



# DET NORSKE VERITAS

## TYPE APPROVAL CERTIFICATE

CERTIFICATE NO. **E-13260**

This is to certify that the  
**Constant Voltage Charger**

with type designation(s)  
**MASS-1 24/25**

Issued to  
**Mastervolt International**  
**AMSTERDAM, Netherlands**

is found to comply with  
**Det Norske Veritas' Rules for Classification of Ships, High Speed & Light Craft and Det Norske Veritas' Offshore Standards**

Application

<b>Voltage output</b>	<b>24 V DC</b>
<b>Power</b>	<b>600 W</b>
<b>Temperature class</b>	<b>A</b>
<b>Vibration class</b>	<b>A</b>
<b>Humidity class</b>	<b>A</b>
<b>Enclosure class</b>	<b>A</b>

This Certificate is valid until **2017-12-31**.

Issued at **Høvik** on **2014-03-03**

DNV local station: **Rotterdam**

Approval Engineer: **Sverre Eriksen**

for **Det Norske Veritas AS**

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**Marit Laumann**  
**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.

If any person suffers loss or damage which is proved to have been caused by any negligent act or omission of Det Norske Veritas, then Det Norske Veritas shall pay compensation to such person for his proved direct loss or damage. However, the compensation shall not exceed an amount equal to ten times the fee charged for the service in question, provided that the maximum compensation shall never exceed USD 2 million. In this provision "Det Norske Veritas" shall mean the Foundation Det Norske Veritas as well as all its subsidiaries, directors, officers, employees, agents and any other acting on behalf of Det Norske Veritas.

### Product description

Battery charger. Charging of 24 V lead acid batteries and power simultaneously loads.  
Equipped with temperature compensated charging.

Type	Input Voltage	Input Current	Output (at 45°C)	Enclosure
MASS-1 24/25	1 ph 190 - 250 V AC, 50/60 Hz, $\pm 5\%$	3,6 A at 230 V AC	24 V DC / 25 A	IP 23

### Application/Limitation

The output current will be decreased if operating at 45 °C for longer periode or with restricted ventilation.  
Derating with 2.5 % / °C > 40 °C.

### Type Approval documentation

Datasheet: Datasheet no. 5.6 – charger mass 24/25-2, undated.

Drawings: Lader IVO PFA no. T1067-501 sheet 12.01, rev. G dated 00-07-25, lader IVO DC/DC no. T1067-501 sheet 12.02, rev. M dated 01-04-13.

"Testreport concerning the compliance of a battery charger, brand Mastervolt with parts of certification notes "environmental test specification for instrumentation and automation equipment""by TNO, dated 01-06-27, "Measurements concerning environmental testing of battery charger, model Mass-1 LDR 24/25", by KEMA dated 01-07-07.

Nedap report "Testen Mass 1 24/25" issued 99-10-07, partly repeated 01-10-09.

See also approval letter 262.1-009163-J-13.

### Tests carried out

Low temperature, Dry heat, Vibration, Humidity/ Damp heat in according to IEC 60068-2,  
EMC in accordance with SfC. 2.4 Class B.

### Marking of product

Mastervolt – charger model no. 24/25 – charger input – charger output.

### Periodical assessment

The scope of the retention/renewal survey is to verify that the conditions stipulated for the Type approval is complied with and that no alterations are made to the product design or choice of materials.

The main elements of the survey are:

- Inspection on factory samples, selected at random from the production line (where practicable)
- Results from Routine tests(RT) checked (if not available tests according to RT to be carried out)
- Review of type approval documentation
- Review of possible change in design, materials and performance
- Ensuring traceability between manufacturer's product type marking and Type Approval Certificate.

Survey to be performed at least every second year.

END OF CERTIFICATE