



CERTIFICATE NUMBER	25-0321648-PDA
EFFECTIVE DATE	27-Jul-2025
EXPIRY DATE	26-Jul-2030
ABS TECHNICAL OFFICE	Houston ESD - Electrical

CERTIFICATE OF Product Design Assessment

This is to certify that a representative of this Bureau did, at the request of

BASLER ELECTRIC COMPANY

located at

12570 STATE ROUTE 143, HIGHLAND, IL, United States, 62249

assess design plans and data for the below listed product. This assessment is a representation by the Bureau as to the degree of compliance the design exhibits with applicable sections of the Rules. This assessment does not waive unit certification or classification procedures required by ABS Rules for products to be installed in ABS classed vessels or facilities. This certificate, by itself, does not reflect that the product is Type Approved. The scope and limitations of this assessment are detailed on the pages attached to this certificate.

Product: **Controllers**
Model: **DECS-450, DECS-450R**
Endorsements:
Tier: **2 - PDA Issued**

This Product Design Assessment (PDA) Certificate remains valid until 26/Jul/2030 or until the Rules and/or Standards used in the assessment are revised or until there is a design modification warranting design reassessment (whichever occurs first).

Acceptance of product is limited to the "Intended Service" details prescribed in the certificate and as per applicable Rules and Standards.

This Certificate is valid for installation of the listed product on ABS units which exist or are under contract for construction on or previous to the effective date of the ABS Rules and standards applied at the time of PDA issuance. Use of the Product for non-ABS units is subject to agreement between the manufacturer and intended client.

American Bureau Of Shipping

Soheni Haque

Soheni Haque, Sr. Managing Principle Engineer

NOTE: This certificate evidences compliance with one or more of the Rules, Guides, standards or other criteria of ABS or a statutory, industrial or manufacturer's standards. It is issued solely for the use of ABS, its committees, its clients or other authorized entities. Any significant changes to the aforementioned product without approval from ABS will result in this certificate becoming null and void. This certificate is governed by ABS Rules 1-1-A3/5.9 Terms and Conditions of the Request for Product Type Approval and Agreement (2010)

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Web: basler.com

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Product: **Controllers**
Model: **DECS-450, DECS-450R**
Endorsements:

Intended Service:

Marine and Offshore Applications - Use for excitation control and logic control for synchronous generators or motors in an integrated package.

Description:

The DECS-450 and DECS-450R are open microprocessor-based controllers. These devices do not directly control the excitation current, instead they provide an analog signal to control the firing circuit output of external power bridge(s) and monitor operating parameters to control and protect synchronous generator or motor from operating outside its capability.

The DECS-450 and DECS-450R consist of Analog Board Assembly, Digital Board Assembly, Power PC Processor Assembly, and Power Supply Assembly with a base panel, a top panel, a rear panel, and a front panel that attaches forming a completely enclosed device. The DECS-450R is a feature-reduced variant of the DECS-450, similar to the DECS-450 except that the DECS-450R lacks an RS-232 communications port from a hardware perspective.

The DECS-450 and DECS-450R provide five regulation modes - Automatic Voltage Regulation (AVR), Field Current Regulation (FCR), Field Voltage Regulation (FVR), Power Factor Regulation (PF) and Var Regulation (var) as well as the protections relating to machine voltage (overexcitation, undervoltage, overvoltage & loss of sensing), frequency (overfrequency and underfrequency), power (reverse power and loss of excitation), etc..

Rating:

Control Power Supply: Style L - 24/48 Vdc, 35W, battery input

Style C - 125 Vdc, 35W, battery input

120 Vac, 50/60 Hz, 50 VA

Voltage Sensing Input: 100/200 Vac (50 Hz), 120/240 Vac (60 Hz), <1 VA per phase, 1-phase or 3-phase,

Current Sensing Input: 1 Aac or 5 Aac, 50/60 Hz, <1 VA, 1-phase or 3-phase

Field Voltage and Current Sensing Input (from Field Isolation Transducer):

0.9 to 9.1 Vdc (5.0 Vdc = zero field voltage), 2.0 to 9.5 Vdc (2.0 Vdc = zero field current)

Operating Ambient Temperature: -25 to +60°C

Humidity: 93% relative humidity

Service Restriction:

- Unit Certification is not required for this product.

- The DECS-450 and DECS-450R are designed for use with Basler Electric's Interface Firing Module (IFM) and three- or six-SCR power bridges or other power bridges with a controller that is compatible with the output signal from the DECS-450 and DECS-450R.

- Installation of the products is to be limited in the general power distribution zone in the enclosed and non-hazardous areas.

Comments:

1) The Manufacturer has provided a declaration about the control of, or the lack of Asbestos in this product.

2) The specific functional and operational arrangements are to be specifically approved in connection with the design approval of particular generator or motor type and to be performance tested in the presence of a surveyor in accordance with 4-9-9/15.7 Table 2 either in the manufacturer's shop or after installation onboard.

3) The generators and motors equipped with the subject controllers are to be tested as per Marine Vessels Rules 4-8-3/3.15 & 4-8-5/3.13.1 and Offshore Units Rules 6-1-7/Table 2, as applicable.

4) Optional integrated power system stabilizer (PSS), Optional CEM-2020 Contact Expansion Module provides and

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Optional AEM-2020 Analog Expansion Module for DECS-450 controller are not included in the assessment.

Notes/Drawing/Documentation:

DOCUMENT No. / TITLE / REVISION (DATE)

9597100400, Assembly Dwg, DECS-450, Rev: C

9597100920, Outline Drawing, DECS-450, Rev: C

9439701406, Power PC Processor Assembly, Rev: A

9439701915, Power PC Processor, Rev: -

9440301410, DECS/250/N/EC/450 Digital Board Assembly, Rev: -

9440301914, DECS/250/N/EC/450 Digital Board Schematic, Rev: -

9440302409, DECS-250/N/EC/450 Analog Assembly Drawing, Rev: D

9440302914, DECS-250/N/EC/450 Analog Board Schematic, Rev: -

9597100960, DECS-450 Interconnect, Rev: A

9597103400, DECS-450 Power Supply Assembly, Rev: C

9597103910, DECS-450 Power Supply Schematic, Rev: C

9597100990, DECS-450 Instruction Manual, Rev A (Sept 2020)

9610000990, DECS-450R Instruction Manual, Rev - (Jul 2020)

QAA-1, DECS-450 Bulletin (Jul 2020)

QAB-1, DECS-450R Bulletin (Jul 2020)

Basler IACS E10 Regulator/Controller Test Plan - Maritime Approval, Rev C

Basler PSG Lab Book - IEC 61000-4-4 (ABS) Fast Transient SWC Immunity, (Jul 2020)

Basler PSG Lab Book - EN 61000-4-5 Surge Immunity of DECS-450, (Jul 2020)

Basler PSG Lab Book - EN 61000-4-2 ESD Immunity of DECS-450, (Jul 2020)

Basler PSG Lab Book - EN 61000-4-6 Conducted Immunity of DECS-450, (Jul 2020)

Basler PSG Lab Book - Vibration Tests Worksheet Relays, (Aug 2020)

Basler PSG Lab Book - Dry Heat, Cold, and Insulation Resistance Tests Power Systems Products, (Jul 2020)

Basler PSG Lab Book - Damp Heat and Insulation Resistance Tests Power System Products, (Aug 2020)

Basler PSG Lab Book - ABS Power Supply Failure & Variation, (Aug 2020)

Basler PSG Lab Book - ABS Performance Test, (Jul 2020)

Basler PSG Lab Book - High Voltage Test (ABS), (Aug 2020)

9610000781, ABS Immunity Test Report of DECS-450, Rev. -

9610000782, ABS Emissions Test Report of DECS-450, Rev. -

UL Certificate of Participation - client test data program (CTDP), DA File: DA363, (Nov 2019)

UL File E97035-Project 4788903703, Vol.1 Sec.36, report on component – engine generator

Terms of Validity:

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STANDARDS**ABS Rules:**

2025, Rules for Conditions of Classification, Part 1A, 1A-1-4/7.7, 1A-1-A3, 1A-1-A4, which covers the following:

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2025, Rules for Building and Classing Marine Vessels: 4-8-3/1.9, 1.11, 1.17.1, Table 2; 4-9-9/15.7 Table 1

2025, Rules for Conditions of Classification, - Offshore Units, Part IB, 1B-1-4/9.7, 1B-1-A2, 1B-1-A3, which covers the following:

2025, Rules for Building and Classing Offshore Units: 4-3-1/11, 17.1

National:

ANSI/CAN/UL/ULC 6200 Standard for Controllers for Use in Power Production, Edition 1, May 31, 2019

International:

IEC 60068-2-1 Environmental Testing Part 2-1: Tests – Test A: Cold, 6th Edition, 2007-03

IEC 60068-2-2 Environmental Testing Part 2-2: Tests – Test B: Dry Heat, 5th Edition, 2007-07

IEC 60068-2-30 Environmental Testing Part 2-30 Tests – Test Db; Damp Heat, cyclic (12 h + 12 h cycle), 3rd Edition, 2005-08

IEC 60068-2-6 Environmental Testing Part 2-6: Tests – Test Fc: Vibration (sinusoidal), 7th Edition, 2007-12

IEC 61000-4-2 Electromagnetic Compatibility (EMC) - Part 4-2: Electrostatic Discharge Immunity Test, 2nd Edition, 2008-12

IEC 61000-4-4 Electromagnetic Compatibility (EMC) - Part 4-4: Electrical Fast Transient/Burst Immunity Test, 3rd Edition, 2012-04

IEC 61000-4-5 Electromagnetic Compatibility (EMC) - Part 4-5: Surge Immunity Test, 3.1 Edition, 2017-08

IEC 61000-4-6 Electromagnetic Compatibility (EMC) - Part 4-6: Immunity to Conducted Disturbances, Induced by Radio-frequency Fields, 4th Edition, 2013-10

Government:

NA

EUMED:

NA

OTHERS:

IACS E10 Test Specification for Type Approval, Rev. 9, Aug. 2023