NGI® Next Generation Instrumentation

Multiplexed Instrumentation Solutions for All Vehicular Applications

Speedometers

with Built-In System Control Unit

Standard Features…

- Reliable, accurate, stepper motor pointer drive
- 270° pointer sweep, 10° oversweep for pointer re-zero
- U.S. or metric, single or dual scale
- White-on-black graphics (black-on-white optional)
- Choice of black, bright chrome, or satin chrome (shown) bezels
- LED backlighting and tip-to-hub illuminated orange pointers
- Six-function alphanumeric display with built-in alert transducer
- Conventional U-clamp mounting into 3⅜- and 5-inch panel cutouts
- Built-in System Control Unit with diagnostic functions
- J1708, J1850, or J1939 (CAN) input
- Four direct analog (resistive or voltage) inputs
- Nine logic inputs
- Menu-driven gauge and telltale test function

AMETEK Dixson's NGI System precision speedometers incorporate the very latest in technology and manufacturing techniques. Reliability is the key word throughout, with stepper-motor pointer drive, LEDs for dial backlighting and pointer illumination, o-ring sealing, and locking plug-in connectors.

High-visibility orange pointers and white graphics are standard. U.S. and metric scales, with or without subscales are available. Backlighting intensity can be varied by the dashlight dimmer.

Available in 3⅜- or 5-inch models, NGI speedometers fit standard panel cutouts and utilize standard U-clamp mounting, allowing retrofits with little or no modifications to the existing panel cutout.

How It Works…

The built-in System Control Unit (SCU) receives vehicle speed and other data from the vehicle's J1708 or J1939 (CAN) data bus. It converts these signals into pointer drive signals and places them on the NGI bus. Pointer drive signals are applied a stepper motor control circuit to drive the speedometer's stepper motor and pointer, and to other modules in the NGI System. The speedometer can be used as a stand-alone gauge, and can power up to 23 NGI modules. Metric and dual-scale versions available.

The maintenance-free speedometer rezeros itself each time the ignition is turned on and provides a visual indication whenever it detects a problem. The driver can switch the odometer and trip odometers between English and metric displays at any time.

A back-lit, 13-segment, 7-digit alphanumeric liquid crystal display driven by the SCU displays an odometer, two independently resettable trip odometers, an engine hourmeter, a system diagnostic test menu, and real-time warning messages. The driver selects which function to display using two pushbutton switches on the front of the speedometer. If desired, remote switches can be used. Trip-odometer data is stored in non-volatile memory.

The SCU also accepts four analog and nine logic inputs.

To aid the technician in troubleshooting problems, the six most recent fault codes are stored for later viewing using the two pushbutton switches. A comprehensive System Diagnostic Test menu allows the entire system as well as individually selected modules to be verified. The SCU can detect and report lost or out-of-range gauge data and loss of the vehicle data bus signal in real time.

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Standard Specifications

Physical Characteristics

Bezel	Black PC/ABS plastic
Case	White PC/ABS plastic
Lens	Glass with rubber O-ring seal
Pointer	Tip-to-tail illuminated orange
Dial graphics	Flat black with white scale
Backlighting	Amber LED with light pipe
Full scale reading	80 mph (250° pointer sweep)

Environmental Characteristics

Temperature and humidity	Meets or exceeds SAE#J1455-1984-08
Shock and vibration	Meets or exceeds SAE#J1455-1984-08
Salt spray	Meets or exceeds SAE#J1455-1984-08

Electrical Characteristics

Operating limits	9 to 32 VDC, reverse polarity protected
Jump-start protection:	
12-volt input	Withstands 24 VDC for 10 minutes
24-volt input	Withstands 36 VDC for 10 minutes
Transient protection	Meets or exceeds SAE #J1455-1984-08
Accuracy	Meets or exceeds SAE #J1399-1984-06

Inputs

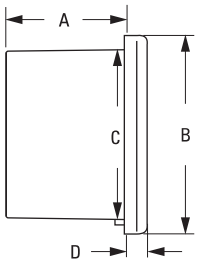
Power	Battery +, 10 to 32 VDC
Input current	500 mA maximum at 13.8 VDC nominal
Ground	Battery –
Backlight power	12 to 24 volts, variable through dimmer control
Ignition	Battery + through ignition switch
Databus	SAE J1708 or J1939/CAN
Analog	Four resistive or voltage
Switched	Three to ground, three to battery,and three factory-configurable

Alphanumeric Display

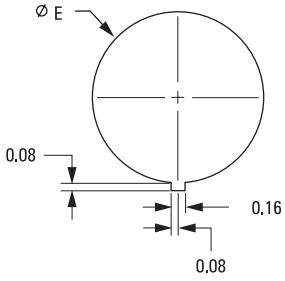
Type	Liquid crystal display
Backlight color	Amber
Number of digits	7 with decimal point and leading zero suppression
Segments per digit	13
Icons	**MI, KM, HR, TRIP1, TRIP2**
Display control	Two momentary pushbutton switches
Available displays:	
Odometer	0.0 to 999999.9, then 9999999, rollover to 0.0
Trip odometer 1	0.0 to 9999.9
Trip odometer 2	0.0 to 9999.9
Hourmeter	0 to 99999
System Diagnostic Test	Auto and Manual Test
Warning messages	Real-time, last 6 stored for recall

Installation Data

Gauge Dimensions



Panel Cut-Out Dimensions



Dimension	A	B	C	D	E
3-inch	2.69	3.82	3.39	0.31	3.41
5-inch	2.74	4.74	4.36	0.32	4.39

All dimensions are inches. Mounting hardware not shown.

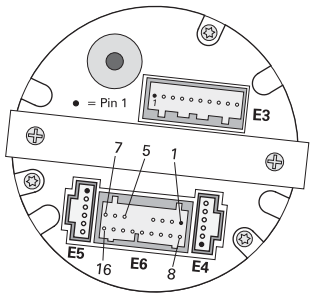
Mating Connector Manufacturer Part Numbers

E3 Housing: JAE IL-AG5-10S-S3C1
E6 Housing: JAE IL-AG5-16S-D3C1-A
E3/E6 Pins: JAE IL-AG5-C1-5000
E4 and E5: AMP 103957-5 (or equivalent)

Gauge Connectors

Connector E3

Pin #	Signal	Pin #	Signal
1	Battery + (9 to 32 VDC)	6	J1708 Bus –
2	Battery –	7	J1939 Bus +
3	Ignition + (switched)	8	J1939 Bus –
4	Backlight +	9	Reserved
5	J1708 Bus +	10	Backlight Gnd



Note: *E4/E5 are internally connected in parallel.*

Connector E6

Pin #	Signal	Pin #	Signal
1	Analog Input 1	9	Set Switch Input
2	Analog Input 2	10	Low Input 1
3	Analog Input 3	11	Low Input 2
4	Analog Input 4	12	Low Input 3
5	Analog Input Ground	13	Programable Input 3
6	High Input 1	14	Programable Input 2
7	High Input 2	15	Programable Input 1
8	Mode Switch Input	16	High Input 3

Connectors E4, E5

Pin #	Signal
1	NGI Power
2	NGI Ground
3	NGI Bus +
4	NGI Bus –
5	Backlight Ground
6	Backlight +

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