DNV·GL

Certificate No:
TAP00001G9

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Gauge Glass Level Indicator

with type designation(s)
PA-FLG-P 100, PA-TLG-P 200

Issued to
Panasia Co., Ltd.
Busan, Republic of Korea

is found to comply with
DNV GL rules for classification – Ships Pt.4 Ch.6 Piping systems

Application :

Product(s) approved by this certificate is/are accepted for installation on vessels classed by DNV GL.

Type:	Temperature range:	Max. working press.:	Design:
PA-FLG-P 100	up to 100°C	See page 2	JIS F 7215
PA-TLG-P 200	up to 100°C	See page 2	JIS F 7211

Issued at **Høvik** on **2018-08-17**
This Certificate is valid until **2022-12-31**.
DNV GL local station: **Busan**

for **DNV GL**

Approval Engineer: **Sinisa Sedlan**

Marianne Spæren Marveng
Head of Section

This Certificate is subject to terms and conditions overleaf. Any significant change in design or construction may render this Certificate invalid.
The validity date relates to the Type Approval Certificate and not to the approval of equipment/systems installed.

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Product description

- Model PA-FLG-P 100 designed according to JIS F 7215
- Model PA-TLG-P 200 designed according to JIS F 7211
- Design: Flat level gauge consisting of borosilicate glass incorporated in a stainless steel (SUS 304) frame with bronze (BC 6). Self Closing valves at the top and bottom (type C), or a Self Closing valve at the bottom and a tank return at the top (type B), or a Self Closing valve at the bottom and a vent pipe at the top (type A).
- Connection size: JIS 5K20, 25A, ANSI 1" 150#

Application/Limitation

- The gauge can be used in engine rooms and machinery spaces with the following design conditions:

Model	Type	Maximum temperature	Maximum working pressure
PA-FLG-P 100	A, B	100°C	4.903325 bar (5 kg/cm^2)
	C		2.941995 bar (3 kg/cm^2)
PA-TLG-P 200	A, B, C	100°C	0.980665 bar (1 kg/cm^2)

- The design review has only covered the strength of pressurized parts. The functionality of the component has not been considered in the approval.
- These level gauges can be installed as a means of level indication for tanks containing flammable fluids. They are to be fitted with a self-closing valve at each end, and are to be protected against mechanical damage. (Ref. DNV GL Ship rules Pt.4 Ch.6 Sec.4 [11.6.2])
- These level gauges are not permitted to be used on fuel oil tanks on passenger ships, where a penetration is required below the top of the tank. (Ref. DNV GL Ship rules Pt.4 Ch.6 Sec.4 [11.6.4])
- Maximum distance between upper and lower support bracket for each type shall be as follows:
  - PA-FLG-P100: Support bracket to be placed and spaced Max. 1000mm between upper and lower valve.
  - PA-TLG-P200: Support bracket to be placed and spaced Max. 600mm between upper and lower valve.
- Self-closing valves are not covered by this approval

Type Approval documentation

Production testing

Each level gauge shall be subjected to a hydrostatic pressure test at 1.5 times the allowable pressure at room temperature. The test pressure shall be applied and maintained for at least 30 minutes to permit visual examination of all surfaces and joints. The component shall exhibit no sign of plastic yielding or leakage.

Certification

No product certificate is required.

Marking of product

For traceability to this Type Approval the products are to be marked with:

- Manufacturer's name or trade mark
- Type designation
- Maximum working pressure
- The year of manufacture

Periodical assessment

For retention of the Type Approval, a DNV GL Surveyor shall perform periodical assessment after two years (+/- 90 days) and after 3.5 years (+/- 90 days) to verify that the conditions for the approval are complied with. Reference is made to DNVGL-CP-0338.