

## Binary & analogue input/output extension unit (ModuCop) for edge applications in rail & busses

### Features

- 1 slot (7 HP) extension unit for ModuCop Edge Computer
- 2x2 digital inputs / outputs (selectable) via 4-pin spring terminal; 0..110V (nom), common ground
- 2x1 analogue input via 4-pin spring terminal; Selectable voltage (+/-10V) or current (4..20mA) type
- 24V supply to external sensor
- Configurable modes for usage as direct I/O or data logger with multiple data streams.
- Galvanic isolation of all inputs and outputs
- EN 50155 compliant (integrated in ModuCop)



### Introduction

The binary and analogue I/O unit **IOU01** extends the functionality of the modular and flexibly expandable Edge Computer ModuCop MEC. Fully integrated in ModuCop, IOU01 provides four cost sensitive binary inputs / outputs as well as two analogue inputs in addition to the various interface offerings of the base computer MEC.

IOU01 enables ModuCop to connect to even more vehicle interfaces and is intended to be used in applications with the need of reading status of binary signals, controlling switching elements by its binary outputs or connecting analogue sensors. For comfortable installation IOU01 offers 24V (DC) supply power via its analogue inputs.

IOU01 is powered by ModuCop integrated power supply and controlled by ModuCop CPU unit.

IOU01 is fully supported by Ci4Rail's Linux Microservices Platform, running on ModuCop.

### Applications

- Condition-based monitoring
- Predictive maintenance
- Board computer
- Fleet optimization
- Ticketing System

### Software

Fully supported in and integrated in Linux Microservices Platform (LMP)

SW configurable modes to select usage as direct I/O or as data logger with multiple time stamped data streams

Secure firmware update for IOU01 integrated Micro Controller.

## Specifications

<b>Input/Output</b>		<b>S101-IOU01-</b>
Binary Input/Output		2x2 IN/OUT via 4p spring terminal
Binary I/O characteristics		0..110V DC (nom) - common ground Max. input frequency: 50 Hz Max. output frequency: 50 Hz Max. capacitive load on output: 470 µF
Binary I/O configuration		Operation mode configurable by software
Analogue Input		2x1 AI via 4p spring terminal voltage (+/-10V) or current (4..20mA) Input sample rate: 300 Hz ... 4000 Hz* Resolution: 15 bit (300 Hz); 13 bit (1000 Hz); 11.5 bit (2000 Hz); 8.8 bit (4000 Hz) Accuracy: better than 0.5% (at 300 Hz)
Analogue In configuration		Operation mode configurable by software
Analogue In external supply		24V DC / 24 mA
Galvanic isolation		1500V DC / 5 Groups
Power Input		Via ModuCop System
<b>Mechanics</b>		
Dimensions		1 Slot (ModuCop System); 7 HP
Installation		ModuCop Extension Slot
<b>Environmental**</b>		
Operating Temperature		-40...+70°C / 85°C (10min) (EN 50155:2021 – OT4 + ST1)
Storage Temperature		-40...+85°C (EN 50155:2021)
Humidity		95% (EN 50125-1:2014)
Altitude		3000 m max. above sea level (EN 50125-1:2014, class AX)
Shock / Vibration		EN 61373:2010; Cat. 1; Class B
EMC Emission / Immunity		Rail Applications: EN 50121-3-2:2016;
Safety		EN 50155:2017; EN 50153:2014+A1:2017; EN 50124-1:2017; EN ISO 13732-1:2008
Fire&Smoke		Rail Applications: EN 45545-2:2013 + A1:2015; HL3
Useful Life		20 years (EN 50155:2021, class L4)
Pollution Degree		PD2 (EN 50124-1:2017)

\* Analogue Input sampling rate: 300 Hz .. 1500 Hz with guaranteed timing jitter less than 150µs

\*\* All environmental data apply for proper installation in ModuCop Edge Computer.

## Order Information

The product can only be ordered as integrated I/O extension unit in ModuCop Edge Computer.

## Accessories

N/A

