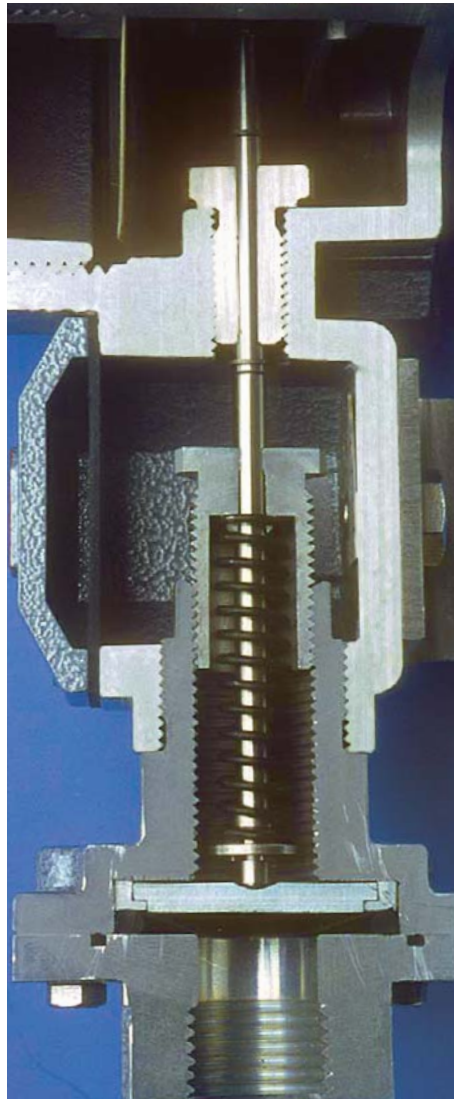


Pressure & Temperature Switches

The "User Friendly Generation"
General Bulletin



TEMPERATURE SWITCHES

BETA TEMPERATURE SWITCH

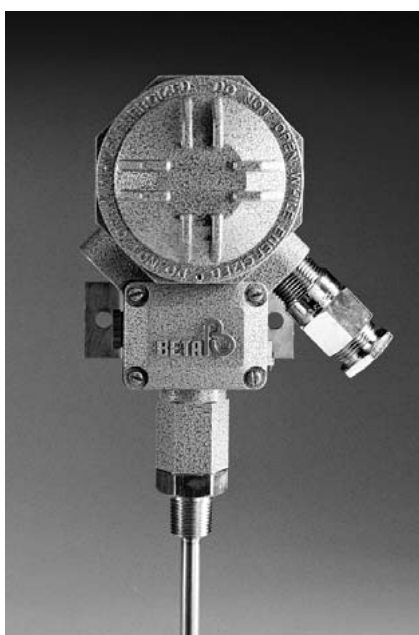


The BETA Temperature Switch is a pressure switch incorporating a sealed 2-phase (vapour/liquid) temperature sensor. When the temperature of the process increases, the vapour pressure of the liquid also increases. If this vapour pressure exceeds the pre-adjusted setpoint of the "pressure" switch, it will actuate the switching element.

- Available as direct- or capillary mount sensor.
- In weathertight and explosion proof execution (ATEX approved).
- Fits into most standard thermowells.
- No need for ambient temperature compensation (no setpoint shift).
- Excellent repeatability/small dead-band.
- All 316 stainless steel sensor and capillary (SS armoured).
- Filling system of gas/liquid acc. to SAMA-Class II C.

"C"-Series with Capillary type sensor

EXPLOSION-PROOF TEMPERATURE SWITCH



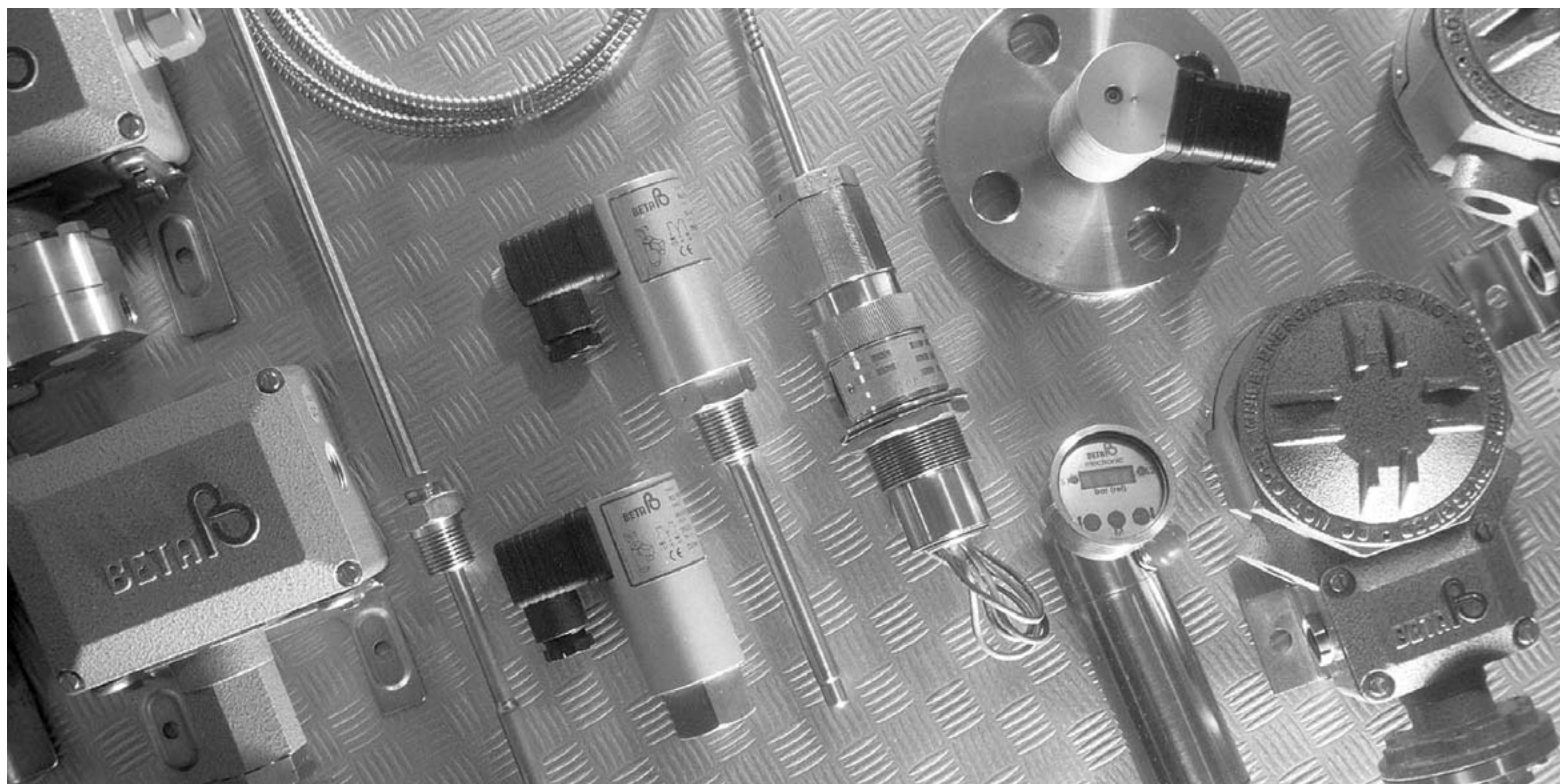
ATEX approved up to the highest classification
With the "M"-, "V"-, "W"- and "Z"-enclosures
the BETA Temperature Switch is approved by ATEX,
standard NEN EN 50 014 / 018 / 019 / 020 / 281

"W"-Series with Direct mount type sensor

TEMPERATURE SWITCHES

1 ENCLOSURE

C1 - T548 - D00 - S0 - Y - X2



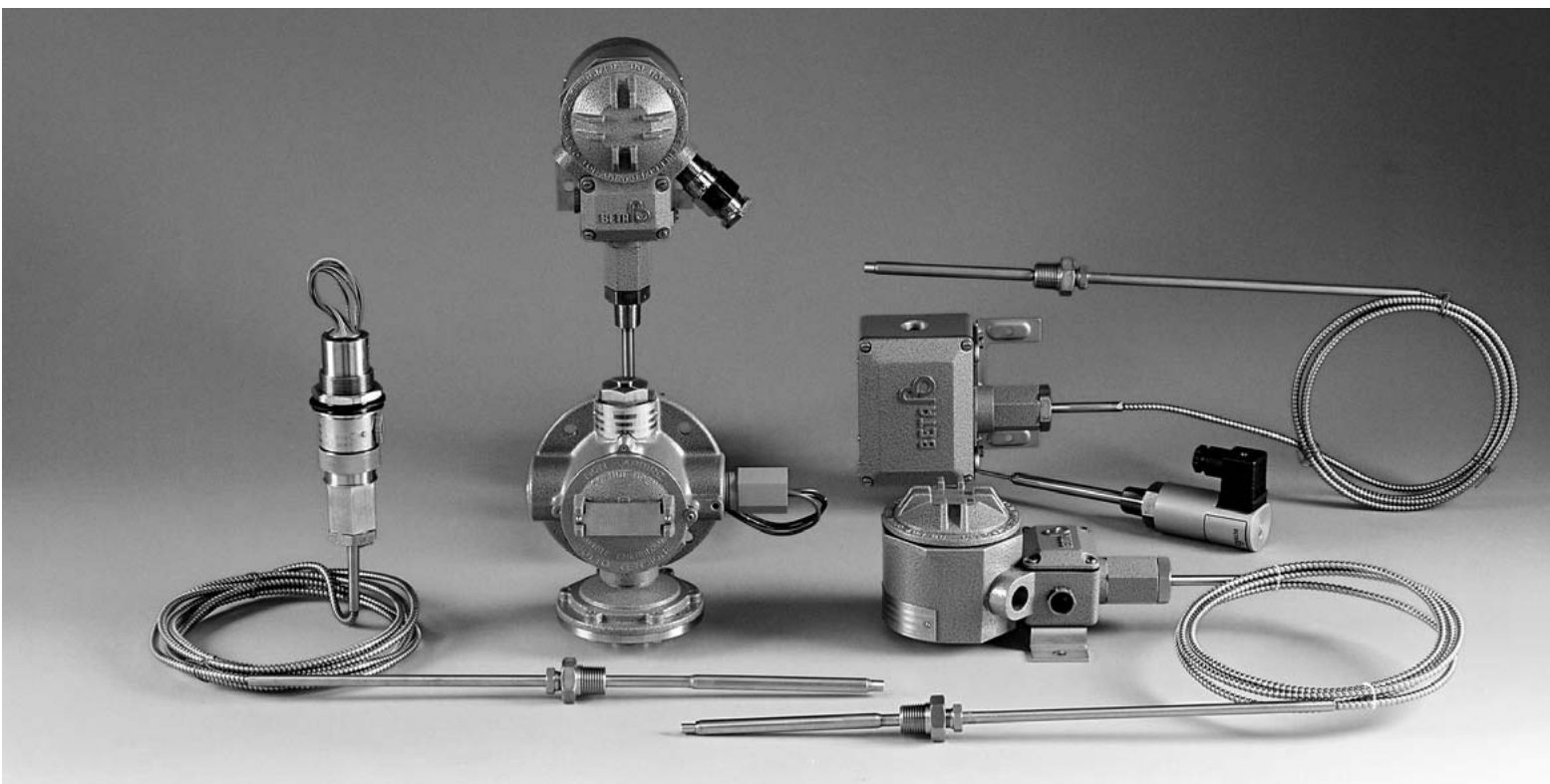
ENCLOSURE CODE	CLASSIFICATION	ELECTRIAL COND. CONN.	MATERIAL	EARTH TERMINAL	TERM. BLOCK
B2	Weathertight Miniature (IP65)	Hirschmann Plug conn. DIN 43650-A	Aluminium	Standard (Via plug)	Not applicable
C1	Weathertight (IP66)	PG 13,5	Aluminium	Standard (Internal)	Standard
C2		M20 x 1,5			
C3		3/4" NPT (F)			
C4		1/2" NPT (F)			
C8		M20 x 1,5	SS 316 1)		
M0	Miniature Explosion-proof EEx ed IIC T6 (IP65) 02 ATEX 2189X	Wire leads (0,5m)	SS 316 1)	Standard (Wire lead 0,5m)	Not applicable
W3	Explosion-proof EEx d IIC T6 (IP65) 02 ATEX 2186X	3/4" NPT (F)	Aluminium	Standard In- & External	Standard
V5		M20 x 1,5	Cast Iron 1)		
Z1	Explosion-proof EEx ed IIC T6 (IP65) 02 ATEX 2187X	PG 13,5	Aluminium	Standard In- & External	Standard EEx e
Z2		M20 x 1,5			
Z3		3/4" NPT (F)			
Z4		1/2" NPT (F)			
Z8		M20 x 1,5	SS 316 1)		

1) See separate brochure BETAMINI for Ranges, Process Connections etc.
Enclosure "B2" only available with Range codes P...H, P...F and V...H.

TEMPERATURE SWITCHES

2 RANGES

C1 - **T548H** - D00 - S0 - Y - X2



RANGE CODE	ADJUSTABLE RANGE	MAX. DEADBAND ³⁾	MAX. TEMPERATURE	PROOF TEMPERATURE	MAX. PROCESS PRESSURE
T 528 H	- 40 / + 40 °C	3 °C	+ 125 °C	+ 200 °C	175 bar
T 548 H	0 / + 95 °C		+ 180 °C	+ 200 °C	
T 568 H ¹⁾	+ 60 / + 180 °C		+ 300 °C	+ 350 °C	
T 588 H ²⁾	+ 160 / + 300 °C	3,5°C	+ 400 °C	+ 450 °C	

1) In case process temperature > 140 °C, Direct mount sensing bulb is not recommended.

2) Not in combination with Direct mount sensing bulb.

3) For deadband calculation in combination with "SR"- and "SP"- micro, Consult Factory.

TEMPERATURE SWITCHES

3 SENSOR BULB

C1 - T548H - **D00** - S0 - K1 - Y - X2

PROCESS CONNECTION	SENSOR CODE	TYPE OF TEMPERATURE SENSING BULB.	
1/2"NPT (M)	D00	Direct mount.	128 mm length.
	D02		225 mm length.
	C02	Capillary mount.	2 m. capillary length.
	C03		3 m. capillary length.
	C05		5 m. capillary length.
	C10		10 m. capillary length.
	CXX		Special capillary length.

All SS 316 stainless steel sensor, capillary (SS 304 armoured) and compression fitting.

1) Not in combination with range T588H (+160/+300 °C), not recommended with T568H in case of process temperature >140 °C.

2) Length of capillary should be specified, consult your BETA Switch Representative.

4 DIAPHRAGM / O-RING

C1 - T548H - D00 - **S0** - K1 - Y - X2

All temperature switches have "S0" welded diaphragm.

5 SWITCHING ELEMENTS

C1 - T548H - D00 - S0 - **K1** - Y - X2

The standard Switching elements are: "K1" for C -, V - and W - enclosures

"M1" for M - enclosures

"R1" for Z - enclosures

Deadband Multiplier microswitch element same as for pressure switch.

For other available switching elements / and more technical information see **5** on pages 11 and 12.

TEMPERATURE SWITCHES

6 OPTIONS

C1 - T548H - D00 - S0 - K1 - **Y** - X2

OPTION CODE	DESCRIPTION
C	Cable gland (weather proof IP65, EExe, EExi or EExd in acc. with classification of enclosure).
I	Intrinsically safe application (EEx)i. Only on "C"-Series.
S	Stainless steel Tag-clipped to enclosure. Tag has 3 lines (20 characters per line).
V	Fungicidal varnish coating (internal).
Y	Epoxy coating of enclosure and sensorbody (external).

Tag no. space on nameplates __ added free of charge

Standard nameplate C.-Series : 2 lines with 18 characters or spaces + 1 line with 14 characters or spaces
M.-, V.- and W.-Series : 1 line with 18 characters or spaces
Z.-Series : 1 line with 14 characters or spaces

7 SPECIALS

C1 - T548H - D00 - S0 - K1 - Y - **X2**

We can incorporate numerous specials to meet your requirements. These special requirements are indicated by the letter X in the model code or at the end of the model number, followed by a figure showing the number of specials.

Example:

"X1" at the end of model reference means one special.

"X2" at the end of model reference means two specials have been incorporated.

Details of each special must always be specified completely on enquiries and orders.

BETA EXPLOSIONPROOF SWITCHES

The most complete range of Explosion-proof switches !

The BETA Pressure & Temperature Switch programme offers you the most complete range of Explosion-proof switches for virtually every industry and application.

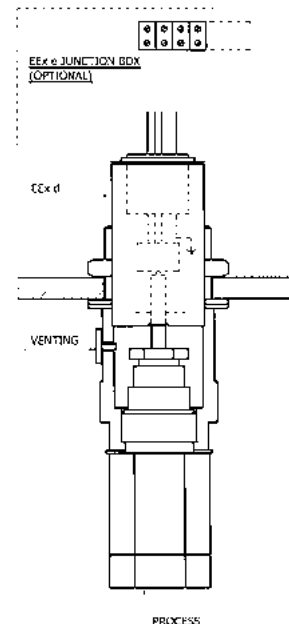
The "BETA Switch", well known as a safety instrument, adds an extra dimension to industrial safety by having the switches approved up to the highest classification EEx d IIC T6/T5 by KEMA 02ATEX.

- Quality product (Q.A. acc. to ISO 9001-2000).
- "User Friendly" Modifications – Standard features incorporated for your safety.
- Only 3 process wetted parts – Check with us before considering expensive Chemical Seals.
- Very high overrange pressures – No setpoint shift.
- "Designed-in" reliability – Designed for your application.
- Wetted parts to NACE standard available.

M-Series (Ex II 2G EEx ed IIC T6)



"MINEX"-Series



"M"-Series (Ex II 2G EEx ed IIC T6)

The stainless steel Mini Explosion-proof switch "M"-series is specially designed for Offshore application.

ATEX approved: KEMA 02 ATEX 2189 X (EN 50 014 / 018 / 019)

(-20 °C to +40 °C / T6)

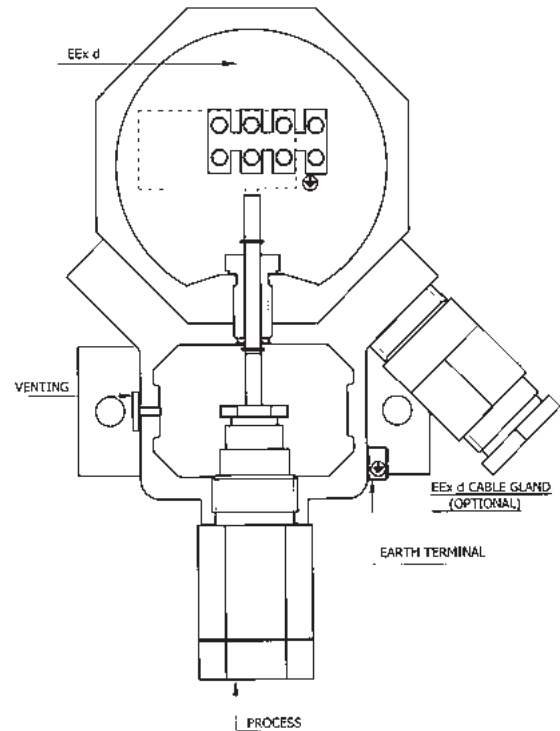
- Available as Pressure-, Hydraulic-, Vacuum-, Differential Pressure (only "D...L" and "D...H"-serie) and Temperature switch.
- All ranges (except for P301L and P302L) available.
- S.P.D.T. and D.P.D.T. execution available.
- Highest overrange protection.
- Combined, easy installation in (optional) EExe box (Min. installation space).
- Easy field adjustment.

BETA EXPLOSIONPROOF SWITCHES

V- and W-Series (Ex II 2G/D EEx d IIC T6/T5)*



"W"-Series



"W"-Series (Ex II 2G/D EEx d IIC T6/T5)*

The "V" and "W"-series are a worldwide best seller.

With its separate adjustment compartment enabling easy field calibration.

Due to the wide selection of materials and components parts, virtually all applications can be covered.

ATEX approved: KEMA 02 ATEX 2186 X (EN 50 014 / 018 / 281)

* For Gas : Ex II 2G EEx d IIC T6 (-40 °C to +40 °C)

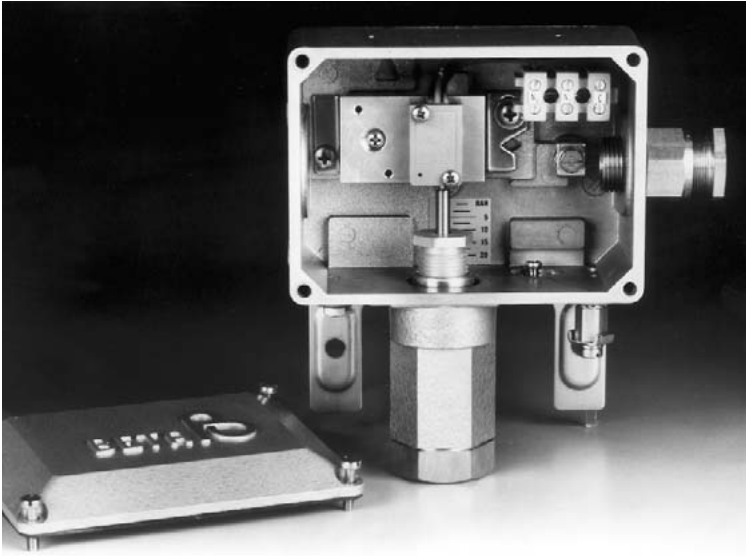
: Ex II 2G EEx d IIC T5 (-40 °C to +80 °C)

For Dust : Ex II 2D T 100 °C

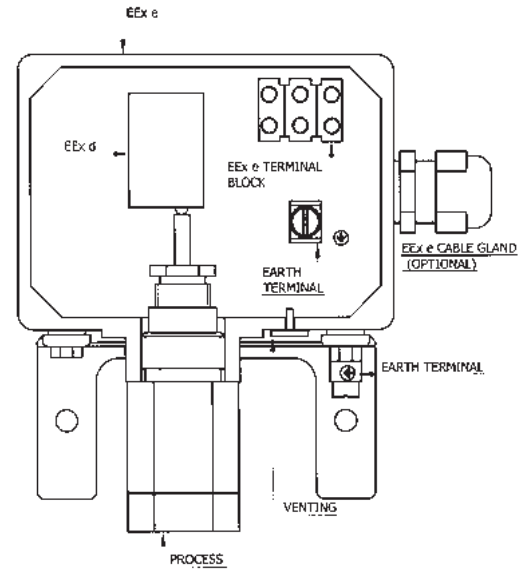
- In aluminium ("W"-type) or cast iron ("V"-type).
- With separate adjustment -compartment.
- Available as Pressure-, Hydraulic-, Vacuum-, Differential pressure- and Temperature switch.
- All ranges available.
- Highest overrange protection.
- Excellent for field mounting. (2" Pipe mounting bracket as accessories available)
- Heavy duty execution.

BETA EXPLOSIONPROOF SWITCHES

Z-Series (Ex II 2G EEx ed IIC T6)



"Z"-Series



"Z"-Series (Ex II 2G EEx ed IIC T6)

The "Z"-Series, the economical explosion-proof switch.

ATEX approved: KEMA 02 ATEX 2187X (EN 50 014 / 018 / 019)

(-40 °C to +65 °C / T6)

- Available in Aluminium or SS 316 (For offshore applications).
- Available as Pressure-, Hydraulic-, Vacuum-, Differential pressure (not on "D...D"-serie) and Temperature switch.
- All ranges (except for P301L and P302L) available.
- Limited to "R1" switching element. (S.P.D.T. only).
- High overrange.
- Simple and quick electrical connection.

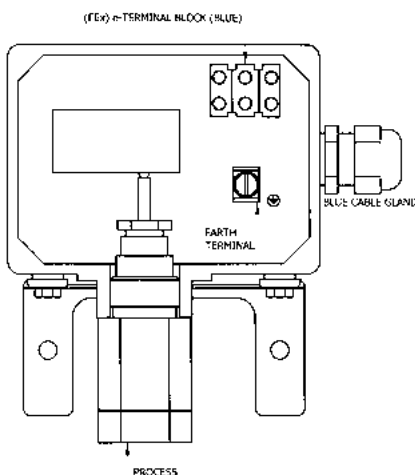
BETA EXPLOSIONPROOF SWITCHES - INTRINSIC SAFE



"C"-Series

BETA "C" - Series with option "I" for intrinsically safe systems

BETA has its "C"-Series switches with option "I" certified by KEMA acc. to NEN EN IEC 60079-0 / EN 50 020 for **Ex II 1G/D EEx ia IIC T6 T 85 °C** or **Ex II 2G/D EEx ib IIC T6 T 85 °C**.



ATEX approved: KEMA 02 ATEX 1190X
(EN 50 014 / 020 / 281 / 284)
(-40 to +80°C)

This option includes all required installation materials like a blue coloured EEx e approved terminal block and the - (standard) earth - terminal.

Option "I" in accordance with art. 9 of the ATEX Directive 94/9/EC (EEx ia/ib IIC) which are related to insulation, clearance, creepage distances and enclosure type whereby a max. peak voltage of 90 V / 3,3A is allowed.

"C"-Series (Intrinsically safe application EEx i).

Please note following:

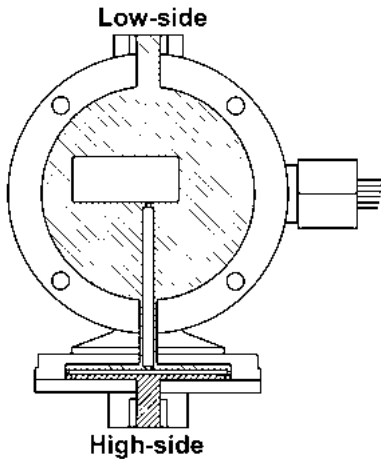
When switch is ordered with cable gland (option "C") we will automatically install the EEx i blue cable gland (see also drawing). Due to low current used in I.S. systems we recommend the use of switching elements with gold contacts (code "G1", "O1" or "Y1"). It is not mandatory.

BETA DIFFERENTIAL PRESSURE SWITCHES

The "USER FRIENDLY" generation of BETA switches offers you a complete range of Differential Pressure Switches

VERY LOW RANGE

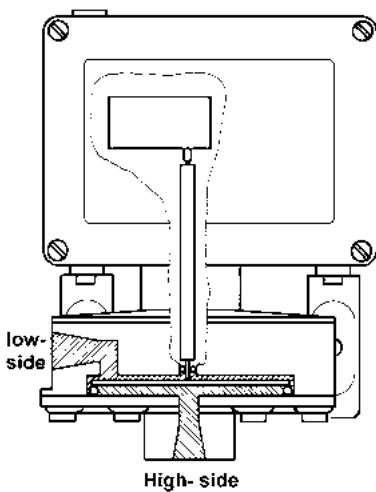
"P301L - .. - D"-SERIE



- Principle:** As pressure switch in sealed. Aluminium enclosure.
- Range:** 2-15 mbar.
- Max. Static Pressure:** 10 bar.
- Application:** Dry clean air or inert gases (Low side only).
- Execution:** Weathertight IP 66. (G3 enclosure only) with potted wire leads.

LOW RANGE

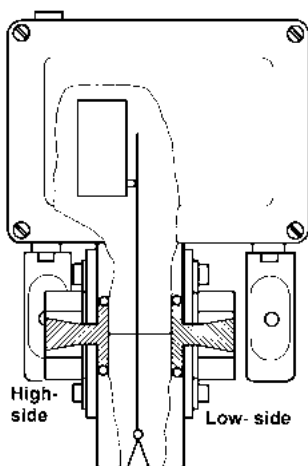
"D... L"-SERIE



- Principle:** As pressure switch, with sealed Aluminium sensorbody (optional in SS 316).
- Range:** 12 - 1250 mbar.
- Max. Static Pressure:** 30 bar.
- Application:** Dry clean air, inert gases and clean non-corr. fluids and gases.
- Execution:** Weathertight IP 66 (C-enclosure).
 EEx i a/b (C-enclosure + option I).
 EEx ed (M-enclosure).
 EEx d (V- and W-enclosure).
 EEx ed (Z-enclosure).

GENERAL PURPOSE

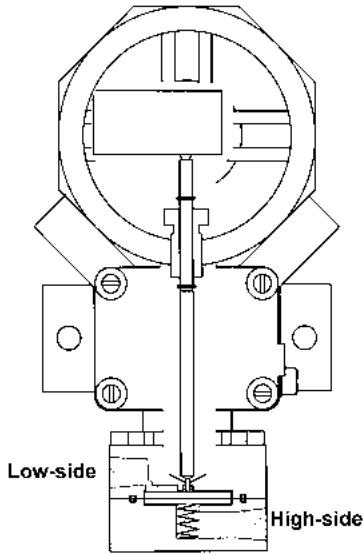
"D... M"-SERIE



- Principle:** 2 x piston/diaphragm type with separate sealing for High and Low.
- Range:** 0,3 – 70 bar.
- Max. Static Pressure:** 140 bar.
- Application:** All fluids & gases provided acceptable choice of wetted parts is within our range.
- Execution:** Weathertight IP 66 (C-enclosure),
 EEx i a/b (C-enclosure + option I),
 EEx ed (Z-enclosure),
 EEx d (V- and W-enclosure).

BETA DIFFERENTIAL PRESSURE SWITCHES

LOW RANGE / HIGH STATIC "D... H"-SERIE



Principle:

Piston type with single diaphragm, sealed in SS 316 sensorbody.

Range:

80 – 3450 mbar.

Max. Static Pressure:

200 bar.

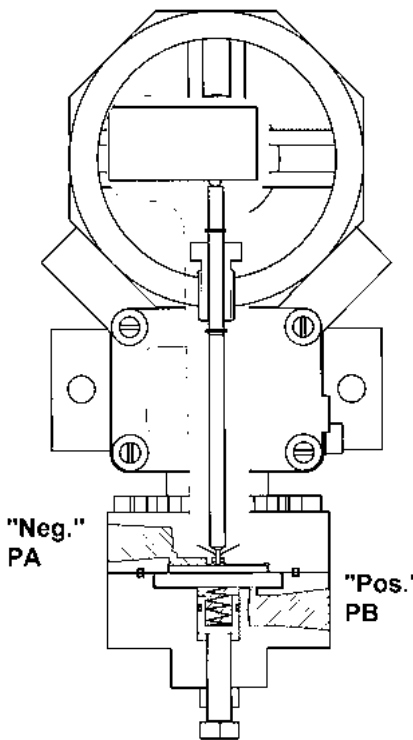
Application:

Clean fluids and gases*, provided acceptable choice of wetted parts is within our range.

Execution:

Weathertight IP 66 (C-enclosure),
 EEx i a/b (C-enclosure + option I),
 EEx ed (M-enclosure),
 EEx d (V- and W-enclosure),
 EEx ed (Z-enclosure).

LOW RANGE / HIGH STATIC "D... D"-SERIE



Bi-Directional Differential Pressure Switch

Principle:

Piston type with single diaphragm, sealed in SS 316 sensorbody.

Range:

0,1 – 3,5 bar

Max. Static Pressure:

200 bar

Application:

Clean fluids and gases*, provided acceptable choice of wetted parts is within our range.

Typical application:

Natural gas pipelines, safe guarding high pressure pipeline valves against being opened at too high differential pressure from either side.

Execution:

Weathertight IP 66 (C-enclosure),
 EEx i a/b (C-enclosure + option I),
 EEx d (V- and W-enclosure).

* With "clean fluids and gases", we mean free of particles > 40µm, filters (not included) are recommended in case of contaminated medium. A differential pressure switch is a "dead end" instrument, so a simple filter with fine mesh will do.

BETA PRESSURE & TEMP. SWITCH - CERTIFICATIONS

EXPLOSIONPROOF CERTIFICATIONS

- ATEX – EEx d IIC T6 for V- and W-Series.
- ATEX – EEx ed IIC T6 for M- and Z-Series.
- ATEX – EEx ia/ib IIC T6 for C-Series (intrinsically safe).
- ATEX – EEx II 2 G c T6 for Air Relay SA/SB.

And more available for different countries like Japan, Korea, South-Africa, Australia etc..

MARINE APPROVALS

- Rina for B- and C-Series
- G.L. for C-Series

FOR GAS, FUEL, WATER AND STEAM

- DVGW - C-, V- and W-Series
- DGWK - C-, V- and W-Series
- TÜV 100/1 - C-, V-, W- and Z-Series

More certificates/reports are available. Please consult your BETA Switch Representative.



DIMENSIONS

"C."- & "Z."-Series: Pressure & Vacuum

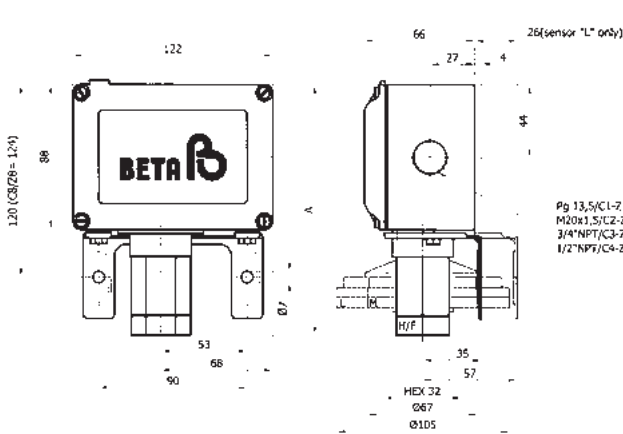
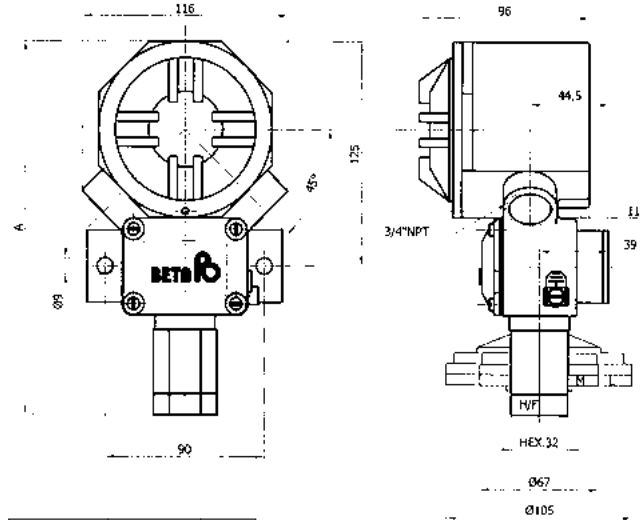


Fig. 13,5/C1-Z1
M20x1,5/U2-Z2
3/4"NPT/C3-Z3
1/2"NPT/C4-Z4

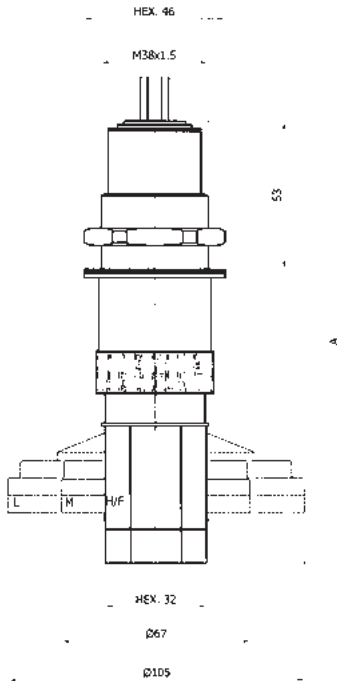
TYPE	SENSOR	A
PRESSURE SWITCH	L	152
	M	152
	H	152
	F	160
VACUUM SWITCH	L	173
	M	173
	H	164

"W."-Series: Pressure & Vacuum



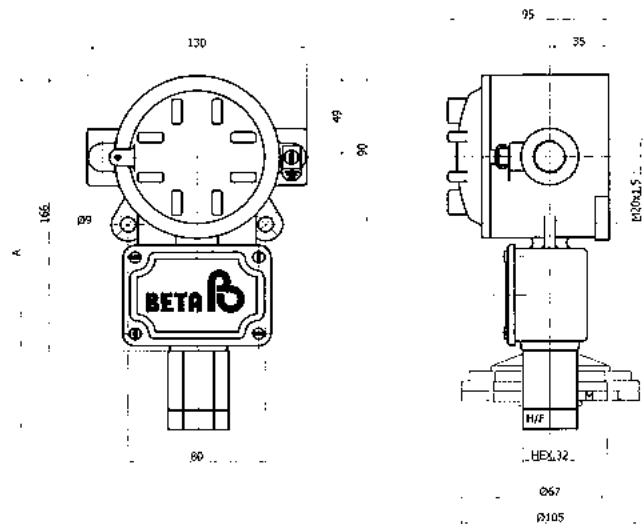
TYPE	SENSOR	A
PRESSURE SWITCH	L	207
	M	207
	H	207
	F	215
VACUUM SWITCH	L	228
	M	228
	H	222

"M0"-Series: Pressure & Vacuum



TYPE	SENSOR	A
PRESSURE SWITCH	L	155
	M	155
	H	155
	F	163
VACUUM SWITCH	L	175
	M	175
	H	169

"V5"-Series: Pressure & Vacuum

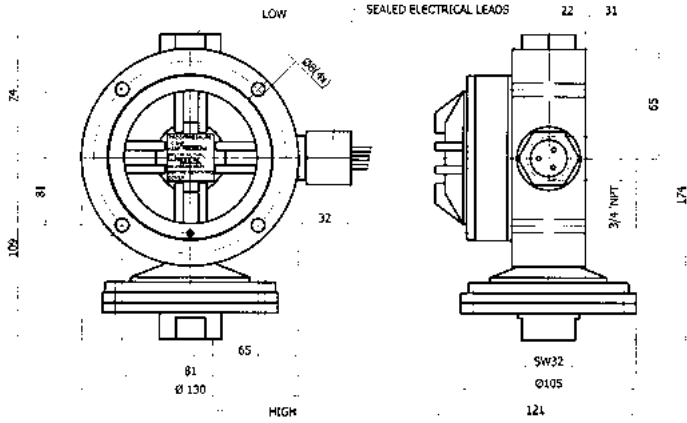


TYPE	SENSOR	A
PRESSURE SWITCH	L	213
	M	213
	H	213
	F	221
VACUUM SWITCH	L	234
	M	234
	H	228

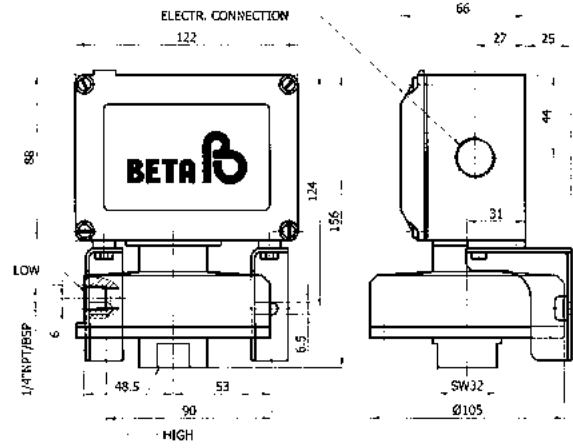
Dimensions given here are for 1/4" and 1/2" (F) process connections: For "H"-sensor with 1/2" (F) add 4 mm on "A" dimension. Sizes in mm, tolerances $\pm 1,5$ mm.

DIMENSIONS

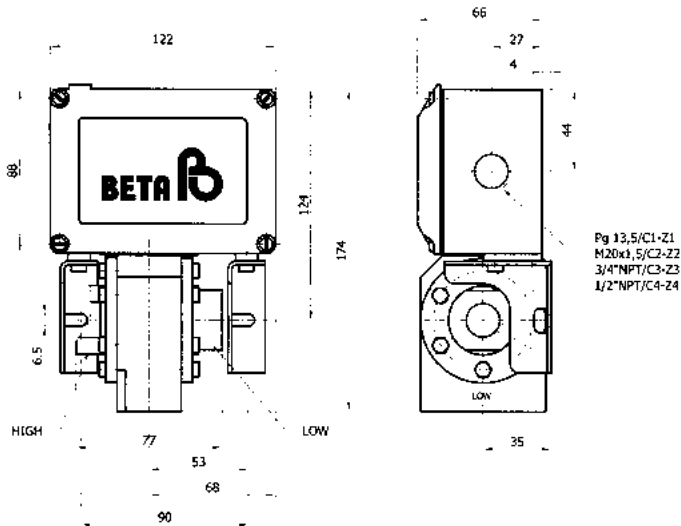
"G3"-Type: Low Differential



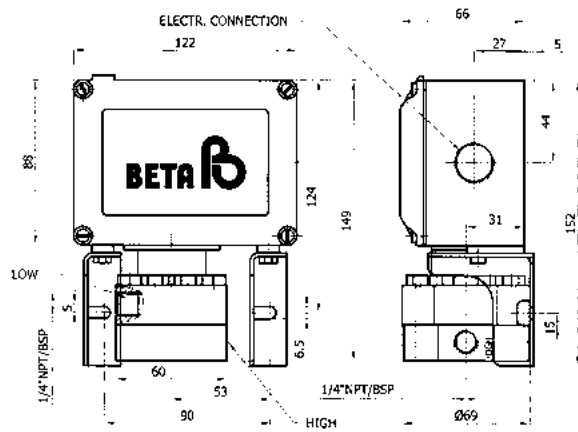
"C."- & "Z."-Series: Differential "D...L"



"C."- & "Z."-Series: Differential "D...M"



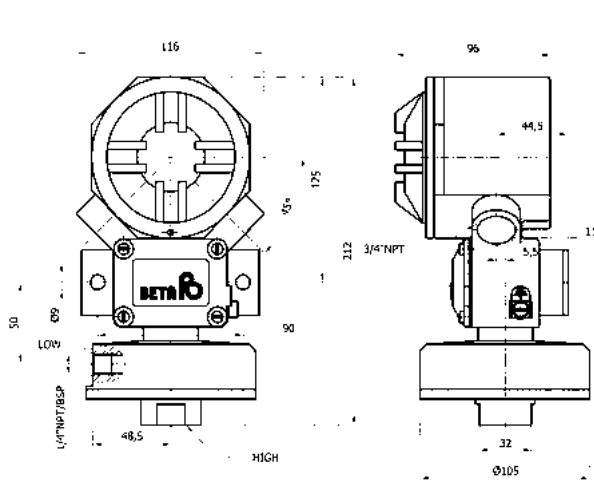
"C."- & "Z."-Series: Differential "D...H"



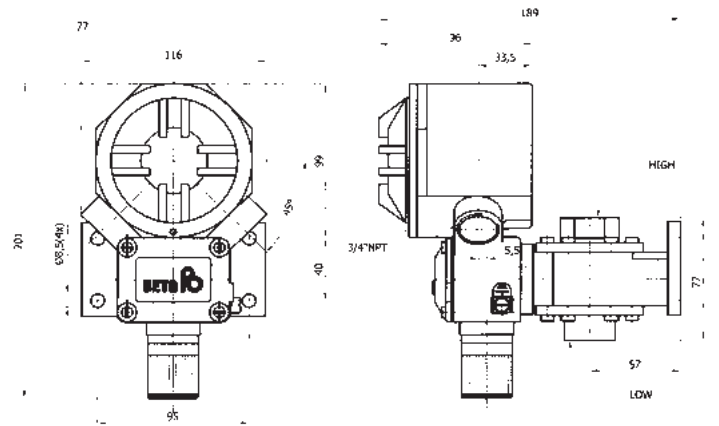
Pg 13,5/C1-Z1
M20x1,5/C2-Z2
3/4" NPT/C3-Z3
1/2" NPT/C4-Z4

DIMENSIONS

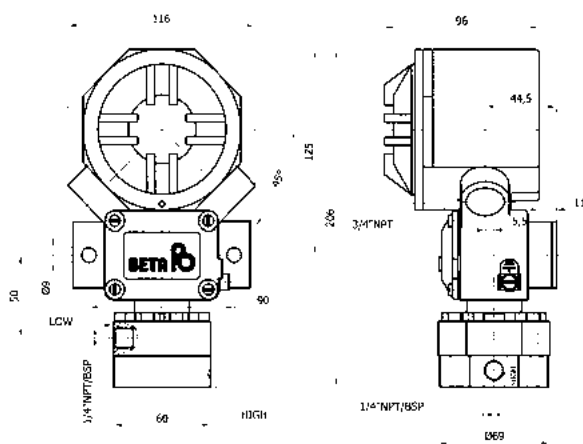
"W."-Series: Differential "D...L"



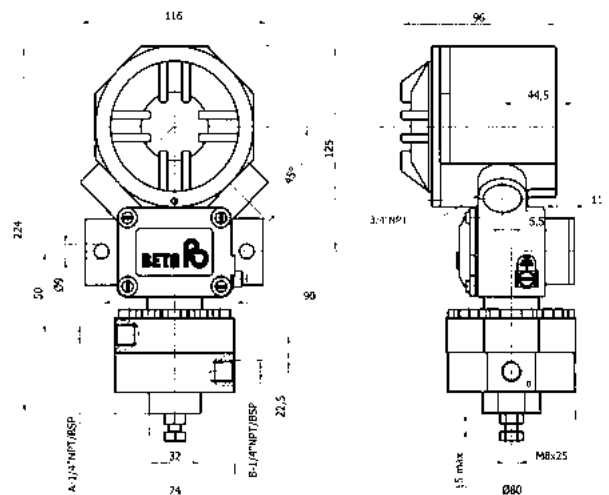
"W."-Series: Differential "D...M"



"W."-Series Differential "D...H"



"W."-Series: Differential "D...D"

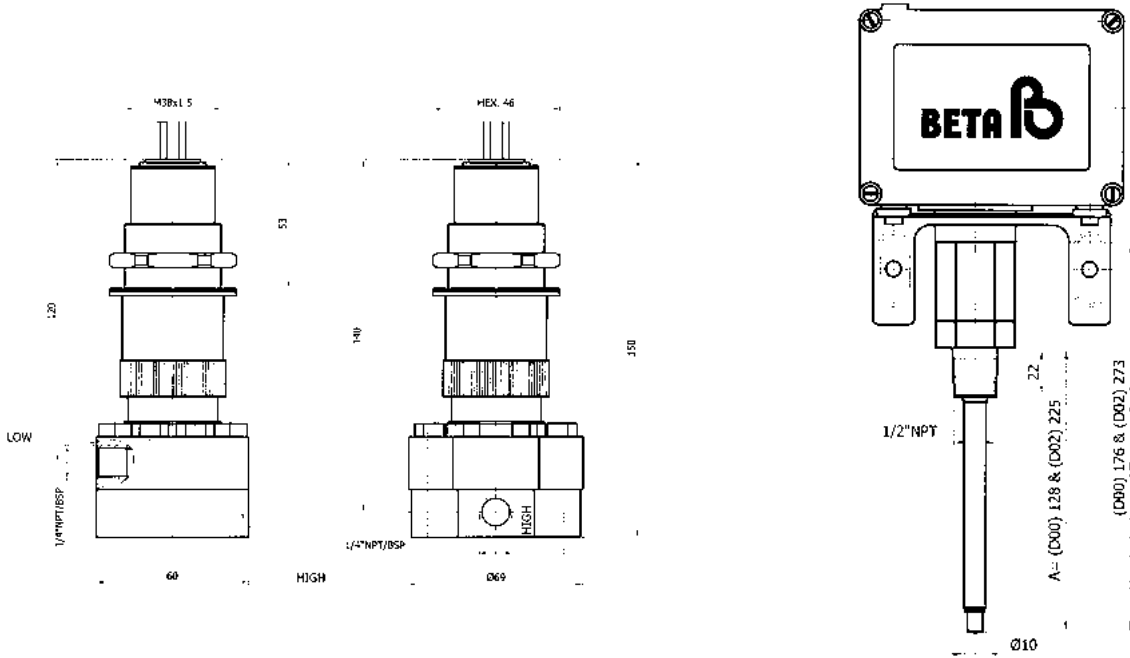


Dimensions given here are for 1/4" and 1/2" (F) process connections: For "H"-sensor with 1/2" (F) add 4 mm on "A" dimension. Sizes in mm, tolerances $\pm 1,5$ mm.

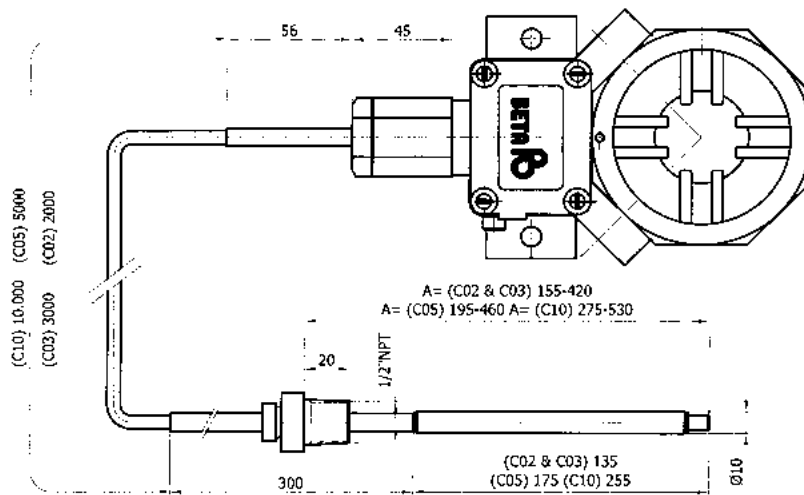
DIMENSIONS

"MO"-Series: Differential "D...H"

"C."- & "Z."-Series: Temperature "Direct" mount



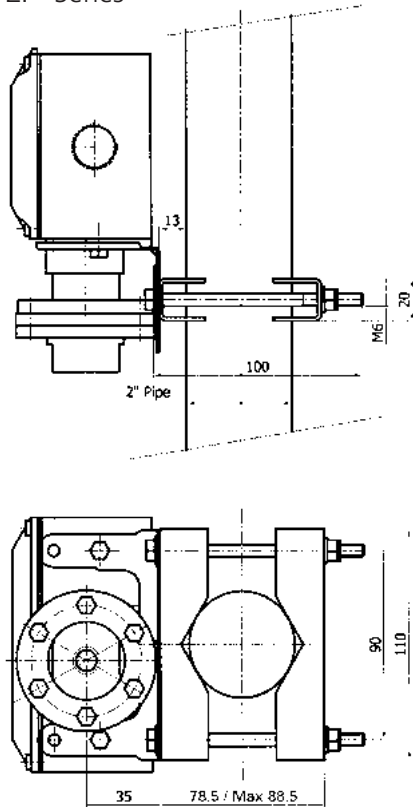
"W."-Series: Temperature "Capillary" mount



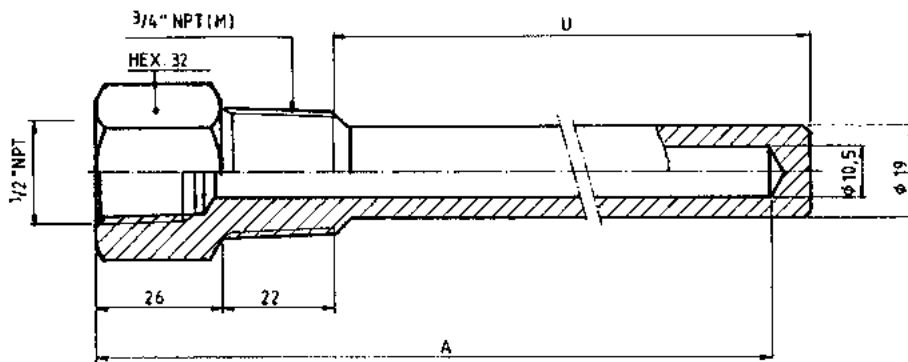
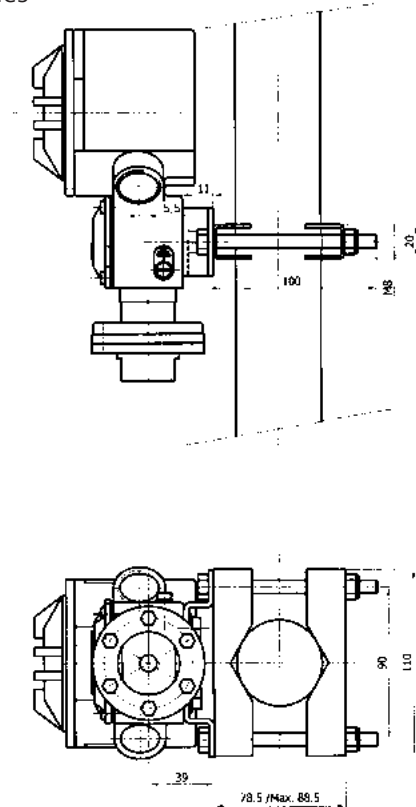
ACCESSORIES

2" Pipe mount bracket (SS 304)

"C."- & "Z."-Series



"W."-Series



Standard BETA Thermowell

CODE	INSERTION LENGTH U (MM)	INSERTION ELEMENT LENGTH A (MM)	FIT TO BETA TEMP. SENSING BULB
TW 11	115	155	D00, C02, C03
TW 15	155	195	C02, C03, C05
TW 19	190	228	D02, C02, C03, C05
TW 22	228	270	C02, C03, C05, C10

NOTES:

1. "C10" requires special Thermowell. Consult your BETA Switch Representative.
2. BETA Thermowells to be ordered as separate item. Do not include Thermowell code into the switch code.
3. Special Thermowell possible. Consult your BETA Switch Representative.

BETA PRESSURE & TEMPERATURE SWITCHES



"OEM"-switches ("B"-Series)



Weather-tight switches ("C"-Series)



Exproof SS 316 offshore switches ("M"-Series)



Explosion proof switches ("W"-Series)



Economical Exproof switches ("Z"-Series)



Air relay switch

Manufacturer BETA B.V. - The Netherlands

BETA Pressure & Temperature switches

POSTAL

P.O. Box 1227
NL-2280 CE Rijswijk

OFFICE

Verrijn Stuartlaan 22
NL-2288 EL Rijswijk

WAREHOUSE

Cort v.d. Lindenstraat 25
NL-2288 EV Rijswijk

TELEPHONE

+31 70 3199700

FAX

+31 70 3199790

E-MAIL

info@beta-b.nl

INTERNET

www.beta-b.nl