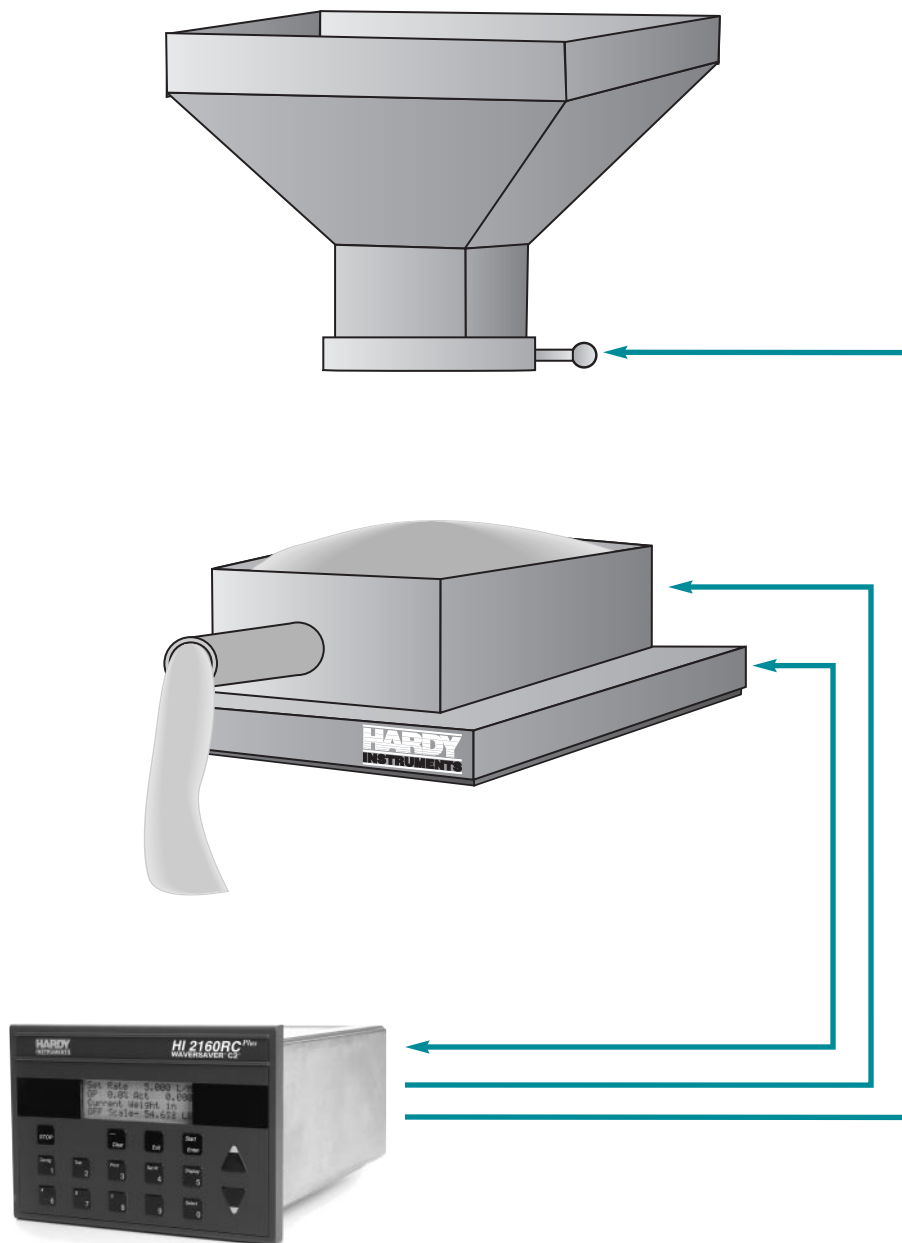


Rate Controller Loss-in-Weight

Model
HI 2160RC^{Plus}



Applications

- Gravimetric Feeding
- Continuous and Batch Rate Control
- Master/Slave

Features

- Automatic Closed Loop Control
- **WAVERSAVER[®]**, Ignores Vibration Around Scales
- Automatic Weight and Rate Calibration

HARDY
INSTRUMENTS

The latest generation of Hardy Instruments Loss-In-Weight Controller, the HI 2160RC^{Plus} provides more features and capabilities than ever before. Used to retrofit volumetric feeders or replace outdated controllers in gravimetric systems, the HI 2160RC^{Plus} controls a variety of feeding devices including :

- augers
- vibratory and belt-based feeders
- your proprietary designs.

For years, WAVERSAVER[®] technology has helped provide precise rate control. Now we've added customer driven features such as automatic rate calibration for easy setup, storage of multiple calibration parameters to allow quick ingredient changes, and an integrated Two Sigma test to allow for on-site system verification.

Features, performance and reliability make the HI 2160RC^{Plus} the controller of choice for all feeder applications.

OPTIMUM CONTROL

The prerequisite of effective feeder control is accurate measurement of the process. Hardy Instruments' exclusive WAVERSAVER[®] technology ignores vibration and mechanical noise in feeders and the plant environment. There's no need for mechanical contraptions to dampen vibration because WAVERSAVER[®] intelligently deciphers true weight data from the load cell signal. All of this is done in a fraction of a second, allowing the HI 2160RC^{Plus}'s control algorithms to be precise and responsive. With 1,000,000 counts of display resolution, the HI 2160RC^{Plus} can monitor even minute weight changes in systems with high dead loads.

AUTOMATIC WEIGHT AND RATE CALIBRATION

Hardy Instruments' C2[®], Second Generation Calibration, feature allows you to electronically calibrate your feeding system immediately after installation,

eliminating all of the problems associated with test weights.

Each C2[®] certified load sensor contains information detailing its unique



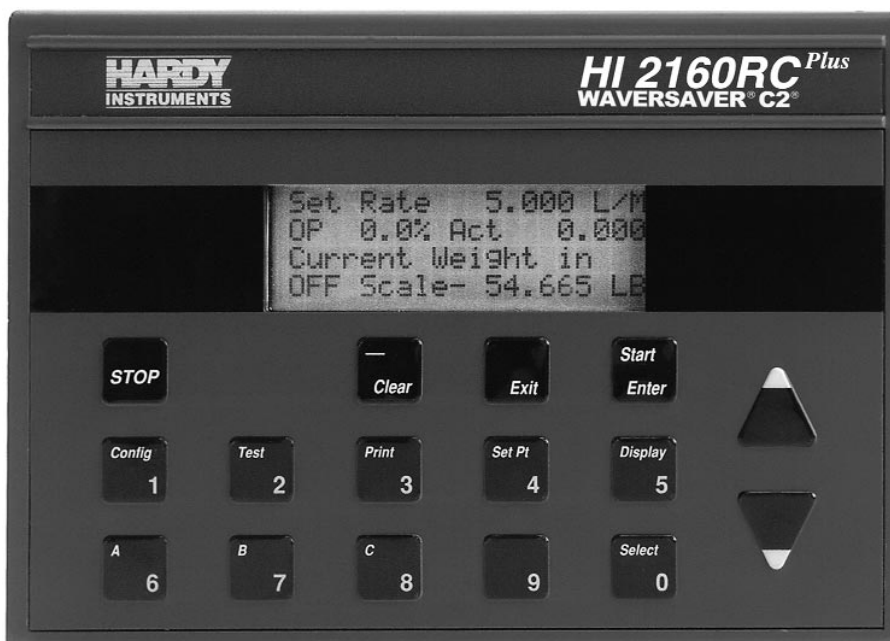
performance characteristics. The HI 2160RC^{Plus} uses these characteristics to automatically calibrate the scale without the need for test weights, even with material placed on the scale.

A five-point Auto Rate Calibration automatically allows the HI 2160RC^{Plus} to tune itself to the feed characteristics of the feeder and the material being fed by it. It will also display a percent deviation, if any, at all five points. This allows for a higher feed accuracy over a broader range of feed rates.

MULTIPLE CONFIGURATION STORAGE

Need to change your material, an auger or the complete feeder? With the HI 2160RC^{Plus}, once you have done your setup and calibrations, you simply store them away in its twelve dedicated, on board memory locations. When you make a change, you just retrieve the required configuration and continue your process. There is no need to manually recalibrate or reconfigure.

If the controller ever needs replacement, all twelve configurations can easily be transferred to another instrument via the rear accessible Secure Memory Module (SMM).



TWO SIGMA TESTING

Today, industrial processes utilizing feeders require a high degree of accuracy and must have a way to measure that accuracy. Feeder users have had to verify their performance by providing test material to a feeder manufacturer's test facility where under laboratory conditions a "Two Sigma" test was performed. For your convenience, Hardy Instruments has added this Two Sigma Test feature to the HI 2160RC^{Plus}. Your system's performance can be verified at any time under your actual production conditions by an on demand, built-in Two Sigma test routine. This feature not only saves you money but also gives you near instant results.

MULTIPLE FEEDER CONTROL

The HI 2160RC^{Plus} is a powerful building block when it comes to multiple feeder systems. It can act as a master to multiple controllers or as a slave to some other process input. Lock out the keypad and let multiple HI 2160RC^{Plus} units be controlled from a common host computer or programmable controller.

WORRY-FREE OPERATION



Start your process and walk away with confidence, because the HI 2160RC^{Plus} will watch and notify you of any problems. Display prompts and "alarm" relay outputs occur with

conditions of rate tolerance errors and refill failures. Significant errors can cause a shutdown condition with specific control parameters. You decide at which levels to alarm or shutdown, and then let the HI 2160RC^{Plus} do its job. Only authorized personnel can enter parameters, start the process and clear alarms. You assign one of three different security levels to each function. All personnel can view the data, but only those with the proper code can actually alter values.

Quick to set up and easy to use, the HI 2160RC^{Plus} is designed for the realities of the workplace with a waterproof front panel, and tactile response keys. Frequently changed parameters are readily accessible and easy to view from the 80-character backlit display.

EASY SYSTEM INTEGRATION



Hardy Instruments provides a wide variety of interface options, including standard bi-directional serial and optional Allen-Bradley Remote I/O, Profibus and Analog interfaces.



C2®, Second Generation Calibration, and WAVESSAVER® are registered trademarks of Hardy Instruments, Inc. All other names are trademarks of their respective companies.



MAIN FEATURES

• Automatic Closed Loop Control

Continuously adjusts feeder to deliver desired feed rate. Alarm and shutdown can occur if feed rate exceeds customer specified levels

• WAVESSAVER®

Ignores the effects of plant and process vibration for more accurate measurement of feed rates

• Continuous or Batch

Menu selection of continuous operation, or a specific batch amount

• Automatic Refill

User-selected refill points start and stop the refill process. Low and high alarms watch for failure of the refill process

• Convenient Manual Mode

Manual speed control is achieved with the up and down arrows. When a desired feed rate is reached, you can switch to automatic closed loop control with the touch of a button

• Multiple Configuration Storage

Stores up to 12 different complete system configurations

• Two Sigma Test

Built-in system performance verification

• C2®, Second Generation Calibration

Calibrate the feeder scale without test weights

• Secure Memory Module

Stores critical data for retrieval in a replacement HI 2160RC^{Plus}

COMPONENTS TO COMPLETE YOUR HARDY INSTRUMENTS SYSTEM

• **Hardy Rate Controller HI 2160RC^{Plus}**



• **Hardy Platform Scales and Load Points**

Hardy Instruments carries a wide variety of strain gauge load points and scale bases to accommodate your applications requirements.



Load Point
Model
HI LPRA



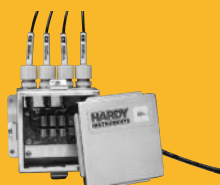
Platform
Scale
Model HIPS

• **Hardy C2[®] Certified Cable**

This 8-conductor cable is designed for optimizing weight and load sensor characteristic signals from the junction box to the instrument.

• **Hardy Junction Box (HI 215JB Series)**

This Nema 4 rated waterproof enclosure sums from one to four load sensor signals. Its unique design allows for easy isolation and troubleshooting of the weighing system.



HARDY INSTRUMENTS

ADDITIONAL FEATURES

• **Operation Displays**

A single button selects pre-defined operating displays including rate, current weight, totalized and batch data. Backlit 80-character display is easy to see from wide angles

• **Totalizer**

Keeps track of the amount of ingredient dispensed

• **Remote Inputs**

Allow synchronization with other process equipment or for simplified remote control of Refill, Start, Pause, Abort, Reset Totalizer, Print, Read Remote Setpoint and Clear Alarm

• **Time Units**

Seconds, minutes and hours

• **Mass Units**

lb., oz., ton, kg, g, gal, ltr, mltr

• **Control Output**

Electrically and optically isolated, user selectable 0-20ma, 4-20ma, 0-5vdc, or 0-10vdc output

• **Front Panel**

Size 5" x 7" (124 x 178mm), waterproof (Nema 4) when panel mounted

• **Serial Communications**

Bi-directional RS-232 serial port allows reading of data and downloading of feeding instructions. Additional network communications available

• **Time and Date**

Self-powered time and date clock

OPTIONAL

• **Remote I/O Interface**

Provides bi-directional communications to Allen-Bradley logic controllers

• **Profibus I/O Interface**

Siemens certified interface providing bi-directional communications to Profibus compatible controllers

• **RS-232 to RS-422 Converter**

Allows the HI 2160RC^{Plus} to share serial bus with other instruments and extends communications distances

• **Remote Set point Input**

Allows rate set point to be adjusted by an external analog input

Current: 4-20 or 0-20 milliamps

Voltage: 0-10 or 0-5Vdc

• **Analog Output**

Transmits weight or actual rate

Current: 4-20 or 0-20 milliamps

Voltage: 0-10 or 0-5Vdc

• **Quad Expander Box**

Remote box when used with an option expander card increases instrument option capabilities from one to four

• **Remote Display**

Allows the display and keyboard to be mounted up to five feet from the instrument

• **240 VAC Operation**

To learn more about
the HI 2160RC^{Plus},
visit our web site to find:

- full product specifications
- ordering information
- application notes
- technical description
- downloadable operator's manual

www.hardyinst.com

or call us at

800-821-5831, ext. 96

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Since 1993

HI 2160^{Plus}-A