



Certificate no.:
TAA00003S2

TYPE APPROVAL CERTIFICATE

This is to certify:

that the **Position Transmitter**

with type designation(s)
WMKA 2010 / WMKA 2110

issued to

AMO Automatisierung Optik Messtechnik GmbH
St. Peter am Hart, Oberösterreich, Austria

is found to comply with

DNV 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.

Location classes:

Temperature	B
Humidity	B
Vibration	B
EMC	A
Enclosure	IP67

Issued at **Hamburg** on **2025-10-06**

This Certificate is valid until **2030-10-05**.

for **DNV**

DNV local unit: **Augsburg**

Approval Engineer: **Heinz Scheffler**

.....

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.

LEGAL DISCLAIMER: Unless otherwise stated in the applicable contract with the holder of this document, or following from mandatory law, the liability of DNV AS, its parent companies and their subsidiaries as well as their officers, directors and employees ("DNV") arising from or in connection with the services rendered for the purpose of the issuance of this document or reliance thereon, whether in contract or in tort (including negligence), shall be limited to direct losses and under any circumstance be limited to USD 300 000.

Product description

Absolute Scanning Head WMKA 2010 based on inductive AMOSIN® measuring principle

Types Variants (Ordering code)

WMKAabcd.efgh-i-j-k-l-m-z

Pos.	Description	Code	Characteristic
a	Platform	2	Integrated electronics
b	Scanning	0	Outside scanning
c	Grating period	10	1000µm
d	Performance	S HA HD	Standard High Accuracy High Dynamics
e	Interface	01 05 14 15 16 17 18 19 21 22 24 25 26 29 30	EnDat 2.2 Fanuc Serial Interface Alpha I DriveCliQ SSI, additional incremental signals 1Vss BiSS C BiSS C, additional incremental signals 1Vss SSI (25 Data-Bit), additional incremental signals 1 Vss SSI (30 Data-Bit), additional incremental signals 1 Vss Mitsubishi High Speed Serial Interface (full duplex) Mitsubishi High Speed Serial Interface (half duplex) EnDat 3 E30-RB Mitsubishi High Speed Serial Interface (two-pair transmission) Mitsubishi High Speed Serial Interface (one-pair transmission) EnDat 3 E30-R2 EnDat 3 E30-R4
f	Interpolations- factor digital	10 12 14	10 bit 12 bit 14 bit
g	Functional Safety Concept	.. FA FS	None Analog signal (1Vpp) can be used for safety related equipment Functional safety
h	Multiplication 1Vpp (only for SSI)	NN 01 - 50	None Values from 1 to 50
i	Design	20 26 28 2A 2B 50 51 52 53 54 55 56 57 60 61 C5 71 72	Standard, cable outlet right Standard, can be mounted on both sides via M4 thread Standard, can be mounted on one side via M4 thread Standard, additional mounting threads for customer attachments Standard, mounting holes milled out on both sides radially mountable with sealing plate, cable outlet tangential right radially mountable with sealing plate, cable outlet tangential left radially mountable, cable outlet tangential right radially mountable, cable outlet tangential left radially mountable, Cable outlet radial axial mountable, cable outlet tangential right axial mountable, cable outlet tangential left radial mountable via mounting block, tangential right vacuum application with rectangular surface as sealing surface (type P7), plug connection axial vacuum application with rectangular surface as sealing surface (type P9), plug connection tangential standard, cable outlet rear setting sensing gap with predefined force, cable outlet left setting sensing gap with predefined force, cable outlet bottom
j	Line count	1024	Line count
k	Cable length	0,50 1,00 1,50 2,00 2,50 3,00	0,50 m 1,00 m 1,50 m 2,00 m 2,50 m 3,00 m

		4,00 5,00 6,00	4,00 m 5,00 m 6,00 m
I	Electrical connection	01 03S17 1SS08	free cable end M23 17polig coupling pin M12 8pin coupling male
m	Electrical termination	C4 IS WF Ed lu lx	in conjunction with 1SS08 in conjunction with 01 or 03S17 in conjunction with 1SS08 in conjunction with 1SS08 in conjunction with 1SS08 in conjunction with 1SS08
z	Additional Information	001 83	Standard packaging AMO Type Plate

Application/Limitation

Mounting Instructions 1230485-01 is to be observed before installation.

The Type Approval covers hardware listed under Product description. When the hardware is used in applications to be classed by DNV, 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 Rules for Ships Pt.4 Ch.9 Control and Monitoring Systems.

SIL2 certification is not covered by this certificate and is issued by a notified/recognized Certification Body.

Type Approval documentation

Test Report: EMC TR-713380472-00, Rev.01; ENV TR-713380294-00, Rev.00; TR-713388474-00 rev0; Performance-Test_AMO_LR_131125; Analogieschluss_Bauform_IP-Rate_LR_131125.

Documentation: Produktinformation, Mai 2025, Data Sheet cable 350.1103.08, Rev.ec5; DNV_AMO_Aufbauübersicht_Bestellcode_LR_091025; Mounting Instructions, Rev. 1244264

Tests carried out

Applicable tests according to class guideline DNV-CG-0339, August 2021

Marking of product

The products to be marked with:

- Model name
- Manufacturer name
- Serial number
- ID number
- Supply voltage

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