

- **Resistance probe and thermocouples**

All industrial applications

- **ATEX Exd or Exi certification**

*CE attestation type LCIE .02 ATEX6097X and 6151X
ATEX notification in LCIE 02ATEXQ8001*

- **Interchangeable measure element**

Removal without production stopping

- **Suitable on most process connection**

By screw or flange

- **With optional local indicator**

- **Application domains**

*Gas and petroleum routing
Pétrochemicals
Chemistry industry
Energetics Industry
Machinery and equipment*



Heavy-duty resistance or thermocouple temp-probes. Using in harsh environment.
Direct output or 4 ... 20 mA output.

• **Models available in ATEX version
Intrinsic safety Gaz and Dust**



FUNCTIONNALITY:

- Cast aluminium explosion-proof protection head with epoxy coating.
- Screwed or clip cap with toric joint.
- 1 or 2 nickel-plated brass cable glands output, gauge passage to explosion-proof process Ø 6 mm
- Protection : **IP 65**
- Protection mode: **without , Exd or Exi**
- Interchangeable measure element, single or duplex duplex 316L stainless steel welded pipe or mineral insulated.
- Sensitive element : RTD or thermocouple.
- Flange, screw or ceramic (high temperature) execution.
- Drilled or welded stainless steel protection thermowell, with special coating according application.

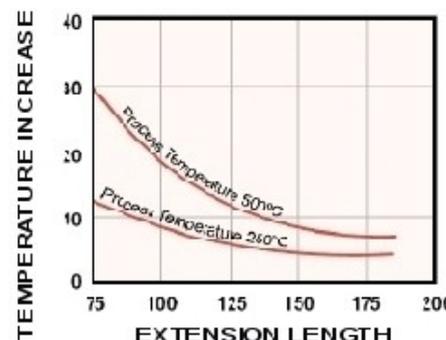
- Options :

- Measure transmitter (single or duplex)in connection head
- Maximum usage temperature. : + 1700 °C.
(according sensor and material)

To guarantee T6 temperature class, surface temperature must not exceed 85 °C in the risk zone.

• **Stainless steel or galvanized steel
extention with or without union
connector.**

**Allow connection head temperature
reduction. (Surface temperature limita-
tion in ADF and protection of inhead
embeded electronic)**



Material selection according to environment measured

Corrodent	T (°C)	C (%)	Material
Acetic Acid	100	All	Monel
Acetic Anhydride	150		Nickel
Acetone	100	All	304
Acetylene	200		304
Alcohols	100	All	304
Aluminum (Potassium or Sodium)	150	All	Hast. C
Aluminum Chloride	100	All	Hast. B
Aluminum Sulfate	100	All	316
Ammonia	100	Dry, All	304/316
Ammonium Chloride	150	50%	Monel
Ammonium Hydroxide (Ammonia, Aqua)	100	All	304/316
Ammonium Nitrate	150	All	304
Ammonium Sulfate	100	All	316
Amyl Acetate	150	All	304
Aniline	-5		Monel
Asphalt	120		304
Atmosphere (Industrial and Marine)			304
Barium Compounds		See Calcium	
Beer	20		304
Benzene (Benzol)	100		Steel
Benzoic Acid	100	All	316
Bleaching Powder	20	15%	Monel
Borax	100	All	Brass
Bordeaux Mixture	95		304
Boric Acid	200	All	316
Bromine	50	Dry	Monel
Butane	200	All	Steel
Butyl Alcohol		See Alcohols	
Butyric Acid	100		Hast. C
Calcium Bisulphite	25	All	Hast. C
Calcium Chloride	100	All	Hast. C
Calcium Hydroxide	150	20%	Hast. C
Calcium Hypochlorite		See Bleaching Powder	
Carbolic Acid		See Phenol	
Carbon Dioxide	430	Dry, All	Brass
Carbonated Beverages	100		304
Carbonated Water	100	All	304
Carbon Disulphide	95		304
Carbon Tetrachloride	50	All	Monel
Chlorine	35	Dry	Monel
Chlorine, Moist	35	All	Monel
Chloroacetic Acid	100	All	Monel
Chloroform	100	Dry	Monel
Chromic Acid	150	All	Hast. C
Cider	150	All	304
Citric Acid	100	All	Hast. C
Copper (10) Chloride	100	All	Hast. C
Copper (10) Nitrite	150	All	316
Copper (10) Sulfate	150	All	316

Corrodent	T (°C)	C (%)	Material
Copper Plating Solution (Acid)	25		304
Copper Plating Solution (Cyanide)	85		304
Corn Oil	95		304
Creosote	95	All	304
Crude Oil	150		Monel
Ethanol		See Alcohols	
Ethyl Acetate		See Lacquer Thinner	
Ethyl Chloride	260	Dry	Steel
Ethylene Glycol (Uninhibited)	100	All	304
Ethylene Oxide	25		Steel
Fatty Acids	260	All	316
Ferric Chloride	25	All	Hast. C
Ferric Sulfate	150	All	304
Fluorine, Anhydrous	35		304.SS
Formaldehyde	100	40%	316
Formic Acid	150	All	316
Freon	150		Steel
Furfural	230		316
Gasoline	150		Steel
Glucose	150		304
Glue pH 6-8	150	All	304
Glycerine	100	All	Brass
Hydrobromic Acid	100	All	Hast. C
Hydrochloric Acid (37-38%)	105	All	Hast. B
Hydrocyanic Acid	100	All	304
Hydrofluogilicic Acid	100	40%	Monel
Hydrofluoric Acid	100	60%	Monel
Hydrogen Chloride	260	Dry	304
Hydrogen Fluoride	80	Dry	Steel
Hydrogen Peroxide	50	10-100%	304
Kerosene	150	All	Steel
Lacquers & Thinners	150	All	304
Lactic Acid	150	All	316
Lime	100	All	316
Linseed Oil	25		Steel
Magnesium Chloride	100	50%	Nickel
Magnesium Hydroxide (or Oxide)	25	All	304
Magnesium Sulfate	100	40%	304
Mercuric Chloride	25	10%	Hast. C
Mercury	370	100%	Steel
Methyl Chloride	25	Dry	Steel
Methylene Chloride	100	All	304
Milk, fresh or sour	85		304
Molasses		See Glucose	
Natural Gas	20		304
Nitric Acid	25	All	304
Nitric Acid	150	All	316
Oxygen	25	All	Steel
Oleic Acid		See Fatty Acids	

Corrodent	T (°C)	C (%)	Material
Oxalic Acid	100	All	Monel
Palmitic Acid		See Fatty Acids	
Phenol	100	All	316
Phosphoric Acid	100	All	316
Photographic Bleaching	35	All	304
Potassium Compounds		See Sodium Compound	
Propane	150		Steel
Rosin	370	100%	316
Sea Water	25		Monel
Soap & Detergents	100	All	304
Sodium Bicarbonate	100	20%	316
Sodium Bisulphate	100	20%	304
Sodium Bisulphite	100	20%	304
Sodium Carbinat	100	40%	316
Sodium Chloride	150	30%	Monel
Sodium Chromate	100	All	316
Salt or Brine		See Sodium Chloride	
Sodium Cyanide	100	All	304
Sodium Hydroxide	100	30%	316
Sodium Hypochlorite	25	10%	Hast. C
Sodium Nitrate	100	40%	304
Sodium Nitrite	25	20%	316
Sodium Phosphate	100	10%	Steel
Sodium Silicate	100	10%	Steel
Sodium Sulfate	100	30%	304
Sodium Sulfide	100	30%	316
Sodium Sulfite	100	10%	316
Sodium Thiosulfate	100	All	304
Steam			304
Stearic Acid		See Fatty Acids	
Sugar Solution		See Glucose	
Sulphur	260		304
Sulphur Chloride	25	Dry	316
Sulphur Dioxide	260	Dry	316
Sulphur Trioxide	260	Dry	316
Sulfuric Acid	100	10%	316
Sulfuric Acid	100	10-90%	Hast. B
Sulfuric Acid	100	90-100%	Hast. B
Sulfurous Acid	25	20%	316
Tannic Acid	25	40%	Hast. B
Titanium Tetrachloride	25	All	316
Toluene	25		Steel
Trichloroacetic Acid	25	All	Hast. B
Trichlorethylene	150	Dry	Monel
Turpentine	25		316
Varnish	65		Steel
Zinc Chloride	100	All	Hast. B
Zinc Sulfate	100	All	316

• TEFLON Thermowell temperature: 250°C maxi

Applications: Acid galvanoplasty baths
Chemical installations



• Enameled steel

Good holding T° (>150°C)
Shock brittle
Applications: Zinc baths



• Halar Coating

Acid-resistant
160°C temperature holding
Applications: Chemistry
Metallurgy
Paper manufacturing
Air processing



• Tantalum coating

Acid-resistant and up to 300 °C base-resistant.
Applications: Nitric acid
Lactic acid
Bromine, iodine



• Hastelloy reduced extremity

Low response time and highly abrasive resistant



• Stelite coating

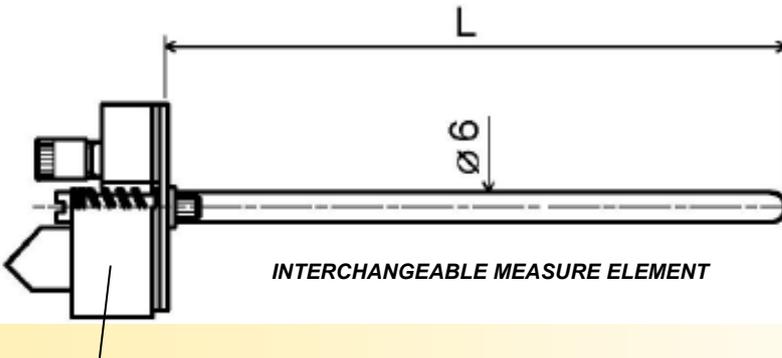
Highly abrasive resistant.
Applications: Rotary furnace
Dusty air

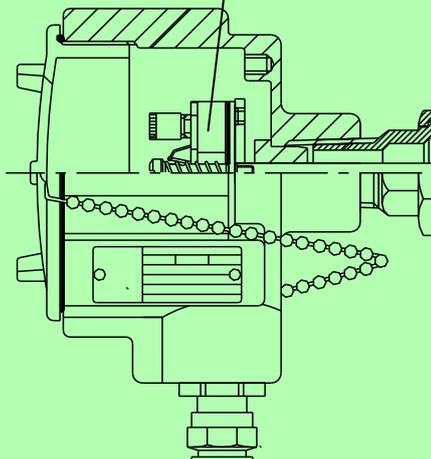
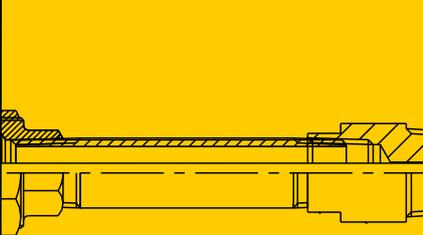
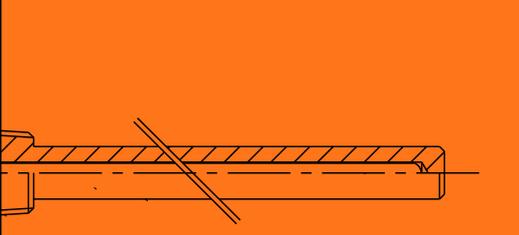


• Kanthal coating

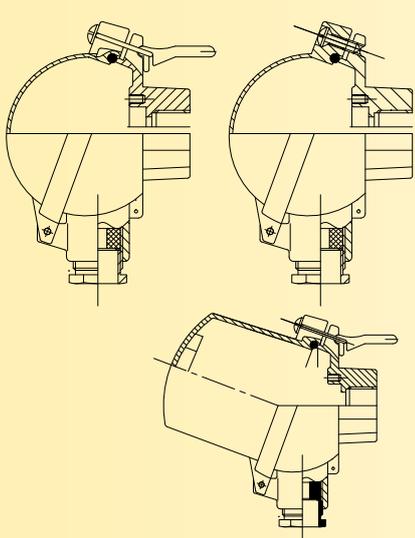
Oxide and sulphur environments resistant.
Applications: Gas furnace

PROCESS TEMPERATURE SENSOR ASSEMBLY

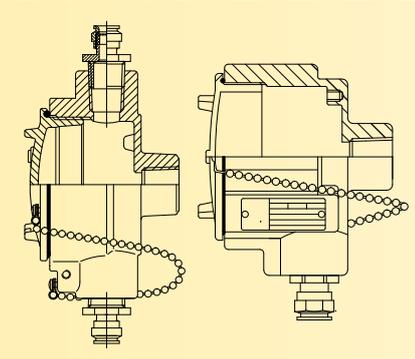
<p>ELC 4-20 mA measure transmitter</p>	 <p>INTERCHANGEABLE MEASURE ELEMENT</p>	<p>Interchangeable measure element RTD probe according to CEI 751</p> <p>Accuracy: ± 0.25 at 0°C ± 0.44 at 100°C</p> <ul style="list-style-type: none"> - single or duplex winding - accuracy tolerance on request reduced - 2, 3 or 4 wires - high temperature on request <p>THERMOCOUPLE according to CEI 584 1 and 2</p> <ul style="list-style-type: none"> - single or duplex - grounded or insulated - accuracy tolerance on request reduced - B,E,J,K,R,S,T,.....
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 <p>CONNECTION HEAD</p>	 <p>EXTENSION</p>	 <p>THERMOWELL</p> <ul style="list-style-type: none"> -Material on request: STAINLESS STEEL-STEEL-HASTELLOY-MONEL-UB6-TITANIUM etc... -Threading on request: BSPP-BSPT-BRIGGS etc ... -Liquation, Pressure test, Material certificate on request.
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Intrinsic safety ATEX or standard version

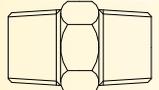


Explosion-proof ATEX version



EXTENSION

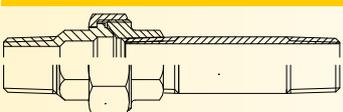
Nipple



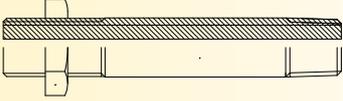
Long Nipple



Union + Nipple

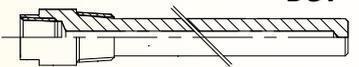


Adjustable Nipple

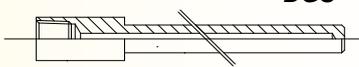


Drilled on the block

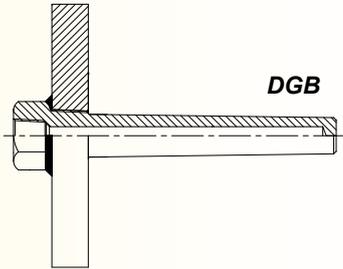
DGV to screw



DGS to weld

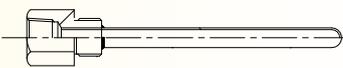


DGB with flange

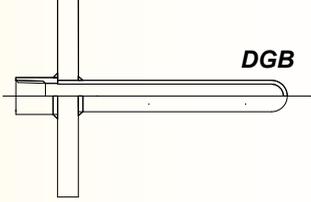


Hand welded

DGV to screw



DGB with flange



INTERCHANGEABLE MEASURE ELEMENT

Interchangeable measure element TYPE

- Straight pipe welded element**
 Standard element for industrial purpose without particular constraint (RTD or thermocouple)
 standard diameter: 6 mm
 Interaxial fixing: 33 mm for B form head
 antivibratory mounting and optimal element contact of sensor by compression springs.
- Flexible mineral insulated element**
 High performance element for harsh environment use, strong vibration constraint (RTD or thermocouple)
 reduced sensitive parts for a better response time in option.
 Interaxial fixing : - 33 mm for B form head
 - 40 mm for A form head
 antivibratory mounting and optimal element contact of sensor by compression springs.
- Beaded ceramic element**
 Very high resistive element for thermocouple.
 Interaxial fixing : - 33 mm for B form head
 - 40 mm for A form head

Straight pipe welded element



Flexible mineral insulated element



Beaded ceramic element



Interchangeable element outputs:

Transmitter output (ELC)	Terminals output (ELB)	Wires output (ELF)

Interchangeable element Identification (under the mounting plate)

Date:

SN:

ELC ELF ELB Duplex
 TCI SCI

Thermocouple			RTD		
<input type="checkbox"/> K	<input type="checkbox"/> T	<input type="checkbox"/> B	<input type="checkbox"/> Pt1K	<input type="checkbox"/> Pt100	
<input type="checkbox"/> J	<input type="checkbox"/> S	<input type="checkbox"/> R	<input type="checkbox"/> 1/10B	<input type="checkbox"/> 1/3A	
			<input type="checkbox"/> 1/5B	<input type="checkbox"/> A	
			<input type="checkbox"/> 1/3B		
			<input type="checkbox"/> B		

RTD Wiring

RTD wiring diagrams showing terminal configurations and corresponding wiring patterns:

- 2-wire RTD: terminals 1, 2; wiring 1-2
- 3-wire RTD: terminals 1, 2, 2; wiring 1-2, 2-2
- 4-wire RTD: terminals 1, 2, 3, 4; wiring 1-2, 3-4
- 4-wire RTD: terminals 1, 1, 2, 2; wiring 1-1, 2-2
- 4-wire RTD: terminals 1, 2, 3, 4, 4; wiring 1-2, 3-4

Thermocouple Wiring

Thermocouple wiring diagrams showing terminal configurations and corresponding wiring patterns:

- 2-wire Thermocouple: terminals 1-, 1+; wiring 1-1+
- 4-wire Thermocouple: terminals 1+, 1-, 2+, 2-; wiring 1+1-, 2+2-

INDUSTRIAL SENSOR FOR HARD PROCESS

- **Welded RTD probe with interchangeable measure element.**
Series : **SPi**

Order code									
SP Platinum probe	D Single (by default) or Duplex element	160 Utile length (mm)	i Stainless steel	Ti 100 extension (mm) Optional Ti stainless steel Ta steel TiM stainless steel nipple TaM steel nipple	ER If Reduced Extremity	ADF - Head type ADF DAN TVKBL Cast iron Stainless steel	RCi / Connection type RS : welded connection (by default) R0 : no connection RCi : sliding stainless steel connection RCa : sliding steel connection BS : welded flange BC : sliding flange	ELB Interchangeable element type ELB : output on screw terminal ELF : output on wires ELC : output on embedded converter Type to be specified CAL40;CNL40;	9 external sheath diameter on request 9mm (by default) optional



- **Welded RTD probe without interchangeable measure element.**
(direct mounting) Series : **SP1006i**

Order code									
SP1006 Platinum probe	D Single (by default) or Duplex element	160 Utile length (mm)	i Stainless steel	Ti 100 extension (mm) Optional Ti stainless steel Ta steel TiM stainless steel nipple TaM steel nipple	ER If Reduced Extremity	ADF - Head type ADF DAN TVKBL Cast iron Stainless	RCi / Connection type RS : welded connection (by default) R0 : no connection RCi : sliding stainless steel RCa : sliding steel connection BS : welded flange BC : sliding flange	SB Interchangeable element type ELB : output on screw terminal ELF : output on wires ELC : output on embedded converter Type to be specified CAL40;CNL40;	9 external sheath diameter on request 9mm (by default) optional



INDUSTRIAL SENSOR FOR HARD PROCESS

- RTD probe with interchangeable measure element, mounting on wells.
Series : **ELB SP and SC**

Order code									
ELB	SP	D	160	i	Ti 100	RUi	ADF /	6	ER
Interchangeable element type	Platinum	Single (by or Duplex element	utile length (mm)	Stainless	extension (mm) Optional Ti stainless steel Ta steel TIM stainless steel nipple TaM steel nipple	Connection type RUi: stainless stell nipple RUa: steel nippel optional	Head type ADF DAN TVKBL Cast iron Stainless steel	interchangeable element diameter on request 6mm (by default) optional	if reduced extremity
ELB: output on screw termi- ELF: output on wires ELC: output on embedded converter Type to be specified CAL40;CNL40;									

• ELB SP Ti



• ELB SP Ti RUi



- **SCi D Ti ADF**
Details according the chapter on mineral insulated probe.



- RTD probe with interchangeable measure element and drilled wells.
Series : **SPi DGx**

Order code										
SP	D	200	i	Ti 100	RUi	DGB	ER	ADF /	ELB	6
Platinum	Single (by or Duplex element	Utile length (mm)	Stainless	extension (mm) Optional Ti stainless steel Ta steel TIM stainless steel TaM steel nipple	Conection type RUi: stainless stell RUa: steel nippel optional	DGB : flange well DGF : threaded well DGS : welded weld	if reduced extremity	Head type ADF DAN TVKBL Cast iron Stainless steel	Interchangeable element type ELB: output on screw terminal ELF: output on wires ELC: output on embedded converter Type to be specified CAL40;CNL40;	interchangeable element diameter on request 6mm (by default) optional

• SP TA RUA DGF



• SP TI DGB



INDUSTRIAL SENSOR FOR HARD PROCESS

- **Welded thermocouple with interchangeable measure element.**
Series : **Cxi**

Order code											
CK	D	160	i	Ti 100	ER	ADF	-	RCi	/	ELB	9
CK : K couple CJ : J couple CS : S couple	Single (by default) Or Duplex element	Utile length (mm)	Stainless steel	extension (mm) Optional Ti stainless steel Ta steel TIM stainless nipple TaM steel nipple	if reduced extremity	head type ADF DAN TVKBL Cast iron Stainless		Connection type RS : welded connection (by default) R0 : no connection RCi : stainless steel sliding connection RCa : steel sliding connection BS : welded flange BC : sliding flange		Interchangeable element type ELB : output on srew-terminal ELF : output on wires ELC : output on embeded converter Type to be specified CAL40;CNL40;	external sheath diameter on request 9mm (by default) optional



- **Welded thermocouple without interchangeable measure element.**
(direct mounting) Series : **Cx1006i**

Order code											
CK1006	D	160	i	Ti 100	ER	ADF	-	RCi	/	SB	9
CK: 1006 K couple CJ: 1006 J couple CS: 1006 S couple	Single (by default) Or Duplex element	Utile length (mm)	Stainless steel	extension (mm) Optional Ti stainless steel Ta steel TIM stainless nipple TaM steel nipple	if reduced extremity	head type ADF DAN TVKBL Cast iron		Connection type RS : welded connection (by R0 : no connection RCi : stainless steel sliding connection RCa : steel sliding connection BS : welded flange BC : sliding flange		Interchangeable element type ELB : output on srew-terminal ELF : output on wires ELC : output on embeded converter Type to be specified CAL40;CNL40;	external sheath diameter on request 9mm (by default) optional



INDUSTRIAL SENSOR FOR HARD PROCESS

- Thermocouple with interchangeable measure element, mounting on wells.
Series : **ELB Cx and TCx**

Order code									
ELB	CK	D	160	i	Ti 100	RUi	ADF /	6	ER
interchangeable element type ELB: output on screw-terminal ELF: output on wires ELC: output on embedded converter Type to be specified CAL40;CNL40;	CK K couple CJ J couple CS S couple	Single (by default) Or Duplex element	Utile length (mm)	Stainless steel	extension (mm) Optional Ti stainless steel Ta steel TiM stainless nipple TaM steel nipple	Connection type RUi : stainless steel nipple RUa : steel nipple	head type ADF DAN TVKBL Cast iron Stainless steel	Interchangeable element diameter On request 6 mm (by default) Optional	If reduced extremity

• ELB CK Ti



• ELB CK Ti RUi



• TCKi D Ti ADF

See the chapter on mineral insulated thermocouple.



- Thermocouple with interchangeable measure element and drilled wells.
Series : **Cxi DG**

Order code											
CK	D	200	i	Ti 100	RUi	DGB	ER	ADF /	ELB	6	
CK K CJ J couple CS S couple	Single (by default) Or Duplex element	Utile length (mm)	Stainless	extension (mm) Optional Ti stainless steel Ta steel TiM stainless nipple TaM steel nipple	Connection type RUi : stainless steel nipple RUa : steel nipple	DGB : flange well DGF : threaded well DGS : welded well	If reduced extremity	head type ADF DAN TVKBL Cast iron Stainless steel	interchangeable element ELB: output on screw-terminal ELF: output on wires ELC: output on embedded converter Type to be specified CAL40;CNL40;	Interchangeable element diameter On request 6 mm (by default) Optional	

• CK TA RUA DGF ADF

K thermocouple, steel extension, steel union connection, threaded thermowell.



• CK Ti DGB ADF

K thermocouple, stainless steel extension, flange thermowell.

