

Hazardous Location Instrumentation

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HAZARDOUS LOCATION
INSTRUMENTATION

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Explosive Environment Equipment Policy

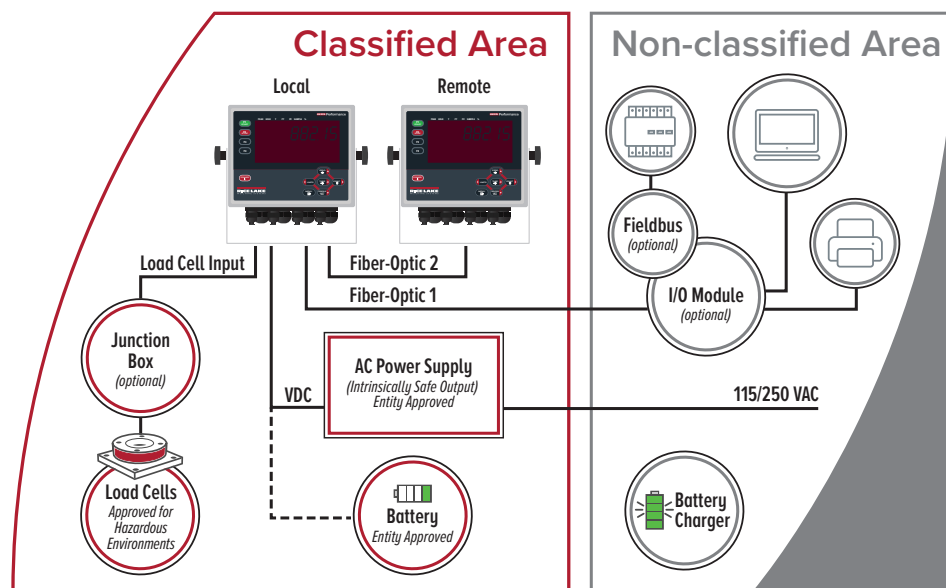


Caution: The equipment contained within this Explosive Environment section requires greater attention to specification and installation guidelines. Improper specification, installation or service of these products can result in loss of equipment or serious injury.

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 567 for assistance in selecting hazardous area control equipment for your application requirements.

Hazardous Area Classification

The distributor is responsible for either maintaining a permanent, traceable record of the equipment location (the end user) or returning this form to Rice Lake Weighing Systems with signatures from the distributor and the end user's hazardous or classified area defining authority.



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

For Rice Lake Office Use Only

RLWS File #:	<input type="text"/>	Date:	<input type="text"/>
Sales Order #:	<input type="text"/>	Checked by:	<input type="text"/>
Equipment PN(s):	<input type="text"/>		
Serial(s):	<input type="text"/>		
Factory Mutual Not Applicable:	<input type="text"/>		
(International Orders Only):	<input type="text"/>		

Rice Lake Distributor Information

Distributor Name:	<input type="text"/>	Customer Number:	<input type="text"/>
Address:	<input type="text"/>		
City:	<input type="text"/>	State:	<input type="text"/>
		Zip:	<input type="text"/>
		<small>(Use two-letter abbreviation)</small>	
Telephone:	<input type="text"/>	Fax:	<input type="text"/>
Contact Name:	<input type="text"/>	Date:	<input type="text"/>
	<small>(Print)</small>		<small>(Signature)</small>
Authorized Sign.:	<input type="text"/>	Date:	<input type="text"/>
	<small>(Print)</small>		<small>(Signature)</small>

End User Information

End User Name:	<input type="text"/>		
Address:	<input type="text"/>		
City:	<input type="text"/>	State:	<input type="text"/>
		Zip:	<input type="text"/>
		<small>(Use two-letter abbreviation)</small>	
Telephone:	<input type="text"/>	Fax:	<input type="text"/>
Contact Name:	<input type="text"/>	Date:	<input type="text"/>
	<small>(Print)</small>		<small>(Signature)</small>
Authorized Sign.:	<input type="text"/>	Date:	<input type="text"/>
	<small>(Print)</small>		<small>(Signature)</small>
Title:	<input type="text"/>		

The following information is to be defined by the END USER'S plant safety engineer or other authorized party.

Hazardous Area Classification:

Class/Division:	Class <input type="text"/>	Division <input type="text"/>	Group <input type="text"/>	Temperature Class <input type="text"/>
Zone:	Zone <input type="text"/>	Group <input type="text"/>	Temperature Class <input type="text"/>	
Specific Hazard/Material:	<input type="text"/>			
Defining Individual:	<input type="text"/>	Date:	<input type="text"/>	
	<small>(Print)</small>		<small>(Signature)</small>	
Defining Individual (Title):	<input type="text"/>			

Additional Application Questions

What are the requirements for the application?

What type of scale? *(Floor / Bench / Truck / Mounts)*

Is a remote display needed? ☐ Yes ☐ No

What communications are needed?

What functions are needed in the Safe Area?

What functions are needed in the Hazardous Area?

Hazardous Area: Class Division Group

What weight indicator is being used? *(for barriers)*

What is the distance from the Hazardous Area to the Safe Area?

Explosive Environment Solutions



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.

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

PURGED 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 LOCATION
INSTRUMENTATION

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-butyraldehyde
- 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

NEW

Improved
Fiber Optic Distance
2nd Fiber Port



Approvals



Standard Features

- Two fiber optic ports with communication up to 500 ft
- LCD display with white LED backlight
- T4 temperature rating
- Battery life display icon
- Numeric keypad (882IS Plus)
- Dual 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 and date (requires I/O module)
- Setpoint functionality using secondary 920i® indicator
- FM Entity Approved for use in hazardous locations per Rice Lake Weighing Systems control drawing file number 221416

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. All systems and components are warranted against defects in materials and workmanship for one year. All Rice Lake intrinsically safe equipment carries a Factory Mutual approval and is documented on various control drawings. Each device is manufactured by Rice Lake 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 factory authorized personnel.



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882IS/882IS Plus

Intrinsically Safe Digital Weight Indicator

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 µV/graduation minimum
1.5 µV/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

882IS Plus: Zero, Gross/Net, Tare, Print, Units Conv, Start, Stop, full numeric keypad

Optical Ports:

Physical Medium: 2.2 plastic fiber @ 640 nm

Max Transmission Length: 500 ft (152 m)

Transmission Type: Full duplex

Temperature:

Operating: 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/cFmus

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:

NTEP 19-015

Measurement Canada AM-6124C

OIML R76/2006-A-NL1-21.11

EU Type Eval Certificate T11166

CE Listed

UKCA

cULus Listed*

cFmus Approved

EX-ATEX

IECEx

*cULus is only applicable to 882IS I/O and battery charger

HAZARDOUS LOCATION
INSTRUMENTATION

882IS/882IS Plus

Intrinsically Safe Digital Weight Indicator

HAZARDOUS LOCATION
INSTRUMENTATION

Part Number/Price

Part #	Description	Price
882IS		
195091	882IS 7.5 VDC with standard tilt stand	\$1,845.00
185288†	882IS with battery and charger (North American plug)	\$2,945.00
194231††	882IS with battery and charger (EU plug)	\$2,945.00
194232†††	882IS with battery and charger (UK plug)	\$2,945.00
196273††††	882IS with battery and charger (AU plug)	\$2,945.00
185290	882IS with power supply with 10 ft cable	\$3,245.00
194235	882IS indicator with power supply and metric thread adapter	\$3,245.00
882IS Plus		
195092	882IS Plus 7.5 VDC with standard tilt stand	\$1,845.00
185291†	882IS Plus with battery and charger (North American plug)	\$2,945.00
194233††	882IS Plus with battery and charger (EU plug)	\$2,945.00
194234†††	882IS Plus with battery and charger (UK plug)	\$2,945.00
196274††††	882IS Plus with battery and charger (AU plug)	\$2,945.00
185293	882IS Plus with power supply	\$3,245.00
194236	882IS Plus indicator with power supply and metric thread adapter	\$3,245.00

Parts/Accessories

Part #	Description	Price
180831	Battery option, IS6V2	\$845.00
194191†	Battery charger, IS6V2, 100-240 VAC NEMA 5-15 (North American plug)	\$345.00
194189††	Battery charger, IS6V2 100-240 VAC (EU plug)	\$345.00
194192†††	Battery charger, IS6V2 100-240 VAC (UK plug)	\$345.00
197591††††	Battery charger, IS6V2 100-240 VAC (Australian plug)	\$345.00
180837	Power supply, 882IS mb-EPS-100-240-X2, dual output 6.8 VDC 200 mA	\$1,295.00
195109	Power supply, 882IS mb-EPS-100-240-X2, dual output 6.8 VDC 200 mA, 1/2 in NPT-M20	\$1,345.00
179668	Cable, M12 power 22 in hazardous location (for battery version)	\$95.00
179669	Cable, M12 power 10 ft hazardous location	\$195.00
179670	Cable, M12 power 50 ft hazardous location	\$245.00
179671	Cable, M12 power 100 ft hazardous location	\$445.00
190979	Lockout device for M12 cable	\$25.00
163751	Tilt stand, 882IS	\$45.00
179678	Tilt stand, 882IS battery option	\$55.00
177850	Panel mount option, gasketed non-NEMA seal	\$255.00
206735	Battery tester, 882IS	\$445.00
223864	Knob, Stainless Steel M6 x 1.0 inch	\$15.00



† US plug (NA) - Type B



†† Euro Plug - Type E



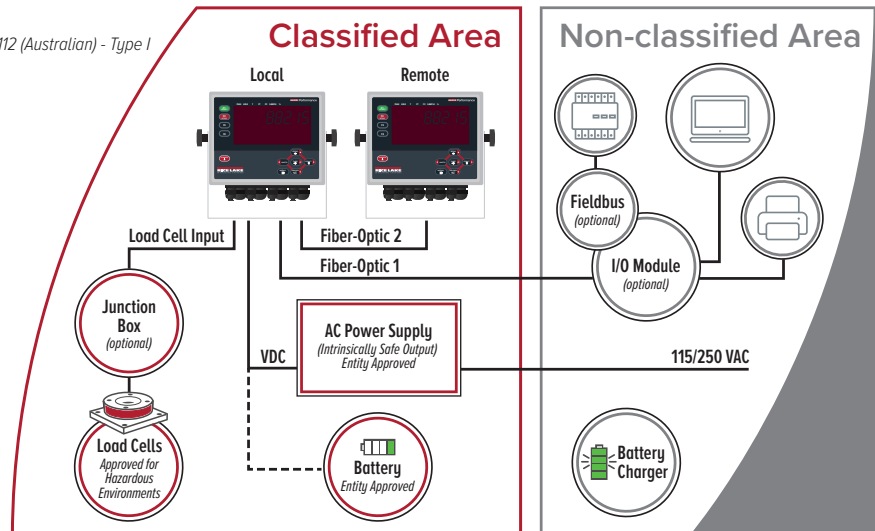
††† BS1363 (UK) - Type G



†††† AS 3112 (Australian) - Type I



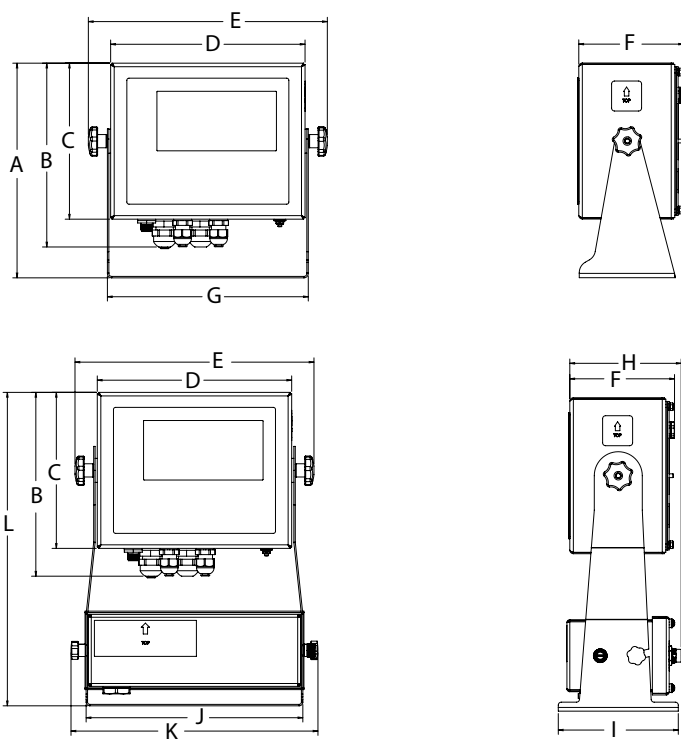
PN 206735 Battery Tester



Control drawing part numbers: 221416, 186430, 182301 and archived drawing 180948, are available at www.ricelake.com

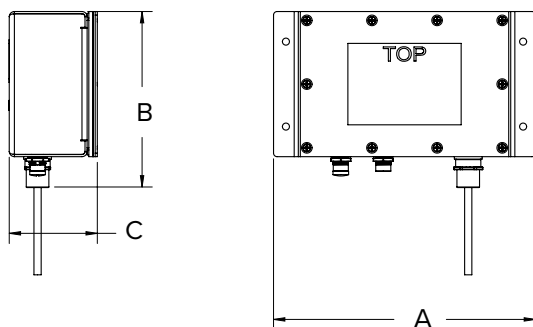
Dimensions

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)		



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



882IS/882IS Plus

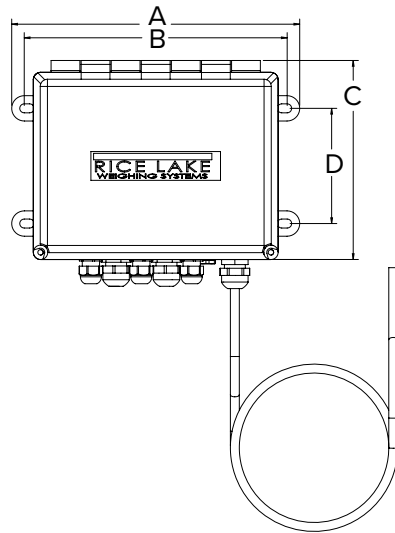
Intrinsically Safe Digital Weight Indicator

Options/Accessories

Part #	Description	Price
Optional Safe Area Modules		
177709	Module, 882 Smart I/O Ethernet fiber optic interface	\$1,025.00
196166	Module, 882 Smart I/O (EU power cord)	\$1,025.00
196769	Converter, fiber optic to RS-232 , 6 × 6 inch FRP enclosure, external power supply included	\$575.00
196770	Converter, fiber optic to RS-422, 6 × 6 inch FRP enclosure, external power supply included	\$575.00
78026	Cable, plastic optical 100 ft. includes polishing kit	\$185.00
78027	Cable, plastic optical 200 ft. includes polishing kit	\$350.00
197384	Kit, polishing POF cable includes 197381 films and 197383 puck	\$65.00
Option Cards		
190528	Single analog output (0-10 VDC, 0-20 mA, 4-20 mA)	\$425.00
190530	EtherNet/IP™ CompactCom	\$620.00
190531	DeviceNet® CompactCom	\$620.00
190532	PROFINET CompactCom	\$620.00
190534	PROFIBUS® DP CompactCom	\$620.00
190533	Modbus TCP CompactCom	\$620.00
190535	EtherCAT® CompactCom	\$620.00
Remote Indicator for Setpoint Functionality		
203343	920i universal indicator, 115 VAC, no A/D, with 882IS iRite software for setpoints	\$3,225.00
203344	920i wall mount indicator, 115 VAC, no A/D, with 882IS iRite software for setpoints - requires fiber convertor (PN 196769 or PN 196770)	\$3,895.00

Dimensions

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



EL232 XPCD

Explosion-proof Remote Serial Display



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) diameter 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:

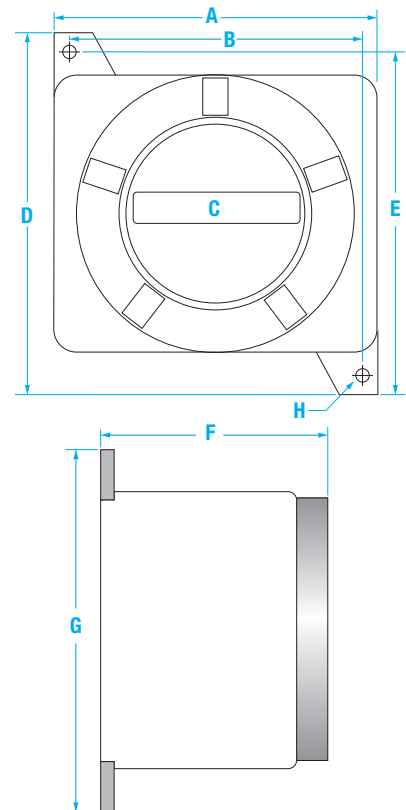
High-intensity, red LED, 0.8 in (20.3 mm) high digits

Weight:

Approximately 60 lb (27.2 kg)

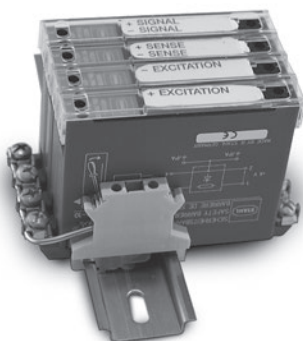
Warranty:

One-year limited



HAZARDOUS LOCATION
INSTRUMENTATION

Intrinsic Safety Barriers



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® and Pepperl+Fuchs® barriers that are approved by Factory Mutual (FM)



Specifications

Part #	Voltage Range	Nominal Resistance	Open Circuit Voltage	Short Circuit Current	Classifications
31201: + Excitation 9001/01-158-390-101	+12 VDC	55 ohm	15.8 VDC	390 mA	FM approved, UL listed, CSA certified, SA, CE marked
31202: ± Excitation 9002/10-187-270-001	±6 VDC	46 ohm	9.3 VDC	270 mA	FM approved, UL listed, CSA certified, SA, CE marked
31540: + Excitation 9001/01-083-442-101	+6 VDC	26 ohm	8.3 VDC	442 mA	FM approved, UL listed, CSA certified, SA, CE marked
199867: + Sense 9001/01-086-075-101	+6 VDC	129 ohm	8.6 VDC	41 mA	FM approved, UL listed, CSA certified, SA, CE marked
30263: ± Signal 9002/77-093-040-001	±6 VDC	519 ohm	9.3 VDC	20 mA	FM approved, UL listed, CSA certified, SA, CE marked
31542: RS-232 9002/77-093-300-001	±6 VDC	76.6 ohm	9.3 VDC	150 mA	FM approved, UL listed, CSA certified, SA, CE marked
30264: ± Sense 9002/10-187-020-001	±6 VDC	516.5 ohm	9.33 VDC	20 mA	FM approved, UL listed, CSA certified, SA, CE marked
30266: – Excitation 9001/00-086-390-101	–6 VDC	30 ohm	8.6 VDC	390 mA	FM approved, UL listed, CSA certified, SA, CE marked
69491: – Excitation 9001/02-016-150-111	±0.7 VDC	20 ohm	1.64 VDC	150 mA	FM approved, UL listed, CSA certified, SA, CE marked
69492: + Sense 9001/01-168-020-101	+12 VDC	918 ohm	16.8 VDC	20 mA	FM approved, UL listed, CSA certified, SA, CE marked
69493: – Sense 9001/02-016-015-101	±0.7 VDC	127 ohm	1.64 VDC	15 mA	FM approved, UL listed, CSA certified, SA, CE marked
72521: + Excitation 9001/01-199-390-101	+16 VDC	67 ohm	19.9 VDC	390 mA	FM approved, CSA certified, CE marked
30265: + Excitation 9001/01-086-390-101	+6 VDC	30 ohm	8.6 VDC	390 mA	FM approved, CSA certified, CE marked
221779: + Excitation Z713	+13.7 VDC	22 ohm	15.75 VDC	160 mA	FM Approved, cULus, ATEX, IECEx
221663: – Excitation Z813	–13.7 VDC	22 ohm	15.75 VDC	160 mA	FM Approved, cULus, ATEX, IECEx
221662: ± EX Z966	±10 VDC	166 ohm	12 VDC	50 mA	FM Approved, cULus, ATEX, IECEx
221660: ± Signal Z961	±6.5 VDC	100 ohm	8.7 VDC	100 mA	FM Approved, cULus, ATEX, IECEx
221661: ± Sense Z964	±10 VDC	1000 ohm	12 VDC	50 mA	FM Approved, cULus, ATEX, IECEx

Intrinsic Safety Barriers

Part Number/Price

Part #	Description	Est. Weight	Price
R Stahl® Barriers #1: (For models with +5 and -5 Volt excitation (10 volt))			
31202	9002/10-187-270-001, ± Excitation barrier	1 lb	\$595.00
30264	9002/10-187-020-001, ± Sense barrier	1 lb	\$595.00
30263	9002/77-093-040-001, ± Signal barrier	1 lb	\$725.00
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	\$495.00
69491	9001/02-016-150-111, – Excitation barrier	1 lb	\$495.00
69492	9001/01-168-020-101, + Sense barrier	1 lb	\$495.00
69493	9001/002-016-015-101, – Sense barrier	1 lb	\$495.00
30263	9002/77-093-040-001, ± Signal barrier	1 lb	\$725.00
Barrier Kit #3: (For models with + 5 Volt excitation)			
31540	9001/01-083-442-101, + Excitation barrier	1 lb	\$375.00
69491	9001/02-016-150-111, – Excitation barrier	1 lb	\$495.00
30263	9002/77-093-040-001, ± Signal barrier	1 lb	\$725.00
If sense leads are required for above, use the following:			
199867	900/01-086-075-101, + Sense barrier	1 lb	\$825.00
69493	9001/02-016-015-10, – Sense barrier	1 lb	\$495.00
Miscellaneous Barriers:			
30266	9001/00-086-390-101, – Excitation barrier	1 lb	\$495.00
30265	9001/01-086-390-101, + Excitation barrier	1 lb	\$675.00
72521	9001/01-199-390-101, + Excitation barrier	1 lb	\$525.00
197643	9002/22-032-300-111, RS-422 dual channel	1 lb	\$850.00
31542	9002/77-093-300-001, RS-232 dual channel	1 lb	\$595.00

Pepperl+Fuchs® Barrier Kit #1 for multiple load cell applications:			
221779	Z713 +Excitation barrier	1 lb	\$345.00
221663	Z813 –Excitation barrier	1 lb	\$745.00
221661	Z964 ± Sense barrier	1 lb	\$365.00
221660	Z961 ± Signal barrier	2 lb	\$375.00
Pepperl+Fuchs Barrier Kit #2 for single load cell applications:			
221662	Z966 ± Excitation barrier	1 lb	\$385.00
221661	Z964 ± Sense barrier	1 lb	\$365.00
221660	Z961 ± Signal barrier	2 lb	\$375.00

Options/Accessories

Part #	Description	Price
33531	DIN rail, 6 in length 35 mm width × 7.5 mm high	\$15.00
35815	Safety barrier instruction sheet	\$15.00
110424	IS barrier FRP enclosure, up to 4 barriers (not included)	\$295.00
22828	Ground terminal block, universal DIN rail mounted	\$25.00
42219	Fuse, IS Barrier 160mA for Stahl barriers	\$15.00
208123	Isolator, barrier mount with DIN rail mounting clips	\$5.00

HAZARDOUS LOCATION
INSTRUMENTATION

This image shows a full page of blank graph paper. The grid consists of small, equal-sized squares formed by thin, light gray lines. There are 20 columns and 20 rows of squares, creating a total of 400 square units. The background is white, and the grid lines extend to the edges of the page without any margins or additional markings.