



Type Approval Certificate

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

Manufacturer	DEIF A/S
Address	Frisenborgvej 33, Skive, 7800, Denmark
Type	Monitoring and Control System
Description	Programmable Automation Controller and intelligent Energy Controller with EtherCAT based I/O modules, Display Unit
Trade Name	AMC 600, iE 650 (*), iE7
Application	Marine, Offshore and Industrial applications for use in environmental categories ENV1, ENV2 and ENV3 as defined in Lloyd's Register's Type Approval System, Test Specification Number 1 - December 2021.
Specified Standard	Manufacturer's Specification. (*) IACS UR E27 Rev.1 (2023) and Part 6, Chapter 1, Section 2.16 of the Rules and Regulations for the Classification of Ships, July 2024
Ratings	24 VDC (18...32 VDC)
Additional Tests	Low Temperature Test: -40°C/16hrs. Flammability Test: Needle Flame Test (IEC 60095-11-5)
Other Conditions	For the configuration of the EtherCAT-slave Output-modules and their safe-operation, please refer to the AMC 600 data sheet doc. no. "492126002K", Section 2.4.3.

71 Fenchurch Street, London, EC3M 4BS, United Kingdom

Martin Lange

Electrical & Control - Lead Specialist to
Lloyd's Register EMEA
A member of the Lloyd's Register group

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For the configuration of the self-monitoring properties of the AMC 600, please refer to the description "IgH EtherCAT master".

(*) Compliance with above listed specified standard requirements are limited to operation in "trusted networks". Any wireless communication function like access management and/or use control are excluded.

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 TSO/24-021690_iE650 and its supplementary Type Approval Terms and Conditions form part of this Certificate.

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Appendix

Programmable Computer Modules – AMC 600 and iE 650(*)

PCM6.1	Application:	C/C++ and CODESYS application
	DI:	high with 13...30V and low with -30...+5V
	DO:	solid state relay with external watchdog
	Interface:	2x Ethernet, 2x CAN, 2x RS-422/485
	Processor:	1.2 GHz dual core
	Memory:	1 GB DDR3 RAM 64bit
	Storage:	4 GB non-volatile
PCM6.2 (*)	Application:	C/C++ and CODESYS application
	DI:	high with 13...30V and low with -30...+5V
	DO:	solid state relay with external watchdog
	Interface:	3x Ethernet, 2x CAN, 2x RS-422/485, 1x Display Port
	Processor:	1.6 GHz quad core
	Memory:	4 GB DDR4 RAM
	Storage:	32 GB non-volatile (8 GB for user application data)

Local Display

iE7	Communication/	1x Display Port
	Connection:	1x USB 2.0 (type C)
		1x USB (type A)
		1x USB (type B)

Power Distribution Modules

PDM6.1	Power:	30W /24V (18...32V) Black-out hold-up for 10ms
	EMI filter:	common mode EMI input filter
	Isolation:	input galvanic isolated from other potentials, 500 VDC
PDM6.2	Power:	30W / 24V (18...32V) Black-out hold-up for 10ms+300ms
	EMI filter:	common mode EMI input filter
	Isolation:	input galvanic isolated from other potentials, 500 VDC

Station Interface Modules

SIM6.1	Interface:	1x EtherCAT OUT (optical – fibre glass 50µm) 1x EtherCAT IN (optical – fibre glass 50µm)
SIM6.2	Interface:	1x EtherCAT OUT (electrical – RJ45) 1x EtherCAT OUT (optical – fibre glass 50µm)
SIM6.3	Interface:	1x EtherCAT IN (electrical – RJ45) 1x EtherCAT OUT (optical – fibre glass 50µm) 1x EtherCAT OUT (electrical – RJ45)

Analogue Input/Output Modules

AIO6.1	2x Output:	Current mode -20...20mA, 0...20mA, 4...20mA Voltage mode -10...10V, 0-10V Resolution 16 bit
	16x Input :	-10...10V, 0...10V, -20...20mA, 0...20mA, 4...20mA Impedance – current (50Ω), voltage (10kΩ) Resolution 16 bit
AIO6.2	8x Output:	Current mode -20...20mA, 0...20mA, 4...20mA Voltage mode -10...10V, 0-10V Resolution 16 bit
	8x Input :	-10...10V, 0...10V, -20...20mA, 0...20mA, 4...20mA Impedance – current (50Ω), voltage (10kΩ) Resolution 16 bit
AOM6.2	8x Output:	Current mode -20...20mA, 0...20mA, 4...20mA Voltage mode -10...10V, 0-10V Resolution 16 bit
AIM6.1	16x Input:	-10...10V, 0...10V, -20...20mA, 0...20mA, 4...20mA Impedance – current (50Ω), voltage (10kΩ) Resolution 16 bit
AIM6.2	8x Input:	-10...10V, 0...10V, -20...20mA, 0...20mA, 4...20mA Impedance – current (50Ω), voltage (10kΩ) Resolution 16 bit

Digital Input/Output Modules

DIO6.1	10x Output: 16x Input:	max. 0.5A per channel and max. total 2A high with 13...30V and low with -30...+5V
DIO6.2	16x Output: 16x Input:	max. 0.5A per channel and max. total 2A high with 13...30V and low with -30...+5V
DIM6.1	32x Input:	high with 13...30V and low with -30...+5V
DOM6.1	32x Output:	max. 0.5A per channel and max. total 2A

Temperature Input Modules

TIM6.1	14x Input:	Pt100 (-50...200°C) – 2-wire or 3-wire connection Sampling ≤ 100ms Open input and short circuit detectable
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Interface Modules

IFM6.1	Interface:	2x Profibus DP Master with max. 5 slaves per master 2x RS-485 shielded twisted copper cable
IFM6.2	Interface:	CAN (ISO11989) with termination open/120Ω 2x RS-422 shielded twisted copper cable 2x Digital with frequency measurement

Software/Firmware Version(s)

Controller:	V.1.0.x.x (PCM6.1) V.2.0.x.x (PCM6.2(*))
EtherCAT configuration file:	V.1.0.x.x (PCM6.1, PCM6.2))
Firmware Package	V.1.0.x.x (DIO6.1, DIO6.2, DIM6.1, DOM6.1, SIM6.1, SIM6.2, SIM6.3, AIO6.1, AIO6.2, AOM6.2, IFM6.1, IFM6.2, TIM6.1)
Display:	V.1.0.x.x (iE7)