

# Hazardous Area Concerns and Recommendations Regarding Reliance Boiler Water Level Equipment



**Reliance**<sup>®</sup>

A PRODUCT OF CLARK-RELIANCE

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When electrical equipment rated for Classified Areas (hazardous locations) must be specified, this guide will assist you with selecting the correct equipment for the area. As a matter of good practice, Reliance recommends reviewing the location where the equipment will be installed to confirm if equipment rated for a hazardous area is required. If it is determined that the area is not within a Classified Area, standard (ordinary location) equipment may be specified.

Note that plant rules may dictate the use of equipment designed for use in a Classified Area with no exception. If there is a concern, consult with plant operations personnel or a safety engineer to confirm the requirements.

### **Simpliport® 180 Viewing System**






Illuminators for the Simpliport 180 are available for NEC-500, Class I, Division 2 and NEC-505, Class I, Zone 2 applications, for use with the same Viewing Hoods as our ordinary location illuminators. Models are available with local and remote Power Supplies for installer convenience. The maximum distance for the remote power supply to light is 1000' (305M).

<b>Specifications</b>	
Power Supply:	85-264 VAC @ 47-63 Hz.
Max. Power Consumption:	1.5A
Estimated Life:	Up to 10 years (continuous)
Hazardous Location Certifications:	 ETL US/Canada Class I, Div. 2, Groups A,B,C,D T4 -13F/-25C ≤ Ta ≤ 176F/80C
Ambient Temperature:	-13F (-25C) to 176F (80C)
Wire Size:	Min. 20AWG (.52mm <sup>2</sup> )
	Min. 12AWG (3.31mm <sup>2</sup> )

## DuraStar Illuminator

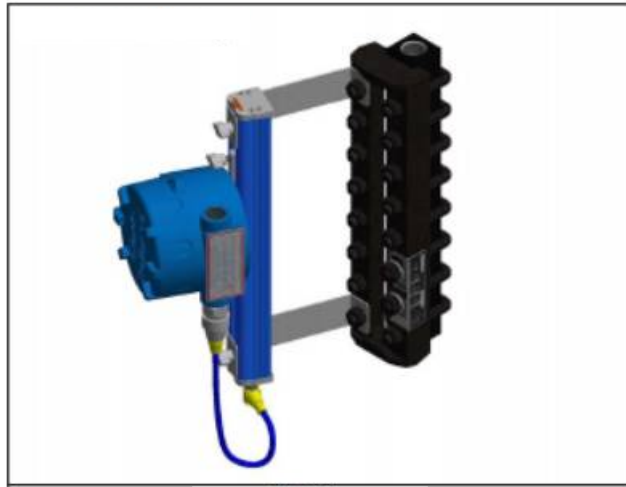





Illuminators for Flat Glass Gages are available for Hazardous Locations, including IECEx and ATEX applications. Individual DuraStars are required for each gage glass window section. The illuminators may not be “daisy-chained” for Hazardous Location applications. However, the installer may use a single power source routed through an appropriate junction box to power the individual illuminator power supplies.

<b>Specifications</b>	
Power Supply:	115/230 VAC @ 50-60 Hz.
Max. Power Consumption:	250mA @ 115VAC/125mA @ 230VAC
Estimated Life:	Up to 10 years (continuous)
Hazardous Location Certifications:	US/Canada: Class I, Div. 1, Groups B,C,D T4 Class I, Zone 1, AEx db [ib] IIB+H2 T4 Gb Class I, Zone 1, AEx ib IIB+H2 T4 Gb Ex db [ib] IIB+H2 T4 Gb Ex ib IIB+H2 T4 Gb. -40°C ≤ Ta ≤ +60°C 
	ATEX: II 2(2) G Ex db [ib] IIB+H2 T4 Gb (Power Supply) II 2 G Ex ib IIB+H2 T4 Gb (Light) -40°C ≤ Ta ≤ +60°C 
	IECEx: Ex db [ib] IIB+H2 T4 Gb (Power Supply) Ex ib IIB+H2 T4 Gb (Light) -40°C ≤ Ta ≤ +60°C 
Ambient Temperature:	-13F (-25C) to 140F (60C)
Wire Size:	Min. 20AWG (.52mm <sup>2</sup> )
	Min. 12AWG (3.31mm <sup>2</sup> )

## Prismatic Gage Glass Illuminator

LumaStar™ style illuminators for Hazardous Locations are available for Prismatic Gages. Please consult the factory for assistance with these illuminators.



<b>Specifications</b>	
Power Supply:	115/230 VAC @ 50-60 Hz.
Max. Power Consumption:	250mA @ 115VAC/125mA @ 230VAC
Estimated Life:	Up to 10 years (continuous)
Hazardous Location Certifications:	<p>US/Canada:</p> <p>Class I, Div. 1, Groups B,C,D T4</p> <p>Class I, Zone 1, AEx db [ib] IIB+H2 T4 Gb</p> <p>Class I, Zone 1, AEx ib IIB+H2 T4 Gb</p> <p>Ex db [ib] IIB+H2 T4 Gb</p> <p>Ex ib IIB+H2 T4 Gb.</p> <p>-40°C ≤ Ta ≤ +60°C</p> 
	<p>ATEX:</p> <p> II 2(2) G Ex db [ib] IIB+H2 T4 Gb (Power Supply)</p> <p>II 2 G Ex ib IIB+H2 T4 Gb (Light)</p> <p>-40°C ≤ Ta ≤ +60°C</p>
	<p>IECEX:</p> <p> Ex db [ib] IIB+H2 T4 Gb (Power Supply)</p> <p>Ex ib IIB+H2 T4 Gb (Light)</p> <p>-40°C ≤ Ta ≤ +60°C</p>
Ambient Temperature:	-13F (-25C) to 140F (60C)
Wire Size:	Min. 20AWG (.52mm <sup>2</sup> )
	Min. 12AWG (3.31mm <sup>2</sup> )

## Relay Control Units

Relay control units can be furnished for Reliance water columns, probe type Levelarms, Traditional Eye-Hyes®, and TWIP units. The controls must be furnished with Intrinsically Safe (IS) barriers on the probe circuit. When mounted remotely, the controls may be mounted in a “safe area” (with a non-explosionproof enclosure) up to 500 ft. from the probes. If mounted locally in the same Classified area as the probes, a NEMA 7/4X enclosure must be furnished.

The IS barriers are rated for the following:

FM	NONINCENDIVE FOR, Class I, Div. 2, Groups A,B,C,D; T4, Class I, Zone 2, Group IIC T4 IS connections for Class I,II,III, Div. 1, Groups A,B,C,D,E,F,G; Class I, Zone 0, Groups IIC/IIB
UL	For use in Hazardous location, Class I, Div. 2, Groups A,B,C,D; T4 Providing IS circuits for Class I,II,III, GROUPS A,B,C,D,E,F,G
CSA	Associated equipment [Ex ia], Class I, Div. 2, Groups A,B,C,D; T4 Provides IS circuits for Class I,II,III; Groups A,B,C,D Class I, Zone 0, Groups IIC/IIB

## SmartLevel Control Units

The control units must be furnished with Intrinsically Safe (IS) barriers on the probe circuit. When mounted remotely, the controls may be mounted in a “safe area” (with a non-explosionproof enclosure) no more than 250 ft. from the probes. If mounted locally in the same Classified Area as the probes, a NEMA 7/4X enclosure must be furnished and mounted no more than 250 ft. from the probes.

The IS barriers are rated for the following:

FM	Use in Class I, II, III Div. 1,2, Groups A,B,C,D,E,F,G; T4 Class I, Zone 2, Group IIC; T4; with IS output CL I, II, III, DIV 1, Groups A, B, C, D, E, F, G; [AEx ia] IIC
UL	Associated Apparatus located in Class I, Div. 2, Groups A,B,C,D; T4 Cl. I, Zone 2, Group IIC, T4 Haz Loc providing IS Circuits for use in Class I, Div. 1, Group A,B,C,D; Class II, Group E,F,G; Cl III
CSA	Use in Cl 1, Div. 2, Groups A,B,C,D; Class I Zone 2 Group IIC with IS connections to Class I, II, III, DIV 1; GR A,B,C,D,E,F,G; Class I, Zone 0 Group IIC; Ex na [ia] IIC
ATEX	II (1) GD [EEx ia] IIC BAS01ATEX7217
IECEx	[Ex ia] I IECEx TSA 05.0036X [Ex ia] IIC IECEx BAS 04.0025

## Area Classification

	Flammable Material Present Continuously	Flammable Material Present Intermittently	Flammable Material Present Abnormally
IEC / EU	Zone 0	Zone 1	Zone 2
US (NEC® 505)	Zone 0	Zone 1	Zone 2
US (NEC® 500)	Division 1		Division 2
CA (CEC Section 18)	Zone 0	Zone 1	Zone 2
CA (CEC Annex J18)	Division 1		Division 2

IEC classification per IEC 60079-10-1

EU classification per EN 60079-10-1

US classification per ANSINFP 70 National Electrical Code® (NEC®) Article 500 or Article 505

CA classification per CSAC22.1 Canadian Electrical Code (CEC) Section 18 or Annex J

## Equipment Grouping

Typical gas	US (NEC® 505) CA (CEC Section 18) EU IEC	US (NEC® 500) CA (CEC Annex J18)
Acetylene	Group IIC	Class I/Group A
Hydrogen	(Group IIB + H <sub>2</sub> )	Class I/Group B
Ethylene	Group IIB	Class I/Group C
Propane	Group IIA	Class I/Group D
Methane	Group I*	Mining*

\*Not within scope of NEC®. Under jurisdiction of MSHA. Not within scope of CEC.

## Temperature Class

Marking	US (NEC® 505) CA (CEC Section 18) EU IEC	US (NEC® 500) CA (CEC Annex J18)
450°C	T1	T1
300°C	T2	T2
280°C		T2A
260°C		T2B
230°C		T2C
215°C		T2D
200°C	T3	T3
180°C		T3A
165°C		T3B
160°C		T3C
135°C	T4	T4
120°C		T4A
100°C	T5	T5
85°C	T6	T6

# Ingress Protection (IP) Codes

First characteristic Numeral		Second characteristic Numeral
Protection against solid bodies		Protection against liquid
0	No protection	No protection
1	Objects greater than 50mm	Vertical (90°) dripping water
2	Objects greater than 12mm	75° to 90° dripping water
3	Objects greater than 2.5mm	Sprayed water
4	Objects greater than 1mm	Splashed water
5	Dust-protected	Water jets
6	Dust-tight	Heavy seas
7		Temporary immersion
8		Continuous immersion
9		High pressure/temperature water jet

## Approximate U.S. enclosure type equivalent to IPXX

Type → IP		Type → IP		Type → IP	
1	10	3S	54	6 and 6P	67
2	11	4 and 4X	55	12 and 12K	52
3	54	5	52	13	54
3R	14				

### NEMA Ratings for Control Unit Enclosures:

NEMA 1 (IP10): General-purpose. Protects against dust, light, and indirect splashing but is not dust-tight; primarily prevents contact with live parts; used indoors and under normal atmospheric conditions.

NEMA 4 or 4X (IP66): Indoor and outdoor use. Provides a degree of protection against the ingress of water, dirt, and dust. "X" (as 4X) indicates additional corrosion resistance.

NEMA 7: Certified and labeled for use in areas with specific hazardous conditions.

NEMA 7/4X: Same as NEMA 7 with the addition of weatherproof and corrosion resistance

NEMA 12 (IP52): General-purpose. Intended for indoor use, provides some protection against dust, falling dirt, and dripping non-corrosive liquids.



On-Line Parts – DIRECT – for Clark-Reliance Products

**JERGUSON®** **Reliance®**

**JACOBY-TARBOX®** **MAGNE-SONICS®**



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**REPLACEMENT PARTS WARNING**

THE USE OF NON-ORIGINAL EQUIPMENT MANUFACTURER PARTS (SUCH AS GLASS, GASKETS, PROBES, MODULES, ETC.) WILL VOID THE AGENCY APPROVAL (FM, UL, CAS, CRN, ABS, ETC.) PRESSURE/TEMPERATURE RATING, AND WARRANTY OF THE EQUIPMENT. CLARK-RELIANCE REQUIRES THE USE OF OEM PARTS FOR ALL REPAIRS IN ON THIS PRODUCT IN ORDER TO MAINTAIN PLANT AND PERSONNEL SAFETY, AND RELIABLE OPERATION.

Consult the factory or your local Clark-Reliance Representative with any questions. Please have the model numbers and/or reference drawing numbers available when calling. You can also contact us at our website [www.relianceboilertrim.com](http://www.relianceboilertrim.com) or [RelianceAppEng@clark-reliance.com](mailto:RelianceAppEng@clark-reliance.com).