



## LPI-B Specifications.

Input	-mV	Field Programmable: 1~1000mVdc and Bipolar. Minimum Input Resistance = 1MΩ. Maximum Over-range = 30Vdc Continuous. 3 Second Input Damping Selectable With S3-1.
Output	-mA -mV	2 Wire 4~20mA. (Loop Powered.) 40~200mV ∝ 4~20mA. (Indicative Test Signal Only.) Other Output Voltages Available. eg 1~5V.
Power Supply		8~40Vdc.
Supply Voltage Sensitivity		<±0.005%/V FSO.
Output Load Resistance		800Ω @ 24Vdc. (50Ω/V Above 8Vdc.)
Maximum Output Current		Limited to <28mA.
Accurate to		<±0.1% FSO Typical.
Linearity & Repeatability		<±0.1% FSO Typical.
Ambient Drift		<±0.02%/C FSO Typical.
Noise Immunity		125dB CMRR Average. (2.0kVac RMS Limit.)
R.F. Immunity		<1% Effect FSO Typical.
Isolation Voltage		2.0kVac/dc Input to Output for 60sec.
Response Time		200msec Typical. (10 to 90% 50msec Typical.)
Operating Temperature		0~70C.
Storage Temperature		-20~80C.
Operating Humidity		90%RH Max. Non-Condensing.
Construction		6.6 Polyamide Thermoplastic Rail Mount Enclosure.

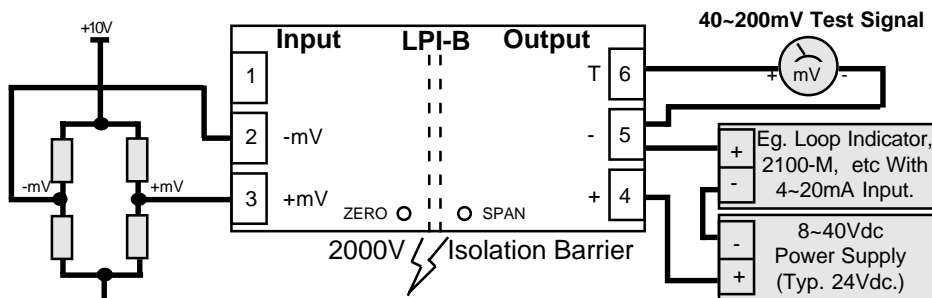
Note 1. Specifications based on Standard Calibration Unit, unless otherwise specified.

Note 2. Due to ongoing research and development, designs, specifications, and documentation are subject to change without notification.

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Note 3. Further ranging and installation information supplied with each unit, and is available upon request.

### Examples of Input Connection.

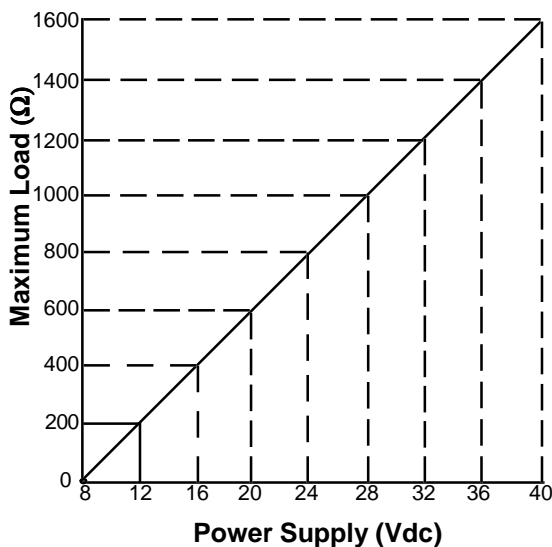


Note: Only use precision regulated power supply for bridge power supply.

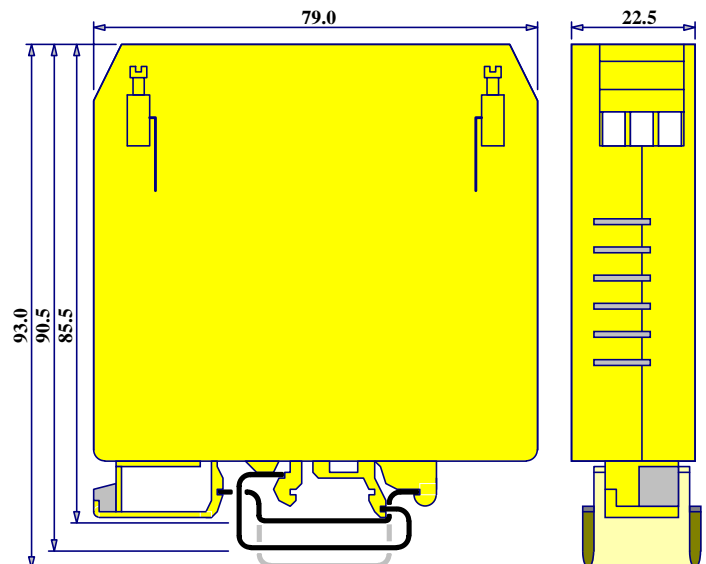
### Terminations.

Input	1	NC
	2	-mV
	3	+mV
Output	4	+mA
	5	-mA
	6	mV TEST

### Graph Of Maximum Load Versus Power Supply.



### Enclosure Dimensions.



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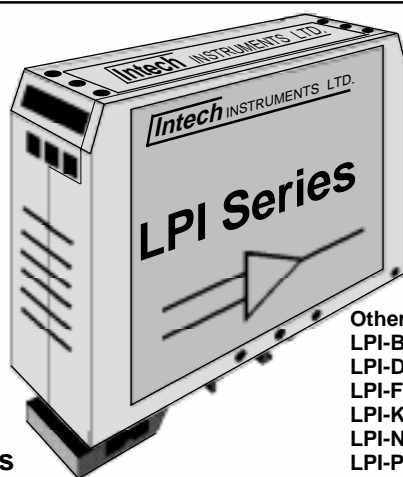
lpi-b\_2p.p65  
ISSUE 050300

# LPI-R RTD Transmitter.

Isolating, Linearised, 3 Wire RTD  
Input, to 4~20mA Output,  
Loop Powered Transmitter.

## Features.

- Pt100 RTD Standard Input.
- Isolated Input to Output 2.0kV
- Field Programmable Input Ranges. (LPI-R-P)
- High Accuracy.
- Linear With Temperature
- 40~200mV Output Test Signal.
- LED Indication of Loop Current.
- Low Cost.
- Compact DIN Rail Mount Enclosure.
- Available Standard or Special Calibration.
- Reverse Polarity Protection.
- Corrosion Proofed Circuit Board & Components by Isonel 642. (Except Terminals & DIP Switches)



Other LPI- models include:  
LPI-B :Bridge / Strain gauge;  
LPI-D :DC;  
LPI-F :Frequency;  
LPI-K :Resistance;  
LPI-N :Differential Pt100 RTD;  
LPI-P :Potentiometer;  
LPI-T :Thermocouple;  
LPI-DO2 :DO2, LCD Display;  
LPI-pH :pH, LCD Display;  
LPI-ORP :ORP, LCD Display;

## Ordering Information.

- LPI-R-F-X Standard, 0~100C Input, Upscale, Fixed Input Range Calibration.
- LPI-R-F---Special Range Special Fixed Input Range Calibration.  
IR SB
- LPI-R-P-X Standard, 0~100C Input, Upscale, Programmable Input Range Calibration.
- LPI-R-P---Special Range Special Programmable Input Range Calibration.  
IR SB

Standard Unit Pt100 input, upscale sensor break. Other types of RTD available in special range calibration are JIS Pt100, Pt250, Pt500, Pt1000, CU10, CU100, Ni100 or specify.

INPUT RANGES (DIN PT100)								SENSOR BREAK	
deg C	IR	deg C	IR	deg F	IR	deg F	IR	STATE	SB
0~20C	1	-10~10C	21	0~40F	41	-20~20F	61	Upscale	US
0~25C	2	-10~20C	22	0~50F	42	-20~40F	62	Downscale	DS
0~30C	3	-10~40C	23	0~60F	43	-20~80F	63		
0~40C	4	-20~20C	24	0~80F	44	-40~40F	64		
0~50C	5	-20~30C	25	0~100F	45	-40~60F	65		
0~60C	6	-25~25C	26	0~120F	46	-50~50F	66		
0~70C	7	-25~50C	27	0~140F	47	-50~100F	67		
0~75C	8	-30~20C	28	0~150F	48	-60~40F	68		
0~80C	9	-50~50C	29	0~160F	49	-100~100F	69		
0~90C	10	-50~100C	30	0~180F	50	-100~200F	70		
0~100C	11	-50~150C	31	0~200F	51	-100~300F	71		
0~110C	12	-100~100C	32	0~220F	52	-200~200F	72		
0~120C	13	-100~200C	33	0~240F	53	-200~400F	73		
0~125C	14	-200~200C	34	0~250F	54	-400~400F	74		
0~150C	15	-200~400C	35	0~300F	55	-400~800F	75		
0~200C	16	20~40C	36	0~400F	56	40~80F	76		
0~250C	17	50~100C	37	0~500F	57	100~200F	77		
0~300C	18	50~150C	38	0~600F	58	100~300F	78		
0~400C	19	100~200C	39	0~800F	59	200~400F	79		
0~600C	20	100~500C	40	0~1200F	60	200~1000F	80		
Special Input Range			Z	Special Input Range			Z		

## Ordering Examples.

- LPI-R-P-5 LPI-R; Programmable; 0~50C In; Upscale Break; Loop Powered 4~20mA Output.
- LPI-R-F-56-DS LPI-R; Fixed Range; 0~400F In; Downscale Break; Loop Powered 4~20mA Output.

## Quality Assurance Programme.

The modern technology and strict procedures of the ISO9001 Quality Assurance Programme applied during design, development, production and final inspection grant the long term reliability of the instrument.

## LPI-R Specifications.

RTD Input		Pt100 DIN (3 Wire Type) Standard. Sensor Current = 0.8mA. Lead Wire Resistance = 10Ω/Wire Max. Field Programmable Zero: -200C (-400F) to 200C (400F). (LPI-R-P Only.) Field Programmable Span: 20C (40F) to 400C (800F). (LPI-R-P Only.) Suitable for 2 Wire Connection. (Offset Calibration needed.) Other Types of RTD Available. JIS Pt100, Pt250, Pt500, Pt1000, CU10, CU100, Ni100 or specify.
Output	-mA -mV	2 Wire 4~20mA. (Loop Powered.) 40~200mV ∝ 4~20mA. (Indicative Test Signal Only.) Other Output Voltages Available. eg 1~5V.
Power Supply		8~40Vdc.
Supply Voltage Sensitivity		<±0.005%/V FSO.
Output Load Resistance		800Ω @ 24Vdc. (50Ω/V Above 8Vdc.)
Maximum Output Current		Limited to <28mA.
Sensor Fail	-Upscale -Downscale	23mA Min. 3.6mA Max.

Accurate to	<±0.1% FSO Typical.
Linearity & Repeatability	<±0.1% FSO Typical.
Ambient Drift	<±0.02%/C FSO Typical.
Noise Immunity	125dB CMRR Average. (2.0kVac RMS Limit.)
R.F. Immunity	<1% Effect FSO Typical.
Isolation Voltage	2.0kVac/dc Input to Output for 60sec.
Response Time	200msec Typical. (10 to 90% 50msec Typical.)
Operating Temperature	0~70C.
Storage Temperature	-20~80C.
Operating Humidity	90%RH Max. Non-Condensing.
Construction	6.6 Polyamide Thermoplastic Rail Mount Enclosure.

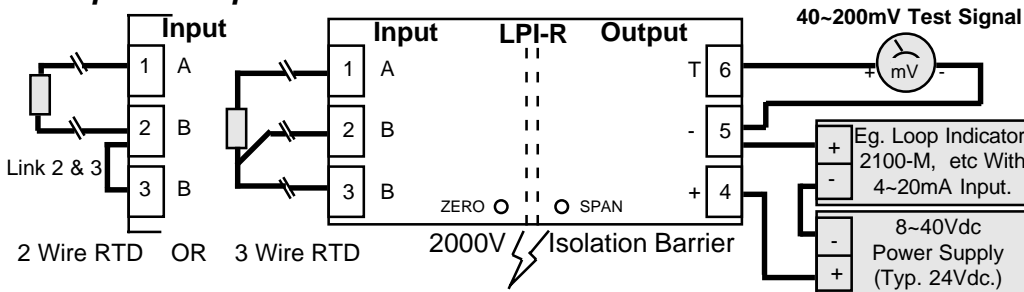
Note 1. Specifications based on Standard Calibration Unit, unless otherwise specified.

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Note 3. Further ranging and installation information supplied with each unit, and is available upon request.

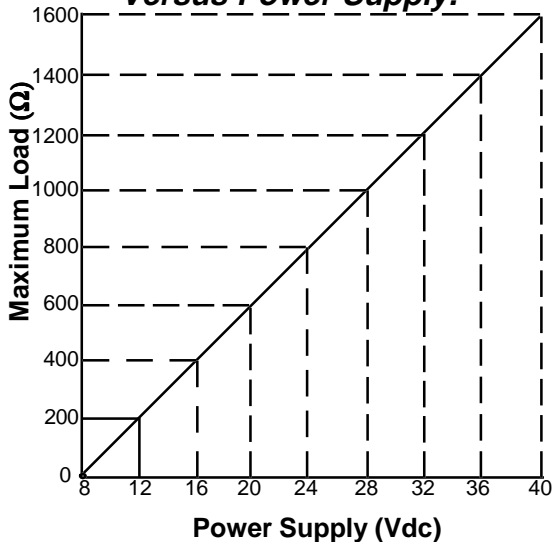
### Examples of Input Connection.



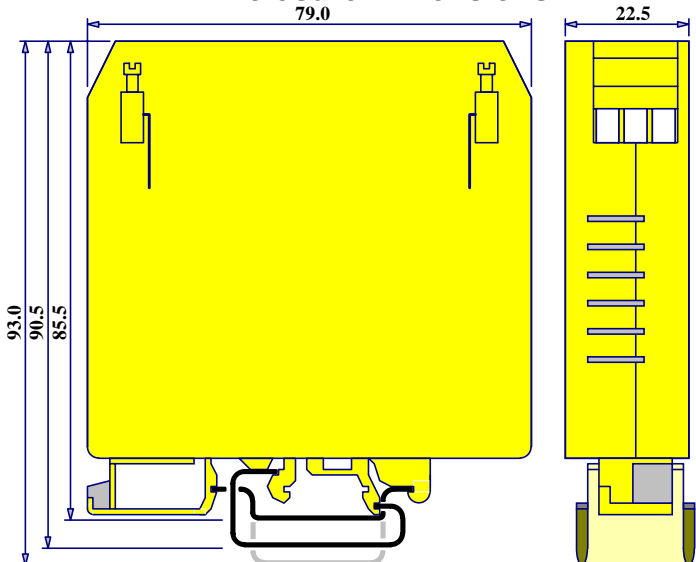
### Terminations.

Input	1	A
	2	B
	3	B
Output	4	+mA
	5	-mA
	6	mV TEST

**Graph Of Maximum Load Versus Power Supply.**



**LPI-R Enclosure Dimensions.**



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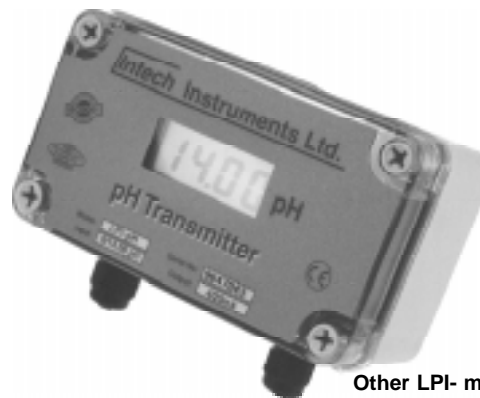
lpi-r\_2p.p65  
 ISSUE 050300

# LPI-pH pH Transmitter.

Isolating pH Voltage Input  
to 4~20mA Output  
Loop Powered Transmitter.

## Features.

- Isolated Input to Output 2.0kV.
- Bi-Polar pH Cell Input.
- IP67 Rated Enclosure.
- Liquid Crystal Display (LCD) 0~14.00pH.
- High Accuracy.
- 40~200mV Output Test Signal
- Low Cost.
- Easy to Install.
- Reverse Polarity Protection.
- Internally Accessible, Finger Adjustable, *SLOPE & OFFSET* Adjustments.
- Selectable, Automatic or Fixed Probe Temperature Compensation.
- Corrosion Proofed Circuit Boards & Components by Isonel 642. (Except terminals & DIP Switch.)



Other LPI- models include:  
 LPI-B :Bridge / Strain gauge;  
 LPI-D :DC;  
 LPI-F :Frequency;  
 LPI-K :Resistance;  
 LPI-N :Differential Pt100 RTD;  
 LPI-P :Potentiometer;  
 LPI-R :Pt100 RTD;  
 LPI-T :Thermocouple;  
 NOTE: These other models do not include LCDs, and have DIN rail mount enclosures.  
 LPI-DO2 :DO2, LCD Display;  
 LPI-ORP :ORP, LCD Display;

## Description.

The LPI-pH is a loop powered, isolated, pH Cell input, to 4~20mA output transmitter, with integral Pt100 RTD temperature compensation, and LCD display of 0~14.00pH.

The LPI-pH is the device to choose when a pH probe is installed in a corrosive, damp, high earth current or electrically noisy environment. The IP67 rating of the transmitter enclosure, together with the corrosion proofed circuit board, give the LPI-pH high immunity to damp and corrosion, allowing it to be mounted close to the pH probe. Having the transmitter close to the pH probe means that the highly sensitive pH probe output signal is amplified and turned into a robust 4~20mA signal before noise exposure from long cable runs can effect it.

The unit also features internally accessible, finger adjustable, 15 turn slope and offset adjustments, for easy calibration of the pH sensor, in conjunction with the LCD Display.

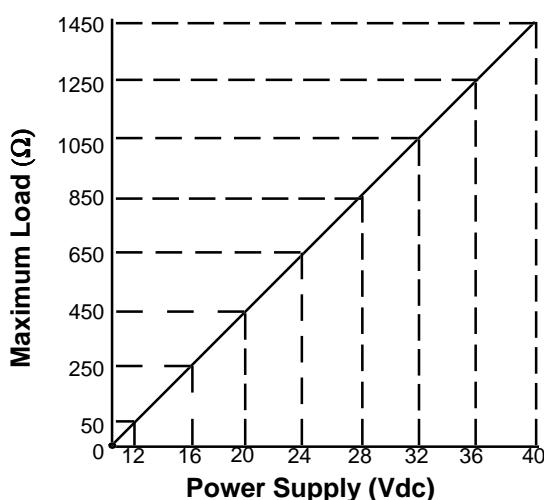
The 4~20mA output from the LPI-pH can be run for long distances to better environments where standard process controllers can be used safely. The LPI-pH fills a niche where it has often been necessary to install low IP rated, dedicated pH instruments in an aggressive environment.

## Ordering Information.

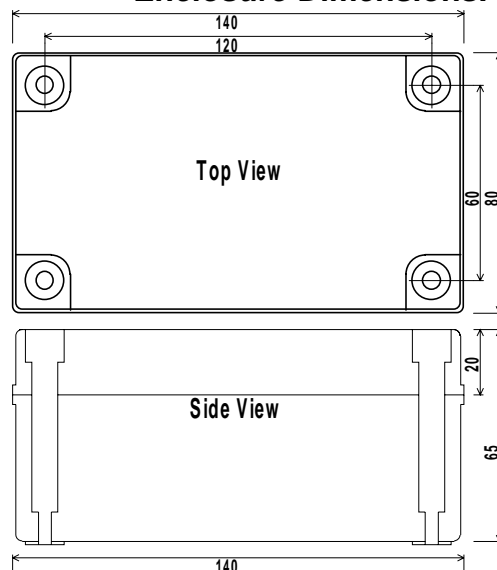
**LPI-pH**

Standard Unit: 0~14pH In, 4~20mA Out, with LCD Display.

## Graph Of Maximum Load Versus Power Supply.



## Enclosure Dimensions. (mm)



## Quality Assurance Programme.

The modern technology and strict procedures of the ISO9001 Quality Assurance Programme applied during design, development, production and final inspection grant the long term reliability of the instrument.

## LPI-pH Specifications.

Input	-pH	-379.0~379.0mV. Standard Calibration (pH Probe @ 20C).
	-Temperature	Pt100 RTD, 0~100C
pH Input Impedance		10 <sup>12</sup> Ω
Default Temperature Compensation <sup>1)</sup>		20C (See Note 1.)
Slope Adjustment Range		200~420mV Standard Calibration.
Offset Adjustment Range		±10% Standard Calibration.
Output	-mA	2 wire 4~20mA. (Loop Powered.)
	-mV	40~200mV ∝ 4~20mA. (Indicative Test Signal Only.)
		Other Output Voltages Available. eg. 1~5V.
Power Supply		11~40Vdc.
Supply Voltage Sensitivity		<±0.005%/V FSO.
Output Load Resistance		650Ω @ 24Vdc. (50Ω/V Above 11Vdc.)
Maximum Output Current		Limited to <28mA.
Accurate to		<±0.1% FSO Typical.
Linearity & Repeatability		<±0.1% FSO Typical.
Ambient Drift		<±0.02%/C FSO Typical.
Noise Immunity		125dB CMRR Average. (2.0kV RMS Limit.)
R.F. Immunity		<1% Effect FSO Typical.
Isolation Voltage		2.0kVac/dc Input to Output for 60sec.
Operating Temperature		0~70C.
Storage Temperature		-20~80C.
Operating Ambient Humidity		90%RH Max. Non-condensing.
Construction	-Enclosure	IP67 Rated, Impact Resistant, Polycarbonate,
	-Glands	IP68 Rated Nylon, Rated to UL94-V2 to Take 3~6mm Cable Size.
Display	-Display.	12.5mm, 3½ Digit, LCD.
	-Resolution	0.01pH.

Note 1. A Dip-switch is provided on the circuit board to select either a fixed 20C temperature compensation or automatic external compensation.

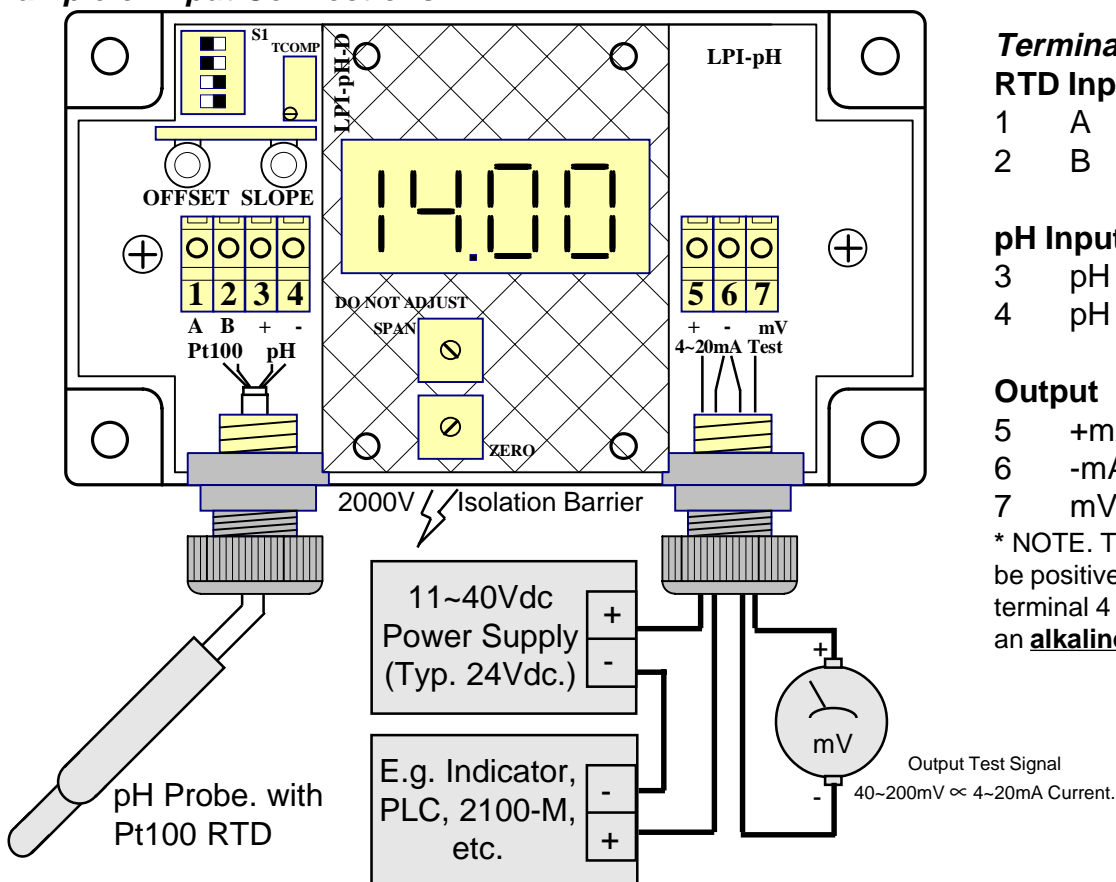
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Note 4. Further ranging and installation information supplied with each unit, and is available upon request.

## Example of Input Connections.



## Terminations.

### RTD Input

- 1 A
- 2 B

### pH Input

- 3 pH +mV
- 4 pH -mV \*

### Output

- 5 +mA
- 6 -mA
- 7 mV TEST

\* NOTE. Terminal 3 needs to be positive with respect to terminal 4 with the probe in an **alkaline** solution.

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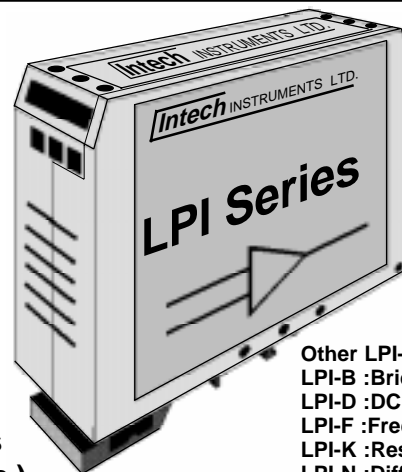
lpi-ph\_2.p65  
ISSUE 050300

# LPI-P Potentiometer Transmitter.

Isolating 3 Wire Potentiometer  
Input to 4~20mA Output  
Loop Powered Transmitter.

## Features.

- Field Programmable Input Ranges.
- Isolated Input to Output 2.0kV.
- High Accuracy.
- 40~200mV Output Test Signal.
- LED Indication of Loop Current.
- Low Cost.
- Easy to Install.
- Compact DIN Rail Mount Enclosure.
- Available Standard or Special Calibration.
- Reverse Polarity Protection.
- Corrosion Proofed Circuit Board & Components by Isonel 642. (Except Terminals & DIP Switches.)



Other LPI- models include:  
LPI-B :Bridge / Straingauge;  
LPI-D :DC;  
LPI-F :Frequency;  
LPI-K :Resistance;  
LPI-N :Differential Pt100 RTD;  
LPI-R :Pt100 RTD;  
LPI-T :Thermocouple;  
LPI-DO2 :DO2, LCD Display;  
LPI-ORP :ORP, LCD Display;  
LPI-pH :pH, LCD Display.

## Ordering Information.

LPI-P-X Standard 0~100% Input; Programmable Input Range; Calibration.

LPI-P -  -Special Range Special Programmable Input Range Calibration.  
IR

INPUT RANGE (% of POTENTIOMETER.)			
%POT	IR	%POT	IR
0~10%	1	20~40%	16
0~15%	2	40~60%	17
0~20%	3	60~80%	18
0~25%	4	80~100%	19
0~30%	5	25~50%	20
0~33%	6	50~75%	21
0~40%	7	75~100%	22
0~50%	8	33~67%	23
0~60%	9	67~100%	24
0~67%	10	50~100%	25
0~70%	11	10~90%	26
0~75%	12	20~80%	27
0~80%	13	25~75%	28
0~90%	14	30~70%	29
0~100%	15	40~80%	30
Special Input Calibration Range			Z

## Ordering Examples.

LPI-P-8 LPI-P; 0~50% Input; Loop Powered 4~20mA Output.

LPI-P-26 LPI-P; 10~90% Input; Loop Powered 4~20mA Output.

## Quality Assurance Programme.

The modern technology and strict procedures of the ISO9001 Quality Assurance Programme applied during design, development, production and final inspection grant the long term reliability of the instrument.

## LPI-P Specifications.

Potentiometer Input		3 Wire Potentiometer. Excitation = 0.25V. Minimum Potentiometer Resistance = 1kΩ. Maximum Potentiometer Resistance = 1MΩ. Field Programmable Zero From 0 to 100%. Field Programmable Span From 0 to 100%.
Output	- mA	2 Wire 4~20mA. (Loop Powered.)
	- mV	40~200mV ∝ 4~20mA. (Indicative Test Signal Only.) Other Output Voltages Available. eg 1~5V.
Power Supply		8~40Vdc.
Supply Voltage Sensitivity		<±0.005%/V FSO.
Output Load Resistance		800Ω @ 24Vdc. (50Ω/V Above 8Vdc.)
Maximum Output Current		Limited to <28mA.
Accurate to		<±0.1% FSO Typical.
Linearity & Repeatability		<±0.1% FSO Typical.
Ambient Drift		<±0.02%/C FSO Typical.
Noise Immunity		125dB CMRR Average. (2.0kVac RMS Limit.)
R.F. Immunity		<1% Effect FSO Typical.
Isolation Voltage		2.0kVac/dc Input to Output for 60sec.
Response Time		200msec Typical. (10 to 90% 50msec Typical.)
Operating Temperature		0~70C.
Storage Temperature		-20~80C.
Operating Humidity		90%RH Max. Non-Condensing.
Construction		6.6 Polyamide Thermoplastic Rail Mount Enclosure.

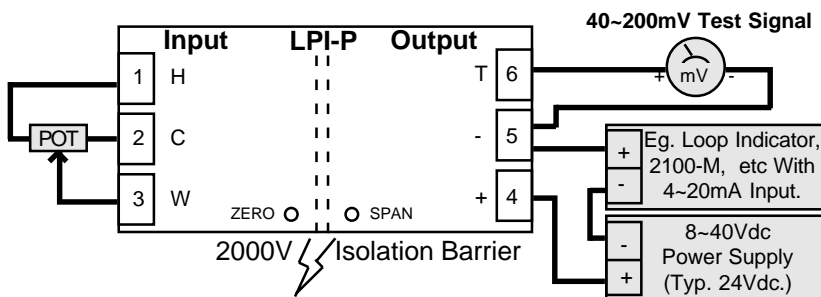
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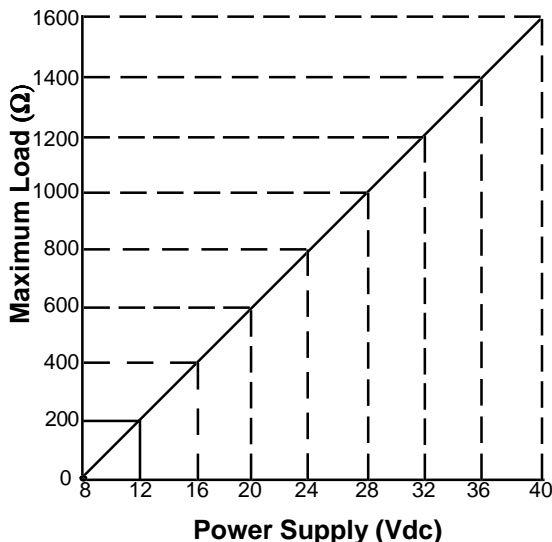
## Examples of Input Connection.



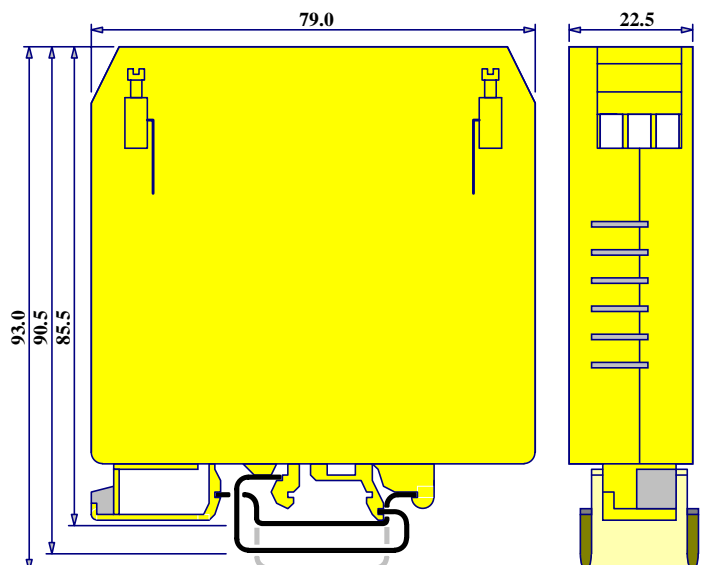
## Terminations.

Input	1	HIGH
	2	COM
	3	WIPER
Output	4	+mA
	5	-mA
	6	mV TEST

## Graph Of Maximum Load Versus Power Supply.



## Enclosure Dimensions.



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lpi-p\_2p.p65  
ISSUE 050300



# LPI-ORP ORP Transmitter.

Isolating ORP Input  
to 4~20mA Output  
Loop Powered Transmitter.

## Features.

- Isolated Input to Output 2.0kV.
- Oxygen Reduction Probe Input.
- IP67 Rated Enclosure.
- High Accuracy.
- 40~200mV Output Test Signal
- Low Cost.
- Easy to Install.
- Reverse Polarity Protection.
- Internally Accessible, Finger Adjustable, *SLOPE & OFFSET* Adjustments.
- Corrosion Proofed Circuit Boards & Components by Isonel 642. (Except terminals & DIP Switch.)



Other LPI models include:  
 LPI-B :Bridge / Strain gauge;  
 LPI-D :DC;  
 LPI-F :Frequency;  
 LPI-K :Resistance;  
 LPI-N :Differential Pt100 RTD;  
 LPI-P :Potentiometer;  
 LPI-R :Pt100 RTD;  
 LPI-T :Thermocouple.  
 NOTE: These above models do not include LCD displays, and have DIN rail mount enclosures.  
 LPI-DO2 :DO<sub>2</sub>, LCD Display;  
 LPI-pH :pH, LCD Display;

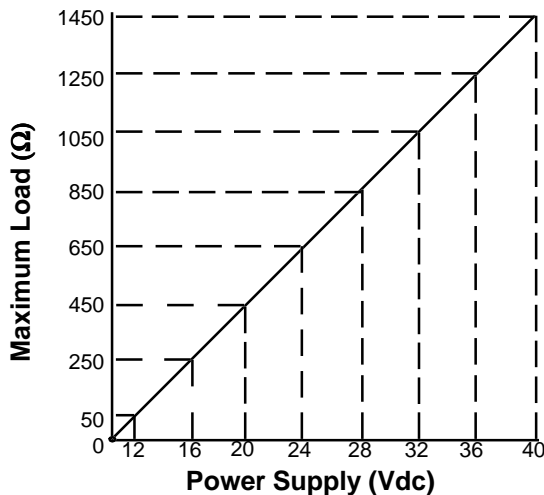
## Ordering Information.

**LPI-ORP**

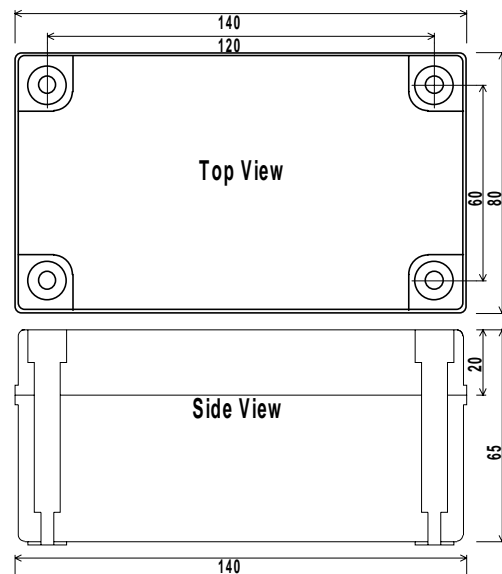
Standard Unit: 0~1000mV In, 4~20mA Out.

Optional: -1500~1500mV In, 4~20mA out.

## Graph Of Maximum Load Versus Power Supply.



## Enclosure Dimensions. (mm)



## Quality Assurance Programme.

The modern technology and strict procedures of the ISO9001 Quality Assurance Programme applied during design, development, production and final inspection grant the long term reliability of the instrument.

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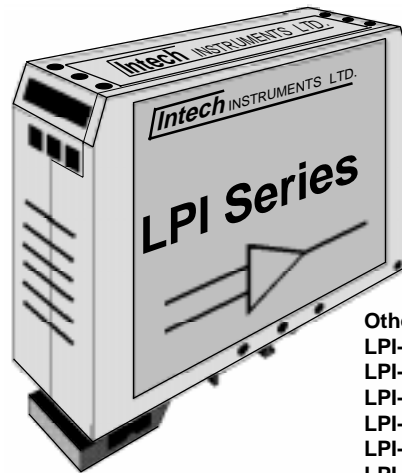
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 ISSUE 110400

# LPI-N Differential RTD Transmitter.

Isolating, Differential 2 Wire  
RTD Input, to 4~20mA Output,  
Loop Powered Transmitter.

## Features.

- Differential Pt100 RTD Standard Input.
- Isolated Input to Output 2.0kV.
- Field Programmable Input Ranges.
- High Accuracy.
- Linear With Temperature
- 40~200mV Output Test Signal.
- LED Indication of Loop Current.
- Low Cost.
- Easy to Install.
- Compact DIN Rail Mount Enclosure.
- Available Standard or Special Calibration.
- Reverse Polarity Protection.
- Corrosion Proofed Circuit Board & Components by Isonel 642. (Except Terminals & DIP Switches.)



Other LPI- models include:  
LPI-B :Bridge / strain gauge;  
LPI-D :DC;  
LPI-F :Frequency;  
LPI-K :Resistance;  
LPI-P :Potentiometer;  
LPI-pH :pH Levels. IP67 Encl;  
LPI-R :Pt100 RTD;  
LPI-T :Thermocouple.  
LPI-DO2 :DO2, LCD Display;  
LPI-ORP :ORP, LCD Display;  
LPI-pH :pH, LCD Display.

## Ordering Information.

LPI-N-X

Standard, 0~100C Input; Upscale; Programmable Input Range Calibration.

LPI-N-  -  -Special Range  
IR SB

Special Programmable Input Range Calibration.

Standard unit Pt100 input, upscale sensor break. Other types of RTD available in special range calibration are JIS Pt100, Pt250, Pt500, Pt1000, CU10, CU100, Ni100 or specify.

INPUT RANGES (DIN PT100) INPUT RANGES								SENSOR BREAK	
deg C	IR	deg C	IR	deg F	IR	deg F	IR	STATE	SB
0~20C	1	-10~10C	21	0~40F	41	-20~20F	61	Upscale	US
0~25C	2	-10~20C	22	0~50F	42	-20~40F	62	Downscale	DS
0~30C	3	-10~40C	23	0~60F	43	-20~80F	63		
0~40C	4	-20~20C	24	0~80F	44	-40~40F	64		
0~50C	5	-20~30C	25	0~100F	45	-40~60F	65		
0~60C	6	-25~25C	26	0~120F	46	-50~50F	66		
0~70C	7	-25~50C	27	0~140F	47	-50~100F	67		
0~75C	8	-30~20C	28	0~150F	48	-60~40F	68		
0~80C	9	-50~50C	29	0~160F	49	-100~100F	69		
0~90C	10	-50~100C	30	0~180F	50	-100~200F	70		
0~100C	11	-50~150C	31	0~200F	51	-100~300F	71		
0~110C	12	-100~100C	32	0~220F	52	-200~200F	72		
0~120C	13	-100~200C	33	0~240F	53	-200~400F	73		
0~125C	14	-200~200C	34	0~250F	54	-400~400F	74		
0~150C	15	-200~400C	35	0~300F	55	-400~800F	75		
0~200C	16	20~40C	36	0~400F	56	40~80F	76		
0~250C	17	50~100C	37	0~500F	57	100~200F	77		
0~300C	18	50~150C	38	0~600F	58	100~300F	78		
0~400C	19	100~200C	39	0~800F	59	200~400F	79		
0~600C	20	100~500C	40	0~1200F	60	200~1000F	80		
Special Input Range			Z	Special Input Range			Z		

## Ordering Examples.

LPI-N-5                      LPI-N; 0~50C In; Upscale Break; Loop Powered 4~20mA Output.

LPI-N-56-DS                LPI-N; 0~400F In; Downscale Break; Loop Powered 4~20mA Output.

## Quality Assurance Programme.

The modern technology and strict procedures of the ISO9001 Quality Assurance Programme applied during design, development, production and final inspection grant the long term reliability of the instrument.

## LPI-N Specifications.

RTD Input		Pt100 DIN (2 Wire Type) Standard. Sensor Current = 0.8mA. Field Programmable Zero: -200C (-400F) to 200C (400F). Field Programmable Span: 20C (40F) to 400C (800F). Other Types of RTD Available. JIS Pt100, Pt250, Pt500, Pt1000, CU10, CU100, Ni100 or Specify.
Output	-mA -mV	2 Wire 4~20mA. (Loop Powered.) 40~200mV $\propto$ 4~20mA. (Indicative Test Signal Only.) Other Output Voltages Available. eg 1~5V.
Power Supply		8~40Vdc.
Supply Voltage Sensitivity		$<\pm 0.005\%/V$ FSO.
Output Load Resistance		800 $\Omega$ @ 24Vdc. (50 $\Omega/V$ Above 8Vdc.)
Maximum Output Current		Limited to $<28$ mA.
Sensor Fail	-Upscale -Downscale	23mA Min. 3.6mA Max.
Accurate to		$<\pm 0.1\%$ FSO Typical.
Linearity & Repeatability		$<\pm 0.1\%$ FSO Typical.
Ambient Drift		$<\pm 0.02\%/C$ FSO Typical.
Noise Immunity		125dB CMRR Average. (2.0kVac RMS Limit.)
R.F. Immunity		$<1\%$ Effect FSO Typical.
Isolation Voltage		2.0kVac/dc Input to Output for 60sec.
Response Time		200msec Typical. (10 to 90% 50msec Typical.)
Operating Temperature		0~70C.
Storage Temperature		-20~80C.
Operating Humidity		90%RH Max. Non-Condensing.
Construction		6.6 Polyamide Thermoplastic Rail Mount Enclosure.

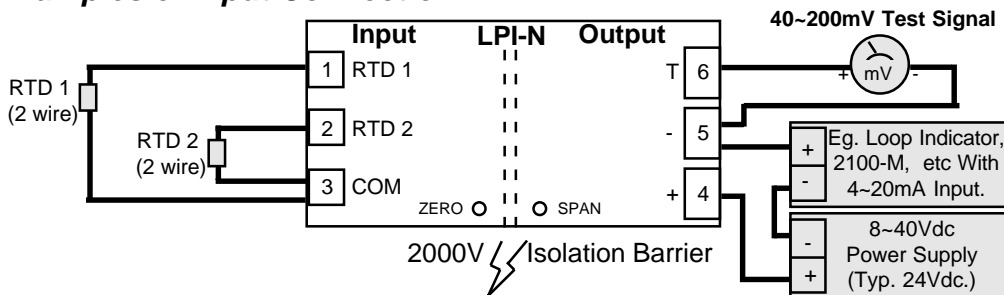
Note 1. Specifications based on Standard Calibration Unit, with RTD 2 at 0C, unless otherwise specified.

Note 2. Due to ongoing research and development, designs, specifications, and documentation are subject to change without notification.

No liability will be accepted for errors, omissions or amendments to this specification.

Note 3. Further ranging and installation information supplied with each unit, and is available upon request.

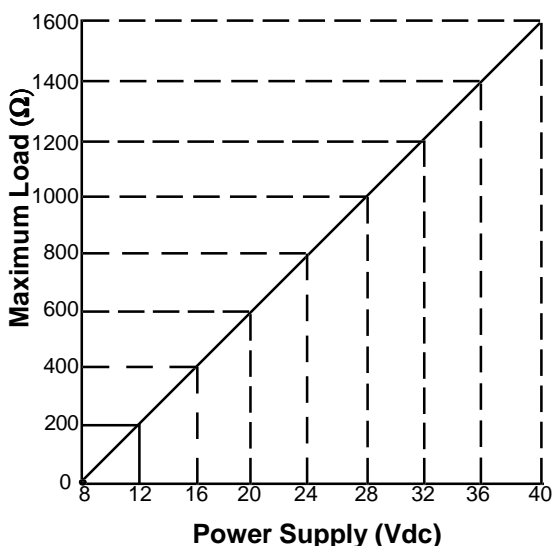
### Examples of Input Connection.



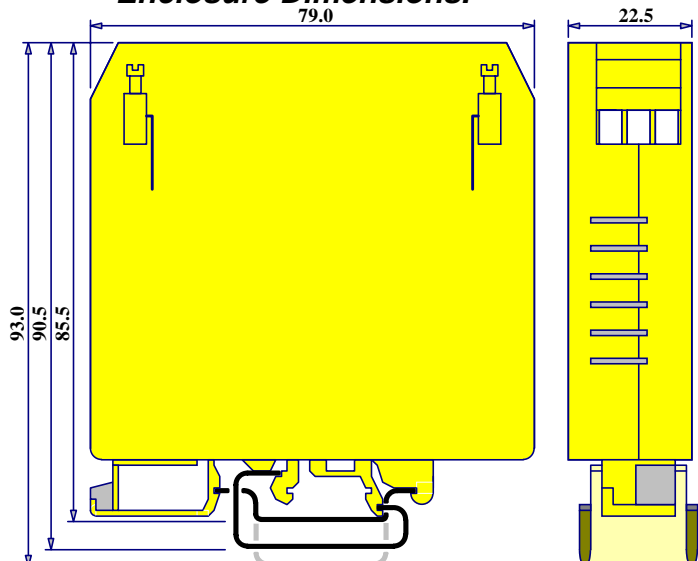
### Terminations.

Input	1	RTD 1
	2	RTD 2
	3	COM
Output	4	+mA
	5	-mA
	6	mV TEST

### Graph Of Maximum Load Versus Power Supply.



### Enclosure Dimensions.



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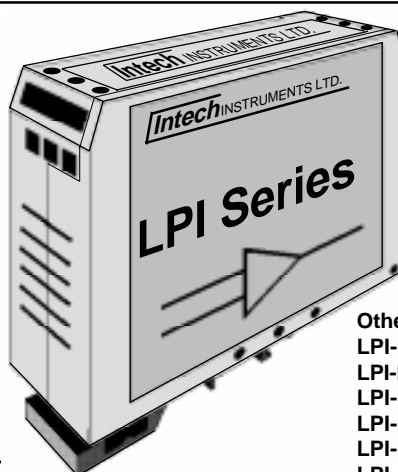
lpi-n\_2p.p65  
ISSUE 050300

# LPI-K Resistance Transmitter.

Isolating, Resistance Input  
to 4~20mA Output,  
Loop Powered Transmitter.

## Features.

- Field Programmable Input Ranges.
- High Accuracy.
- Linear With Temperature
- 40~200mV Output Test Signal.
- LED Indication of Loop Current.
- Low Cost.
- Easy to Install.
- Compact DIN Rail Mount Enclosure.
- Available Standard or Special Calibration.
- Reverse Polarity Protection.
- Corrosion Proofed Circuit Board & Componer by Isonel 642. (Except Terminals & DIP Switches)



Other LPI- models include:  
LPI-B :Bridge / Straingauge;  
LPI-D :DC;  
LPI-F :Frequency;  
LPI-N :Differential Pt100 RTD;  
LPI-P :Potentiometer;  
LPI-pH :pH Levels, IP67 Encl;  
LPI-R :Pt100 RTD;  
LPI-T :Thermocouple.  
LPI-DO2 :DO2, LCD Display;  
LPI-ORP :ORP, LCD Display;  
LPI-pH :pH, LCD Display.

## Ordering Information.

LPI-K-X Standard 0~1kΩ Input, Programmable Input Range Calibration.

LPI-K- -Special Range Special Programmable Input Range Calibration.  
IR

INPUT RANGES			
Resistance (Ω)	IR	Resistance (Ω)	IR
0~10Ω	1	5~15Ω	23
0~12Ω	2	10~20Ω	24
0~15Ω	3	10~50Ω	25
0~20Ω	4	25~75Ω	26
0~22Ω	5	50~100Ω	27
0~25Ω	6	50~150Ω	28
0~47Ω	7	75~225Ω	29
0~50Ω	8	100~200Ω	30
0~75Ω	9	150~250Ω	31
0~100Ω	10	250~500Ω	32
0~120Ω	11	500~1kΩ	33
0~150Ω	12	1k~1.5kΩ	34
0~200Ω	13	1k~2kΩ	35
0~220Ω	14		
0~250Ω	15		
0~470Ω	16		
0~500Ω	17		
0~750Ω	18		
0~1kΩ	19		
0~1.2kΩ	20		
0~1.5kΩ	21		
0~2kΩ	22		
Special Input Range			Z

## Ordering Examples.

LPI-K-10 LPI-K; 0~100Ω In; Loop Powered 4~20mA Output.

LPI-K-33 LPI-K; 500~1kΩ In; Loop Powered 4~20mA Output.

## Quality Assurance Programme.

The modern technology and strict procedures of the ISO9001 Quality Assurance Programme applied during design, development, production and final inspection grant the long term reliability of the instrument.

## LPI-K Specifications.

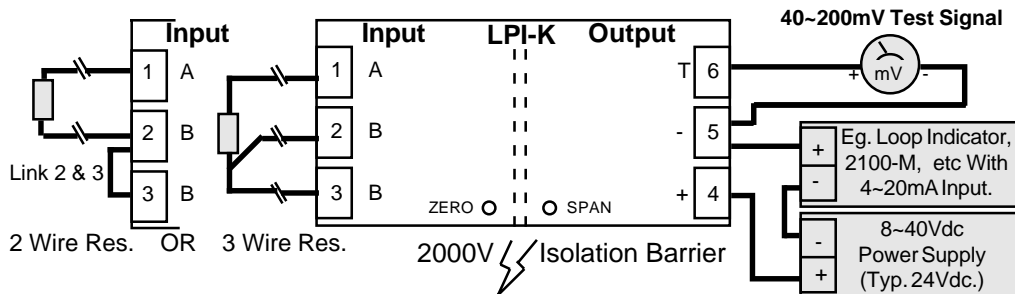
Resistance Input		3 Wire Resistance. Excitation = 0.8mA / 0.08mA. Lead Wire Resistance = 10Ω/Wire Max. Field Programmable Zero: 5Ω to 2kΩ. Field Programmable Span: 10Ω to 2kΩ. Suitable for 2 Wire Connection. (Offset Calibration needed.)
Output	-mA	2 Wire 4~20mA. (Loop Powered.)
	-mV	40~200mV ∝ 4~20mA. (Indicative Test Signal Only.) Other Output Voltages Available. eg 1~5V.
Power Supply		8~40Vdc.
Supply Voltage Sensitivity		<±0.005%/V FSO.
Output Load Resistance		800Ω @ 24Vdc. (50Ω/V Above 8Vdc.)
Maximum Output Current		Limited to <28mA.
Accurate to		<±0.1% FSO Typical.
Linearity & Repeatability		<±0.1% FSO Typical.
Ambient Drift		<±0.02%/C Typical.
Noise Immunity		125dB CMRR Average. (2.0kVac RMS Limit.)
R.F. Immunity		<1% Effect FSO Typical.
Isolation Voltage		2.0kVac/dc Input to Output for 60sec.
Response Time		200msec Typical. (10 to 90% 50msec Typical.)
Operating Temperature		0~70C.
Storage Temperature		-20~80C.
Operating Humidity		90%RH Max. Non-Condensing.
Construction		6.6 Polyamide Thermoplastic Rail Mount Enclosure.

Note 1. Specifications based on Standard Calibration Unit, unless otherwise specified.

Note 2. Due to ongoing research and development, designs, specifications, and documentation are subject to change without notification.  
No liability will be accepted for errors, omissions or amendments to this specification.

Note 3. Further ranging and installation information supplied with each unit, and is available upon request.

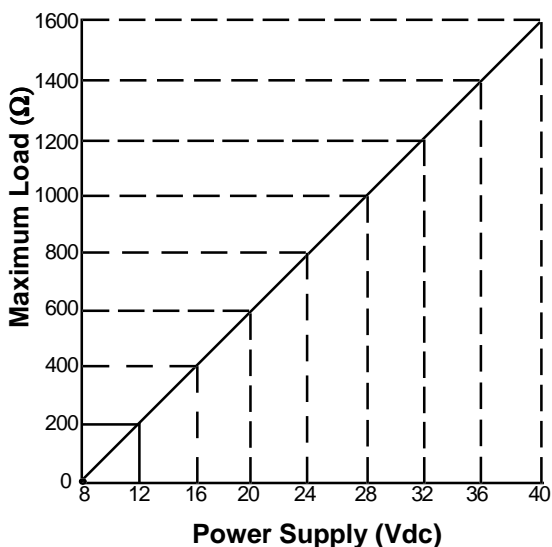
### Examples of Input Connection.



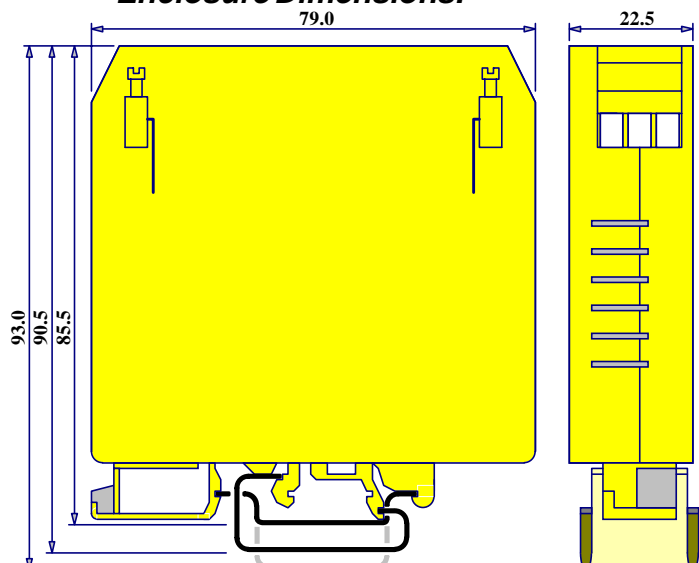
### Terminations.

Input	1	A
	2	B
	3	B
Output	4	+mA
	5	-mA
	6	mVTEST

### Graph Of Maximum Load Versus Power Supply.



### Enclosure Dimensions.



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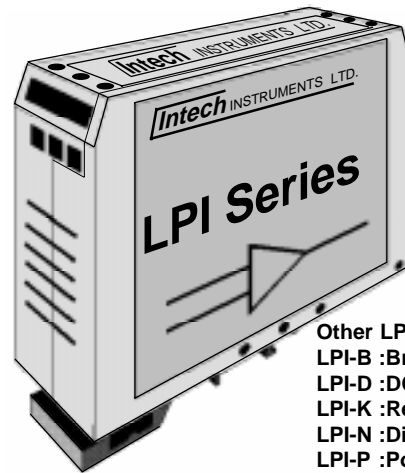
lpi-k\_2p.p65  
ISSUE 050300

# LPI-F Frequency Transmitter.

Programmable Isolating Frequency  
Input to 4~20mA Output  
Loop Powered Transmitter.

## Features.

- Field Programmable Input Ranges.
- Isolated Input to Output 2.0kV.
- Impedance Matching on Input.
- Crystal Locked F-V.
- Selectable Damping.
- High Accuracy 0.1%.
- 40~200mV Output Test Signal.
- LED Indication of Loop Current.
- Low Cost.
- Easy to Install.
- DIN Rail Mount or IP67  
Water Resistant Enclosure.
- Available Standard or Special Calibration.
- Reverse Polarity Protection.



Other LPI- models include:  
LPI-B :Bridge / Strain gauge;  
LPI-D :DC;  
LPI-K :Resistance;  
LPI-N :Differential Pt100 RTD;  
LPI-P :Potentiometer;  
LPI-R :Pt100 RTD;  
LPI-T :Thermocouple.  
LPI-DO2 :DO2, LCD Display;  
LPI-ORP :ORP, LCD Display;  
LPI-pH :pH, LCD Display.

## Ordering Information.

LPI-F-X Standard, 0~100Hz Input, Programmable  
Input Range Calibration, DIN Rail Enclosure.

LPI-F-  -  - Special Range Special Programmable Input Range Calibration.  
EN IR

ENCLOSURE OPTIONS		INPUT RANGES			
ENCLOSURE	EN	Frequency	IR	Frequency	IR
DIN Rail Mount	D	0~15Hz	1	0~1kHz	14
IP67 Wall Mount Water Resistant	E	0~20Hz	2	0~1.5kHz	15
		0~25Hz	3	0~2kHz	16
		0~40Hz	4	0~2.5kHz	17
		0~50Hz	5	0~4kHz	18
		0~75Hz	6	0~5kHz	19
		0~100Hz	7	0~7.5kHz	20
		0~150Hz	8	0~10kHz	21
		0~200Hz	9		
		0~250Hz	10		
		0~400Hz	11		
		0~500Hz	12		
		0~750Hz	13		

## Ordering Examples.

LPI-F-D-8 LPI-F; DIN Rail Enclosure; 0~150Hz Input Range; Loop Powered 4~20mA Output.

LPI-F-E-3 LPI-F; IP67 Wall Mount Enclosure; 0~25Hz Input Range; Loop Powered 4~20mA Output.

## Quality Assurance Programme.

The modern technology and strict procedures of the ISO9001 Quality Assurance Programme applied during design, development, production and final inspection grant the long term reliability of the instrument.

## LPI-F Specifications.

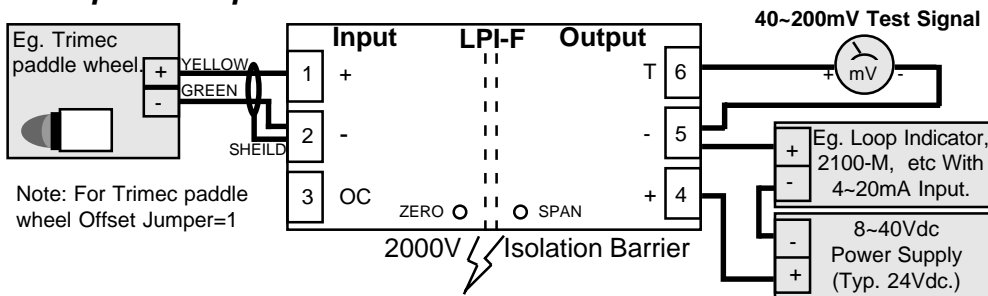
Frequency Input		2 Wire Sine / Square / Pulse, Uni-polar / Bi-polar. (Signals <math><2V_{pp}</math> Bipolar Only.)
- Minimum Input Signal		10mVpp @ 100Hz, 100mVpp @ 1kHz, 1Vpp @ 10kHz Typical. (Offset Jumper=1 for $V < 2V_{pp}$ .)
- Maximum Input Signal		100Vpp. (Offset Jumper=0 for $V \geq 2V_{pp}$ .)
- Span		Field Programmable From 15Hz to 10kHz. (100Hz Typical Max. With Debounce Jumper=1.)
		Adjustable Input Impedance From 1k $\Omega$ to 100k $\Omega$ . Open Collector Connected to + Frequency Input with 3k3 Resistor.
Output	-mA	2 Wire 4~20mA. (Loop Powered.)
	-mV	40~200mV $\propto$ 4~20mA. (Indicative Test Signal Only.)
		Other Output Voltages Available. eg 1~5V.
Power Supply		8~40Vdc.
Supply Voltage Sensitivity		$<\pm 0.005\%/V$ FSO.
Output Load Resistance		800 $\Omega$ @ 24Vdc. (50 $\Omega/V$ Above 8Vdc.)
Maximum Output Current		Limited to $<28mA$ .
Accurate to		$<\pm 0.1\%$ FSO Typical.
Linearity & Repeatability		$<\pm 0.1\%$ FSO Typical.
Ambient Drift		$<\pm 0.01\%/C$ FSO Typical.
Noise Immunity		125dB CMRR Average. (2.0kVac RMS Limit.)
R.F. Immunity		$<1\%$ Effect FSO Typical.
Isolation Voltage		2.0kVAC/DC Input to Output for 60sec.
Response Time		$\leq 1sec$ Typical. $\leq 5sec$ Typical with Damping On.
Operating Temperature		0~70C.
Storage Temperature		-20~80C.
Operating Humidity		90%RH Max. Non-Condensing.
Construction		6.6 Polyamide Thermoplastic Rail Mount Enclosure.

Note 1. Specifications based on Standard Calibration Unit, unless otherwise specified.

Note 2. Due to ongoing research and development, designs, specifications, and documentation are subject to change without notification.  
No liability will be accepted for errors, omissions or amendments to this specification.

Note 3. Further ranging and installation information supplied with each unit, and is available upon request.

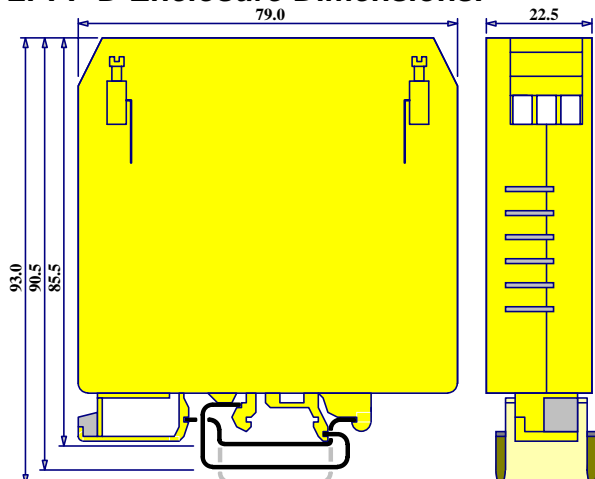
## Examples of Input Connection.



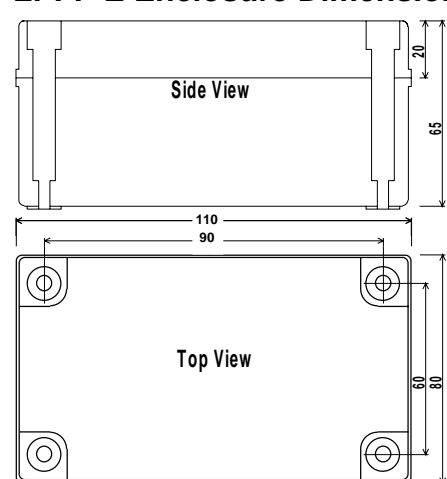
## Terminations.

Input	1	+ve
	2	-ve
	3	OC
Output	4	+mA
	5	-mA
	6	mV TEST

## LPI-F-D Enclosure Dimensions.



## LPI-F-E Enclosure Dimensions.

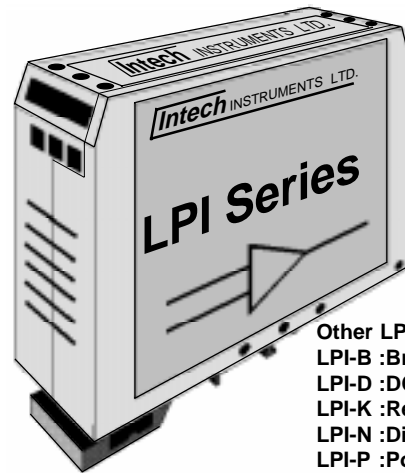


# LPI-F Frequency Transmitter.

Programmable Isolating Frequency  
Input to 4~20mA Output  
Loop Powered Transmitter.

## Features.

- Field Programmable Input Ranges.
- Isolated Input to Output 2.0kV.
- Impedance Matching on Input.
- Crystal Locked F-V.
- Selectable Damping.
- High Accuracy 0.1%.
- 40~200mV Output Test Signal.
- LED Indication of Loop Current.
- Low Cost.
- Easy to Install.
- DIN Rail Mount or IP67  
Water Resistant Enclosure.
- Available Standard or Special Calibration.
- Reverse Polarity Protection.



Other LPI- models include:  
LPI-B :Bridge / Strain gauge;  
LPI-D :DC;  
LPI-K :Resistance;  
LPI-N :Differential Pt100 RTD;  
LPI-P :Potentiometer;  
LPI-R :Pt100 RTD;  
LPI-T :Thermocouple.  
LPI-DO2 :DO2, LCD Display;  
LPI-ORP :ORP, LCD Display;  
LPI-pH :pH, LCD Display.

## Ordering Information.

LPI-F-X Standard, 0~100Hz Input, Programmable  
Input Range Calibration, DIN Rail Enclosure.

LPI-F-  -  - Special Range Special Programmable Input Range Calibration.  
EN IR

ENCLOSURE OPTIONS		INPUT RANGES			
ENCLOSURE	EN	Frequency	IR	Frequency	IR
DIN Rail Mount	D	0~15Hz	1	0~1kHz	14
IP67 Wall Mount Water Resistant	E	0~20Hz	2	0~1.5kHz	15
		0~25Hz	3	0~2kHz	16
		0~40Hz	4	0~2.5kHz	17
		0~50Hz	5	0~4kHz	18
		0~75Hz	6	0~5kHz	19
		0~100Hz	7	0~7.5kHz	20
		0~150Hz	8	0~10kHz	21
		0~200Hz	9		
		0~250Hz	10		
		0~400Hz	11		
		0~500Hz	12		
		0~750Hz	13		

## Ordering Examples.

LPI-F-D-8 LPI-F; DIN Rail Enclosure; 0~150Hz Input Range; Loop Powered 4~20mA Output.

LPI-F-E-3 LPI-F; IP67 Wall Mount Enclosure; 0~25Hz Input Range; Loop Powered 4~20mA Output.

## Quality Assurance Programme.

The modern technology and strict procedures of the ISO9001 Quality Assurance Programme applied during design, development, production and final inspection grant the long term reliability of the instrument.



## LPI-F Specifications.

Frequency Input		2 Wire Sine / Square / Pulse, Uni-polar / Bi-polar. (Signals < 2Vpp Bipolar Only.)
- Minimum Input Signal		10mVpp @ 100Hz, 100mVpp @ 1kHz, 1Vpp @ 10kHz Typical. (Offset Jumper=1 for V < 2Vpp.)
- Maximum Input Signal		100Vpp. (Offset Jumper=0 for V ≥ 2Vpp.)
- Span		Field Programmable From 15Hz to 10kHz. (100Hz Typical Max. With Debounce Jumper=1.)
		Adjustable Input Impedance From 1kΩ to 100kΩ.
		Open Collector Connected to + Frequency Input with 3k3 Resistor.
Output	-mA	2 Wire 4~20mA. (Loop Powered.)
	-mV	40~200mV ∝ 4~20mA. (Indicative Test Signal Only.)
		Other Output Voltages Available. eg 1~5V.
Power Supply		8~40Vdc.
Supply Voltage Sensitivity		< ±0.005%/V FSO.
Output Load Resistance		800Ω @ 24Vdc. (50Ω/V Above 8Vdc.)
Maximum Output Current		Limited to < 28mA.
Accurate to		< ±0.1% FSO Typical.
Linearity & Repeatability		< ±0.1% FSO Typical.
Ambient Drift		< ±0.01%/C FSO Typical.
Noise Immunity		125dB CMRR Average. (2.0kVac RMS Limit.)
R.F. Immunity		< 1% Effect FSO Typical.
Isolation Voltage		2.0kVAC/DC Input to Output for 60sec.
Response Time		≤ 1sec Typical. ≤ 5sec Typical with Damping On.
Operating Temperature		0~70C.
Storage Temperature		-20~80C.
Operating Humidity		90%RH Max. Non-Condensing.
Construction		6.6 Polyamide Thermoplastic Rail Mount Enclosure.

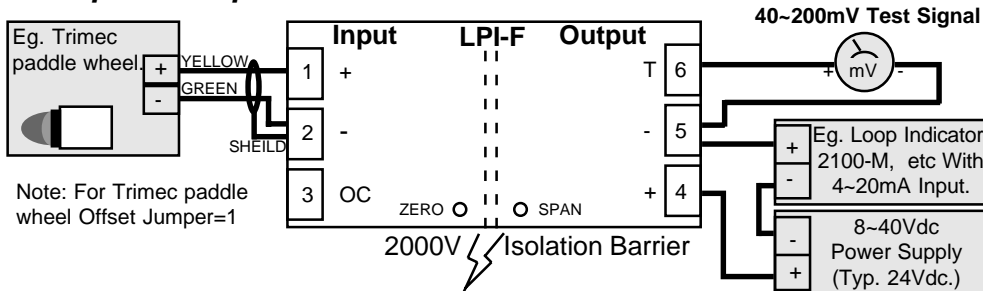
Note 1. Specifications based on Standard Calibration Unit, unless otherwise specified.

Note 2. Due to ongoing research and development, designs, specifications, and documentation are subject to change without notification. No liability will be accepted for errors, omissions or amendments to this specification.

Note 3. If the input frequency exceeds the programmed input range by 80% typical, the output signal may decrease or fall to 0%.

Note 4. Further ranging and installation information supplied with each unit, and is available upon request.

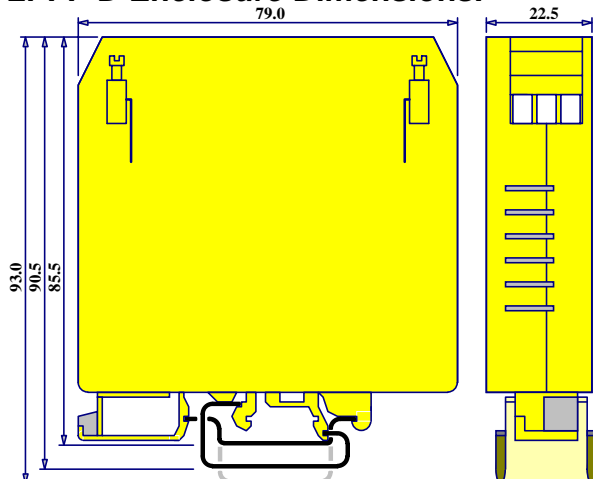
## Examples of Input Connection.



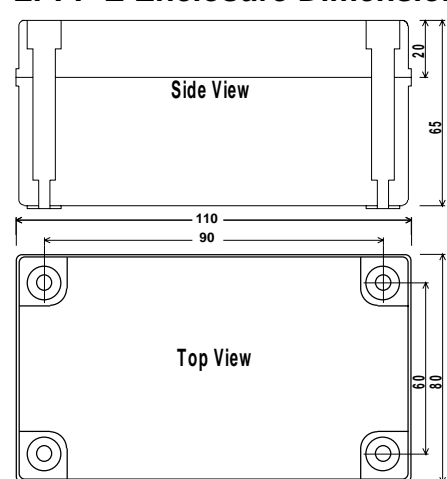
## Terminations.

Input	1	+ve
	2	-ve
	3	OC
Output	4	+mA
	5	-mA
	6	mV TEST

## LPI-F-D Enclosure Dimensions.



## LPI-F-E Enclosure Dimensions.



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## LPI-T Specifications.

Input

Note 1: The input range must be within the specified **min / max range** of the thermocouple type.

Note 2: Each LPI-T is only rangeable within the specified 'Thermocouple Type'.

Type	Thermocouple Type		Field Programmable Input Ranges								Linearity and Accuracy: %, ±1C (±2F)
	Specification Range (C)	Specification Range (F)	Zero Offset				Span (Max. In - Zero)				
			Min.(C)	Max.(C)	Min.(F)	Max.(F)	Min.(C)	Max.(C)	Min.(F)	Max.(F)	
J	0-800	0-1500	0	600	0	1100	200	800	400	1500	0.25
K	0-1200	0-2200	0	1000	0	1800	200	1200	400	2200	0.25
N	0-1200	0-2200	0	1000	0	1800	200	1200	400	2200	0.25
R	400-1700	750-3100	0	1300	0	2400	400	1700	750	3100	0.5
S	400-1700	750-3100	0	1300	0	2400	400	1700	750	3100	0.5
T	-100-200	-150-400	-100	100	-150	200	100	300	200	550	0.5

- Impedances	Input Impedance = 1MΩ Min. Thermocouple Lead Resistance = 100Ω Max.
Cold Junction Compensation Accuracy	<0.03C/C (0.06F/F) Typical.
Output	-mA 2 wire 4~20mA. (Loop Powered.) -mV 40~200mV ∝ 4~20mA. (Indicative Test Signal Only.) Other Output Voltages Available. eg 1~5V.
Power Supply	8~40Vdc.
Supply Voltage Sensitivity	<±0.005%/V FSO.
Output Load Resistance	800Ω @ 24Vdc. (50Ω/V Above 8Vdc.)
Maximum Output Current	Limited to <28mA.
Sensor Fail	-Upscale 23mA Min. -Downscale 3.6mA Max.
Repeatability	<±0.1% FSO Typical.
Ambient Drift	<±0.02%/C FSO Typical.
Noise Immunity	125dB CMRR Average. (2.0kVac RMS Limit.)
R.F. Immunity	<1% Effect FSO Typical.
Isolation Voltage	2.0kVac/dc Input to Output for 60sec.
Response Time	200msec Typical. (10 to 90% 50msec Typical.)
Operating Temperature	0~70C.
Storage Temperature	-20~80C.
Operating Humidity	90%RH Max. Non-Condensing.
Construction	6.6 Polyamide Thermoplastic Rail Mount Enclosure.

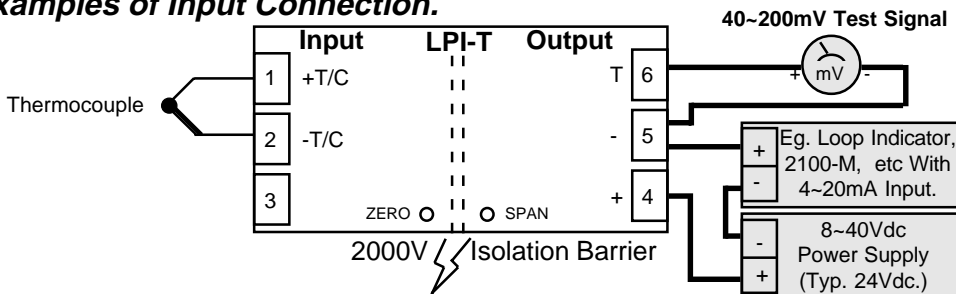
Note 1. Specifications based on Standard Calibration Unit, unless otherwise specified.

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Note 3. Further ranging and installation information supplied with each unit, and is available upon request.

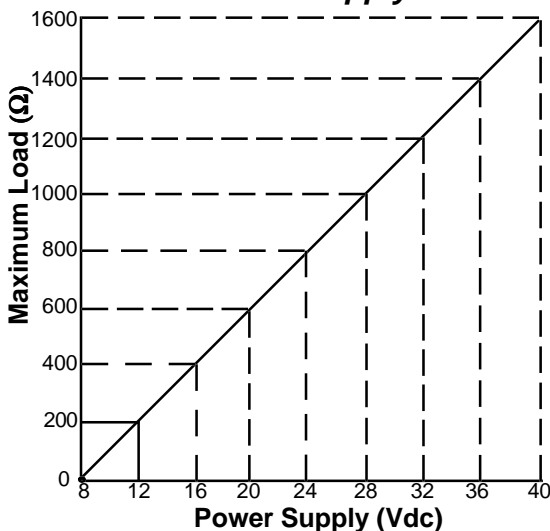
### Examples of Input Connection.



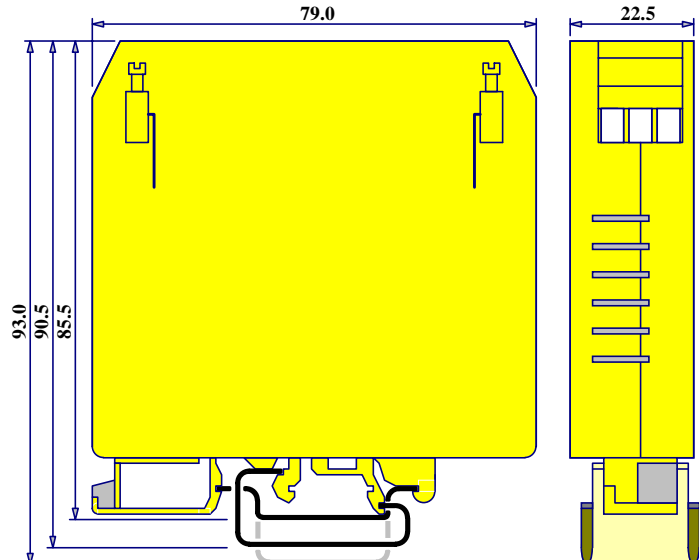
### Terminations.

Input	1	+T/C
	2	-T/C
	3	
Output	4	+mA
	5	-mA
	6	mV TEST

**Graph Of Maximum Load Versus Power Supply.**



**Enclosure Dimensions.**



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# LPI-DO2 Dissolved Oxygen Transmitter.

Isolating DO2 Input  
to 4~20mA Output  
Loop Powered Transmitter.

## Features.

- Isolated Input to Output 2.0kV.
- Dissolved Oxygen Probe Input.
- IP67 Rated Enclosure.
- High Accuracy.
- 40~200mV Output Test Signal
- Low Cost.
- Easy to Install.
- Reverse Polarity Protection.
- Internally Accessible, Finger Adjustable, *SLOPE & OFFSET* Adjustments.
- Corrosion Proofed Circuit Boards & Components by Isonel 642. (Except terminals & DIP Switch.)

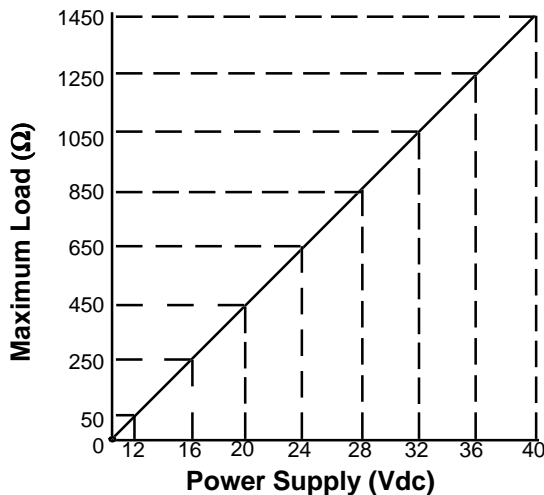


Other LPI- models include:  
 LPI-B :Bridge / Strain gauge;  
 LPI-D :DC;  
 LPI-F :Frequency;  
 LPI-K :Resistance;  
 LPI-N :Differential Pt100 RTD;  
 LPI-P :Potentiometer;  
 LPI-R :Pt100 RTD;  
 LPI-T :Thermocouple.  
 NOTE: These above models do not include LCD displays, and have DIN rail mount enclosures.  
 LPI-pH :pH, LCD Display;  
 LPI-ORP :ORP, LCD Display;

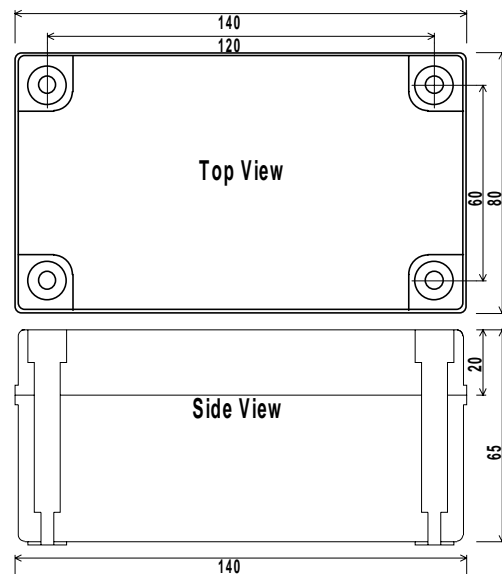
## Ordering Information.

**LPI-DO2** Standard Unit: 0~8.26ppm Oxygen (30mV) In, 4~20mA Out.

## Graph Of Maximum Load Versus Power Supply.



## Enclosure Dimensions. (mm)



## Quality Assurance Programme.

The modern technology and strict procedures of the ISO9001 Quality Assurance Programme applied during design, development, production and final inspection grant long term reliability of the instrument. This instrument has been designed and built to comply with EMC and Safety Standards requirements.

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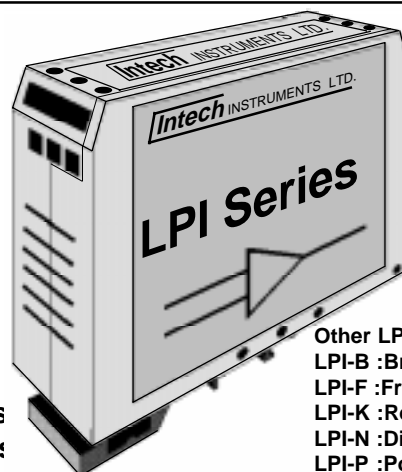
lpi-do2.p65  
 ISSUE 280200

# LPI-D DC Transmitter.

Isolating DC Signal Input  
to 4~20mA Output  
Loop Powered Transmitter.

## Features.

- Field Programmable Bi-Polar Input Ranges.
- Isolated Input to Output 2.0kV.
- High Accuracy.
- 40~200mV Output Test Signal.
- LED Indication of Loop Current.
- Low Cost.
- Easy to Install.
- Compact DIN Rail Mount Enclosure.
- Available Standard or Special Calibration.
- Reverse Polarity Protection.
- Corrosion Proofed Circuit Board & Components by Isonel 642. (Except Terminals & DIP Switches)



Other LPI- models include:  
LPI-B :Bridge / Strain gauge;  
LPI-F :Frequency;  
LPI-K :Resistance;  
LPI-N :Differential Pt100 RTD;  
LPI-P :Potentiometer;  
LPI-pH :pH Levels, IP67 Encl;  
LPI-R :Pt100 RTD;  
LPI-T :Thermocouple.  
LPI-DO2 :DO2, LCD Display;  
LPI-ORP :ORP, LCD Display;  
LPI-pH :pH, LCD Display.

## Ordering Information.

LPI-D-F-X Standard 4~20mA Fixed Input Range Calibration.

LPI-D-F--Special Range Special Fixed Input Range Calibration.  
IR

LPI-D-P-X Standard 4~20mA Input, Programmable Input Range Calibration.

LPI-D-P--Special Range Special Programmable Input Range Calibration.  
IR

INPUT RANGES			
Voltage	IR	Current	IR
0~10mV	A	0~200µA	1
0~20mV	B	0~500µA	2
0~50mV	C	0~1mA	3
0~100mV	D	0~2mA	4
0~200mV	E	0~5mA	5
0~500mV	F	0~10mA	6
0~1V	G	0~20mA	7
0~2V	H	0~40mA	8
0~4V	I	0~50mA	9
0~5V	J	1~5mA	10
0~10V	K	2~10mA	11
0~20V	L	4~20mA	12
0~50V	M	10~50mA	13
0~100V	N	-1~1mA	14
0~150V	O	-10~10mA	15
1~2V	P	-20~20mA	16
1~5V	Q	20~4mA *	17
2~10V	R	50~10mA *	18
-1~1V	S		
-5~5V	T		
-10~10V	U		
Special Input Range			Z
Ranges with '*' beside them must have the polarity of their connections reversed.			

## Ordering Examples.

LPI-D-F-Q LPI-D; Fixed Input Range; 1~5V Input; Loop Powered 4~20mA Output.

LPI-D-P-3 LPI-D; Programmable Input Range; 0~1mA Input; Loop Powered 4~20mA Output.

## Quality Assurance Programme.

The modern technology and strict procedures of the ISO9001 Quality Assurance Programme applied during design, development, production and final inspection grant the long term reliability of the instrument.

## LPI-D Specifications.

Input	-Voltage	10mVdc to 150Vdc and Bipolar. (LPI-D-P is Field Programmable.) Minimum Input Resistance = 200k $\Omega$ .
	-Current	Maximum Over-range = 170Vdc Continuous. 200 $\mu$ Adc to 100mAdc and Bipolar. (LPI-D-P is Field Programmable.) Input Resistance = 25 $\Omega$ . Maximum Overrange = 120mAdc Continuous.
Output	-mA	2 wire 4~20mA. (Loop Powered.)
	-mV	40~200mV $\propto$ 4~20mA. (Indicative Test Signal Only.) Other Output Voltages Available. eg 1~5V.
Power Supply		8~40Vdc.
Supply Voltage Sensitivity		< $\pm$ 0.005%/V FSO.
Output Load Resistance		800 $\Omega$ @ 24Vdc. (50 $\Omega$ /V Above 8Vdc.)
Maximum Output Current		Limited to <28mA.
Accurate to		< $\pm$ 0.1% FSO Typical.
Linearity & Repeatability		< $\pm$ 0.1% FSO Typical.
Ambient Drift		< $\pm$ 0.02%/C FSO Typical.
Noise Immunity		125dB CMRR Average. (2.0kVac RMS Limit.)
R.F. Immunity		<1% Effect FSO Typical.
Isolation Voltage		2.0kVAC/DC Input to Output for 60sec.
Response Time		200msec Typical. (10 to 90% 50msec Typical.)
Operating Temperature		0~70C.
Storage Temperature		-20~80C.
Operating Humidity		90%RH Max. Non-Condensing.
Construction		6.6 Polyamide Thermoplastic Rail Mount Enclosure.

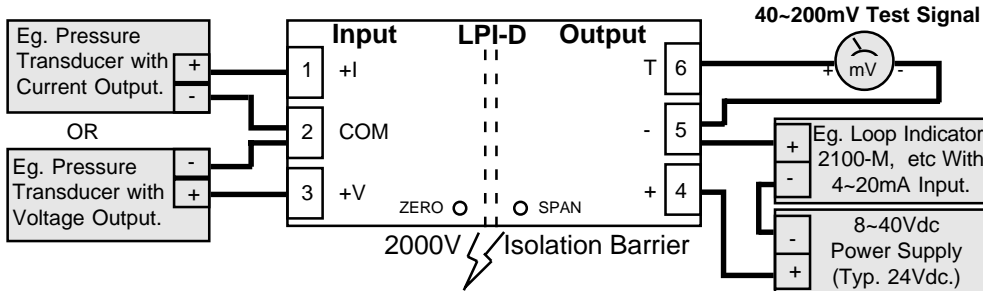
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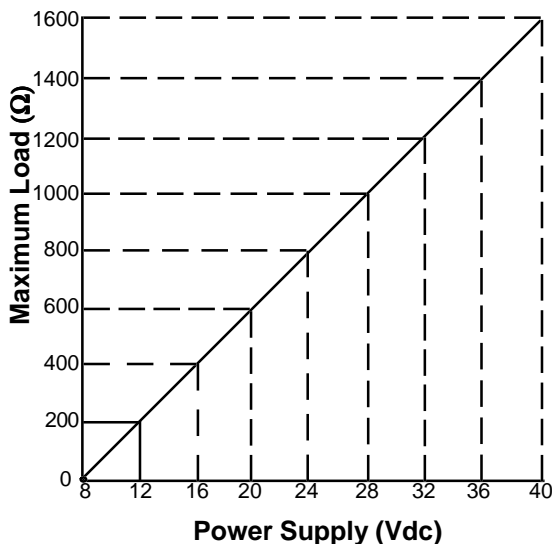
## Examples of Input Connection.



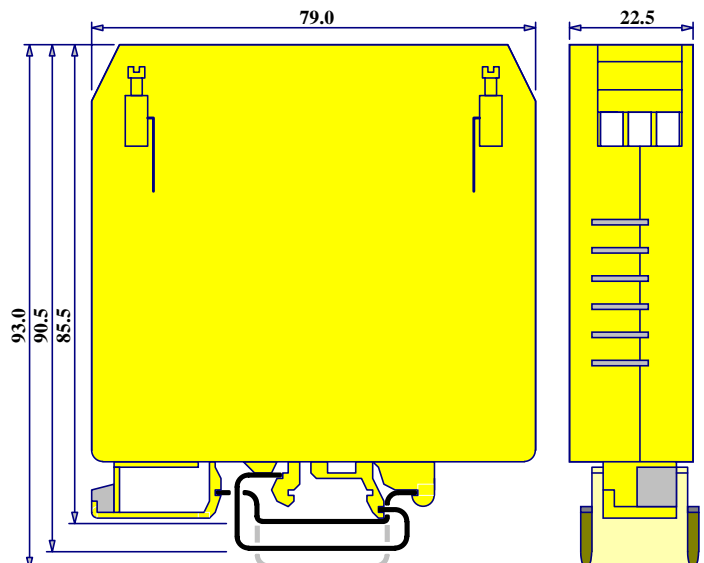
## Terminations.

Input	1	+I
	2	COM
	3	+V
Output	4	+mA
	5	-mA
	6	mV TEST

## Graph Of Maximum Load Versus Power Supply.



## Enclosure Dimensions.



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