

FULL GRIP JOYSTICKS



CALDARO



THE LINK BETWEEN MAN AND MACHINE

BUILT FOR HEAVY DUTY



In 2010, when our existing joystick couldn't quite cope with a customer's extremely harsh environment and brutal use, we had to develop one that could. The result was the C14, which the customer is still using today.

The Caldaro C14 joystick provides the best combination of full grip size and perfect precision. It's large enough to match the full-sized heavy-duty machines and strong enough to withstand the toughest operators. You can rely on the C14 to stay intact and keep its precision year after year.

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!

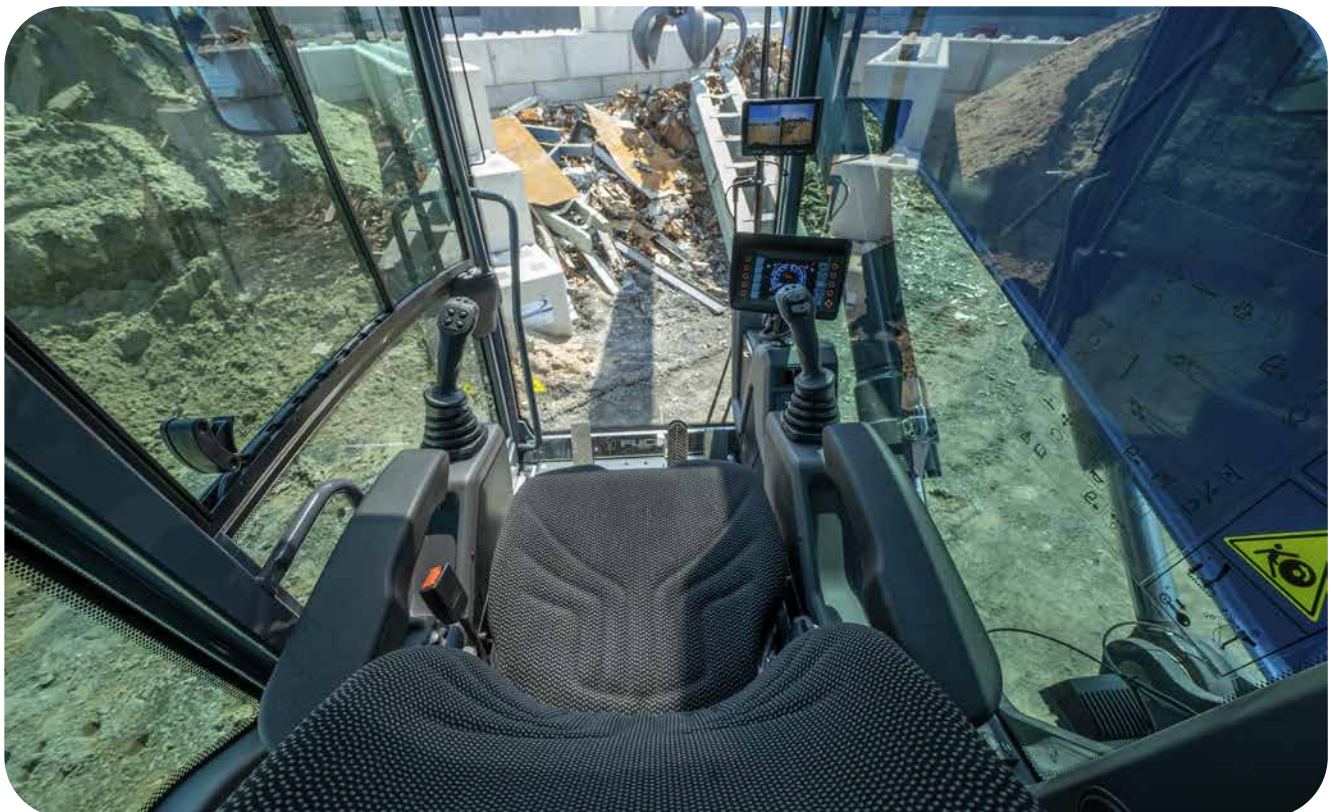
Claudio Talamo, CEO Caldaro

ERGONOMIC AND USER-FRIENDLY

Our full grip-sized industrial joystick C14 is designed to suit the most demanding heavy duty applications in terms of mechanical strength and environmental requirements. Typically, you will find these industrial joysticks in heavy-duty applications, such as Mining and Construction applications, to mention a few, where robustness and reliability are essential. To meet the requirements, we can offer these joysticks with a protection class up to IP67.

Designed with the operator in focus, our full grip industrial joysticks are ergonomic and user friendly, built for precise functioning every working hour. By using the best possible materials, our joysticks are built to superior standards. They are tough, smooth to handle, and have a high-quality feel. All of our full grip joysticks can be customised to meet your expectations and requirements. They are available with field bus interface J1939 and CANopen.

Caldaro defines a joystick as a two-part module: the joystick base and the joystick grip attached to the base. The C14 joystick is best combined with our Viper grips.



C14: PROVEN DURABILITY

Tested and have been used for years in salt and copper mines.

All temperatures. Hot or cold, the C14 will endure all temperatures from -40°C to $+85^{\circ}\text{C}$.

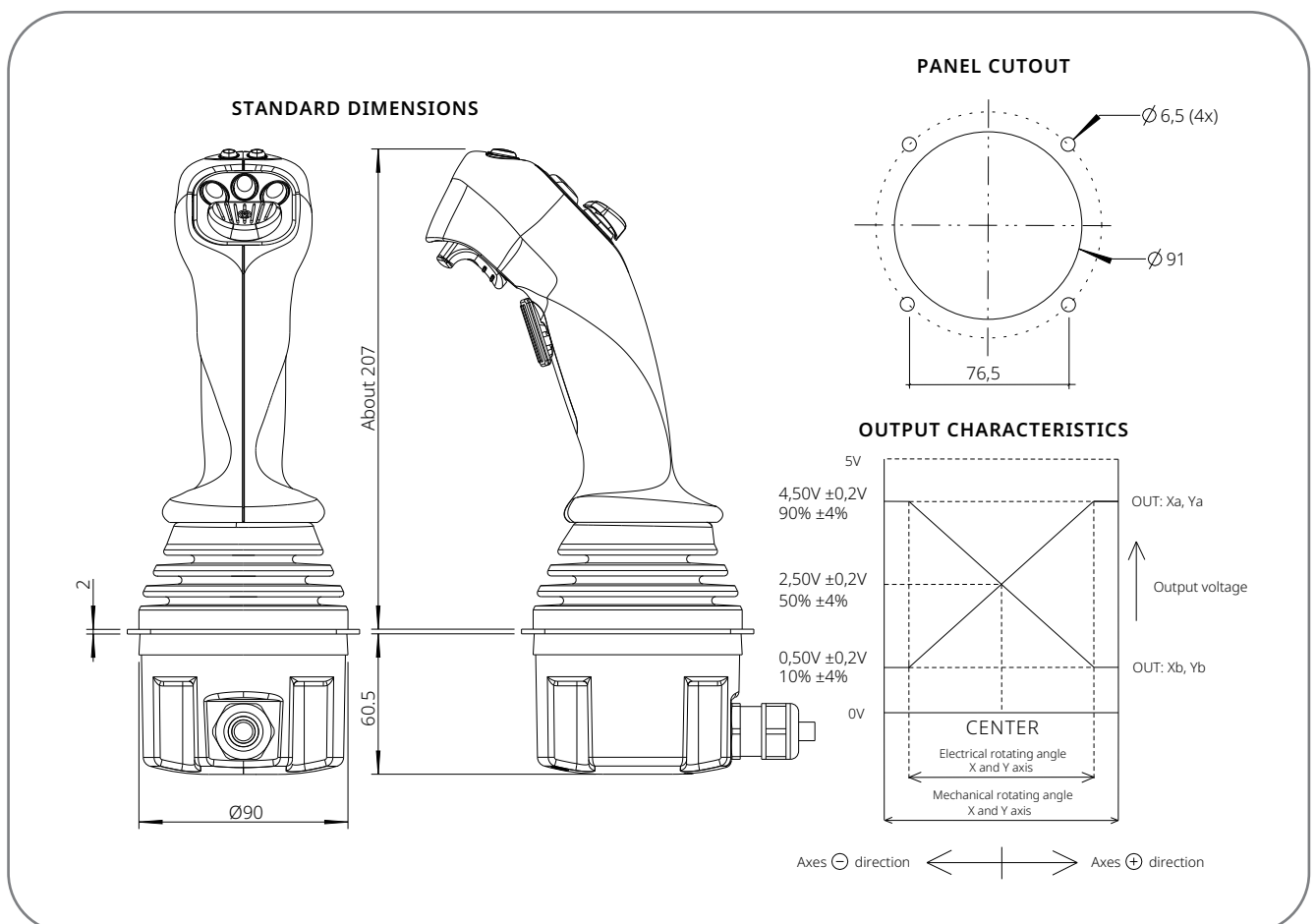
The best material has been chosen for each component. The rubber mixture endures the toughest conditions.

The strongest shaft. The shaft is manufactured in one single piece and with extended dimensions. This makes it practically impossible to bend.

Sealed panel mounting. The electronics are protected from fluids, salt, and oil.

Precision that lasts. It will withstand more than 10 million operations and keep its detent precision.

Adding operator feeling. Fully customisable feeling with Guide feeling. Optional spring force and Over-press feature.



MECHANICAL SPECIFICATIONS

Mechanical angle two axis: $\pm 12^\circ$ or $\pm 20^\circ$

Mechanical angle one axis: $\pm 12^\circ$ or $\pm 20^\circ$

Lever strength: Max 500N Static load

Life expectancy: 10 000 000 operations

ENVIRONMENTAL SPECIFICATIONS

Storage temperature: -40°C to $+85^\circ\text{C}$ (-40°F to 185°F)

Operating temperature: -40°C to $+85^\circ\text{C}$ (-40°F to 185°F)

Sealing: IP67 (above panel subject to handle and final specification)

EMC: 100V/M

ESD: $\pm 8\text{kV}$ (contact discharge) $\pm 15\text{kV}$ (air discharge)

ELECTRICAL SPECIFICATIONS: ANALOGUE

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

Total current consumption: 17–22mA

Power supply: 5VDC $\pm 10\%$ (regulated)

Load resistance: 4,7k Ω –100k Ω pull down

ELECTRICAL SPECIFICATIONS: CAN

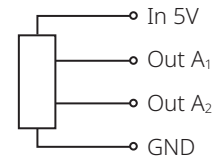
Power Supply: 9–32VDC

Baud rate: 125, 250, 500 Kbit/s

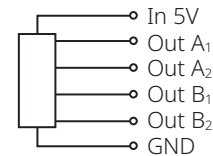
Transmission rate: 10, 20, 50 ms

OUTPUT OPTIONS

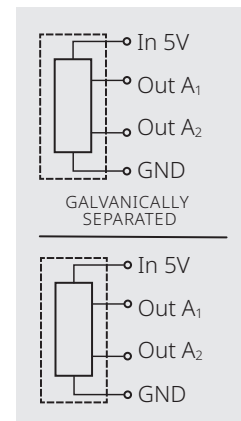
SINGLE OUTPUT



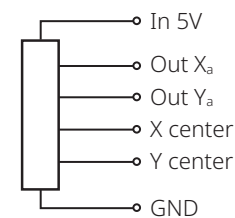
DUAL OUTPUT



DUAL INDEPENDENT OUTPUT



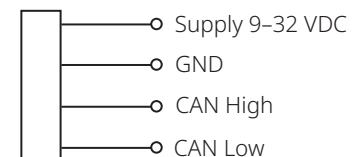
SINGLE + DIGITAL OUTPUT*



*Centre validation signal 1 per axis (please consult Caldaro)

CAN INTERFACE

CANopen, CANopen Safety or J1939 protocol



Available with direction or centre Switch function (please consult Caldaro)

COMBINE THE POWERFUL C14 JOYSTICK WITH OUR ERGONOMIC VIPER GRIPS

FEATURES FOR THE VIPER GRIPS

- Directly suitable for a hydraulic valve
- Modular design; numerous adaptation possibilities
- Multifunction grip
- Ergonomic design
- Buttons
- A capacitive sensor for "operator presence"

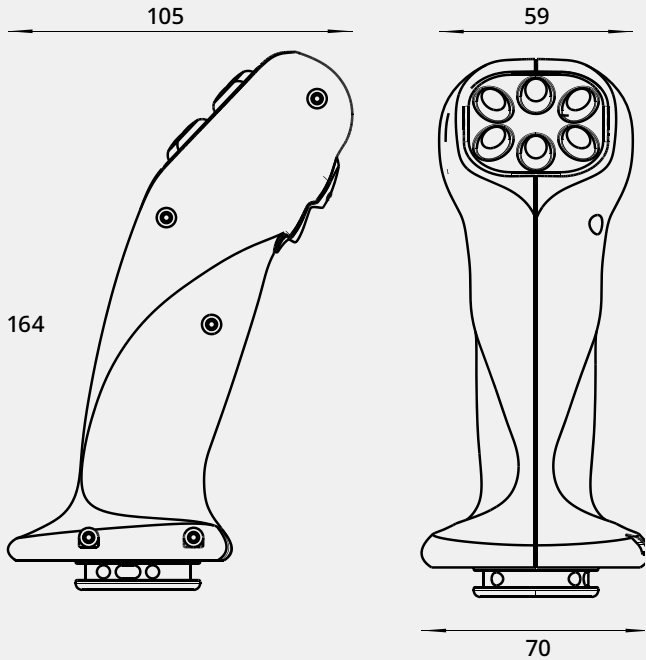
Can't find
your required
specifics?
Consult us!

OPTIONS FOR THE VIPER GRIPS

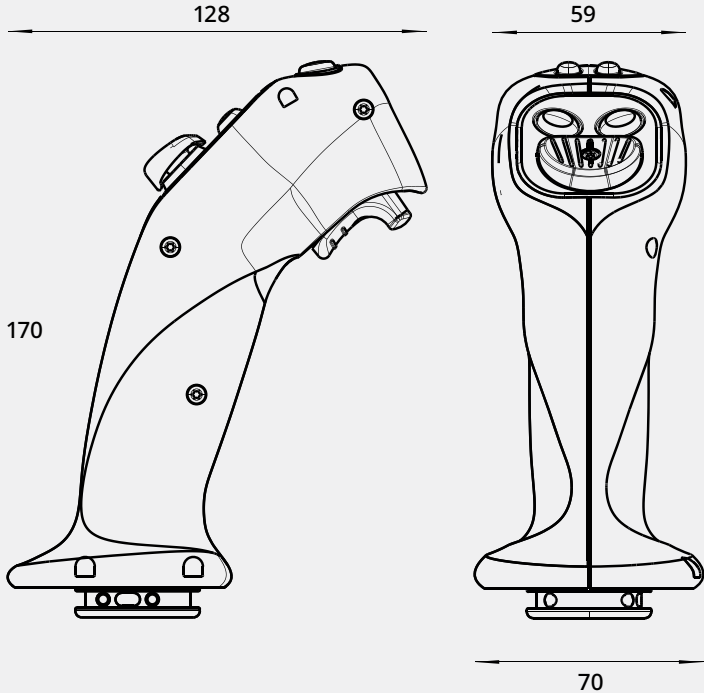
- Choose between 10 faceplate panels
- Incorporate the Co3B joystick within the Viper faceplate
- Black buttons
- Multicoloured buttons
- Hall effect sensor
- Proportional rocker sensor



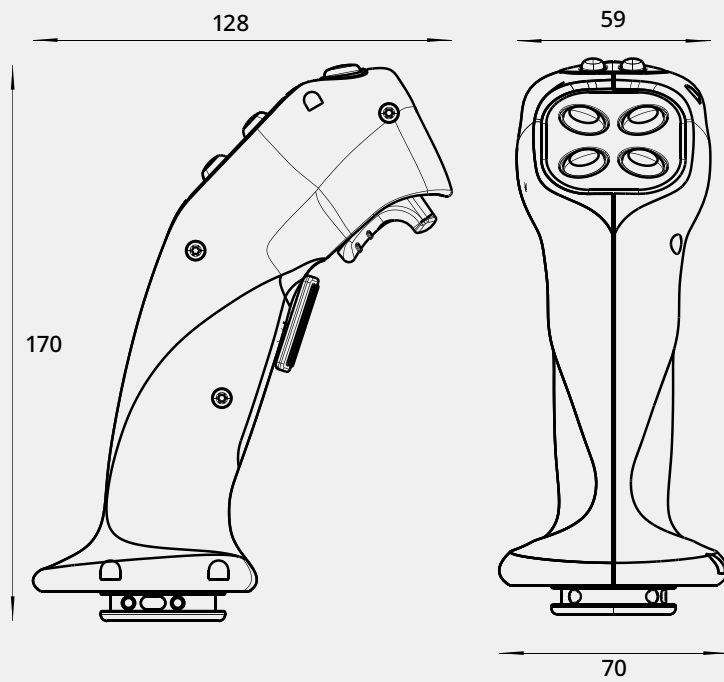
VIPER STANDARD



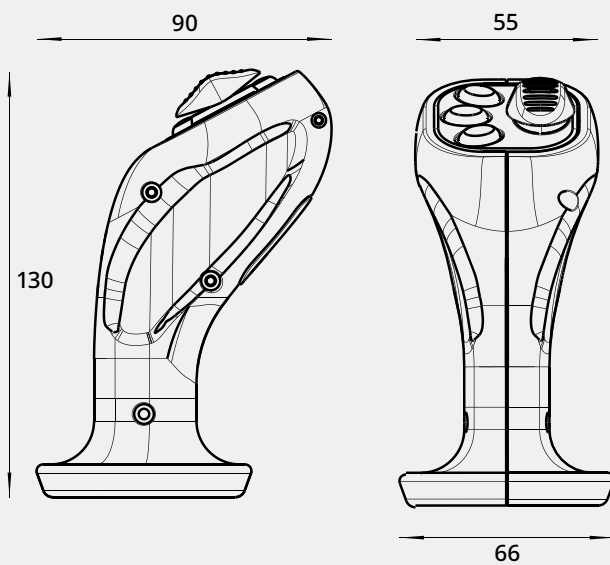
VIPER PLUS



VIPER XT



VIPER MEDIUM



MECHANICAL PERFORMANCE

Viper Standard, Plus, XT: dual mould black plastic

Viper Medium, Slim: single mould black plastic

High grade silicon (button)

Temperature range: -40°C to +85°C

Ingress Protection: IP 66 & IP67 (Viper), IP65 (ViperPlus)

Maximum load: 600N

PUSHBUTTON AND TRIGGER SWITCHES

Function: Momentary type, tactile action

Switch life: minimum 10 000 000 operations

Power rating: 50mA at 24 VDC

Optional: Changeover (NO/NC)

Optional: High current switch (1A at 24 VDC)

FNR SHIFTER

Function: Alternating type, haptic action

3-position rocker switch (F, N and R)

Separate switch signal for each position

Life expectancy: Minimum 5 000 000 operations

Power rating: 1A at 24 VDC

PROPORTIONAL ROCKER

Sensor: Hall effect, ratiometric

Single or dual output

Mechanical travel: $\pm 12^\circ$ from centre

Power supply: Regulated 5 VDC ($\pm 10\%$)

Proportional voltage output: 10-90%, others upon request

Life: minimum 10 000 000 operations

Current consumption: 14mA

EMC: 100V/m

ESD (Connector pin/air): ± 8 kV/+15 kV

OPERATOR PRESENT SENSOR (DMH)

Optional contactless electronic sensor located inside handle.

Power supply: 7.0-28 VDC or 5 VDC

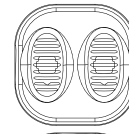
Characteristics of output: 5 VDC = ON (with hand present) and 0 V = OFF (with hand not present)

Current consumption: 30mA at 28 VDC and 15mA at 5 VDC

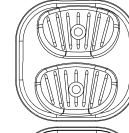
Switching time: 0.1 ms

EMC: 100 V/m (preliminary)

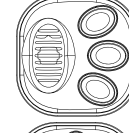
FACEPLATE PANELS



Type A



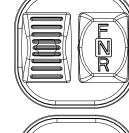
Type A*



Type B



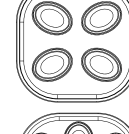
Type B*



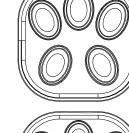
Type C



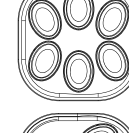
Type D



Type E



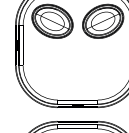
Type F



Type G



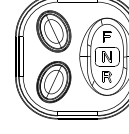
Type H



Type I



Type J
also as a rotated version



Type K

*Turned 90 degrees

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.

