



# I<sup>P</sup>AQ-L / I<sup>P</sup>AQ-LX

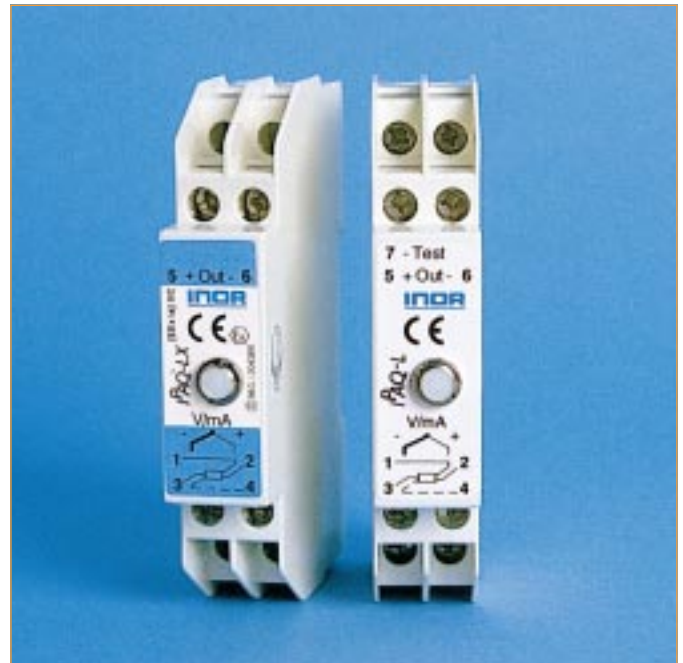
## Universal Intelligent 2-wire DIN Rail Transmitters

I<sup>P</sup>AQ-L is a universal and intelligent 2-wire DIN rail transmitter for temperature and other measurement applications.

I<sup>P</sup>AQ-LX is the Intrinsic Safe version for use in Ex-applications.

The combination of *competitive pricing, functionality and simple configuration* has made I<sup>P</sup>AQ-L and I<sup>P</sup>AQ-LX leading DIN rail transmitters for industrial temperature measurements.

The Windows based and user friendly software, I<sup>P</sup>RO 4, is used for transmitter configuration, documentation, monitoring and calibration purposes.



### Performance and design:

#### Excellent stability

- Long-term stability 0.1 %/year.

#### Enhanced total system accuracy

- Sensor error correction (for known sensor errors).
- System error correction (against known temperatures).

#### NAMUR-compliant

- Output limitations and fail currents according to NAMUR recommendations

#### Input-Output isolation 1500 VAC

- Eliminates measuring errors due to ground loops.

#### High load capacity

- Only 7.5 V voltage drop over the transmitter (I<sup>P</sup>AQ-L) allows for high loads.

#### Designed for harsh conditions

- Excellent EMC performance.
- Durable due to protected PCBs.

#### Space saving and simple mounting

- Only 17.5 mm / 0.7 inch wide.
- Quick mounting on DIN rail.

5 year limited warranty.

### Functions:

#### Input for RTDs, T/Cs, mV and resistance

- Reduced inventory costs.
- Simplified plant engineering.

#### Input for mA (separate version of I<sup>P</sup>AQ-L)

- Active 2-wire isolator / load amplifier.
- Only 10  $\Omega$  input impedance.

#### True on-line communication

- Full access to all features while in operation.

#### Sensor diagnostics

- Selectable sensor break action.

#### Simplified loop check-up

- The transmitter works as an accurate current generator.

#### On-screen indications and line recording

- Valuable tools for temporary measurements.

## Main features of IPAQ-L and IPAQ-LX

### Accuracy and stability

IPAQ-L/IPAQ-LX are designed for applications with standard industrial demands on accuracy. To reach these demands, the following factors are essential:

**Linearity and calibration errors** -The use of quality components and precision calibration equipment reduce these errors, e.g.  $\pm 0.1\%$  of span for RTD inputs.

**High long-term stability** -Internal "self calibration", by means of continuous adjustment of important parameters after comparison with accurate built-in references, contributes to a stability of  $\pm 0.1\%$  /year.

### Measurements with RTDs and other resistances

IPAQ-L/IPAQ-LX accept inputs from standardized Platinum and Nickel RTDs like Pt10...Pt1000 acc. to IEC 751 ( $\alpha=0.00385$ ), Pt100 acc. to JIS 1604 ( $\alpha=0.003916$ ) and Ni100/Ni1000 acc. to DIN 43760, as well as inputs from plain resistance sensors such as potentiometers. 3- or 4-wire connection can be chosen.

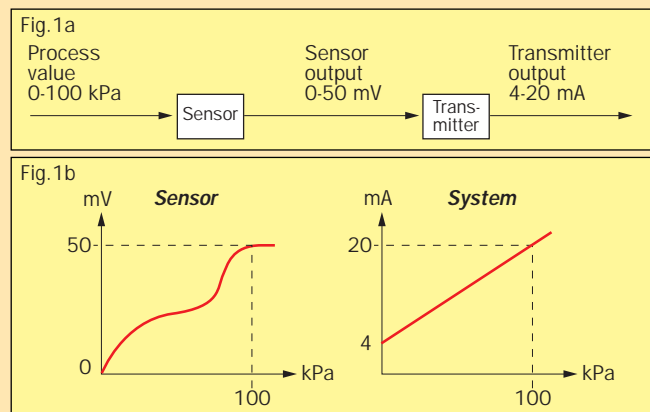
### Measurements with thermocouples, voltage and current

IPAQ-L/IPAQ-LX accept inputs from 11 types of standardized thermocouples as well as plain mV input. A separate version of IPAQ-L is available for current input.

For T/C input, the CJC (cold junction compensation) is fully automatic, by means of an accurate measurement of the terminal temperature. Alternatively, the CJC can be disabled.

### Customized linearization and Engineering units

The *Customized linearization* can be used to create a linearization curve for RTD, T/C, resistance, mV and mA inputs. By combining *Customized linearization* with the use of *Engineering units*, the transmitters can be programmed to give a linear output corresponding to a specific measuring range expressed in the primary process value. The sensor characteristics are described by a maximum of 9 data pairs. Fig. 1a and 1b.

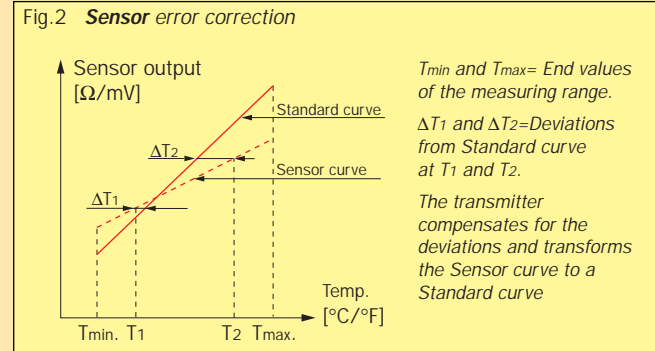


Example of a system (sensor + transmitter) with an output **linear** to the process value, in spite of a **non-linear** sensor.

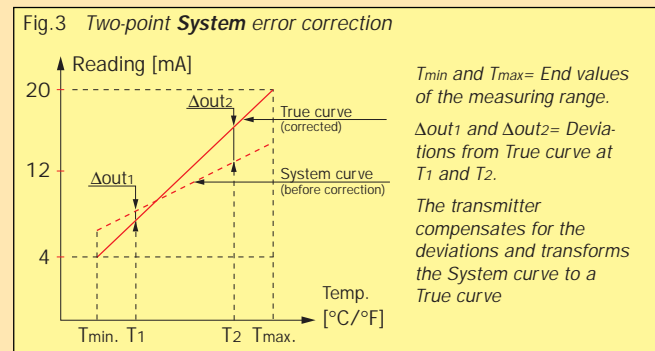
### Sensor or System error correction

IPAQ-L/IPAQ-LX offer two ways of improving the measurement with temperature sensors:

**Sensor error correction** - Known sensor errors compared to the standard curve, e.g. for a calibrated sensor, are entered, and the transmitter automatically corrects for the sensor errors. Fig. 2.



**System error correction** -This method is used to correct the system error (sensor + transmitter error) by exposing the sensor to one (one-point correction) or two (two-point correction) accurately measured temperatures (true temperatures). The true temperature(s) are entered, and the transmitter automatically corrects for the system errors. Fig. 3.



### Sensor break monitoring

IPAQ-L/IPAQ-LX monitor sensor break and force the output signal to a user defined level, when *any* sensor lead is broken or disconnected. The sensor break monitoring can be switched off. The monitoring is furnished with a *pulsed excitation current*. This eliminates the voltage drop in the lead wires (giving a measuring error), caused by a standard DC excitation current.

### Controlled output for instrument calibration

IPAQ-L/IPAQ-LX can be set to automatically provide a recurring output current regardless of the input signal. The total time for the controlled output is adjustable up to 30 minutes.

**Dampening**

The dampening function can be used to dampen undesired instabilities on the input signal. The dampening time is approximately 2 seconds. The dampening time is the time required, in addition to the update time, for the output to reach 90% of its final value after a step change has been applied to the input.

**Power supply**

IPAQ-L/IPAQ-LX are loop-powered and will work on voltages down to 7.5 VDC (8.0 VDC for IPAQ-LX), thus giving good margins for high loads in the current loop. Reversed polarity will not damage the transmitter. Fig. 4

**Mounting**

IPAQ-L/IPAQ-LX are designed to fit on a standard 35 mm rail according to DIN EN 50022.

**Warranty**

IPAQ-L/IPAQ-LX are covered by a 5 year limited warranty.

**IPRO 4 - The user friendly software for all transmitters of the IPAQ family**

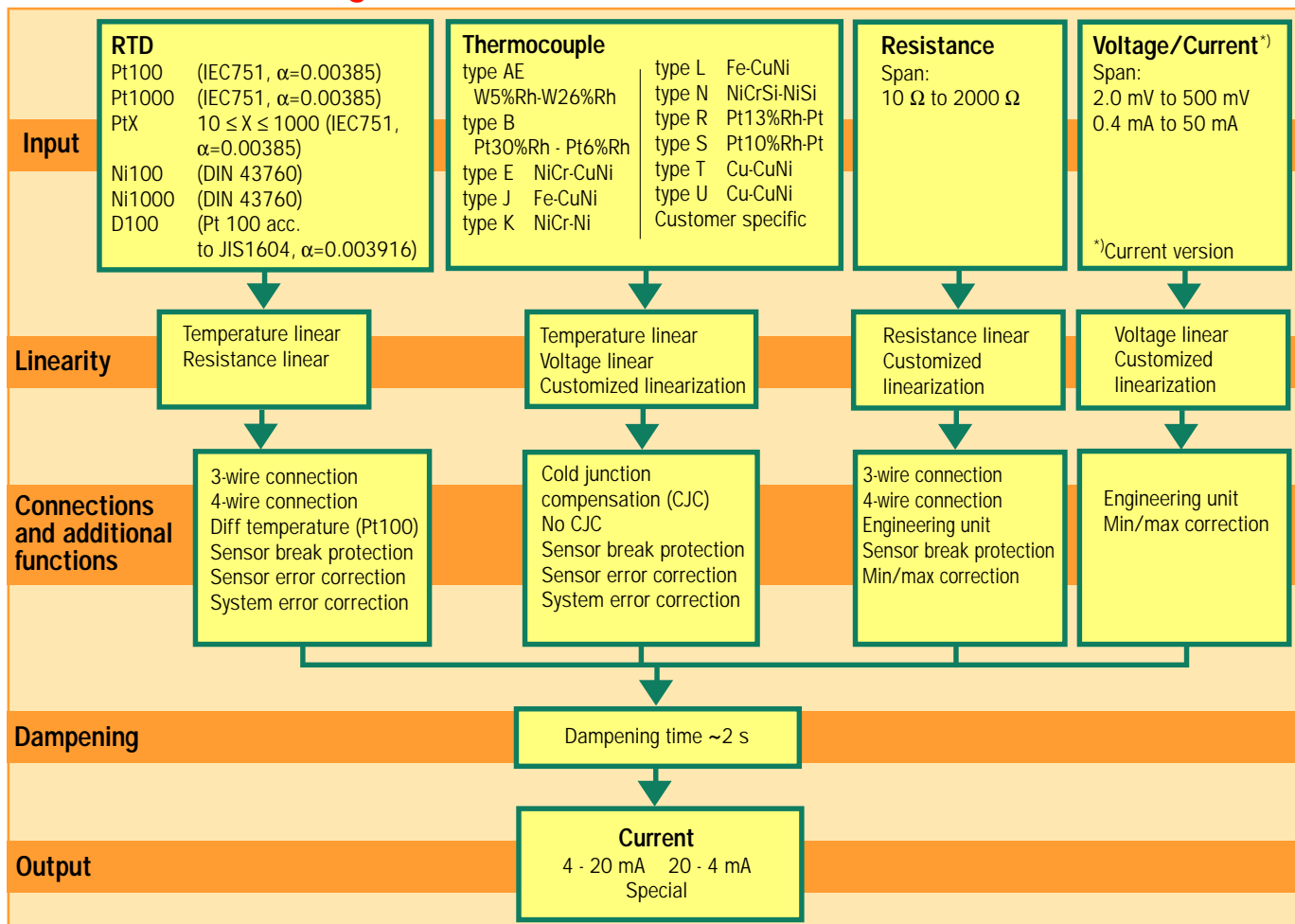
IPRO 4, which is used with all IPAQ-transmitters, is the tool to utilize all the versatile functions of the IPAQ-L/IPAQ-LX such as:

- Measurement configuration: Sensor type, range, sensor or system error correction, linearization, engineering units, output settings, filter activation, etc.
- Monitoring of sensor status: Sensor break detection.
- On-screen real time presentation of measured values and output signal in the form of numericals, meters, bar graphs and line recorder.
- Transmitter calibration: Field calibration in one or two points and basic calibration.
- Documentation: Configuration files can be saved for future use and configuration protocols can easily be printed.

The communication with the transmitter can be performed on line, i.e. with transmitter in operation. An isolated and Ex-approved communication cable is included in the software kit, IPRO-X.

IPRO 4 is compatible with Windows 3.1, Windows 3.11, Windows 95 and Windows NT Workstation 4.0. The program is menu-driven and easy to learn. On-line help is an effective tool for the user.

**IPAQ-L/IPAQ-LX Configuration scheme**



## Specifications

<b>Input</b>		
<b>RTD's and Resistance</b>		
Pt100 (IEC751, $\alpha = 0.00385$ )	3-, 4-wire connection	-200 to +1000 °C / -328 to +1832 °F
Pt1000 (IEC751, $\alpha = 0.00385$ )	3-, 4-wire connection	-200 to +200 °C / -328 to +392 °F
PtX $10 \leq X \leq 1000$ (IEC751, $\alpha = 0.00385$ )	3-, 4-wire connection	Upper range depending on X-value
Ni100 (DIN 43760)	3-, 4-wire connection	-60 to +250 °C / -76 to +482 °F
Ni1000 (DIN 43760)	3-, 4-wire connection	-60 to +150 °C / -76 to +302 °F
D100 (Pt 100 acc.to JIS1604, $\alpha = 0.003916$ )	3-, 4-wire connection	-200 to +1000 °C / -328 to +1832 °F
Potentiometer/resistance	3-, 4-wire connection	0 to 2000 $\Omega$
Sensor current		~ 0.4 mA
Maximum sensor wire resistance		25 $\Omega$ /wire
<b>Thermocouples, Voltage and Current</b>		
T/C	Type: AE, B, E, J, K, L, N, R, S, T, U	Ranges according to users manual
Voltage		-10 to +500 mV
Current	IPAQ-L <sup>1)</sup>	-1 to +50 mA
Input impedance	T/C, Voltage	>10 M $\Omega$
	Current	10 $\Omega$
Maximum sensor wire resistance	T/C, Voltage	500 $\Omega$ (total loop)
<b>Monitoring</b>		
Sensor break monitoring	User definable output	3.5 to 21.6 mA
<b>Adjustments</b>		
Zero adjustment	All inputs	Any value within range limits
Minimum spans	Pt100, Pt1000, Ni100, Ni1000	10 °C / 18 °F
	Potentiometer	10 $\Omega$
	T/C, Voltage	2 mV
	Current	0.4 mA
<b>Output</b>		
Straight, reversed or any intermediate value		4-20/20-4 mA
Resolution		5 $\mu$ A
Minimum output signal	Measurement/Failure	3.8 mA / 3.5 mA
Maximum output signal	Measurement/Failure	20.5 mA / 21.6 mA
Permissible load, see fig.4	IPAQ-L	750 $\Omega$ @ 24 VDC, 22 mA
	IPAQ-LX	725 $\Omega$ @ 24 VDC, 22 mA
<b>Temperature</b>		
Ambient, storage		-20 to +70 °C / -4 to +158 °F
Ambient, operation		-20 to +70 °C / -4 to +158 °F
<b>General data</b>		
Selectable dampening time		~ 2 s
Update time		~ 1.5 s
Isolation In - Out	Isolated versions	1500 VAC, 1 min
Humidity (non-condensing)		0 to 95 % RH
Intrinsic safety	IPAQ-LX, Cenelec	[Ex ia] IIC
	FM	I.S.Connections to Class I-III, Div. 1, Group A-G
<b>Power supply, polarity protected</b>		
Supply voltage	IPAQ-L	7.5 to 36 VDC 2-wire
	IPAQ-LX	8.0 to 30 VDC 2-wire
Permissible ripple		4 V p-p @ 50/60 Hz

<sup>1)</sup> Separate version of IPAQ-L, only for current input.

Accuracy		
Linearity	RTD Potentiometer, mV, mA	±0.1 % <sup>1)</sup>
	T/C	±0.2 % <sup>1)</sup>
Calibration	RTD	Max. of ±0.2 °C / ±0.4 °F or ±0.1 % <sup>1)</sup>
	Potentiometer	Max. of ±0.1 Ω or ±0.1 % <sup>1)</sup>
	mV, T/C	Max. of ±20 μV or ±0.1 % <sup>1)</sup>
	mA (IPAQ-L) <sup>4)</sup>	Max. of ±4 μA or ±0.1 % <sup>1)</sup>
Cold Junction Compensation (CJC)	T/C	±0.5 °C/±0.9 °F
Temperature influence <sup>5)</sup>	All inputs	Max. of ±0.25 °C/25 °C or ±0.25%/25 °C <sup>1) 3)</sup>
		Max. of ±0.5 °F/50 °F or ±0.28%/50 °F <sup>1) 3)</sup>
Temperature influence CJC <sup>5)</sup>	T/C	±0.5 °C/25 °C / ±1.0 °F/50 °F
Instrument calibration output	4-20 mA	±8 μA
Sensor wire resistance influence	RTD, Potentiometer, 3-wire	Negligible <sup>2)</sup>
	RTD, Potentiometer, 4-wire	Negligible
	mV, T/C, mA	Negligible
Load influence		Negligible
Power supply influence		Negligible
RFI influence, 0.15-1000 MHz, 10 V or V/m		±0.2 % <sup>1)</sup> (typical)
Long-term stability		±0.1 % <sup>1)</sup> /year
Housing		
Material / Flammability (UL)		PC + Glass fibre/VO
Mounting		Rail acc. to DIN EN 50022, 35 mm
Connection	Single/stranded wires	≤1.5 mm <sup>2</sup> , AWG 16
Weight		70 g
Protection, housing / terminals		IP 20 / IP20

<sup>1)</sup> Of input span

<sup>2)</sup> With equal wire resistance

<sup>3)</sup> If zero-deflection > 100% of input span:  
add 0.125% of input span/25 °C or 0.14%  
of input span/50 °F per 100% zero-deflection

<sup>4)</sup> Separate version of IPAQ-L, only for current input

<sup>5)</sup> Reference temperature 23 °C/73°F

**The User Instructions must be read prior to adjustment and/or installation.**

## Intrinsic Safety specifications

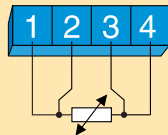
Specifications	IPAQ-LX, isolated	IPAQ-LX, isolated
Approval	Demko / Cenelec	Factory Mutual (FM)
Classification	[EEx ia] IIC <sup>6)</sup>	IS connections to Class I-III, Div. 1, Group A-G
Certificate No.	96D.120438X	J.I. 0D6A8.AX, Drw. 3-7852
Output/Supply		
Max voltage to transmitter	U <sub>i</sub> = 30 Vdc	V <sub>max</sub> = 30 Vdc
Max current to transmitter	I <sub>i</sub> = 100 mA	I <sub>max</sub> = 100 mA
Max power to transmitter	P <sub>i</sub> = 0.9 W	P <sub>max</sub> = 900 mW
Internal inductance	Not applicable	Not applicable
Internal capacitance	Not applicable	Not applicable
Input (Sensor)		
Max voltage from transmitter	U <sub>o</sub> = 30 Vdc	V <sub>oc</sub> = 30 Vdc
Max current from transmitter	I <sub>o</sub> = 25 mA	I <sub>sc</sub> = 25 mA
Max power from transmitter	Not specified	Not specified
Max inductance (input loop)	L <sub>o</sub> = 50 mH	L <sub>a</sub> = 56.8 mH
Max capacitance (input loop)	C <sub>o</sub> = 64 nF	C <sub>a</sub> = 0.12 μF

<sup>6)</sup> The transmitter must be placed outside the hazardous area.

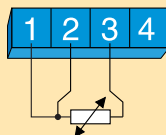
INPUTS

RTD

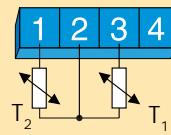
Pt100, Pt1000, Ni100, Ni1000, PtX, D100  
4-wire connection



3-wire connection

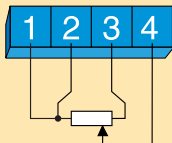


Pt100  
Diff temperature  $T_1 > T_2$

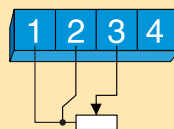


Potentiometer

4-wire connection

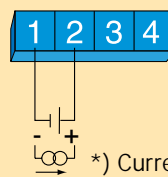


3-wire connection



Voltage/Current \*)

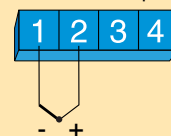
mV/mA \*)



\*) Current version

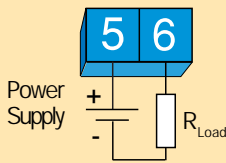
Thermocouple

AE, B, E, J, K, L, N, R, S, T, U  
or customer specific

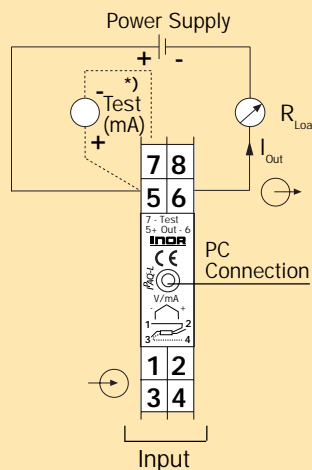


OUTPUT

4-20 mA Output

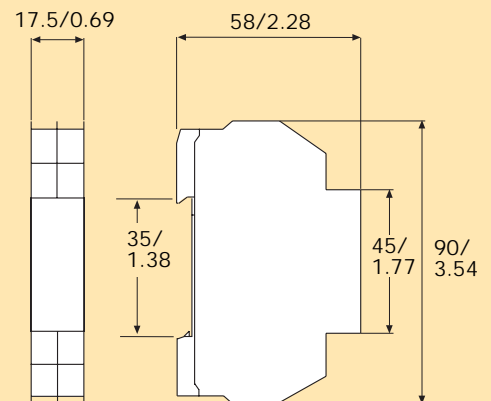


Connections



\*) Only IPAQ-L

Dimensions

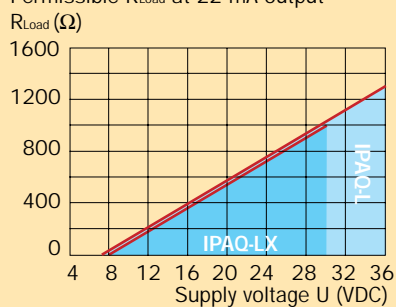


mm / inches

Output load diagram

Fig.4

Permissible  $R_{Load}$  at 22 mA output



$R_{Load} = (U - 7.5) / 0.022$  (IPAQ-L)  
 $R_{Load} = (U - 8.0) / 0.022$  (IPAQ-LX)

Ordering table

Item	Part No.
<b>Transmitter</b>	
IPAQ-L, isolated	70IPL00001
IPAQ-L, non-isolated	70IPL00002
IPAQ-L, current, isolated	70IPL00003
IPAQ-L, current, non-isolated	70IPL00004
IPAQ-LX, isolated (Cenelec)	70IPLX0001
IPAQ-LX, isolated (FM)	70IPLX1001
<b>Options</b>	
Configuration	70CAL00001
Configuration with 5-point calibration certificate	70CAL00051
<b>Software and cable</b>	
IPRO-X (IPRO with cable)	70IPRX0001
Software IPRO upgrade	70IPRS0001



**DEMKO**  
Testing and Certification

**CERTIFICATE OF CONFORMITY**

1. **DIMED No.** 96D.120438X

2. This certificate is issued for **Intelligent 2-wire Transmitter**,  
**type** **IPAQ-LX**

3. **Manufactured by** INOR Process AB, Box 9125, S-200 39 Malmö, Sweden

4. **and submitted by** INOR AB, Box 9125, S-200 39 Malmö, Sweden

5. This electrical apparatus and any acceptable variation therein is specified in the Appendix to this certificate and the documents therein referred to.

6. DEMKO being an Approved Certification Body in accordance with Article 14 of the Council Directive of the European Communities of 18th December 1985, document 76/117/EEC, confirms that the apparatus has been found to comply with the harmonized European Standards:

EN 50114 incl. amend. 1 - 5  
EN 50120 incl. amend. 1 - 5

7. The apparatus marking shall include the code:  
**IEEx ia IIC**

8. The supplier of the electrical apparatus referred to in this certificate has the responsibility to ensure that the apparatus conforms to the specifications laid down in the Appendix to this certificate and has satisfied routine verifications and tests specified therein.

9. The apparatus may be marked with the Distinctive Community mark specified in Annex II to the Council Directive of 16 January 1994, document 94/11/EEC. A facsimile of this mark is printed at the top of this certificate. The marking of the equipment shall be visible, legible and durable.

For and on behalf of DEMKO Herlev, 1995-06-11

*J. Høegh*  
J. Høegh  
Department Manager

This certificate is only allowed to be reproduced in entirety and without alterations.  
DEMKO Testing and Certification, P.O. Box 114, Lyngby 8, DK-2730 Herlev, Denmark.  
Phone: +45 44 94 31 00 Telex: +45 44 94 31 01

**DEMKO**  
Testing and Certification

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**APPENDIX**  
to Certificate of Conformity No. 96D.120438X

**THIS APPROVAL APPLIES TO**

2-wire Transmitter  
for temperature measurement,  
for calibration and configuration with a PC.  
Supply: max 30 VDC  
Ambient temperature range: -20°C ≤ T<sub>amb</sub> ≤ +70°C  
method "PFCB"  
E11 type: IPAQ-LX  
intended for use in potentially  
explosive atmospheres (intrinsically safe)  
**IEEx ia IIC**

**Manufactured by:** INOR Process AB  
Box 9125  
S-200 39 Malmö  
Sweden

**Submitted by:** INOR AB  
Box 9125  
S-200 39 Malmö  
Sweden

The product type has been tested to accordance with the CENELEC Standard EN 50014 incl. amend. 1 - 5 and EN 50120 incl. amend. 1 - 5.

The approval applies to products, strictly identical with the submitted and approved product type. If you make any alterations of the product, including the marking, you are obliged to inform DEMKO about this by letter.

**DESCRIPTION OF THE APPARATUS**

IPAQ-LX is an isolated 2-wire transmitter intended for temperature measurement in process industry. The input signal is either of resistance, mA or voltage type. The output signal is standard 4-20 mA. The transmitter must be placed in the safe area and powered with an intrinsic safe power supply unit. An external sensor can be connected to the 4 intrinsically safe input terminals (P1-PL4). The transmitter is calibrated and configured with a PC, which is connected to the transmitter via a special cable type IPRO-X with built-in barrier. This cable is certified by DEMKO under No. 96D.13141X.

**DEMKO**  
Testing and Certification

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**APPENDIX**  
to Certificate of Conformity No. 96D.120438X

**INTRINSICALLY SAFE SPECIFICATIONS**

**Terminal 5-6-7, (Supplied from an intrinsically safe Power Supply)**

U<sub>sc</sub> ≤ 30 VDC  
I<sub>sc</sub> ≤ 100 mA  
P<sub>sc</sub> ≤ 0.9 W

**Terminal 1-2-3-4, (Intrinsically safe sensor terminals)**

U<sub>sc</sub> ≤ 30 VDC  
I<sub>sc</sub> ≤ 25 mA  
C<sub>sc</sub> ≤ 50 nF  
P<sub>sc</sub> ≤ 64 mW

**By which**

U, Maximum voltage that can be applied to the connection facilities for intrinsically safe circuits without invalidating intrinsic safety.

I, Maximum current that can be applied to the connection facilities for intrinsically safe circuits without invalidating intrinsic safety.

P, Maximum input power in an intrinsically safe circuit that can be dissipated while an apparatus when it is connected to an external source without invalidating intrinsic safety.

U<sub>o</sub>, Maximum output voltage in an intrinsically safe circuit that can appear under open circuit conditions at the connection facilities of the apparatus at any applied voltage up to the maximum voltage, including U<sub>sc</sub> and U<sub>o</sub>.

I<sub>o</sub>, Maximum current in an intrinsically safe circuit that can be taken from the connection facilities of the apparatus.

L<sub>o</sub>, Maximum value of inductance in an intrinsically safe circuit that can be connected to the connection facilities of the apparatus without invalidating intrinsic safety.

C<sub>o</sub>, Maximum capacitance in an intrinsically safe circuit that can be connected to the connection facilities of the apparatus without invalidating intrinsic safety.

**DEMKO**  
Testing and Certification

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**APPENDIX**  
to Certificate of Conformity No. 96D.120438X

**SPECIAL CONDITIONS FOR SAFE USE**

The transmitter must be placed outside the hazardous area and supplied by an intrinsically safe power supply/barrier circuit certified to EN 50020.

The transmitter must only be configured and calibrated via the special barrier cable type IPRO-X.

The DEMKO certificate number: 96D.120438X must be inserted on the marking plate.

**DRAWINGS**

Description	Number	Date
List of critical components	4-7505	96-05-15
Block Diagram	4-7502	95-06-07
Input Stage, Module 100	3-7503, Rev B	96-05-19
Controller Stage, Module 200	3-7504	95-06-07
Output Stage, Module 300	3-7505, Rev A	96-05-15
Device mounting	4-7512	95-06-18
Component location primary side	4-7506	95-06-07
Layout layer 1, primary side	4-7507	95-06-07
Layout layer 2	4-7508	95-06-07
Layout layer 3	4-7509	95-06-07
Layout layer 4, secondary side	4-7510	95-06-07
Component location secondary side	4-7511	95-06-07
Marking plate	4-7503	96-05-19

The approval enables the licensee to provide the product with the registered approval mark and the Yellow e mark.

For and on behalf of DEMKO Herlev, 1995-06-11

*J. Høegh*  
J. Høegh  
Department Manager

Examiner:  
L. Frensdorff

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DEMKO Testing and Certification, P.O. Box 114, Lyngby 8, DK-2730 Herlev, Denmark.  
Phone: +45 44 94 31 00 Telex: +45 44 94 31 01

**FACTORY MUTUAL**  
 Factory Mutual Research Corporation  
 1381 Boston Providence Turnpike  
 P.O. Box 9002  
 Norwood, Massachusetts 02062

**CERTIFICATE OF COMPLIANCE**

**HAZARDOUS (CLASSIFIED) LOCATION ELECTRICAL EQUIPMENT**

This certificate is issued for the following equipment:

4-20 mA TEMPERATURE TRANSMITTER consisting of the following apparatus, installed in accordance with entry requirements and Certification Drawings 3-7882, 3-7851 and 3-7881. The transmitters were evaluated having the following equipment ratings:

Associated electrical apparatus having intrinsically safe connections for Class I, II and III, Division I, Group A, B, C, D, E and G hazardous (classified) locations.

Apparatus	Model
Temperature Transmitter	Model IPAQ-LX

Electrical apparatus having intrinsically safe connections for Class I, Division I, Group A, B, C and D hazardous (classified) locations.

Apparatus	Type
Temperature Transmitter	Model IPAQ-HX
Temperature Transmitter	Model APAQ-HX

Manufactured by: INOR PROCESS AB  
 P.O. BOX 8123  
 S-200 36 MALLMO, SWEDEN

This certifies that the equipment described has been found to comply with the following Factory Mutual Research Corporation Approval Standards:

- Approval Standard Class 3608 - 1988
- Approval Standard Class 3613 - 1988
- Approval Standard Class 3618 - 1988

Approval Job Identification: 82648-AX      Approval Report Dated August 6, 1997

Factory Mutual Research Corporation  
 Frank J. Murphy, Manager  
 Intrinsically Safe Section  
 Approval Division

Date: 9/19/97

**FACTORY MUTUAL RESEARCH CORPORATION**  
**JOB IDENTIFICATION (J.I. 82648-AX)**

**1.2 Listing**

1.2.1 The following was evaluated as associated apparatus having intrinsically safe connections for Class I, II, III, Division I, Group A, B, C, D, E, F and G, hazardous (classified) locations in accordance with Drawing No. 3-7852, Revision F, and will appear in the Approval Guide as follows:

**APR0101ABCEFG - 3-7852 / F, Entry**

Entry Parameters (Terminals 3 and 6):

Vmax = 38 V, Imax = 180 mA, Pmax = 900 mW, Ci and Li are not applicable.

Entry Parameters (Terminals 1, 2, 3 and 4):

Voc = 38 V, Ioc = 25 mA, Ca = 8.12 uF, La = 56.8 mH

Temperature Transmitter, Model IPAQ-LX

1.2.2 The following was evaluated as intrinsically safe for use in Class I, Division I, Groups A, B, C and D hazardous (classified) locations in accordance with entry requirements and Drawing No. 3-7851, Revision F and will appear in the Approval Guide as follows:

**IS01ABCD - 3-7851 / F, Entry**

Entry Parameters (Terminals 3 and 6):

Vmax = 38 V, Imax = 180 mA, Pmax = 900 mW, Ci = 0, Li = 2.5 uH

Entry Parameters (Terminals 1, 2, 3 and 4):

Voc = 38 V, Ioc = 25 mA, Ca = 8.12 uF, La = 56.8 mH

Temperature Transmitter, Model IPAQ-HX

1.2.3 The following was evaluated as intrinsically safe for use in Class I, Division I, Groups A, B, C and D hazardous (classified) locations in accordance with entry requirements and Drawing No. 3-7882, Revision C and will appear in the Approval Guide as follows:

**IS01ABCD - 3-7882 / C, Entry**

Entry Parameters (Terminals 4 and 7):

Vmax = 38 V, Imax = 100 mA, Pmax = 780 mW, Ci = 8.018 uF, Li = 0

Entry Parameters (Terminals 1, 2 and 3):

Voc = 38 V, Ioc = 86.7 mA, Ca = 0.12 uF, La = 5.86 mH

Temperature Transmitter, Model APAQ-HX

