™ line

**Analog-Voltage Direct From Sender**
Information comes directly from a sender with a 0.5 - 4.5 voltage output. Examples include voltage-out current transducers and voltage-output IntelliSensor®.
- Fuel Level; Ammeter

**Direct SAE J1939 Data-Bus Interface With Display & Fault Code Capability**
Include 2-line display, analog inputs, fault code display capability. Information pulled directly from data-bus as well as convert analog inputs to proper format and add this information to the data-bus.
- Tachometer; Speedometer

**Direct SAE J1939 Data-Bus Interface With Display**
Include 2-line display to indicate hours and trip hours (tachometer) or odometer and trip odometer (speedometer). Information pulled directly from data-bus.
- Tachometer; Speedometer

**Direct SAE J1939 Data-Bus Interface (No Display)**
Information pulled directly from data-bus.
- Tachometer; Speedometer

ELECTRICAL CONNECTIONS:

**2” Data-Bus Instrument Wiring**
- PIN CONNECTIONS
  1. IGNITION
  2. BUS 1-
  3. BUS 2-
  4. ILLUMINATION
  5. BUS SHIELD
  6. GROUND

**3” With Fault & Analog Input Wiring**
- PIN 1 CONNECTIONS
  1. IGNITION
  2. BUS 1-
  3. BUS 2-
  4. ILLUMINATION
  5. BUS SHIELD
  6. DIGITAL INPUT
  7. GROUND
- PIN 2 CONNECTIONS
  1. ILLUMINATION
  2. BUS 2-
  3. BUS 2+
  4. ANALOG IN 1
  5. ANALOG IN 2
  6. ANALOG IN 3

**2” Analog Instrument Wiring**
- PIN CONNECTIONS
  1. IGNITION
  2. N/C
  3. ANALOG INPUT
  4. ILLUMINATION
  5. N/C
  6. GROUND

**3” Without Fault or Analog Input Wiring**
- PIN 1 CONNECTIONS
  1. IGNITION
  2. BUS 1-
  3. BUS 1+
  4. ILLUMINATION
  5. BUS SHIELD
  6. GROUND
- PIN 2 CONNECTIONS NOT USED

SAMPLE DATA-BUS ILLUSTRATION:

**Termination Resistor**
120 ohm 1/2 watt
One resistor at each end of the data-bus backbone

**Battery**
Shield terminated at a single point only
Ground as close as practical to the battery ground

**Data-Bus Backbone**
Maximum Length = 40 Meters
Usually a shielded twisted pair of wires

**Chassis Controller**
DATA-BUS TAILS
Maximum length = 1 meter

**Transmission Controller**
DATA-BUS DEVICES

**Engine Controller**

**Data-Bus Device**
SAMPLE SYSTEM:
Example shows the inclusion of data from three resistive senders which is converted and broadcast onto the data-bus using our 3-3/8" instrument with display, analog inputs and fault code display capability. Many other layouts are possible.

SIMPLIFIED DDBI™ INSTRUMENT INTERACTION WITH DATA-BUS PACKETS:

Data traveling on twisted wire in the form of "packets" of information.

A  B  C  A  B  C  A  B  C  A  B  C  A  B  C

A - Controller ID - indicates which controller the data packet is from (i.e. transmission controller)
B - Defines what specific type of data will follow - i.e. oil temperature, specific type of fault code, etc.
C - Provides parameter data that the gauge will immediately display and then "listen" for its next packet

Each 2" DDBI™ instrument connects directly to the data-bus. Each gauge then "listens" to the information on the data-bus, retrieves the proper values and displays the information.

The 3-3/8" DDBI™ instruments with fault and analog input capabilities, when connected to a resistive 240-33.5 ohm sender, will convert and broadcast the sender information onto the data-bus where it can be used by any other device on the data-bus.
**TACHOMETERS/SPEEDOMETERS:**
- 3-3/8" tachometers & speedometers with display show fault codes and various engine operating parameters via 2-line LED backlit LCD display.*
- 3-3/8" tachometers without display provide only RPM.
  
  *For more information regarding fault codes, programming and installation, consult Maxima.

**GAUGES:**
- Full complement of digitally driven gauges for temperature, pressure, boost, volts and fuel with integral LED warning lights for operator alerts at pre-set thresholds to safeguard operation.
- Gauges are directly connected to bus network.
- Data-bus compatible gauges with A/D circuitry available for non-bus functions such as fuel, air pressure and volts.

**STYLES:**

<table>
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<th>BLACK LOW PROFILE</th>
<th>SS LOW PROFILE</th>
<th>BLACK STEP</th>
<th>SS STEP</th>
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<td><img src="image2" alt="SS Low Profile" /></td>
<td><img src="image3" alt="Black Step" /></td>
<td><img src="image4" alt="SS Step" /></td>
</tr>
</tbody>
</table>

Low profile black bezel, anodized, with domed glass lens
Low profile stainless steel bezel, polished, with domed glass lens
Black anodized SAE step bezel, with flat glass lens
Polished stainless steel SAE step bezel, with flat glass lens

**NOTES:**
- Appropriate engine/vehicle data assumed to be available on bus network.
- Maxima recommends using a DDBI™ compatible version of our electronic fuel level sensor the New IntelliSensor®.
- Consult with Maxima or your distributor for pricing information.
- Specifications in flyer were correct at time of printing.

**CONNECTIONS:**
- Fully sealed 6-pin Deutsch DT Series connectors.
- #8-32 mounting studs with corrosion resistant hardware.
- 1- or 6-gauge wiring harnesses available as options.

**DIMENSIONS:**

**2" Instruments**
- 2.30 DIA (58)
- 1.64 (41.7)
- 31/78 MAX PANEL
- 0.0204 (0.5134)

**3-3/8" Instruments**
- 3.01
- 1.86 MAX (47.2)
- 8-32 UNC (2 PLCS)
- 0.0204 (0.5134)

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