



TYPE APPROVAL CERTIFICATE

N. ELE377920CS

This is to certify that the product below is found to be in compliance with the applicable requirements of the RINA Type Approval system.

Description	Propulsion remote control system
Type	Series 4600-R
Applicant	Flexball Italiana S.r.l. Strada San Luigi, 13 A 10043 Orbassano (TO) Italy
Manufacturer	Flexball Italiana S.r.l. Strada San Luigi, 13 A 10043 Orbassano (TO) Italy
Testing Standard	Rules for the classification of Ships - Part C - Machinery, Systems and fire protection. - Ch.3, Sect. 6, Table 1.

Issued in **Genova, July 27, 2021**

This certificate is valid until **July 27, 2026**

RINA Services S.p.A.



Luigi Benedetti



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Product description:

Propulsion remote control system Series 4600-R based on CAN Bus communication, intended for Ships with two independent propulsion engines and independent propulsion shafts

Control stations (up to four control stations)	4600R.C-200003
Monitoring and warning Interface panel (for each control station)	4600R.M-000001

Engine actuators for speed and thrust direction control, as follows:

Mechanical engine speed actuator with mechanical control of propulsion reversing gears	4600R.A-004039
CAN Bus and Voltage engine speed control with mechanical control of propulsion reversing gears	4600R.A-104039
Current and PWM engine speed control with mechanical control of propulsion reversing gears	4600R.A-304039
Mechanical engine speed actuator and solenoid valves control of propulsion reversing gears	4600R.A-034039
CAN Bus and Voltage engine speed control and solenoid valves control of propulsion reversing gears	4600R.A-130039
Current and PWM engine speed control and solenoid valves control of propulsion reversing gears	4600R.A-330039
"All in one" actuator including all the above described different control outputs	4600R.A-000000
CANBus Optical Isolator Box and fuses	4600R.M-000002

Reference document:

Flexball technical specification for Series 4600R Propulsion remote control system: doc. DT10 (02.07.2021)

Flexball type Approval Test Plan for Series 4600R Propulsion remote control system: doc. PP10 (30.04.2021)

Test reports:

Flexball Power Supply Failure according to IACS UR E10.3 (30.06.2021)

Flexball Power Supply Variation 12Vdc according to IACS UR E10.4 (30.06.2021)

Flexball Power Supply Variation 24Vdc according to IACS UR E10.4 (30.06.2021)

G.S.D. S.r.l. Laboratories Environmental Tests: Report n. 21225 Rev. 02 (06.07.2021)

TUV Sud Degree of protection IP 66: Report n. CLI1731702A Rev. 00 (23.06.2021)

TUV Sud Degree of protection IP 66: Report n. CLI1731702B Rev. 01 (02.07.2021)

General remarks:

4600-R Remote Control System Configuration is approved for Ships having redundant propulsion.

Emergency stopping devices independent from the Engines remote control system to be provided on the Bridge for each propulsion engine.

Before installation on board RINA Classed Ships, each specific System configuration to be tested according to SOLAS Convention requirements: Ch. II-1, Part C, Reg. 31 and Reg. 49 for Unattended Machinery Spaces as applicable.

