



AS-Interface Safety Cabinet Module CMSAFE 2.0 for emergency stop switch.

- **The module** is designed to be connected by AS-i standard fieldbus cable, AS-i Cabinet cable or 2 single wires 1.5mm<sup>2</sup>.
- **The connection** is independent of polarity, allowing the cable to be connected in both directions.
- **Multi-color** pilot indicator light with light effects is included as standard.



### Cabinet Module Characteristics

- Replaces contact block and fit your emergency stop button and other safety related illuminated or not illuminated pushbuttons.
- The installation and connection process are simple and requires no tools, utilizing AS-Interface standard cables.
- Complies with IEC 61508 SIL3 (Functional safety of electrical/electronic/programmable electronic safety-related systems) and EN954-1 safety category 4 (Safety of machinery-Safety related parts of control systems).
- The module is designed to be compact in size.
- By using AS-Interface technology, diagnosis and fault monitoring is possible at operator control point.
- LED pilot indicator with 6 colors: Red, Green, Yellow, Amber, Blue and White.
- The pilot indicator can be configured in 2 different modes.
  - Fixed ON
  - 2 Hz fading brightness up/down
- Up to 31 slaves can be connected to one single AS-Interface cable.

### Preamble

This document will provide detailed information of how to install and configure the AS-Interface Cabinet module CMSAFE 2.0.

### *General safety instructions*

The following precautions must be observed to ensure safe operation.

1. Do not use the product in environments subject to flammable or explosive gases.
2. The product must only be used indoor or inside a cabinet or box with proper protection class.
3. Do not attempt to disassemble, repair, or modify the product.
4. Do not use a voltage that exceeds the rated operating voltage range.
5. Dispose of the product according to applicable regulations (laws).

### *Intended Use*

The product is designed and intended for specific purpose as described. The product may only be used with equipment and under operating conditions described in relevant documentation. Users must be qualified to handle the devices and be aware of the hazards potentially associated with the process. The user is solely responsible for applications, which go beyond the intended use described here and for each individual product or equipment or device, which are not described in instructions sets.

### *Misuse of the product*

Read this document carefully and always follow all instructions. Celpia AB assumes no responsibility for any damage caused by not following the instructions in this, and product-related documents. Any use beyond the intended use is misuse.

### *Exclusion of liability*

The information contained herein is accurate at the time of publication, subject to editorial errors. Compatibility with future versions of this product is not guaranteed.

### *Certification*

To ensure that all Celpia's AS-Interface products meet the applicable requirements for reliable function and failure immunity, they have been tested by an independent authorized laboratories and have the AS-Interface Certification Logo and UL mark printed on it.

The products have been tested by an authorized laboratory and meet the applicable EMC requirements.

The product is UL recognized, UL 60947-5-1 / CSA C22.2 NO. 60947-5-1.

### Technical data

Type of voltage supply for power supply	Using AS-Interface, Standard and Power24
Operating voltage	16.0 – 31,6V DC class 2
Max total current (16 – 31,6V DC)	<35mA
Electrical connection of the AS-Interface line	Piercing terminal for: AS-Interface standard cable 2x1.5mm <sup>2</sup> AS-Interface cabinet cable 2x0.86
AS Interface Connection Polarity reversal protection	Not sensitive to reverse polarity. The cable may be connected in any directions
Addressing	1-31 programmable via Power Barrel Connector, Outer diameter 3.40mm, inner diameter 1.30mm or piercing AS-Interface connector
Slave profile	S-7.B.0 Extended ID Code 1 is set to F by default but can be changed by user
AS-Interface version	3
Required master profile	≥ M0
Display of AS-Interface status	Green / Red LED
Inputs / Actuator switches	2
Outputs / LED indicator colors	Red, Green, Yellow, Amber, Blue, White
Dimensions	Width 30mm, Height 45mm, Depth 40mm
Operating altitude	max 2000m
Ambient temperature during operation	-25°C ... +55°C @ 24V -25°C ... +48°C @ 31.6V
Ambient temperature during storage	-40°C ... +60°C
Protection class	IP 20
Mechanical durability	5,000,000 cycles
Certificates/approvals	CE marking EN 62026-2:2013/A1:2019 IEC 61508 SIL3 EN954-1 safety category 4 RoHS 2011/65/EU WEEE 2012/19/EU UL recognized ASI-Certification No. 136401 by AS-International Association
Ordering information	CMSAFE 2.0 See separate document or contact Celpia AB for further order information

### Mounting instructions

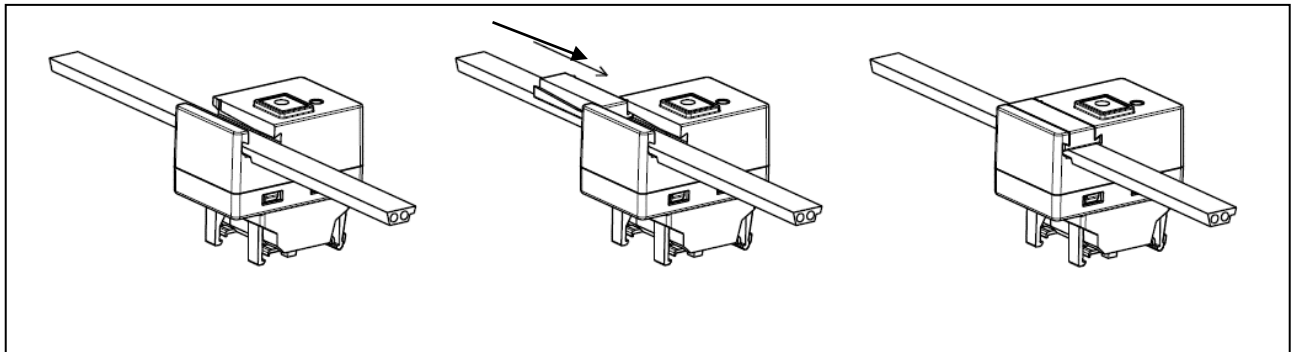
The Cabinet module is mounted on the back of an emergency stop switch in the same way the contact block and LED module is mounted. Simply snap the module on the back of the desired device. See documentation from manufacturer of switch for further instructions.

### Connection of Cabinet module

The Cabinet Module can be connected in three different ways using a standard AS-Interface field bus cable  $2 \times 1.5 \text{mm}^2$ , AS-Interface cabinet cable  $2 \times 0.86 \text{mm}^2$  or with color coded hook-up cables which is placed in a customized holder for guidance.

#### Connection

Remove the wedge and place the cable in the groove. Reinstall the wedge and push it in manually, the piercing pins will penetrate the cable insulation and make a connection to the wires.



### Addressing

The module can be addressed by connecting a programmer to the Barrel Connector on the back of the module. If the connection is done via the Barrel Connector there is no need to disconnect the installed AS-interface cable.

## Semantics of I/O data bits and parameter settings

### Output Data and LED control

Output from master to cabinet module safety slave.

Bit D2-D0: Value	LED color
0 (x000 <sub>Bin</sub> )	OFF
1 (x001 <sub>Bin</sub> )	Red
2 (x010 <sub>Bin</sub> )	Green
4 (x100 <sub>Bin</sub> )	Yellow
<b>Other colors</b>	
3 (x011 <sub>Bin</sub> )	Amber
5 (x101 <sub>Bin</sub> )	Blue
6 (x110 <sub>Bin</sub> )	White
7 (x111 <sub>Bin</sub> )	OFF

Data bits to select LED color.

X = set light effect

Bit D3: Value	Light effect
0 (0xxx <sub>Bin</sub> )	Fixed ON
8 (1xxx <sub>Bin</sub> )	Fading indication brightness, 2Hz up/down

Data bit 3 settings to control indicator light effect.

XXX = set LED color

### Parameters

Parameters are not used.

*Input data – Switch status*

Input when master read cabinet module safety slave.

Data bits				Switch status		Meaning
D3	D2	D1	D0	SW 2	SW 1	
0	0	0	0	X	X	Off-state
0	0	1	1	X		Error
1	1	0	0		X	Error
1	1	1	1			On-state

X = Switch Activated

Instead of the regular data provided at the data ports, a 4-bit data word from a specific 8 \* 4 bit code table is transmitted to the master. Each Cabinet safety module is programmed with its own code sequence which is unique.

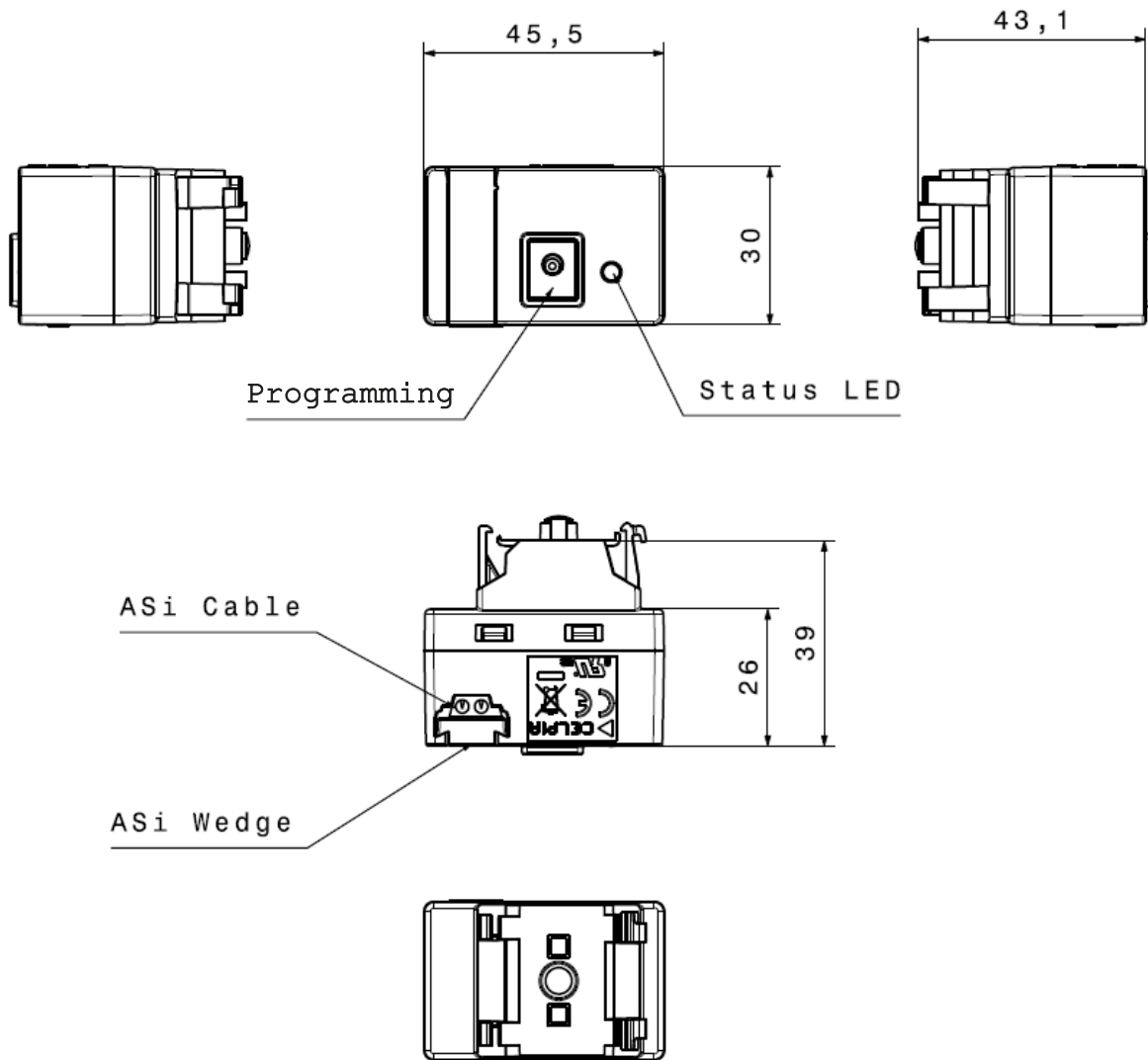
The safe data transfer is only guaranteed in conjunction with a safety monitor. The safety monitor controls the correctness of the behavior of the AS-Interface master (i. e. linear addressing from the lowest to highest address). That means for future changes in the Complete Specification the behavior of the safety monitor must be considered.

The peripheral fault bit indicates error state of switch status.

**Status LED**

LED indication	Description
No indication	No power supply available or AS-interface cable not connected.
RED	AS-interface BUS inactive, no data exchange.
GREEN	Normal operation.
Alternating RED/YELLOW	Address = 0, no data exchange.
Alternating RED/GREEN	Internal ERROR.
Flashing RED	External reset from master.

### Dimensions





### Spare parts and accessories

Component	Order number
Cabinet Module Wedge 2.0 for ASi Cabinet Cable	9001-00-02
AS-Interface BUS Cabinet Cable 2x1,5mm <sup>2</sup>	9003-00-03

More information about accessories can be found in document *Celpia Product Range*.



## Dismantling and disposal

### *EU Waste Electrical and Electronic Equipment (WEEE) Directive*

In August of 2005, the European Union (EU) implemented the EU WEEE Directive 2002/96/EC and later the WEEE Recast Directive 2012/19/EU requiring Producers of electronic and electrical equipment (EEE) to manage and finance the collection, reuse, recycling and to appropriately treat WEEE that the Producer places on the EU market after August 13, 2005. The goal of this directive is to minimize the volume of electrical and electronic waste disposal and to encourage re-use and recycling at the end of life.

If you have purchased Celpia-branded electrical or electronic products in the EU and are intending to discard these products at the end of their useful life, please do not dispose of them with your other household or municipal waste. Celpia AB has labeled its branded electronic products with the WEEE Symbol (figure 1) to alert our customers that a product bearing this label should not be disposed of in a landfill or with municipal or household waste in the EU.



*Figure 1 WEEE symbol -  
crossed out wheeled bin*



Revision history

Revision	Description
00	Preliminary
01	First release