IOM3.2

Input/output module
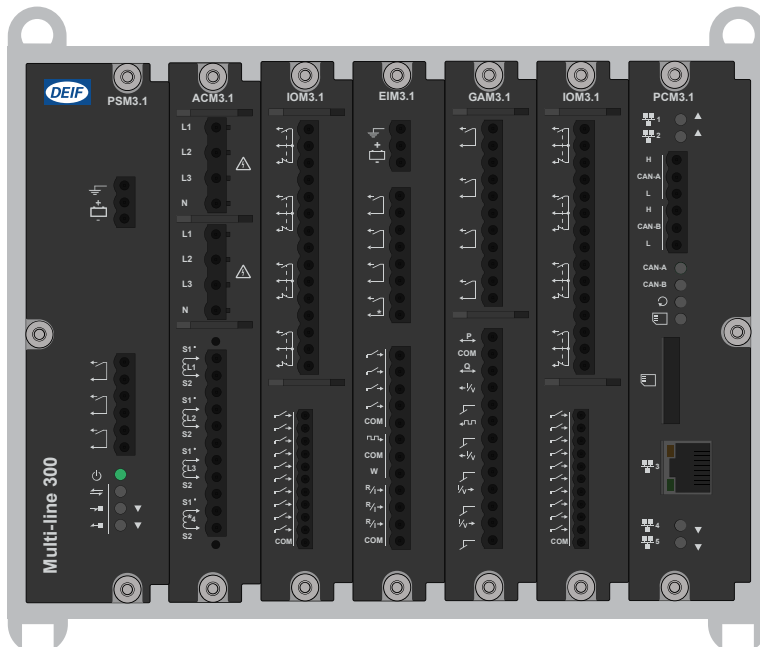
Data sheet

DEIF Improve Tomorrow

1. Multi-line 300

2. Technical specifications
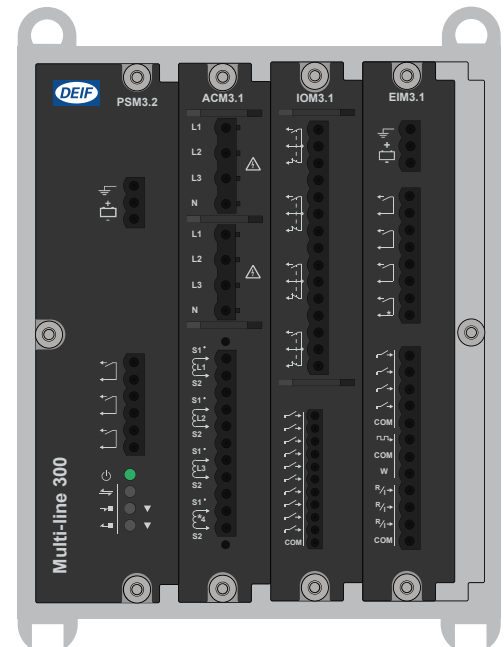
3. Legal information

1. Multi-line 300

1.1 About the hardware modules

The Multi-line 300 (ML 300) hardware modules are printed circuit boards that slot in to either a rack R7.1 or rack R4.1. Depending on the type of module, they can provide measurement connections, inputs, and outputs.

Example rack R7.1

Example rack R4.1

The hardware modules feature:

* Placement flexibility in the rack.
* Remove, replace, or add on-site.
* Automatically recognised.
* Configurable input and output functions (digital and analogue):
  ◦ Digital input functions: Commands from operators or 3rd party equipment, changing configuration, operating information.
  ◦ Digital output functions: Alarm status, commands to 3rd party equipment, operating information.
  ◦ Analogue input functions: External set points, operating information, supervised binary inputs.
  ◦ Analogue output functions: Regulation *, operating information.

NOTE * Only available on certain types of controller.

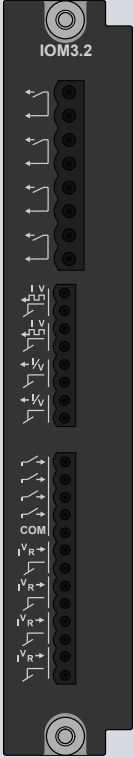All slots must be covered during operation and blind modules can be used to cover unused slots.

2.   Technical specifications

2.1   Input/output module IOM3.2

The input output module has 4 relay outputs, 4 analogue multifunctional outputs (including 2 pulse width modulation PWM outputs), 4 digital inputs, and 4 analogue multifunctional inputs. These I/Os are all configurable.

Internal cold junction compensation is not available on IOM3.2

IOM3.2 terminals

Module	Count	Symbol	Type	Name
IOM3.2	4		Relay output	Configurable
	2	I V	Analogue multifunctional output (mA, V DC, PWM)	Configurable
	2	I/V	Analogue multifunctional output (mA, V DC)	Configurable
	4		Digital input	Configurable
	4	IᵛR	Analogue multifunctional input (mA, V DC, RMI)	Configurable

IOM3.2 technical specifications

Category	Specification
Relay outputs	Relay type: Solidestate relay Electrical rating and UL/cUL Listed: 30 V DC, and 6 A, resistive; B300, pilot duty (B300 is a power limit specification for inductive loads) Voltage withstand: ±36 V DC
Analogue multifunctional outputs	**Current output:** • Range: Any custom range between -25 to 25 mA DC • Accuracy: 1 % of range • Resolution: 16 bits (< 2 uA / bit) • Type: Active output (internal supply) • Load: Maximum ±25 mA → 400 Ω **Voltage output:** • Range: Any custom range between -10 to 10 V DC • Accuracy: 1 % of range • Resolution: 16 bits (< 0,7 mV / bit) • Load: Minimum ±10V -> 600 Ω

Category	Specification
	• Internal resistance, power ON: < 1 Ω • Internal resistance, power OFF: > 10 MΩ **General information for all outputs:** • Refresh rate (max): 50ms (input to output) • Voltage withstand: ±36 V DC
Analogue multifunctional PWM outputs ⌐ I V ↵⊓⊔	**PWM output:** • Frequency range: 1 to 2500 Hz ±5 Hz • Duty cycle accuracy (5 to 95 %): 0.5 % within reference temperature range • Resolution: 12 bits (4096 steps) • Voltage: Low level: < 0.5 V. High level: > adjustable 1 to 10 V. Maximum: 10.2 V • Output impedance: 25 Ω **General information for all outputs:** • Refresh rate (max): 50 ms (input to output) • Voltage withstand: ±36 V DC
Digital inputs ⌐↗	Bipolar inputs • ON: -36 to -8 V DC, and 8 to 36 V DC • OFF: -2 to 2 V DC Minimum pulse length: 50 ms Impedance: 3.9 kΩ Voltage withstand: ±36 V DC
Analogue multifunctional inputs I V R →	**Digital inputs with wire break detection:** • Dry contact inputs, 3 V DC internal supply • Wire-break detection with maximum resistance for ON detection: 100 Ω to 400 Ω **Current inputs:** • From active transmitter: 0 to 20 mA, or 4 to 20 mA • Accuracy: ±10 uA ±0.25 % of actual reading **Voltage inputs (DC):** • Range: ±10 V DC / 0 to 10 V DC • Accuracy: ±10 mV ±0.25 % of actual reading **Resistance measurement inputs, 2 wire (RMI):** • Resistance measurement: 0 to 4.5 kΩ • Accuracy: ±1 Ω ±0.25 % of actual reading **Resistance measurement inputs, 1 wire (RMI):** • Resistance measurement: 0 to 4.5 kΩ • Accuracy: ±2 Ω ±0.25 % of actual reading **Pt100:** • Range: -200 to 850 °C • Accuracy: ±1 °C ±0.25 % of actual reading **Pt1000:** • Range: -200 to 850 °C • Accuracy: ±0.5 °C ±0.25 % of actual reading **Thermocouple type, range and accuracy:** • E: -200 to 1000 °C (±2 °C ±0.25 % of actual reading) • J: -210 to 1200 °C (±2 °C ±0.25 % of actual reading) • K: -200 to 1372 °C (±2 °C ±0.25 % of actual reading) • N: -200 to 1300 °C (±2 °C ±0.25 % of actual reading) • R: -50 to 1768 °C (±2 °C ±0.25 % of actual reading) • S: -50 to 1768 °C (±2 °C ±0.25 % of actual reading)

Category	Specification
	• T: -200 to 400 °C (±2 °C ±0.25 % of actual reading)
	Note: Twisted pair and shielded cable is recommended to achieve specification and optimisation of noise immunity.
	General information for all outputs:
	• Refresh rate (max): 50 ms (input to output)
	• Voltage withstand: ±36 V DC
	• All analogue multi-functional inputs have a common ground
Terminal connections	**Relay outputs**: Terminals: Standard 45° plug, 2.5 mm^2 Wiring: 0.5 to 2.5 mm^2 (22 to 14 AWG), multi-stranded **Other inputs**: Terminals: Standard 45° plug, 1.5 mm^2 Wiring: 0.1 to 1.5 mm^2 (28 to 16 AWG), multi-stranded
Torques and terminals	Module faceplate screws: 0.5 N·m (4.4 lb-in) Connection of wiring to relay output terminals: 0.5 N·m (4.4 lb-in) Connection of wiring to digital input terminals: 0.25 N·m (2.2 lb-in) UL/cUL Listed: Wiring must be minimum 90 ºC (194 °F) copper conductors only
Galvanic isolation	Between relay groups and other I/Os: 2210 V, 50 Hz for 60 s Between other input groups and other I/Os: 600 V, 50 Hz for 60 s
Ingress protection	Unmounted: No protection rating Mounted in rack: IP20 according to IEC/EN 60529
Dimensions	L×H×D: 28 × 162 × 150 mm (1.1 × 6.4 × 5.9 in)
Weight	188 g (0.4 lb)

3. Legal information

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