



Marine & Offshore

Certificate number: 51126/A0 BV

File number: AP4766

Product code: 2658H

This certificate is not valid when presented without the full attached schedule composed of 7 sections

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TYPE APPROVAL CERTIFICATE

This certificate is issued to

LEROY SOMER DEI (Les Agriers)
ANGOULEME - FRANCE

for the type of product

GENERATOR CONTROL AND PROTECTION UNITS
Digital voltage regulator D350

Requirements:

Bureau Veritas Rules for the Classification of Steel Ships

EC Code : 31

This certificate is issued to attest that Bureau Veritas Marine & Offshore did undertake the relevant approval procedures for the product identified above which was found to comply with the relevant requirements mentioned above.

This certificate will expire on: 30 Jul 2023

For Bureau Veritas Marine & Offshore,

At BV BORDEAUX, on 30 Jul 2018,

Gabriel ZIMMER



This certificate remains valid until the date stated above, unless cancelled or revoked, provided the conditions indicated in the subsequent page(s) are complied with and the product remains satisfactory in service. This certificate will not be valid if the applicant makes any changes or modifications to the approved product, which have not been notified to, and agreed in writing with Bureau Veritas Marine & Offshore. Should the specified regulations or standards be amended during the validity of this certificate, the product(s) is/are to be re-approved prior to it/they being placed on board vessels to which the amended regulations or standards apply. This certificate is issued within the scope of the General Conditions of Bureau Veritas Marine & Offshore available on the internet site www.veristar.com. Any Person not a party to the contract pursuant to which this document is delivered may not assert a claim against Bureau Veritas Marine & Offshore for any liability arising out of errors or omissions which may be contained in said document, or for errors of judgement, fault or negligence committed by personnel of the Society or of its Agents in establishment or issuance of this document, and in connection with any activities for which it may provide.

THE SCHEDULE OF APPROVAL

1. PRODUCT DESCRIPTION:

The **D350** is an automatic voltage regulator for Marine and Offshore application.

1.1 - Product's datas:

Description	Minimum value	Maximum value
Supply-(Vac)	50	277
Supply-(Vdc)	50	400
Voltage sensing (Vac) 3 phase range	0	530
Field excitation (A)	0	5
Alternator frequency (Hz)	10	100
Voltage adjustment range (% rated V)	0	150
Quadrature droop adjustment range (%)	-20	20
Ambient Temp (°C)	-40	+65
Weight (kg)		0.45

1.2 - Software & Firmware:

Software version	Firmware version
EasyReg Advanced	Firmware 1.XX

2. DOCUMENTS AND DRAWINGS:

- Digital regulator D350 Installation and maintenance, Ref 5611 en, rev a, dated February-2018.
- D350 Specifications, Ref CDC150113 01 RDE ME H, dated 27/09/2017

3. TEST REPORTS:

File name	Ref	Dated
D350 - CR170124 01 RDE RD A - Vibrations Chocs PROTO 2 D350	CR170124 01 RDE RD A	24/01/2017 rev A
D350 - CR170202 01 RDE GS B - Conducted Emissions test	CR170202 01 RDE GS B	23/09/2017 rev B
D350 - CR170206 01 RDE LR A - IEC60068-2-1 Tenue au Froid - Marine	CR170206 01 RDE LR A	06/02/2017 rev A
D350 - CR170207 01 RDE LR A - IEC60068-2-2 Tenue chaleur sèche - Marine	CR170207 01 RDE LR A	07/02/2017 rev A
D350 - CR170207 03 RDE LR A-IEC60068-2-30 Test Db Tenue à la chaleur humide-Marine	CR170207 03 RDE LR A	07/02/2017 rev A
D350 - CR170321 01 RDE GS A - Electrical Fast Transient Burst Immunity test	CR170321 01 RDE GS	21/03/2017 rev A
D350 - CR170329 02 RDE GS A - Surge Immunity test	CR170329 02 RDE GS A	29/03/2017 rev A
D350 - CR170406 01 RDE GS A - ESD test	CR170406 01 RDE GS A	06/04/2017 rev A
D350 - CR170411 02 RDE GS A - Pulse magnetic field Immunity test	CR170411 02 RDE GS A	11/04/2017 rev A
D350 - CR170915 01 RDE RD A - Conducted Immunity	D350 - CR170915 01 RDE RD A	21/09/2017 rev A
D350 - CR170920 01 RDE MC A - Essai a la flamme IEC 60695-11-5	CR170920 01 RDE MC A	20/09/2017 rev A
R240-PNN-17-100132-1-A (00) (Mechanical Test report)	R240-PNN-17-100132-1-A (00)	08/02/2017 rev A
RC051-17-100202-1-A Ed. 0 (EMC test report)	RC051-17-100202-1-A Ed. 0	02/03/2017 rev A

Functional test report

D350 - CR170413 01 RDE BJ A - Sous-vitesse	CR170413 01 RDE BJ A	13/04/2017
D350 - CR170413 02 RDE BJ A - Sous-tension	CR170413 02 RDE BJ A	13/04/2017
D350 - CR170418 01 RDE BJ A - Survitesse	CR170418 01 RDE BJ A	18/04/2017
D350 - CR170418 02 RDE BJ A - Surtension	CR170418 02 RDE BJ A	18/04/2017
D350 - CR170419 01 RDE BJ A - Perte de référence	CR170419 01 RDE BJ A	19/04/2017
D350 - CR170419 02 RDE BJ A - Déséquilibre de tension	CR170419 02 RDE BJ A	19/04/2017
D350 - CR170421 01 RDE BJ A - Court-circuit	CR170421 02 RDE BJ A	21/04/2017
D350 - CR170421 02 RDE BJ A - Température PT100	CR170421 02 RDE BJ A	21/04/2017
D350 - CR170515 01 RDE BJ A - Maintien UF et coude	CR170515 01 RDE BJ A	15/05/2017
D350 - CR170515 02 RDE BJ A - Limite surexcitation	CR170515 02 RDE BJ A	15/05/2017
D350 - CR170515 03 RDE BJ A - Compensation de Chute en ligne	CR170515 03 RDE BJ A	15/05/2017
D350 - CR170515 04 RDE BJ A - Limite courant stator	CR170515 04 RDE BJ A	15/05/2017
D350 - CR170515 05 RDE BJ A - Démarrage en rampe	CR170515 05 RDE BJ A	15/05/2017
D350 - CR170515 06 RDE BJ A - Démarrage sur seuil	CR170515 06 RDE BJ A	15/05/2017
D350 - CR170516 01 RDE BJ A - LAM	CR170516 01 RDE BJ A	16/05/2017
D350 - CR170612 01 RDE BJ A - Démarrage Moteur	CR170612 01 RDE BJ A	15/05/2017
D350 - CR171010 01 RDE ME B - Transitoires et Regulation	CR171010 01 RDE ME B	11/04/2018

4. APPLICATION / LIMITATION:

4.1 - BUREAU VERITAS Rules and Regulations for the Classification of Steel Ships.

4.2 - Approval valid for ships intended to be granted with the following additional class notations: **AUT-UMS, AUT-CCS, AUT-PORT and AUT-IMS.**

4.3 - BUREAU VERITAS Environmental Category, **EC Code: 31**

4.4 - The equipment fulfils the EMC requirements for installation in General Power Distribution Zones.

4.5 - The equipment, once installed on board ship, is to be tested in accordance with the above referred Regulations under the supervision of a Society's Surveyor.

4.6 - Only Hardware and Firmware / Software successfully tested together in compliance with the regulations as referred to in page one, according to the declaration of the manufacturer are covered by this certificate.

4.7 - The equipment is to be mounted in an electric control panel or in a terminal box.

5. PRODUCTION SURVEY REQUIREMENTS:

5.1 - The above products are to be supplied by **LEROY SOMER DEI (Les Agriers)** in compliance with the type described in this certificate.

5.2 - This type of product is within the category HBV of Bureau Veritas Rule Note NR320 and as such does not require a BV product certificate.

5.3 - **LEROY SOMER DEI (Les Agriers)** has to make the necessary arrangements to have its works recognised by Bureau Veritas in compliance with the requirements of NR320 for HBV products.

5.4 - **LEROY SOMER DEI (Les Agriers)** has declared to Bureau Veritas the following production site

LEROY SOMER DEI (Les Agriers)
Zi Agriers
16000 ANGOULEME
FRANCE

6. MARKING OF PRODUCT:

- Maker's name or trade mark.

- Serial number of the units.

- Equipment type number or model identification under which it was type-tested.

7. OTHERS:

7.1 - It is **LEROY SOMER DEI (Les Agriers)**'s responsibility to inform shipbuilders or their sub-contractors of the proper methods of fitting, use and general maintenance of the approved equipment and the conditions of this approval.

*** END OF CERTIFICATE ***