

DEIF A/S

Type Certificate

4124030084A / ref. SOJ

Type:	Multi-line 300 PPU 300 – Paralleling and Protection Unit
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Technical specifications

* Measuring Voltage:	Nominal: 100...690V AC phase-phase. External voltage transformer load max. 0.2VA / phase.
Voltage withstand:	1.2 x Nominal voltage continuously; 1.3 x Nominal voltage for 10 s.
* Measuring Current:	Nominal: 1 or 5A AC from current transformer. External current transformer load max. 0,3VA / phase.
Current withstand	10A continuously; 17.5A for 60 s; 100A for 10 s; 250A for 1 s.
* Measuring frequency:	Nominal: 40...70Hz.
Accuracy:	Voltage: Class 0.2 of selected nominal value, e.g. 230V. Current: Class 0.2 of selected nominal value, e.g. 1A. Power (P,Q,S): Class 0.5 of nominal range setting, e.g. at 100V/1A, +/-0.5% of 100W. Frequency: Class 0.1 of selected nominal value, e.g. 50Hz. (Operating temperature range). Frequency: Class 0.02 of selected nominal value, e.g. 50Hz. (Reference temperature range). Phase angle: 0.1°. Temperature coefficient: Add 0.2% of nominal value per 10°C outside the reference range. E.g. for Voltage measurement, the accuracy is +/- 1% at 70°C.
* Auxiliary supply:	
PSM 3.1	Nominal: 12/24V DC (8...36V DC) max. 35W consumption.
EIM 3.1	Nominal: 12/24V DC (8...36V DC) max. 5W consumption.
Cranking dropout:	Able to survive 0V for 50ms when dropping from at least 8V DC. Reverse polarity protected.
* Relay outputs:	
PSM 3.1	30V DC / 1A resistive.
EIM 3.1	30V DC / 6A resistive (including wire break detection).
IOM 3.1	250V AC / 30V DC / 6A resistive, B300 Pilot duty.
GAM 3.1	250V AC / 30V DC / 6A resistive, B300 Pilot duty.
* Digital input:	Optocoupler, bi-directional. ON: 8...36V DC. OFF: 0...2V DC. Impedance: 4.7kΩ.
Voltage withstand:	±36V DC.
* Magnetic pickup:	3...70V _{PEAK} , 2...20000Hz.
Voltage withstand:	70VAC
* Alternator Tacho/NPN-PNP	8...36V, 2...20000Hz.
Voltage withstand:	±36V DC.
Accuracy	2...99Hz: ±0.5Hz 100...20000Hz: Class 0.5 of measured value.

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* Analogue multi-functional inputs:	<p>Current: 0...20mA or 4...20mA. Pt100/Pt1000: -40...250°C. RMI: 0...2500Ω. (Ranges: 0-200Ω, 0-300Ω, 0-500Ω, 0-1000Ω, 0-2500Ω) Voltage: -10...10V DC or 0...10V DC.</p>
Accuracy:	<p>Class 1.0 of selected range. E.g. for RMI 0-200Ω, +/-1% of 200Ω.</p> <p>Temperature coefficient: 0.2% of full scale per 10°C outside the reference range.</p> <p>Digital: Dry contact with wire supervision. Max. resistance for ON detection: 330Ω. Min. current rating for the connected relay: 2.5mA.</p>
Voltage withstand:	±36V DC.
* Analogue multi-functional outputs:	<p>Current: -20...20mA, 0...20mA or 4...20mA. Max load: 500Ω.</p> <p>Voltage: -10...10V DC, 0...10V DC, 0...5V DC, -5...5V DC, 0...3V DC, -3...3V DC, 0...1V DC. Max. load: 600Ω.</p>
Accuracy:	<p>Class 1.0 of selected range. E.g. for 0...20mA, +/-1% of 20mA.</p> <p>Temperature coefficient: 0.2% of full scale per 10°C outside the reference range.</p>
Voltage withstand:	±36V DC.
* Load Sharing Q/P:	<p>Voltage input/output: -5...5V DC. Impedance: 23kΩ.</p>
Accuracy:	<p>Class 1.0 of input/output range. E.g. +/-1% of 10V.</p> <p>Temperature coefficient: 0.2% of full scale per 10°C outside the reference range.</p>
* PWM output:	<p>Frequency: 500Hz Duty cycle: 5...95%. Voltage: 0...6.8V DC. Low level: <0.5V DC. High Level: >5.5V DC.</p>
Accuracy:	<p>Frequency: ± 50Hz Duty cycle: Class 0.25%</p> <p>Temperature coefficient: 0.2% of full scale per 10°C outside the reference range.</p>
Voltage withstand:	±30V DC.

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* Galvanic separation:

PSM 3.1	Between power supply input and other I/O's: 600V, 50Hz, 60 s. Between relay groups and other I/O's : 600V, 50Hz, 60 s. Between EtherCAT ports and other I/O's: 600 V, 50 Hz for 60 s.
ACM 3.1	Between AC voltage and other I/O's: 3250V, 50Hz, 60 s. Between AC current and other I/O's: 2200V, 50Hz, 60 s.
EIM 3.1	Between relay groups and other I/O's: 600 V, 50 Hz for 60 s. Between digital input groups and other I/O's: 600 V, 50 Hz for 60 s. Between MPU and W inputs and other I/O's: 600 V, 50 Hz for 60 s. Between analogue inputs and other I/O's: 600 V, 50 Hz for 60 s.
IOM 3.1	Between relay groups and other I/O's: 2200 V, 50 Hz for 60 s. Between digital input groups and other I/O's: 600 V, 50 Hz for 60 s.
GAM 3.1	Between relay groups and other I/O's: 2200 V, 50 Hz for 60 s. Between digital input groups and other I/O's: 600 V, 50 Hz for 60 s. Between MPU and W inputs and other I/O's: 600 V, 50 Hz for 60 s. Between analogue inputs and other I/O's: 600 V, 50 Hz for 60 s.
PCM 3.1	Between CAN A and other I/O's: 600 V, 50 Hz for 60 s. Between CAN B and other I/O's: 600 V, 50 Hz for 60 s. Between Ethernet ports and other I/O's: 600 V, 50 Hz for 60 s.

Note: "Other I/O's" includes frame ground.

Type test specifications

Tested according to:

Temperature:	15...30°C (Reference) -40...70°C (operating) -40...80°C (storage)	IEC 60068-2-1/2-2 IEC 60255-1
Humidity:	97% RH Cyclic 93% RH Steady state	IEC 60068-2-30, test Db. IEC 60068-2-78, test Cab. IEC 60255-1
Change of temperature:	70°C ...-40°C 1°/minute	IEC 60255-1 IEC 60068-2-14, test Nb.
Operating altitude:	0-4000m	Refer to module specification for altitude de-rating above 2000m.
Vibration:	Operation: 3...8Hz: 17mm _{pp} 8...100Hz: 4g 100...500Hz 2g Response: 10...58.1Hz 0.15mm _{pp} 58.1...150Hz 1g Endurance: 10...150Hz 2g Seismic: 3...8.15Hz 0.15mm _{pp} 8.15...35Hz 2g	IEC 60068-2-6 & IACS UR E10 IEC 60255-21-1 (Class 2) IEC 60255-21-1 (Class 2) IEC 60255-21-3 (Class 2)

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-power in control

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Type test specifications

Shock:	Base mounted: 10g, 11msec. half sine 30g, 11msec. half sine 50g, 11msec. half sine Tested with 3 impacts in each direction in all 3 axes. Total 18 impacts per test.	IEC 60255-21-2 Response (Class 2) IEC 60255-21-2 Endurance (Class 2) IEC 60068-2-27, test Ea.
Bump	20g, 16msec. half sine Tested with 1000 impacts in each direction in all 3 axes. Total 6000 impacts per test.	IEC 60255-21-2 (Class 2)
Safety:	Installation Cat.III 600V Pollution degree 2	IEC/EN 60255-27
Load dump:	1 pulse of 123V/1Ω/100ms 1 pulse of 174V/8Ω/350ms	ISO 7637-2 (Pulse 5a)
EMC:		EN 61000-6-3 EN 61000-6-2 IEC/EN 60255-26 IEC 60533 power distr. zone IACS UR E10 power distr. zone
Flammability:	All plastic parts are self-extinguishing to UL94-V0	UL94 IEC/EN 60695-11-5 (Needle flame test)
Ingress protection:	IP20	IEC/EN 60529

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

22nd December 2016

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Søren Madsen

R&D Product Approval Manager