

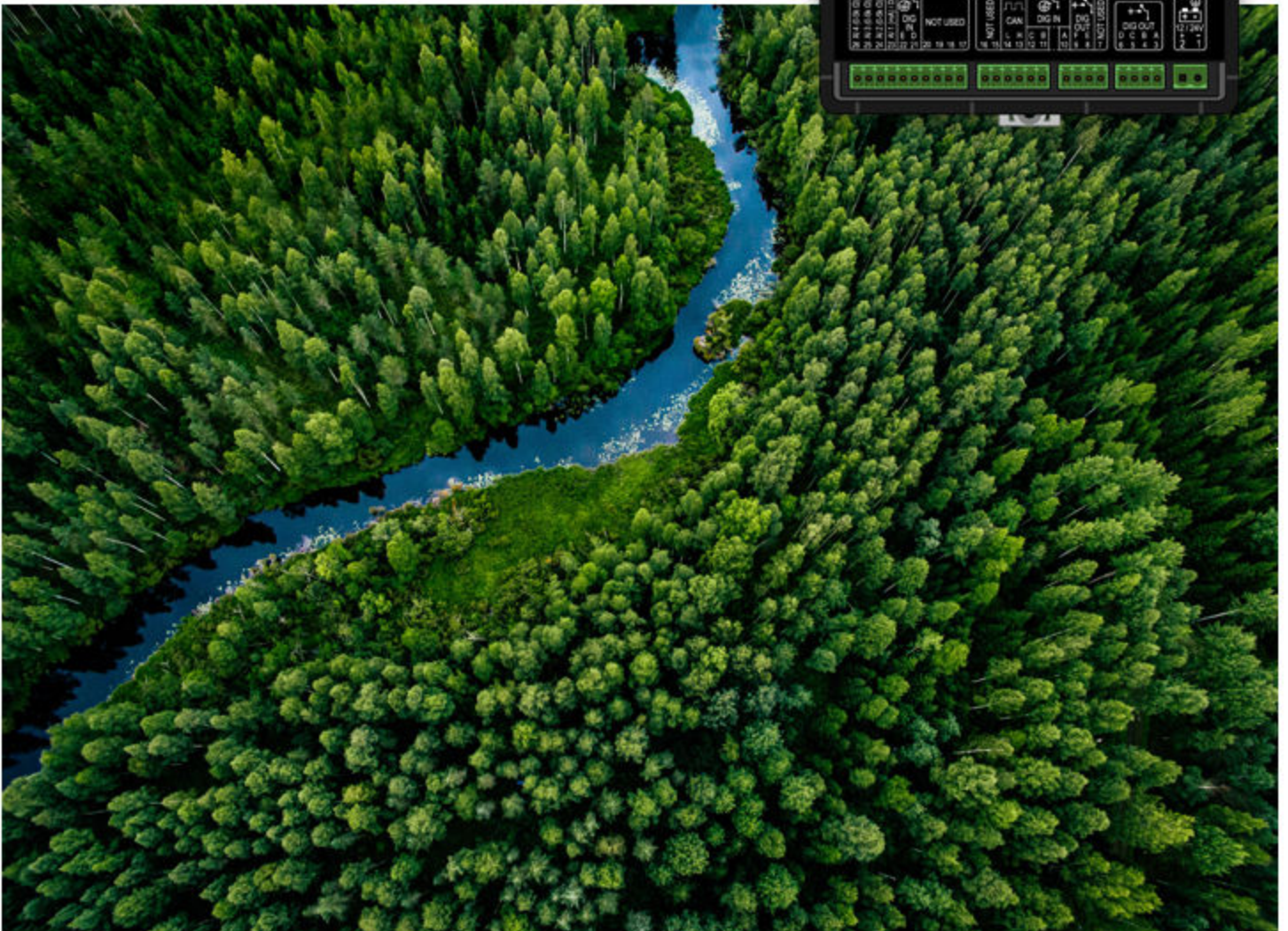
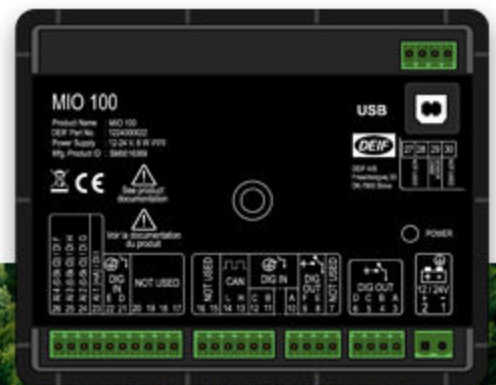
MIO 100

CAN bus-based I/O module

Data sheet



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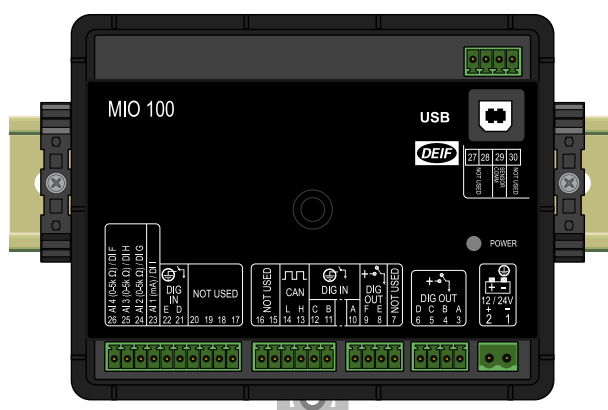
1. About

1.1 About MIO 100

The MIO 100 is a DIN rail-mounted I/O expansion module designed for use with DEIF SGC controllers. The module extends the available input and output capacity of the control system and provides a simple solution when additional field signals are required.

The MIO 100 communicates with the host controller through CAN using the J1939 protocol and is configured through DEIF Smart Connect Mk II software.

The module contains the hardware required for power supply, digital inputs, digital outputs, analog inputs, CAN communication, and USB communication.



1.2 Software version

The information in this document relates to software version:

Software	Version
MIO 100	R1.00
Smart Connect Mk II	2.1.4.1

1.3 Typical applications

The MIO 100 can be used in applications where the required number of inputs and outputs exceeds the capacity of the host controller.

Typical applications include:

- Additional alarm and status inputs
- Tank level monitoring
- Auxiliary equipment monitoring
- Additional control outputs
- Expansion of existing SGC installations
- Integration of additional sensors and switches

The MIO 100 enables system expansion without replacing the existing controller.

1.4 Key features

- Compatible with SGC controllers
- CAN J1939 communication
- 5 digital inputs
- 6 digital outputs
- 4 configurable analog inputs
- USB Type-B service interface
- Configuration through Smart Connect Mk II
- DIN rail mounting
- Compact enclosure design

1.5 Compatible controllers

The MIO 100 is compatible with the following controller software versions:

Controller	Minimum software version
SGC 120 Mk II	R19.00
SGC 320 Mk II	R20.00
SGC 420 Mk II	R20.00

2. Technical specifications

2.1 Electrical specifications

Power supply	
Controller terminals	1 (Ground) 2 (Battery or DC+)
Supply voltage range	Nominal voltage: 12/24 V DC Operating range: 8 to 32 V DC
Cranking dropout period	50 ms
Maximum reverse voltage protection	-32 V DC
Measurement accuracy (battery voltage)	±1 % full scale
Resolution	0.1 V
Maximum current consumption	~ 200 mA, 12/24 V DC (excluding the current load for the DC outputs)
Standby current consumption	124 mA, 12 V DC 123 mA, 24 V DC
Deep sleep current	20 mA, 12/24 V DC

Digital outputs	
Controller terminals	3, 4, 5, 6, 8, and 9
Number of outputs	6
Type	DC outputs
Maximum current rating	Maximum for each output: 500 mA Total maximum: 1 A
Configurable parameters with software	For example, start relay or fuel relay.

Digital inputs	
Controller terminals	10, 11, 12, 21, and 22
Number of inputs	5
Type	Negative switching
Maximum input voltage	+32 V
Minimum input voltage	-24 V
Current source	2.42 mA to 7.27 mA (depends on the battery voltage)
Configurable parameters with software	For example, high coolant temperature and low lube oil pressure.

Analogue voltage/current inputs	
Controller terminal	23 (configurable voltage/current, configurable function)
Measurement type	Analogue voltage/current sensing
Range	0 to 5 V DC 4 to 20 mA
Accuracy	±2 % of full scale voltage ±1.25 % of full scale current
Resolution	0.1 V

Analogue voltage/current inputs	
	0.1 mA

Analogue voltage/current inputs	
Controller terminal	25 (configurable voltage/resistance, configurable function)
Measurement type	Analogue voltage/ratio-metric sensing
Range	0 to 5 V DC 0 to 5000 Ω
Accuracy	± 2 % of full scale voltage ± 2 % of full scale (up to 1000 Ω)
Resolution	0.1 V
Open circuit detection	Above 5.5 k Ω

Analogue resistive sensor inputs	
Controller terminals	24 and 26 (configurable function)
Number of inputs	2
Type	Ratio-metric sensing
Range	0 to 5000 Ω
Open circuit detection	Above 1.5 k Ω (terminal 24) Above 5.5 k Ω (terminal 26)
Measurement accuracy	± 2 % of full scale (up to 1000 Ω)



More information

See **Analogue inputs used as digital inputs** in the **MIO 100 Installation instructions** for how to wire the analogue inputs and configure the parameters.

Sensor common point (SCP)	
Controller terminal	29
Range	± 2 V
Accuracy	± 2 % of full scale

NOTE Connect terminal 29 (Sensor common point, SCP) to a reliable grounding point on the engine. The SCP provides a common reference for analogue sensors and helps ensure accurate measurements. Do not use this connection for other electrical circuits.

2.2 Environmental specifications

Operation conditions	
Operating temperature	-20 to +65 °C (-4 to +149 °F). To IEC 60068-2-1, 2
Storage temperature	-30 to +75 °C (-22 to +167 °F). To IEC 60068-2-1, 2
Vibration	3G in X, Y and Z axes for 8 to 500 Hz. To IEC 60068-2-6
Shock	15 g for 11 ms. To IEC 60068-2-27
Humidity	0 to 95 % RH. To IEC 60068-2-78
EMI/EMC	IEC 61000-6-2, 4

2.3 Terminals overview

MIO 100

Product Name : MIO 100
DEIF Part No. : 1224000022
Power Supply : 12-24 V, 6 W
Mfg. Product ID : SM0016369

See product documentation

Voir la documentation du produit

AI 4 (0-5k Ω) / DIF

AI 3 (0-5k Ω) / DI H

AI 2 (0-5k Ω) / DIG

AI 1 (mA) / DII

DIG IN
E D

NOT USED

26 25 24 23 22 21 20 19 18 17

NOT USED

CAN
L H

DIG IN
C B

DIG OUT
F E

NOT USED

16 15 14 13 12 11 10 9 8 7

DIG OUT
D C B A

6 5 4 3

12 / 24V
+ -
2 1

USB

DEIF A/S
Frisenborgvej 33
DK-7800 Skive

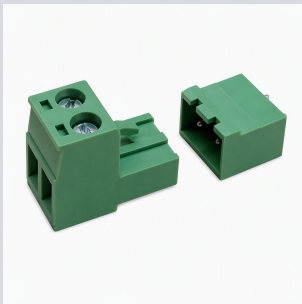
27	28	29	30
NOT USED	NOT USED	SENSOR COMM	NOT USED

POWER

Terminal	Text	Description
1	GND	Power ground
2	BATT +	Power supply positive
3	DIG OUT A	DC output A
4	DIG OUT B	DC output B
5	DIG OUT C	DC output C
6	DIG OUT D	DC output D
7	Reserved	-
8	DIG OUT E	DC output E
9	DIG OUT F	DC output F
10	DIG IN A	Input from switch A
11	DIG IN B	Input from switch B
12	DIG IN C	Input from switch C
13	CAN H	CAN high
14	CAN L	CAN low
15	Reserved	-
16	Reserved	-
17	Reserved	-
18	Reserved	-
19	Reserved	-
20	Reserved	-

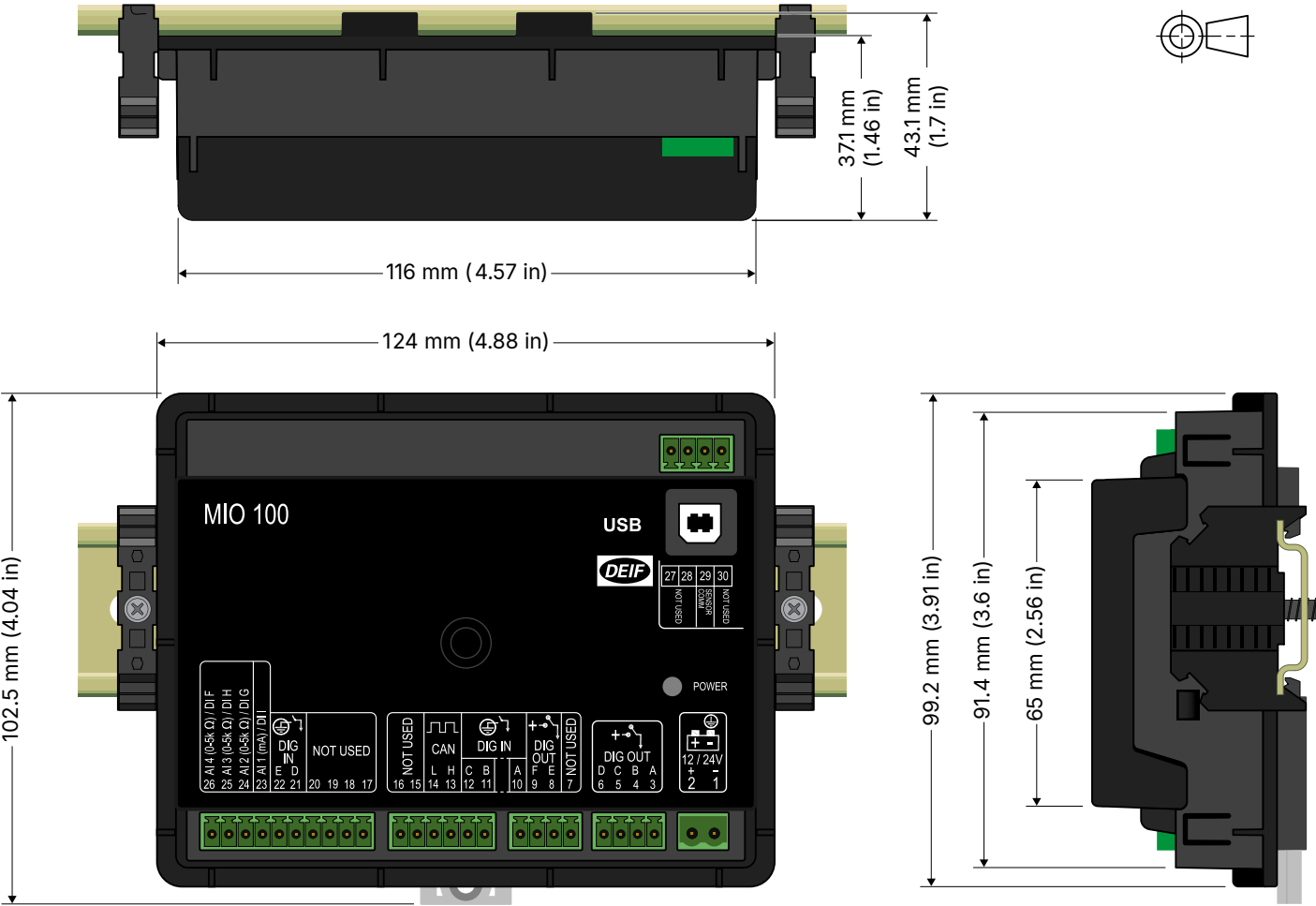
Terminal	Text	Description
21	DIG IN D	Input from switch D
22	DIG IN E	Input from switch E
23	AI 1 (mA) / DI I	Configurable Analogue input or Digital input I
24	AI 2 (0-5k Ω) / DI G	Configurable Resistive Analogue input or Digital input G
25	AI 3 (0-5k Ω) / DI H	Configurable Resistive Analogue input or Digital input H
26	AI 4 (0-5k Ω) / DI F	Configurable Resistive Analogue input or Digital input F
27	Reserved	-
28	Reserved	-
29	SENSOR COMM	Sensor common point
30	Reserved	-

Connectors

Connectors of 3.5 mm pitch	Connectors of 5.08 mm pitch
	

Connector type	Pitch	Male (on controller) *	Female (mating part) *	Quantity
4-pin	3.5 mm	TLPHC-001V-1112-04P-G12	TLPS-001RL-04P-G12S	3
6-pin	3.5 mm	TLPHC-001V-1112-06P-G12	TLPS-001RL-06P-G12S	1
10-pin	3.5 mm	TLPHC-001V-1112-10P-G12	TLPS-001RL-10P-G12S	1
2-pin	5.08 mm	TLPHC-300V-1112-02P-G12	TLPS-300V-1067-02P-G12S	1

2.4 Dimensions



Dimensions	
Dimensions	Length: 124.0 mm (4.88 in) Height: 102.5 mm (4.04 in) Depth: 37.1 mm (1.46 in)
Weight	170 g

2.5 Mounting

Mounting	
DIN rail	35 mm (EN 60715)
Installation	Snap-on mounting
Orientation	Horizontal mounting recommended

2.6 Approvals

Standards	
CE	
UL/cUL Recognized to UL/ULC6200:2019 1st edition	

NOTE Refer to deif.com for the most recent approvals.

3. Legal information

Warranty

NOTICE	
	Warranty The controller is not to be opened by unauthorised personnel. If opened anyway, the warranty will be lost.

Disclaimer

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