

Hazardous Location Instrumentation

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HAZARDOUS LOCATION
INSTRUMENTATION

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Explosive Environment Equipment Policy

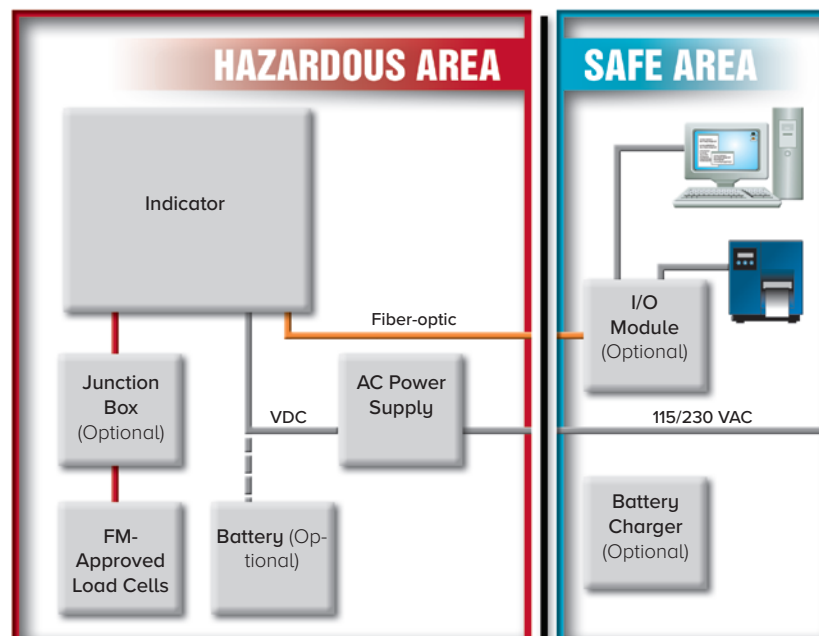


Caution: The equipment contained within this Explosive Environment section requires greater attention to specification and installation guidelines. Improper specification, installation or service of these products can result in loss of equipment or serious injury.

Rice Lake Weighing Systems has assembled the very best intrinsically safe and explosion-proof equipment. In order to properly specify, install and service this equipment, it is necessary that our distributors understand and appreciate the possible risks involved.

Persons involved in selection and installation of intrinsically safe equipment should have knowledge of but not limited to the following:

- Explosive environment designations: Class, Division and Group
- Standards and codes applicable to hazardous environment equipment
- Equipment liability
- Theory of intrinsically safe, explosion-proof and purged systems
- Equipment specification guidelines
- Proper installation procedures
- Service precautions
- NFPA 70, "National Electrical Code (NEC) Handbook"
- NFPA 496, "Classification of Gases, Vapors, and Dusts for Electrical Equipment in Hazardous (Classified) Locations"
- ANSI/UL 913, "Standard for Intrinsically Safe Apparatus and Associated Apparatus for use in Class I, II and III, Division 1 Hazardous Locations"
- ANSI/ISA RP 12.6, "Installation of Intrinsically Safe Instrument Systems for Hazardous (Classified) Locations"
- FM Approval Standard 3610, "Approval Standard, Intrinsically Safe Apparatus and Associated Apparatus for use in Class I, II and III, Division 1 Hazardous Locations"
- FM Approval Standard 3615, "Approval Standards, Explosion Proof Electrical Equipment"
- "Electrical Installations in Hazardous Locations"



Plant Safety Engineers and Certified Electricians should always be involved in the specification and installation of any explosive environment equipment.

Please see Hazardous Area Classification on page 571 for assistance in selecting hazardous area control equipment for your application requirements.

INTRINSICALLY SAFE

Hazardous Area Classification

For PDF version visit www.ricelake.com

For assistance in selecting hazardous area control equipment for your application requirements, please complete this form and submit, along with a description of the application, to:



Rice Lake Weighing Systems

Attn: Hazardous Environment
230 West Coleman Street
Rice Lake, WI 54868
Telephone: 715-234-9171 • Fax: 715-234-6967

RLWS File #: _____	Date: _____	For Rice Lake Office Use Only
Sales Order #: _____	Checked By: _____	
Equipment PN#(s) & Serial Number(s): _____		
Factory Mutual Not Applicable _____ (International Orders Only) _____		

RICE LAKE CUSTOMER INFORMATION:

Rice Lake Customer Name: _____ Customer Number: _____
Address: _____
City: _____ State: _____ Zip: _____
Telephone: (_____) _____ Fax: (_____) _____
Contact Name: _____
(Printed name) (Signature) (Date)
Authorized Signature: _____
(Printed name) (Signature) (Date)

END USER INFORMATION:

End User Company Name: _____
Address: _____
City: _____ State: _____ Zip: _____
Telephone: (_____) _____ Fax: (_____) _____
Contact Name: _____
(Printed name) (Signature) (Date)
Authorized Signature: _____
(Printed name) (Signature) (Date)
Title: _____

(The following information is to be defined and completed by the END USER'S plant safety engineer or other authorized party)		
Hazardous Area Classification: Class _____, Division _____, Group _____, Temperature Class _____		
Zone _____, Group _____, Temperature Class _____		
Specific Hazard/Material (please print): _____		
Defining Individual:	_____	_____
	(Printed name)	(Signature) (Date)
Defining Authority (Title): _____		

Please retain a copy of this completed form for your records.



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EXPLOSION PROOF SYSTEM

What is an explosion-proof indicator?

It is simply a digital weight indicator enclosed in a special case. The purpose of an explosion-proof indicator is not, as the name suggests, to protect the indicator. Instead, the case prevents any explosion WITHIN the case from causing subsequent fire or explosion in the surrounding atmosphere.

For example, in a grain elevator application, combustible dusts (Class II hazardous atmosphere) may be present. A spark in a non-explosion-proof indicator could ignite an elevator-wide explosion. However, with an explosion-proof indicator, the spark (or even an explosion) is contained within the case. The hazardous atmosphere cannot be ignited, and the elevator is protected.

ADVANTAGES

- Explosion containment
- Requires low maintenance
- No electronics
- No moving parts

DISADVANTAGES

- Cannot indicate failure of containment capability
- Cost of protection per cubic foot increases with enclosure size
- Promotes condensation
- Cumbersome, limited access
- Causes harmful heat buildup
- Limited sizes
- Bulky designs
- Excessive weight

PURGE SYSTEM

Purged systems are ideal for hazardous environments and use positive pressure to prevent particles, gases and fibers from entering the controller enclosure. As an added safeguard, a differential pressure switch automatically cuts off power when the pressure falls below the acceptable level. Type X, Y and Z purging hardware is available that meets National Fire Protection Association (NFPA) article 496 guidelines.

The three configurations are as follows:

Type X Pressurizing: Reduces the classification within the protected enclosure from Division 1 to Safe.

Type Y Pressurizing: Reduces the classification within the protected enclosure from Division 1 to Division 2.

Type Z Pressurizing: Reduces the classification within the protected enclosure from Division 2 to Safe.

ADVANTAGES

- Reduces heat buildup
- Inhibits metal corrosion
- Requires low maintenance
- Increases equipment longevity
- Allows fast access to equipment
- Reduces moisture and dust buildup
- Reduces classification within enclosure
- Continuous system status indication
- Protects enclosures up to 450 cubic feet
- Allows use of any enclosure shape
- Cost of protection per cubic foot decreases with enclosure size

DISADVANTAGES

- Contains moving parts
- Requires instrument air supply
- Some systems contain electronics
- Some systems require electrical power

INTRINSICALLY SAFE BARRIER SYSTEM

Intrinsically safe load cells and safety barriers take the explosion proof principle a step further. Intrinsic safety ensures the indicator's electrical wiring and components are, by design, incapable of releasing enough energy to ignite flammable or combustible atmospheric mixtures in their most easily ignitable concentrations. In short, an intrinsically safe device eliminates the conditions for an explosion, no matter what the circumstances.

ADVANTAGES

- Limits energy to device
- Requires low maintenance
- No moving parts
- Ideal for sensors

DISADVANTAGES

- One barrier is required for each conductor
- Project cost increases with number of conductors
- Offers no protection against heat, moisture and dust
- Requires protection or installation in nonclassified area
- 24 VDC, 50 mA maximum power and signal strength limit

Hazardous Atmospheres

(for reference only)

Hazardous atmospheres are divided into three general classes and two divisions:

CLASS I:

Flammable gases or vapors

CLASS II:

Combustible dusts

CLASS III:

Ignitable fibers or flyings

DIVISION 1:

Hazard exists under normal conditions

DIVISION 2:

Hazardous material is handled, processed or stored. Hazard is not normally present, but may be released due to accident or equipment malfunction.

CLASS I:

Flammable gases or vapors

CLASS I, GROUP A:

- Acetylene

CLASS I, GROUP B:

- Acrolein (inhibited)
- Arsine
- Outadiene
- Ethylene oxide
- Hydrogen
- Manufactured gases containing more than 30% hydrogen by volume
- Propylene oxide
- Propyl nitrate

CLASS I, GROUP C:

- Acetaldehyde
- Allyl alcohol
- N-butylaldehyde
- Carbon monoxide
- Crotonaldehyde
- Cyclopropane
- Diethyl ether
- Diethylamine
- Epichlorohydrin
- Ethylene
- Ethylenimine
- Ethyl mercaptan
- Ethyl sulfide
- Morpholine
- 2-nitropropane
- Tetrahydrofuran
- Unsymmetrical dimethyl hydrazine
- UMDH 1, 1-dimethyl hydrazine

CLASS I, GROUP D:

- Acetic acid
- Acetone
- Acrylonitrile
- Ammonia
- Benzene
- Butane
- 1-butanol (butyl alcohol)
- 2-butanol (secondary butyl alcohol)
- N-butyl acetate
- Isobutyl acetate
- Diisobutylene
- Ethane
- Ethanol (ethyl alcohol)
- Ethyl acetate
- Ethyl acrylate (inhibited)
- Ethylene diamine (anhydrous)
- Ethylene dichloride
- Ethylene glycol monomethyl ether
- Gasoline
- Heptanes
- Hexanes
- Isoprene
- Isopropyl ether
- Mesityl oxide
- Methane (natural gas)
- Methanol (methyl alcohol)
- 3-methyl 1-butanol (isoamyl alcohol)
- Methyl ethyl ketone
- 2-methyl 1-propanol (isobutyl alcohol)
- 2-methyl 2-propanol (tertiary butyl alcohol)
- Petroleum naphtha
- Pyridine
- Octanes
- Pentanes
- 1-pentanol (amyl alcohol)
- Propane
- 1-propanol (propyl alcohol)
- 2-propanol (isopropyl alcohol)
- Propylene
- Styrene
- Toluene
- Vinyl acetate
- Vinyl chloride
- Xylenes

CLASS II:

Combustible Dusts

CLASS II, GROUP E

Atmospheres containing:

- Aluminum, magnesium or their commercial alloys
- Metals of similarly hazardous characteristics with a resistivity of 100 ohm per centimeter

CLASS II, GROUP F

Atmospheres containing:

- Carbon black, charcoal, coal or coke dusts containing more than 8 percent total volatile material
- Dusts sensitized by other materials, presenting an explosion hazard and having a resistivity greater than 100 ohm per centimeter and equal to or less than 100 megohm per centimeter

CLASS II, GROUP G

Atmospheres containing:

- Flour
- Starch
- Grain
- Combustible plastics or chemical dusts having resistivity greater than 1 megohm per centimeter

CLASS III:

Ignitable Fibers or Flyings

Atmospheres containing:

- Rayon
- Cotton
- Other textiles

Combustible fiber manufacturing and processing plants such as:

- Cotton gins
- Cottonseed mills
- Flax processing plants
- Clothing manufacturing plants
- Sawmills
- Other woodworking locations.

Easily ignitable fibers including:

- Rayon
- Cotton (including cotton linters and cotton wastes)
- Sisal or henequen
- Istle
- Jute
- Hemp
- Tow
- Cocoa
- Oakum
- Baled waste kapok
- Spanish moss
- Excelsior
- Sawdust
- Wood chips

HAZARDOUS LOCATION
INSTRUMENTATION

882IS/882IS Plus

Intrinsically Safe Digital Weight Indicator

HAZARDOUS LOCATION
INSTRUMENTATION



Approvals



Standard Features

- LCD display with white LED backlight
- T4 temperature rating
- Battery life display icon
- Numeric keypad (882IS Plus)
- Duplex fiber-optic interface
- Power ON/OFF; battery save mode
- Configurable local/remote mode
- I/O module option: one serial port, optional analog output, optional fieldbus cards, Ethernet TCP/IP
- Time & date (requires I/O module)
- Setpoint functionality using secondary indicator
- FM Entity Approved for use in hazardous locations per Rice Lake Weighing Systems control drawing file number 180948

Rice Lake Weighing Systems warrants that all Rice Lake Weighing Systems intrinsically safe (IS) equipment and systems installed by a qualified electrician will operate per written specifications as confirmed by the distributor/OEM and accepted by Rice Lake Weighing Systems. All systems and components are warranted against defects in materials and workmanship for one year. All Rice Lake Weighing Systems intrinsically safe equipment carries a Factory Mutual approval and is documented on various control drawings. Each device is manufactured by Rice Lake Weighing Systems factory authorized personnel. To preserve the warranty and Factory Mutual approval, all repairs or replacement of circuit boards or components housed within the enclosures must be performed by Rice Lake Weighing Systems factory authorized personnel.



CAUTION! The equipment contained within this Explosive Environment section requires greater attention to specification and installation guidelines. Improper specification, installation or service of these products can result in loss of equipment or serious injury.

Specifications

Power:

Input: 5.8 to 7.9 VDC, 100 to 175 mA

Power Consumption:

0.25 W

Battery (optional):

60 hours with 4 × 350 ohm load cells
80 to 100 hours with 1 × 350 ohm load cell
8 to 10 hour charging time

Load Cell Excitation:

3.0 VDC at 87.5 ohm, 4.6 VDC at 700 ohm

Load Cell Current:

34 mA 4 × 350 ohm load cells or 8 × 700 ohm load cells

Load Cell Cabling:

Four- and six- wire with remote sensing (recommended)

Analog Signal Input Range:

-0.5 mV/V to 4.0 mV/V

Analog Signal Sensitivity:

0.2 μ V/graduation minimum
1.5 μ V/graduation recommended

Resolution:

Internal: 1,000,000 counts
Display: 10,000
The maximum number of allowed graduations will vary by application

Conversion Rate:

60 updates/second

Annunciators:

Center of Zero, Gross, Net, Motion, lb, kg, oz, g

Motion Band:

Configurable to ± 1 or ± 3 graduations,
1 second delay (or Off)

Display Increments:

1, 2, 5

Display:

Seven-digit, seven-segment LCD display 121 × 24 dot
matrix messaging area with white LED backlight

Keys/Buttons:

Flat membrane panel, tactile feel

882IS: Zero, Gross/Net, Tare, Print, Units Conv,

Start, Stop, On/Off

882IS Plus: Zero, Gross/Net, Tare, Print, Units Conv,

Start, Stop, Full numeric keypad, On/Off

Temperature:

14 °F to 104 °F (-10 °C to 40 °C)

Rating/Material:

IP66 enclosure

Stainless steel

Weight:

6.1 lb (2.8 kg)

Warranty:

One-year limited

Intrinsic Safety:

FM/cFM

Class I, II, III, Division 1, Groups ABCDEFG T4

Class I, Zone 0 AEx/Ex ia IIC T4 Ga

Zone 21 AEx/Ex ib IIIC T135°C Db

Ta = -10 °C to 40 °C (14 °F to 104 °F)

ATEX/IECEx

II 1 G Ex ia IIC T4 Ga

II 2 D Ex ib IIIC T135°C Db

Approvals:

cULus Listed*

FM Entity

ATEX

IECEx

NTEP CC 19-015

Measurement Canada AM-6124C

OIML R76/2006-A-NL1-21.11

EU Test Certificate T11166

cULus* Listed

CE Marked

*cULus is only applicable to 882IS I/O and battery charger
Visit ricelake.com for current prices.

882IS/882IS Plus

Intrinsically Safe Digital Weight Indicator

Part Number/Price

Part #	Description	Price
882IS		
195091	882IS 7.5VDC with standard tilt stand	\$1,525.00
185288†	882IS with battery and charger (North American plug)	\$2,455.00
194231††	882IS with battery and charger (EU plug)	\$2,455.00
196273†††	882IS with battery and charger (AU plug)	\$2,455.00
185290	882IS with power supply	\$2,685.00
194235	882IS indicator with power supply and metric thread adapter	\$2,685.00
882IS Plus		
195092	882IS Plus 7.5VDC with standard tilt stand	\$1,525.00
185291†	882IS Plus with battery and charger (North American plug)	\$2,455.00
194233	882IS Plus with battery and charger (EU plug)	\$2,455.00
196274†††	882IS Plus with battery and charger (AU plug)	\$2,455.00
185293	882IS Plus with power supply	\$2,685.00
194236	882IS Plus indicator with power supply and metric thread adapter	\$2,685.00



† US plug (NA) - Type B



†† Euro Plug - Type E



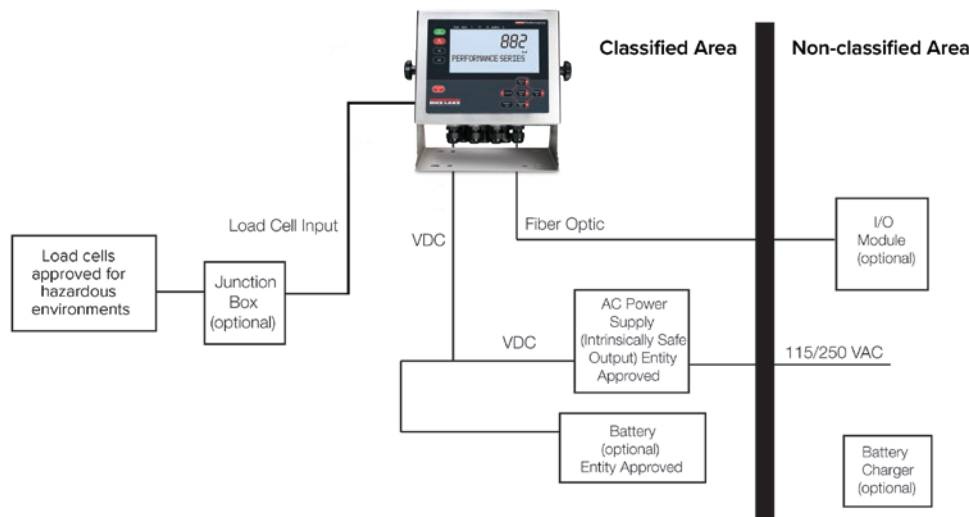
††† BS1363 (UK) - Type G



††† AS 3112 (Australian) - Type I

Options/Accessories

Part #	Description	Price
180831	Battery option, IS6V2	\$685.00
194191	Battery charger, IS6V2, 100-240 VAC NEMA 5-15 (North American plug)	\$275.00
194189	Battery charger, IS6V2 100-240 VAC (EU plug)	\$275.00
194192	Battery charger, IS6V2 100-240 VAC (UK plug)	\$275.00
197591	Battery charger, IS6V2 100-240 VAC (Australian plug)	\$255.00
180837	Power supply, 882IS mb-EPS-100-240-X2, dual output 6.8 VDC 200mA	\$1,055.00
195109	Power supply, 882IS mb-EPS-100-240-X2, dual output 6.8 VDC 200mA, 1/2 in NPT-M20	\$1,095.00
179668	Cable, M12 power 22 in hazardous location (for battery version)	\$76.00
179669	Cable, M12 power 10 ft hazardous location	\$149.00
179670	Cable, M12 power 50 ft hazardous location	\$185.00
179671	Cable, M12 power 100 ft hazardous location	\$360.00
190979	Lockout device for M12 cable	\$24.00
163751	Tilt stand, 882IS	\$41.00
179678	Tilt stand, 882IS battery option	\$45.00
177850	Panel mount option, gasketed non-NEMA seal	\$215.00
206735	Battery tester, 882IS	\$375.00



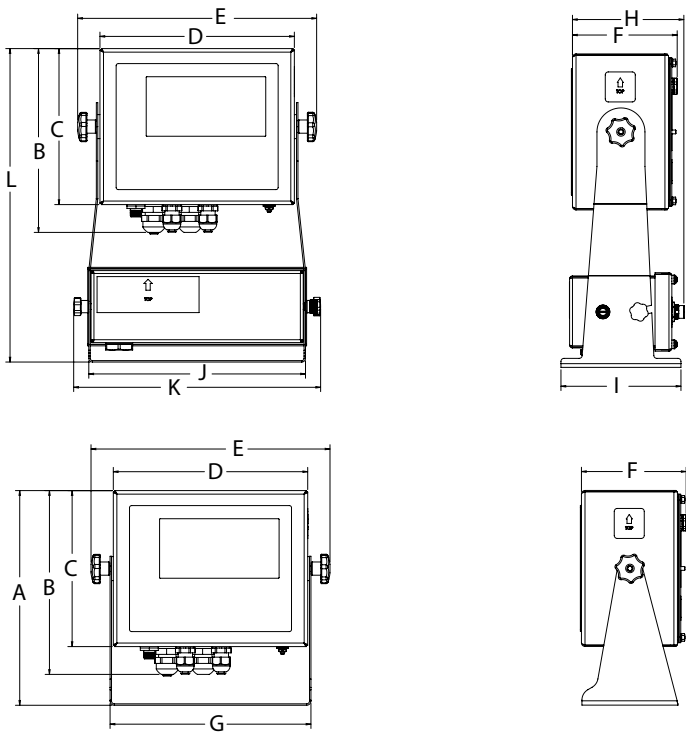
Complete Control Drawings available at www.ricelake.com

882IS/882IS Plus

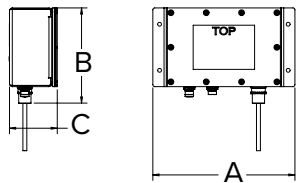
Intrinsically Safe Digital Weight Indicator

Dimensions

882IS/882IS Plus			
Without Battery			
A	8.94 in (227 mm)	E	9.96 in (253 mm)
B	7.66 in (195 mm)	F	4.36 in (111 mm)
C	6.50 in (165 mm)	G	8.37 in (213 mm)
D	8.10 in (206 mm)		
With Optional Battery and Tilt Stand			
H	4.64 in (118 mm)	K	10.29 in (261 mm)
I	5.00 in (127 mm)	L	13.06 in (332 mm)
J	9.03 in (229 mm)		



882IS/882IS Plus			
Optional Power Supply			
A	9.25 in (235 mm)	C	3.11 in (79 mm)
B	6.20 in (158 mm)		



HAZARDOUS LOCATION
INSTRUMENTATION

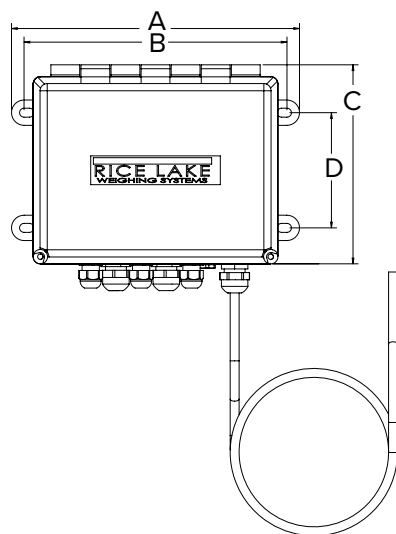
Optional I/O Module

Part #	Description	Price
177709	Module, 882 Smart I/O interface	\$975.00
196166	Module, 882 Smart I/O (EU power cord)	\$975.00
196769	Option, fiber/RS232 6x6 FRP enclosure, fiber-optic 232 converter, external power supply	\$545.00
196770	Option, fiber/RS422 6x6 FRP enclosure, fiber-optic RS422 converter, external power supply	\$545.00
78026	Cable, plastic optical 100 ft. includes polishing kit	\$175.00
78027	Cable, plastic optical 200 ft. includes polishing kit	\$328.00
197384	Kit, polishing POF cable	\$63.00
Option Cards		
190528	Single analog output (0-10 VDC, 0-20 mA, 4-20 mA)	\$425.00
190530	882 option, Ethernet/IP	\$600.00
190531	882 option, DeviceNet	\$600.00
190532	882 option, ProfiNet	\$600.00
190534	882 option, Profibus	\$600.00
190533	882 option, Modbus TCP	\$600.00
190535	882 option, EtherCAT	\$600.00
Remote Indicator for Setpoint Functionality		
203343	920i universal indicator, 115 VAC, no A/D, with 882IS iRite software for setpoints	\$2,265.00
203344	920i wall mount indicator, 115 VAC, no A/D, with 882IS iRite software for setpoints	\$2,895.00

HAZARDOUS LOCATION
INSTRUMENTATION

Dimensions

882IS/882IS Plus			
Optional I/O Module			
A	10.00 in (254 mm)	D	4.00 in (102 mm)
B	9.13 in (232 mm)	E	2.75 in (70 mm)
C	6.91 in (176 mm)	F	1.50 in (38 mm)



880 HazLoc

Digital Weight Indicator/Controller for Hazardous Locations

COMING
SOON

HAZARDOUS LOCATION
INSTRUMENTATION



Approvals



EU
NAWI
CERTIFIED

UK
CA



IECEX



Standard Features

- LED display
- Hardware slot for one option card
- 20 setpoints with latched batch engine or unlatched outputs
- Four onboard TTL digital I/O channels
- Programmable ticket formats up to 1,000 characters for header text, gross, net, accumulator and setpoints
- Local/remote operation
- Multi-range or multi-interval weighing
- Filter settings for light, medium and heavy noise

Rice Lake Weighing Systems warrants that all Rice Lake Weighing Systems hazardous location equipment and systems installed by a qualified electrician will operate per written specifications as confirmed by the distributor/OEM and accepted by Rice Lake Weighing Systems. All systems and components are warranted against defects in materials and workmanship for one year. All Rice Lake Weighing Systems intrinsically safe equipment carries a UL Hazardous approval and is documented on various control drawings. Each device is manufactured by Rice Lake Weighing Systems factory authorized personnel. To preserve the warranty and UL Hazardous approval, all repairs or replacement of circuit boards or components housed within the enclosures must be performed by Rice Lake Weighing Systems factory authorized personnel.

Specifications

Power:

Line voltages: 100 to 240 VAC
Frequency: 50/60 Hz

Power Consumption:

AC 15 W

Excitation Voltage:

4.373 VDC 4 × 350 ohm or 8 × 700 ohm load cells

Analog Signal Input Range:

-45 mV to 45 mV

Analog Signal Sensitivity:

0.83 μ V/graduation

A/D Sample Rate:

7.5 to 960 Hz, software selectable

Resolution:

Internal: 8,000,000 counts 23-bit
Display: 999,999

System Linearity:

± 0.01% full scale

Digital I/O:

Four I/O onboard (max), primary keys, pseudo functions, batching functions

Communication Ports:

RS-232 full duplex or RS-485 half duplex; USB micro A/B connector 2.0; Ethernet TCP/IP

Annunciators:

Gross, net, center of zero, standstill, lb, kg, tare, preset tare, multi-range/interval 1/2/3

Display:

LED, 0.56 in (14 mm), six-digit, 14-segment with decimal or comma

Keys/Buttons:

Membrane panel, tactile feel

Temperature Range:

Certified: 14 °F to 104 °F (-10 °C to 40 °C)

Dimensions:

(L × W × H)
9.87 × 4.00 × 9.38 in
(248 × 102 × 235 mm)

Rating/Material:

IP64, 304 stainless steel

Weight:

12 lb (5.4 kg)

EMC Immunity:

EN 50082 Part 2 IEC EN 61000-4-2, 3, 4, 5, 6, 8, and 11

Warranty:

Two-year limited

Hazardous Classification:

UL/cUL:
Class I, II, Division 2, Groups ABCDFG T4
Class III
Class I, Zone 2 AEx/Ex ic ec nA nC [ic] IIC T4 Gc
Zone 22 AEx/Ex tc IIIC T135°C Dc
ATEX/IECEx:
II 3 G Ex ic ec nA nC [ic] IIC T4 Gc
II 3 D Ex tc IIIC T135°C Dc

Approvals:

NTEP CC 13-080 Class III/IIIL, 10,000d
Measurement Canada AM-5931C
EU Test Certificate
UKCA
cULus Listed
ATEX/IECEx
CE Marked

Part Number/Price

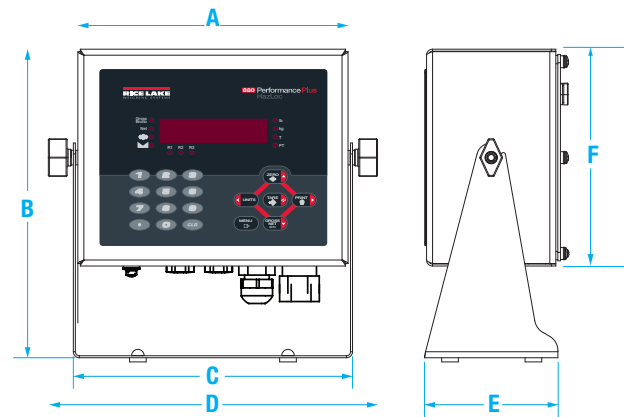
Part #	Description	Est. Weight	Price
181392	880 Universal hazardous indicator, 1/2 NPT thread adapters	8 lb	Consult
181507	880 Universal hazardous indicator, M16 x 1.5 thread adapters	8 lb	Consult

Options/Accessories

Part #	Description	Price
Option Cards		
208110	880 HazLoc analog kit	\$345.00
208111	880 HazLoc relay kit	\$445.00
Network Cards		
211019	EtherCat HazLoc	\$625.00
211020	EtherNet/IP HazLoc	\$625.00
211021	Profinet HazLoc	\$625.00
211022	Modbus TCP HazLoc	\$625.00
211023	Devicenet HazLoc	\$625.00
211024	Profibus HazLoc	\$625.00

Dimensions

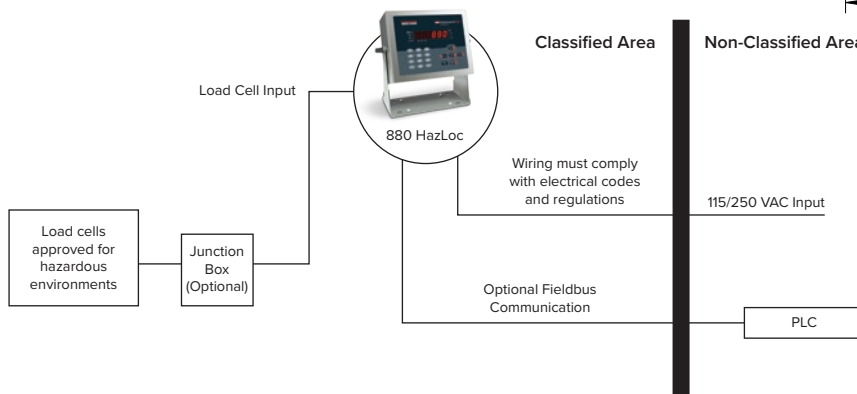
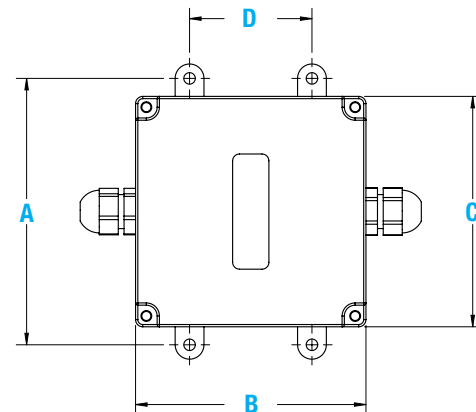
880 HazLoc			
A	8.10 in (206 mm)	D	9.87 in (248 mm)
B	9.38 in (235 mm)	E	4.00 in (102 mm)
C	8.37 in (213 mm)		



Dimensions

Junction Box			
A	4.63 in (118 mm)	C	4.00 in (102 mm)
B	4.00 in (102 mm)	D	2.13 in (548 mm)

Note: Junction box is provided and required for proper installation



882D HazLoc

Belt Scale Integrator for Hazardous Locations

COMING
SOON



Approvals



Standard Features

- LCD display
- Hardware slot for two option cards
- Operator access to audit trail, preset tare, accumulator, time & date and setpoints through menu keys
- Password protected audit trail tracking for configuration and calibration changes
- Setpoints for control and alarms
- Four onboard digital I/O channels
- Four programmable ticket formats up to 1,000 characters
- Filter settings for noise
- Speed inputs

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Specifications

Power:

Input voltages: 100 to 240 VAC
Input frequency: 47/63 Hz

Power Consumption:

AC: 15 watts; DC: 20 watts

Excitation Voltage:

4.373 VDC 4 × 350 ohm or 8 × 700 ohm load cells

Analog Signal Input Range:

-45 mV to 45 mV

Analog Signal Sensitivity:

0.3 μ V/graduation minimum at 7.5 Hz;
1.0 μ V/graduation typical at 120 Hz

Sample Rate:

7.5 to 120 Hz, software selectable

Resolution:

Internal: 8,000,000 counts 23-bit
Display: 100,000

System Linearity:

± 0.01% full scale

Digital I/O:

Four I/O onboard primary keys, pseudo functions, batching functions

Pulse Input:

Dual inputs for redundancy

Communication Ports:

RS-232 full duplex or RS-485 half duplex; USB micro
A/B connector 2.0; Ethernet TCP/IP

Annunciators:

Load, total, rate, speed, zero

Display:

LCD display, seven-digit, seven-segment weight
display, 3 × 20 pixelated prompt area

Keyboard:

Flat membrane panel, tactile feel

Dimensions:

(L × W × H)
9.93 × 4.00 × 8.94 in
(251 × 102 × 227 mm)

Temperature Range:

Operating: 14° F to 122° F (-10° C to 50° C)

Rating/Material:

IP64, 304 stainless steel

Weight:

12 lb (5.4 kg)

Warranty:

Two-year limited

EMC Immunity:

15 kV ESD transients, EMI 10 V/meter

Hazardous Certification:

cULus:
Class I,II, Division 2, Groups ABCDFG T4
Class III
Class I, Zone 2 AEx/Ex ic ec nA nC [ic] IIC T4 Gc
Zone 22 AEx/Ex tc IIIC T135°C Dc
ATEX/IECEx:
II 3 G Ex ic ec nA nC [ic] IIC T4 Gc
II 3 D Ex tc IIIC T135°C Dc

Approvals:

CE Marked
cULus Listed
ATEX/IECEx
UKCA

882D HazLoc

Belt Scale Integrator for Hazardous Locations

Part Number/Price

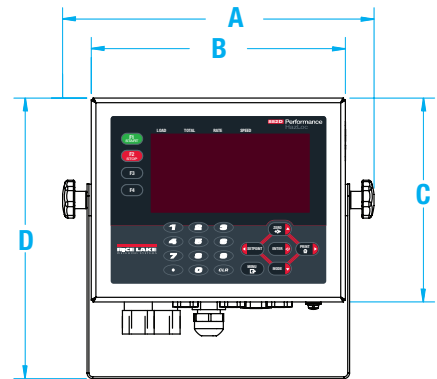
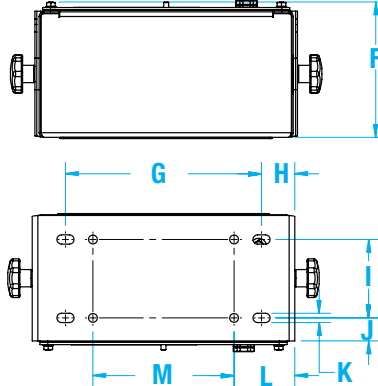
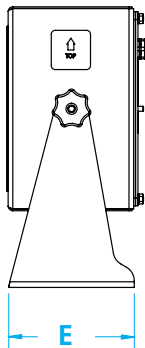
Part #	Description	Price
180845	882D HazLoc indicator with LCD display universal enclosure, 1/2 NPT thread adapters	Consult
180846	882D HazLoc indicator with LCD display universal enclosure, M16 x 1.5 thread adapters	Consult

Options/Accessories

Part #	Description	Price
Option Cards		
208116	880 HazLoc analog kit	\$345.00
208117	880 HazLoc relay kit	\$345.00
Network Cards		
211011	882 EtherNet/IP HazLoc	\$625.00
211012	882 DeviceNet HazLoc	\$625.00
211013	882 ProfiNet HazLoc	\$625.00
211014	882 Profibus HazLoc	\$625.00
211015	882 Modbus TCP HazLoc	\$625.00
211017	882 EtherCAT HazLoc	\$625.00

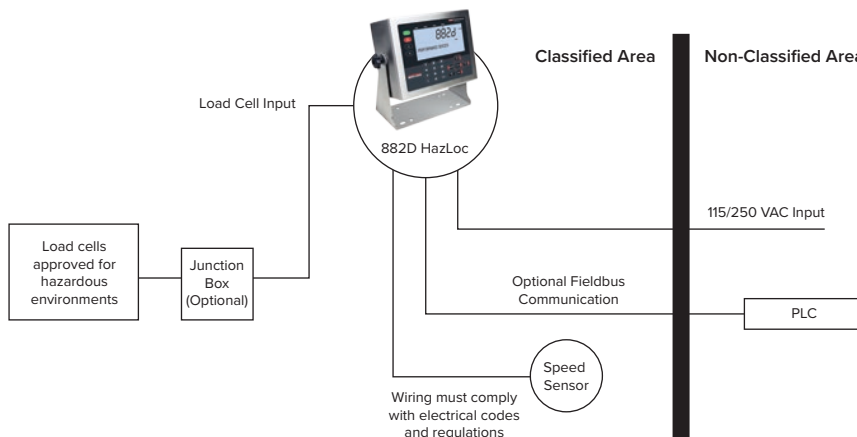
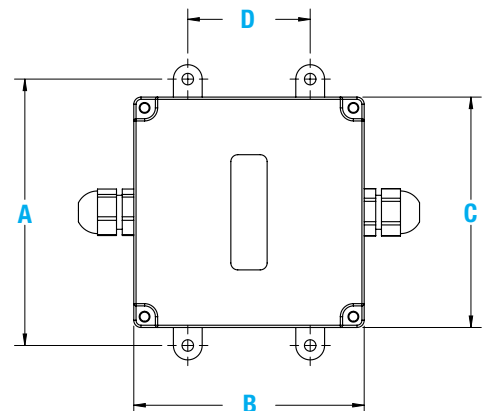
Dimensions

882D HazLoc			
A	9.93 in (252 mm)	H	1.06 in (27 mm)
B	8.10 in (206 mm)	I	2.50 in (64 mm)
C	6.50 in (165 mm)	J	0.73 in (19 mm)
D	8.94 in (227 mm)	K	0.30 in (8 mm)
E	4.00 in (102 mm)	L	1.93 in (49 mm)
F	4.32 in (110 mm)	M	4.50 in (114 mm)
G	6.25 in (159 mm)		



Dimensions

Junction Box			
A	4.63 in (118 mm)	C	4.00 in (102 mm)
B	4.00 in (102 mm)	D	2.13 in (54 mm)



HAZARDOUS LOCATION
INSTRUMENTATION

EL232 XPCD

Explosion Proof Remote Serial Display

HAZARDOUS LOCATION
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NOTE: Custom enclosures as requested. All explosion-proof devices are now built-to-order, so please coordinate purchase of these items with one of our application specialists.

Part Number/Price

Part #	Description	Est. Weight	Price
20904	EL232 XPCD explosion proof remote serial display	60 lb	\$7,675.00

Dimensions

EL232 XPCD			
A	10.50 in (266.7 mm)	E	10.50 in (266.7 mm)
B	9.50 in (241.3 mm)	F	7.50 in (190.5 mm)
C	5.81 in (147.7 mm)	G	11.75 in (298.5 mm) (glass diameter)
D	11.75 in (298.5 mm)	H	7/16 in (11 mm) dia holes



CAUTION! The equipment contained within this Explosive Environment section requires greater attention to specification and installation guidelines. Improper specification, installation or service of these products can result in loss of equipment or serious injury.

Standard Features

- 20 mA current loop or RS-232 input
- Compatible with most Rice Lake indicators
- NEMA Type 4, 7CD, 9EFG enclosure

Specifications

Input Voltage:

115 VAC, 60 Hz

NEC Classifications:

Class I, Division 1, Groups C & D; Class II, Division 1, Groups E, F & G and Class III hazardous environments

Baud Rate:

1200, 2400, 4800 and 9600

Interfaces:

20 mA current loop and RS-232

Please consult factory for model numbers and interface requirements

Display:

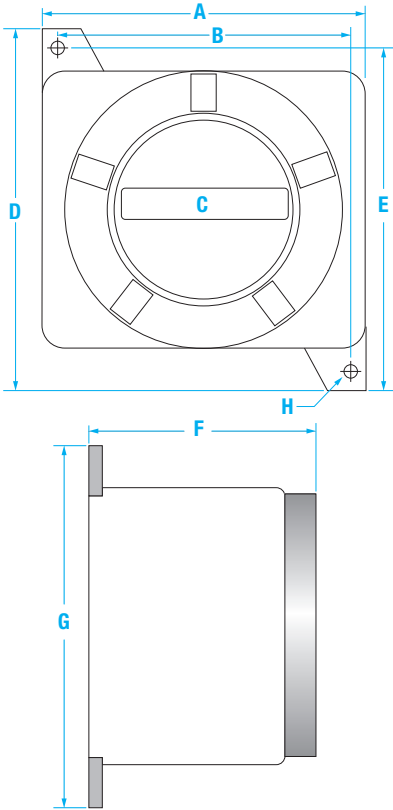
High-intensity, red LED, 0.8 in (20.3 mm) high digits

Weight:

Approximately 60 lb (27.2 kg)

Warranty:

One-year limited





Standard Features

- Each system features excitation, sense and signal barriers
- Available in an enclosure for external mounting or in a chassis mount version
- R Stahl® or equivalent barriers that are approved by Factory Mutual (FM)

Specifications

Part #31201:

+ Excitation 9001/01-158-390-101

Voltage Range:

+12 VDC

Internal Resistance:

55 ohm

Open Circuit Voltage:

15.7 VDC

Short Circuit Current:

390 mA

Classifications:

FM approved, UL listed,
CSA certified, SA, CE marked

Part #31202:

± Excitation 9002/10-187-270-001

Voltage Range:

±6 VDC

Internal Resistance:

46 ohm

Open Circuit Voltage:

18.7 VDC

Short Circuit Current:

278.8 mA

Classifications:

FM approved, UL listed,
CSA certified, SA, CE marked

Part #31540:

+ Excitation 9001/01-083-442-10

Voltage Range:

+6 VDC

Internal Resistance:

48 ohm

Open Circuit Voltage:

8.4 VDC

Short Circuit Current:

442 mA

Classifications:

FM approved, UL listed,
CSA certified, SA, CE marked

Part #70724:

+ Sense 9001/01-086-020-101

Voltage Range:

+6 VDC

Internal Resistance:

470 ohm

Open Circuit Voltage:

8.6 VDC

Short Circuit Current:

18.3 mA

Classifications:

FM approved, UL listed,
CSA certified, SA, CE marked

Part #30263:

± Signal 9002/77-093-040-001

Voltage Range:

±6 VDC

Internal Resistance:

482 ohm

Open Circuit Voltage:

9.6 VDC

Short Circuit Current:

40.9 mA

Classifications:

FM approved, UL listed,
CSA certified, SA, CE marked

Part #31542:

RS-232 9002/22-093-300-001

Voltage Range:

±6 VDC

Internal Resistance:

75.8 ohm

Open Circuit Voltage:

9.6 VDC

Short Circuit Current:

297.5 mA

Classifications:

FM approved, UL listed,
CSA certified, SA, CE marked

Part #30264:

± Sense 9002/10-187-020-001

Voltage Range:

±6 VDC

Internal Resistance:

482 ohm

Open Circuit Voltage:

18.7 VDC

Short Circuit Current:

22 mA

Classifications:

FM approved, UL listed,
CSA certified, SA, CE marked

Part #30266:

- Excitation 9001/00-086-390-101

Voltage Range:

-0.6 VDC

Internal Resistance:

30 ohm

Open Circuit Voltage:

8.6 VDC

Short Circuit Current:

377.6 mA

Classifications:

FM approved

Part #69491:

- Excitation 9001/02-016-150-111

Voltage Range:

±0.7 VDC

Internal Resistance:

12.8 ohm

Open Circuit Voltage:

1.64 VDC

Short Circuit Current:

127.4 mA

Classifications:

FM approved, UL listed,
CSA certified, SA, CE marked

Part #69492:

+ Sense 9001/01-168-020-101

Voltage Range:

±12 VDC

Internal Resistance:

898 ohm

Open Circuit Voltage:

16.8 VDC

Short Circuit Current:

18.7 mA

Classifications:

FM approved, UL listed,
CSA certified, SA, CE marked

Part #69493:

- Sense 9001/02-016-015-101

Voltage Range:

+0.7 VDC

Internal Resistance:

127 ohm

Open Circuit Voltage:

1.64 VDC

Short Circuit Current:

13.7 mA

Classifications:

FM approved, UL listed,
CSA certified, SA, CE marked

Part #72521:

- Excitation 9001/01-199-390-101

Voltage Range:

+16 VDC

Internal Resistance:

67 ohm

Open Circuit Voltage:

-19.9 VDC

Short Circuit Current:

382.7 mA

Classifications:

FM approved, CSA-certified,
CE marked

Part #30265:

+ Excitation 9001/01-086-390-101

Voltage Range:

+6 VDC

Internal Resistance:

30 ohm

Open Circuit Voltage:

8.6 VDC

Short Circuit Current:

377.6 mA

Classifications:

FM approved

Intrinsic Safety Barriers

Part Number/Price

Part #	Description	Est. Weight	Price
Barrier Kit #1: (For models with \pm 5 Volt excitation)			
31202	9002/10-187-270-001, \pm excitation barrier	1 lb	\$475.00
30264	9002/10-187-020-001, \pm sense barrier	1 lb	\$495.00
30263	9002/77-093-040-001, \pm signal barrier	1 lb	\$495.00
109663	DIN rail mounted kit #1 (includes 31202, 30264, 30263)	2 lb	\$1,610.00
Barrier Kit #2: (For models with + 10 Volt excitation)			
31201	9001/01-158-390-101, + excitation barrier	1 lb	\$415.00
69491	9001/02-016-150-111, - excitation barrier	1 lb	\$370.00
69492	9001/01-168-020-101, + sense barrier	1 lb	\$345.00
69493	9001/002-016-015-101, - sense barrier	1 lb	\$395.00
30263	9002/77-093-040-001, \pm signal barrier	1 lb	\$495.00
Barrier Kit #3: (For models with + 5 Volt excitation)			
31540	9001/01-083-442-101, + excitation barrier	1 lb	\$310.00
69491	9001/02-016-150-111, - excitation barrier	1 lb	\$370.00
30263	9002/77-093-040-001, \pm signal barrier	1 lb	\$495.00
If sense leads are required, use the following:			
199867	9001/01-086-075-101, + sense barrier	1 lb	\$525.00
69493	9001/02-016-015-10, - sense barrier	1 lb	\$395.00
Miscellaneous Barriers:			
30266	9001/00-086-390-101, - excitation barrier	1 lb	\$345.00
30265	9001/01-086-390-101, + excitation barrier	1 lb	\$345.00
72521	9001-01-199-390-101, + excitation barrier	1 lb	\$450.00
197643	Barrier, dual channel, RS-422	1 lb	\$485.00
31542	9002/77-093-300-001, RS-232	1 lb	\$450.00

Options/Accessories

Part #	Description	Price
33531	DIN rail, 6 in length	\$12.00
35815	IS barrier installation manual	\$15.00
110424	FRP enclosure, up to 4 barriers (not included)	\$240.00
22828	Ground terminal block	\$25.00
42219	Barrier fuse (160 mA)	\$14.50

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