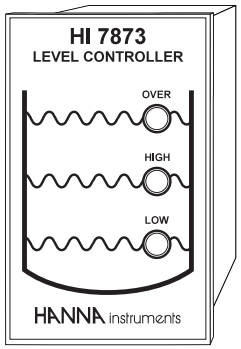
Instruction Manual

HI 7871- HI 7873
HI 7874
Level Controllers



PEWA
Messtechnik GmbH

Weidenweg 21
58239 Schwerte

Tel.: 02304-96109-0
Fax: 02304-96109-88
E-Mail: info@pewa.de
Homepage : www.pewa .de

WARRANTY

HI 7871, HI 7873 and HI 7874 are warranted for two years against defects in workmanship and materials when used for their intended purpose and maintained according to instructions. This warranty is limited to repair or replacement free of charge.

Damages due to accident, misuse, tampering or lack of prescribed maintenance are not covered.

If service is required, contact the dealer from whom you purchased the instrument. If under warranty, report the model number, date of purchase, serial number and the nature of the failure. If the repair is not covered by the warranty, you will be notified of the charges incurred. If the instrument is to be returned to Hanna Instruments, first obtain a Returned Goods Authorization Number from the Customer Service department and then send it with shipment costs prepaid. When shipping any instrument, make sure it is properly packaged for complete protection.

All rights are reserved. Reproduction in whole or in part is prohibited without the written consent of the copyright owner, Hanna Instruments.

Hanna Instruments reserves the right to modify the design, construction and appearance of its products without advance notice.

Dear Customer,

Thank you for choosing a Hanna product.

This manual will provide you with the necessary information for a correct operation.

If you need additional technical information, do not hesitate to e-mail us at **tech@hannainst.com**.

These instruments are in compliance with the CE directives.

PRELIMINARY EXAMINATION

Remove the instrument from the packing material and examine it carefully. If any damage has occurred during shipment, immediately notify your Dealer or the nearest Hanna Customer Service Center.

Note: Conserve all packing material until the instrument has been observed to function correctly. Any defective item must be returned to the Dealer in its original packing.

GENERAL DESCRIPTION

HI 7871 and **HI 7873** are 2-wire transmitter level controllers designed especially for long distance control of liquid levels in tanks (e.g. in biological and industrial water treatment).

A complete system should include:

- **HI 7871** or **HI 7873** level controller
- **HI 7874** level transmitter & bar holder
- **HI 7164** undecal connector
- 3 or 4 measuring bars

The level transmitter is basically a molded electrode holder with 4 sockets to screw in the level sensors. The longest bar has to be the common electrode and connected to the COM port. The remaining bars can be connected in any sequence, after cutting them to the required lengths.

HI 7874 contains a completely resinated amplifier circuit and a 2-wire terminal board. It also comes with a mounting bracket for quick and easy installation.

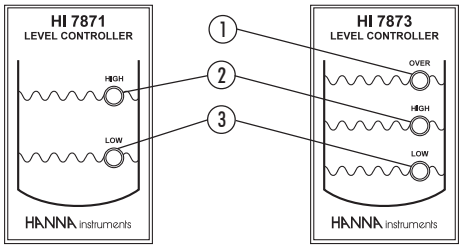
HI 7874 uses stainless steel measuring bars and employs 9V peak to peak AC to measure the liquid level. It can be used in liquids with conductivity greater than 10 µS/cm.

HI 7871 requires only 3 bars, whereas **HI 7873** needs 4.

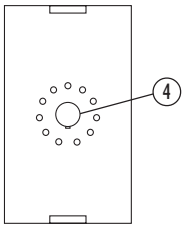
HI 7871 is a basic high and low level controller. **HI 7873** has an additional overflow alarm control.

FUNCTIONAL DESCRIPTION

FRONT PANEL



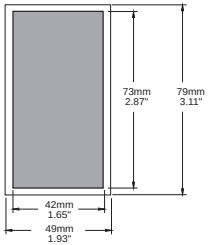
REAR PANEL



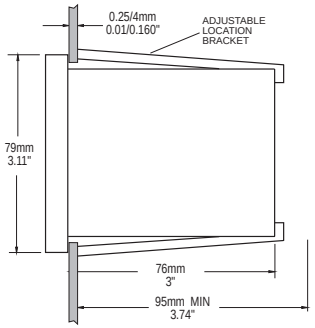
1. OVER LED (**HI 7873** only) indicates an overflow condition
2. HIGH LED indicates full tank
3. LOW LED indicates low liquid level
4. 11-pin socket

MECHANICAL DIMENSIONS

FRONT VIEW



SIDE VIEW



The supplied adjustable brackets allow the controller to slide into the cut-out and hold the unit in place. 95 mm (3.74") is the minimum space required to install the controller with the cables connected.

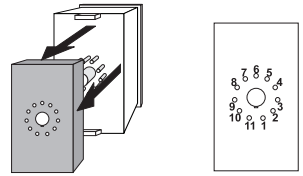
SPECIFICATIONS

	HI 7871	HI 7873
Transmission	max 100 m (330 feet)	
Electrical Connection*	**HI 7164** undecal connector	
Level Adjustment	high, low	high, low, overflow
Level Indication	high, low	high, low, overflow
Sensing Bars*	3	4
Transmitter*	**HI 7874**	
Output Contact	1 relay (2A/250 Vac, 30Vdc)	2 relays (2A/250 Vac, 30Vdc)
Power Supply	110/115 Vac or 220/240 Vac; 50/60 Hz	
Environment	0 to 50°C (32 to 122°F); RH max 85% non-condensing	
Dimensions	83 x 53 x 95 mm (3.1 x 1.9 x 3.7")	
Weight	250 g (8.8 oz.)	

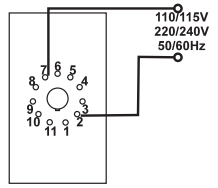
* Not included with **HI 7871** and **HI 7873**.

CONNECTIONS

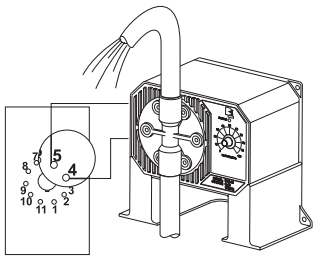
- Remove the 11-pin connector from the rear of the level controller.



- Connect a 2-wire power cable to terminals #2 and #7 (no ground connection).

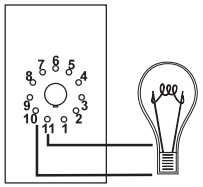


- Connect the output terminals #4 (common) and #5 (low) to a relay switch (max 2A/230V) to start and stop a pump or to open and close an electrovalve. These two contacts act only as a switch and the pump or electrovalve have to be powered independently.

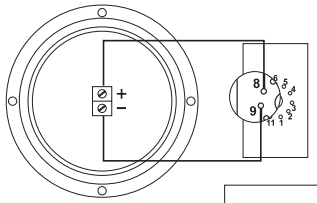


The common terminal (#4) and #3 can also be connected to a device to indicate a "full tank" state.

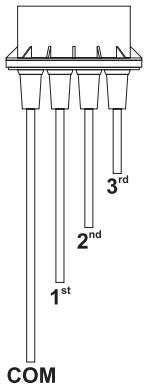
- With **HI 7873**, connect terminals #10 and #11 to an alarm for monitoring Over Flow condition.



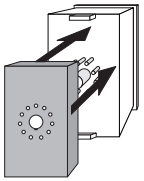
- Remove the cover of **HI 7874** (bar holder) and connect a 2-wire cable from #8 to positive (+) and #9 to negative (–) terminals of the holder.



- Screw the longest bar to the hole marked as COMM. This bar will be used as the reference electrode. Screw the other measuring bars into the remaining sockets in any order. The bars should be cut to the required lengths for low, high and over. The reference (COM) and the low bar (1st) can be the same length.
- With **HI 7871**, connect only 3 bars to the holder: reference, low and high. With **HI 7873**, connect 4 bars to the holder: reference, low, high and over.

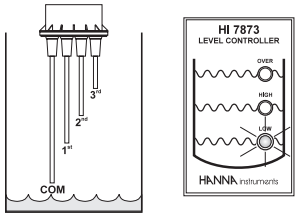


- Insert the 11-pin connector to the back of the level controller.

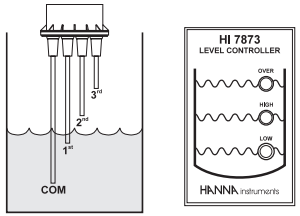


OPERATIONAL GUIDE

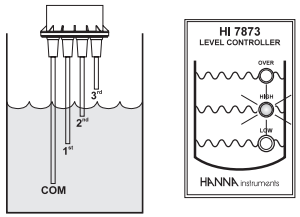
- Turn on the power supply. After approx. 8 seconds, the controller can activate a pump or electrovalve.
- When liquid level is below the COM (reference) or the 1st bar, LOW LED turns on and output contacts (#4 & #5) close, activating a pump/electrovalve.



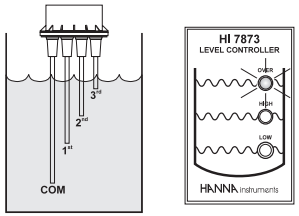
- When liquid level reaches the low (1st) bar, LOW LED goes off but the contacts (#4 & #5) remain closed.



- When liquid level reaches the high (2nd) bar, HIGH LED turns on and the output contact (#5) opens (pump/electrovalve disactivated) while #3 & #4 close.

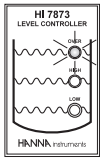


- With **HI 7873**, if after reaching HIGH level, liquid level continues to rise and reaches the 3rd bar, the alarm contacts close and the OVER LED comes on.

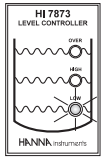


- Subsequently, when liquid level drops below the 3rd bar, OVER LED goes off and HIGH LED comes on. When liquid level drops below the 2nd bar, HIGH LED goes off. LOW LED lights up when the level drops below the 1st bar.
- **HI 7873** can also detect faulty conditions, such as a short or open circuit, in the 2-wire connection between #8 and #9 terminals with HI 7874 bar holder.

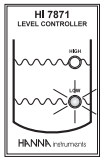
If the 2-wire is shorted, the OVER LED goes on and the alarm contacts close.



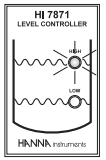
If the 2-wire is damaged and the circuit is open, LOW LED goes on and the alarm contacts close.



- With **HI 7871**, LOW LED goes on with an open circuit. If the LOW LED remains lit but the pump/electrovalve is not activated, it indicates an open circuit.



A short circuit will instead give a HIGH LED indication.



Note: It takes about 8 seconds for the controller to activate the relay from when an alarm condition occurs.

ACCESSORIES

HI 7164	Undecal connector
HI 7875/P	Stainless steel threaded measuring bars (5 pcs)

Note: The sensing bars are made in such a way that they can be screwed one into each other to provide any required length. It is recommended to keep the bars separate with a non-conductive material, such as plastic to ensure they do not touch each other, specially in deep tanks.

CE DECLARATION OF CONFORMITY

HANNA instruments

CE

DECLARATION OF CONFORMITY

We

Hanna Instruments Italia Srl
via E.Fermi, 10
35030 Sarmeola di Rubano - PD
ITALY

herewith certify that the level controllers/transmitter

HI 7871 HI 7873 HI 7874

have been tested and found to be in compliance with EMC Directive 89/336/EEC and Low Voltage Directive 73/23/EEC according to the following applicable normatives:

EN 50082-1: Electromagnetic Compatibility - Generic Immunity Standard
IEC 801-2 Electrostatic Discharge
IEC 801-3 RF Radiated
IEC 801-4 Fast Transient

EN 50081-1: Electromagnetic Compatibility - Generic Emission Standard
EN 55022 Radiated, Class B

EN61010-1: Safety requirements for electrical equipment for measurement, control and laboratory use

Date of Issue: 27-11-1998

P. Cesa - Technical Director
On behalf of
Hanna Instruments S.r.l.

Recommendations for Users

Before using these products, make sure that they are entirely suitable for the environment in which they are used.

Operation of these instruments in residential areas could cause unacceptable interferences to radio and TV equipment.

Any variation introduced by the user to the supplied equipment may degrade the instrument's EMC performance.

For HI 7874 only:

The measuring bars at the end of the sensor are sensitive to electrostatic discharges. Avoid touching these bars at all times.

Connection to level controller should be done with the recommended ferrite close to level controller.