



HI 6020IT-SSX-Y-EX and HI 6020JB-SSX-Y-EX



ATEX & IECEx User Guide





Hardy Process Solutions Document Number: 0596-0351-01 REV C

CONTROLLED DOCUMENT
CHANGES MAY NOT BE MADE
WITHOUT APPROVAL FROM
CERTIFICATION AGENCY

	 WARNING!
	<p>DO NOT INSTALL OR PERFORM ANY SERVICE ON THIS EQUIPMENT BEFORE THE AREA IN WHICH THE HI 6020 JB OR IT SUMMING BOX IS LOCATED HAS BEEN SECURED AS NON-HAZARDOUS BY PERSONNEL AUTHORIZED TO DO SO BY THE RESPONSIBLE PERSON AT THE CUSTOMER'S SITE</p>

	 WARNING!
	<p>INSTALLATION SHOULD BE IN ACCORDANCE WITH ANSI/ISA RP12.06.01 "INSTALLATION OF INTRINSICALLY SAFE SYSTEM FOR HAZARDOUS (CLASSIFIED) LOCATIONS" AND THE ELECTRICAL SAFETY CODE (ANSI/NFA 70) ARTICLE 504.</p> <p>WHEN THIS SUMMING BOX IS INCLUDED AS A COMPONENT PART OF A SYSTEM, THE RESULTING DESIGN MUST BE REVIEWED BY QUALIFIED PERSONNEL WHO ARE FAMILIAR WITH THE CONSTRUCTION AND OPERATION OF ALL COMPONENTS IN THE SYSTEM AND THE POTENTIAL HAZARDS INVOLVED. FAILURE TO OBSERVE THIS PRECAUTION COULD RESULT IN BODILY HARM AND/OR PROPERTY DAMAGE.</p>

	 WARNING!
	<p>ALL EQUIPMENT MUST BE INSTALLED IN ACCORDANCE WITH THE INSTALLATION INSTRUCTIONS DETAILED IN THIS USER GUIDE. INCORRECT OR SUBSTITUTE COMPONENTS AND/OR DEVIATION FROM THESE INSTRUCTIONS CAN IMPAIR THE INSTRINSIC SAFETY OF THE DEVICE AND COULD RESULT IN BODILY INJURY AND/OR PROPERTY DAMAGE.</p>

	 WARNING!
	<p>TO PREVENT IGNITION OF FLAMMABLE OR COMBUSTIBLE ATMOSPHERES, DISCONNECT POWER BEFORE SERVICING</p>

	 WARNING!
	<p>FOR CONTINUED PROTECTION AGAINST SHOCK HAZARD, CONNECT TO THE INTRINSICALLY SAFE GROUND ONLY. DO NOT REMOVE THE GROUNDING CONNECTION.</p>

 CAUTION
<p>OBSERVE PRECAUTIONS FOR HANDLING ELECTROSTATIC SENSITIVE DEVICES.</p>

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Chapter 1

Overview



Please read and observe these instructions carefully before installing or using the HI 6020 Junction Box. In addition, please store these instructions in a secure, dry location for future reference. If lost, these instructions can be downloaded from the Hardy website at www.hardysolutions.com.

This user guide describes installation, setup and operating procedures for the HI 6020IT and HI 6020JB summing boxes. Be sure to read and understand all cautions, warnings, and safety procedures in this user guide to ensure safe installation and operation of the summing boxes.

Hardy Process Solutions sincerely appreciates your business. We encourage input about the performance and operation of our products from our customers. Should you not understand any information in this user guide or experience any problems with this product, please contact our Technical Support Department at:

Phone: (858) 278-2900

Toll Free: 1-800-821-5831

FAX: (858) 278-6700

E-Mail: hardysupport@hardysolutions.com or hardyinfo@hardysolutions.com

Website: www.hardysolutions.com

Please visit our website for the latest revision of this User Guide and sign up for the Hardy Newsletter to get the latest information on all Hardy products and services. For answers to technical issues and service problems, please visit the Hardy WebTech section of our website or contact a technician by phone during our normal operating hours (6:30 AM to 5:30 PM Pacific Time).

Introduction to the HI 6020IT and HI 6020JB Summing Boxes

The Hardy HI 6020 summing box is a critical component in a weighing system that enables use of Hardy's core technologies - C2[®] electronic calibration and Integrated Technician[®] (IT).


Each summing box distributes excitation voltage to up to four load cells and transfers each load cell's performance characteristics and weight signals to the Hardy weighing instrument. A summing card with IT allows a weighing instrument operator to switch to the summing card's internal test circuit and diagnose the entire weighing system from the front panel of the instrument or a remote location over the Internet. Individual load cells can be isolated from each other for weight and voltage readings, allowing a technician or operator to quickly and safely troubleshoot weighing system faults and anomalies.

The HI 6020 Summing box is available with a variety of options, including Integrated Technician[®] (IT) and trim pots (for non-Hardy load cells). The UL Type 4/4X stainless steel enclosure features a thick-wall design with an interior seal for a long lasting, robust wash-down installation. Two configurations are available, a 5-hole version for connecting up to four load cells to a Hardy weight indicator, controller, or module; or a 6-hole version that connects to a second HI 6020 summing box to enable up to eight load cells to be connected to a Hardy weight indicator or controller.

Please note that cable glands are not supplied on HI 6020JB and HI 6020IT Series units for use in ATEX and IECEx Zone 0, Group IIC hazardous area locations. The system installer is to only use cable glands that are appropriate for the hazardous area locations.

HI 6020JB-SSX-Y-EX and HI 6020IT-SSX-Y-EX junction boxes are marked as follows:

ATEX Marking:

 II 1 G Ex ia IIC T4 Ga

Certificate No. DEMKO 17 ATEX 1819

IECEx Marking:

Ex ia IIC T4 Ga

Certificate No. IECEx UL 17.0009

Zone 0 Hazardous Area



The HI 6020 part number contains certain variations as follows:

- SS: Stainless steel enclosure
- X: X= 1 without trim pots or
X= 2 with trim pots
- Y: Y = **blank** is a 5-hole summing box enclosure
Y = **6** is a 6-hole summing box enclosure enabling connection to a second summing box
- EX: Provided without cable glands; and is approved for the above ATEX/IECEx hazardous areas only when installed with cable glands which are suitable for the hazardous area

IMPORTANT NOTE:



Only the stainless steel versions of the HI 6020JB and HI 6020IT junction boxes are certified for use in hazardous areas.



Chapter 2

Instructions for Safety



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Please read and observe these instructions carefully before installing or using the HI 6020 Junction Box. In addition, please store these instructions in a secure, dry location for future reference. If lost, these instructions can be downloaded from the Hardy website at www.hardysolutions.com.

	 WARNING!
	<p>DO NOT INSTALL OR PERFORM ANY SERVICE ON THIS EQUIPMENT BEFORE THE AREA IN WHICH THE HI 6020 JB OR IT SUMMING BOX IS LOCATED HAS BEEN SECURED AS NON-HAZARDOUS BY PERSONNEL AUTHORIZED TO DO SO BY THE RESPONSIBLE PERSON AT THE CUSTOMER'S SITE</p>

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Wiring Summing Boxes

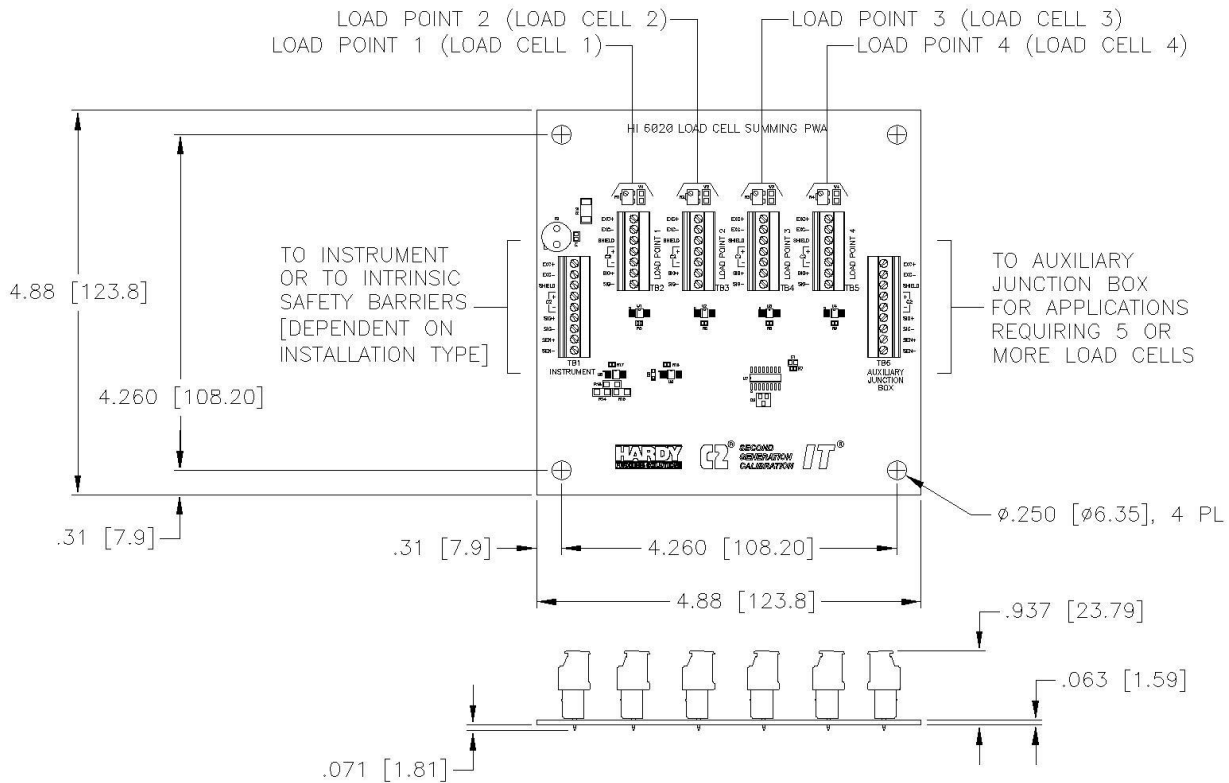
IMPORTANT NOTE: When wiring between load cells, summing boxes, and intrinsically safe barriers

1. Associated apparatus manufacturer’s installation drawings must be followed when installing this equipment.
2. Resistance between Intrinsically Safe Ground and earth ground must be less than 1.0 Ohm.
3. Install Intrinsic Safe Barriers in accordance with barrier instructions.
4. The total combined length of all wiring in the system, including the cable from each associated apparatus to and from the summing box, and to each load cell must not exceed 300 feet.
5. Installation should be in accordance with IEC/EN 60079-14.
6. The products for use in ATEX/IECEX Zone 0 Group IIC areas are the HI 6020JB-SSX-Y-EX and the HI 6020IT-SSX-Y-EX (both shipped without cable glands):
 - a. SS = Stainless Steel enclosure
 - b. 1 = Without trim pots; 2 = With Trim Pots
 - c. Y = Blank is a 5-hole summing box enclosure; Y = 6 is a 6-hole summing box enclosure enabling connection to a second summing box
7. SB (summing box) maximum cable length 250 ft; used between the summing box and IS barriers.
8. Substitution of components may impair Intrinsic Safety and/or void Hazardous Area Approval.

WARNING: To prevent ignition of flammable or combustible atmospheres, disconnect power before servicing

Connecting to Hardy Summing Boxes or Summing Cards

To connect more than one load cell to a Hardy instrument, controller, or module, you will need a summing card or summing box to aggregate the signals to provide a singular weight reading. While a platform, bench or floor scale has a built in summing card to perform this function, load cells need an external Summing Card or Summing box.

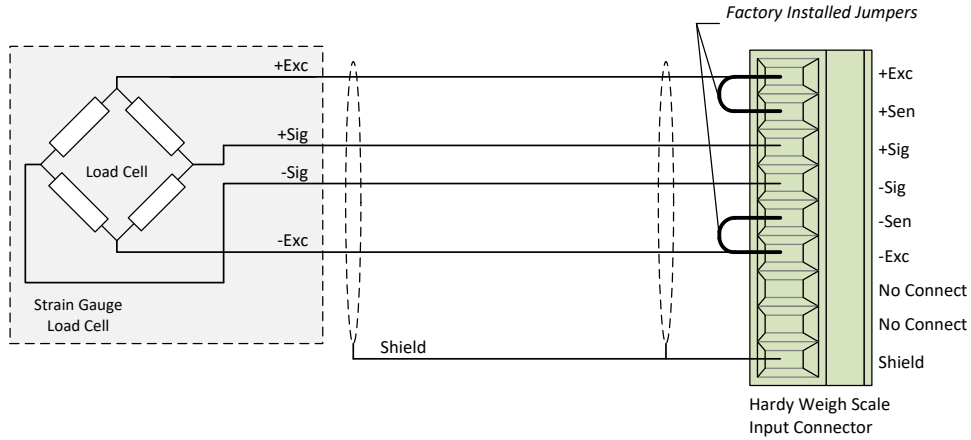


HI 6020 IT Summing Box Wiring Diagram

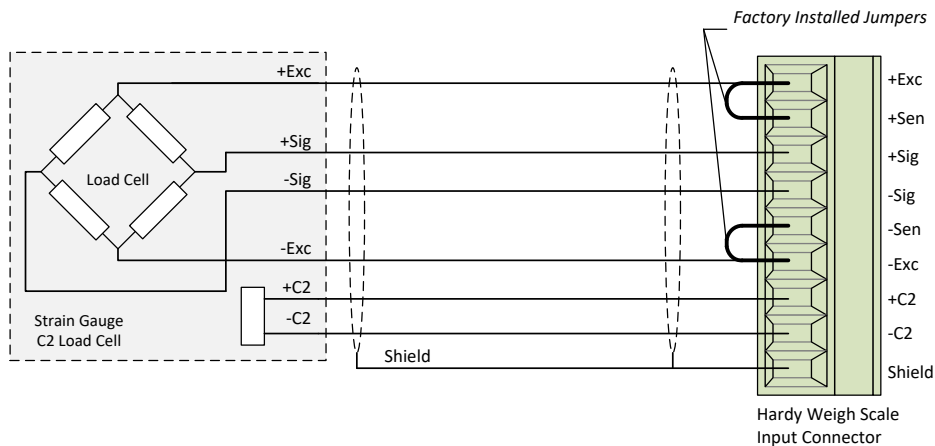
To connect more than four load sensors to a single Hardy instrument, controller, or module two summing boxes will need to be cascaded by connecting the instrument output from a 5 hole version of the HI 6020 summing box to the auxiliary summing box input connector on a 6-hole version of the HI 6020 summing box.

Connecting Load Cell Sensors to a Hardy Summing Box

The diagrams below show Hardy Load Sensors with C2 and non-Hardy Load Cells (4 wire and 6 wire are similar except 6 wire adds sense wiring) that do not have C2. Wire the terminal connector that plugs into the front of the Weight Processor Modules by carefully following the Weigh Scale Input termination label.



Non-C2 load sensor wiring



Hardy load sensor with C2 wiring

WARNING: To prevent ignition of flammable or combustible atmospheres, disconnect power before servicing

CAUTION: Observe precautions for electrostatic sensitive devices when handling the summing box terminal connections

Chapter 3

Specifications for Use



The specifications listed are designed to assist in the installation, operation and troubleshooting of your summing box. All service personnel should be familiar with this section before installing or repairing the instrument

Number of Load Cells Supported

- 8 (requires two summing boxes, C2 Cable, and one 6-hole summing box and one 5-hole summing box)
- 4 (requires only one 5-hole summing box)

Enclosure

Stainless Steel, UL Type 4X Indoor Only

PCB Dimensions

4.88" (12.38 cm) x 4.88" (12.38 cm)

Connector Type

- Removable Plug-In Terminal Blocks
- 4 off, 7 pin, 1 row, 3.5 mm pitch (load points)
- 2 off, 9 pin, 1 row, 3.5 mm pitch (instrument and auxiliary ports)

Temp Range

Normal Operating Range:	-10 to +60°C (14 to 140°F)
ATEX/IECEX Approved Operating Range:	-10 to +60°C (14 to 140°F)

Maximum Excitation Voltage and estimated Excitation Current

The maximum excitation voltage, on the summing box side of the IS barrier, is 5VDC. The maximum excitation current is 70mA under normal operating conditions, and is limited to 100mA by the selected IS barriers.

The required IS barrier supply voltage and actual excitation current drawn for a load cell weighing system, depends upon the IS barriers selected, the load cell resistance, the cable length between the excitation voltage source and the summing box, the number of summing boxes, and the number of load cells required for the weighing system.

Please review the installation section for additional information.

Trim Pot Number of Turns

11 (for use with non-C2 systems)

Trim Pot Impedance Range

0-10 Ω

Power Rating

Power must be supplied to the summing box through approved intrinsically safe barriers per control drawing 0594-0011 (HI 6020JB) or 0594-0012 (HI 6020IT)

HI 6020IT: 5 VDC, Class 2, max. 50 mA

HI 6020JB: 5 VDC, Class 2, max. 50 mA

Housing Torque Specification

Enclosure Bolt Torque Specification: 50-55 in/lb

Additional Instruction: Be sure to lubricate (oil) the screw threads to prevent galling of the screw and enclosure screw flange threads.

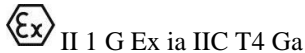
Warranty

Two-year warranty against defects in workmanship

Approvals:



- ATEX:



Certificate No. DEMKO 17 ATEX 1819

- IECEx:

Ex ia IIC T4 Ga

Certificate No. IECEx UL 17.0009

- Zone 0 Hazardous Area

See control drawing 0594-0011 (HI 6020JB) or 0594-0012 (HI 6020IT) for specific installation instructions

Notes:

- Any tampering with the equipment by anyone, other than repair work done by authorized Hardy service provider, will result in the loss of EX conformity and in the forfeiture of all claims under the manufacturer's warranty.
- Check the EX approval marking (particularly the group for gases/dusts and temperature class/code) on all equipment in the hazardous area before operation to ensure that this approved equipment is permitted to be operated in this area.
- The equipment must be powered by a suitable certified/approved power supply or battery pack with intrinsically safe circuits as described in the certificate of this equipment.
- Avoid generating static electricity. Use only a damp cloth to wipe down the equipment. The equipment operator shall be responsible for preventing any risks caused by static electricity.
- Keep chemicals and other agents, which can corrode the housing seals and cable sheaths, away from the equipment. These agents include oil, grease, benzene, acetone and ozone. If you are not sure about the safety of a certain substance, please contact the manufacturer.
- Use equipment only in the temperature ranges indicated. Avoid exposing the equipment to heat.
- The equipment operator is responsible for any non-Hardy cables used.

Features and Capabilities

Hardy Process Toolbox

The Hardy Process Toolbox is a set of productivity tools that support process weighing functions. Each tool in the Hardy Process Toolbox saves time, increases accuracy, improves efficiency or reduces risk in process weighing applications.

C2® and Calibration

Traditional calibration uses certified test weights. C2® Electronic Calibration allows a scale to be calibrated without the need for test weights. A C2 weighing system consists of up to eight load cell sensors per HI 6020 IT or JB summing box, C2 interconnect cable, and a Hardy instrument, controller, or module with C2.

Each Hardy Process Solutions C2-certified load sensor outputs digital information used for calculating the calibration. When Hardy instrument reads the signals from the load sensors, it calibrates the scale based on the load sensor's output plus a user-supplied reference point value (from 0 to any known weight on the scale).

***NOTE:** Check the Hardy instrument, controller, or module to verify the number of load sensors that can be supported.*

INTEGRATED TECHNICIAN®

The HI 6020IT features INTEGRATED TECHNICIAN® (IT), a system diagnostics program that makes it possible to diagnose weighing system problems from a Hardy Instrument, controller, or module that reads individual load sensor voltages and weights and isolates individual system components for quick and easy troubleshooting.

***NOTE:** C2 and INTEGRATED TECHNICIAN are registered trademarks of Hardy Process Solutions.*

Chapter 4

List of Applicable Standards



The HI 6020 Junction Box complies with the European Council Directives as well as international regulations and standards for electrical equipment, electromagnetic compatibility, and the stipulated safety requirements. The HI 6020 Junction Box meets the requirements set in EC Directive 2014/34/EU for electrical equipment in category II 1 G and as such is suitable for use in potentially explosive Zone 0 atmospheres. Any other use beyond this is considered improper.

HI 6020JB-SSX-Y-EX and HI 6020IT-SSX-Y-EX junction boxes have been evaluated to, and conform to the requirements of the following standards.

- IEC 60079-0 EXPLOSIVE ATMOSPHERES - PART 0: EQUIPMENT GENERAL REQUIREMENTS - Edition 6 - Revision Date 2014/10/01
- IEC 60079-11 EXPLOSIVE ATMOSPHERES – PART 11: EQUIPMENT PROTECTION BY INTRINSIC SAFETY "I" - Edition 6 - Revision Date 2014/10/01
- EN 60079-0 EXPLOSIVE ATMOSPHERES - PART 0: EQUIPMENT - GENERAL REQUIREMENTS - Edition N/A - Revision Date 2013/01/01
- EN 60079-11 EXPLOSIVE ATMOSPHERES - PART 11: EQUIPMENT PROTECTION BY INTRINSIC SAFETY "I" - Edition N/A - Issue Date 2012/01/01

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At Hardy, we believe that industrial weighing solutions should be EASY to engineer and operate.

We believe that simplicity delivers the LOWEST TOTAL COST to own.

That's why our solutions are EASIER to install, integrate, commission, diagnose and maintain.

Want MORE PRODUCTIVITY at the LEAST TOTAL COST to own? Call Hardy to discover how Today!



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