CAN.I/O.100

Electronic Control Unit (ECU)

Programmable module

L.4 - DS0029 R04 CAN IO CANopen 27/01/2026

CHARACTERISTICS

- High protection class IP67
- Programmable IOs (7 inputs and 8 outputs)
- Functional safety level: SIL2 (EN62061) / PLd (EN13849)
- Compact design

ADVANTAGES

- Free contact WDO Relay
- Optional CANbus termination resistor
- Separate power supply (Power and logic)
- High configuration flexibility
- Upgradeable via can bus bootloader

IP67 — High protection level

Shock/vibration resistant

Reverse polarity protection

-40...+85 °C — Wide range temperature

SIL2 PLd — Functional safety

CANopen safety easy to use — CANopen Safety

CANopen — CANopen output

CPU — Firmware Upgradable

RoHS compliant — Directive 2011/65/EU

CE — EU conformity

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PRODUCT DESCRIPTION

The CAN.I/O.100 is an electronic control unit operating as an input/output expansion with CAN Bus communication interface.

The ECU collects the status of the inputs and transmits it to a master unit which in turn can activate or deactivate of one or more outputs.
The device performs many internal checks and an in-depth diagnosis which allows to improve the diagnostic coverage when use for safety functions.

Optionally, the unit can be used as a master device capable of autonomously performing actions on the outputs, known the inputs status and by mean user-defined algorithms. These logics can be easily implemented by mean of a simple IDE, coding the software in C language.

In case of master version, the communication interface is CAN: the integration of CANOpen and CANOpen Safety stacks is in charge of the customer.

Agricultural machinery

Construction

Earth moving

Handling and **lifting**

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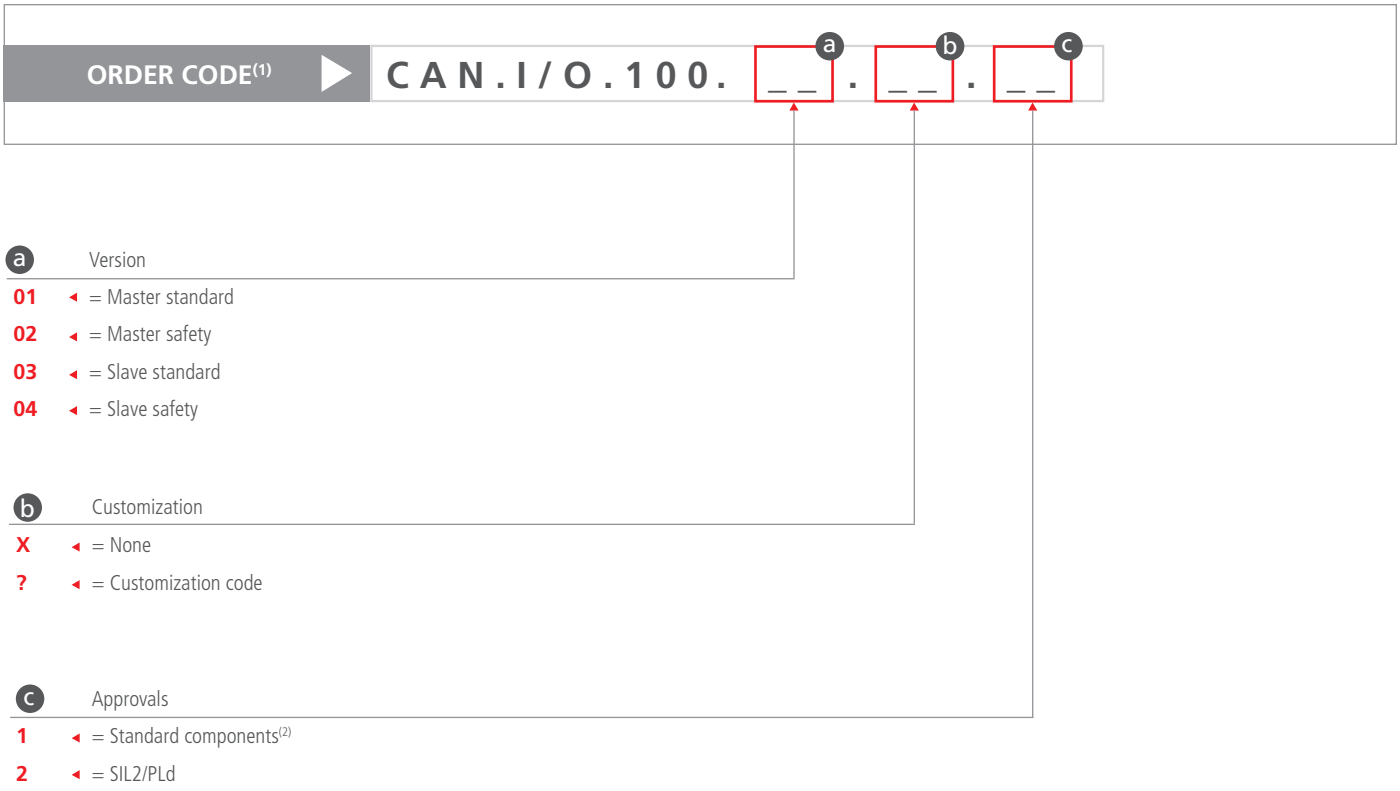
PRODUCT CODE



a Version

- **01** = Master standard
- **02** = Master safety
- **03** = Slave standard
- **04** = Slave safety

b Customization

- **X** = None
- **?** = Customization code

c Approvals

- **1** = Standard components(2)
- **2** = SIL2/PLd

ACCESSORY

PROGRAMMING: “C” language, STM32CubeIDE, “gcc” compiler for ARM.
On request: IDE & low level driver Safety library.

(1) Not all combinations can be ordered. Please contact TSM for confirmation before placing an order.
(2) Standard component. It does not constitute a safety component as defined in the Machinery Directive 2006/42/CE.

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Top Sensors Manufacture

TECHNICAL SPECIFICATION

Type of connection	Aptiv (formerly Delphi) 24 WAY PIN HEADER
Protection class	IP67 acc. to IEC60529
Operating temperature range	- 40°C to + 85°C
Enviromental resistance	acc. to: IEC 60068-2-1 IEC 60068-2-2 IEC 60068-2-38 IEC 60068-2-78
Weight approx.	150 g
Shock resistance	acc. to EN 60068-2-27 50 G, 11 ms, 100 shocks per axis Axis : X, Y, Z
Vibration resistance	acc. to EN 60068-2-6 10 ... 500 Hz, 10 G, 2h for axis Axis : X, Y, Z

ELECTRICAL CHARACTERISTICS

Power supply range	8-32 VDC
Reverse polarity protection	Yes
Over/Under voltage protection	Yes
Consumption typ. (logic)	< 150 mA
EMC compatibility (Industrial electromagnetic environment)	acc. to EN 61326-1, EN 61326-3-1
EU conformity	EMC directive 2014/30/EU RoHS directive 2011/65/EU + 2015/863/EU

HARDWARE CHARACTERISTICS

1 x CPU 32 bit STM32F103RCT6	Working frequency: 72 MHz Internal flash memory: 256 kB Internal RAM: 48 kB Communication: 1 x CANBUS
1 x CPU 32 bit STM32F030C8T6	Working frequency: 48 MHz Internal flash memory: 64 kB Internal RAM: 8 kB
SPI interface	according to internal connection between the two microcontroller
RS232 interface	according to internal connection between the two microcontroller
IOs (*)	- 6 of Inputs: digital high side or analogue 0-25 mA, 0-32 Vdc, 0-5,5 Vdc - 1 of Inputs: digital high side or analogue 0-32 Vdc, 0-5,5 Vdc - 8 of Digital/PWM high side outputs 2A, open loop with ON-OFF/ratio status feedback input, whit overall over current measurement for protection purpose (max current 12A **); - WDO circuit with free relay contacts (12A) and status feedback inputs

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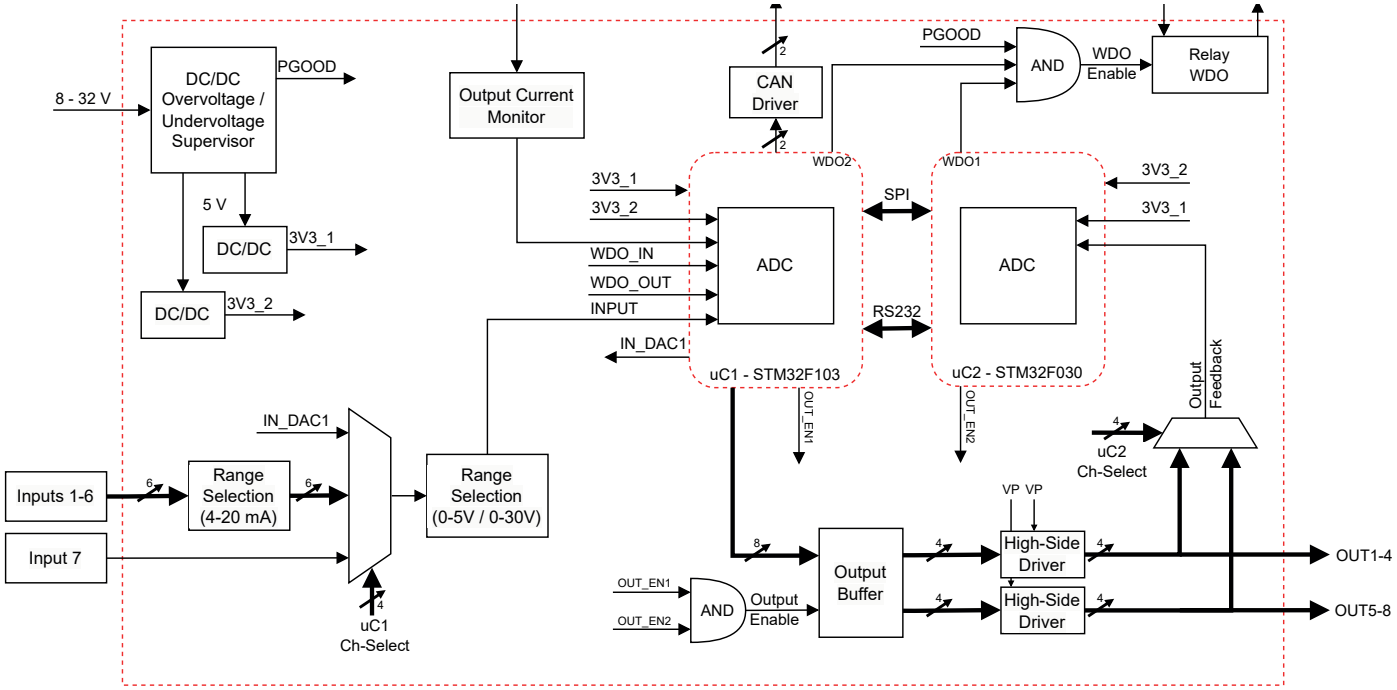
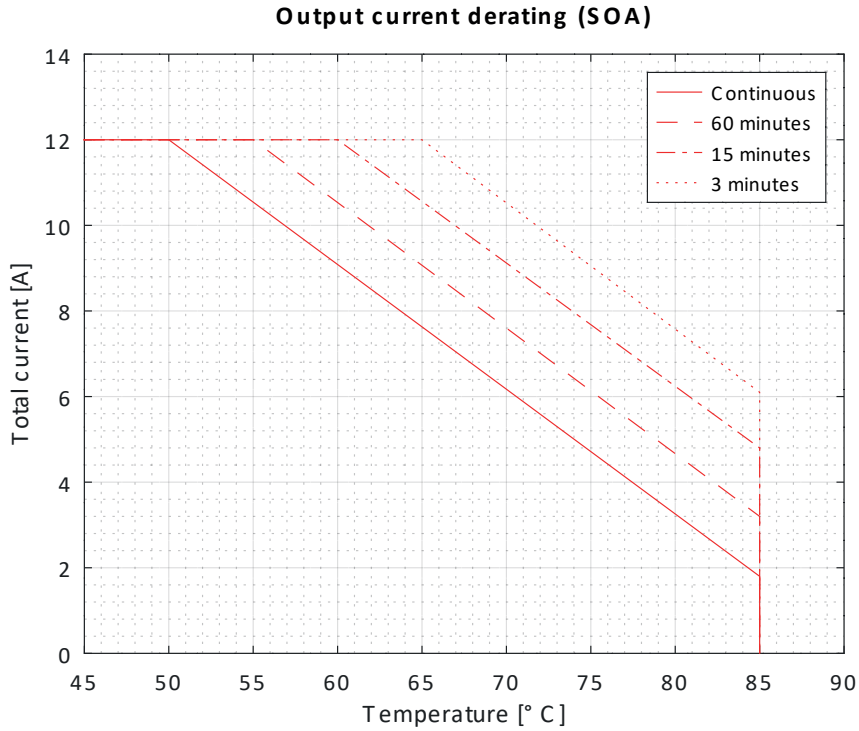
BLOCK DIAGRAMS



The controller architecture is based on CAT. 2 of EN 13849-01

THERMAL SPECIFICATION



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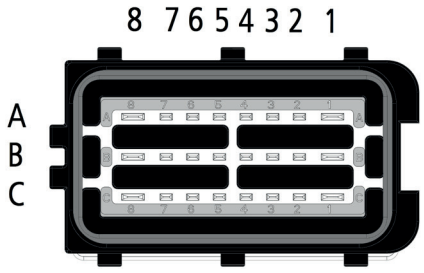
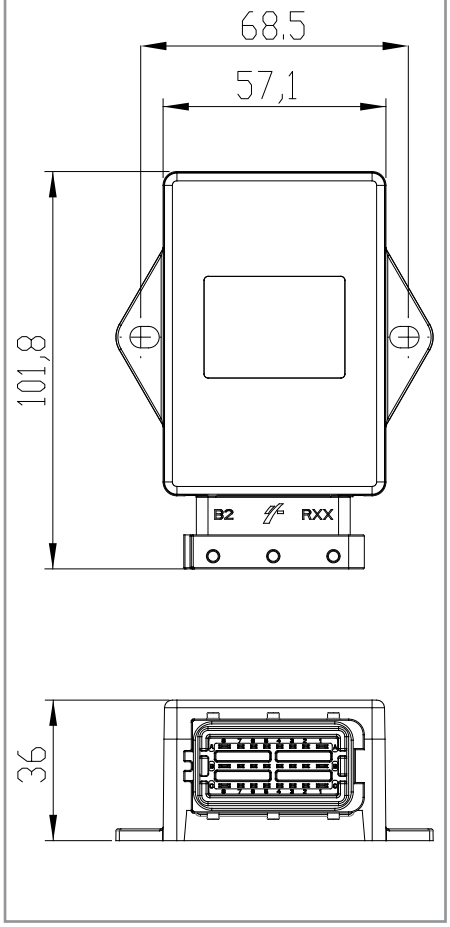
ELECTRICAL CONNECTION 24 PIN



Pinout			Description
	COMPATIBILITY MODE	STANDARD MODE	
1A	OUT 7	OUT 1	On-Off/PWM open loop High Side Output (max 2A)
2A	OUT 5	OUT 3	On-Off/PWM open loop High Side Output (max 2A)
3A	OUT 4	OUT 4	On-Off/PWM open loop High Side Output (max 2A)
4A	OUT 3	OUT 5	On-Off/PWM open loop High Side Output (max 2A)
5A	OUT 2	OUT 6	On-Off/PWM open loop High Side Output (max 2A)
6A	OUT 1	OUT 7	On-Off/PWM open loop High Side Output (max 2A)
7A	OUT 0	OUT 8	On-Off/PWM open loop High Side Output (max 2A)
8A	+VP	+VP	Power Supply for OUTPUTS stage (max 12A **)
1B	- VB	- VB	GND supply from vehicle battery to CAN-IO logic
2B	OUT 6	OUT 2	On-Off/PWM open loop High Side Output (max 2A)
3B	INP 0	INP 1	Analogue IN range: 0-5,5 V or 0-25 mA or 0-30 V OR On/Off IN High Active (*)
4B	INP 2	INP 2	Analogue IN range: 0-5,5 V or 0-25 mA or 0-30 V OR On/Off IN High Active (*)
5B	CA 0	INP 3	Analogue IN range: 0-5,5 V or 0-25 mA or 0-30 V OR On/Off IN High Active (*)
6B	CAN R2	CAN R2	Pin 2 for CAN BUS termination resistor
7B	CANL	CAN L	CAN Low Line
8B	WDO-IN	WDO-IN	Pin 1 of WDO Relay (max 12A **)
1C	+ VB	+ VB	Power supply from vehicle battery to CAN-IO logic
2C	INP 7	INP 7	Analogue IN range: 0-5,5 V or 0-30 V OR On/Off IN High Active (*)
3C	INP 1	INP 5	Analogue IN range: 0-5,5 V or 0-25 mA or 0-30 V OR On/Off IN High Active (*)
4C	INP 3	INP 6	Analogue IN range: 0-5,5 V or 0-25 mA or 0-30 V OR On/Off IN High Active (*)
5C	CA 1	INP 4	Analogue IN range: 0-5,5 V or 0-25 mA or 0-30 V OR On/Off IN High Active (*)
6C	CANH	CANH	CAN High Line
7C	CAN R1	CAN R1	Pin 1 for CAN BUS termination resistor
8C	WDO-OUT	WDO-OUT	Pin 2 of WDO Relay (max 12A **)

DIMENSIONS [mm]



* The selection of the input range sets the channel resolution but the maximum analog input voltage is always limited by the power supply voltage (VB).
Example: if VB is 24 Vdc and the selected input range is 0-30 V, the analog input voltage is clamped at 24 Vdc anyway.
** The maximum output current is limited versus temperature according to the SOA curve.

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