



Lloyd's
Register

Type Approval Certificate

This is to certify that the undernoted product have been tested with satisfactory results in accordance with the relevant requirements of the Lloyd's Register Type Approval System.

This certificate is issued to:

PRODUCER	EMMIS S.A.
PLACE OF PRODUCTION	11, Andrea Metaxa Str. 14564, Kifisia, Greece
DESCRIPTION	Low Voltage Dry type Transformers 5kVA to 630kVA
TYPE	EMMIS MAR/TC series
APPLICATION	Marine, offshore and industrial applications in environmental category ENV2 as defined in Lloyd's Register's Type Approval System, Test Specification Number 1- July 2015.
STANDARDS	Manufactured in accordance with the following as applicable: IEC 60076-11:2004 Power Transformers – Dry Type Transformers, IEC 60092-303:1980 Electrical Installations In Ships – Transformers For Power And Lighting, IEC 61558-2-4:2009 Isolating Transformers (applicable for power up to 40kVA) & Lloyd's Register's Rules and Regulations for the Classification of Ships Part6 Chapter2. Tested in accordance with the following as applicable: EN 60076-1:2011/11.3, EN 60076-11:2004/17, EN 60076-1:2011/11.4, EN 60076-1:2011/11.5, EN 60076-11:2004/20, EN 60076-11:2004/23.2.1, IEC 60068-2-1:2007, IEC 60068-2-30:2005, IEC 60068-2-6:2007, IEC 60092-504 Ed. 4.0:2016, EN 61000-4-11:2004, IACS E10 Rev.6 Oct 2014.

Certificate No.	17/00085
Issue Date	15 September 2017
Expiry Date	14 September 2022
Sheet	1 of 3

*Lloyd's Register EMEA
Lloyd's Register Global Technology Centre, Southampton Boldrewood Innovation Campus, Burgess Road,
Southampton, SO16 7QF*



Stamatis Agelopoulos
Lead Specialist
Piraeus Technical Support Office

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ADDITIONAL TESTS

Protection (enclosure) IP23 as per relevant requirements of IEC 60529:1989 +A1:1999 +A2:2013, IEC 60092-201:1994

RATINGS

POWER	5kVA – 630kVA
SERIES	MAR/TC
NUMBER OF INPUT - OUTPUT PHASES	3ph – 3ph
OPERATION FREQUENCY	50 - 60Hz
INPUT VOLTAGE	110 - 690V
OUTPUT VOLTAGE	110 - 450V
WINDINGS	Copper/ aluminum
WINDINGS CONNECTION	D-d or Yn-yn or Yn-d or D-yn
TYPE	Dry
CLASS	I (earth terminal – protective conductor)
OPERATION	Continuous at rated power
INSULATION CLASS	F
VOLTAGE DROP	2.5% for power more than 15KVA 5% for power up to 15KVA
ENVIROMENTAL CATEGORY	ENV2
COOLING	AN, air natural
AMBIENT TEMPERATURE	45°C max
TEMPERATURE RISE	90°C max
LIFTING CAPABILITY	Lifting eye for power 10-630KVA
DEGREES OF PROTECTION	IP00/ IP23
TERMINALS	Rail type or high current into enclosure or copper bars (depending on current)

OTHER CONDITIONS

Transformers of 100 kW and over, where intended for use for essential and emergency services, is to be surveyed by LR Surveyor(s) during manufacture and testing.

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**OTHER CONDITIONS
(cont.)**

Transformers should be selected and installed such that the degrees of protection (IP), as specified in IEC 60092-201: Electrical Installations in Ships – Part 201: System Design – General, will satisfy the requirements for the relevant installation location.

Manufacturer's instructions are to be followed.

"This Certificate is not valid for equipment, the design, ratings or operating parameters of which have been varied from the specimen tested. The manufacturer should notify Lloyd's Register EMEA of any modification or changes to the equipment in order to obtain a valid certificate."

The Design Appraisal Document No. 17/00085 and its supplementary Type Approval Terms and Conditions form part of this Certificate.

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