SWARCO

CAIMAN

Junction Box Description

CAIMAN

WIDE BEAM STOP+MOTION
RADAR DETECTOR

CAIMAN_JunctionBox_BE_00

The Better Way. Every Day.

CONTENT

1 User Safety Warning Information

Read the instructions carefully before you start to work.

Installation

Please observe the following advices when installing and connecting **Junction Box**es to the sensors:

- Only use provided or approved equipment for installation. Use screws with metric thread M3x8.
- Only skilled and instructed persons shall install and connect the devices. Proper experience in working with mains voltage, electrical and electronic devices is required.
- Don't wire any connections while power is applied to the device.
- Ground the devices carefully to prevent electrical shock.
- The connector to the sensor is pin-coded and fits in only one position. Also note the arrows indicating the top side of sensor and **Junction Box**.
- After the **Junction Box** is connected to the sensor, don't turn or twist it until all screws are tightened as this may damage the connector.
- Only use fully functional equipment (ladders, aerial work platform, …) when working above ground. Staff shall be capable of working at heights.
- Use caution when installing the devices on or around active roadways. Pay attention to moving traffic.
- Mount the devices carefully to prevent them from shifting or dropping.
- Make sure that your installation methods are in accordance with local safety policy and procedures and company practices.

Technical service

Only use provided or approved equipment for operation.
Persons other than authorized and approved electrical technicians shall NOT attempt to connect this unit to a power supply, Traffic Management Interface Board and/or other controllers, as there is a risk of electrical shock by unsafe handling of the power source.
Do not attempt to service or repair this unit.

- No user-maintainable parts are contained within the device.
- To avoid electrical shock, do not remove or open the cover.
- Unauthorized opening will void all warranties.
- Swarco is not liable for any damages or harms caused by unauthorized attempts to open or repair the device.

Operation

Using a **Junction Box** does not influence sensor performance.
Do not operate the device if the device itself or any cables are damaged. The **Junction Box**es are designed to work under different environment conditions (temperature, rain, dust, …). Regular maintenance such as cleaning or recalibration is not required.

2 Data Sheet

The Swarco **Junction Box** offers a universal and easy to use field installable way of connecting and surge protecting a CAIMAN detector to the home run cable.

2.1 Features

- Provides an **easy-to-use** universal electrical interface through a terminal block.
- **Field installable**: A simple screwdriver is sufficient to install the Junction Box.
- **Surge Protection**: The Junction Box features protection for power, CAN and RS485 communication wires.
- **Robust**: The Junction Box is watertight and almost unbreakable.
- Gen. 01 and Gen. 02 Junction boxes feature
- Captive screws
- Signal names printed on PCB
- Jumpers to determine RS485 full or half duplex operation[1]
- Versions for) all CAIMAN (1st Generation), CAIMAN PLUS and CAIMAN PRO available.
- Integrates into SWARCO brackets.

1 CAIMAN hardware has to offer both options, check CAIMAN datasheet.

3 Junction Box for CAIMAN (1st Generation)

Figure 1: Junction Box RD_Caiman_JB_36 with attached Lapp cable

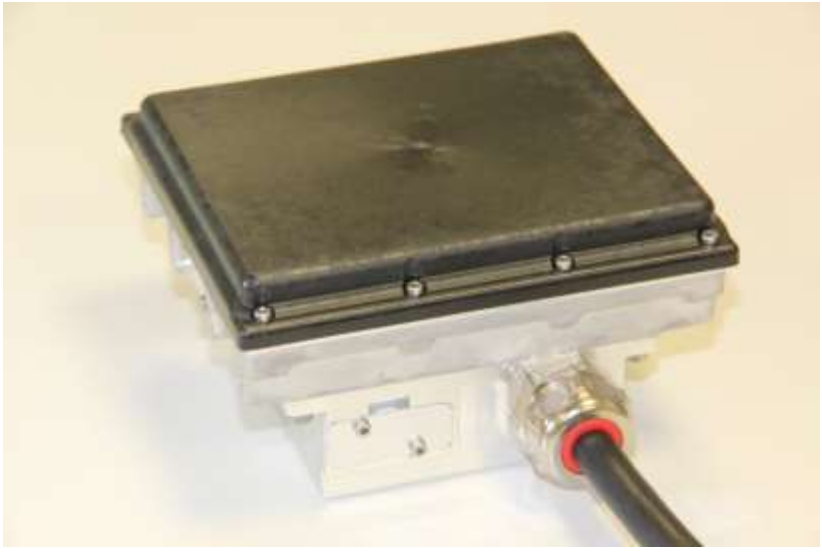

Figure 2: Junction Box RD_Caiman_JB_36 with attached Sensor

3.1 Specifications

Model No.	RD_Caiman_JB_36 / RD_Caiman_JB_3070
Mechanical	
Weight	183 g, excluding cable.
Height	79.8 mm excluding cable outlet ca. 116 mm including cable outlet
Width	84 mm
Depth	29 mm
Supported Cables	
Supported cable diameter	9 mm – 13 mm (smaller diameter available on request)
Supported conductor cross section range	0.13 mm^2 – 2.5 mm^2
Recommended cable	Lapp cable UNITRONIC BUS IBS Yv COMBI type 2170217 or MEDI no. 9DB280431
Surge Protection	
Surge protection of power lines	Compliant to IEC 61000-4-2 (ESD) and IEC 61000-4-4 (fast transients)
Surge protection of data lines	Compliant to IEC 61000-4-2 (ESD) and IEC 61000-4-4 (fast transients)

Table 1: specifications

3.2 Pinout

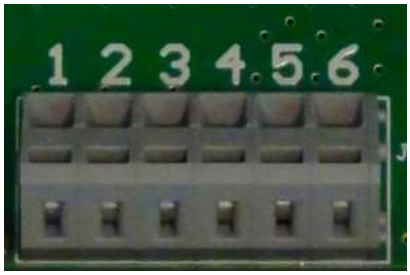

Figure 3:Terminal block with “pin” numbers

Pin No.	Function	Wire Color (Lapp type 2170217)	Wire Color (MEDI type #9DB280431)
1	CAN H	green	green
2	CAN L	yellow	yellow
3	Sensor RS485 TX/RX High	gray	gray
4	Sensor RS485 TX/RX Low	pink	pink
5	Sensor_VCC	red	red
6	Sensor_GND	blue	blue

Table 2: pinout of terminal block connector

3.3 Variants

See **Table 3** for a list of Junction Box variants and the sensor types they support.

Junction Box variant	Supported CAIMAN Version
RD_Caiman_JB_36 /	CAIMAN B36 / I36 / M36
RD_Caiman_JB_3070	CAIMAN B70 / I70 / MB70 CAIMAN I30 / M30

Table 3: Junction Box variants

3.4 Recommended Cable

Lapp cable UNITRONIC BUS IBS Yv COMBI type 2170217.

4 Junction Box for CAIMAN-PLUS and CAIMAN-PRO

Figure 4: Junction Box RD_CaimanPRO_JB / RD_CaimanP_JB inner view

Figure 5: Junction Box RD_CaimanPRO_JB / RD_CaimanP_JB outer view

4.1 Specifications

Model No.	RD_CaimanPRO_JB / RD_CaimanP_JB
Mechanical	
Weight	180 g, excluding cable.
Height	79.8 mm excluding cable outlet ca. 116 mm including cable outlet
Width	84 mm
Depth	29 mm
Supported Cables	
Supported cable diameter	9 mm – 13 mm (smaller diameter available on request)
Supported conductor cross section range	0.08 mm^2 – 0.5 mm^2
Recommended cable	MEDI #KU110C12J002
Surge Protection	
Surge protection of power lines	Compliant to IEC 61000-4-2 (ESD) and IEC 61000-4-4 (fast transients)
Surge protection of data lines	Compliant to IEC 61000-4-2 (ESD) and IEC 61000-4-4 (fast transients)

Table 4: RD_CaimanPRO_JB / RD_CaimanP_JB specifications

4.2 Jumpers J3 and J4

J3 and J4 are bridges between pins 3 and 5 / pins 4 and 6 of the terminal block. Those bridges must be **open for full duplex RS485** operation, and must be **closed for half-duplex RS485**.

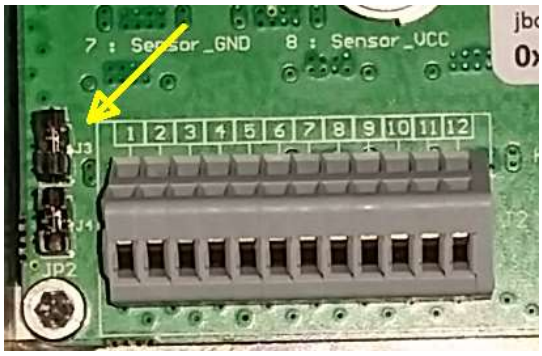

Figure 6: J3 and J4 determine RS485 full/half duplex operation

Please note J3 and J4 are open or closed depending on order code**.** Check **Table 7.**

4.3 Pinout

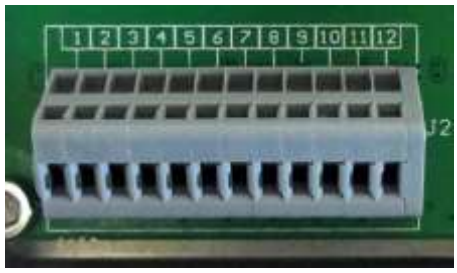

Figure 7: Terminal block with "pin" numbers

Pin No.	Function	Wire Color (MEDI type #KU110C12J001)
1	Sensor Ethernet TX H	gray / red
2	Sensor Ethernet TX L	red / blue
3	Sensor RS485 TX/RX L	pink
4	Sensor RS485 TX/RX H	gray
5	connect to pin 3[2]	brown
6	connect to pin 4[3]	white
7	Sensor_GND	blue
8	Sensor_VCC	red
9	Sensor Ethernet RX L	black
10	Sensor Ethernet RX H	purple
11	CAN H	green
12	CAN L	yellow

Table 5: Pinout of terminal block connector (half-duplex/2-wire RS485, CAIMAN-PLUS products)

Pin No.	Function	Wire Color (MEDI type #KU110C12J001)
1	Sensor Ethernet TX H	gray / red
2	Sensor Ethernet TX L	red / blue
3	Sensor RS485 RX L	pink
4	Sensor RS485 RX H	gray
5	Sensor RS485 TX L	brown
6	Sensor RS485 TX H	white
7	Sensor_GND	blue
8	Sensor_VCC	red
9	Sensor Ethernet RX L	black
10	Sensor Ethernet RX H	purple
11	CAN H	green
12	CAN L	yellow

Table 6: Pinout of terminal block connector (full-duplex/4-wire RS485, CAIMAN-PLUS and CAIMAN-PRO products)

[2] *In half-duplex mode the pins 3 and 5 has to be hard-wired connected, use J3 and J4*
[3] *In half-duplex mode the pins 4 and 6 has to be hard-wired connected, use J3 and J4*

4.4 Variants

See **Table 7** for a list of Junction Box variants and the sensor types they support.

Junction Box variant	Supported CAIMAN Version
RD_CaimanPRO_JB	CAIMAN-PRO B32 / I32 / M32 CAIMAN-PRO B80 / I80 / M80
RD_CaimanP_JB	CAIMAN-PLUS B36 / I36 / M36 CAIMAN-PLUS B100 / M100 CAIMAN-PLUS T100

Table 7: RD_CaimanPRO_JB / RD_CaimanP_JBvariants

5 General Information

5.1 Junction Box Grounding Requirements

Neither the housing of the UMRR sensor nor the Junction Box is electrically floated but connected to the negative supply voltage instead.
To assure correct operation of the sensor, please refer to the grounding requirements described in CAIMAN_Grounding_Requirements.pdf.

5.2 Fixation

The Junction Box will be attached to the CAIMAN (1st Generation) / CAIMAN-PLUS / CAIMAN-PRO sensor using the threaded holes on the back of the sensor. Please consider this in case that you design your own bracket or integrate the sensor in another housing. The threaded holes **on the sides** of the sensor are intended for the fixation of the sensor instead.

6 Important Legal Disclaimer Notice

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