



LICO®

LICO Heat Detector & Prevent a Fire Catalog 2017

Detect Heat and prevent Overheat, Fire, Explosion
with custom made Industrial Heat & Fire Detectors from 60 °C - until 510 °C



ENG Version 4.1 - 02.2017

LICO develops and manufactures in the EU

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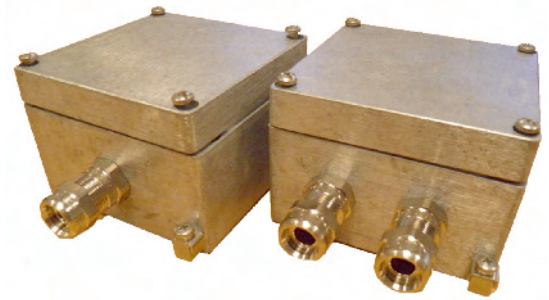
**Detect Over Heat before!
When there is a Fire it's already too late...**



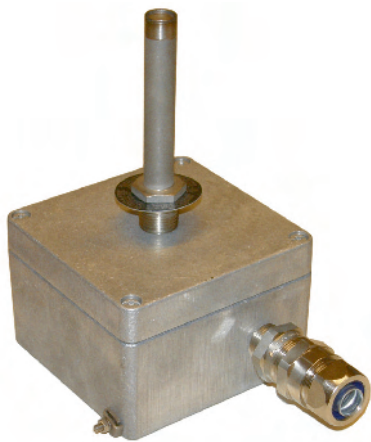
HDL-2 & HDL-3



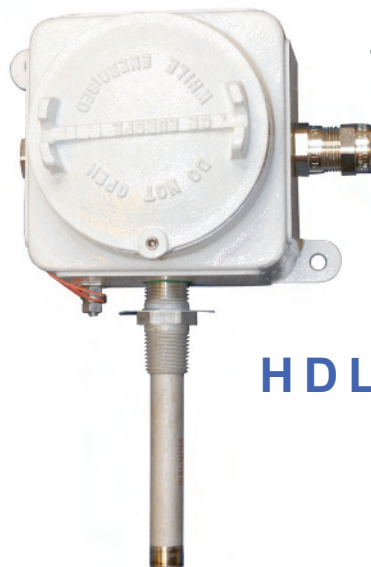
**Protective shells
& Accessories**



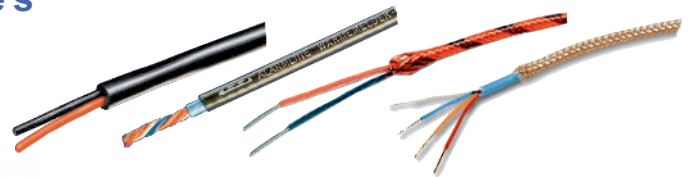
Connection Houses



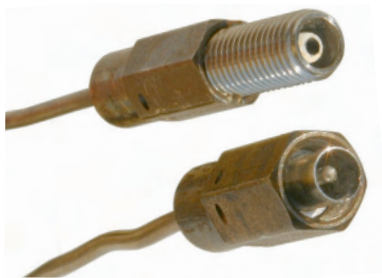
HDL-5



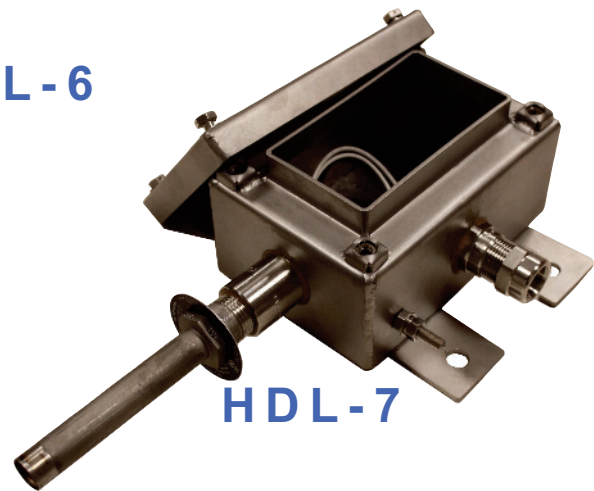
HDL-6



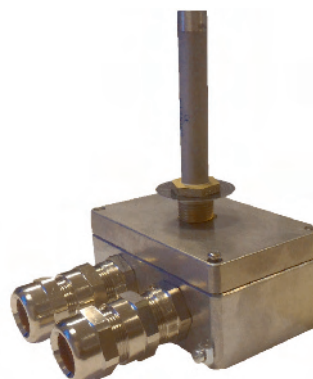
Linear Heat Detection



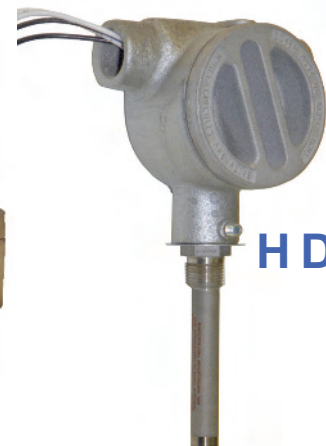
**CFD-
Inconelwire**



HDL-7



HDL-3-XL



HDL-4

Indexpage

HDL-2 & HDL-3 - Standrad Heat Detector Units	4
HDL-2, HDL-3, HDL-3XL Variations and Applications	6
HDL-4 Variations & Applications	8
HDL-5 High Temperature Heat Detector Variations and Applications	10
HDL-5 Connection House Variations	12
HDL-6 Ex 'd' - Flameproof Heat Detector Units & Variations	14
HDL-7 Stainless steel Heat Detector Units & Variations	16
Example for Ordering / Creating Part Numbers	18
Ordering Sheet / Create your Own HDL	19
Available Standard Fenwal DAF® Sensor Variations	20
Fenwal Detect-a-Fire ®	21
Special Fenwal Sensors: 17343 Serie	22
Heat Detector Accessories: LICO Weld in Pod / Screw in Pod	23
Horizontal Detect-a-Fire Units	24
Heat Detector Accessories: Cable Gland variations	26
Heat Detector Accessories: Wiring Blocks, Serie- and EOL Resistors	27
LICO Alarmpanel	28
LICO Alarmsystem	29
Abstract Wiring Diagram of Detect-a-Fire ® Elements	31
Linear Heat Detection Cables - Alarmline 2	32
Linear Heat Detection Cables - SIGNALINE	33
CFD - Continuous Fire Detection - Fenwal Sensing element	34
Additional information about Hazardous Areas	40
INFLUX - Firesure Type FM	42
INFLUX - Firesure and Firesure X	44

Heat Detector LICO - HDL-2 & HDL-3 with Ex 'e' certified Components

HDL-2

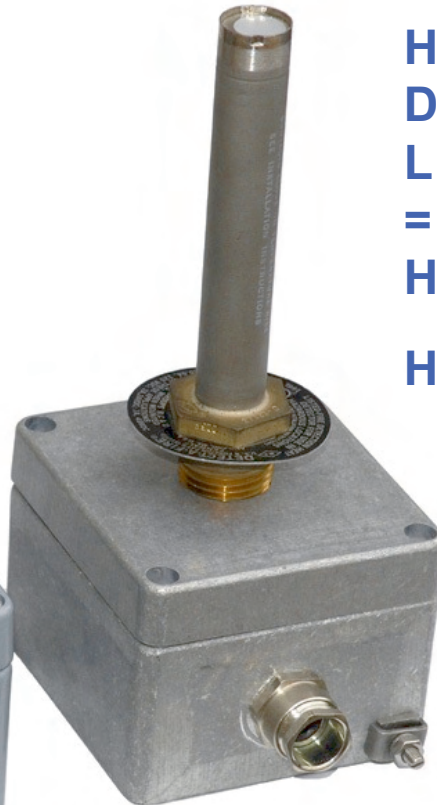


**Heat
Detector
LICO**

=

HDL

HDL-3 Ex*



HDL-2 / No Ex

Overheat - & Fire Detector unit for any kind of NO Ex. applications until 135°C

Complete and ready to install Heat Detector unit consists of:

- Bimetallic temperature sensor,
- junction box, metal cable gland and wiring block assembly.
- IP66/IP67 – with european CE!
- nett weight approx. 0,6 kg / pc

HDL-3 / Ex*

Overheat - & Fire Detector unit for any kind of Ex. applications until 135°C

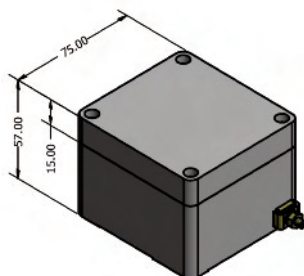
Complete and ready to install Heat Detector unit consists of:

- Bimetallic temperature sensor,
- Ex. Certified Components: Junction box, cable gland and wiring block assembly.
- IP66/IP67 – with european CE!
- nett weight approx. 0,6 kg / pc

Information for all HDL: (HDL = Heat Detector LICO)

Heat detector for hazardous- and industrial applications
Automatic Reset after cooling
Switching contacts hermetically sealed (IP67)
Resistant against Dust and Humidity

Heat Detector for Fire Alarm Systems
Shock-Humidity-& Temperature resistant
Different Alarm temperatures
from 60°C up to 385°C



HDL-2 & HDL-3 Standard Size junction box dimensions:

HDL-2 & HDL-3	Outside L. (mm)	Outside W. (mm)	Inside L. (mm)	Inside W. (mm)	Height (mm)
Standard	75	80	63	52	57
XL	125	80	113	52	57

For bespoken, custom made boxes please contact LICO

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www.prevent-a-fire.eu

HDL-2 / No Ex: suitable until 135 °C

Ready to install Heat Detector Unit with Bimetallic, **Rate of Rise**, Temperature Sensor mounted in HDL-2 NO EX Junction box, with metal cable gland and high temperature wiring block assembly. Fully assembled units according to IEC standards.

In other words: Fenwal DAF Sensors mounted in Industrial-Alu Box with cable glands and high temperature wiring terminals.

- Fenwal-Switch free of Choice
- Precision Cast AISI12 (LM24) Aluminium Alloy painted epoxy polyester grey (RAL7001)
- Sealing: High temp. Silicone, Neoprene on request
- unit up to 135°C
- 4 Ground terminals inside (others on request)
- 1 or 2 pcs of metal cable glands
- Recessed screws
- Removable lid
- IP 66/67

HDL-3 / Ex*: suitable until 135 °C

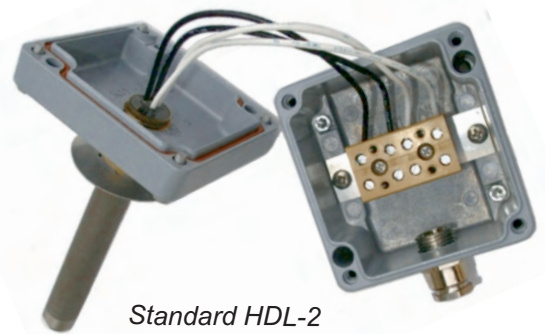
*Ready to install Heat Detector Unit with Bimetallic, **Rate of Rise**, Temperature Sensor mounted in ATEX & IECEx certified Junction box, with ATEX & IECEx cert. metallic cable gland and ATEX & IECEx cert., wiring block assembly. Fully assembled units according to IEC standards.

In other words: Fenwal DAF Sensors mounted in Ex certified Industrial-Alu Box with Ex certified cable glands and Ex certified, high temperature wiring terminals.

- Fenwal-Switch free of Choice
- Precision Cast AISI12 (LM24) Aluminium Alloy housing
- Sealing: High temp. Silicone, Neoprene on request
- T3 Ex certified box, up to 135°C,
- 1 Ground terminal outside, 4 inside
- 1 or 2 pcs of metal cable glands
- Recessed screws
- Removable lid
- Cabling: up to 190°C:Teflon, over 190°C:TGGT
- IP 66/67



HDL-2 Assembly
(Sensor mounted in box)



Standard HDL-2
Assembly

HDL-3 & HDL-3 XL Enclosures Certified according to:

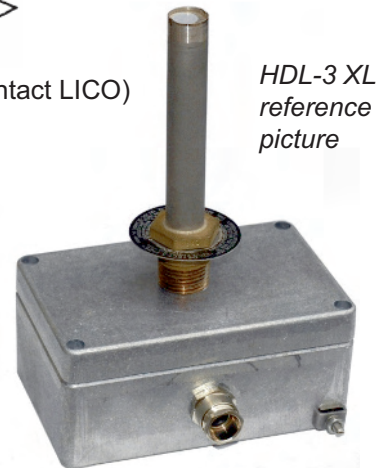


(for further info and actual certificate please contact LICO)

Need more space inside? GO HDL-3 XL or HDL-5 Size!

HDL-3 XL & HDL-5 Size junction box dimensions:

	Outside L. (mm)	Outside W. (mm)	Inside L. (mm)	Inside W. (mm)	Height (mm)
HDL-3 XL	125	80	113	52	57
HDL-5	120	122	104	106	80



HDL-3 XL
reference
picture

HDL-2 & variations and applications:

HDL-2 for No Ex Industrial Applications:

Recommended for any kind of industrial and commercial applications where there are NO Ex requirements.

Simply, easy, very price economic heat detector unit. Designed until 130 °C applications.

Junction Box may stay at the cooler part of the installation Detect-A-Fire-Sensor with Coupling Head – double thread allows unique installation possibilities, use with Sensor 28020-003 or 28021-005 series.

Sensors are mounted with maximum torque of 27 NM and sealed with special, high temperature Loctite glue. NPT counter nuts for the Sensors are on request.

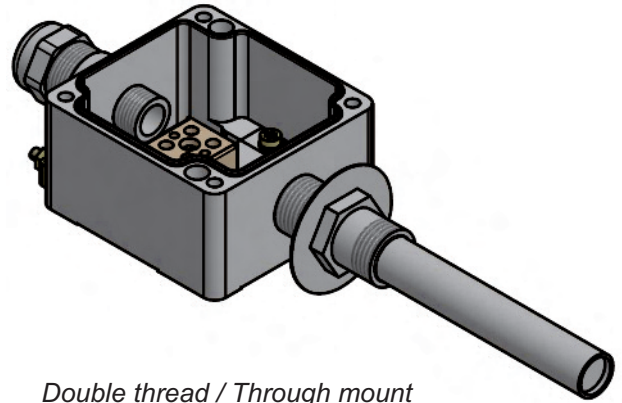
Cable glands are mounted & fixed with counter nut and sealed with special, high temperature Loctite glue.

Standard Cable gland variations: **See on Page 24**

- 20 - + 80°C with Neoprene seal, IP66/68
- 40 - +100°C with EPDM-seal, IP66/68
- 70 - +220°C with Silicone-seal, IP66/68

Options/ Accessories: **See on Page 24**

- oil-resistant mounting of Heat Detector and Cable gland
- 2nd Cable gland (Option KD)
- Serie- and EOL – End of Line Resistors



*Double thread / Through mount
HDL-2 Assembly (Serie 28000)*



*Sensor and number of cable glands
according to your local requirements*

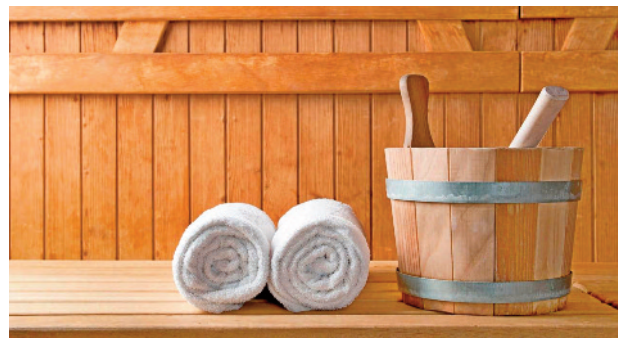
Applications:

- Saunas, transformer stations
- Server rooms, Ovens, Windmills
- Painting rooms and many more

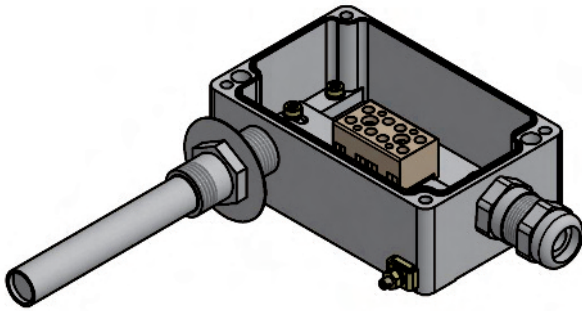


Bespoken Custom-made:

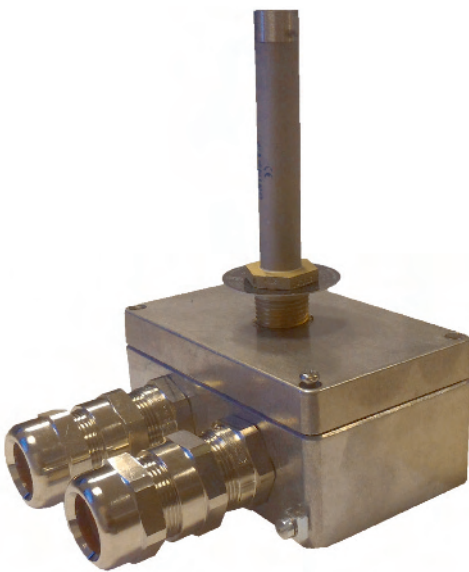
Free Choice of Fenwal Detect-a-Fire Sensor
1 pc or 2 pc of Cable Glands,
2,4,6,8 pole or more wiring blocks,
Wiring blocks are suitable until 130 °C use,
EOL and/or Series Resistors on request



HDL-3 & HDL-3 XL variations and applications:



Custom specific HDL-3 XL constructions



Custom specific HDL-3 XL constructions

Applications:

- Power plants, Engine rooms,
- Heating rooms, Air-filter / Duct Systems,
- Chemical plants, production lines
- Gas compressors, Factories etc.

HDL-3 / HDL-3-XL Ex*:

Recommended for any kind of industrial and commercial applications where there ARE Ex requirements.

Simply, easy, very price economic heat detector unit. Designed until 130 °C applications.

Junction Box may stay at the cooler part of the installation Detect-A-Fire-Sensor with Coupling Head – double thread allows unique installation possibilities, use with Sensor 28020-003 or 28021-005.

Sensors are mounted with maximum torque of 27 NM and sealed with special, high temperature Loctite glue. NPT counter nuts for the Sensors are on request.

Cable glands are mounted & fixed with counter nut and sealed with special, high temperature Loctite glue.

*Housing Ex-certified:

Ex II 2 GD, Ex e/ib IIC Gb, Ex tb IIIC Db IP6X*

- 40°C /+80°C with Neoprene seal,
- 70°C/+130°C with Silicone-seal,
- IP66/67,

Wiring Terminal: acc. Ex requirements

Standard EX Cable gland variations: **See on Page 24**

- 20 - + 80°C with Neoprene seal, IP66/68
- 40 - +100°C with EPDM-seal, IP66/68
- 70 - +220°C with Silicone-seal, IP66/68

Options/ Accessories: **See on Page 24**

- oil-resistant mounting of Heat Detector and Cable gland
- 2. Cable gland (Option KD)
- Series und EOL – End of Line Resistors
- High temperature Silicone Sealings



HDL-4 variations and applications:

HDL-4 / Ex*, suitable until 210/220 °C max

*Ready to install Heat Detector Unit with Bimetallic, **Rate of Rise**, Temperature Sensor mounted in Ex-certified Junction box, Ex. cert Cable gland and Ex. certified wiring block assembly.

Fully assembled units according to IEC standards.
Temperature range: 60 – 220°C

In other words: Fenwal DAF Sensors mounted in Ex certified Industrial-Alu Box with Ex certified cable glands and high temperature Ex certified wiring terminals.

Product description:

- Fenwal-Switch free of Choice
- Materials: Body - Feraloy Cover: Copper-free aluminum
- Enclosure Dimensions: ca 140 x 127 x 67 mm, weight: ca. 950 g
- Finishes: Body - Electro-galvanize and aluminium acrylic paint: Natural
- Opening: Screw down Lid, fixing screw (imbus)
- Built in grounding terminal
- Entries: 2 x 3/4" NPT and 1 x 1/2" NPT
- 1 or 2 Cable Glands - Free of choice



Standard HDL-4

HDL-4 Housing:

the High-Temperature-solution
based on Fenwal 116317/ Cooper/EATON
Housing and Fenwal Detect-A-Fire-Sensors

HDL-4 with 250°C 3/4" NPT-Flextube or 385°C with
solid 3/4" NPT-Iron-tube and even up to 510°C

For Details consult LICO 116317 Data-sheet.

T-max 510°C with iron-tube and extra long Heat-Detector cables or 200°C with Std-Ceramic wiring block or 385°C with Special V2A Wiring-Block or 510C with Fenwal Temperature switch

High-temperature - tubes on request



Standard HDL-4 /
Fenwal 116317
Housing



Applications:

- Suspend explosionproof pendant luminaires from the conduit system
- Function as both conduit outlet box and luminaire hanger



HDL-4 variations and applications:

Standard Materials:

- Bodies – Feraloy® iron alloy
- Covers – copper-free aluminum

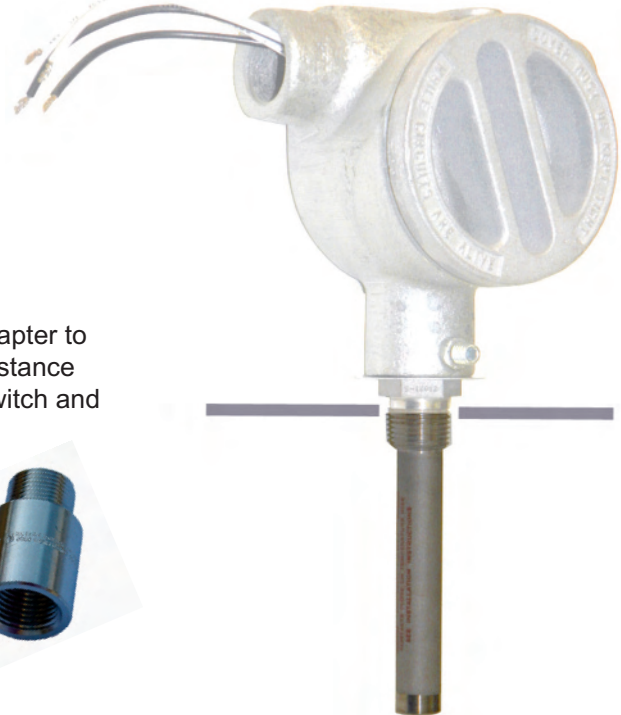
Standard Finishes:

- Feraloy – electrogalvanized and aluminum acrylic paint
- Copper-free aluminum – natural

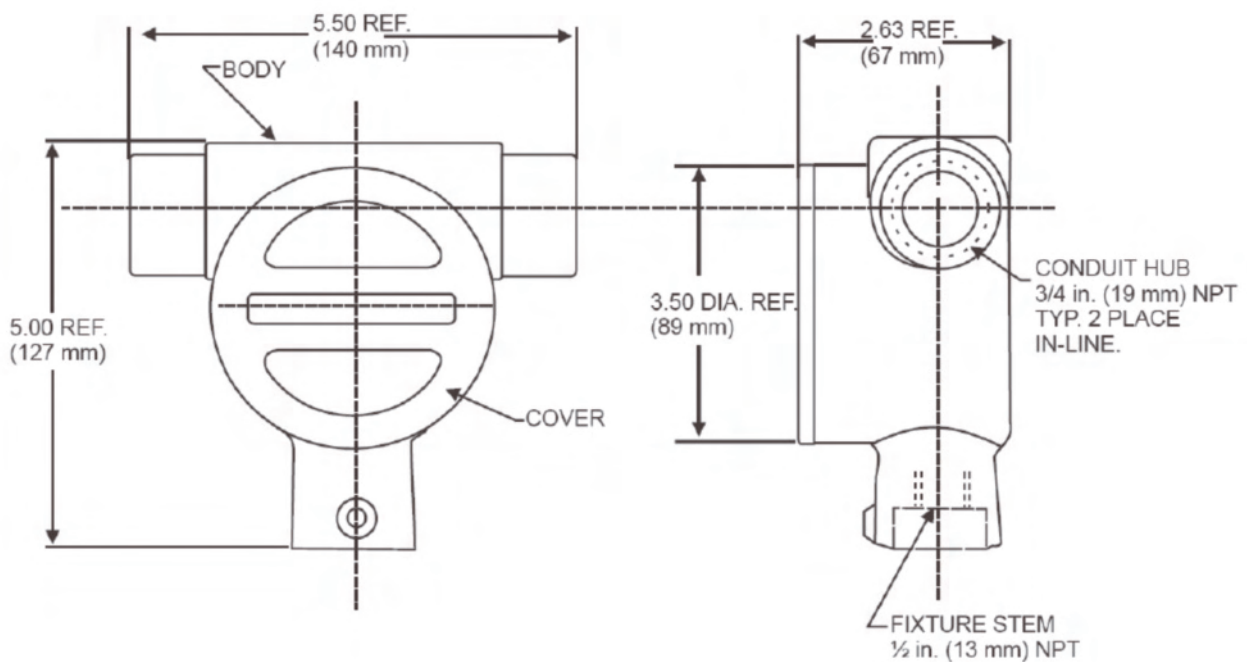


Optional:

NPT-Elongation adapter to achieve a bigger distance between Sensor-switch and the HDL-box.



Dimension of HDL-4 / Fenwal 116317 Housing:



HDL-4 enclosures certifications and compliances:

NEC/CEC:

Class I, Groups C, D
Class II, Groups E, F, G
Class III

- UL Standard: 1203
 - CSA Standard: C22.2 No. 30
- For Details see:
LICO-116317-Brochure

(for further info and actual certificate please contact LICO)

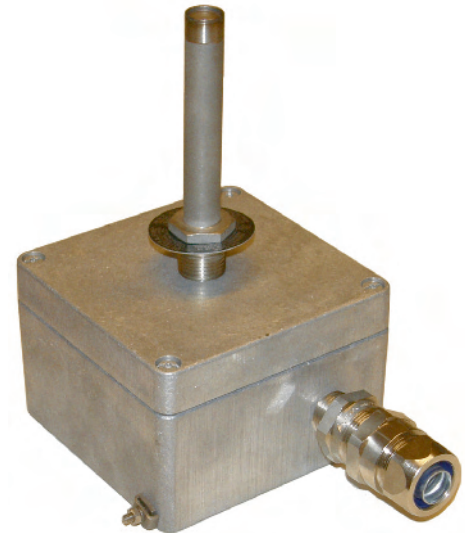
HDL-5 with High Temperature Ex 'e' certified Components:

True High Temp. Heat Detector Assembly: HDL-5 / Ex*: suitable until 210/220+ °C

*Ready to install Heat Detector Unit with Bimetallic, **Rate of Rise**, Temperature Sensor mounted in ATEX & IECEX certified Junction box, with ATEX & IECEX cert. metallic cable gland and ATEX & IECEX cert., Ceramic wiring block assembly. Fully assembled units according to IEC standards.

In other words: Fenwal DAF Sensors mounted in Ex certified Industrial-Alu Box with Ex certified cable glands and Ex certified, high temperature wiring terminals.

- Fenwal-Switch free of Choice
- Precision Cast AISI12 (LM24) Aluminum Alloy housing
- Sealing: High temp. Silicone, Neoprene on request
- T3 Ex certified box, up to 210°C,
- 1 Ground terminal outside, 4 inside
- 1 or 2 pcs of metal cable glands
- Recessed screws
- Removable lid
- Cabling: up to 190°C:Teflon, over 190°C:TGGT
- IP 66/67



Custom specific HDL-5 constructions

Bespoken Custom-made:

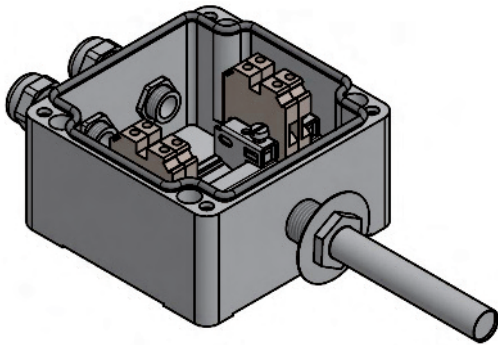
Free Choice of Fenwal Detect-a-Fire Sensor
1 pc or 2 pc of Cable Glands,
2,4,6,8 pole or more Ultra high temp. Ceramic wiring blocks,
Wiring blocks assemblies are suitable until 210 °C use,
High Temp. Cement based EOL and/or
Series Resistors on request

Applications:

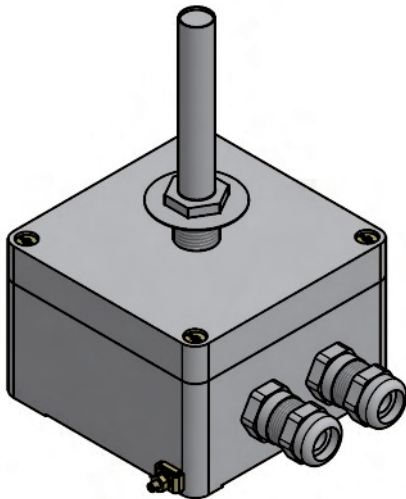
- Ovens, Powder coating ovens
- Turbine housings, Exhaust- and Ventilation systems
- and many more high temperature applications



HDL-5 variations and applications:



HDL-5 for through-mount,
Serie 28000



Custom specific HDL-5 constructions

HDL-5 Ex*:

Recommended for any kind of high temperature industrial and commercial applications where there ARE Ex requirements. Designed until 210°C / 220°C applications.

Junction Box may stay at the cooler part of the installation Detect-A-Fire-Sensor with Coupling Head – double thread allows unique installation possibilities, use with Sensor 28020-003 or 28021-005.

Sensors are mounted with maximum torque of 27 NM and sealed with special, ultra high temperature Loctite glue. NPT counter nuts for the Sensors are on request.

Cable glands are mounted & fixed with counter nut and sealed with special, high temperature Loctite glue.

*Housing Ex-certified:

Ex II 2 GD, Ex e/ib IIC Gb, Ex tb IIIC Db IP6X*

- 70°C/+220°C with Silicone-seal,

- IP66/67,

- Wiring Terminal: suitable until 210 °C use acc. Ex requirements

Standard EX Cable gland variations: **See on Page 24**
-70 - +220°C with Silicone-seal, IP66/68

Options/ Accessories: **See on Page 24**

- oil-resistant mounting of Heat Detector and Cable gland
- 2. Cable gland (Option KD)
- Cement based ultra high temperature Series and EOL – End of Line Resistors
- Ultra high temperature Silicone Sealings

HDL-5 Enclosures Certified according to:



(for further info and actual certificate please contact LICO)

HDL-5 Standard Size junction box dimensions:

HDL-5	Outside L. (mm)	Outside W. (mm)	Inside L. (mm)	Inside W. (mm)	Height (mm)
Standard	120	122	104	88,5	80

For bespoken, custom made boxes please contact LICO

HDL-5 Connection House Variations with Ex 'e' certified Components:

HDL-5-CH-WB130
HDL-5-CH-WB220



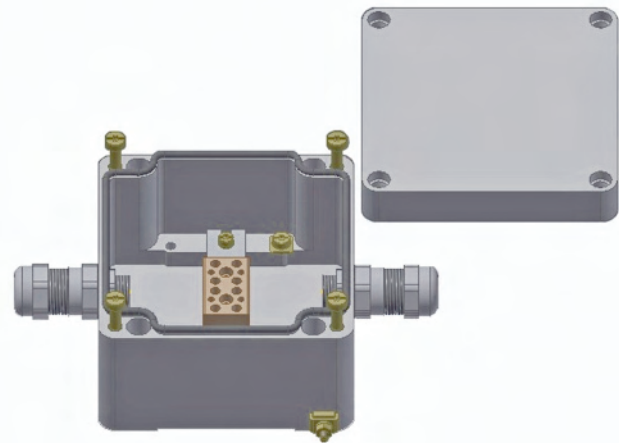
Designed and made in EU

Highly Reliable Connection Boxes:

Can be used also Resistor box (R-box) to install Series and EOL resistors

HDL-5-CH-WB130
2, 4, 6 or 8 positions,
T-Max 130 °C
All and only ATEX and/or IECEx certified parts

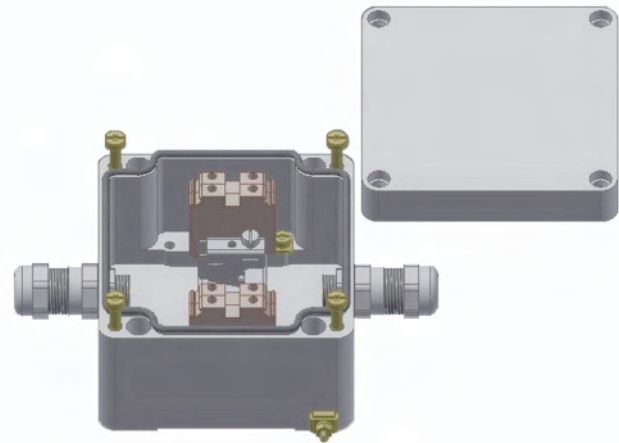
Cable gland of Choice
for cable diameter of choice



HDL-5-CH-WB220
2, 3, 4, 5, 6 or 8 positions
T-Max standard: 210°C
All and only ATEX-certified parts

T-Max with special High-temperature
O-Ring: 220°C

Cable Gland of Choice
for cable diameter of choice



HDL5-CH - series is very popular for cable-hose assemblies.
Application: mounting at pumps, generators, drives, motors, gears, ignitors, injectors and many more.
Standard Box is EEx-e, EEx-d (HDL6) on request

LICO optionally can mount Very High Temperature O-Rings of i.e. 220°C in lieu of the cert. O-Ring., Then the T.max of the unit can be i.e. 220°C, higher temperatures on request.



The fully mounted and in the System installed Housing/unit mandatory has to be certified by an approved body to be in accordance with the existing ATEX-Norms, the simple Installation of an EX-certified Mounting Box does not stretch the ATEX approval of parts or units onto an entire system.

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www.prevent-a-fire.eu

Every piece a Master-piece

Easy installation!

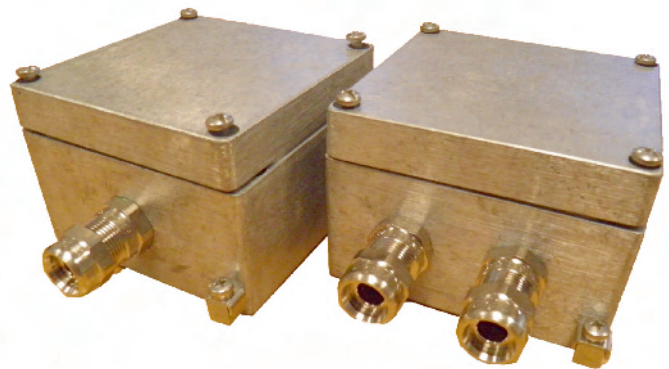
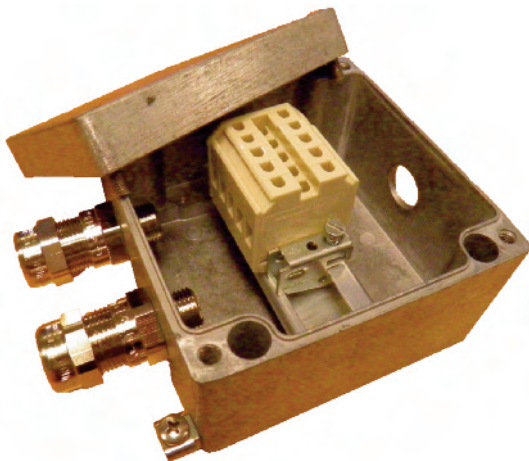
Junction Box may stay at the cooler part of the installation

Detect-A-Fire-Sensor with Coupling Head – double thread allows unique installation possibilities, use with Sensor 28020-003 or 28021-005

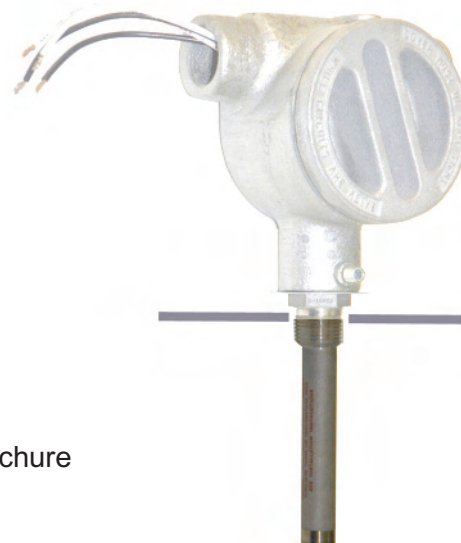


HDL5 for through wall mounting with i.e. cable/hose-gland

Option:
NPT-Elongation adapter to achieve a bigger distance between Sensor-switch and the HDL-box.



Bespoken Custom-made Junction box solutions



For Details see:
LICO-116317-Brochure

HDL-6 Heat Detector Variations with Ex 'd' certified Components:

Ex 'd' Heat Detector Assembly: HDL-6 / Ex*: suitable until 210/220+ °C

*Ready to install Heat Detector Unit with Bimetallic, **Rate of Rise**, Temperature Sensor mounted in ATEX & IECEx Ex 'd' - Flameproof cert. Junction box, with ATEX & IECEx cert. metallic cable gland and ATEX & IECEx cert., Ceramic wiring block assembly. Fully assembled units according to IEC standards.

In other words: Fenwal DAF Sensors mounted in Ex certified Industrial-Alu Box with Ex certified cable glands and Ex certified, high temperature wiring terminals.

- Fenwal-Switch free of Choice
- Aluminum alloy EN AC-42000
- Sealing: Neoprene, High temp. Silicone on request
- T1 Ex certified box, until 60°C,
- 1 Ground terminal outside, 1 inside
- 1 or 2 pcs of metal cable glands
- Removable lid
- Cabling: up to 190°C:Teflon, over 190°C:TGGT
- IP 66

Bespoken Custom-made:

Free Choice of Fenwal Detect-a-Fire Sensor
1 pc or 2 pc of Cable Glands,
2,4,6,8 pole or more Ultra high temp. Ceramic wiring blocks,
Wiring blocks assemblies are suitable until 210 °C use,
High Temp. Cement based EOL and/or
Series Resistors on request

Applications:

- Ex 'd' flameproof Applications
- Marine- and Offshore platforms
- and many more

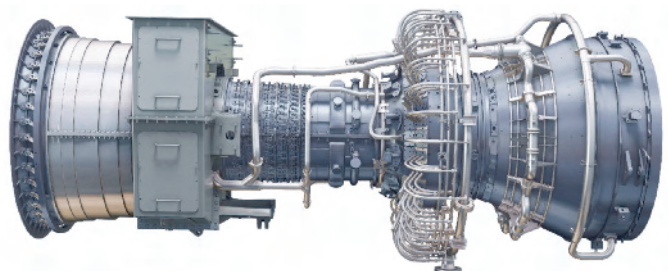


Custom specific HDL-6 construction

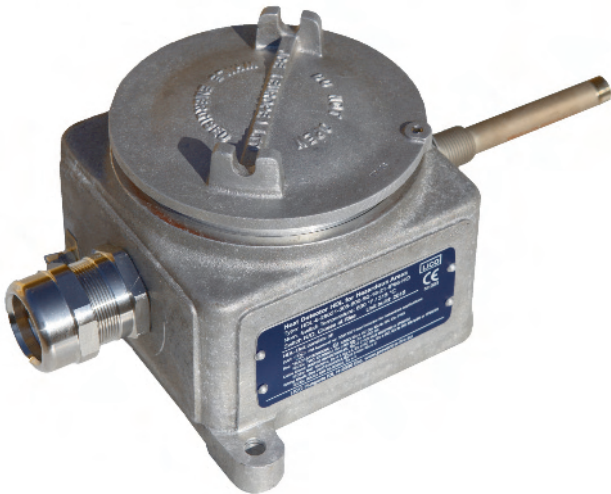
Painted HDL-6 boxes are:

Chromate primed and polyester powder coated for added protection against corrosion **until 180 °C**

- Gas-turbine- and Turbine housings,



HDL-6 variations and applications:



Protection:

When fitted with a gasket - IP66
Without gasket - IP54
Application of a non hardening grease to flamepaths and entries is recommended.

Earthing:

All enclosures are supplied with a 6mm stainless steel (18/8) internal and external earth stud as standard.
Larger internal earth terminals can be fitted on request.

Dimensions & Material:

Aluminum housing: 165 x 125 x 120 mm,
Material (Body & cover):
Aluminum alloy EN AC-42000
(LM25) to BS EN 1706:1998 with
less than 0.2% copper content
Locking Screw: Stainless steel (18/8)

HDL-6 Ex*:

Recommended for any kind of high temperature industrial and commercial applications where there harsh environmental & Ex requirements. Designed until 210°C / 220°C applications.

Junction Box may stay at the cooler part of the installation Detect-A-Fire-Sensor with Coupling Head – double thread allows unique installation possibilities, use with Sensor 28020-003 or 28021-005.

Sensors and Cable glands are mounted & fixed with ultra high temperature Loctite glue.

Housing Ex-certified:

- IP66/67,
- Wiring Terminal: suitable until 210 °C use acc. Ex requirements

Standard Ex Cable gland variations: **See on Page 24**
-70 - +220°C with Silicone-seal, IP66/68

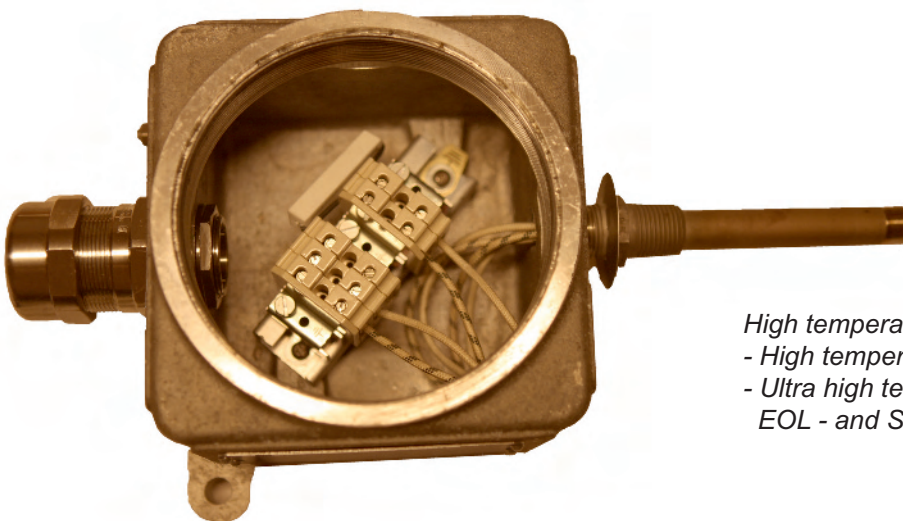
Options/ Accessories: **See on Page 24**

- 2. Cable gland (Option KD)
- Cement based ultra high temperature Series and EOL – End of Line Resistors
- Ultra high temperature Silicone Sealings

HDL-6 Enclosures Certified according to:



(for further info and actual certificate please contact LICO)



High temperature, unpainted HDL-6 unit:
- High temperature Ceramic wiring blocks,
- Ultra high temp, Cement based, Ceramic EOL - and Serie Line Resistors

HDL-7 Heat Detector Variations with Ex 'e' certified Components:

Stainless Steel "Food Safe" Heat Detector Assembly:

HDL-7 / Ex*: suitable until 210/220 °C max

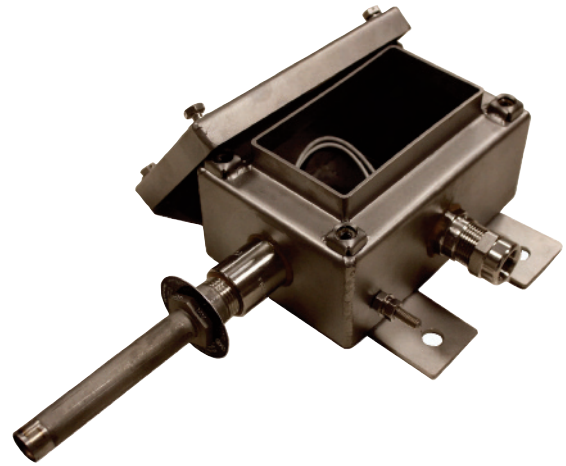
*Ready to install Heat Detector Unit with Bimetallic, **Rate of Rise**, Temperature Sensor mounted in ATEX & IECEx cert. **Stainless steel Junction box**, with ATEX & IECEx cert. Stainless steel cable gland and ATEX & IECEx cert., wiring block assembly. Fully assembled units according to IEC standards.

In other words: Fenwal DAF Sensors mounted in Ex certified Industrial **Stainless steel Box** with Ex certified **Stainless steel** cable glands and Ex certified, high temperature wiring terminals.

- Fenwal-Switch free of Choice
- Stainless steel: 316 (1.4404) or Mild steel
- Sealing: High temp. Silicone, Neoprene on request
- Ex certified box, until 180°C,
- Internal and external ground terminal
- 1 or 2 pcs of stainless steel cable glands
- Removable lid
- Cabling: up to 190°C:Teflon, over 190°C:TGGT
- IP 67

HDL-7

Housing: Standard



Dimensions: l/w/h:

152 mm, 102 mm, 126 mm
High Temperature-Silicone-sealing,
Appropriate stainless steel box,
Weight: 1500 g
IP66 or IP67,
Material: 316(1.4404) or Mild steel

Food Safe HDL-7 Heat Detectors:

Food Safe HDL-7 units can be made only with a special food safe glue from LICO

Applications:

- Special areas where aggressive gases and moistures can corrode aluminum or other type of metals
- Food- and Marine Applications



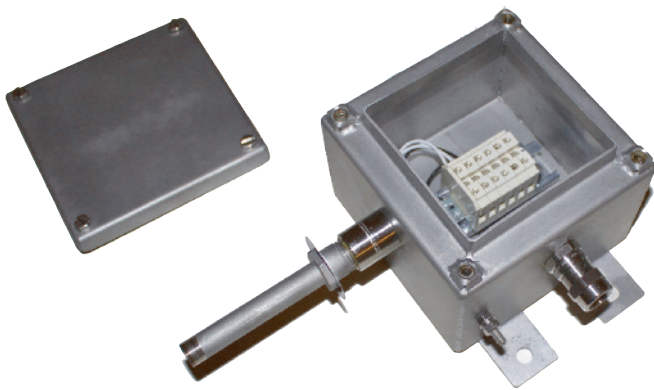
Foodsafe Heat Detector Assemblies



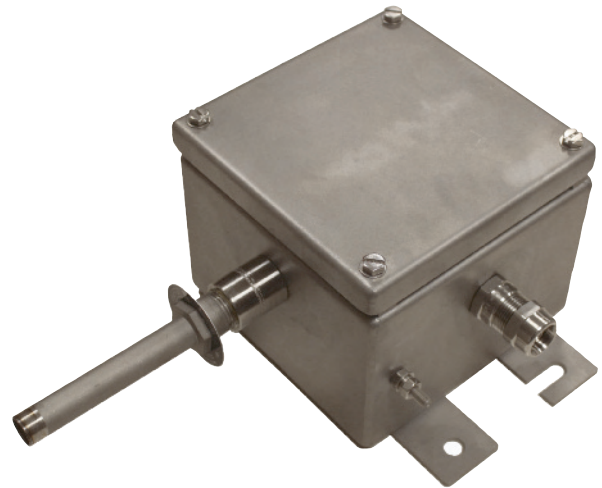
LICO Electronics GmbH
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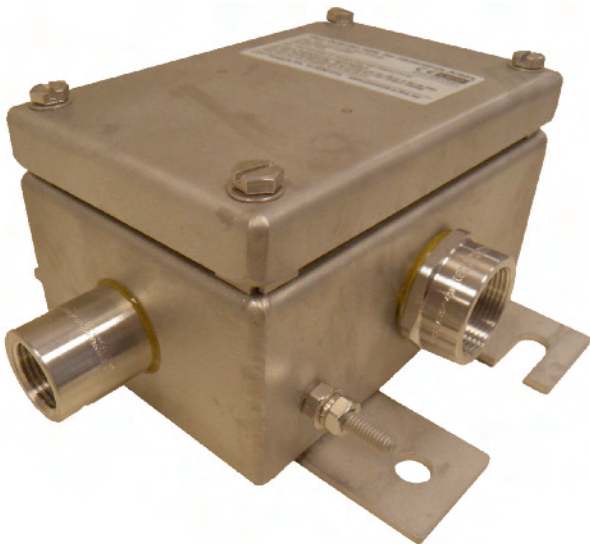
HDL-7 variations and applications:



HDL-7- "FAT BOY" XL Size Housing



Dimensions: l/w/h:
152 mm, 152 mm, 126 mm
High Temperature-Silicone-sealing,
Appropriate stainless steel box
Weight: 2200 g
IP66 or IP67
Material: 316(1.4404) or Mild steel



Radiation Resistant Stainless Steel HDL-7 Heat Detectors

HDL-7 Enclosures Certified according to:



(for further info and actual certificate please contact LICO)

Applications:

- Highly radiated areas
- Nuclear Power Plants



Example for Ordering / Creating part numbers

Part Number Example:

HDL-3-27121-000-140-S-1-4-8-WB135-IP66,
HDL-7-28021-005-325-S-2-6-8-WB210-IP67



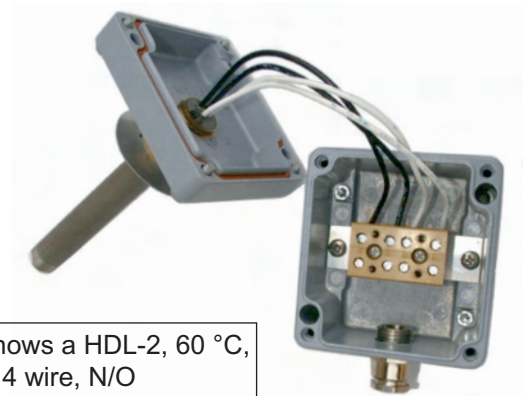
www.prevent-a-fire.eu

How to Order / How to create your own HDL:

Type:	-2 -3 -3 XL -4 -5 -6 -7
Sensor Type + Alarm Temperature:	27121-0xx-xxx 27120-0xx-xxx 28021-0xx-xxx 28020-0xx-xxx See chart on page 20
Size of Housing:	Standard or Custom Made
Number of Cable Gland(s) + Cable Diameter	1. Number of Cable gland(s) 2. Cable diameter in mm See chart on page 24
WB: Wiring block TemperatureType	No Ex until 130°C Ex Until 130°C, Ex Until 210°C,
IP	66 or 67 68 only on request

Every Piece a Master-piece.

Easy installation!
Solid Construction!
2 Grounding Terminals are Standard
VA-mounting screws



Picture shows a HDL-2, 60 °C,
4 wire, N/O
Heat Detector

Optional Add ons: - Please write after the IP number at the end of the HDL Part number

- L : Lid grounded, special silicone covered grounding device
- OIL : Oil-resistant mounting of temperature-switch and cable gland
- S : Serie Line Resistors supplied or built in
- EOL : (End (End of Line)-Resistor, Value in Ohms
- A : Thread adapter built between the Sensor and the chosen junction box, used in very high temp applications
- WD : LICO Stainless steel Weld in Pod supplied or mounted on sensor
- SC : LICO Stainless steel Screw in Pod supplied or mounted on sensor
- HO: High Temperature O-ring mounted
- C: Chosen CelsiStrip fixed in/on the wished junction box, see on page

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Ordering Sheet / Make your own HDL:

Some information about the Application / Environment:

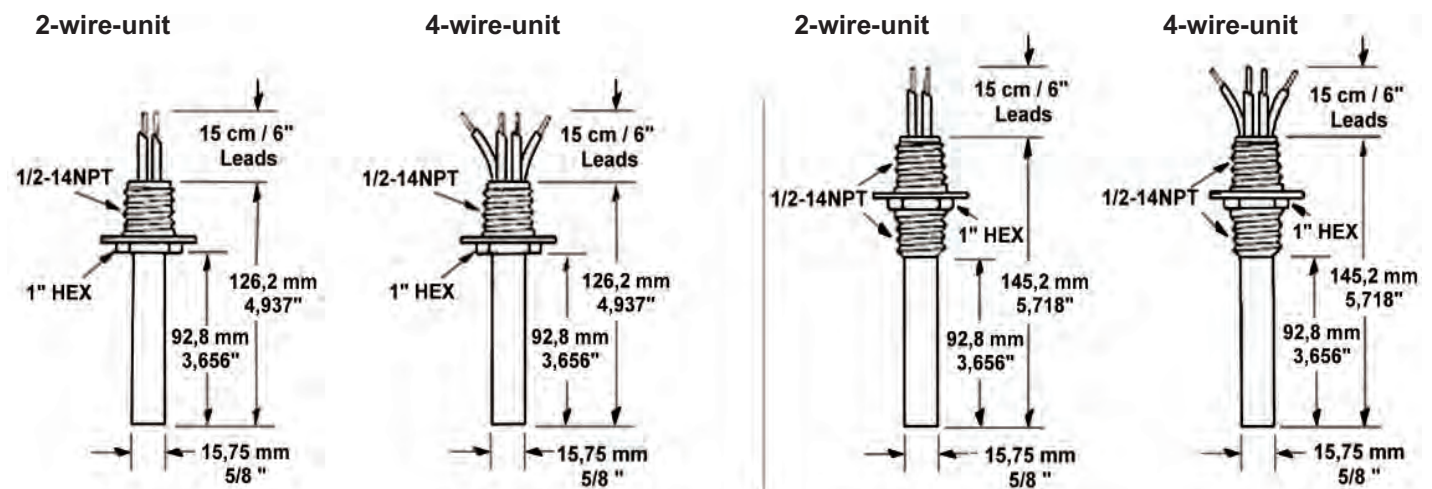
Example: - Place of use:

Ovens, Driers, Air filter / Exhaust systems, Power plant, Factory lines, Marine, Chemical plants, Saunas, Windmills, Gasturbines, industrial etc.

Temperature under normal operation

Wished Alarm Temperature in °C or °F

HDL Part number:	
Quantity (pcs):	



LICO HDL Units are designed and assembled according to strict IEC standards:

- MSZ EN 60079-0:2013 (according to IEC 60079-0:2011 modified),
- MSZ EN 60079-0/A11:2014 (MSZ EN 60079-0:2013 modified)
- MSZ EN 60079-10-1:2009 (according to IEC 60079-10-1:2008)
- MSZ EN 60079-10-2:2010 (according to IEC 60079-10-2:2009)
- MSZ EN 60079-1:2008 (according to IEC 60079-1:2007)
- MSZ EN 60079-7:2007 (according to IEC 60079-7:2006)
- MSZ EN 60079-11:2012 (according to IEC 60079-11:2011)

We use these standards to make our Heat Detector units better and better for every individual application. Every LICO Heat Detector unit (HDL unit) is CE marked and checked in every detail.



This includes Equipment- and protection systems for dedicated and proper use in explosion-hazardous areas (94/9EG), as far as this regulation is applicable.

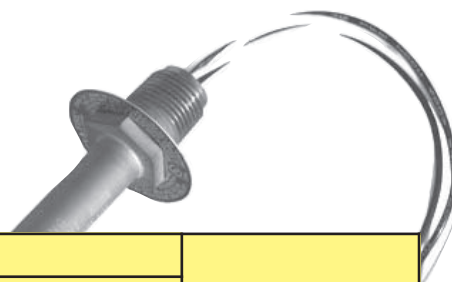
LICO Heat Detector Manufacturing and sales are ISO:9001 certified. Made and designed in Hungary-EU

LICO Heat Detectors and Prevent-a-Fire Systems are mainly bespoke- custom made products. Everytime we plan and design our systems according to customers detailed specifications. To our experience there is no standard solution in Fire Prevention.

Available Standard Fenwal DAF® Sensor Variations:

Single Thread units:

Brass & Stainless Steel or
Fully Stainless steel
N/C (2 wire) Opens at temperature rise or
N/C (4-wire) Closes at temperature rise



2-wire unit		4-wire unit		Nominal Switching temperature
N/C, Opens at Rise		N/O, Closes at Rise		
Sensor Housing Stainless Steel		Sensor Housing Stainless Steel		
Body Brass	Body Stainless	Body Brass	Body Stainless	
27120-000-140	27120-022-140	27121-000-140	27121-020-140	60°C / 140°F
27120-000-160	27120-022-160	27121-000-160	27121-020-160	71°C / 160°F
27120-000-190	27120-022-190	27121-000-190	27121-020-190	88°C / 190°F
27120-000-210	27120-022-210	27121-000-210	27121-020-210	99°C / 210°F
27120-000-225	27120-022-225	27121-000-225	27121-020-225	107°C / 225°F
27120-000-275	27120-022-275	27121-000-275	27121-020-275	135°C / 275°F
27120-000-325	27120-022-325	27121-000-325	27121-020-325	165°C / 325°F
27120-000-360	27120-022-360	27121-000-360	27121-020-360	187°C / 360°F
27120-000-450	27120-022-450	27121-000-450	27121-020-450	232°C / 450°F
		27121-000-500	27121-020-500	260°C / 500°F
		27121-000-600	27121-020-600	315°C / 600°F
		27121-000-725	27121-020-725	385°C / 725°F

Double Thread (Coumpling Head) units:

Fully Stainless steel
N/C (2 wire) Opens at temperature rise or
N/C (4-wire) Closes at temperature rise



Class 1, Group A requires fully Stainless-steel Fenwal DAF-versions !

2-wire unit		4-wire unit		Nominal Switching temperature
N/C, Opens at Rise		N/O, Closes at Rise		
Sensor Housing Stainless Steel		Sensor Housing Stainless Steel		
Body Brass	Body Stainless	Body Brass	Body Stainless	
	28020-003-140		28021-005-140	60°C / 140°F
	28020-003-160		28021-005-160	71°C / 160°F
	28020-003-190		28021-005-190	88°C / 190°F
	28020-003-210		28021-005-210	99°C / 210°F
	28020-003-225		28021-005-225	107°C / 225°F
	28020-003-275		28021-005-275	135°C / 275°F
	28020-003-325		28021-005-325	165°C / 325°F
	28020-003-360		28021-005-360	187°C / 360°F
	28020-003-450		28021-005-450	232°C / 450°F
			28021-005-500	260°C / 500°F
			28021-005-600	315°C / 600°F
			28021-005-725	385°C / 725°F

Fenwal DAF: Detect-a-Fire ®

Description of Rate Compensated Thermostwitches:

These highly reliable devices have been a standard of the industry for over 50 years. Many thousands of these units are now in use controlling the release of extinguishants such as clean agents, CO₂, water, or dry chemicals. In some systems the device is used as an ALARM device, to sense overheat or fire, and alert personnel. In other systems, it is used as a RELEASE device, to sense fire and actuate fire attack systems.

DETECT-A-FIRE units have met with wide acceptance because they are designed with RATE COMPENSATION. This provides a unique advantage over both fixed temperature and rate-of-rise types of detectors because only the DETECT-A-FIRE unit accurately senses the surrounding air temperature regardless of the fire growth rate. At precisely the predetermined danger point, the system is activated.

Fixed temperature detectors must be completely heated to alarm temperature and therefore a disastrous lag in time may occur with a fast rate fire. Rate compensated / Rate-of-rise devices, on the other hand, are triggered by the rate of increase in ambient temperature and could be subject to false alarms caused by harmless, transient thermal gradients such as the rush of warm air from process ovens.

Vertical Detect a Fire Units for Concealed and Exposed Wiring:

Vertical detectors are designed for use in both "ordinary" or "hazardous" locations. For "ordinary" use, they may be mounted to any appropriate tight metal junction box (preferred: solid Alu) with 7/8" diameter opening by using 1/2-14 NPT mounting nuts or into a 1/2"-14NPT thread. The device may be wired in or out of conduit, depending on local preference and codes. Four lead-wires are provided on normally open vertical units (that close on temperature rise), per UL requirement, to facilitate supervision of system wiring. Instruments are Underwriters Laboratory and Underwriters Laboratory of Canada listed and Factory Mutual approved for hazardous locations, when mounted in a suitable fitting.

Important Information:

The Detect A Fire Thermo Switch is a Sensible and Precise Electromechanical Safety Switch. Do NOT paint and Do NOT let cover the Sensor with dirt or any material! In this case the Sensor must be cleaned on a regular basis. If the circumstances do not allow regular cleaning, **LICO Weld in Pod** or **Screw in Pod** spare parts are recommended.

Do NOT hit and Do NOT flood the Sensor and the HDL Unit. Any of these can change the switching effect of the Sensor. The Sensor and the HDL Unit shall be mounted only there where the Unit and the Sensor does NOT experience strong and/or continuously mechanical and chemical effects!

Normally Detect a Fire Switches can be Normally Open or Normally Closed. Normally Open switches are used in release function, Normally Closed switches are used in alarm function. Normally Closed switches do NOT meet the requirements of NFPA-72 for use as a releasing device.

Test Information:

The Fenwal DETECT-A-FIRE heat detector models are 100% factory tested and temperature calibrated. The units must actuate within the tolerances of the standard temperature settings listed before passing final QA acceptance. The units are calibrated and verified by controlling temperature in heat blocks. The units cycle for a minimum of 15 minutes and a minimum of 15 consecutive cycles of stable operation are recorded within specification before the unit is deemed accepted. Fully Stainless steel Sensors (body made from Stainless) are hermetically tightened and leak tested in water.

Warnings:

DO NOT overshoot the set point of the unit by more than 100°F = 55°C, this could result in a shift of the set point temperature.

DO NOT contact the sensing shell with heating device such as soldering iron or blow-torch as this will damage the unit and cause in a shift of the set point temperature.

While the DETECT-A-FIRE is a repeatable device, replacement is recommended should the unit be subjected to the intense heat of a fire.



Special Fenwal Sensors: 17343 Serie

17343-124 -xxx,

Temperatures: (100F), 140F - 725F, 60°C - 385°C
 Make in full stainless-steel
 Contacts N/O, close with increase of temperature
 Rating, 28VDC, 0,5A, 125VDC, 0,5A
 Mounting: 3/4"-14 NPT

17343-124 140F, 60°C
 17343-124 325F, 165°C
 17343-124 425F, 218°C
 17343-124 600F, 315°C
 17343-124 725F, 385°C



**17343-124 Sensors are
ATEX & IECEx certified !**



(for further info and actual certificate please contact LICO)

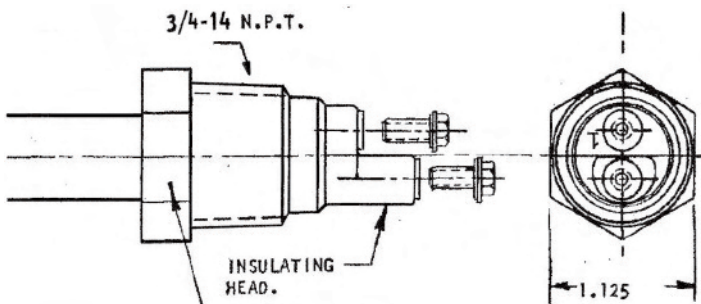


CE/ATEX Approved for
 Group II, Category 3 Gas,
 Type of protection: "nC"
 Unit is hermetically sealed.
 Datasheet on request

17343-113 -600, 17343-113 -950

2 Temperatures: 600F, 950F = 315°C, 510°C
 Flame safe up to 2000°F/1082 °C for short periods

600°F UL Listed for
 Class I Group A,B,C,D
 Class II, Groups E,F,G,
 For use in hazardous locations



Make in full stainless-steel
 Contacts N/O, close with increase of temperature

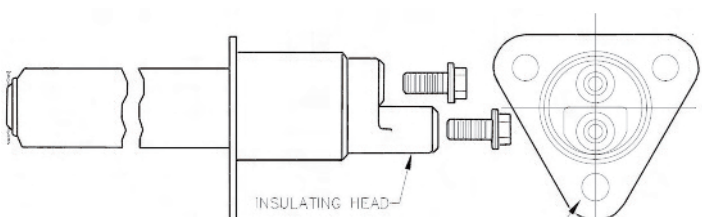
CSA certified 600 + 950F,
 overheat Detector in
 hazardous locations.

Datasheet on request

Rating, 125VDC, 1A
 Mounting: 3/4"-14 NPT

17343-78-500, -725, -900

3 Temperatures: 600F - 950F = 315°C, 385°C, 482°C.
 Flame safe until 2000°F/1082 °C for short periods
 17343-78 500F, 315°C / 17343-78 725F, 385°C / 17343-78 900F, 482°C



Make in full stainless-steel, hermetically sealed
 Contacts N/O, close with increase of temperature
 Rating: 28VDC, 3 A; 125VDC, 1A; 115VAC, 3A
 Temperature: Field adjustable, Mounting: plate
 Make in full stainless-steel
 Contacts N/O, close with increase of temperature

Heat Detector Accessories: LICO Weld in Pod / Screw in Pod

A popular solution in gas, oil and chemical industry.
Also widely used in hydraulics, frying and drying applications,
as well as in ovens and heating controls.

Easy installation!

Drilling the hole and welding in the weld-in pod allows easy installation and safe service without contact to the tank media.



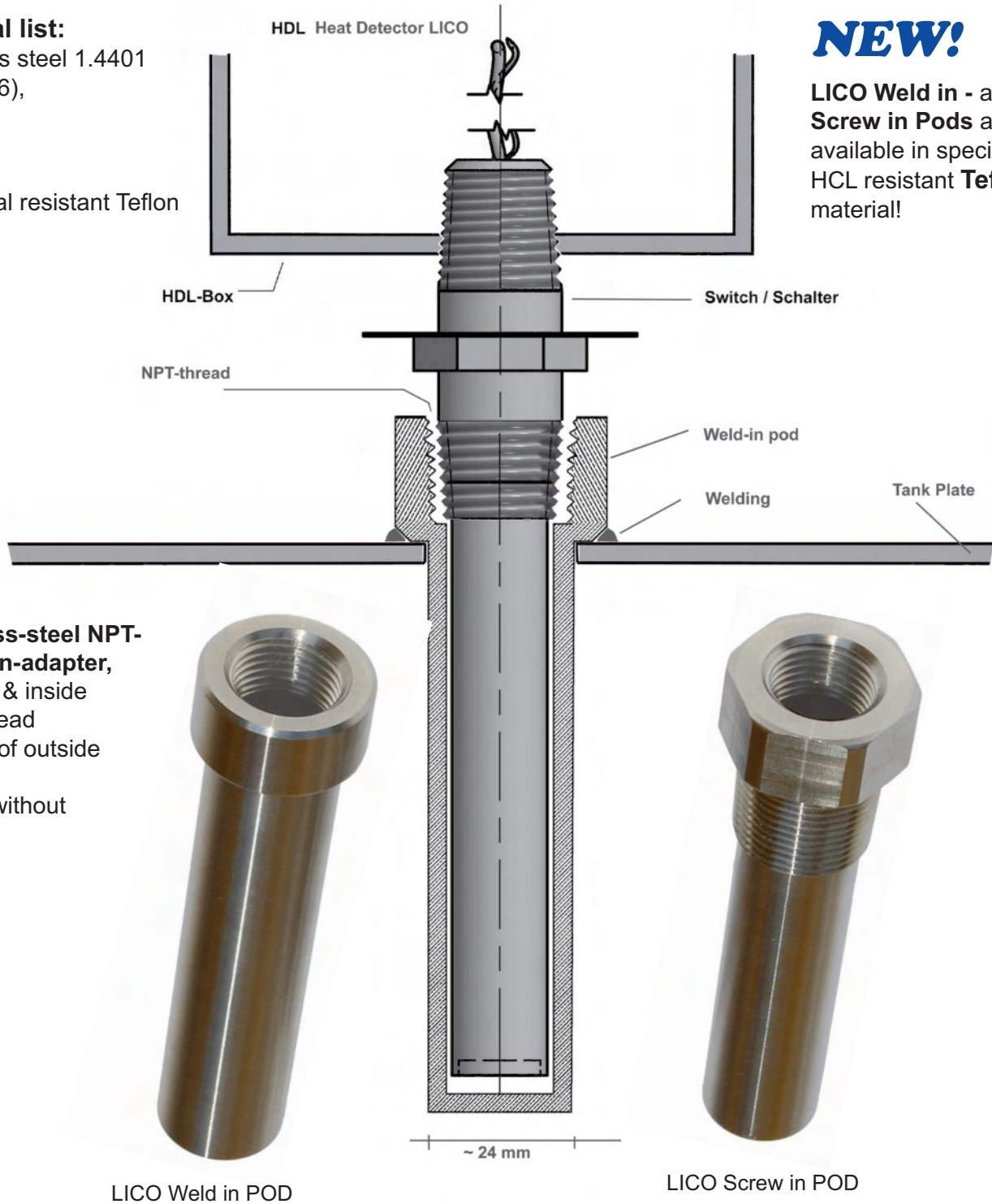
Designed and made in EU

Material list:

Stainless steel 1.4401
(AISI 316),
or
S355
or
Chemical resistant Teflon

NEW!

LICO Weld in - and
Screw in Pods are
available in special
HCL resistant **Teflon**
material!



Option:
Stainless-steel NPT-
Screw-in-adapter,
Outside & inside
NPT-thread
instead of outside
weld-in.
with or without
hexagon

For ordering:

Please specify weld-in or screw-in type, material and shell thickness

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LICO Electronics GmbH
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Tel: +43 1 706 43 000 Email: office@lico.at

HORIZONTAL DETECT-A-FIRE-UNITS for i.e. Parking Houses

Horizontal detectors are designed for locations where appearance is a factor. The attractive, functional design lends physical protection of the unit while making it suitable for commercial, industrial, mercantile and public buildings, institutions and ships in non-hazardous locations (those classified as "ordinary" under the National Electric Code). Flush mounted units are designed to fit standard 4" octagonal electrical boxes and surface mounting units are designed to mount directly on ceilings or on 4" electrical junction boxes. Canadian Electrical Codes requires mounting only to an electrical junction box.

MOUNTING

DETECT-A-FIRE units are not position sensitive. Horizontal and vertical detectors refer to the most common mounting configuration for that unit. However, each type can be mounted either horizontally or vertically depending on the application and installation requirements.

NOTE:

Specifications subject to change without notice.

UL of Canada labelling available upon request.

Although incandescent lamps are considered resistive, their inrush current is 10-15 times their steady current. Do not exceed ratings.

CONSTRUCTION

Stainless steel shell sensing element
Cold rolled steel mounting facility.

COLOR

Off-White finish.

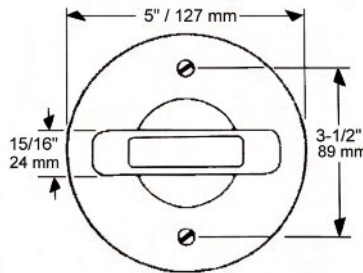
TEMPERATURE RATING

(Suggested setting a minimum of 100°F above ambient)
~ about 50 - 55°C

SPECIFICATIONS



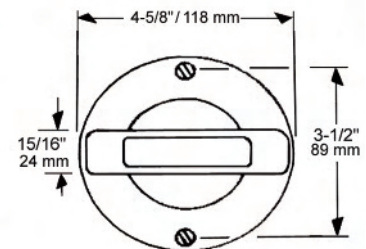
**Flush Mounting Unit
for Concealed Wiring**



12-X27020-000
12-X27021-000



**Surface Mounting Unit
for Exposed Wiring**



12-X27020-001
12-X27021-001

Model No.	Contact Operation on temperature rise	Function	Weight	Electrical Rating (resistive ONLY)
12-X27020-000	Opens	N/C	~ 170 g	5,0 Amps 125VAC
12-X27020-001	Opens	N/C	~ 270 g	0,5 Amps 125 VDC
12-X27021-000	Closes	N/O	~ 170 g	5,0 Amps 125VAC
12-X27021-001	Closes	N/O	~ 270 g	0,5 Amps 125 VDC 2,0 Amps 24 VDC 1,0 Amps 48 VDC



HORIZONTAL DETECT-A-FIRE-UNITS

SELECTION:

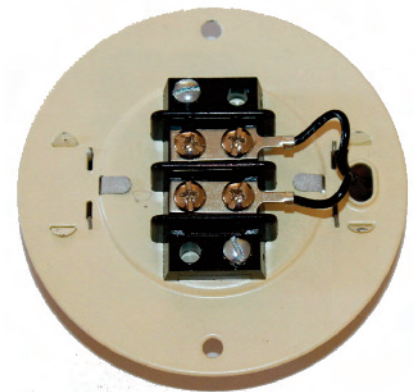
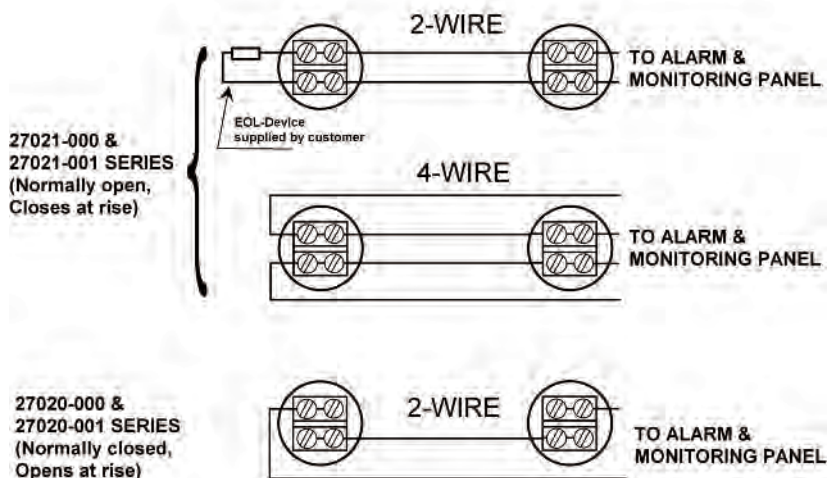
Flush Mount		Surface Mount		Nominal switching-temperature
opens at rise	closes at rise	opens at rise	closes at rise	
27020-000-140	27021-000-140	27020-001-140	27021-001-140	60°C / 140°F
27020-000-160	27021-000-160	27020-001-160	27021-001-160	71°C / 160°F
27020-000-190	27021-000-190	27020-001-190	27021-001-190	88°C / 190°F
27020-000-210	27021-000-210	27020-001-210	27021-001-210	99°C / 210°F
27020-000-225	27021-000-225	27020-001-225	27021-001-225	107°C / 225°F
27020-000-275	27021-000-275	27020-001-275	27021-001-275	135°C / 275°F
27020-000-325	27021-000-325	27020-001-325	27021-001-325	165°C / 325°F

°F SETTING AND TOLERANCE	COLOR CODING	SPACINGS (in feet)		
		UL	FM	ULC
140 +7°/-8°	Black	50	25	50
160 +7°/-8°	Black	25	25	25
190 +7°/-8°	White	50	25	50
225 +7°/-8°	White	25	25	50
275 ± 10°	Blue	25	25	50
325 ± 10°	Red	50	25	50

Horizontal DETECT-A-FIRE Units, series 27020 & 27021, are not suitable for use in hazardous locations.

LICO's HDL3 – HDL6 series maybe used in these areas.

INSTALLATION:



Series and EOL-Devices are not included in p/n

LOCATION:

DETECT-A-FIRE® Units are precision temperature sensors.

They must be mounted in an area (normally a ceiling) so that:

1. The detector spacing complies with both system requirements and requirements of the agency having local jurisdiction.
2. The thermal air path to the shell is not obstructed.

Spacing per UL, FM, and UL of Canada are shown in Table 1. Distances given are for between units on smooth ceilings. Distances from partitions or walls are half that shown. To assure that all spacing requirements are met, consult the authority having local jurisdiction.

Heat Detector Accessories: Cable Gland variations

A: Ex certified cable glands:

Basic-Standard: Brass-Ni-plated - BCG-Series,
 Temperature: -20 °C until +80 °C
 Sealing: Neoprene



www.prevent-a-fire.eu

Protection: IP66/68

Ex Zone: Ex II 2 GD, Ex e II, ex tD A21 IP66/68*



*(for further info & actual certificates please contact LICO)

Please find our standard marked in red

Material	Cable Gland Size	Sealing	Cable Diameter min-max in mm	Available Cylindrical Threads: ISO 262
Brass-Ni-plated	Size 1	Neoprene	3-6,5	M12x1,5
Brass-Ni-plated	Size 2	Neoprene	4-8	M16x1,5
Brass-Ni-plated	Size 3	Neoprene	6-12	M20x1,5
Brass-Ni-plated	Size 4	Neoprene	10-14	M25x1,5
Brass-Ni-plated	Size 5	Neoprene	13-18	M32x1,5
Brass-Ni-plated	Size 6	Neoprene	18-25	M40x1,5
Brass-Ni-plated	size 7	Neoprene	22-32	M50x1,5

B: ATEX & IECEx certified cable glands:

EXCG Series cable glands in **Brass-Ni-Plated, Stainless steel (AISI 316L),**
 Aluminum or AVP steel

Temperatures:

EPDM Sealing: -40 °C until +100 °C

Silicone Sealing: -70 °C until +220 °C



Protection: IP66/68

ATEX: Ex II 2 GD/I M2, Ex d IIC/Ex e II ex d I/Ex e I, Ex tD A21 IP66 or IP66/68*

IECEx: Ex d I, Ex e I, Ex d IIC, Ex e II and Ex tD A21 IP66/68 or IP66*

*(for further info and actual certificates please contact LICO)



Armoured cables SHALL have Cable Glands specified for armoured cables to prevent the loss of the ATEX certificate for the entire installation.

Please find our standard marked in red

Material	Cable Gland Size	Sealing	Cable Diameter min-max in mm	Available Metric Threads: ISO 262	Available Conic Threads
Brass-Ni-plated, Stainless steel	Size 1	EPDM	4-7 / 7-10	M16x1,5	1/2" NPT
		High temp.Silicone	4-6 / 6-8 / 8-10	M16x1,5	1/2" NPT
Brass-Ni-plated, Stainless steel	Size 2	EPDM or High temp.Silicone	5,5-8 / 8-10,5 / 10,5-13	M16x1,5 / M20x1,5	1/2" NPT / 3/4" NPT
Brass-Ni-plated, Stainless steel	Size 3	EPDM or High temp.Silicone	13-15,5 / 15,5-18	M20x1,5	3/4" NPT / 1" NPT
Brass-Ni-plated, Stainless steel	Size 4	EPDM or High temp.Silicone	18-21 / 21-24	M20x1,5 / M32x1,5	1" NPT
Brass-Ni-plated, Stainless steel	Size 5	EPDM or High temp.Silicone	24-27 / 27-30 / 30-33	M40x1,5/ M50x1,5	1 1/2 NPT

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Heat Detector Accessories: Wiring Blocks, Serie and EOL Resistors:

Standard for Ex-versions ATEX & IECEx Certified Wiring Blocks,

Temperature: -50 / +130°C,

2, 3, 4 or 5 poles
Wiring: 0,5 - 4 mm² with screw connection
Material: : KrG, Flammability class UL 94: V-0
Max current: 28 A, Max voltage: 275 V
ATEX: Ex II 2GD EEx e II*
IECEX: Ex e II*
(* for further info & actual certificates please contact LICO)

Temperature: -50 / +210°C,

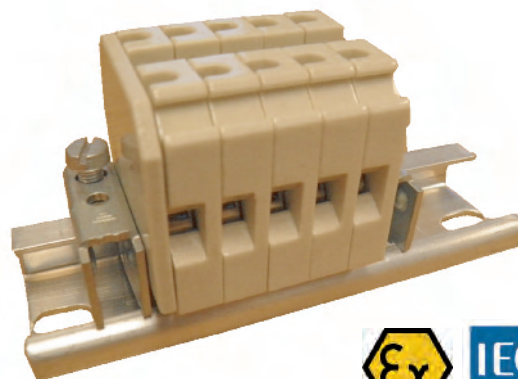
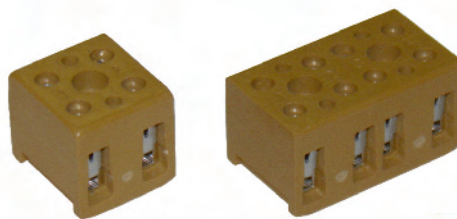
2-10 poles or more
Wiring: 0,5 - 4 mm² with screw connection
Material: Ceramic, Flammability class UL 94: V-0
Max current: 28 A, Max voltage: 275 V
ATEX: Ex II 2G D Ex e II*
IECEX: Ex e II*
(* for further info & actual certificates please contact LICO)

VDE-approved Wiring Blocks:

Porcelain C111 glazed or Steatik C220 unglazed
2, 3 or 4 poles
Wiring: 0,5-2,5 mm²/ 1,5-6 mm², 24A
T max:
350°C surface,
200°C brass-parts to avoid burn-out,

VDE-approved Wiring Blocks:

Option: 2-pole 500°C-Wiring-Block-Version:
All electrical parts are made entirely of V2A



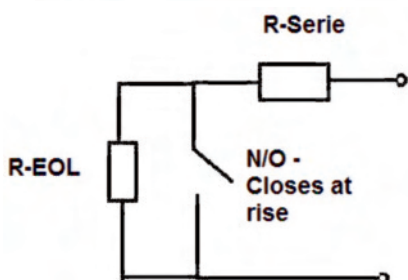
Electrotechnic 5 W Former, Ex-conform- Resistors

Series or EOL (End of Line) Resistors for Ex e junction boxes,
T3 max 40 °C, T6 max 60 °C
(Ex-cert. expired, T max 125C, out-gasing may occur at higher Temperatures)
Available in: 470 Ohm, 680 Ohm, 1,8 kOhm, 3,3 kOhm

220°C "Ex-conform"-Resistors are in Design & Evaluation
We are glad to receive your inquiry!

Typical system wiring:

R-Serie and End Of Line resistors used mainly for cable break and shortcut control



LICO Alarmpanel:

You specify your function, we deliver that.



www.prevent-a-fire.eu



You choose, we ship:

**Massive Aluminum housing with Membrane-keyboard,
dedicated programmed μ Controller:**

AP1 Alarmpanel 1:

- 1 or 2 Inputs, N/O or N/C
- 9-30 VDC
- Individual Printing of Keyboard possible
- Integrated Wirebreak-control
- Opt: Housing with Cabelglands or Flushmount
- 0, 4, 15, 23 mA Functional Currents

AP2, Alarmpanel 2:

as above plus 0-20mA output
0, 4, 15, 20 mA functional currents

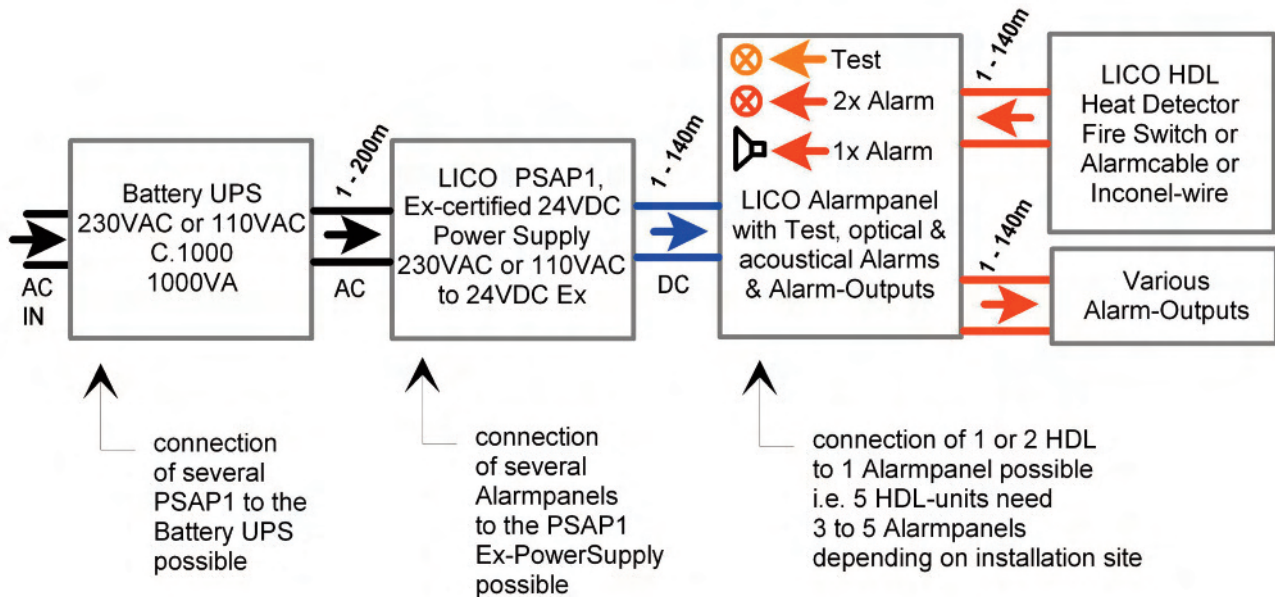
Output:

- Alarm-LED
- 2 Outputs: 1 Output per Channel, switch only

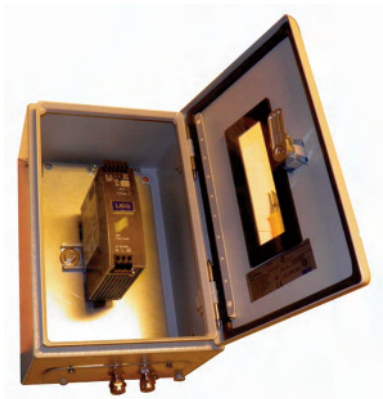
**Ask for the
Alarmpanel
datasheet!**

PAF - Prevent-a-Fire - Outline

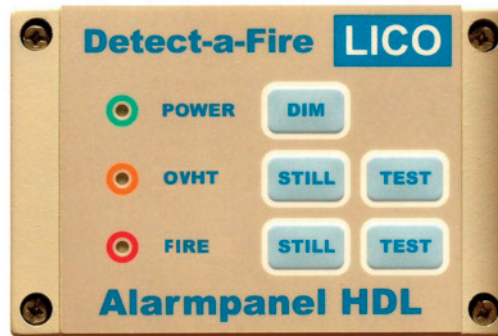
Detect and Control Overheat & Fire at the Source



Content:



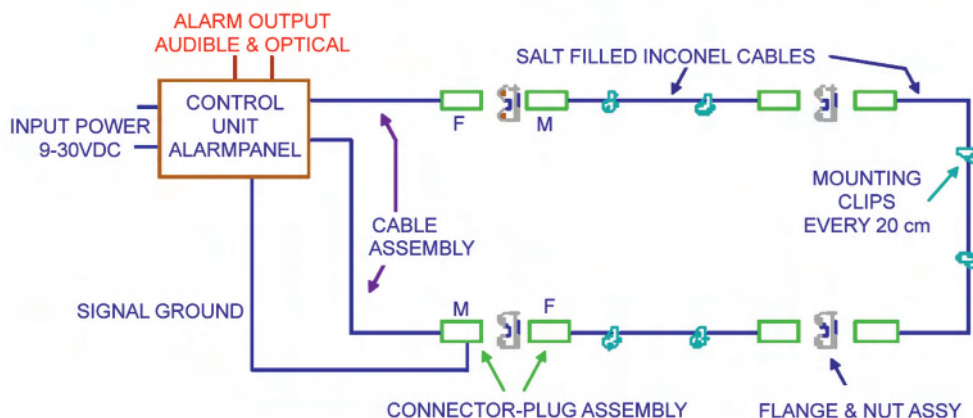
ATEX-Netzteil,
Option Zenerbarriere



Control Unit: Alarmpanel,
auch im Ex e oder Ex d Gehäuse lieferbar



Layout of salt filled inconel wire:



LICO Alarmsystem:

Content:

1. (Industrial-Server-USV)
2. ATEX-certified 24VDC Power Supply
3. Safety barrier



www.prevent-a-fire.eu



4. LICO Alarmpanel:

The Alarmpanel provides the supply and control for action, stand-by, cable break Alarm, short-cut and test

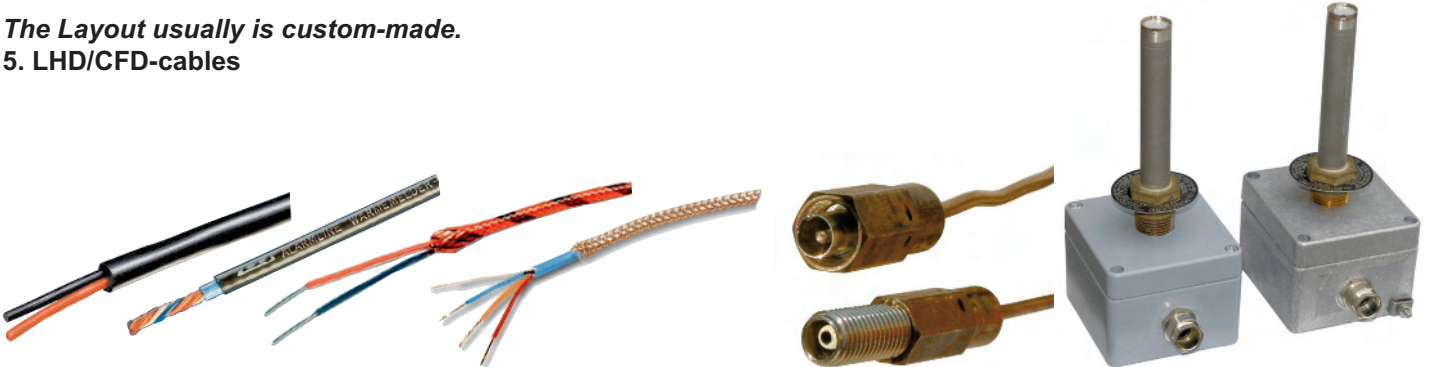
The Standard configuration offers 2 Inputs. The Output is realized by 2 integrated optical and audible Alarms. External Outputs are 2 each for Alarm 1 + 2, audible and optical Alarm (N/O & N/C –Outputs allow connection to practically ANY alarm-system on the market.)

Versions: Build in panel (with O-Ring or Stand-alone (wall-mount with cable glands)

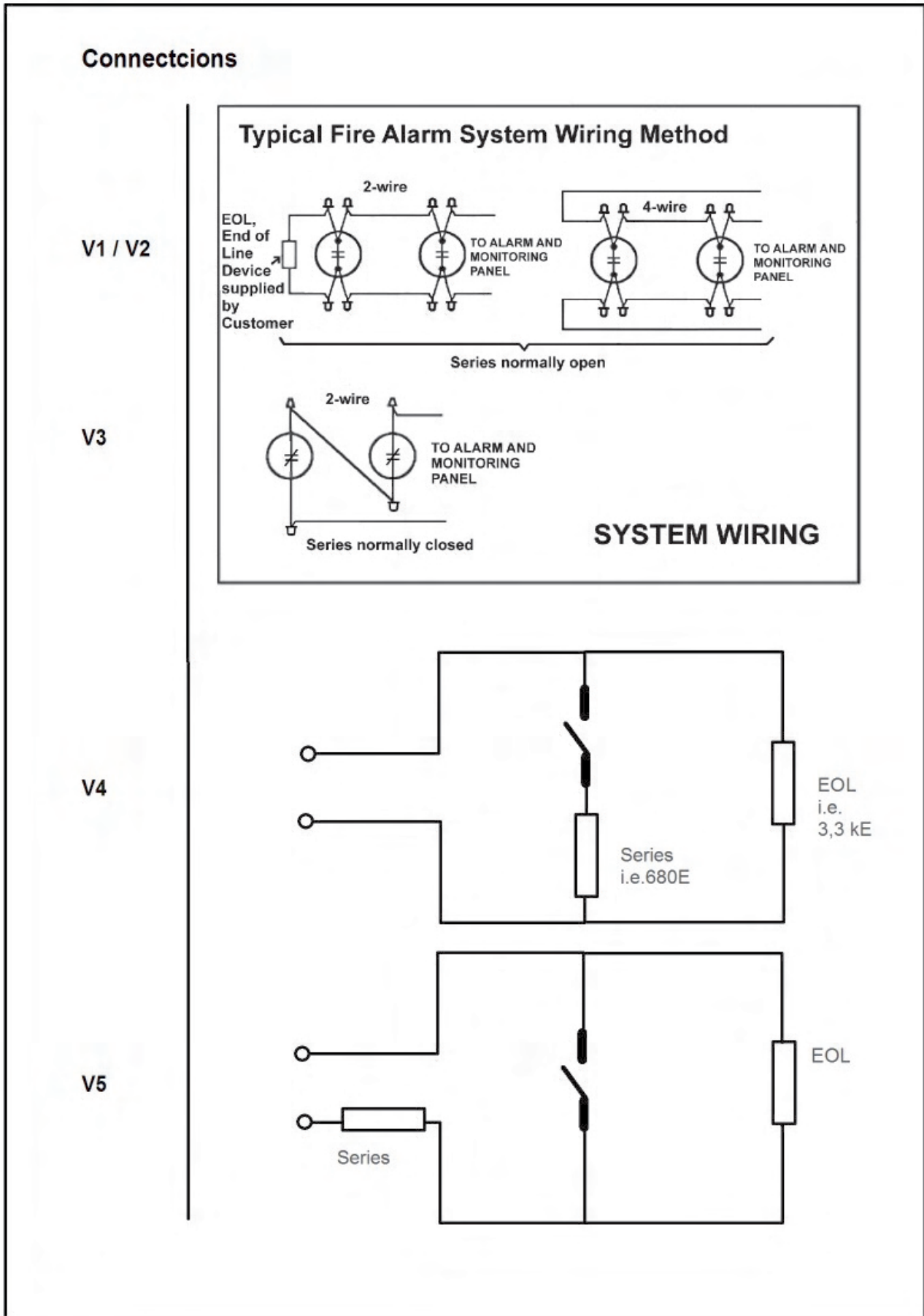


The Layout usually is custom-made.

5. LHD/CFD-cables



Abstract Wiring Diagram of Detecct-a-Fire® Elements:



Linear Heat Detection Cables - Alarmline 2:

Alarmline 2 Digital LHD Cables: (NOT self restorable)

Comprises a twin-conductor "switching" cable with temperature-sensitive insulation protected by a special sheath. It operates by melting of the insulation between the conductors at a pre-determined temperature. This creates a short circuit which is detected by a simple electrical device, which in turn provides a fire alarm signal. Fault conditions are detected by continuous monitoring for an open circuit state. Cable control is permanent. A safety barrier may be used in Ex-areas.

Main applications: Storage Tanks, Dryers, Car Parks, Escalators, Floating roof tanks, Tunnels, Warehouse racking, Pumps, Silos, Transformers, Vehicle engines

Available Alarm temperature: 68 °C, 88 °C, 105 °C, 185 °C, 240 °C

Digital LHD Cable Isolations:

PVC outer sheath, Nylon outer sheath, PVC coated cable with Polypropylene outer sheath, PVC coated cable with Stainless Steel outer braid

Alarmline Cables are supplied only in: 100 m, 500 m or in 1.000 m increments

Alarmline 2 Analogue LHD Cables: (self restorable)

4-wire system: - Consists of a four-conductor cable surrounded by an outer sheath of PVC. A change in temperature produces a change in resistance, which is monitored by an Alarmline Control Unit, which in turn actuates an alarm signal at a predetermined level. The cable is continuously monitored for open and short circuit fault conditions. It detects either a localised hot spot or a lower level of temperature increase over the entire length. *It is recoverable after operation if the cable is not damaged or burned. Approvals: Vds and/or FM depends on type of cable

Main applications: Storage Tanks, Dryers, Car Parks, Escalators, Floating roof tanks, Tunnels, Warehouse racking, Pumps, Silos, Transformers, Vehicle engines

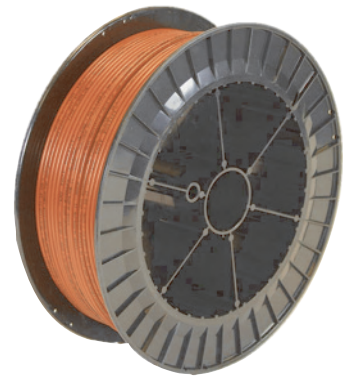
Analogue LHD Cable Isolations:

PVC coated (red), Nylon coated, Polypropylene coated, PVC coated cable with Stainless Steel outer braid, Nylon coated with Stainless Steel outer braid

Alarmline Cables are supplied only in: 100 m or 500 m increments

Control Units:

Analogue LHD Control Unit - Self Programmable,
Analogue LHD Control Unit - PC Programmable with USB cable,



LICO Alarmpanel to control Alarmline Digital LHD cables



Analogue LHD Control Unit: Self Programmable



Analogue LHD Control Unit: Self Programmable

Linear Heat Detection Cables: SIGNALINE

Signaline Heat Sensing Digital Cables:

(NOT self restorable)

Signaline Fixed Temperature Heat Sensing Cable (Signaline FT) detects a build up of heat anywhere along its length. When any point along the length of the cable reaches a predetermined temperature an alarm is initiated.

Signaline FT is available in four different temperature settings and two outer cover options making the Signaline FT suitable for use in a very wide range of applications.

Signaline FT is comprised of two steel conductors individually insulated with a heat sensitive polymer that are twisted together. At the rated temperature the heat sensitive polymer insulation breaks down permitting the steel conductors to move into contact with each other. This forms a closed switch contact that can be used to signal an alarm condition at the control panel.

Signaline FT cable can be installed in hazardous areas when suitably protected by an intrinsically safe barrier.

Main applications: Hazardous Areas, Power plants, Boiler rooms, Road- and Access tunnels, Train applications, Engine rooms, Cable ducts, Airports, Underground (metro) applications and many more...

Available Alarm temperature: 68 °C (155 °F), 88 °C (190 °F), 105 °C (220 °F), 185 °C (365 °F)

Signaline Cable Isolations:

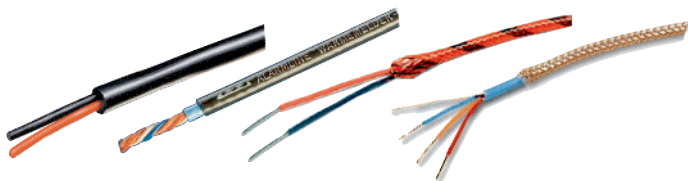
Standard PVC coating, Nylon coating for increased UV and chemical protection, Stainless steel outer braid for excellent mechanical protection and where a very rugged product is required.

Signaline HD Analogue Cable: is fully resettable EN54 compliant VdS approved heat sensing cable. It is ideal for use in confined spaces where access is restricted such as escalators, cable tunnels and shafts.

Signaline Controllers:

All Signaline HD Heat Sensing Cables (Signaline HD) must be used with a Signaline HD Heat Sensing Cable Controller (Signaline HD Controller). Signaline HD Controllers are very simple and easy to use and there are three models to choose from:

- Signaline SKM-03; EN54 compliant for use with conventional systems (VdS approved)
- Signaline SKM-03UK; generate alarm when 1m of cable reaches 60°C or 80°C
- Signaline SKM-95; EN54 compliant loop power controller for use with Apollo XP95 addressable systems (VdS approved)



Wide range of Heat Sensing cables!



Alarm Point Distance locator



HD controller

SIGNALINE HEAT

NEW!



CFD - Continuous Fire Detection - Fenwal Sensing element:

The solution for Aircraft & Industry Overheat (OVHT) & Fire-alarm

Merkmale:

- Wiedereinschaltend sofern 1.100°C nicht überschritten wurden,
- wartungsfrei
- Solide & robust - widersteht Schock und Vibration
- vielseitig einsetzbar – verschiedene Schaltemperaturen,
auch untereinander kombinierbar
- Dauerhaft –
 - Langlebige Inconel Konstruktion
- Wirtschaftlich –
 - Deckt auch große Flächen ab,
 - Sauber zu installieren
- Das Innenleben des Sensorkabels ist hermetisch in Inconel und Keramik isoliert
- Besonders Korrosionsbeständig
- Alterungsbeständig
- Extrem geringes Gewicht

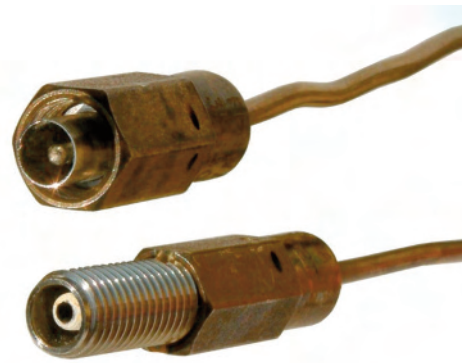
REFERENCES:

Kidde Aerospace bzw Kidde Technologies Inc ist der Weltmarktführer im Bereich von Überhitzungsschutz und Brandverhütung im Bereich von zivilen und militärischen Fluggerät. Kidde Aerospace schafft den Schutz für jede gefährliche Triebwerks-Situation und ist laut Eigengabe die einzige Quelle für entsprechenden Schutz vor Feuer in Fluggeräten.

Auf der Erde werden weltweit industrielle Prozesse und Anlagen vor Überhitzung, Feuer oder Gas- und Staub-Explosionen geschützt.

Auszug aus einem Gerichtsurteil:

Es entspricht der Lebenserfahrung, dass mit der Entstehung eines Brandes praktisch jederzeit gerechnet werden muss. Der Umstand, dass in vielen Gebäuden jahrzehntelang kein Brand ausbricht, beweist nicht, dass keine Gefahr besteht, sondern stellt für die Betroffenen einen Glücksfall dar, mit dessen Ende jederzeit gerechnet werden muss."



APPLICATION:

Schutz von

- Transformatoren und Schaltanlagen
- Superheizanlagen
- Nuclear engineering
- Sprühtrockner
- Gasturbinen
- Ventilations Filter Bänke
- Industrielle Wärme/Hitze-Trockner mit Transportsystem für Pulver, Fasern, Papier, Pulpe, Granulate, Schnitzel etc.
- Industrielle Trommeltrockner
- Marine Motorräume, Antriebe
- Große mechanische Antriebe
- Große Kompressorstationen
- Abgasanlagen/Abgassysteme
- Hochtemperatur-Wärmetauscher

Advantage:

- Sehr schneller «Schalter»
- Extrem zuverlässig
- Höchste MTBF
- Fehlalarm konstruktiv nicht möglich
- Geringstes Gewicht



DETECT HEAT & OVERHEAT AND PREVENT A FIRE

Entsprechend der Schutzart, der Fläche und des Schutzniveaus finden Sie bei LICO die richtige Lösung zur Vermeidung von Industriebrand.

LICO Electronics GmbH
Klederinger Str. 31, A-2320 Kledering, Austria
Tel: +43 1 706 43 000 Email: office@lico.at

LICO Hungaria Kft
Raba u.4, H-2030 Erd, Hungary
Tel: +36 23 520 113 Email: sales@lico.hu
www.prevent-a-fire.eu

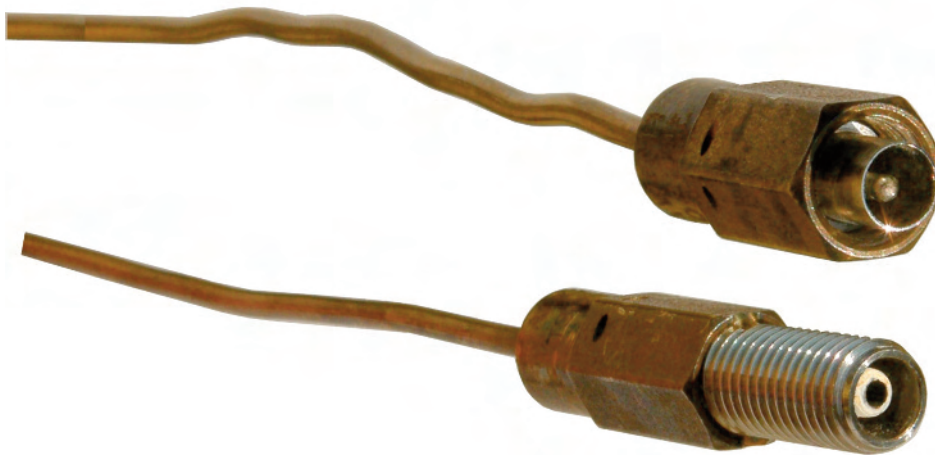
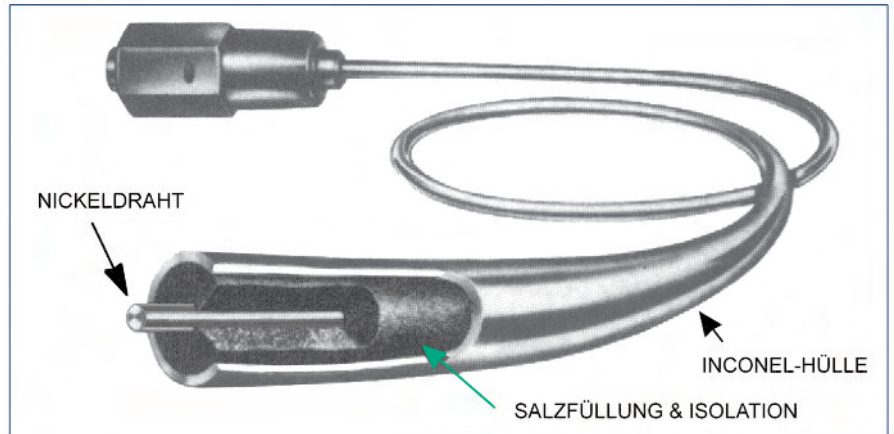
CFD - Continuous Fire Detection - Fenwal Sensing element:

Description:

Die Eigenschaften des Sensorkabels:

- Völlig wasserdicht
- korrosionsfest
- schock und vibrationssicher
- klärt Überhitzung binnen weniger Sekunden
- Hitzefest bis ~1.100°C

Damit ist das Sensorkabel seit über 50 Jahren der Industriestandard das Herz vieler Überhitzungsschutz- und Brandschutzsysteme.



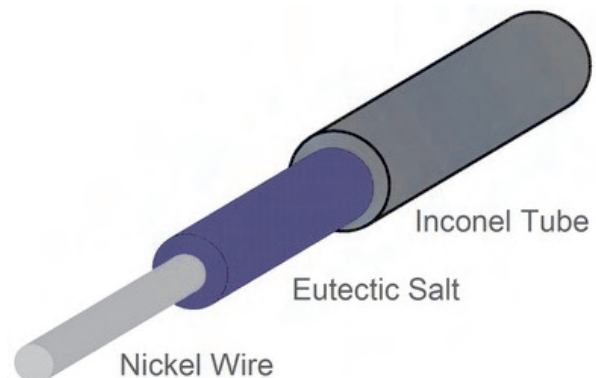
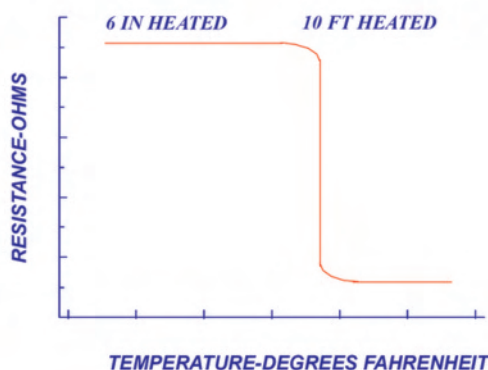
Bei zig-tausenden Installationen werden diese Systeme entweder als Überhitzungsschutz eingesetzt, also als ALARM-Einrichtung und oder als Einrichtung zur hitzereduzierenden Aktion, zB Abschalten der Anlage) oder bei der Feuerlöschung als auslösende Einrichtung um das Löschmittel freizusetzen. In vielen Fällen werden auch kombinierte Funktionen wie systemabschaltender Überhitzungsschutz UND Auslösen der Löscheinrichtung eingebaut.

STANDARD DATA:

124°C, 154°C, 204°C, 302°C, 407°C,
höhere Schaltpunkte nach technischer Klärung
T max reversibel: bis max. 1100°C

Abmessungen:

Kabelsegmentlängen: 0,46 m – 4,60 m in 2,5 cm Teilungen
Max. Länge von Kabelsystemen: ~120m
Längere Konfigurationen auf Anfrage
Kabeldurchmesser: nur 2,25 mm



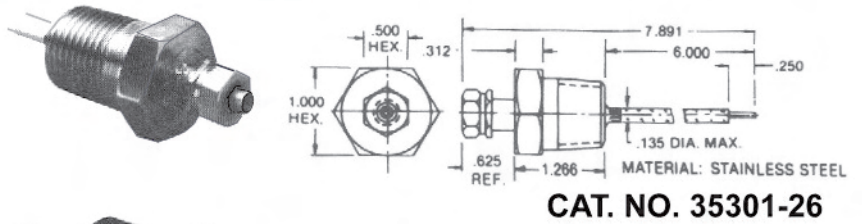
CFD - Continuous Fire Detection - Fenwal Sensing element:

Connectors and Mounting material 1/3:

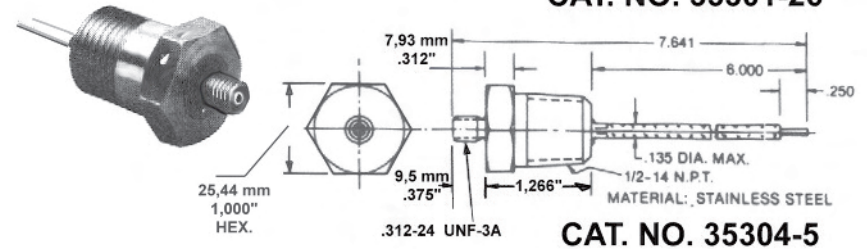
Screw-in connector Plug Assemblies:

Connector assemblies are available in male and female thread configuration to accommodate either end of the sensing element.

The plug thread facilitates connection to a standard conduit box like the HDL-Conn-box.



CAT. NO. 35301-26

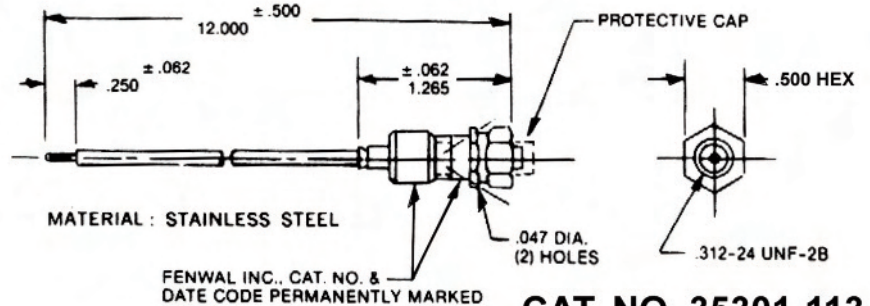
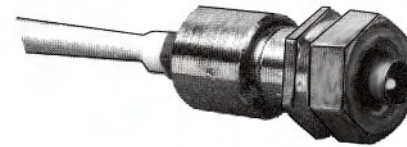


CAT. NO. 35304-5

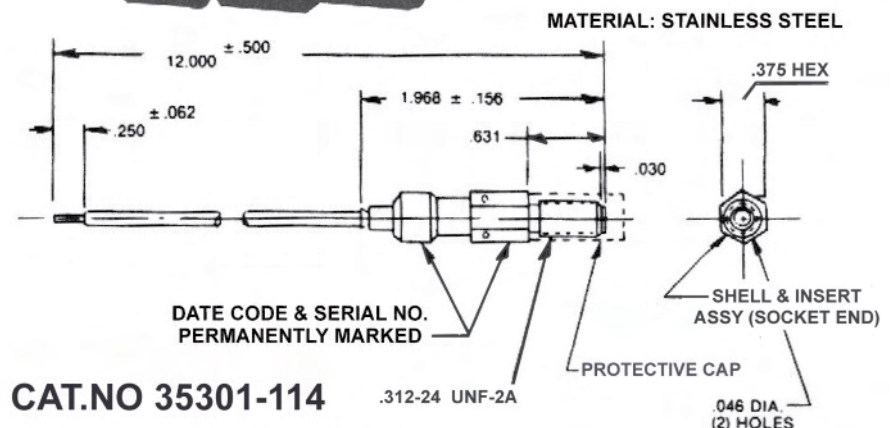
Loose Cable Assemblies:

Cable assemblies are available in male and female thread configuration.

They may be used singly to connect the sensing element termination to the control unit or in combination to connect sensing element sections through volumes not monitored by the elements.



CAT. NO. 35301-113



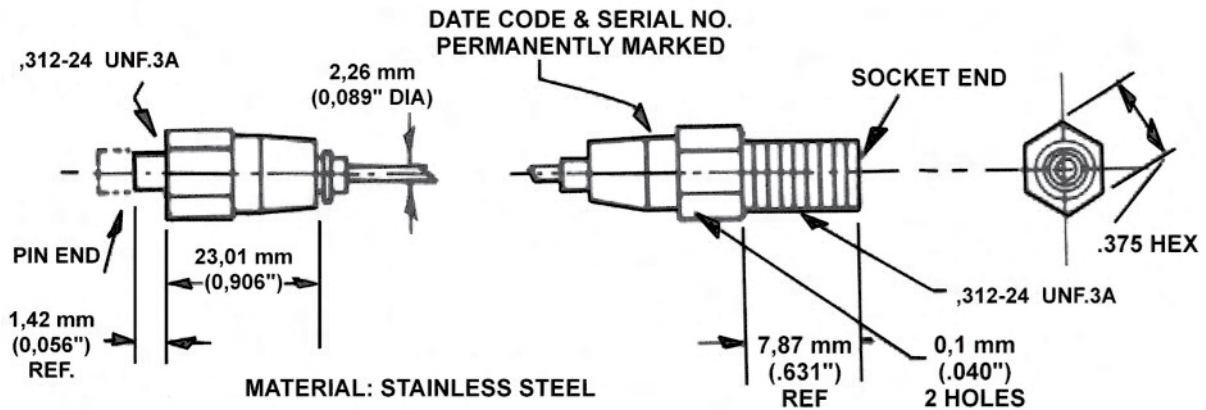
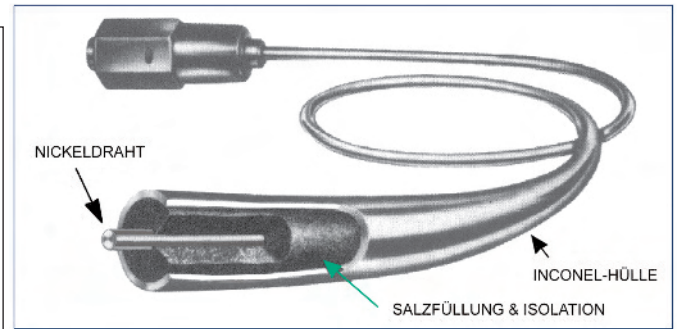
CAT. NO. 35301-114

CFD - Continuous Fire Detection - Fenwal Sensing element:

Connectors and Mounting material 2/3:

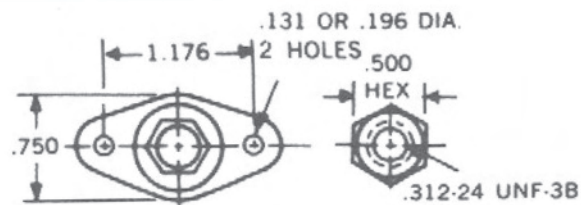
Sensing Element:

The Fenwal sensing element consists of a small 2,26 mm diameter (.089 inch OD), lightweight, flexible Inconel tube with a nickel wirecenter conductor. The tube is packed with insulation impregnated with a special salt compound and is hermetically sealed. The picture below shows the sensing element with standard m + f connectors.



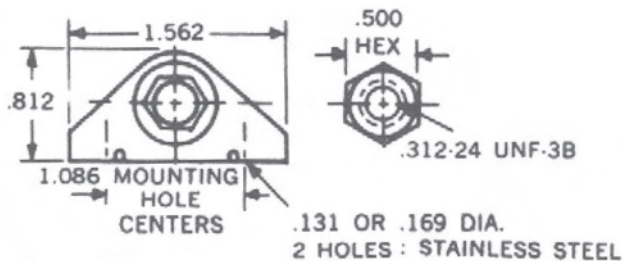
Flange and Nut Assemblies:

Flange and nut assemblies are used to support the connection of two sensing elements. They are used to support and separate the elements from the structure or as a bulkhead feed through supports. Flange and nut assemblies may be surface or bulkhead mounted.



MATERIAL: STAINLESS STEEL

CAT.NO 35410-0 (Feedthrough Type)



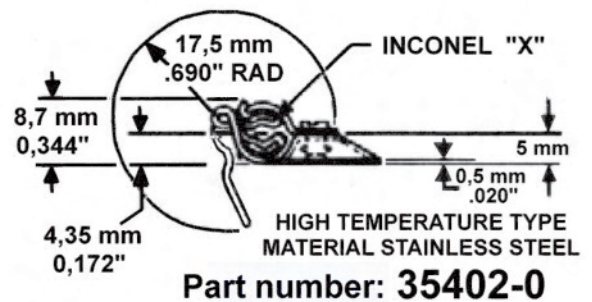
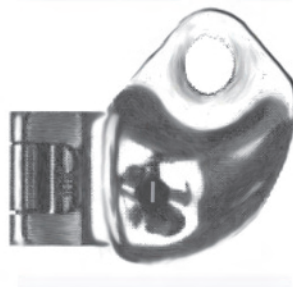
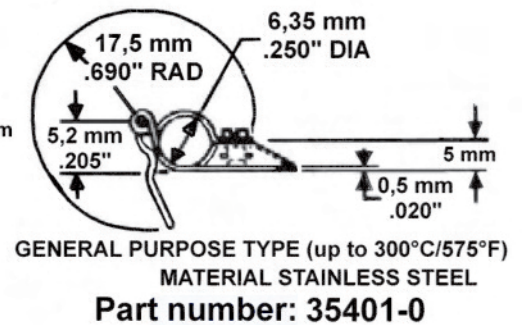
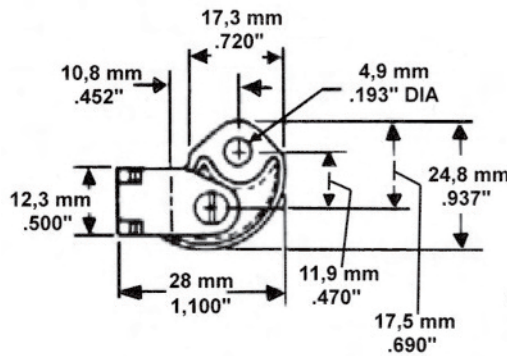
CAT.NO 35410-1 (Surface Mounted Type)

CFD - Continuous Fire Detection - Fenwal Sensing element:

Connectors and Mounting material 3/3:

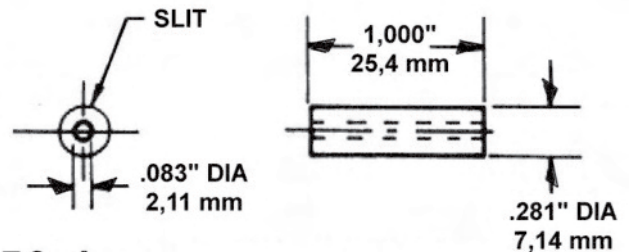
Sensing Element:

Diese speziellen Befestigungen halten das Schaltkabel sicher an ihrem Montageort. Die Artikelnummer 35401 benötigt den Silikoneinsatz 35450-1, Die Hochtemperatur Version 35402-0 aus 321 oder 347 Edelstahl beinhaltet schon eine Inconel „X“ Befestigung und benötigt daher keinen weiteren Silikoneinsatz.



Silikontüllen:

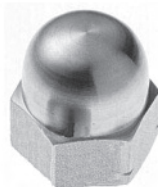
Notwendig Für den Montageclip 35401-0 zur Befestigung des Schaltkabels.
T-Max 260°C



Part number: 35450-1 Silicone rubber sleeve

Schaltkabel-Abschluss:

Dieses Abschlussterminal ist notwendig um bei einer Stichleitung (anstelle einer Ring-Schleife) die Ring-Schleife zu erzeugen.

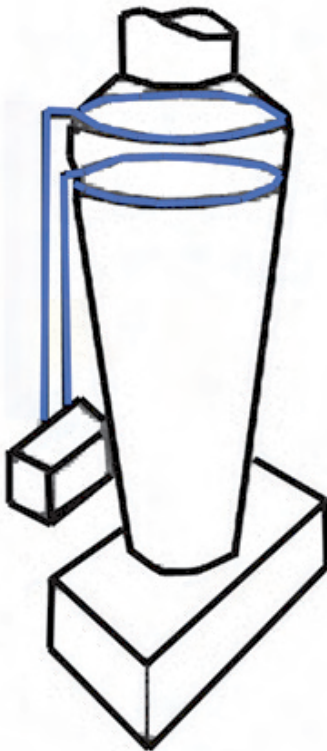


MATERIAL: STAINLESS STEEL

Part number: 114088

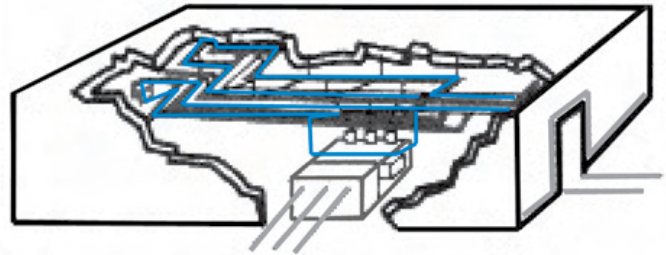
Anwendung/Beispiele:

Sprüh- & Trommeltrockner

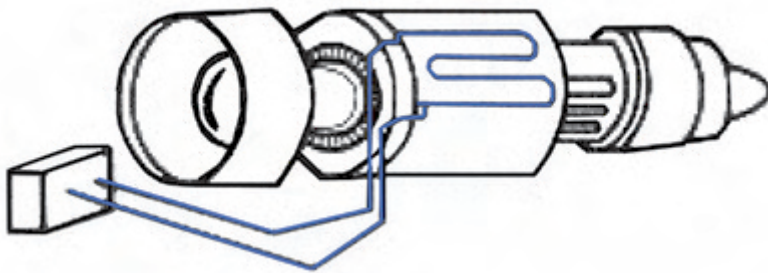


Durch das auch mehrfache Verlegen in Kreisform in verschiedenen Höhen wird eine Überhitzung oder ein Brand rechtzeitig erkannt.

Heizräume und unterirdische Versorgungseinrichtungen, Ein CFD-System meldet Überhitzung in Sekundenschnelle.

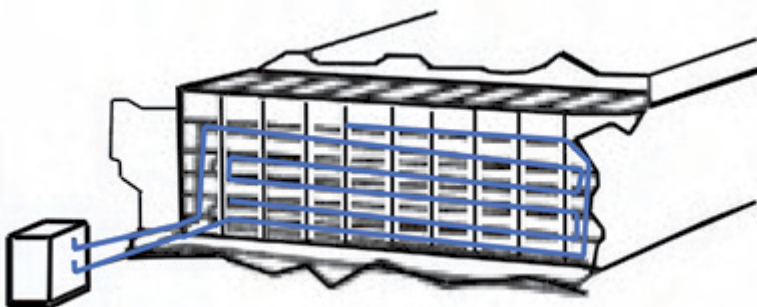


Gasturbinen:



Gasturbinen
Ein CFD-System schützt vor Überhitzung oder Durchbrand der Brennkammer.

Filterbänke & Absaugkanäle:



Filterbänke
Die Ansammlung von entzündlichen Ablagerungen kann Feuer und erhebliche Luftverschmutzung auslösen.

Additional information about Hazardous Areas:

Please consult the ATEX guidelines and requirements in your language.

Typical Ignition Temperatures in C of Dusts		
Dust type	Cloud	Layer
Coal dust	380 °C	225 °C
Aluminium	590 °C	>450 °C
Flour	490 °C	340°C
Grain dust	510°C	300 °C
Methyl cellulose	420°C	320°C
Phenolic resin	530°C	>450°C
Polythene	420°C	(melts) °C
PVC	700°C	>450 °C
Soot	810°C	570 °C
Sugar	490 °C	460°C

Classification of Zones and Divisions			
Type of Area	NEC	ATEX and IEC	Definition
Continuous hazard	Division 1	Zone 0 / Zone 20	Areas where explosive atmosphere is continually present
Intermittent hazard	Division 1	Zone 1 / Zone 21	Areas where explosive atmosphere is likely to occur in normal operation
Hazard under abnormal conditions	Division 2	Zone 2 / Zone 22	Areas where explosive atmosphere is unlikely to occur but if it does, will exist only for a short period

Equipment Categories / Protection ATEX & IECEx			
Equipment category	Cat.	Equipment Protection Level	Zone
Category 1	1G	Ga	Suitable for use in Zone 0, 1, 2
	1D	Da	Suitable for use in Zone 20, 21, 22
Category 2	2G	Gb	Suitable for use in Zone 1, 2
	2D	Db	Suitable for use in Zone 1, 2
Category 3	3G	Gc	Suitable for use in Zone 2
	3D	Dc	Suitable for use in Zone 22

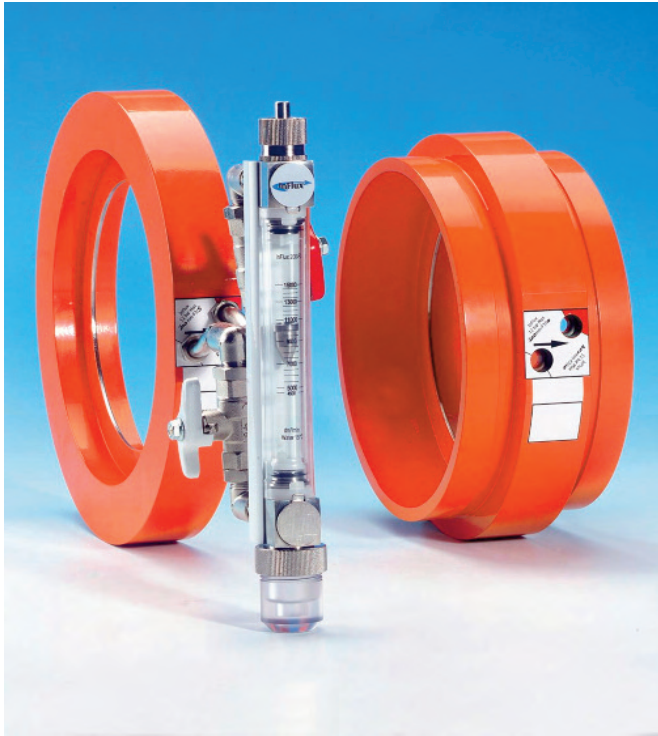
Additional information about Hazardous Areas:

Ingress Protection Rating I		
First Digit: Solid Particle Protection		Effective Against
0	No Special Protection	No Special Protection
1	Objects > 50 mm diameter	Any large surface of the body, such as the back of a hand, but no protection against deliberate contact with a body part
2	Objects > 12 mm diameter	Fingers or similar objects
3	Objects > 2,5 mm diameter	Tools, thick wires, etc.
4	Objects > 1 mm diameter	Most wires, screws, etc.
5	Dust Protected	Ingress of dust is not entirely prevented, but it must not enter in sufficient quantity to interfere with the satisfactory operation of the equipment; complete protection against contact (dust proof)
6	Dust Tight	No ingress of dust; complete protection against contact (dust tight)

Ingress Protection Rating II		
Second Digit: Liquids		Description
1	Dripping water	Dripping water (vertically falling drops) shall have no harmful effect. Test duration: 10 minutes Water equivalent to 1mm rainfall / minute
2	Dripping water when tilted up to 15°	Vertically dripping water shall have no harmful effect when the enclosure is tilted at an angle up to 15° from its normal position.
3	Spraying water	Water falling as a spray at any angle up to 60° from the vertical shall have no harmful effect.
4	Splashing water	Water splashing against the enclosure from any direction shall have no harmful effect.
5	Water jets	Water projected by a nozzle (6.3mm) against enclosure from any direction shall have no harmful effects.
6	Powerful water jets	Water projected in powerful jets (12.5mm nozzle) against the enclosure from any direction shall have no harmful effects.
7	Immersion up to 1 m	Ingress of water in harmful quantity shall not be possible when the enclosure is immersed in water under defined conditions of pressure and time (up to 1 m of submersion).
8	Immersion beyond 1 m	The equipment is suitable for continuous immersion in water under Test duration: continuous immersion in water conditions which shall be specified by the manufacturer.

INFLUX Firesure Type FM

FLOWMETERS FOR SPRINKLER FIRE PUMP TESTING

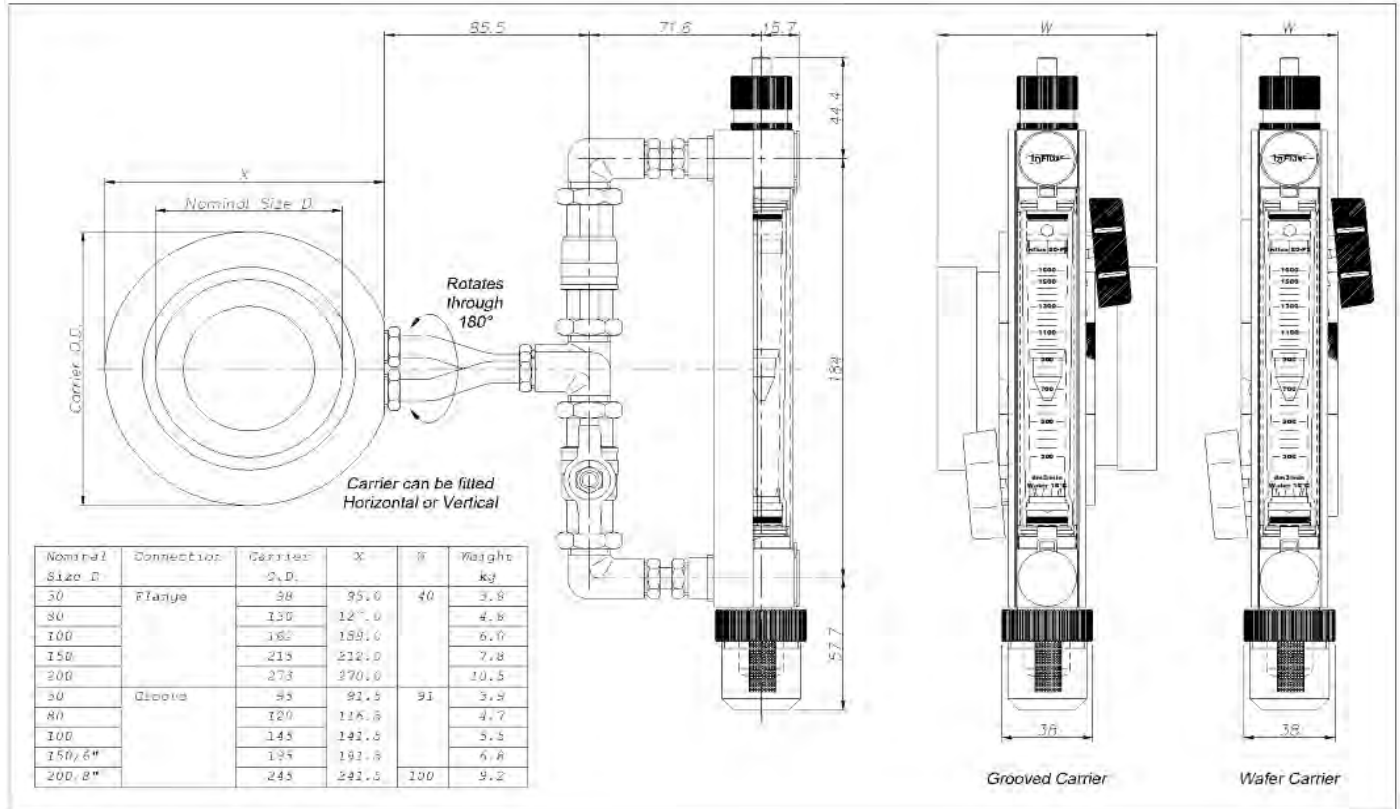


- Flange or groove style connection.
- Horizontal or vertical pipes.
- Scaled in USGPM and dm³/min.
- Flow element: Polyester coated carbon steel body.
- Highly stable indicator readings.
- S.W.P: 20 bar g
- Accuracy: ± 2% of test range max.

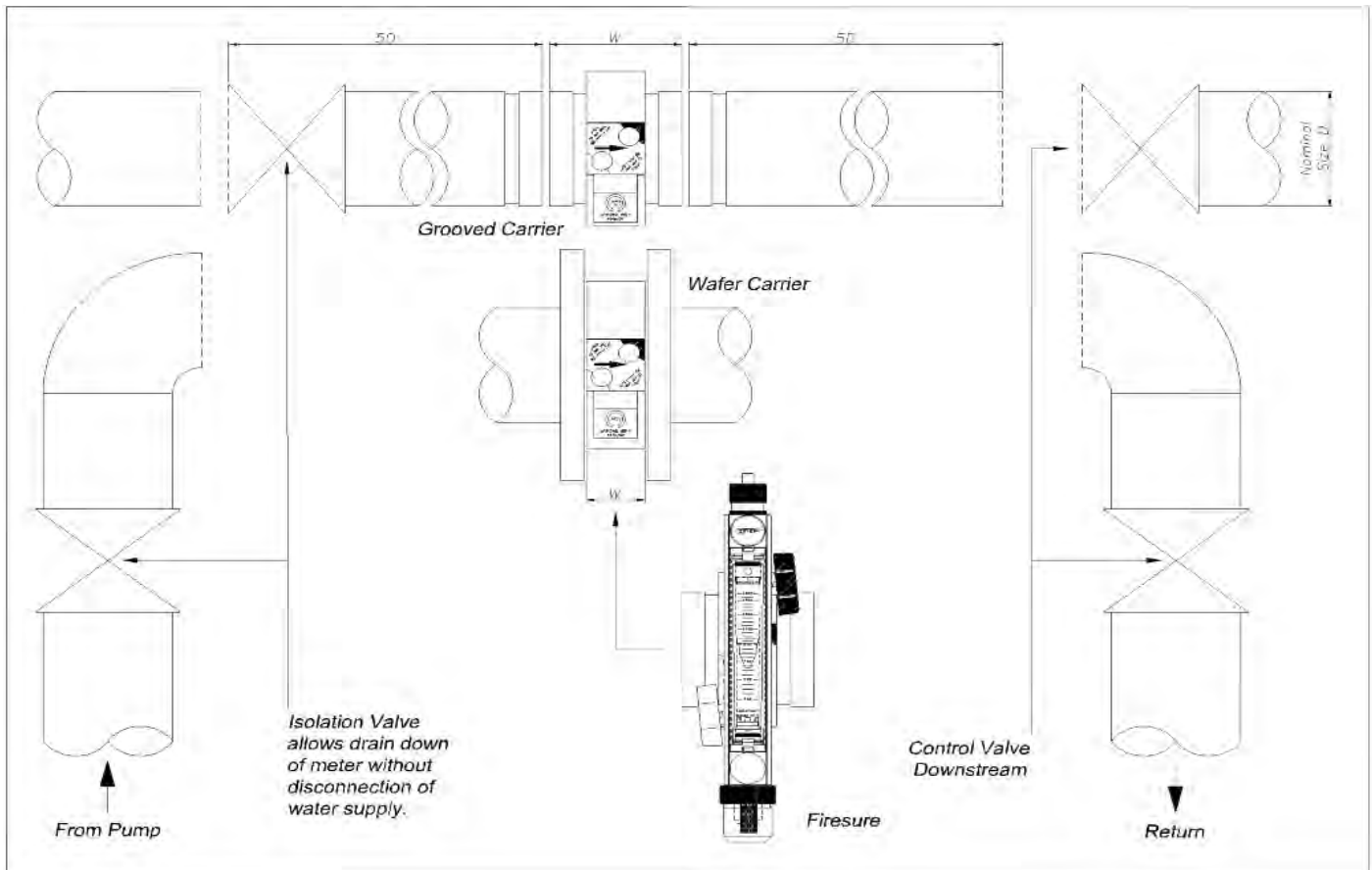
Pump USGP M	Flowmeter and line size		Flowmeter test ranges USGPM		Flowmeter range USGPM		Grooved con- nection order code	Wafer flange connection order code	Flowmeter range dm ³ /min	
	Inches	mm	min	max	min	max			min	max
200	3	80	100	400	100	400	FS80FGFM	FS80FLFM	400	1500
250	4	100	150	500	150	900	FS100FGFM	FS100FLFM	600	3400
300			150	600						
450			250	900						
500	6	150	250	1000	250	2000	FS150FGFM*	FS150FLFM	1000	7500
750			375	1500						
1000			500	2000						
1250	8	200	750	2500	750	4000	FS200FGFM	FS200FLFM	3000	15000
1500			750	3000						
2000			1000	4000						
2500	8	200	1500	5000	1500	6000	FS8FGFM	-	6000	22000
3000			1500	6000						

INFLUX Firesure Type FM

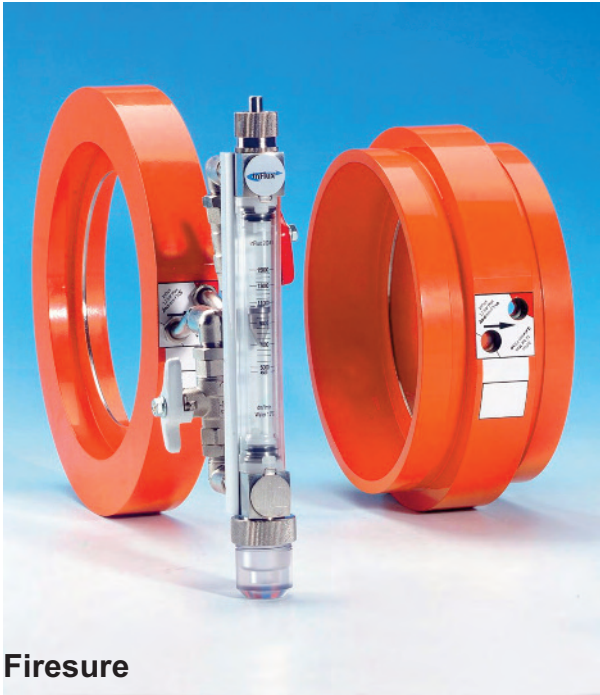
Mounting Detail - Firesure



Typical Pipeline Configuration (Horizontal or Vertical)

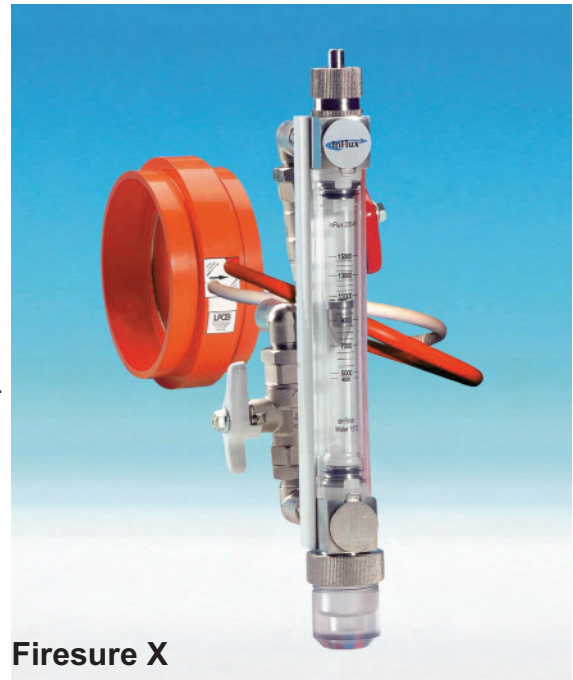


FLOWMETERS FOR SPRINKLER SYSTEMS



Firesure

- Flange and groove style connection.
- Simple and quickest to install.
- Horizontal or vertical pipe-lines.
- Most extensive flow ranges.



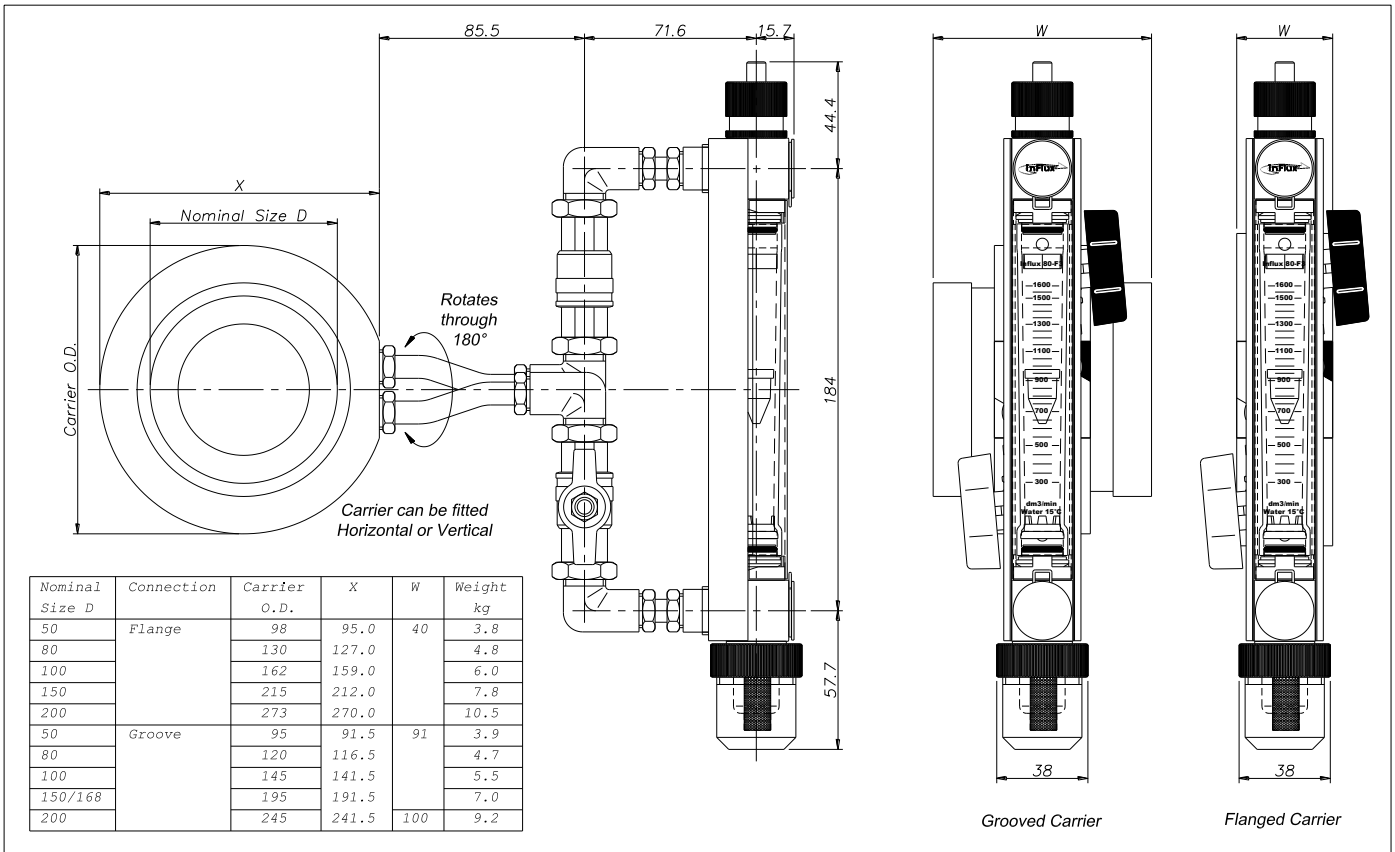
Firesure X

- Direct and remote indicator positioning options.
- Design flexibility to meet CDM regulations.
- Increased pressure rating.
- Remote indicator can be retrofitted.
- Certificated to LPS 1045

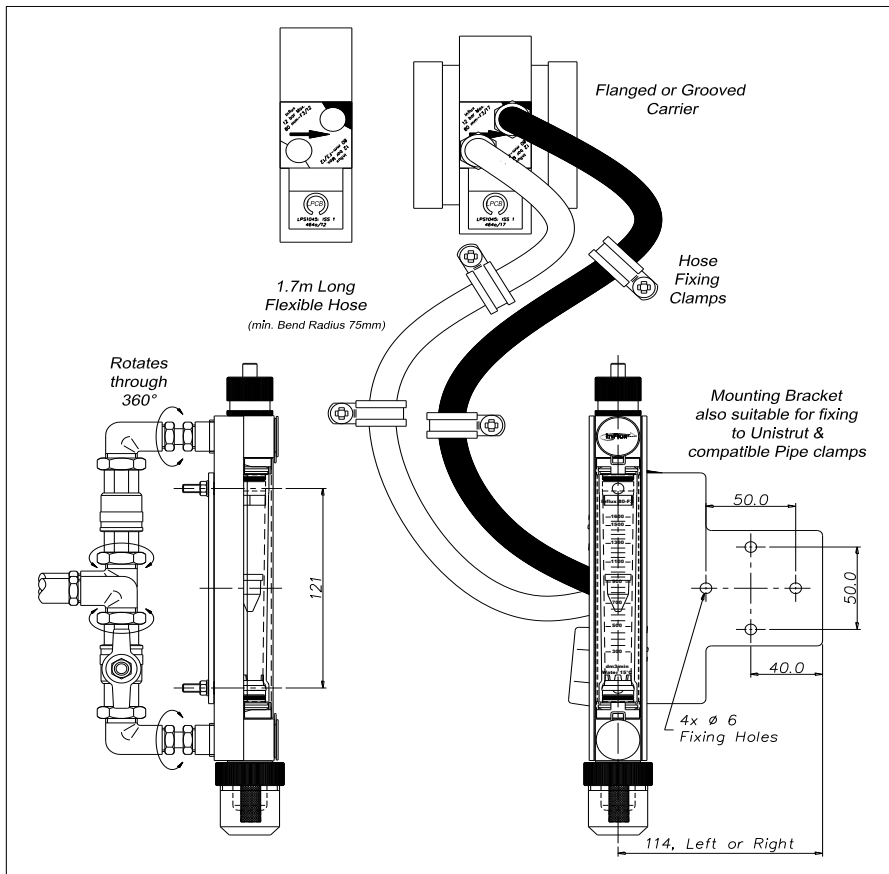
Size & Connection	Groove Pipe OD	Firesure close coupled		Firesure X remote coupled.	
	mm	dm ³ /min	LPCB ref.	dm ³ /min	LPCB ref.
50 Flange	-	150 to 700	464a/01	200 to 850	464a/11
80 Flange	-	300 to 1600	464a/02	200 to 1800	464a/12
100 Flange	-	500 to 3500	464a/03	400 to 4000	464a/13
150 Flange	-	900 to 7900	464a/04	1100 to 9500	464a/14
200 Flange	-	2000 to 15000	464a/05	2500 to 17000	464a/15
50 Groove	60.3	150 to 700	464a/06	200 to 850	464a/16
80 Groove	88.9	300 to 1600	464a/07	200 to 1800	464a/17
100 Groove	114.3	500 to 3500	464a/08	400 to 4000	464a/18
150 Groove	165.1	900 to 7900	464a/09	1100 to 9500	464a/19
168 Groove	168.3	900 to 7900	464a/22	1100 to 9500	464a/24
200 Groove	219.1	2000 to 15000	464a/10	2500 to 17000	464a/20

INFLUX Firesure and Firesure X

Mounting Detail - Firesure



Mounting Detail - Firesure X



Assessed to ISO 9001:2008
LPCB Cert No. 464

INFLUX

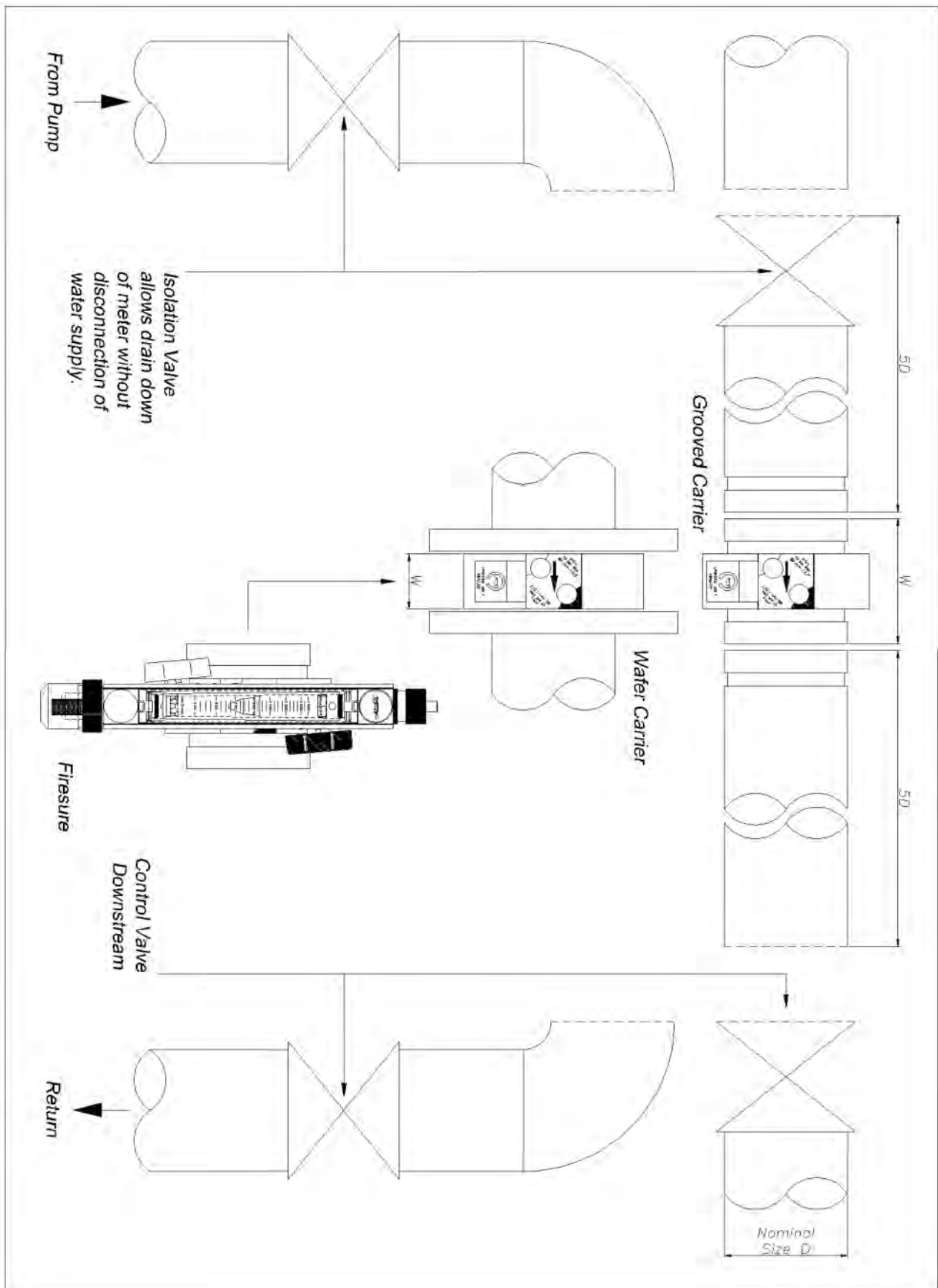
INFLUX Firesure and Firesure X

Size & Connection	LPCB Ref. No. & Order codes		Dimension	Weight
	Firesure	Firesure X	'W' (mm)	(kg)
50 Flange	464a/01	464a/11	40	3.8
80 Flange	464a/02	464a/12	40	4.8
100 Flange	464a/03	464a/13	40	6.0
150 Flange	464a/04	464a/14	40	7.8
200 Flange	464a/05	464a/15	40	10.5
50 Groove	464a/06	464a/16	90	3.9
80 Groove	464a/07	464a/17	90	4.7
100 Groove	464a/08	464a/18	90	5.5
150 Groove	464a/09	464a/19	90	7.0
168 Groove	464a/22	464a/24	90	7.0
200 Groove	464a/10	464a/20	100	9.2

Construction and Specification:

	Firesure*	Firesure X
Main orifice carrier	Flange and groove connection, 316SS orifice in polyester coated steel body.	
Indicator assembly	Nickel plated brass valves and components, borosilicate glass flow tube and Viton seals. Polycarbonate filter bowl and stainless steel filter element.	
Indicator connectors	Direct coupled nickel plated copper tube.	1.7 metre colour coded hydraulic hoses and stainless steel hose clips.
Indicator mounting	Simple direct to main body	Galvanised steel bracket with 6mm fixing holes, compatible with Unistrut frame and pipe clip mounting options.
Safe Working Pressure	16 bar g (with x 2.5 safety factor.)	
Accuracy	5% of flow rate reading.	
*FIRESURE X RETROFIT PACKAGE: Existing Firesure installations can be converted to Firesure X by use of FSX01 or FSX02 retrofit package.		

Typical Pipeline Configuration (Horizontal or Vertical)



Custom Made Fire Prevention Solutions from LICO!



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