

ENTRY LEVEL tilt sensor with MEMS technology.

Space-saving solution, high performances, easy installation.

High IP protection level, resistance to shock and vibration, and high electromagnetic compatibility make this product suitable for many mobile hydraulics applications.

Developed to ensure a robust and high-performance solution for applications such as agricultural machines, construction machines, material handling equipments.

### TECHNICAL DATA

#### Measurement range

$\pm 10^\circ$   $\pm 15^\circ$   $\pm 20^\circ$   $\pm 30^\circ$   $\pm 45^\circ$   $\pm 60^\circ$   $\pm 85^\circ$  (dual axis XY)  
 $360^\circ$  ( $\pm 180^\circ$ ) (single axis Z)

#### Supply voltage

+5Vdc (only for 0.5...4.5Vdc output); +10...+36Vdc (see output signal for right supply voltage)

#### Output signal

0.5...4.5V RATIOMETRIC (supply +5Vdc); 0.5...4.5V; 0...10V; 4...20mA; CANopen

#### Electrical connections

AMP Superseal 6P 282108-1; 6 wires output 18 AWG 1.65mm OD (cable+connector on request)

#### Resolution

$0.05^\circ$  ( $\pm 10^\circ$  to  $\pm 20^\circ$ );  $0.05^\circ$  ( $\pm 30^\circ$ );  $0.1^\circ$  ( $\pm 45^\circ$ );  $0.1^\circ$  ( $\pm 60^\circ$ );  $0.1^\circ$  ( $\pm 85^\circ$ );  $0.1^\circ$  ( $\pm 180^\circ$ ) analog output;  $0.05^\circ$  CANopen output

#### Linearity

$< \pm 0.5\%$  FS ( $\pm 10^\circ$  to  $\pm 60^\circ$ ;  $\pm 180^\circ$ );  $< \pm 0.5\%$  FS ( $\pm 85^\circ$ )

#### Working and coefficient temperature

$-40^\circ\text{C}$  ...  $+85^\circ\text{C}$  thermal drift  $< 0.01^\circ/\text{C}$  in the range ( $T = -10^\circ\text{C} \dots +60^\circ\text{C}$ )

#### Vibrations

20g tra 10 Hz ... 2000 Hz IEC 60068-2-6

#### Shock

Impulsive on 3 axes; 50g 11 ms IEC 60068-2-27

#### Electromagnetic compatibility

2014/30/EU Electromagnetic Compatibility (EMC)

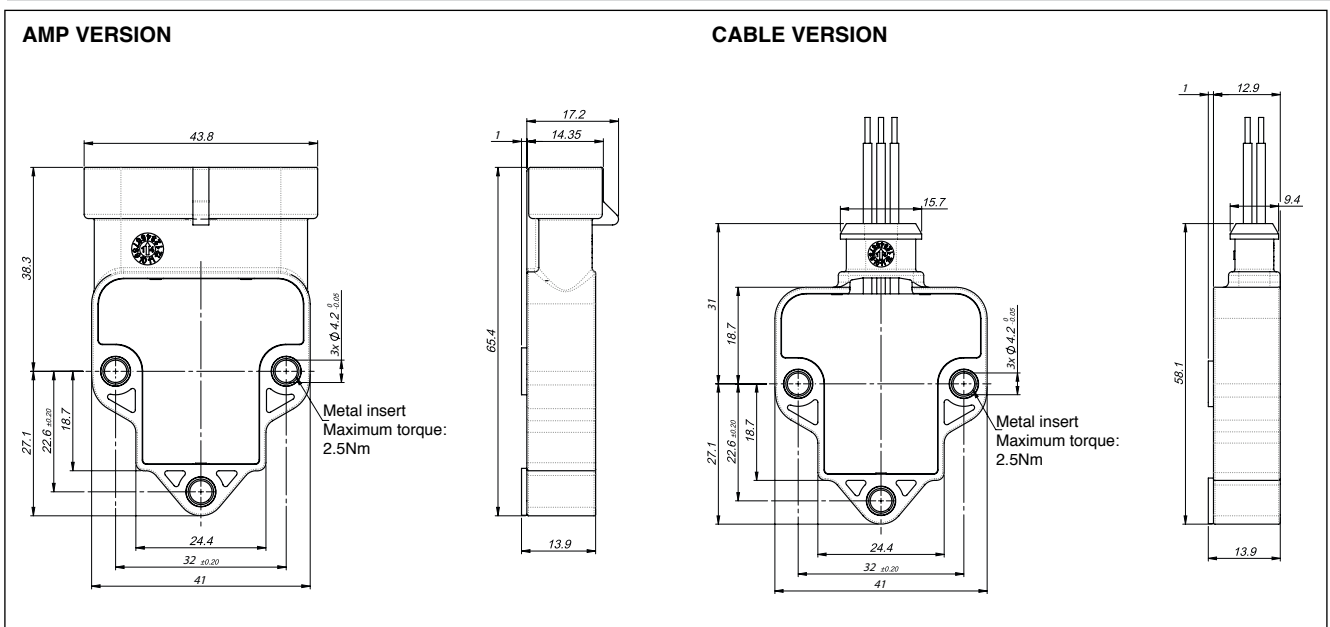
#### IP protection level

IP67 - IPX9K with female mating connector mounted AMP282090-1 (GIB-A version) and IP68 (GIB-F version)

#### Housing material

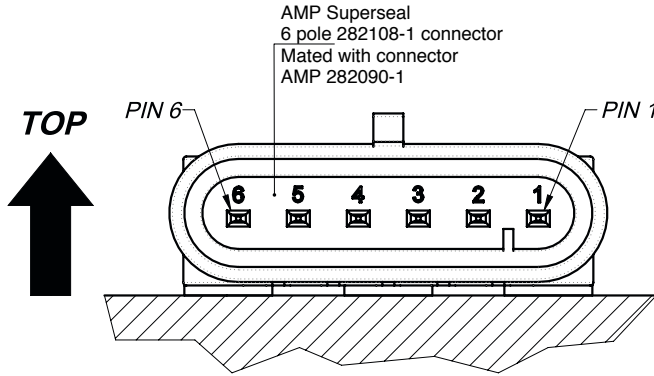
PBT

### MECHANICAL DIMENSIONS



# ELECTRICAL CONNECTIONS

## AMP VERSION



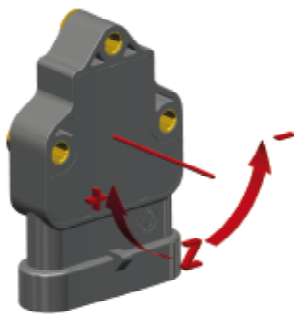
### CONNECTIONS

- 1. GROUND
- 2. + SUPPLY
- 3. OUTPUT X
- 4. OUTPUT Y
- 5. n.c.
- 6. n.c.

### CAN CONNECTIONS

- 1. GROUND
- 2. + SUPPLY
- 3. n.c.
- 4. n.c.
- 5. CAN L
- 6. CAN H

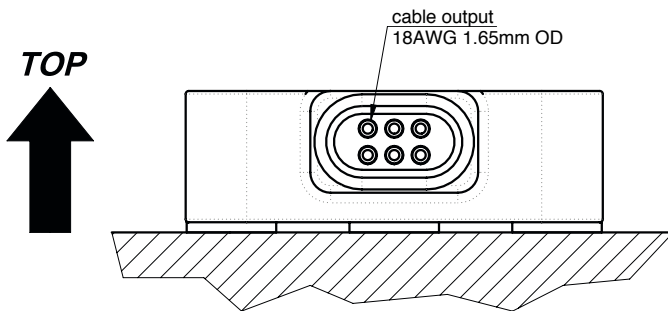
### SINGLE AXIS



### DUAL AXIS



## CABLE VERSION



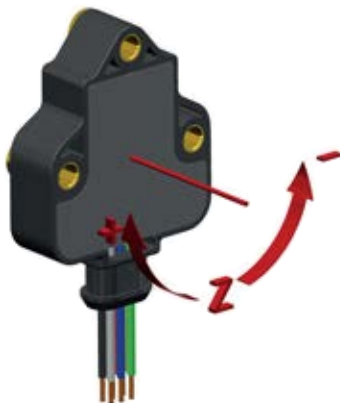
### CONNECTIONS

- |           |          |
|-----------|----------|
| 1. BLACK  | GROUND   |
| 2. RED    | + SUPPLY |
| 3. YELLOW | OUTPUT X |
| 4. GREEN  | OUTPUT Y |
| 5. BLUE   | n.c.     |
| 6. WHITE  | n.c.     |

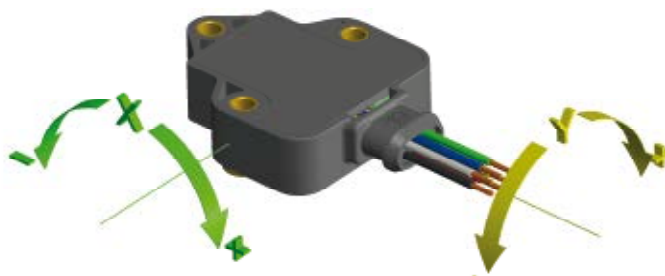
### CAN CONNECTIONS

- |           |          |
|-----------|----------|
| 1. BLACK  | GROUND   |
| 2. RED    | + SUPPLY |
| 3. YELLOW | n.c.     |
| 4. GREEN  | n.c.     |
| 5. BLUE   | CAN L    |
| 6. WHITE  | CAN H    |

### SINGLE AXIS



### DUAL AXIS



ITEMS MARKED "n.c." SHOULD NOT BE CONNECTED

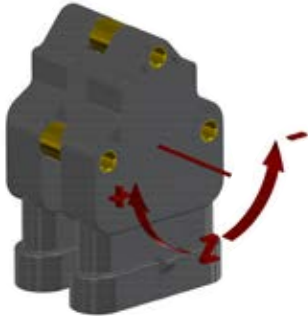
## FULL REDUNDANT VERSION

Gefran GIB tilt sensor is designed to be double mounted with specific spacers (BUS027) in order to have a full redundant space-saving version.

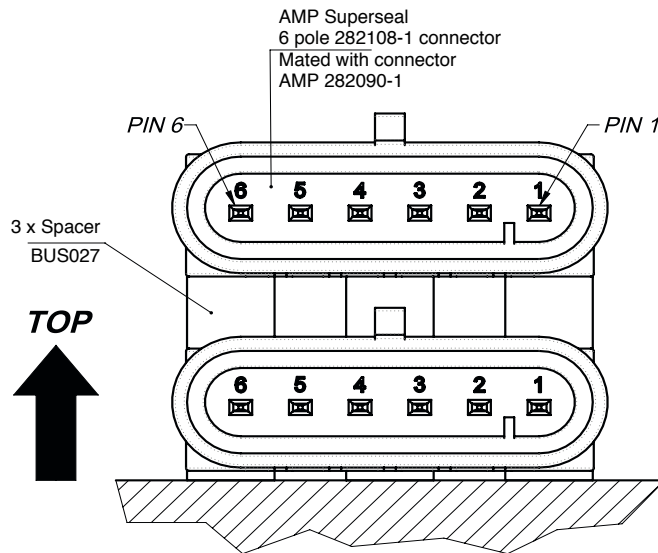
Please pay attention how to install the two GIB sensors: please position them both always face up or both face down.

### Example of AMP FULL REDUNDANT VERSION

#### SINGLE AXIS



#### DUAL AXIS



#### CONNECTIONS

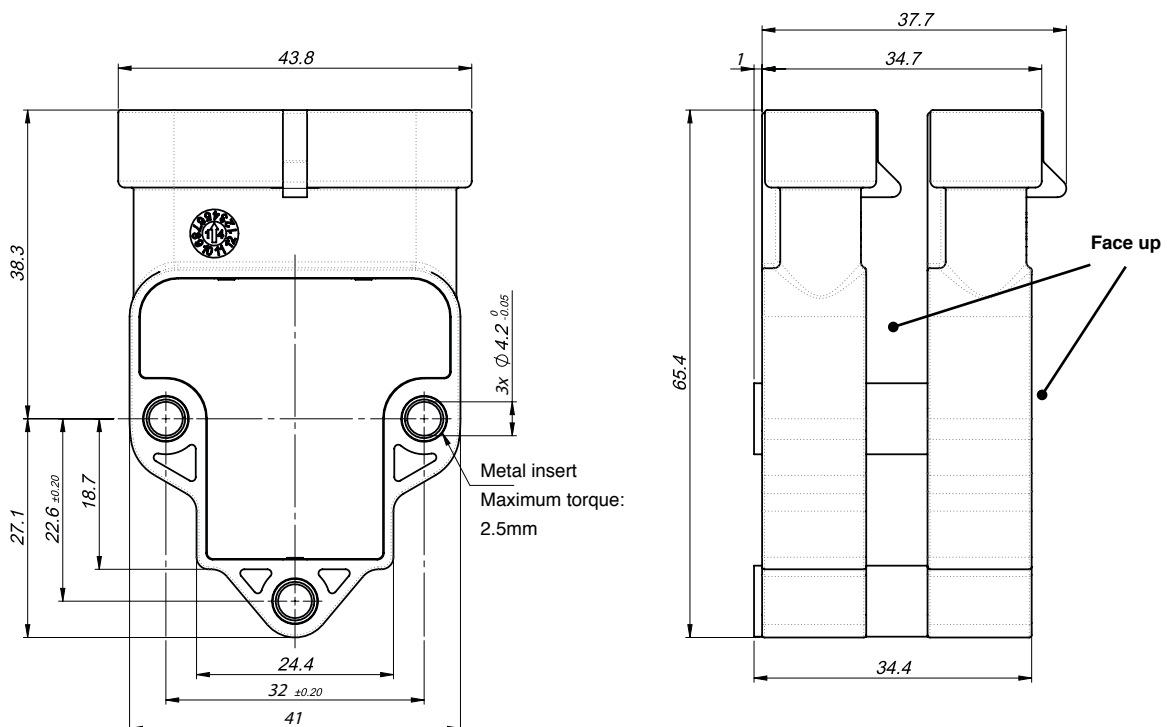
1. GROUND
2. + SUPPLY
3. OUTPUT X
4. OUTPUT Y
5. n.c.
6. n.c.

#### CAN CONNECTIONS

1. GROUND
2. + SUPPLY
3. n.c.
4. n.c.
5. CAN L
6. CAN H

ITEMS MARKED "n.c." SHOULD NOT BE CONNECTED

#### MECHANICAL DIMENSIONS



## AUTOZERO FUNCTION (additional function)

available for analog versions in GIB-XY configuration (dual axis)




To activate **the Autozero function** make sure that:

- sensor is powered
- fixing surface is free of dust or grease
- sensor is fixed on the horizontal plane with suitable screws



### ATTENTION!

The Autozero function can be defined **within a maximum range of +/- 4.5°** from the original zero position (factory set).

Hold the **magnetic pen** ① (accessory to order-PKIT312) to the **ZERO POINT**  indicated on the product label ②.

Hold the position for **at least 3-5 seconds** so that the operation is successful.

①

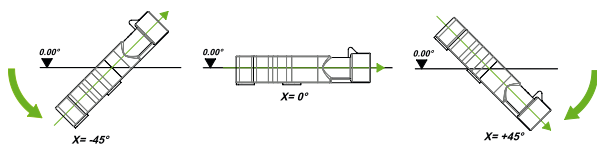
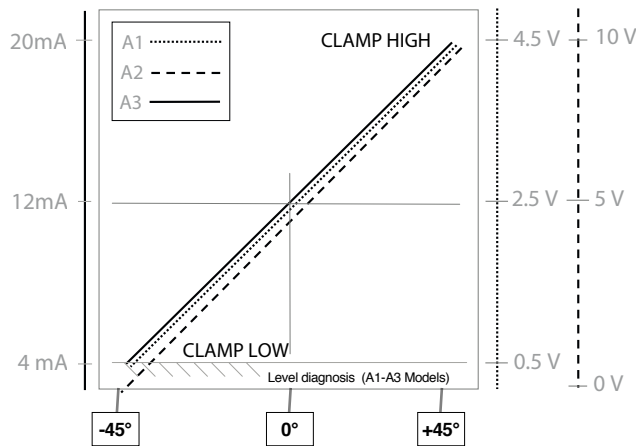


②

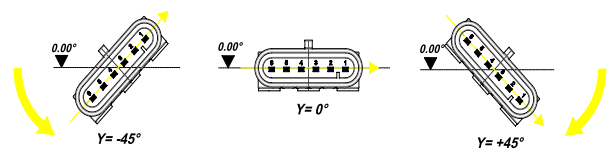
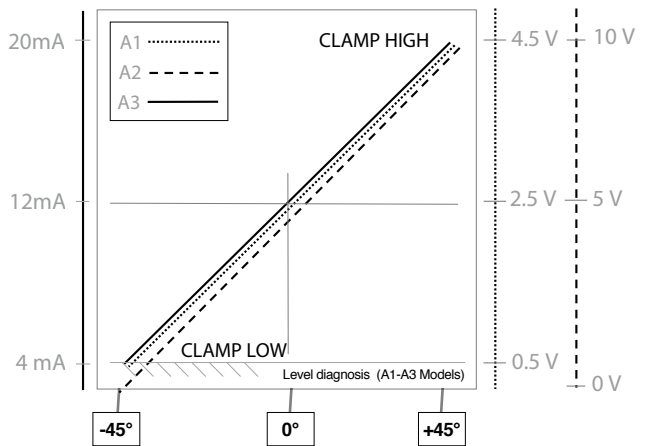


# FUNCTIONS: SENSOR OUTPUT GRAPH

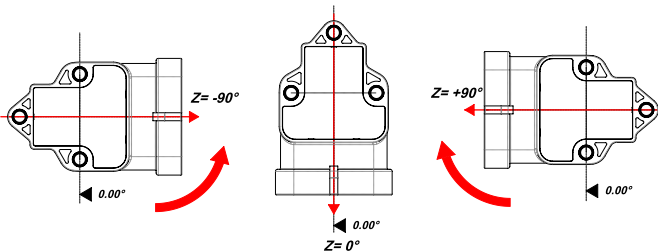
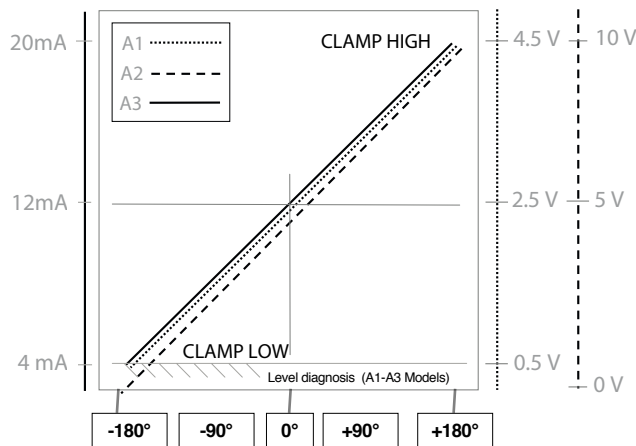
DUAL AXIS TILT SENSOR (XY) - X AXIS



DUAL AXIS TILT SENSOR (XY) - Y AXIS



SINGLE AXIS TILT SENSOR ( $\pm 180^\circ$ ) - Z AXIS



## LOAD CONDITIONS

+0.5Vdc...+4.5 Vdc output with power +10...36Vdc and +0..10Vdc output with power +11..36Vdc: it is recommended a load resistance > 100 K $\Omega$

+0.5Vdc...+4.5 Vdc output with power +5 Vdc: it is recommended a load resistance > 10 K $\Omega$

+4...20 mA output with power < + 15..36Vdc: the maximum load resistance is admissible 200 $\Omega$

+4...20 mA output with power > + 15..36Vdc: the maximum load resistance is admissible 500 $\Omega$

## ORDERING CODE

### GIB - SINGLE/DUAL AXIS ENTRY LEVEL TILT SENSOR (XY/360°)

ELECTRICAL CONNECTIONS	
AMP Superseal 6P connector output	<b>A</b>
Cable output (specify cable length)	<b>F</b>

AXIS TYPE	
Dual axis (XY axis)	<b>O</b>
Single axis 360° (z axis)	<b>V</b>

MEASURING RANGE	
measuring range (indicate) (single axis always 360° dual axis ±10° ±15° ±20° ±30° ±45° ± 60° ±85°)	<b>XXX</b>

MEASURING RANGE (NOT available)	
(redundant option NOT available)	<b>000</b>

SUPPLY VOLTAGE	
+5Vdc (only for A1 output)	<b>L</b>
+10...+36Vdc (see output signal for right supply voltage)	<b>H</b>

OUTPUT TYPE	
+0.5...+4.5Vdc output (available with supply L = ratiometric output and with supply H = 0.5...4.5V output)	<b>A1</b>
0...+10Vdc output (powered at +11...+36Vdc)	<b>A2</b>
4...20mA output (powered at +10...+36Vdc)	<b>A3</b>
CANopen output (powered at +10...+36Vdc)	<b>C1</b>

CABLE	
Cable without connector (always "0" in case of GIB-A version)	<b>0</b>

CERTIFICATE	
<b>0</b>	No certificate attached
<b>L</b>	Linearity curve to be attached

ACCESSORIES	
<b>X</b>	No accessories
<b>Y</b>	Magnetic pen ( <b>PKIT312</b> )
<b>A</b>	3x spacers for redundant version ( <b>BUS027</b> )

CABLE LENGTH	
<b>01</b>	cable 100 mm
<b>02</b>	cable 200 mm
<b>05</b>	cable 500 mm
<b>10</b>	cable 1 m
<b>20</b>	cable 2 m
<b>---</b>	other lengths on request

#### EXAMPLE OF DESCRIPTION: GIBFV360000HA30 0000X01

<b>GIB</b>	<b>F</b>	<b>V</b>	<b>360</b>	<b>000</b>	<b>H</b>	<b>A3</b>	<b>0</b>	<b>0</b>	<b>000</b>	<b>X</b>	<b>01</b>
	cable output	single axis	360°	ND	+10...36Vdc	4...20mA output	cable only		special execution	no accessories	cable 100 mm
								no certificate attached			

GEFRAN spa reserves the right to make any kind of design or functional modification at any moment without prior notice

# GEFRAN

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