MARKET INFORMATION
SHIPBUILDING





Trimod Besta

Solutions for Shipbuilding and the Marine Industry

SIL
IEC 61508/61511

Shipbuilding market



Since 1967 the Shipbuilding industry trusts the unique Trimod Besta level switches. Today, hundreds of thousands are installed on cargo vessels, tankers, cruise ships, fregattes, nuclear submarines, catamarans, crane- and container ships.



Electric and pneumatic level switches are available to the marine industry, in light, heavy duty and explosion proof versions.

SIL 3 Capable



The 3-modular concept offers an unlimited variety of switches

Modules | **Standard range** | **Rod extensions**

Switch modules

- Electronic switch elements
- Electric switch elements
- Pneumatic switch elements
- Explosion proof modules
- Housing in IP65, IP67 and IP68
- Aluminium and stainless steel housings





Flange modules

- Square flange, 92 x 92 mm
- Flanges to JIS, ANSI, DIN, BS
- Stainless steel, Hastelloy C and plastic
- Pressures up to ANSI cl. 2500, DIN 320



Float modules

- For low density liquids
- Stainless steel, Hastelloy C and plastic
- For high pressure applications
- For interface applications
- Horizontal and vertical use





Typical applications

- Fresh & waste water tanks
- Fuel oil tanks
- Bilge alarm
- Lubrication tanks
- Separation layer detection
- Balance tanks
- Inert gas production
- LPG tanks

Four typical Trimod Besta switches - robust, reliable and extremely user friendly





Type	A 01 04 / A 01 041 For general purpose	A 01 051 For contaminated medias
Nominal pressure	PN 25	PN 25
Minimum density of liquid	min. 0.7 kg/dm³	min. 0.75 kg/dm³
Flange	92 x 92 mm, PCD 92 mm	92 x 92 mm, PCD 92 mm
Wetside material	Stainless steel (CrNiMo)	Stainless steel (CrNiMo)
Flange material	Stainless steel (1.4408)	Stainless steel (1.4408)
Housing material	Seawater resistant aluminium	Seawater resistant aluminium
Enclosure	IP65	IP65
Ambient temperature	0 to 70°C	0 to 70°C
Operating temperature	0 to 300°C	0 to 120°C
Bellow material		Perbunan/Buna
Switch element	Microswitch SPDT with silver contacts	Microswitch SPDT with silver contacts
Switch rating	250 VAC, 5 A / 30 VDC, 5 A	250 VAC, 5 A / 30 VDC, 5 A
Switching distance	12 mm, fixed	12 mm, fixed
Option of rod extension	Yes, with type A 01 04	Yes
Safety Integrity Level (SIL)	SIL 1 (Types AA 01 04 or AA 01 041: SIL 2)	SIL 1 (Type AA 01 051: SIL 2)



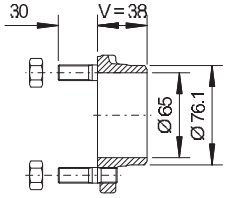


Type	U3A 01 04 For submersible applications	P 01 04 For pneumatic control applications
Nominal pressure	PN 25	PN 25
Minimum density of liquid	min. 0.7 kg/dm³	min. 0.7 kg/dm³
Flange	92 x 92 mm, PCD 92 mm	92 x 92 mm, PCD 92 mm
Wetside material	Stainless steel (CrNiMo)	Stainless steel (CrNiMo)
Flange material	Stainless steel (1.4408)	Stainless steel (1.4408)
Housing material	Seawater resistant aluminium	Seawater resistant aluminium
Enclosure	IP68	
Ambient temperature	-30 to 80°C	1 to 80°C
Operating temperature	-30 to 80°C	1 to 250°C
Switch element	Microswitch SPDT with silver contacts	3/2 way valve
Switch rating	250 VAC, 5 A / 30 VDC, 5 A	max. 10 bar
Switching distance	12 mm, fixed	12 mm, fixed
Option of rod extension	Yes	Yes
Safety Integrity Level (SIL)	SIL 1 (Type U3AA 01 04: SIL 2)	

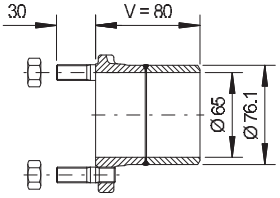
The simplest method of installing any Trimod Besta switches is to use our standard weld-on counterflanges.

Counterflange

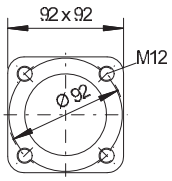
not for use with the test actuator



Type 2829.1 & 2831.3



Type 2829.1V80 & 2831.3V80

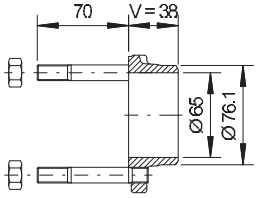


Type	Flange length	Flange material	Stud material	Stud length
2829.1	V = 38 mm	C22.8	5.8	30 mm
2831.3	V = 38 mm	1.4404	A2	30 mm
2829.1V80*	V = 80 mm	C22.8	5.8	30 mm
2831.3V80*	V = 80 mm	1.4404	A2	30 mm

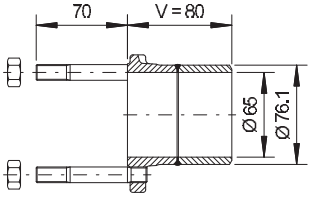
***Important:** Not for use in applications on top of the tank.

Counterflange

for use with the test actuator (type 2382 & 2383)



Type 2829.2 & 2831.4



Type 2829.2V80 & 2831.4V80

Type	Flange length	Flange material	Stud material	Stud length
2829.2	V = 38 mm	C22.8	5.8	70 mm
2831.4	V = 38 mm	1.4404	A2	70 mm
2829.2V80*	V = 80 mm	C22.8	5.8	70 mm
2831.4V80*	V = 80 mm	1.4404	A2	70 mm

Test actuator

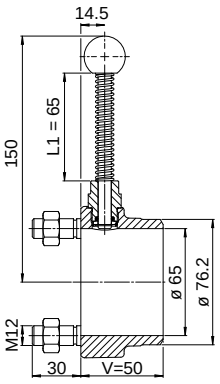
The test actuator allows a periodic manual function check of the level switch in operating status. The following functions can be tested; function of the switching element (micro-switch, proximity switch, pneumatic valve) and movement of the float.
Important: Not for use with the Compact Switch.



Type	Material	O-Ring	Temperature range	Operating pressure
2382	CrNiMo	FPM	0 to 150°C	-1 to 25 bar
2383	CrNiMo	EPDM	-30 to 150°C	-1 to 25 bar

Counterflange with test actuator

Important: Positioning of counterflanges with G 3/8" thread for test actuator.
If the level switch is used for high alarm the thread has to look upwards.
For a low level alarm, the thread has to look downwards.





Counterflange V = 50 mm with test actuator

Type	Flange material	Stud material	Test actuator material	O-Ring
2865	C22.8	5.8	1.4305/1.4404	FPM
2866	C22.8	5.8	1.4305/1.4404	EPDM
2868	1.4404	A2	1.4305/1.4404	FPM
2869	1.4404	A2	1.4305/1.4404	EPDM

Important: Not for use in applications on top of the tank.

BESTA

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