Certificate No:
TAA000031F

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Valve Remote Control System

with type designation(s)
RDFK

Issued to
Shanghai Rongde Engineering Equipment Co., Ltd.
Shanghai, **China**

is found to comply with

Application :

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

Temperature	**B**
Humidity	**A**
Vibration	**A**
EMC	**A**
Enclosure	**A&B** **note: (location class B see page 2)**

Issued at **Hamburg** on **2021-09-09**
This Certificate is valid until **2026-09-08**.
DNV local station: **Shanghai**

Approval Engineer: **Didier Girardin**

for **DNV**

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.

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 300,000 USD.

Product description [1)]

Valve remote control system, including the following function and parts:
- Valve and pump control
- Hydraulic power unit
- Hydraulic/ Electric hydraulic/ Electric/ Pneumatic actuator(s)

System comprises the following main components:[1)]

Component Name	Maker	Module Names
All in one PC	NODKA	TPC6000-8152T
	NODKA	TPC6000-8172T
Network switch	MOXA	EDS 208A
CAN communication card	ZLG	PCIE-9221
CAN Bridge	ZLG	CAN Bridge
	ZLG	CANHub-AS4
Control module	RONGDE	EPC-IQ8A
	RONGDE	EPC-D32
	RONGDE	EPC-Q48
	RONGDE	VCM-HV8
	RONGDE	VCM-HV8-HPU
	RONGDE	VCM-GA4
	RONGDE	VCM-GA4B
Solenoid valve cabinet [2)]	RONGDE	
Solenoid valve	YUKEN	DSG series
Hydraulic power unit [2)]	RONGDE	HPU
Electrodynamics actuator	COSMIC ROC	EMA series
	COSMIC ROC	EI series
	Tianjin Baili Ertong Machinery Co., Ltd	QT series
Hydraulic actuator	RONGDE	HA series
Electro-hydraulic actuator	RONGDE	EHP series
Pneumatic actuator	Shanghai Suoqiang Fluid Control Equipment Co., Ltd.	FBY series
Valve position indicator	RONGDE	VPI-F series

Note 1) present type approval is including all electronic and programmable equipment as listed. Piping elements are provided for information only,

Note 2): Enclosure location class B

Control HMI software version – RDFK-TA03-200 V1.01 is included in the type approval certificate. Software number and versions are described in document Register of product's software (S/N 17070), Program versions for application software.

Place of manufacture

No. 268, Yangyue Road, Fengxian District, Shanghai, PRC.

Application/Limitation

The Type Approval covers electronic and programmable equipment and systems and software as listed under Product description.

The following documentation of the actual application is to be submitted for approval in each case:

- Reference to this Type Approval Certificate
- Functional description
- System block diagram
- Power supply arrangement (may be part of the System block diagram)
- List of control and monitored points
- Circuit diagrams
- Test program for certification

Product certificate
Each delivery of the application system is to be certified according to Pt.4 Ch.9 Sec.1. The certification test is to be performed at the manufacturer of the application system before the system is shipped to the yard. After the certification the clause for application software control will be put into force.

Application software control
All changes in software are to be recorded as long as the system is in use on board. Documentation of major changes is to be forwarded to DNV GL for evaluation and approval before implemented on board.

Type Approval documentation

System Structure Diagram: 2787-03-1-00 (Ver. C)
System Bus Diagram: 2787-03-1-01 (Ver. C)
Layout drawings: 2787-03-1(Ver. A)
Circuit drawings: 2787-03-2(Ver. A)
User manual: 2787-03-0-05 (V1.11)
Test Outline: 2787-03-0-12b
Test report: A17-007-ZC-01, A21-006-WT, 2787-03-0-40

Tests carried out

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

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