

10cas

INSTALLATION + COMMISSIONING GUIDE

Dual 0-10 VDC input-to-Casambi Element mapper
Hardware reference: TENCas

Project:
Type:
Contact:



PRODUCT ROLE 10cas converts two independent 0-10 VDC control signals into two Casambi Element levels.

At a glance	Verified installation value
Power	12-24 VDC, 30 mA; Class 2 supply
Primary inputs	Two independent 0-10 VDC inputs, common RETURN
Casambi mapping	Input A -> Element 1; Input B -> Element 2; 8-bit level updates
Reserved terminals	RELAY and SENSOR: not supported at this time; do not connect

1 Product overview

10cas is a Bluetooth Low Energy, Casambi-enabled interface that measures two independent 0-10 VDC inputs and publishes their levels to Casambi Elements. It is intended for bringing legacy analog controls or supervisory voltages into a Casambi project without generating DMX or sourcing a 0-10 V control voltage.

DIRECTION MATTERS 10cas is a 0-10 V input device. In A and In B measure externally generated control voltages; they are not dimming outputs and must not be connected as though they source 0-10 V.

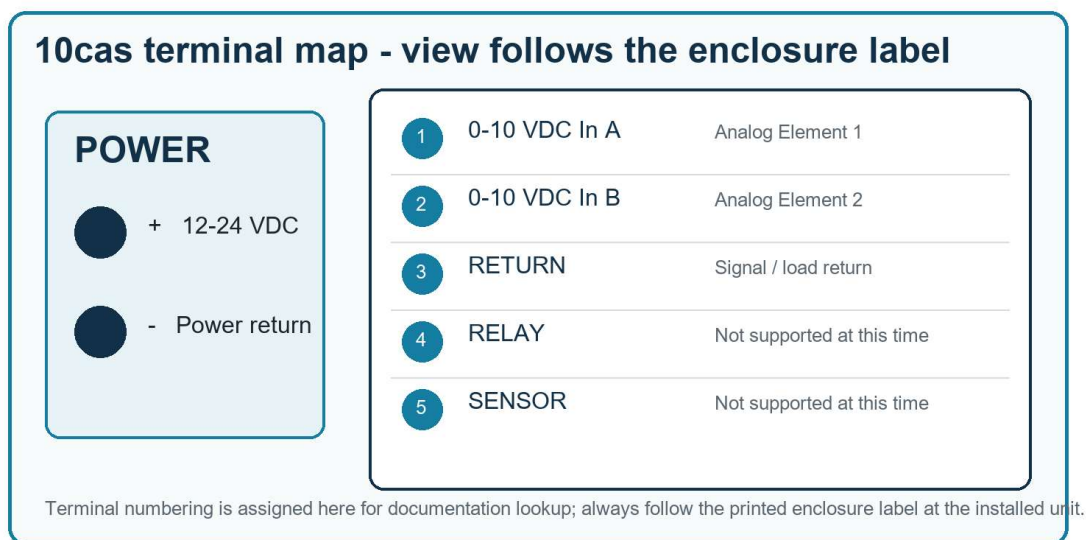
1.1 Functional behavior

- Input A maps to Casambi Element 1; Input B maps to Element 2.
- Firmware averages 32 ADC samples, applies per-channel bottom/top trim and hysteresis, then publishes an 8-bit level from 0 through 255.
- Only a sufficient input change causes a new level update, reducing unnecessary Casambi traffic.
- RELAY and SENSOR are reserved for future requirements and are not supported at this time. Do not connect either terminal.

1.2 Technical data

Item	Product specification
Input supply	12-24 VDC; 30 mA; Class 2
Analog inputs	2 x 0-10 VDC, return-referenced
Analog network values	Two independent Casambi Element levels, 0-255
Analog filtering	32-sample average per firmware
Reserved terminals	RELAY and SENSOR are not supported at this time; do not connect
Controller	Infineon/Cypress PSoC 4, CY8C4244PVI-432
Radio	Casambi CBM-003
Installation	Indoor, Class 2 low-voltage system; maintain radio clearance from metalwork

2 Terminals and installation



2.1 Terminal functions

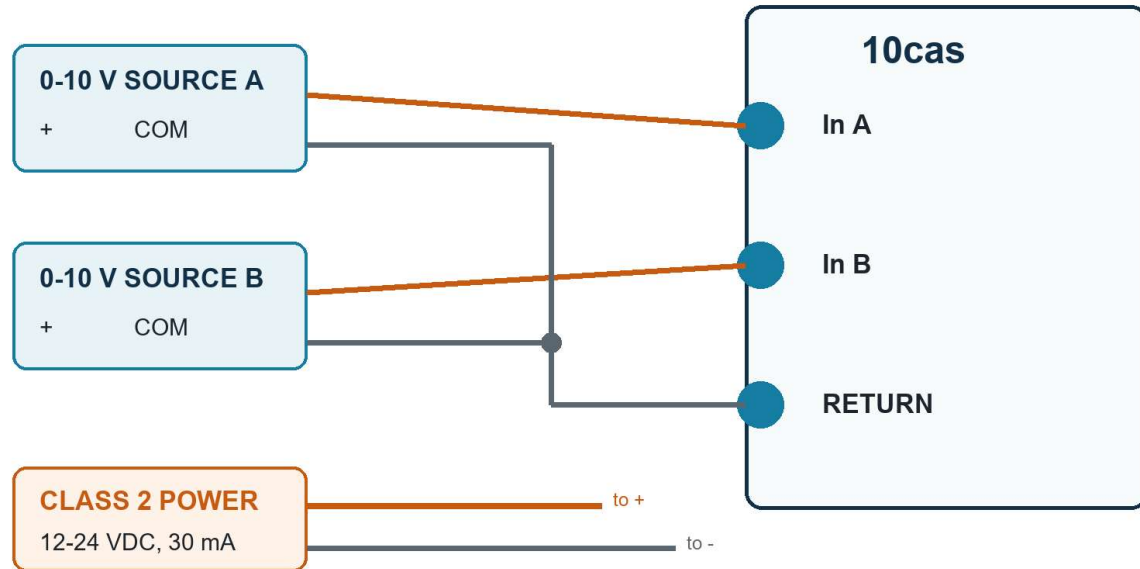
Terminal	Connect to	Function / limit
POWER +	+12 to +24 VDC	Class 2 supply positive
POWER -	Supply return	Power return
0-10 VDC In A	Source A positive	Analog input mapped to Element 1
0-10 VDC In B	Source B positive	Analog input mapped to Element 2
RETURN	Source common	Common reference for analog inputs A and B
RELAY	Do not connect	Not supported at this time; reserved for future requirements
SENSOR	Do not connect	Not supported at this time; reserved for future requirements

2.2 Installation procedure

1. **Remove power.** De-energize the Class 2 supply and verify zero voltage at the intended conductors.
2. **Mount for radio performance.** Secure the enclosure using its mounting ears. Keep the radio end clear of grounded metal, line-voltage conductors, and heat sources.
3. **Wire power and references.** Land the 12-24 VDC supply with correct polarity. Establish the analog source common at RETURN only as allowed by the source equipment.
4. **Wire each signal.** Land Source A and Source B positives on their labeled inputs. Leave RELAY and SENSOR unconnected.
5. **Inspect before power.** Check polarity, exposed copper, common-reference continuity, and verify that the unsupported RELAY and SENSOR terminals have no conductors landed.

3 0-10 V wiring

Typical dual 0-10 V input wiring



Use a common reference only where the source manufacturers permit it. Do not apply negative voltage or exceed the labeled input range.

3.1 Field-wiring rules

- Confirm both sources are true voltage outputs compatible with a shared return before tying their commons together.
- Route low-voltage analog wiring away from contactors, switched-mode power conductors, and line voltage.
- Use a consistent polarity and identify both ends of every conductor. Reverse polarity or negative voltage is not a valid input condition.
- If a source is isolated or has an unfamiliar reference scheme, verify it with the source manufacturer before connecting RETURN.

RESERVED TERMINALS RELAY and SENSOR are not supported at this time. Leave both terminals unconnected; future product requirements may assign functions to them.

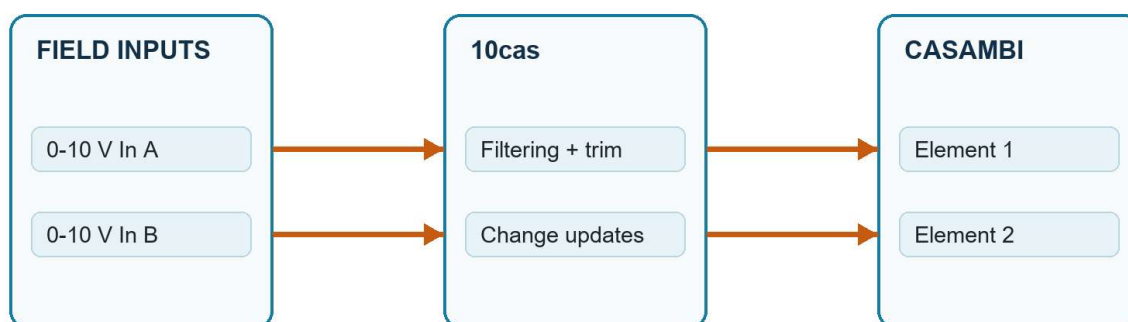
3.2 Pre-power measurements

Check	Expected result
POWER + to POWER -	12-24 VDC, correct polarity
In A to RETURN	0-10 VDC across the intended operating range
In B to RETURN	0-10 VDC across the intended operating range
RELAY and SENSOR	No conductors connected

4 Add 10cas to the Casambi app

Commission 10cas into the intended Casambi network using the standard Casambi workflow and the 10cas Elements profile supplied for the product. App wording can vary by Casambi App and profile revision; identify the unit by product name and physical response rather than by proximity alone.

Signal path and Casambi Element mapping



Each analog input is independent. A changed input publishes an 8-bit level (0-255) to its corresponding Element after filtering, trim, and hysteresis

4.1 Pair and identify

1. **Power one unit.** For an initial installation, energize one unpaired 10cas at a time and remain within Bluetooth range.
2. **Add the nearby device.** Open Nearby devices, select the 10cas entry, and add it to the correct network using the project credentials.
3. **Name the functions.** Assign a location-based device name and label Element 1 as Input A and Element 2 as Input B.
4. **Map the Elements.** Associate each Element with the intended Casambi scenes, groups, automations, or control logic.
5. **Prove end to end.** Apply known values to each input and confirm only the corresponding Element changes.

4.2 Analog acceptance points

Applied input	Expected Element result
0 V	Minimum / off end of the commissioned range
Approximately 5 V	Approximately midpoint, subject to trim/curve settings
10 V	Maximum end of the commissioned range
Small steady noise	No repeated updates when inside the configured hysteresis band

5 Vendor parameters

The production firmware stores independent trim and hysteresis values for the two analog channels, plus a global curve setting. Parameter names and displayed ranges are defined by the installed Casambi profile; record the app-visible values used at turnover.

Parameter	Purpose	Default / guidance
Channel 1 Top Trim	Sets the In A upper endpoint	Default 100
Channel 1 Bottom Trim	Sets the In A lower endpoint	Default 0
Channel 2 Top Trim	Sets the In B upper endpoint	Default 100
Channel 2 Bottom Trim	Sets the In B lower endpoint	Default 0
Channel 1 Hysteresis	Minimum change before In A republishes	Default 3 plus firmware offset
Channel 2 Hysteresis	Minimum change before In B republishes	Default 3 plus firmware offset
Log Curve	Optional alternate analog transfer curve	Default Off; leave Off for normal commissioning

5.1 Trim procedure

1. **Start from defaults.** Set the channel to its released default values and disable the alternate curve unless the project schedule explicitly requires it.
2. **Set the low point.** Apply the source's intended minimum voltage and adjust Bottom Trim only enough to achieve the required minimum Element level.
3. **Set the high point.** Apply the intended maximum voltage and adjust Top Trim only enough to achieve full Element level.
4. **Tune hysteresis.** With a stable source, raise hysteresis only if noise causes repeated network updates. Recheck slow ramps and small intentional changes afterward.
5. **Repeat independently.** Commission Channel 2 separately; do not assume two field sources have identical endpoints or noise.

CURVE SETTING Leave Log Curve Off for normal commissioning unless released project documentation specifically requires the alternate curve.

6 Startup and acceptance testing

Test	Pass criterion
Power	Unit powers from 12-24 VDC without supply collapse or abnormal heating.
Network	Correct 10cas is paired, named, and reachable in the intended Casambi network.
Input A	0 V, midpoint, and 10 V drive only Element 1 through the expected range.
Input B	0 V, midpoint, and 10 V drive only Element 2 through the expected range.
Stability	Steady inputs do not cause visible chatter or excessive Element traffic.
Recovery	After power cycling, pairing, parameters, and functional mapping remain correct.

6.1 Troubleshooting

Symptom	Check in this order
Unit not visible	Supply polarity/voltage; Bluetooth range; metal enclosure; whether unit is already paired to another network.
Element stuck low	Measure input to RETURN; verify source common; check Bottom/Top Trim; confirm the correct Element mapping.
Element stuck high	Measure for over-range voltage; check shared return; restore trim defaults and retest.
Element chatters	Check analog noise and grounding; separate wiring from switched loads; increase hysteresis modestly.
Channels interact	Look for source-common conflicts or mislabeled conductors; test one source at a time.

6.2 Commissioning record

Record	Project value
Casambi network / device name	
Input A / Element 1 / trim / hysteresis	
Input B / Element 2 / trim / hysteresis	
RELAY / SENSOR left unconnected	Yes / No
Curve	
Commissioned by / date	

7 Closeout and replacement

7.1 Replacement

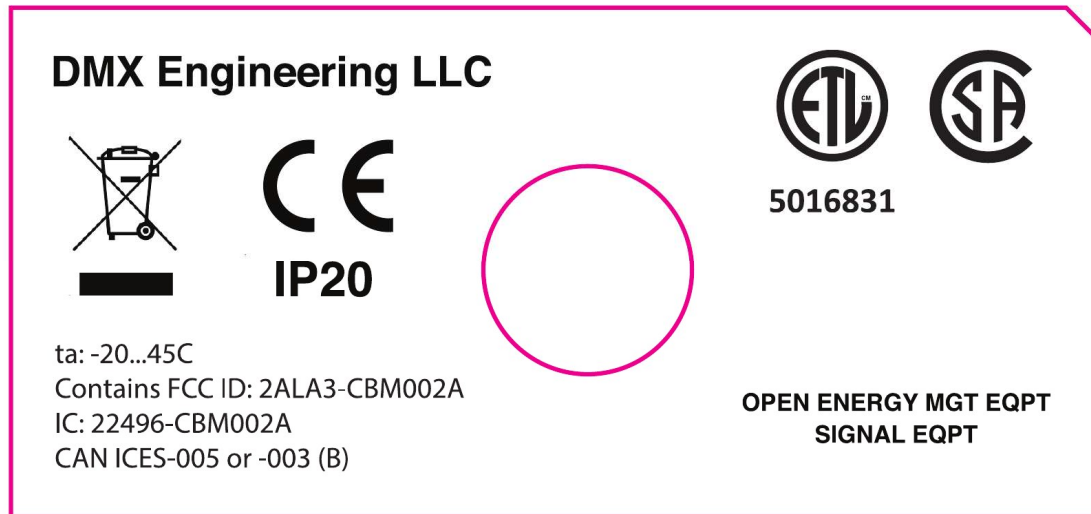
Use the Casambi Replace device function when replacing failed hardware with an identical 10cas and released Elements profile. Confirm the replacement is unpaired and powered. Re-enter trim, hysteresis, and curve values if they are not carried through, then repeat the complete acceptance test.

7.2 Installer turnover

- Record the network, device name, Element assignments, and vendor parameters.
- Provide the owner with the final issued guide and the Casambi network credentials under the project's security procedure.
- Photograph the installed terminal wiring and retain measured 0 V / midpoint / 10 V results for both channels.

7.3 Product identification and certification label

The common DMX Engineering LLC bottom product label is the authority for the marks and identifiers applied to the installed unit. Retain the ETL certification mark and control number 5016831, equipment-category wording, CE and IP20 markings, WEEE symbol, ambient rating, FCC ID, IC identifier, and Canadian interference statement exactly as shown on the approved artwork.



LABEL CONTROL Do not redraw, omit, reposition, or substitute certification marks or radio identifiers without product and compliance approval.