

INDUSTRIAL PEDALS



CALDARO



THE LINK BETWEEN MAN AND MACHINE

CLEAN DESIGN AND PROTECTED ELECTRONICS



Our customers expressed their need for a more robust yet compact pedal, and in 2014, we realised we had to design it ourselves. Since then, we have developed both the P09 and the P11 pedals to be extremely compact and robust. No loose parts. Just smart tech and careful design.

By reducing the number of components, we have managed not only to simplify construction in our pedals P09 and P11 but also to give them higher precision, better ergonomics and resistance to challenging environments.

Caldaro is a modern company with a decentralised organisation where people enjoy working and take responsibility. Exciting problems make our brains tick.

I love my job because it's rewarding to be part of developing the future operator environment. I also think it's an honour to work with the leading manufacturers of machines in the world; they trust us and rely on our expertise.

Thanks to working with prominent customers, we quickly realised the importance of sustainability issues, which are close to our hearts.

We always want to deliver the very best product to our customers. Best as in "solving the customer's challenges and fulfilling their needs". We started as a trading company, but since 2003, we have been designing our own products.

To customise a product will sometimes mean just configuring or modifying one of the products we have already developed. In other cases, it means creating a whole new product.

Don't hesitate to ask us even if you want just a small batch; it's a matter of adapting the manufacturing methods. Our speciality is to think outside the box. Please go ahead and challenge us!

Claudio Talamo, CEO Caldaro

PEDALS FOR THE MOST DEMANDING APPLICATIONS

Our specially designed foot pedals P09 and P11 for heavy-duty throttle-, brake- and retardation control are as robust as they are precise. All our industrial pedals are designed and manufactured for the most demanding applications in harsh environments. The pedals withstand the toughest conditions in all surroundings for your safety.

The P09 is a floor-mounted pedal, while the P11 is a wall-mounted, or suspended, pedal. They both have contactless Hall effect sensors for durability. They are designed with the operator in focus, always with an ergonomic low pivot point, enabling the operator to rest his heel on the floor or floorboard for comfortable operations.

Caldaro's P09 pedal revolutionised industrial controls with a clean, modern design and protected electronics. The new suspended P11 pedal is the natural progression of the floor-mounted P09.



P09: COMPACT, TOUGH, PRECISE

Fewer components, fewer problems. Our team fundamentally redefined control pedal design. The result is a better product with a reduced component count for improved reliability and electronics are protected by placement inside the casted pedal house.

Low pivot point. Our pedal improves both ergonomics and control precision. Comfort is assured as an operator may rest their heel on the floor or floorboard.

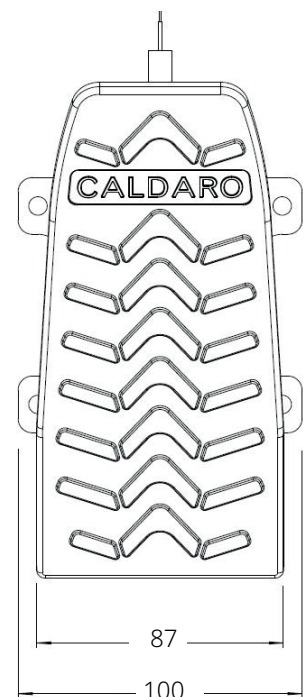
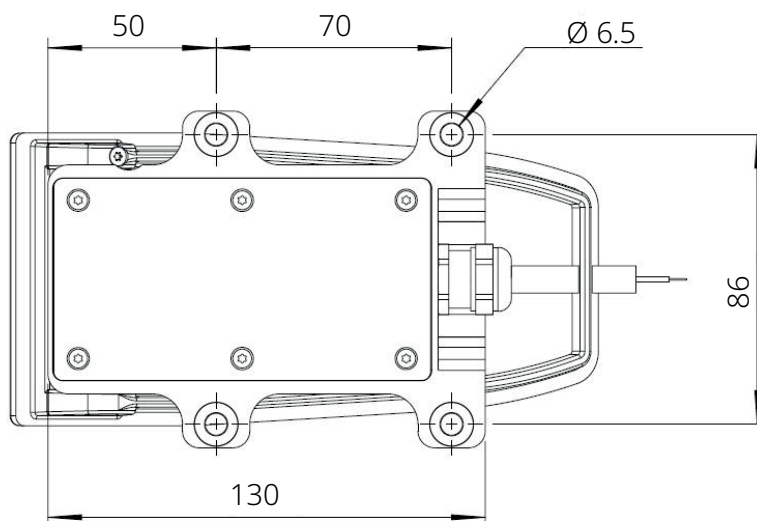
Compact design. The compact and simple design with its casted plate and slimmed housing might fool you, but the P09 pedal contains hi-tech that will fit in the most complicated machines.

Stands tough conditions. The electronics are coated and sealed. The surface of the pedal body and plate is both anodised and powder-coated. This pedal will withstand virtually all chemicals and extreme wear resistance.

Good looking. Have your corporate logo imprinted on the pedal.



P09: STANDARD DIMENSIONS



P09: MECHANICAL SPECIFICATIONS

Starting angle: 30°, 38° or 45°

Mechanical angle deflection: 20°
(regardless of starting angle)

Lever strength: Max 1500N to treadle
at 180 mm from pivot point

Life expectancy: 10 000 000 operations

Brake actuation force: 30N–65N

Throttle actuation force: 7,5N–26N or 10N–35N

P09: ENVIRONMENTAL SPECIFICATIONS

Storage temperature: –40°C to +85°C
(–40°F to 185°F)

Operating temperature: –40°C to +85°C
(–40°F to 185°F)

Sealing: IP67 (subject to specification)

EMC: 100 V/M

ESD: ±8kV (contact discharge) ±15kV (air
discharge)

P09: ELECTRICAL SPECIFICATIONS: ANALOGUE

Effective output: Standard 10%–90% Vin

Total current consumption: 17–22mA

Power supply: 5VDC ±10% (regulated)

Load resistance: 4,7kΩ–100kΩ pull down

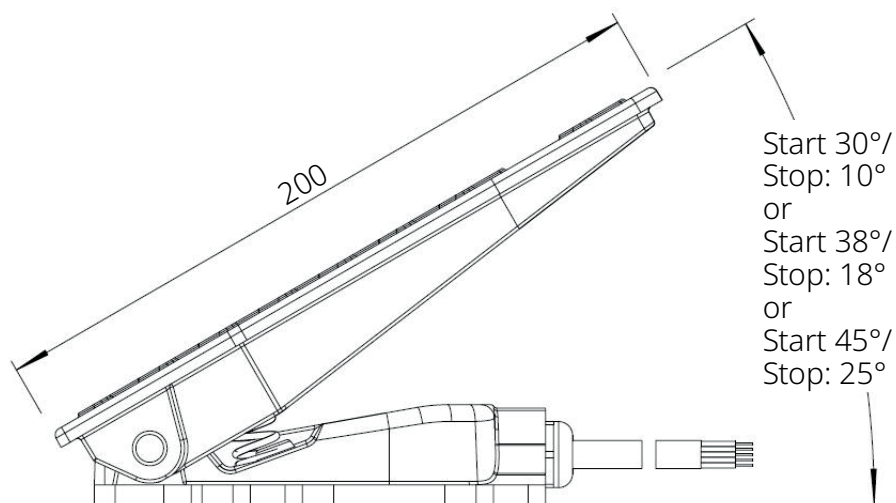
P09: ELECTRICAL SPECIFICATIONS: CAN

Power supply: 9–32VDC

Baud rate: 125, 250, 500 Kbit/s

Transmission rate: 10, 20, 50 ms

P09: STANDARD DIMENSIONS



P09: OUTPUT OPTIONS

Controller Area Network:

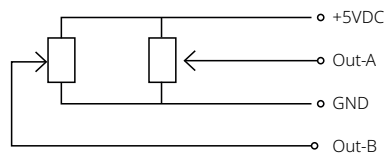
All configurations are available with CANopen or J1939 protocol.

Dual analog output signals are available as following:

- Crossed
- Parallel
- Non intersecting

STANDARD CONFIGURATION A

(dual analog outputs)



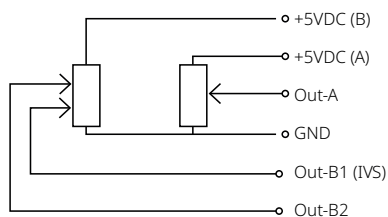
Pinning order

1. +5VDC regulated supply
2. Out-A (10–90%)
3. Out-B (90–10%)
4. GND

Parallel or non-intersecting outputs and other outputs ratios available on request.

STANDARD CONFIGURATION B

(dual analog + IVS signal)



Pinning order

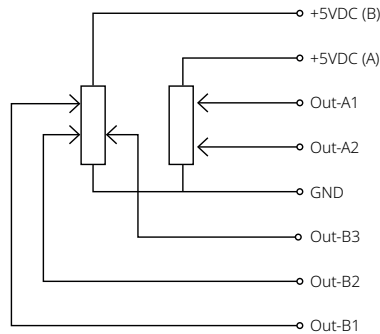
1. +5VDC regulated supply (A)
2. +5VDC regulated supply (B)
3. Analog Out-A (10–90%)
4. Out-B1* (Idle validation signal. 0V at idle switching to 5V at approx 16% output on A)
5. Analog Out-B (90–10%)
6. GND

*Digital output from Hall effect sensor.

Other analog output ratio and IVS activation point available on request.

STANDARD CONFIGURATION C

(dual analog + changeover type IVS + kickdown signal) + 5VDC (B)



Pinning order

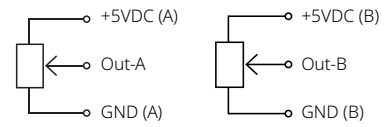
- 1.1 +5VDC regulated supply (A)
- 1.2 Analog out-A1 (10–90%)
- 1.3 Out-A2* (Kickdown signal. 0V at idle switching to 5V at about 80% output on A)
- 1.4 GND
- 2.1 +5VDC regulated supply (B)
- 2.2 Out-B1 (IVS-NC signal open collector output, maximum 20mA at 24VDC. Switching at approx 16% output on A1)
- 2.3 Out-B2 (IVS-NO signal open collector output, max 20mA at 24VDC. Switching at approx 16% output on A1)
- 2.4 Analog out-B3 (90–10%)

*Digital output from Hall effect sensor.

Other analog output ratios and IVS/kick-down switch activation points available on request.

STANDARD CONFIGURATION D

(dual independent analog outputs)



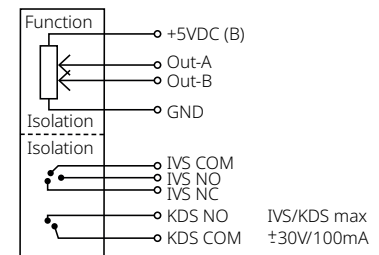
Pinning order

1. +5VDC regulated supply (A)
2. +5VDC regulated supply (B)
3. Analog Out-A (10–90%)
4. Analog Out-B (10–90%)
5. GND (A)
6. GND (B)

Crossed or non-intersecting outputs and other output ratios available on request.

STANDARD CONFIGURATION E

(dual analog + potential free switch)



Pinning order

- 1.1 +5VDC regulated supply (A)
- 1.2 Analog Out-A (10–90%)
- 1.3 Analog Out-B (90–10%)
- 1.4 GND
- 2.1 IVS COM
- 2.2 IVS NC
(Switching at approx 16% output on A)
- 2.3 IVS NO
(Switching at approx 16% output on A)
- 2.4 KDS COM
- 2.5 KDS NO
- 2.6 (Empty)

Other analog output ratios and IVS/kick-down switch activation points available on request.

P11: SMART TECH FOR MODERN MACHINES

A minimal number of components lend these pedals durability and dependability. That there are no loose parts means it's difficult to break. For example, when you press the pedal, a permanent magnet inside the pedal rotates, creating a fluctuation in the magnetic field that is converted to an analog and linear output signal by a microprocessor. No wires!

The slim, compact design makes it easy for the machine designers to insert it in their designs.

Made of anodised and powder-coated aluminium that withstands the harshest conditions.

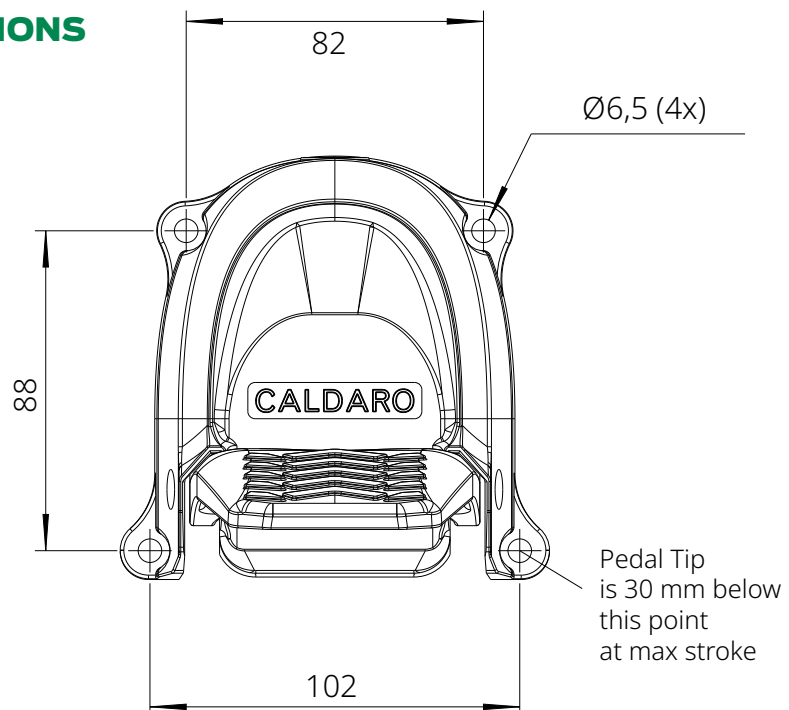
Excels in tough environments. The potted electronics make it safe and waterproof. When the pedal is wall-mounted it's easy to flush the cabin with water to get rid of the dirt.

Good looking. Have your corporate logo imprinted on the pedal.

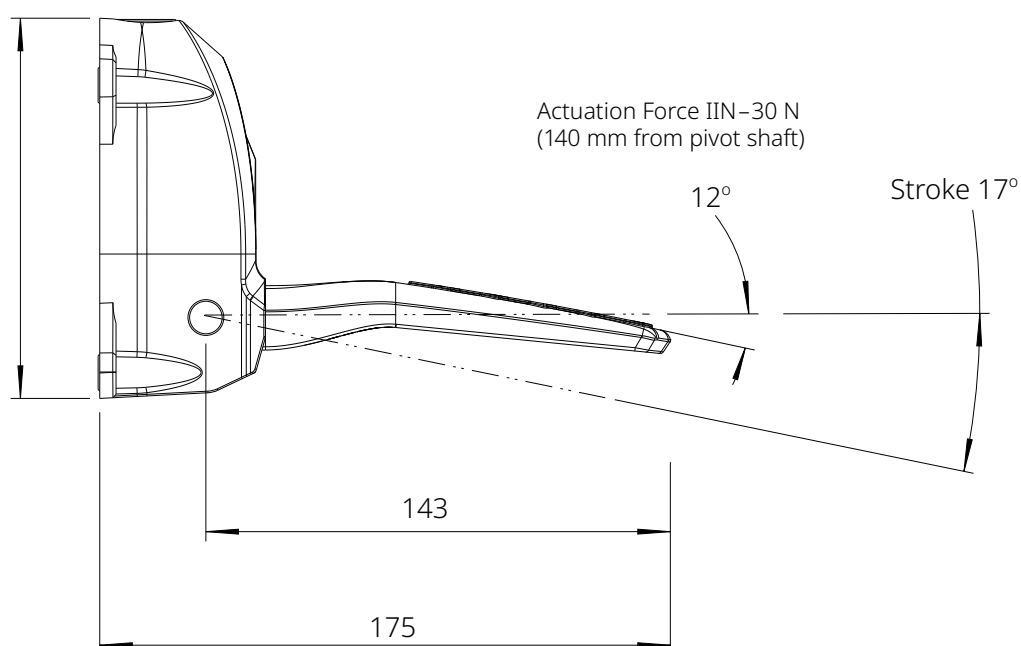
Unique protected design. The EU Intellectual Property Office has approved the design for the pedal P11. It is well-thought-out to make sure design and function are one.



P11: STANDARD DIMENSIONS



P11: STANDARD DIMENSIONS



P11: MECHANICAL SPECIFICATIONS

Mechanical angle deflection: 12° or 17°

Lever strength: Max 1500N to treadle at 180 mm from pivot point

Life expectancy: 10 000 000 operations

P11: ENVIRONMENTAL SPECIFICATIONS

Storage temperature: -40°C to +85°C (-40°F to 185°F)

Operating temperature: -40°C to +85°C (-40°F to 185°F)

Sealing: IP67 (subject to final specifics)

EMC: 100 V/M

ESD: ±8kV (contact discharge) ±15kV (air discharge)

P11: ELECTRICAL SPECIFICATIONS: ANALOGUE

Effective output: Standard 10%–90% V_{in}

Total current consumption: 17–22mA

Power supply: 5VDC ±10% (regulated)

Recommended load resistance:
4,7kΩ–100kΩ pull down

P11: ELECTRICAL SPECIFICATIONS: CAN

Power supply: 9–32VDC

Baud rate: 125, 250, 500 Kbit/s

Transmission rate: 10, 20, 50 ms

P11: OUTPUT OPTIONS

Controller Area Network:

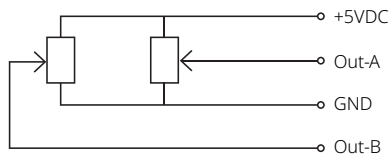
All configurations are available with CANopen or J1939 protocol.

Dual analog output signals are available as following:

- Crossed
- Parallel
- Non intersecting

STANDARD CONFIGURATION A

(dual analog outputs)

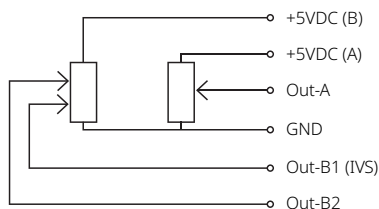


Pinning order

1. +5VDC regulated supply
2. Out-A (10-90%)
3. Out-B (90-10%)
4. GND

STANDARD CONFIGURATION B

(dual analog + IVS signal)



Pinning order

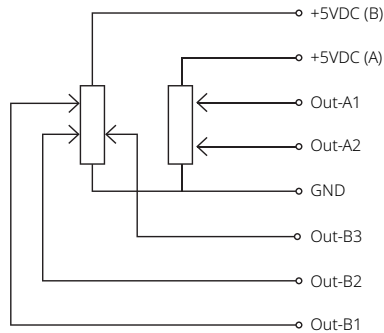
1. +5VDC regulated supply (A)
2. +5VDC regulated supply (B)
3. Analog Out-A (10-90%)
4. Out-B1* (Idle validation signal. 0V at idle switching to 5V at approximately 16% output on A)
5. Analog Out-B2 (90-10%)
6. GND

*Digital output from Hall effect sensor.

Other analog output ratio and IVS activation point available on request.

STANDARD CONFIGURATION C

(dual analog + changeover type IVS + kickdown signal) + 5VDC (B)



Pinning order

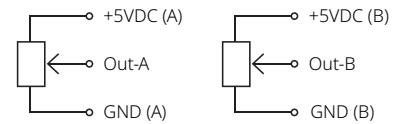
- 1.1 +5VDC regulated supply (A)
- 1.2 Analog out-A1 (10-90%)
- 1.3 Out-A2* (Kickdown signal. 0V at idle switching to 5V at about 80% output on A)
- 1.4 GND
- 2.1 +5VDC regulated supply (B)
- 2.2 Out-B1 (IVS-NC signal open collector output, maximum 20mA at 24VDC. Switching at approx 16% output on A1)
- 2.3 Out-B2 (IVS-NO signal open collector output, max 20mA at 24VDC. Switching at approx 16% output on A1)
- 2.4 Analog Out-B3 (90-10%)

*Digital output from Hall effect sensor.

Other analog output ratios and IVS/kick-down switch activation points available on request.

STANDARD CONFIGURATION D

(dual independent analog outputs)



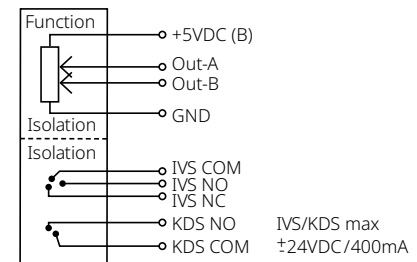
Pinning order

1. +5VDC regulated supply (A)
2. +5VDC regulated supply (B)
3. Analog Out-A (10-90%)
4. Analog Out-B (10-90%)
5. GND (A)
6. GND (B)

Crossed or non-intersecting outputs and other output ratios available on request.

STANDARD CONFIGURATION E

(dual analog + potential free switch)



Pinning order

- 1.1 +5VDC regulated supply (A)
- 1.2 Analog Out-A (10-90%)
- 1.3 Analog Out-B (90-10%)
- 1.4 GND
- 2.1 IVS COM
- 2.2 IVS NC
- 2.3 IVS NO
- 2.4 KDS COM
- 2.5 KDS NO
- 2.6 (Empty)

Other analog output ratios and IVS/kick-down switch activation points available on request.

CUSTOMER-ADAPTED PRODUCTS MADE IN SWEDEN

Caldaro is an international company based in Sweden that develops premium HMI products like joysticks, pedals and sensors for customers with high-quality expectations and special requirements. Our products are typically used in harsh conditions or operating environments where ergonomics and design are important.

We develop our products according to each customer's distinctive needs while pushing the boundaries of design and technology. Our extensive know-how from several demanding applications allows us to design each product according to each customer's quality and function needs.

We are dedicated to providing modern, safe controls that lead the industry in durability, precision, and dependability through constant innovation. Ergonomics and simplified design go hand in hand. We are the link between man and machine; our task is to optimise that interaction.

WE DELIVER HIGH-END SOLUTIONS

We have become the go-to supplier for customers with high performance, accuracy, and functionality demands in various industries worldwide.

With solid growth, we have established ourselves as the leading player in our niche. A modern organisation with cutting-edge expertise at our head office means we can deliver on short lead times with a proven track record of reliability.

Outsourced production allows us to increase or decrease capacity as necessary while we get the best help and solutions. We see this as a winning model.

We operate in an exciting technical environment where, in close cooperation with our customers, we are designing the operator environments of the future.



SUSTAINABILITY IS NECESSARY



We are committed to building a sustainable society with our customers, partners and stakeholders. Our focus areas are the environment, ethics, social responsibilities, and economy.

In everything we do, we follow Caldaro's values, ethical principles, and appropriate laws and regulations. In line with our values and Code of Conduct, we aim to provide excellent customer experiences professionally in all our projects. We deliver on our customers' promises and are committed to increasing customer satisfaction.

Our fundamental principle is to offer the best working conditions. With happy, skilled and motivated employees, we can design the best possible products and thereby get satisfied customers.

We increase environmental awareness by communicating our sustainable goals and results internally and externally to ensure that quality and environmental policies are embedded and adhered to at all levels of the organisation.

In 2019, we committed to the UN Global Compact's sustainability goals. In 2022, we received our first. Ecovadis sustainability rating: their Platinum medal for the top 1% of companies.

CALDARO QUALITY

- Joysticks and pedals built to last "forever". We always perform extensive life and other tests to ensure we can exceed our specified requirements.
- Long life expectancy is also a matter of sustainability.
- We use the most durable materials.
- Ergonomic design.
- Excellent precision.
- Simplified design to reduce the number of parts.
- Custom-made to fit the customer's needs.
- Constantly working to get more sustainable: environment, ethics, social, and economy.
- The ID number on each manufactured item allows for full traceability and test data from end-of-line testing if needed.

PREMIUM PRODUCTS

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INDUSTRIAL JOYSTICKS

Our full grip-sized industrial joysticks are designed to suit the most demanding heavy-duty applications in terms of mechanical strength and environmental requirements. Designed with the operator in focus, these joysticks are ergonomic and user-friendly, built for operating every productive hour.

Our palm grip joysticks are designed with particular emphasis on operator comfort and precision control. After decades of experience working with joysticks, our technical advisers are well placed to supply customers with the ideal solution for their individual needs, and always with various CAN bus options.

Our fingertip joysticks are designed for smooth operator control with high precision. These mini joysticks are often used in precision machines, forklifts and remote controls but can also be found in agricultural applications.

We can offer a wide range of joysticks with up to 5 analog axis and contactless redundant sensors.



INDUSTRIAL PEDALS

Our specially designed foot pedals for heavy-duty throttle, brake and retardation control are as robust as they are precise. All our industrial pedals are designed and manufactured for the most demanding applications in harsh environments. The pedals withstand the toughest conditions in all surroundings for dependability and your safety.



POSITION SENSORS

Caldaro has been supplying sensors since the early 80's. Initially, it was only potentiometers with wire-wound or conductive plastic in both rotating and linear versions. Currently, contactless technology (Hall effect and inductive) has evolved and is now used effectively in many different sensor types, both rotating and linear.

MARINE CONTROLS

Real craftsmanship levers made by our specialist team. Every control lever has a smooth, elegant feeling resulting from decades of refinement and engineering experience. Since we started in 1985, we have developed about 200 different variations for a wide variety of marine and offshore applications.

