CURTIS® MODEL 2100R & 2200R Engine Gages

Read Instructions Carefully

Safety Instructions

This instrument was manufactured and tested according to the applicable technical standards. It complies with all the safety regulations as shipped from the factory.

Installation and startup must be performed by skilled personnel.

Failure to install and operate the unit in accordance with these instructions may result in damage or injury.

If safe operation of the instrument can no longer be ensured, stop and secure it against accidental operation.

If instrument failure or malfunction may cause personal injury or material damage, use additional safety measures such as limit switches, guards, etc.

Read the Operating Instructions carefully before startup.

Note the safety instructions marked with this warning symbol in this manual!

TABLE OF CONTENTS

	Page
1. Safety Instructions	2
2. Model Encodement	3
3. Technical Specifications	
3.1 Electrical	5
3.2 Mechanical	8
3.3 Environmental	9
4. Installation	11
5. Troubleshooting	14
6. Maintenance	15

2. MODEL ENCODEMENT

(for 2100R/2200R series)

2111RXX-YYYY ZZ

Model Numbers

2111 Temperature
2112 Fuel
2113 Pressure
2114 Voltage

2211 Temperature/Hour
2212 Fuel/Hour
2213 Pressure/Hour
2214 Voltage/Hour

R = case (round)
XX = voltage (DC voltages only)
YYYY = sequential number code
describes gage's factory programming
ZZ = artwork code (OO = Curtis)

3. TECHNICAL SPECIFICATIONS

3.1 Electrical

Operating Voltage

Model Series 2100R and 2200R are available in either 12VDC or 24VDC (negative ground systems only)

Operating Voltages

(Models 2111R, 2112R, 2113R and 2211R, 2212R, 2213R)

Model	Minimum	Nominal	Maximum
12V	9.0	12.0	16.0
24V	18.0	24.0	32.0

(Models 2114R and 2214R)

Model	Minimum	Nominal	Maximum
12V	8.0	12.0	18.0
24V	16.0	24.0	36.0

Accuracy

Maximum indicator error is less than ±3.5% of full scale

Operating Current

Total system current is a function of the voltage, sender type, display mode, and the gage's factory programming. Typical operating currents (not including the current to drive the sender) vary from 16-55 mA, for 12V models, depending on model number. For 24V models, typical operating currents (not including the current to drive the sender) vary from 18-45 mA, depending on model number.

Variable Parameters

The following parameters are set in the factory as part of the gage's programming. Contact Curtis for additional information on your specified model number.

Sender input: Variable resistance
Variable voltage
Variable current

Display mode
Single LED pointer*
Rising bar graph

Transition points for each of the 10 LEDs
(Used to customize display for OEM applications)

*indicates standard setting

Output signal trigger point (lower)
- First LED
- Second LED

Output signal trigger point (upper)
- Ninth LED
- Tenth LED

Output signal format—(upper and lower independently set)
- 0-5 V
- 5-0 V*

LED flashing mode (lower)
- No flashing
- First LED flashes alone
- First LED or second flashes alone
- Both first & second flash out of phase*

LED flashing mode (upper)
- No flashing
- Tenth LED flashes alone
- Both tenth & ninth flash in phase
- Both tenth & ninth flash out of phase*

*indicates standard setting

Damping and Hysteresis

Transducer power modulation (XPM)
Used to reduce current in sender circuit

Output signal format

Outputs are capable of sinking or sourcing up to 1mA, maximum (50μA maximum is standard)
The 5V-0 output signal format is fully compatible with the Curtis Model 1178 relay module.

3.2 Mechanical

Terminals (Spade)	6 ANSI/NEMA 0.25 inch male fast-ons	
Dimensions	Bezel diameter	58.8 mm, maximum
	Case diameter	51.5 mm, maximum
	Depth	45.0 mm, maximum (includes mounting studs)
Weight	70g, maximum	
Lens Material	Glass (plastic lens optional)	
Case Material	Black polycarbonate	

Bezel Material	Aluminum, black anodized
Hardware	U clamp (1)
(Individually boxed	4 mm lock washers (2)
units)	Female 1/4 inch fast-on connectors (up to 6)
	4 mm knurled thumbnuts (2)
Hardware	U clamp (1)
(OEM bulk packed)	4 mm lock washers (2)
	4 mm hex nuts (2)

3.3 Environmental

Temperature

Operating	-40C to +85C
Storage	-50C to +90C
Shock	Meets SAE J 1378 March 83.
	Amplitude 44-55g, half sine, 9-13 msec duration.

Vibration

Meets SAE J 1378 March 83.
Double amplitude of 1.53 mm with frequency sweep from 10-80-10 Hz (20 g max) at intervals of 1 minute.

Humidity

95% RH (non-condensing) at +38C

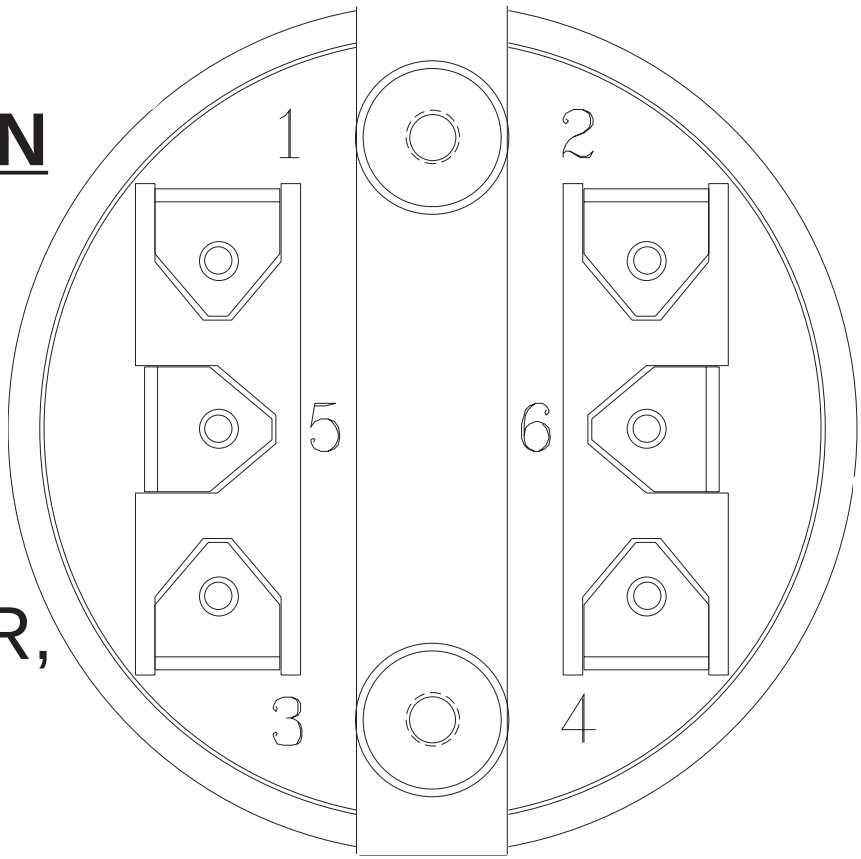
Water/dust immunity

Face	IP63
Rear	IP50

Salt spray (fog)

ASTM B 117-73 as per SAE J1810, section 4.7.1.2

4. INSTALLATION



Terminal Assignment for Models 2111R, 2112R, 2113R

1	Sender in
2	Battery +
3	Ground
4	Sender low (optional: for use with two wire senders)
5	Output signal (upper)
6	Output signal (lower)

Terminal Assignment for Model 2114R

1 Not Connected **
2 Battery +
3 Ground
4 Not Connected**
5 Output signal (upper)
6 Output signal (lower)

Terminal Assignments for Models 2211R, 2212R, 2213R

1 Sender in
2 Battery +
3 Ground
4 Hourmeter enable*
5 Output signal (upper)
6 Output signal (lower)

Terminal Assignments for Model 2214R

1 Not connected***
2 Battery +
3 Ground
4 Hourmeter enable***
5 Output signal (upper)
6 Output signal (lower)

* Options terminal can be factory programmed to function as hourmeter reset or sender low (for use with two wire senders)

**Options terminal-can be factory programmed to measure a separate variable voltage supply.

***Options terminals-can be factory programmed to measure a separate variable voltage supply. Hourmeter enable terminal could be factory programmed as an hourmeter reset.

5. TROUBLESHOOTING

The following checklist should help you to troubleshoot any problems with the instrument. Turning the instrument off and then on again after about 10 seconds may solve the problem in the simplest cases. Make sure to observe the safety instructions in Section 1.

Problem	Possible Cause
No display	Voltage on Battery + terminal insufficient
Display is not accurate	Check sender installation. Teflon tape, some lubricants and anti-sieze compounds may prevent proper grounding of single wire senders. Check sender-to-gage wiring for excessive resistance.

6. MAINTENANCE

Curtis 2100R & 2200R Series Engine Gages are not serviceable in the field. Units returned to the factory within the warranty period will be replaced without charge.

Guarantee - These Curtis Instruments' products are guaranteed against defects in workmanship and material for a period of three years, or as defined in the individual product literature, from date of shipment from our factory, when applied in a proper application within specified ratings. This guarantee is limited to repair or replacement F.O.B. our factory. There is no further warranty or implied representation, guarantee, promise or agreement as to any Curtis Instruments product and/or component. Curtis Instruments, Inc., cannot assume responsibility or accept invoices for unauthorized repairs to its products and/or components, even though defective. In no case will Curtis Instruments' responsibility extend to products, components or equipment not of its manufacture. Under no circumstances shall Curtis Instruments, Inc., be liable for any special or consequential damages or loss of profits or other damages. Returned goods will not be accepted unless identified by a Curtis Return Material Authorization (RMA).

All specifications are subject to change without notice.

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