

**DEIF A/S****Type Certificate**

4124030088C / ref. HEJ

Type:	ML 150 AGC 150 or ASC 150 with designations: -Mains, -Hybrid, -Stand alone, -BTB, -Engine Drive, -Generator, -ATS, -Remote Display, -Engine Drive Marine, -Generator Marine, -Solar or -Storage
-------	--

Technical specifications	
Operating temperature:	-40 to 70 °C (-40 to +158 °F) (operating) -40 to 85 °C (-40 to +185 °F) (storage)
Measuring voltage:	100 to 690 V AC RMS (phase-phase) (above 2000m derate to max. 480V)
Voltage withstand:	Un +35 % continuously, Un +45 % for 10 seconds Measuring range of nominal: 10 to 135 % Low range, nominal 100 to 260 V: 10 to 351 V AC phase-to-phase High range, nominal 261 to 690 V: 26 to 932 V AC phase-to-phase
Measuring current:	-1 A and -5 A Consumption max. 0,5VA
Current withstand:	7 A continuous 20 A for 10 seconds 40 A for 1 second
Measuring frequency:	5 to 75 Hz
Digital inputs:	12 x digital inputs Min./max. -24V / 36VDC Negative switching (connect to ground for activation)
Analogue inputs:	4 x analogue inputs Configurable as: • Negative switching digital input • 0 V to 10 V sensor (Accuracy: ± 20 mV ± 1.00 % rdg) • 4 mA to 20 mA sensor (Accuracy: ± 20 μ A ± 1.00 % rdg) • 0 Ω to 2.5 k Ω sensor (Accuracy: ± 2 Ω ± 1.00 % rdg)
Tacho inputs:	10 to 10000 Hz +/- 1 V _{peak} to 70 V _{peak}
DC outputs:	2 x outputs, fuel and crank (15 A DC inrush and 3 A continuous, supply voltage 0 to 36V DC) 10 x outputs (2 A DC inrush and 0.5 A continuous, supply voltage 4.5 to 36 V DC)
D+	210 mA @ 12 V, 105 mA @ 24 V
Voltage regulator output:	Isolated DCV output 10 - +10VDC, minimum load 500 Ω
Speed governor output	Isolated DCV/PWM output -10 - +10VDC 1 – 2500 Hz \pm , 1 – 10,5V (12 bit resolution)
Communication:	RJ45 Ethernet, USB 2.0 (type B connector) RS485-1 & -2, CAN A & B,
Auxiliary supply:	12 / 24 VDC (operating range: 6.5 to 36 V DC)
Max. current consumption:	5 W typical (12 W max.)
Size/Weight::	173.3 x 233.3 x 44.7 mm (6,82 x 9,16 x 1.76 in), 0.79 kg

*) Tested on all units according to specifications. Remaining specifications are tested regularly by test sampling

Type test specifications		Tested according to:
Temperature:	-40 to 70 °C (-40 to +158 °F) (operating) -40 to 85 °C (-40 to +185 °F) (storage)	IEC 60068-2-1 IEC 60068-2-2
Battery voltage accuracy:	± 0.35 V	
Battery voltage resolution:	0.1 V	

DEIF A/S
Frisenborgvej 33, DK-7800 Skive, Denmark

Tel: (+45) 96149614 * Fax: (+45) 96149615
Further information: www.deif.com

**DEIF A/S****Type Certificate**

4124030088C / ref. HEJ

Type test specifications		Tested according to:
Voltage accuracy:	± 1 % of nominal within 10-75 Hz $\pm 1/-4$ % of nominal within 3.5-10 Hz	
Current accuracy:	From 10 to 75 Hz: • ± 1 % of nom. 2-100% current • ± 1 % of meas. 100-300% current From 3.5 to 10 Hz: • $\pm 1/-4$ % of nom. 2-100% current • $\pm 1/-4$ % of meas. 100-300% current	
Frequency accuracy:	± 0.01 Hz within 60-135% of nom. voltage ± 0.05 Hz within 10-60% of nom. voltage	
Power accuracy (W,PF):	± 1 % of nominal within 35 to 75 Hz	
Input accuracy: Current: Voltage: RMI 2-wire LOW: RMI 2-wire HIGH:	• Accuracy: ± 20 uA ± 1.00 % rdg • Range: 0 to 10 V DC • Accuracy: ± 20 mV ± 1.00 % rdg • Range: 0 to 800 Ω • Accuracy: ± 2 Ω ± 1.00 % rdg • Range: 0 to 2500 Ω • Accuracy: ± 5 Ω ± 1.00 % rdg	
Output accuracy:	± 1 % of setting value	
Accuracy and temperature:	Temperature coefficient: 0.2 % of full scale per 10 °C	
Humidity (Damp Heat)	Cyclic, 20/55°C, 97% RH, 144h. Steady State, 40°C, 93% RH, 240 h.	IEC 60255-1
Change of temperature:	70 to -40 °C, 1°C / minute, 5 cycles.	IEC 60255-1
Vibration:	Response: • 10 to 58.1 Hz, 0.15 mmpp • 58.1 to 150 Hz, 1 g. Endurance: • 10 to 150 Hz, 2 g. Seismic vibration: • 3 to 8.15 Hz, 15 mmpp • 8.15 to 35 Hz, 2 g.	IEC 60255-21-1 (Class 2) IEC 60255-21-1 (Class 2) IEC 60255-21-3 (Class 2)
Shock:	Response: 10 g, 11 ms, half sine. Withstand: 30 g, 11 ms, half sine. 50 g, 11 ms, half sine. Tested in 3 axes (18 impacts per test)	IEC 60255-21-2 (Class 2) IEC 60255-21-2 (Class 2) IEC 60068-2-27, test Ea
Bump:	20g, 16 ms, half sine Tested in 3 axes. (6000 impacts per test)	IEC 60255-21-2 (Class 2)
Electrical safety:	Installation Cat.III 600V Pollution degree 2	IEC/EN 60255-27 ULC 6200:2019, 1.ed
EMC:		IEC/EN 60255-26
Materials:	All plastic parts are self-extinguishing	UL94-V0
Protection degree:	Terminal side: IP20 (rear) Front: IP65 (with supplied sealing gasket)	IEC/EN 60529

31th May 2023
DEIF A/S

Jesper Flyvholm
Certification Manager

DEIF A/S
Frisenborgvej 33, DK-7800 Skive, Denmark

Tel: (+45) 96149614 * Fax: (+45) 96149615
Further information: www.deif.com