

TYPE APPROVAL CERTIFICATE

This is to certify:**That the Peripheral Equipment**

with type designation(s)
LPU version 3

Issued to

Emerson Automation Solutions, Damcos A/S
Næstved, Sjælland, Denmark

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:

Temperature D

Humidity B

Vibration A / B (see page 2)

EMC B

Enclosure C / D (IP66 + IP68(30m,24h) + IP68(15m,72h))

Issued at **Høvik** on **2019-09-02**

This Certificate is valid until **2024-09-01**.

DNV GL local station: **Denmark CMC**

for **DNV GL**

Approval Engineer: **Ståle Sneen**

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Trond Sjøvåg
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

Local Power Unit – LPU version 3.

LPU name will be LPU-#1-#2-#3-#4-#5-#6-#7-#8 (e.g. LPU-Basic-DD1-0,7S-T2-H1-On/Off)

#1	Control and firmware setup		A (Basic), B (Plus), C (Elite), P-net (P-NET control), or Power (Power control)
#2	Base block	(pos 10)	160G9908 (S) or 160G9909 (D)
#3	Hydraulic block	(pos 30)	160G9910 (S1), 160G9911 (D1), 160G9912 (S2), 160G9913 (D2), 160G9914 (S3), or 160G9915 (D3)
#4	Pump size	(pos 20)	0.2-0.7 l/min (0,7) or 0.4-1.5 l/min (1,5)
#5	Motor size	(pos 50)	Small (S) or Large (L)
#6	Tank	(pos 40)	Tank standard (T2), Tank 0.25 l with level sensor (P2), or Tank 1.0 l with level sensor (P4)*
#7	Control type	(pos 70 and 80)	Basic (H1), Plus (H2), Elite (H4), Padlock (S1), P-NET (B4), or Power (H9)
#8	Position indicator type		Switches (ON/OFF), Analogue (CONT), or Both switch or analogue feedback possibilities (xxx)

* Tank P4 is designed and approved for vibration class A, all other parts for vibration class B

Any combination of the main parts is covered by this approval.

Technical specification:

Main principles: LPU-S for single acting actuators
LPU-D for double acting actuators
Local operation by: Portable hand pump or optionally by magnets
Flow – adjustable: 0.2 to 0.7 l/min or 0.4 to 1.5 l/min
Working pressure: 135 bar (pressure tested to 250 bar)
Power supply: 230 Vac, 50-60 Hz
Control: 24 Vdc – Basic, Plus or Elite (Bluetooth status)
Control functions: Open/close or optional 4-20 mA
LED: Red (Close), Green (Open), Blue (Local operation and Bluetooth),
Steady Yellow (Middle position), Flashing Yellow (Alarm)
Bluetooth transceiver: 2 mW [e.i.r.p], channel bandwidth 2 MHz in the range 2402-2480 MHz

Place of manufacture

Emerson Automation Solutions, Damcos A/S Aaderupvej 41 DK-4700 Næstved Denmark	Emerson Process Management Marine Systems (Shanghai) Co., Ltd. T3-7,128 Long Gui Road, JinQiao Export Process Zone (South) Shanghai Post Code: 201201
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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

The frequency band 2400-2500 MHz is defined by ITU-R Radio Regulations (2016) as an ISM-band. Any use of the radio frequency band has to be in line with the requirements of the administration concerned.

Type Approval documentation

Tests carried out

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

Applicable tests according to IACS Unified Requirements E10, Rev.7 (including EMC up to 6 GHz).

Applicable tests according to ETSI EN 300 328 (V2.1.1).

Marking of product

The products to be marked with:

- manufacturer name
- model name
- code for time and place of manufacture
- 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