Honeywell

Preamplifier Module
31028698
Operation and Maintenance Manual

70-82-25-36

Rev 3

October 2009

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Revision 3 – October 2009

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About This Document

Abstract

This document is intended to support the installation, operation and maintenance of the 31028698, Preamplifier Module.

Revision Notes

The following list provides notes concerning all revisions of this document.

Rev. ID	Date	Notes
0	2/87	This document is the initial Honeywell release of the L&N manual p/n 177773 Rev. J1. No significant changes, the format has been changed to reflect the Honeywell layout.
1	8/97	Edits were made to Figures 2-2, 2-3 and 2-4 to add product model numbers to the headings in the tables found in these figures.
2	1/99	Changes were made to Figures 2-2 and 2-3 to eliminate confusion on wiring diagrams
3	10/2009	Reference to Preamplifier Modules 31026395, 055908, 055909 and 316529 were removed. References to UDA 2182 added. Figure 2-2 and 2-3 modified and Figure 1-1 and 2-4 were removed. Contact address updated.

References

Honeywell Documents

The following list identifies all Honeywell documents that may be sources of reference for the material discussed in this publication.

Document Title	ID #	Binder Title	Binder ID #

Non-Honeywell Documents

The following list identifies select non-Honeywell documents that may be sources of reference for the material discussed in this publication.

Title	Author	Publisher	ID/ISDN #

Contacts

The following list identifies important contacts within Honeywell.

Organization	Telephone	Address
Honeywell TAC	1-800-423-9883 Voice	512 Virginia Drive Fort Washington, PA 19038

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1. Introduction

1.1 Description

The Preamplifier Module 31028698 permits the use of Honeywell analyzers for pH with any Honeywell electrode mounting. They constitute the preamplifier portion of the measuring system, serving as an interface between the pH analyzer and conventional electrodes and mountings.

The input to the preamplifier module is the low-level, high-impedance emf from the electrode system, connected to the module using shielded low-loss cable. The module output is a high-level, low-impedance signal, easily carried long distances over ordinary cable. The module contains the Honeywell Electrode-emf Preamplifier, potted and sealed against humidity, in a stainless-steel case on which is mounted a terminal board for the output cable, temperature compensator, and reference electrode connections. The measuring electrode lead, an integral part of the preamplifier, is connected to a special low-loss electrode terminal block at which the shielded measuring electrode cable is terminated.

The preamplifier module is housed in a weatherproof, corrosion resistant case (fiberglass reinforced plastic). It requires no line voltage supply. The dc operating voltages are supplied from the receiving instrument through the output cable.

1.2 Specifications

Models

31028698 - for use with: UDA 2182 pH Analyzer with Internal Pre-Amp Input Card

Dimensions

Length: 7-7/16” (189 mm)

Width: 5-7/16” (138 mm)

Height: 4-13/16” (122 mm)

Weight

Approx. 3 lb (1.36 kg)

Mounting

Surface: Four 5/16” (8 mm) mounting holes

Material

Molded fiberglass with gasketed lid

Electrical Classification

NEMA 4X (corrosion resistant, watertight)

Openings

Two 1-1/8” (29 mm) dia. holes for ¾” conduit, one on each end

2. Installation

2.1 Mounting

Locate the module as close as possible to the electrode site. The module is designed for surface mounting. Dimensions required for mounting the case are given in Figure 2-1. Four 5/16” diameter holes are provided in the case flanges for mounting screws or bolts. Captivate screws secure a gasketed cover plate. A 1-1/8” diameter hole in opposite sides of the case permits use of 3/4” electrical conduit. To maintain NEMA 4X rating, use proper conduit connectors.

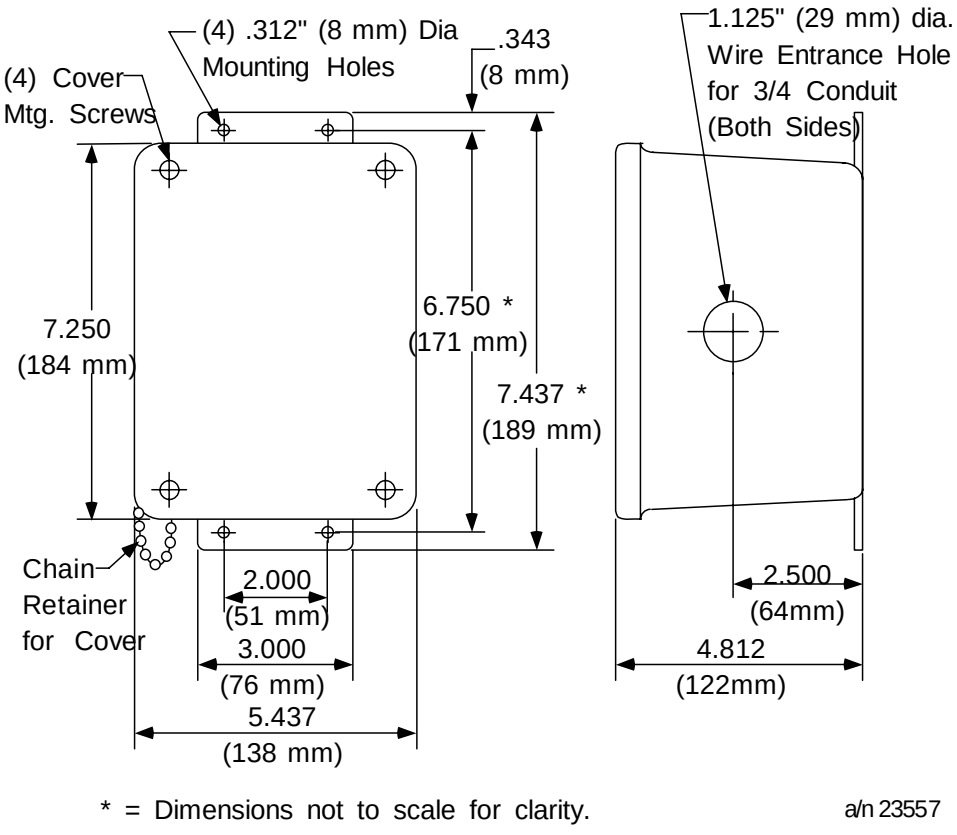


Figure 2-1. Preamplifier Module Mounting Dimensions

2.2 Wiring Connections

Run input leads from the electrode mounting to an opening in the module case. Observe all precautions given in the directions furnished with the electrode mounting. If necessary, use watertight 3/4” conduit to carry the wiring between the electrode mounting and the module. For electrode connections, see Table 2-1 and the appropriate referenced connection diagram.

2.2.1 Electrode Cable Connections

Do not remove the metal cover from the special terminal block, located in the upper section of the module case, until ready to make connections. When it is removed, do not touch the terminal block and do not handle the inner insulation of the shielded electrode lead. These parts are made of a special very high resistance insulating material. The oils or salts from bare hands will form leakage paths on the surface of this material, which may cause erroneous readings. If any of this insulation material becomes contaminated by handling, refer to Section 3.1.

Connect the shield of a combination pH electrode to the REF terminal on the module terminal board, being very careful that the cable shield is not in contact with the shield can or any other part of the terminal board compartment. Connect the inside conductor of the shielded cable to the lower screw on the metal terminal strip E on the special terminal block; avoid touching the plastic block with bare fingers. Replace the metal cover on this block.

Table 2-1. Preamplifier Module/Preamplifier Selection Guide

Preamplifier Module	Used with the Following Instruments
31028698 (For replacement preamplifier, not including the NEMA 4 box, order P/N 31022283)	UDA 2182
See Installation Wiring Diagram in Figure 2-3 for pH	

2.2.2 Automatic or Fixed Temperature Compensator Connections

ATTENTION

For automatic temperature compensation, a specific temperature compensator must be used with the electrode system.

Connect the two compensator leads to preamplifier terminals (TH and TG). For Meredian Combination Electrodes with integral temperature compensator, these leads are the two white leads in the electrode cable. For fixed temperature compensation, select a resistor having a value suitable for the instrument and the solution temperature and connect it as indicated above. Table 2-2 gives the resistor values at 25°C for Honeywell instruments.

Determine resistor values at other temperatures as follows:

For microprocessor-based instruments, see the instrument service manual for the curve.

Table 2-2. Temperature Compensation Resistor Values at 25^0 C

Instrument	Module Part No.	Preamplifier Part No.	Terminals	Resistor Value
UDA 2182 Analyzer	31028698	31022283	TH -- TG	8550 ohms

2.2.3 Preamplifier-to-Analyzer Cable Connections

Make these connections to the module and analyzer terminals in accordance with Table 2-1 and the appropriate referenced connection diagram.

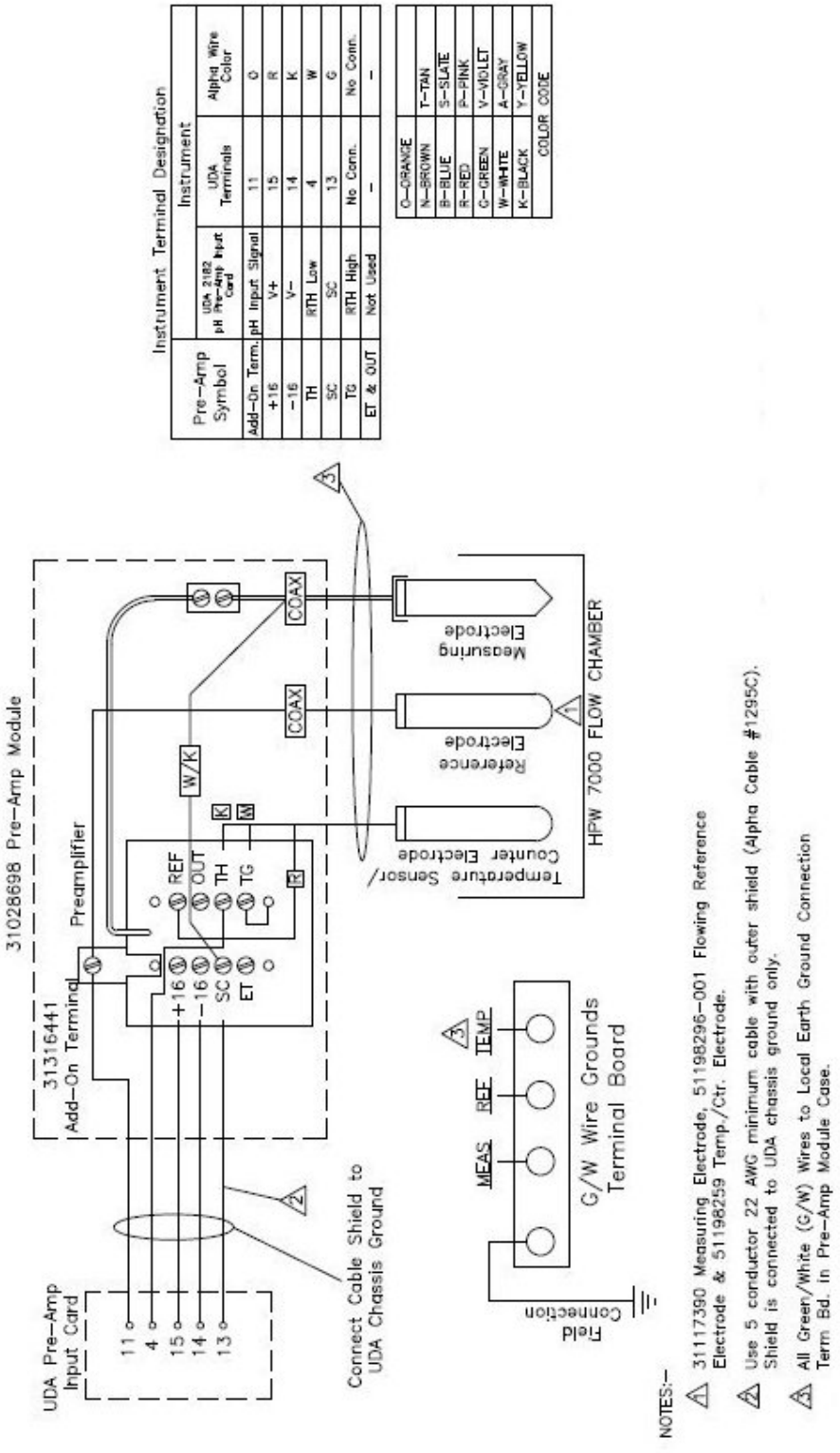
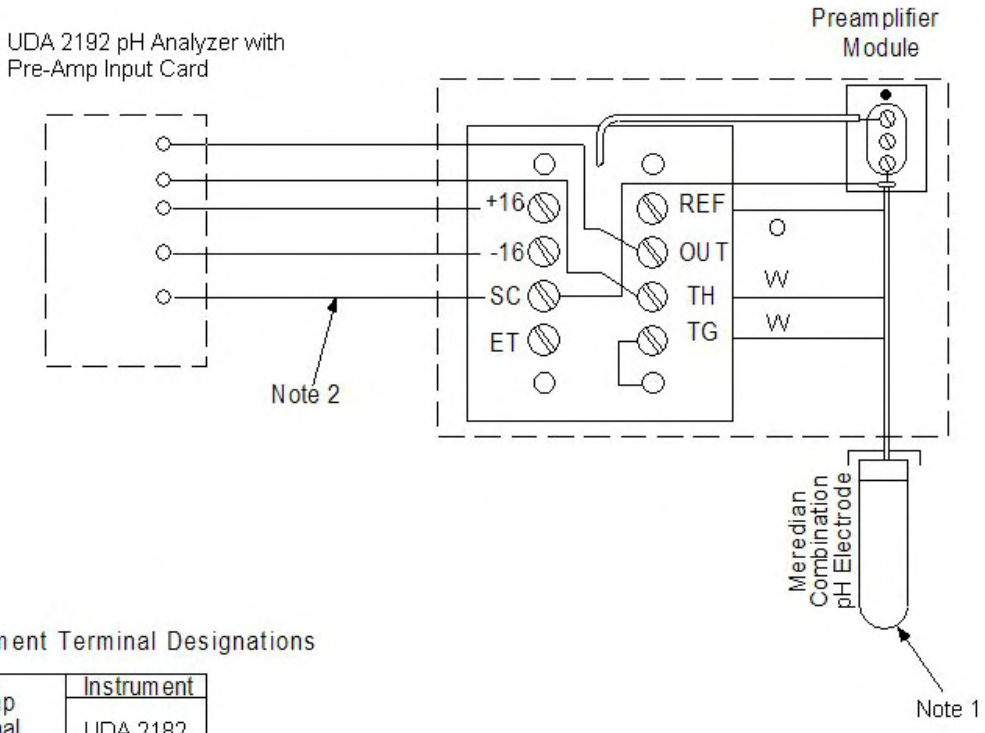


Figure 2-2. Wiring diagram for HPW7000 pH System Using 21028698 Pre-Amp to UDA 2182 Analyzer with Pre-Amp Input Card



Instrument Terminal Designations

Preamp Terminal	Instrument UDA 2182
Out	11
+16	15
-16	14
ET	No Connect
SC	13
TH	4

NOTES:

1. If separate electrodes are used, connect reference electrode lead to "REF" terminal and connect temperature compensator leads to "TH" and "TG" terminals.
2. Use #22 AWG or larger 5-conductor cable.

Figure 2-3. pH Electrode Connections for Mountings Using 31028698 Preamplifier Module

3. Maintenance

3.1 Cleaning

The special terminal block is made from an extremely high resistance material. Oils and salts from perspiration form leakage paths which can cause erroneous pH readings. Always keep these parts clean and dry. If any of this insulation material becomes contaminated by handling, wipe it clean with a lint-free cloth or lens tissue moistened in isopropyl or grain alcohol. If this is not effective, remove the block and use water and detergent. Use distilled water if tap water has high mineral content. Use clean forceps or clean rubber finger cots.

3.2 Preamplifier Parts and Installation

The following replacement parts are available for the preamplifier module.

- Preamplifier 31028698

When replacing the preamplifier, cut off the screw cap and prepare the shielded lead as indicated in Figure 3-1. Do not touch the inner insulation.

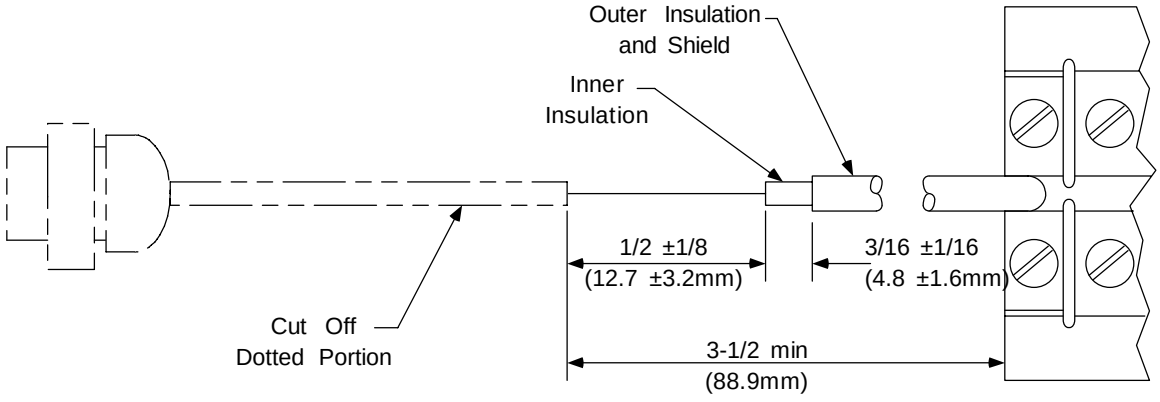


Figure 3-1. Preparing Preamplifier for Replacement in Module

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