

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Pressure Transmitter

with type designation(s)

GS4200/HP1000 Series, PR3110 Series, PR3441 Series, PR3900 Series, PR3900EXxxxxxx-TI*

Issued to

ESI Technology Ltd
Wrexham Technology Park, United Kingdom

is found to comply with

DNV GL rules for classification – Ships, offshore units, and high speed and light craft

Application :

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

Location classes:

Type	Temperature	Humidity	Vibration	EMC	Enclosure
GS4200/HP1000 Series	D	B	B	B	C
PR3110 Series	D	B	B	B	C
PR3441 Series	D	B	B	B	D
PR3900 Series	D	B	B	B	C
PR3900EXxxxxxx-TI*	D	B	B	B	B

*** See product description**

Issued at **Høvik** on **2018-06-08**

for **DNV GL**

This Certificate is valid until **2023-06-07**.

DNV GL local station: **Manchester**

Approval Engineer: **Nils Jarem**

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Odd Magne Nesvåg
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.



Product description

Genspec GS4200 Series GENERAL PURPOSE PRESSURE TRANSDUCER

- SILICON-ON-SAPPHIRE SENSOR TECHNOLOGY
- PRESSURE RANGES 0-500mbar TO 0-1500bar
- 4-20 mA OUTPUT AS STANDARD (0-100mV, 0-5Vdc or 0-10Vdc OPTIONAL)

Hipres HP1000/HP1100 Series HIGH PRESSURE TRANSDUCER

- SILICON-ON-SAPPHIRE SENSOR TECHNOLOGY
- PRESSURE RANGES 0-6bar TO 0-5000bar
- OUTPUTS AVAILABLE 0-100mV, 0-5Vdc, 0-10Vdc or 4-20mA

Protran PR3110 Series LOW PRESSURE TRANSMITTER

- PIEZORESISTIVE SENSOR TECHNOLOGY
- PRESSURE RANGES FROM 0-100mbar
- 4-20mA TWO WIRE OUTPUT AS STANDARD (0-5Vdc, 0-10Vdc, 0-100mV OPTIONAL)

Protran PR3441 Series SUBMERSIBLE DEPTH PRESSURE TRANSMITTER

- PIEZORESISTIVE SENSOR TECHNOLOGY
- PRESSURE RANGES FROM 0-1mWG
- 4-20mA TWO WIRE OUTPUT

Protran PR3900 Series HAZARDOUS AREA PRESSURE TRANSMITTER

- SILICON-ON-SAPPHIRE SENSOR TECHNOLOGY
 - PRESSURE RANGES 0-1bar TO 0-1500bar
 - 4-20mA TWO WIRE OUTPUT
 - PR3900EXxxxxx-TI* (Special with Aluminium terminal head)
- *The x depicts the pressure range and thread

Approval conditions

The Type Approval covers hardware listed under Product description. When the hardware is used in applications to be classed by DNV GL, documentation for the actual application is to be submitted for approval by the manufacturer of the application system in each case. Reference is made to DNV GL rules for classification of ships Pt.4 Ch.9 Control and monitoring systems.

Application/Limitation

Ex-certification is not covered by this certificate. Application in hazardous area to be approved in each case according to the Rules and Ex-Certification/ Special Condition for Safe Use listed in valid Ex-certificate issued by a notified/recognized Certification Body.

Type Approval documentation

	Drw. No.	Rev.	Title
Data sheets:	GS4200	--	GENSPEC GS4200
	PR3441	--	Protran PR3441
	PR3900	--	Protran PR3900
	PR3110	--	Protran PR3110
	HP1000	--	Hipres HP1000/HP1100
Test reports:	TRA-036622-35-00A	A/2017-12-18	EMC Report GS4200, PR3441 and PR3900
	TR-ESI-26-17-2	2017-07-24	2.0 Visual inspection
	TR-ESI-26-17-3	2017-07-24	3.0 Performance test
	TR-ESI-26-17-4	2017-07-25	4.0 Electrical power supply failure test
	TR-ESI-26-17-5	2017-07-25	5.0 Power supply variation tests
	TR-ESI-26-17-6	2017-07-28	6.0 Vibration tests
	--	2018-04-10	6.0 Vibration Test DNV 10.4.18 Endorsed
	TR-ESI-26-17-7	2017-07-31	7.0 Dry heat tests
	TR-ESI-26-17-8	2017-08-04	8.0 Damp heat test
	TR-ESI-26-17-9	2017-08-07	9.0 Cold Test
	TR-ESI-26-17-10	2018-04-18	10.0 Salt mist test
	TR-ESI-26-17-11	2017-09-22	13.0 High voltage test
	TR-ESI-26-17-12	2017-08-18	12.0 Insulation resistance test
	TR-ESI-26-17-13	2018-06-07	13.0 Hydrostatic test

Type approval initial assessment report, DNV GL Manchester 2018-04-16.

Tests carried out

Applicable tests according to class guideline DNVGL-CG-0339, November 2016.

Marking of product

The products to be marked with:

- manufacturer name
- model name
- serial number
- power supply ratings

Periodical assessment

The scope of the periodical assessment is to verify that the conditions stipulated for the type are complied with, and that no alterations are made to the product design or choice of systems, software versions, components and/or materials.

The main elements of the assessment are:

- Ensure that type approved documentation is available
- Inspection of factory samples, selected at random from the production line (where practicable)
- Review of production and inspection routines, including test records from product sample tests and control routines
- Ensuring that systems, software versions, components and/or materials used comply with type approved documents and/or referenced system, software, component and material specifications
- Review of possible changes in design of systems, software versions, components, materials and/or performance, and make sure that such changes do not affect the type approval given
- Ensuring traceability between manufacturer's product type marking and the type approval certificate

Periodical assessment is to be performed after 2 years and after 3.5 years. A renewal assessment will be performed at renewal of the certificate.

END OF CERTIFICATE