TYPE APPROVAL CERTIFICATE

This is to certify:

That the Measurement Converter

with type designation(s)
RH5, RP5, RPT5, RI5, RG5, RTK5, RFW50, RW5, VP5, VPT5, VTK5, VF5, VFS5, VFG5, VFW5

Issued to
NORIS Automation GmbH
Nürnberg, Bayern, **Germany**

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.

Temperature	**D**
Humidity	**B**
Vibration	**B**
EMC	**A**
Enclosure	**Required protection acc. to DNV-GL Rules shall be provided upon installation on board**

Issued at **Hamburg** on **2017-05-08**

This Certificate is valid until **2022-05-07**.
DNV GL local station: **Augsburg**

Approval Engineer: **Jens Dietrich**

Digitally Signed By: Rinkel, Marco
for **DNV GL**
Signing Date: 2017-05-19
Location: Hamburg - On behalf of

Joannis Papanuskas
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

Limit values switches:
RH51, RH51-A: 40-120°C
RH52, RH52-A: 5-70°C NTC (Ohm)
RP51, RP51-A: 0-120°C
RP52, RP52-A: 0-150°C Pt100 (Ohm)
RPT51, RPT51-A: 0-120°C
RPT52, RPT52-A: 0-120°C Pt1000 (Ohm)
RI51, RI51-A: 0-20mA
RI52, RI52-A: 0-4-20mA I (mA)
RG51, RG51-A: 0-10V DC
RG52, RG52-A: 0-2-10V DC U (V)
RFW500-R1/R2: 5Hz-100Hz
RFW501R1/R2: 20Hz-1KHz F (Hz)
RFW500-A1/A2: 5Hz-100Hz
RFW501A1/A2: 20Hz-1KHz F (Hz)
RTK58, RTK58-A: 0-600°C
RTK59, RTK59-A: 0-800°C NiCr-Ni
RW53, RW53-A: 0-20V AC
RW54, RW54-A: 0-60V AC U (V)
RW55, RW55-A: 0-90V AC U (V)
RG51-S: 0-10V DC
RW53-S: 0-20V AC U (V)
RW54-S: 0-60V AC
RW55-S: 0-90V AC U (V)

Signal transducer:
VP51-I1 Pt100 0-120°C / 0-20 mA
VTK58-I1 NiCrNi 0-600°C / 0-20mA
VP51-I2 Pt100 0-120°C / 4-20mA
VTK58-I2 NiCrNi 0-600°C / 4-20mA
VP51-G1 Pt100 0-120°C / 0-10V
VTK58-G1 NiCrNi 0-600°C / 0-10V
VP51-G2 Pt100 0-120°C / 2-10V
VTK58-G2 NiCrNi 0-600°C / 2-10V
VP52-I1 Pt100 0-150°C / 0-20 mA
VTK59-I1 NiCrNi 0-800°C / 0-20mA
VP52-I2 Pt100 0-150°C / 4-20mA
VTK59-I2 NiCrNi 0-800°C / 4-20mA
VP52-G1 Pt100 0-150°C / 0-10V
VTK59-G1 NiCrNi 0-800°C / 0-10V
VP52-G2 Pt100 0-150°C / 2-10V
VTK59-G2 NiCrNi 0-800°C / 2-10V
VP511-I1 Pt100 -30-120°C / 0-20 mA
VF5xx-I1 *1 *3 / 0-20mA
VP511-I2 Pt100 -30-120°C / 4-20mA
VF5xx-I2 *1 *3 / 0-4-20mA
VP511-G1 Pt100 -30-120°C / 0-10V
VF5xx-G1 *1 *3 / 0-10V
VP511-G2 Pt100 -30-120°C / 2-10V
VF5xx-G2 *1 *3 / 2-10V
VPT51-I1 Pt1000 0-120°C / 0-20 mA
VFS5xx-I1 1-10V AC *3 / 0-20mA
VPT51-I2 Pt1000 0-120°C / 4-20mA
VFS5xx-I2 1-10V AC *3 / 4-20mA

VPT51-G1 Pt1000 0 - 120°C / 0-10V
VFS5xx-G1 1-10V AC *3 / 0-10V
VPT51-G2 Pt1000 0-150°C / 2-10V
VFS5xx-G2 1-10V AC *3 / 2-10V
VPT52-I1 Pt1000 0-150°C /0-20mA
VFG5xx-I1 6-60V AC *3 / 0-20mA
VPT52-I2 Pt1000 0-150°C / 4-20mA
VFG5xx-I2 6-60V AC *3 / 4-20mA
VPT52-G1 Pt1000 0-150°C / 0-10V
VFG5xx-G1 6-60V AC *3 / 0-10V
VPT52-G2 Pt1000 0-150°C / 2-10V
VFG5xx-G2 6-60V AC *3 / 2-10V
VPT511-I1 Pt1000 -30-120°C / 0-20mA
VFW5xx-I1 *2 *3 / 0-20mA
VPT511-12 Pt1000 -30-120°C / 4-20mA
VFW5xx-I2 *2 *3 / 4-20mA
VFW5xx-G1 *2 *3 / 0-10V
VFW5xx-G2 *2 *3 / 2-10V

*1 = NORIS speed sensor series FT../FA
*2 = for connection at terminal "W" of dynamo
*3 = xx=00= 5Hz-100Hz, xx =01= 20Hz-1KHz, xx=02= 50Hz-10KHz.

Power supply for all types: 24V DC
Rated current for relay outputs: 1A/30V DC; 0,5A/60V DC; 0,2A/220V AC.

Application/Limitation
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 Ships Pt.4 Ch.9 Control and Monitoring Systems.

Product certificate
If specified in the Rules, ref. Pt.4 Ch.9 Sec.1, the control and monitoring system in which the above listed hardware is used shall be delivered with a product certificate. For each such delivery the certification test is to be performed at the manufacturer of the application system before the system is shipped to the yard. The test shall be done according to an approved test program.

Type Approval documentation
Test reports: NORIS P444; EMCC-840080VB; LGA 471 1173.
Documents, Info: 535, SL972-1; 536, SL979-1; 537, SL983-1; 538, SL983-1; 539, SL983-1; 542, SL992-1; 545, SL1040-1; 544, SL1017-1; 543, SL1017-1; 540, SL993-1567, SL 1039-1; 541, SL996-1; SA596-1.

Tests carried out
Applicable tests according to Class Guideline DNVGL-CG-0339, edition November 2016.

Marking of product
Maker, type designation, serial number

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 at least every second year and at renewal of this certificate.

END OF CERTIFICATE