
BLIND

CONDUCTIVITY

CONTROLLER

BCH-1

USERS GUIDE



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SPECIFICATIONS

| | |
|---------------------------|---|
| RANGE: | 0-5000uS single range |
| LED Indicators: | 3 LED indicators display mode of operation. Power on Bleed Inhibitor |
| Temperature compensation: | 0-100°C fully automatic |
| Relay output: | 2x240VAC 3 A. current rating (non conductive) Manual override mode for both relay outputs. |
| Fuses: | 3 Amp. fast blowing. (for instrument and 240 volts output.) |
| Deadband: | 2% of full scale |
| Accuracy of set point: | 1% of full scale. |
| Repeatability: | Better than 1%. |
| Calibration: | uS calibration accessible through front panel. |
| Signal Output: | 0-5000uS = 4-20mA full scale, constant current fully isolated from instrument |
| Housing: | Thermoplastic IP 53 rating with transparent lid. |
| Dimensions: | W182 x H110 x D111mm. |
| Cell size: | 3/4" BSP thread |
| Cell temperature: | 0-60°C |
| Cell material: | PVC |
| Cell cable length: | 3 metres with 4 pin plugs both ends. |
| Temperature sensor: | Encapsulated in cell |

INTRODUCTION

The model BCH-1 blind controller is particularly suited where an economical yet efficient installation is required. All instrument connections are accomplished with plugs and connectors; eliminating all on-site electrical wiring. Mounting the BCH-1 involves no more than inserting 4 screws through 4 large holes located on each corner of the instrument and fixing them to a mounted back panel.

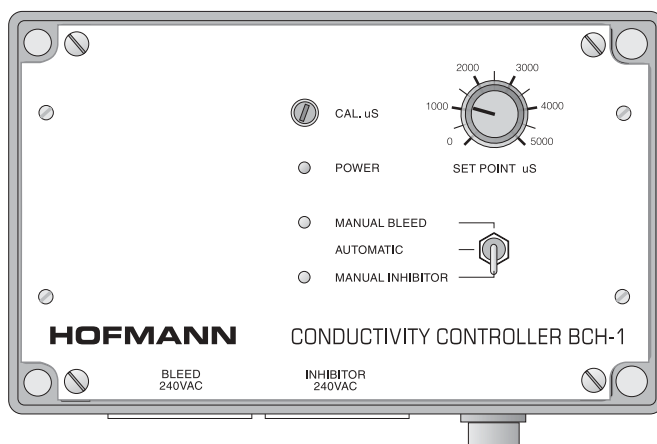


FIG. 1 CONTROLLER BCH-1

The 4-20mA constant current output allows interfacing with a microprocessor or central control system. The current output is fully isolated from the conductivity electrode thereby avoiding possible earth loop problems and false uS readings. The BCH-1 controller features automatic temperature control, a single set point control, manual override for the bleed and inhibitor outputs and a calibration trim control easily adjusted through the front panel.

A red LED light indicates the power-on condition of the instrument. The single set point controls 2 relays switching 240 VAC to the output sockets located on the bottom side of the instrument. Each relay output can be manually overridden with a three way toggle switch located on the front panel. 2 green LED lights indicates the selected operation. A 4-pin connector with a locking ring connects the electrode to the instrument. An identical 4-pin connector attaches the electrode to the cable. The wiring of the 3 metre cable is symmetrical and may be used in either direction to plug the electrode into the BCH-1. A second 2-pin SIGNAL output socket is available to connect an optional chart recorder or interface into a micro processor. (See Fig.2) An internal fuses of 3A rating is used to connect the 240 VAC to the instrument and the output sockets adding an extra safety feature to the BCH-1.

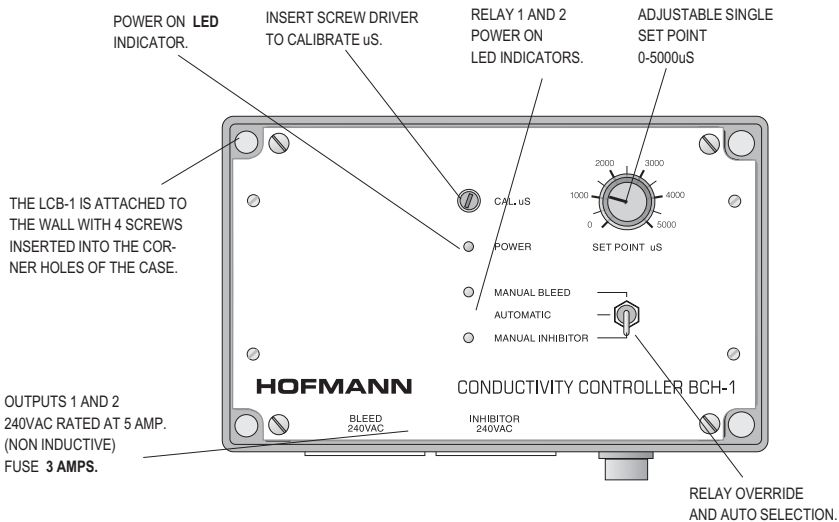


FIG. 2 FRONT PANEL LAYOUT

INSTALLATION

Instrument

Installation and setting up of the BCH-1 is easy and straight forward. No special tools are required. (See Fig.2) The 4 screws are inserted through 4 corner holes (locking holes for the transparent lid) and also fastened through them with a screw driver. The pumps simply plug into the flush mounted sockets placed on the underside of the instrument. OUTPUT 1 and 2 may be chosen at will to connect the pumps as the SET POINT control regulates both 240V outputs identically.

Electrode

The cell is mounted inline into a 3/4" BSP Tee. If the electrode is installed into a PVC T-jointer extra care must be taken to insure that the 2 stainless steel electrodes protrude far enough into the body to be immersed into the flow of water through the pipe.

The electrode plugs into the 4 pin socket situated on the underside of the instrument. Never cut the cable or re-join the 4 wires in order to shorten or lengthen the cable, as this will result in unreliable and inferior performance. Always reconnect the whole length of the cable to the 4 pin plug. Longer cables up to 10 metres can be supplied on request.

The T-piece used to install the electrode must be PVC to ensure that no short circuit between the stainless steel electrodes and pipe fittings occurs. A conduction leakage may also affect the accuracy of the instrument reading if a metal T-piece is used.

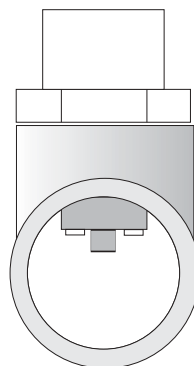


FIG.3 *ELECTRODE POSITION.*

NOTE: *The wiring of both connectors to the 4 wire cable is identical and either plug can be connected to the electrode or BCH-1.*

The electrode in the standard package is supplied with a 4 pin socket and a 3 metre cable is supplied. This greatly simplifies an installation where the cable is wired into a conduit or is fastened to a wall and the electrode is screwed into a pipe. For situations where it is desired to simply immerse the electrode into the solution a special model with a 3 metre cable directly moulded into the body can be supplied on request.

Using a chart recorder.

A CRH-41 recorder connected to the 4-20mA current output enables the plant to be monitored.

4mA = 0uS, 12mA=2500uS 20mA=5000uS.

NOTE: *The current output of the BCH-1 is fully isolated and no precautions have to be taken when connecting other equipment to the instrument. The isolation prevents any earth loops via the electrode and water back to the instrument.*

OPERATION

Initial check of BCH-1

Once the instrument is properly installed and the power connected the red LED will light up. The 2 OUTPUT relays may latch depending on the position of the SET POINT control. Sweeping across its range will activate the 2 OUTPUT relays and green LED lights at some point, provided the μS value of the measured solution is within the range of 0-5000 μS .

NOTE: *When sweeping across the range with the SET POINT control the operation of the relay appears to function in the reverse order. This however is only an illusion as it is obvious that the SET POINT is changing and not the value of the solution.*

Calibration of the BCH-1

The instrument is calibrated in the factory and all that is required for most applications is to set the desired μS with the SET POINT control. The range is 5000 μS calibrated in 500 μS divisions making a SET POINT adjustment with a resolution of approx. 50 μS possible.

To adjust the calibration place the electrode in a known buffer solution (preferably in the range of between 2000

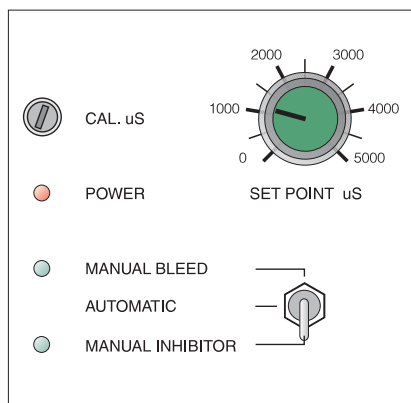


FIG. 4 PANEL LAYOUT

and 5000uS). Select the same value with the SET POINT control and with a screw driver carefully turn the CAL.uS control (See Fig.5) until the OUTPUT relays and LED'S are switched. Rotate the SET POINT control either way, activating the relay outputs and confirm that the SET POINT value and the solutions uS are the same value. Repeat the operation if necessary until the required uS value is set. The above mentioned operation of course can also be performed with the installed electrode as long as the uS value of the water in the tank installation has been determined.

NOTE: *When the SET POINT control is adjusted bear in mind that a deadband (hysteresis) of 2% full scale is present placing the on and off points of the outputs at slightly different places on the scale.*

Temperature compensation

The build in temperature sensor compensates the uS reading in a linear fashion between 0 and 100°C. The time taken for the electrode to adjust the compensation for a 10°C temperature change in the solution is approx. 5 min. due to the mass of the electrode body. The BCH-1 is able to sense a temperature sensor open circuit at the input socket (should the temperature sensor for any reason fail or a wire connection become faulty) and will internally adjust the compensation to an equivalent value of 0°C.

NOTE: *The temperature range of the electrode is 0-60°C. and should not be exceeded as the PVC body will distort and possibly crack. A special electrode is required for high temperature applications.*

Options

The CSR-2 current sense relay controller expands the BCH-1 from a single point to a three point controller, with the ability to select the configuration of two set points.

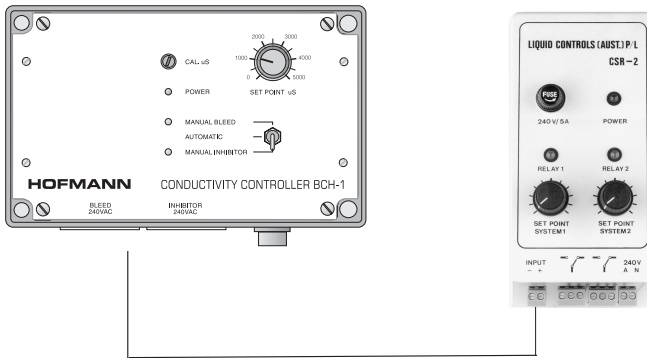


FIG5 EXPANDING THE BCH1 FOR 3 SET POINT CONTROL.

WARRANTY

We, HOFMANN ELECTRONICS guarantee this unit against defects due to faulty manufacture or breakdown of components for a period of twelve month from the date of purchase, subject to the following provisions:

- The guarantee will cover original failure of parts and natural defects due to manufacturing causes. Otherwise repair charges are to be to the owners cost.
- The warranty does not cover any carriage costs.

The warranty is void if:

- The instrument is damaged due to rough handling or transport after purchase.
- The article has not been used in accordance with the operating instructions.
- Any parts in the instrument have been changed or have been altered in any way.
- The serial number is removed or defaced.

All other warranties and conditions, express or implied, are void.

MODEL: BCH-1

SERIAL NO:

SOLD AND SERVICED BY

