



PRODUCT OVERVIEW

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Complete technical information are available in the product datasheets of the “General Catalog” and in the Download-Technical Documents section on www.ter.it.





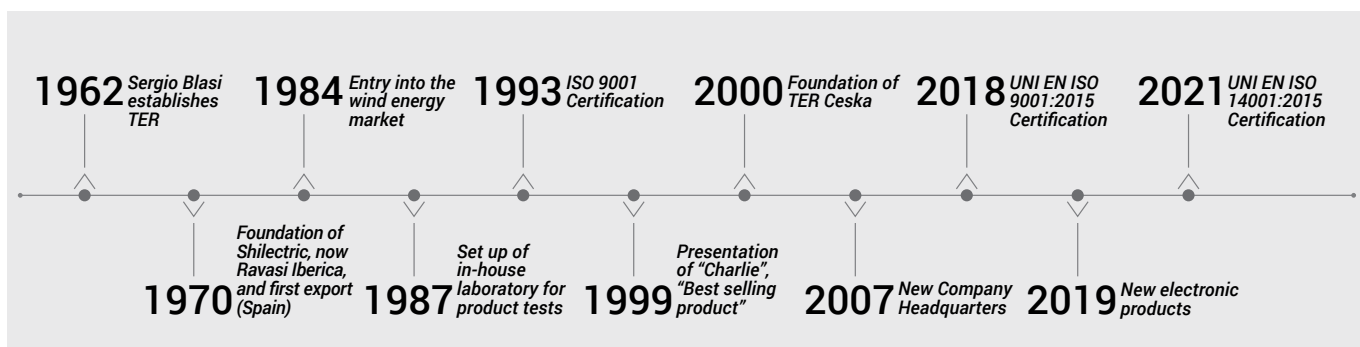
TER Tecno Elettrica Ravasi srl was established in Olgiate Molgora (Lecco), in 1962, by its founder, Sergio Blasi, willing to enter the field of switches and controls for industrial hoisting machines.

In the early 70s TER started a process of internationalization with the first export sales, and worked on increasing the diversification of its product range, entering the wind energy industry in the mid 80s.

Over the years, TER focused on the creation of innovative, reliable products that could anticipate demands from the market, starting combining mechanical technology with electronics in some of its products.

In 1987, TER set up an in-house laboratory for product testing and in 1993 it was the first Italian company to obtain the ISO 9001 certification from the Dutch certification company KEMA. At the beginning of 2018 TER's Quality Management System is updated according to the new UNI ISO 9001: 2015 standard.

In 2021 TER has been certified UNI EN ISO 14001: 2015, as a result of its continuous attention to the environment and environmental sustainability.



MARKETING



TER simplifies the control of the machines that carry its devices, designing reliable, ergonomic and intuitive safety products.

The increasingly central role given to the sales department is seen as a continuous relationship between TER and its customers.

TER supports commercial relations with customers with a well-structured **back office** and the wealth of technical and sales documentation available on the company's **website**, which also includes a new **e-commerce** area and as of 2018 is also accessible at the new and easier **domain ter.it**. Since 2012, orders have been managed by means of **configurators**, also accessible through the web.



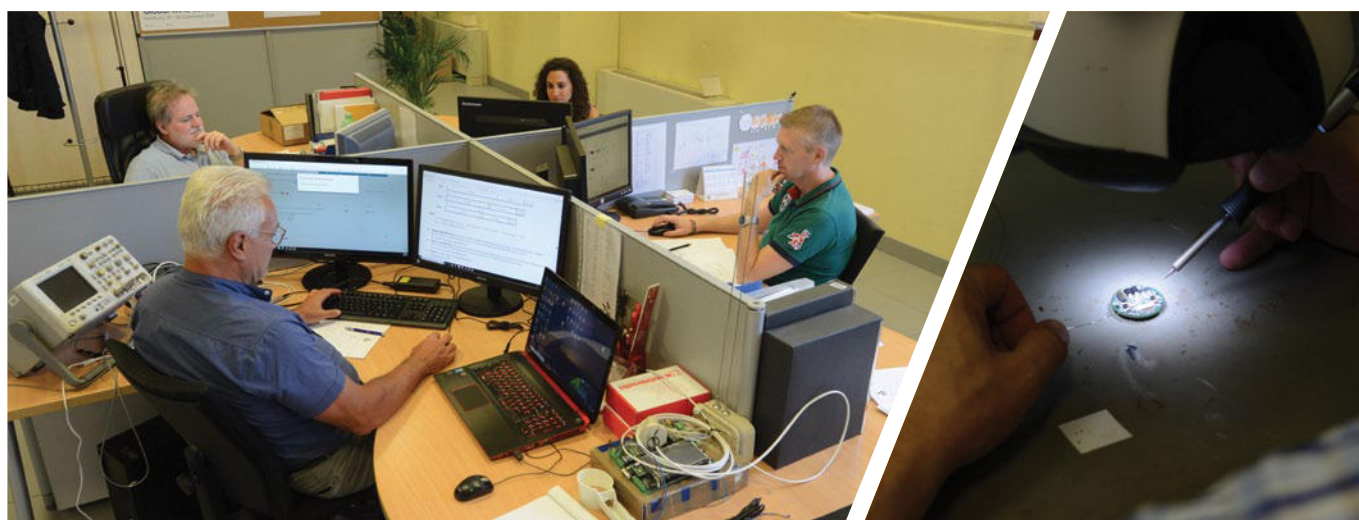
www.ter.it



TECHNOLOGY

TER products are the result of capacity for innovation, experience and application of technological expertise. The quality standard of TER products stems from a thorough knowledge of the materials used and from a constant attention to technical, construction, performance, quality and ergonomic aspects.

TER has gained extensive expertise in the area of plastic moulding and associated processes, thanks to the experience acquired in the 70s with the opening of a plastic moulding plant. In the early 90s, TER introduced the use of 3D modelling in the design process and started a progressive integration in its products of electronics, which in the last two years has taken a more and more important role leading to the design of a new and innovative line of electronic products.



PRODUCTION



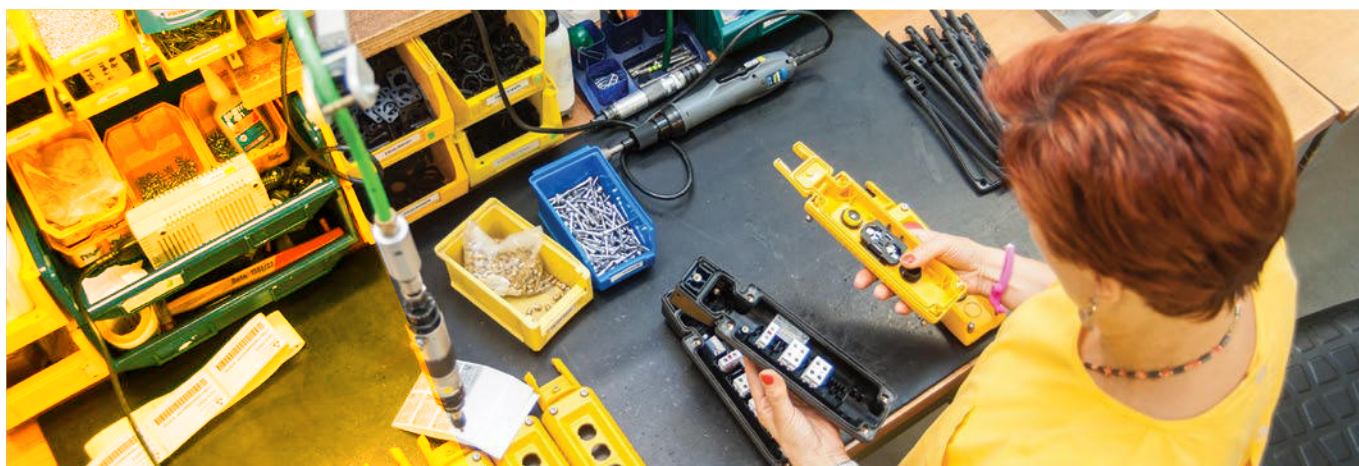
Product families



Product configurations

From order reception in the Sales Department through to shipment, each step is organized by processes, in order to respect delivery times, ensure product traceability and carry out all the required conformity checks.

All TER products are “**Made in Italy**” and production has always been concentrated in Italy to guarantee excellence of materials and greater controls on products and components.



QUALITY ASSURANCE

CE

EAC

cULus

SIL1

cRUus

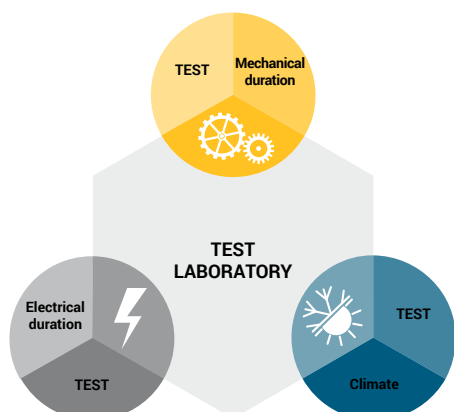
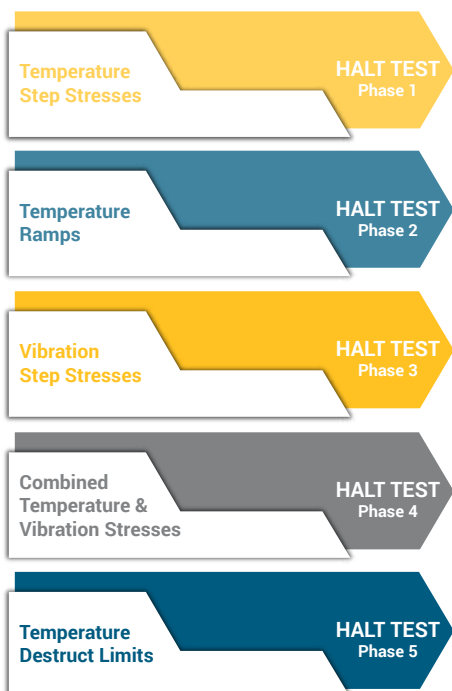
TER's Quality Management System, ISO 9001 certified since 1993, is now based on processes according to UNI ISO 9001: 2015, ensuring coordination of all company activities.

In 2021 TER has been certified UNI EN ISO 14001 and it has implemented an environmental policy aimed at minimizing any significant impact by protecting the surrounding environment.

TER has obtained cULus product certification for the US and Canadian markets, EAC for the Russian market, and it has certified its products at the first safety integrity level (SIL 1) according to Standard IEC 61508.



TEST LABORATORY



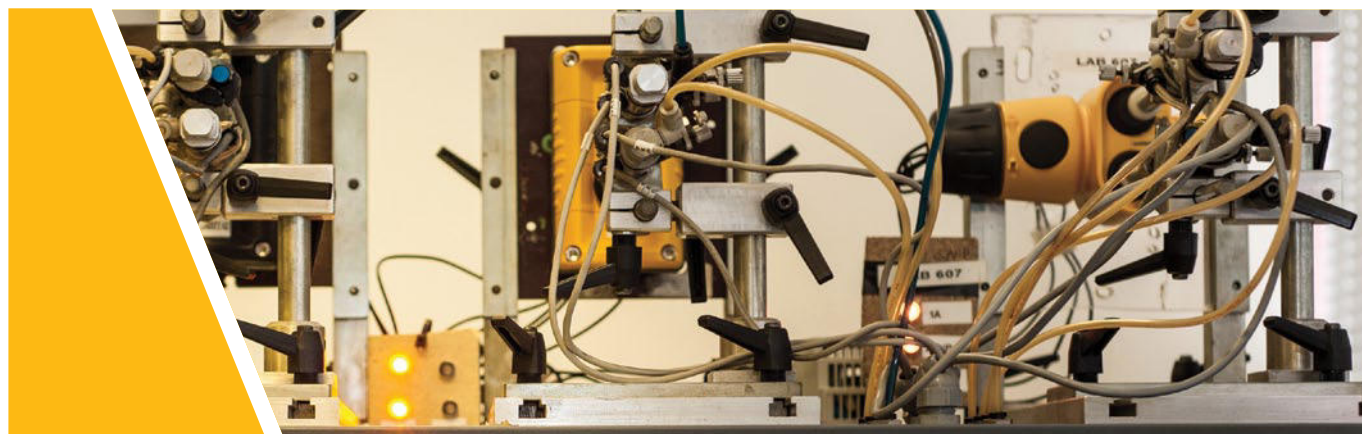
Since 1987, TER has been running an in-house Test Lab, designed to test the operating safety of the products and guarantee conformity with the different regulations that apply to the electromechanical industry.

TER's Test Lab is equipped with all the instruments needed to carry out electrical, mechanical and climate tests on the products:

- Mechanical life
- Mechanical properties of the terminals
- IP code - protection degree
- IK code - protection degree
- Electrical life
- Electrical heating
- Electrical properties
- Making and breaking capacity under normal and abnormal conditions
- Short-circuit test
- Fitness of equipment for storage and/or use in particular climatic conditions

Some TER products have successfully undergone the HALT Test (Highly Accelerated Life Test).

Upon customer's request, Test Lab staff are available to carry out more complex, in-depth measurements.



CONTROL STATIONS

Seven series of pendant or wall-mounted control stations used for auxiliary (Victor, Mike, Charlie, SPA, Alpha and NPA) or direct control (NPA-CP and Mike-D) of industrial machinery.

FEATURES

- Emergency stop mushroom pushbutton complying with ISO13850.
- Positive opening NC contacts for safety functions \ominus (Victor, Mike)
- Mechanical or electrical interlock to prevent simultaneous operation of opposite functions.
- Insulation category: Class II.
- All materials and components used are wear resistant and guarantee protection of the unit against water and dust.

DIRECTIVES AND STANDARDS

- Conformity to Community Directives: 2014/35/UE, 2006/42/CE.
- Conformity to CE Standards (auxiliary control): EN 60204-1, EN 60947-1, EN 60947-5-1, EN 60947-5-5 (Victor, Mike), EN 60529, ISO 13850.
- Conformity to CE Standards (direct control): EN 60204-1, EN 60947-1, EN 60947-3, EN 60529, ISO 13850.
- Conformity to cULus Standards (Victor, Mike): CSA-C22.2 No 14-13, UL 508.
- Regulations for the prevention of accidents BGV C 1 (only for Germany) (Victor, Mike).

Victor

CE cULus EAC BGV C1



- Wall-mounted control station for **auxiliary control**.
- Available with magnetic mounting case.
- Configurations from 1 to 8 actuators.
- 1NO or 1NC switches, LEDs, potentiometers.
- Actuators in different colours: 1 or 2 speed pushbuttons, selector switches and key-selector switches in various operation configurations, pilot lights, impulse or latched mushroom pushbuttons with rotation or key-operated release.
- 1 speed pushbuttons and selector switches available in illuminated version in a range of colours.
- Mechanical life of pushbuttons: 10x10⁶ operations.
- Cable entry: cable gland M20 or spiral cable gland M20 that can be mounted above, below or on the back of the enclosure.
- Overall dimensions (depending on the number of actuators):
 - min. 72.9 x 72.7 x 61.9 mm (HxLxW)
 - max. 302 x 72.7 x 61.9 mm (HxLxW).

Switch specifications

- Utilization category: AC 15 / 3 A / 250 Vac.
- Rated thermal current: 10 A.
- Rated insulation voltage: 300 Vac.
- Mechanical life: 10x10⁶ operations.
- Connections: screw-type terminals.

Mike

CE cULus EAC SIL1 BGV C1



- Pendant control station for **auxiliary control**.
- Configurations from 4 to 15 actuators.
- 1NO or 1NC switches, LEDs, potentiometers.
- Actuators in different colours: 1 or 2 speed pushbuttons, selector switches and key-selector switches in various operation configurations, pilot lights, impulse or latched mushroom pushbuttons with rotation or key-operated release.
- 1 speed pushbuttons and selector switches available in illuminated version in a range of colours.
- Mechanical life of pushbuttons: 10x10⁶ operations.
- Protection for actuators mounted on the bottom of the control station.
- Innovative hanging system with hidden cables.
- Cable entry: rubber cable sleeve (Ø 8÷26 mm).
- Overall dimensions (depending on the number of actuators):
 - min. 261 x 72.7 x 59.5 mm (HxLxW)
 - max. 561 x 72.7 x 59.5 mm (HxLxW).

Switch specifications

- Utilization category: AC 15 / 3 A / 250 Vac.
- Rated thermal current: 10 A.
- Rated insulation voltage: 300 Vac.
- Mechanical life: 10x10⁶ operations.
- Connections: screw-type terminals.



- Pendant control station for **auxiliary control**.
- Configurations from 2 to 3 actuators.
- 1NO or 1NC switches, 1 or 2 speed double switches with NO contacts.
- Threaded ring closing base and cover without using screws.
- Cable entry: cable gland M20 or spiral cable gland M20.
- Overall dimensions: 249 x 80 x 95 mm (HxLxW).

Switch specifications

- Utilization category: AC 15 / 3 A / 250 Vac.
- Rated thermal current: 10 A.
- Rated insulation voltage: 500 Vac.
- Mechanical life: 1x10⁶ operations.
- Connections: screw-type terminals.



- Pendant control station for **auxiliary control**.
- Configurations from 2 to 20 actuators arranged on a double row.
- 1 or 2 speed switches with NO or NC contacts.
- Pushbuttons, selector switches and key-selector switches, pilot lights, impulse or latched mushroom pushbuttons with rotation release.
- Cable entry: rubber cable sleeve (Ø 14÷26 mm).
- Overall dimensions (depending on the number of actuators):
 - min. 132 x 94 x 64 mm (HxLxW)
 - max. 600 x 94 x 64 mm (HxLxW).

Switch specifications

- Utilization category: AC 15 / 1.9 A / 380 Vac.
- Rated thermal current: 10 A.
- Rated insulation voltage: 500 Vac.
- Mechanical life: 1x10⁶ operations.
- Connections: screw-type terminals.



- Pendant control station for **auxiliary control**.
- Configurations from 2 to 13 actuators arranged on a double row.
- Single or double switches with NO or NC contacts featuring one or two speeds.
- Pushbuttons, selector switches and key-selector switches in various operation configurations, pilot lights, latched mushrooms pushbuttons with rotation release or key-operated.
- Cable entry: rubber cable sleeve (Ø 14÷26 mm).
- Overall dimensions (depending on the number of actuators):
 - min. 222 x 75 x 60 mm (HxLxW)
 - max. 382 x 75 x 60 mm (HxLxW).

Switch specifications

- Utilization category: AC 15 / 3 A / 250 Vac.
- Rated thermal current: 10 A.
- Rated insulation voltage: 500 Vac.
- Mechanical life: 1x10⁶ operations.
- Connections: screw-type terminals.



- Pendant control station for **auxiliary control**.
- Configurations from 2 to 12 actuators.
- 1, 2 or 3 speed switches with NO and/or NC contacts.
- Cable entry:
 - 2÷6 buttons: rubber cable sleeve (Ø 10÷18 mm)
 - 8÷12 buttons: rubber cable sleeve (Ø 17÷26 mm).
- Cable sleeve can be angled up to 20° for comfortable working position.
- Overall dimensions (depending on the number of actuators):
 - min. 140 x 76 x 70 mm (HxLxW)
 - max. 560 x 90 x 70 mm (HxLxW).

Switch specifications

- Utilization category: AC 15 / 1.9 A / 380 Vac.
- Rated thermal current: 10 A.
- Rated insulation voltage: 500 Vac.
- Mechanical life: 1x10⁶ operations.
- Connections: screw-type terminals.



- Pendant control station for **direct control**.
- Configurations available: 3 actuators (1 speed version) or 4 actuators (2 speed version).
- 1 speed pushbuttons, latched mushroom pushbuttons with rotation release.
- 1 speed two-pole switches and 1 speed three-pole switches for emergency mushroom pushbutton, for direct control.
- Mechanical life of pushbuttons: 10x10⁶ operations.
- Innovative hanging system with hidden cables.
- Cable entry: rubber cable sleeve (Ø 8÷26 mm).
- Overall dimensions:
 - 3 actuators: 261 x 72.7 x 59,5 mm (HxLxW)
 - 4 actuators: 321 x 72.7 x 59,5 mm (HxLxW).

Switch specifications

- Utilization category: AC 3 - AC 4 (AC 23B for PRSL1902PI) / 10 A / 400 Vac.
- Rated operational power: 3 kW.
- Rated thermal current: 20 A.
- Rated insulation voltage: 660 Vac.
- Connections: screw-type terminals.



- Pendant control station for **direct control**.
- Configurations from 2 to 8 actuators.
- 1 or 2 speed two-pole switches or 1 speed three-pole switches, with or without brake contact / auxiliary contact, for direct control.
- Cable entry:
 - 2÷6 buttons: rubber cable sleeve (Ø 10÷18 mm)
 - 8 buttons: rubber cable sleeve (Ø 17÷26 mm).
- Cable sleeve can be angled up to 20° for comfortable working position.
- Overall dimensions (depending on the number of actuators):
 - min. 140 x 76 x 70 mm (HxLxW)
 - max. 393 x 83 x 70 mm (HxLxW).

Switch specifications

- Utilization category: AC 3 - AC 4 (AC 23B for PRSL508PI) / 10 A / 400 Vac.
- Rated operational power: 3 kW.
- Rated thermal current: 20 A.
- Rated insulation voltage: 660 Vac.
- Brake operating contact / auxiliary contact: 100 V, 0.7 A, L/R=100 ms.
- Mechanical life: 1x10⁶ operations.
- Connections: screw-type terminals.

JOYSTICKS

Three series of joysticks used to control industrial machinery.

FEATURES

- Various types of handles and grips.
- Available with free movement, with "dead man" safety device (with mechanical interlock), or with NO pushbutton.
- Up to 5 or 6 speed for each direction, with cross or 360° movement.
- Configurations with switches or potentiometers.
- Available with Egon 36-AL single or redundant analog encoders with current or voltage output.

DIRECTIVES AND STANDARDS

- Conformity to Community Directives: 2014/35/UE, 2006/42/CE.
- Conformity to CE Standards (Juliet): EN 60204-1, EN 60947-1, EN 60947-5-1.
- Conformity to CE Standards (Romeo, Hercules): EN 60204-1, EN 60947-1, EN 60947-5-1, EN 61000-6-2 (Romeo), EN 61000-6-3 (Romeo).

Juliet



MAX.
ASSEMBLED
IN SPECIFIC
ENCLOSURE

- Up to 5 speeds for each direction.
- Stepped or linear operation.
- Cross or 360° movement.
- Available with switch boards or potentiometers.
- Switches are assembled on pull-out or fixed terminal boards.
- Overall dimensions:
 - standard version: 150.1 x 83 x 83 mm (HxLxW)
 - version with potentiometers: 134.3 x 85.5 x 85.5 mm (HxLxW).

Switch specifications

- Utilization category: AC 15 / 2 A / 48 Vac.
- Rated thermal current: 8 A.
- Rated insulation voltage: 1000 Vac.
- Mechanical life: 5x10⁶ operations.
- Connections: screw-type terminals.

Romeo



MAX.
ASSEMBLED
IN SPECIFIC
ENCLOSURE

- Up to 6 speeds for each direction.
- Stepped or linear operation with spring return or maintained position.
- Cross or 360° movement.
- 3 different versions: with free movement, with "dead man" safety device (with mechanical interlock with or without NO/NC contact), with NO pushbutton for use as electrical interlock.
- 3 different handles, also available with pushbuttons and selector switches.
- Available with potentiometers.
- Insulation category: Class I.
- Mechanical life: 0.5x10⁶ operations.
- Overall dimensions (depending on the handle):
 - min. 216 x 100 x 100 mm (HxLxW)
 - max. 281 x 100 x 100 mm (HxLxW)
 - max. length of Romeo with potentiometers: 129.3 mm.

Switch specifications

- Utilization category: AC 15.
- Operating electrical usage:
 - inductive load 48 Vac / 1 A, resistive load 48 Vac / 2 A
 - inductive load 125 Vac / 1 A, resistive load 125 Vac / 3 A
 - inductive load 250 Vac / 0.5 A, resistive load 250 Vac / 2 A
 - inductive load 30 Vac / 1 A, resistive load 30 Vac / 3 A.
- Rated thermal current: 8 A.
- Rated insulation voltage: 1000 Vac.
- Mechanical life: 5x10⁶ operations.
- Connections: screw-type terminals.



MAX
ASSEMBLED
IN SPECIFIC
ENCLOSURE

- Nylon fiberglass structural components and steel levers to ensure maximum resistance.
- Up to 5 speeds for each direction.
- Stepped or linear operation with spring return.
- Cross or 360° movement.
- 3 different versions: with free movement, with "dead man" safety device (with mechanical interlock with or without NO/NC contact), with NO pushbutton for use as electrical interlock.
- 4 different handles, also available with pushbuttons and selector switches.
- Available with potentiometers.
- Available with Egon 36-AL single or redundant analog encoders with current or voltage output.
- Insulation category: Class I.
- Mechanical life: 5×10^6 operations.
- Overall dimensions (depending on the handle):
 - min. 216 x 103 x 103 mm (HxLxW)
 - max. 285 x 103 x 103 mm (HxLxW)
 - max. length of Hercules with potentiometers: 134.4 mm.



HERCULES - S



HERCULES-CK

Hercules-S - Switch specifications

- Utilization category: AC 15.
- Operating electrical usage:
 - inductive load 48 Vac / 1 A, resistive load 48 Vac / 2 A
 - inductive load 125 Vac / 1 A, resistive load 125 Vac / 3 A
 - inductive load 250 Vac / 0.5 A, resistive load 250 Vac / 2 A
 - inductive load 30 Vac / 1 A, resistive load 30 Vac / 3 A.
- Rated thermal current: 8 A.
- Rated insulation voltage: 1000 Vac.
- Mechanical life: 5×10^6 operations.
- Connections: screw-type terminals.

Hercules-CK - Switch specifications

- Utilization category: AC 15.
- Operating electrical usage: 3 A / 250 Vac.
- Rated thermal current: 10 A.
- Rated insulation voltage: 300 Vac.
- Connections: screw-type terminal.

Specifications of Egon 36-AL analog encoders

- Power supply: 12...30 Vdc.
- Output:
 - analog current output 4 - 20 mA.
 - analog voltage output 1 ÷ 5 Vdc.
 - analog voltage output 2 ÷ 10 Vdc.
- Power consumption: 35 mA.
- Single turn resolution: 12 bit (4096 points per revolution).
- Input/output over-current and over-voltage protection.
- Accuracy: $\pm 0.5\%$.
- Linearity: $\pm 0.25\%$.
- Redundancy: 2 offset analog outputs.



HERCULES with EGON 36-AL

JOYSTICK STATIONS

Two series of joystick stations used to control industrial machinery.

FEATURES

- Wide range of actuators: pushbuttons, selector switches, key selector switches, pilot lights.
- Emergency stop mushroom pushbutton complying with ISO13850.
- Rubber cable sleeve for cable entry and screw-type terminal connections.
- Carrying strap and protections against accidental operation in case of impact.
- All materials and components used are wear resistant and guarantee protection of the unit against water and dust.

DIRECTIVES AND STANDARDS

- Conformity to Community Directives: 2014/35/UE, 2006/42/CE.
- Conformity to CE Standards: EN60204-1, EN60947-1, EN60947-5-1, EN 60529, ISO13850.

Juliet-PK

CE EAC



- Designed for Juliet joysticks.
- 1NO or 1NC switches.
- Insulation category: Class II.
- Cable entry: rubber cable sleeve (Ø 14÷26 mm).
- Operating positions: any position.
- Overall dimensions: 187 x 265 x 197 mm (HxLxW).

Switch specifications

- Utilization category: AC 15 / 3 A / 250 Vac.
- Rated thermal current: 10 A.
- Rated insulation voltage: 500 Vac.
- Mechanical life: 1x10⁶ operations.
- Connections: screw-type terminals.

Hercules-PK

CE



MIN.
DEPENDENT
ON THE JOYSTICK



MAX.
DEPENDENT
ON THE JOYSTICK

- Designed for Hercules joysticks.
- 1NO or 1NC switches, 1 or 2 speed double switches with NO contacts.
- Insulation category: Class II.
- Cable entry: rubber cable sleeve (Ø 14÷26 mm).
- Operating positions: any position.
- Overall dimensions: 265 x 590 x 150 mm (HxLxW).

Switch specifications


- Utilization category: AC 15 / 3 A / 250 Vac.
- Rated thermal current: 10 A.
- Rated insulation voltage: 500 Vac.
- Mechanical life: 1x10⁶ operations.
- Connections: screw-type terminals.

ROTARY LIMIT SWITCHES

Five series of rotary limit switches used to control the movement of industrial machinery, measuring the rotation angle and/or the number of shaft revolutions.

One series of encoders suitable for reading the shaft position.

FEATURES

- Revolution ratios ranging from 1:1 to 1:8100.
- Equipped with sets of cams/switches, potentiometers, encoders and absolute encoders Yankee.
- XL version with cover rise available for rotary limit switches Oscar and Top, suitable for mounting more cams, potentiometers, encoders and absolute encoders Yankee.
- Different revolution ratios on each limit switch output.
- Adjustment of cam activation point.
- Positive opening NC contacts for safety functions .
- Available with flanges, pinion gears and couplings.
- Available with anti-moisture plug.
- Plates with universal adapters to replace existing systems.
- Cable glands or dedicated connectors.

MATERIALS

- Shafts made of stainless steel AISI 430F or high-resistance stainless steel AISI 303.
- Gears and driving bushes made of self-lubricating techno-polymers.
- Enclosures made of wear resistant techno-polymers or of salt spray resistant electrostatic varnished die-cast aluminium (limit switch Top).

DIRECTIVES AND STANDARDS

- Conformity to Community Directives: 2014/35/UE, 2006/42/CE.
- Conformity to CE Standards: EN 60204-1, EN 60204-32, EN 60947-1, EN 60947-5-1, EN 60529.
- Conformity to cULus Standards: CSA-C22.2 No 14-13, UL 508.
- Regulations for the prevention of accidents BGV C 1 (only for Germany).

Base

CE cULus EAC BGVC1



- Available either for auxiliary or direct control.
- Revolution ratios: from 1:15 to 1:1500.
- Number of outputs: 1.
- It can be equipped with 1 set of maximum 6 cams/switches.
- Snap action switches with 1NO+1NC contacts for auxiliary control.
- Bipolar switches with 2NC contacts for direct control.
- Insulation category: Class II.
- Cable entry: cable gland M16.
- Maximum rotation speed: 800 rev./min.
- Overall dimensions (depending on the configuration):
 - min 84.5 x 98 x 70 mm (HxLxW)
 - max 101.5 x 98 x 70 mm (HxLxW).

Auxiliary control switch specifications

- Utilization category: AC 15 / 3 A / 250 Vac.
- Rated thermal current PRSL0003XX - PRSL0011XX: 5 A.
- Rated thermal current PRSL0017XX - PRSL0195XX: 2.5 A.
- Rated insulation voltage: 300 Vac.
- Mechanical life: 1x10⁶ operations.
- Connections: 6.3 mm Faston taps or screw-type terminals.

Fox

CE cULus EAC SIL1 BGVC1



- Revolution ratios: from 1:3 to 1:2870.
- Number of outputs: 1.
- It can be equipped with 1 cam set (with up to 5 switches) and potentiometers, encoders, absolute encoders Yankee.
- Snap action switches with 1NO+1NC contacts or slow action switches with 1NC contact.
- Insulation category: Class II.
- Cable entry: cable gland M20, M20+M16, M20+M20.
- Rotation speed:
 - revolution ratios ≥ 1:16: max. 800 rev./min.
 - revolution ratios < 1:16: max. 200 rev./min.
 - revolution ratios = 1:50 and 1:100: max. 1500 rev./min.
- Overall dimensions: 117 x 102 x 75 mm (HxLxW).

Switch specifications

- Utilization category: AC 15 / 3 A / 250 Vac.
- Rated thermal current: 10 A.
- Rated insulation voltage: 300 Vac.
- Mechanical life: 10x10⁶ operations.
- Connections: screw-type terminals.



XL VERSION



- Revolution ratios: from 1:1 to 1:1550.
- Number of outputs: 2 with same or different revolution ratios.
- It can be equipped with 2 cam sets (with up to 10 switches), potentiometers, encoders, absolute encoders Yankee and Egon 36-AL.
- **XL version** featuring cover rise suitable for 2 cam sets (with up to 12 switches), potentiometers, encoders, absolute encoders Yankee and Egon 36-AL.
- Snap action switches with 1NO+1NC contacts or slow action switches with 1NC contact.
- Insulation category: Class II.
- Cable entry: up to 8 cable glands (4 M20 and 4 M16).
- Maximum rotation speed:
 - 800 rev./min. (output 1 >1:22, output 2 >1:22 or =1:1)
 - 200 rev./min. (output 1 ≤1:22, output 2 ≤1:22 or =1:1).
- Overall dimensions:
 - standard version: 134.5 x 146.5 x 119 mm (HxLxW)
 - XL version: 158.3 x 146.5 x 119 mm (HxLxW).

Switch specifications

- Utilization category: AC 15 / 3 A / 250 Vac.
- Rated thermal current: 10 A.
- Rated insulation voltage: 300 Vac.
- Mechanical life: 10x10⁶ operations.
- Connections: screw-type terminals.

Oscar with system "Lima"



- Rotary limit switch Oscar with Increased Safety System "Lima".
- Rotation control of the limit switch shaft through a connection to a control unit or a PLC.
- Control redundancy guaranteed.
- Connection: screw-type terminal board - 8 PIN (4 for each sensor).

Output technical specifications

- Resolution: 5 impulse/rev.
- Power supply: 10-30 Vdc.
- Max. frequency: 66.6 Hz.
- Max. current consumption (no load): 12 mA (for each sensor).
- Voltage drop: < 2 Vdc.
- Output current: < 100 mA (for each sensor).
- Short-circuit protection.
- Reverse polarity protection.
- MTTF(d) PNP sensor: 533 years.
- MTTF(d) NPN sensor: 626 years.



XL VERSION



- Salt spray resistant.
- Revolution ratios: from 1:1 to 1:8100.
- Number of outputs: 3 with same or different revolution ratios.
- It can be equipped with 3 cam sets (with up to 15 switches), potentiometers, encoders, absolute encoders Yankee and Egon 36-AL.
- **XL version** featuring cover rise suitable for 3 cam sets (with up to 18 switches), potentiometers, encoders, absolute encoders Yankee and Egon 36-AL.
- Snap action switches with 1NO+1NC contacts or slow action switches with 1NC contact.
- Insulation category: Class I.
- Cable entry: up to 2 cable glands M20.
- Maximum rotation speed: 800 rev./min.
- Overall dimensions:
 - standard version: 139 x 186 x 120 mm (HxLxW).
 - XL version: 169 x 186 x 120 mm (HxLxW).

Switch specifications

- Utilization category: AC 15 / 3 A / 250 Vac.
- Rated thermal current: 10 A.
- Rated insulation voltage: 300 Vac.
- Mechanical life: 10x10⁶ operations.
- Connections: screw-type terminals.

Top with "Overspeed System"



- "Overspeed System": a speed detection system featuring 4 different relay switches.
- Salt spray resistant.
- Revolution ratios: from 1:1 to 1:8100.
- Number of outputs: 2 with same or different revolution ratios.
- It can be equipped with 1 cam set (with up to 6 switches), or 1 potentiometer, 1 encoder, 1 absolute encoder Yankee or Egon 36-AL.
- Snap action switches with 1NO+1NC contacts or slow action switches with 1NC contact.
- Insulation category: Class I.
- Cable entry: up to 2 cable glands M20.
- Maximum rotation speed: 800 rev./min.
- Overall dimensions: 169 x 186 x 120 mm (HxLxW).

Switch specifications

- Utilization category: AC 15 / 3 A / 250 Vac.
- Rated thermal current: 10 A.
- Rated insulation voltage: 300 Vac.
- Mechanical life: 10x10⁶ operations.
- Connections: screw-type terminals.

GF4C



- Available either for auxiliary or direct control.
- Revolution ratios: from 1:1 to 1:969.
- Number of outputs: 2.
- It can be equipped with 2 cam sets (with up to 7 switches), potentiometers, encoders, absolute encoders Yankee.
- Snap action switches with 1NO+1NC contacts or slow action switches with 1NC contact for auxiliary control.
- Bipolar switches with 2NC contacts for direct control.
- Insulation category: Class II.
- Cable entry: cable gland M20.
- Maximum rotation speed: 800 rev./min.
- Overall dimensions: 118 x 133 x 100 mm (HxLxW).

Auxiliary control switch specifications

- Utilization category: AC 15 / 3 A / 250 Vac.
- Rated thermal current: 10 A.
- Rated insulation voltage: 300 Vac.
- Mechanical life: 10x10⁶ operations.
- Connections: screw-type terminals.

POSITION LIMIT SWITCHES

Five series of position limit switches designed for controlling winches, hoists and machine tools.

FEATURES

- Cross limit switches with maintained positions.
- Limit switches with rods and roller with spring return movement.
- Limit switches with Heads in technopolymer, metal or aluminum featuring up to 39 different types of actuators for a variety of applications.
- Positive opening NC contacts for safety functions ☹ (Arke, 7551-7552, X-FSC, X-FRZ, Ino).

MATERIALS

- Limit switches 7551-7552 are made of die-cast aluminium alloy to guarantee maximum resistance to violent impact, chemical aggression and rust; bushes are made of sinterized material.
- Series Arke, Tango, X-FSC, X-FRZ are made of wear resistant thermoplastic materials.
- Limit switches Ino have casing made of fiber-glass reinforced UL-VO thermoplastic, zinc alloy (zama) or aluminum.

DIRECTIVES AND STANDARDS

- Conformity to Community Directives: 2014/35/UE, 2006/42/CE.
- Conformity to CE Standards: EN 60947-1, EN 60947-5-1, EN 60529.
- Conformity to cULus Standards: CSA-C22.2 No 14-18, UL 508.

Arke



MAX. WITH
DEDICATED
CABLE GLAND
M20

- Cross rods with 4 maintained positions every 90°, T rods with 3 maintained position every 90°, single rod or rod with roller with 65° movements and spring return.
- 2 slow action switches with 1NC+1NC staggered contacts, or 2 slow action switches with 1NO+1NC contacts.
- 3 outputs for cable clamps.
- Insulation category: Class II.
- Cable entry: cable gland M20.
- Maximum impact speed: 3 m/s.
- Mechanical life: 1.5x10⁶ operations.
- Overall dimensions (without rods): 129 x 81 x 69.5 mm (HxLxW).

Switch specifications

- Utilization category: AC 15 / 6 A / 250 Vac.
- Rated thermal current: 10 A.
- Rated insulation voltage: 500 Vac.
- Mechanical life: 2x10⁶ operations @ 2 A/240 Vac.
- Connections: screw-type terminals.

7551-7552



MAX. WITH
DEDICATED
CABLE GLAND
M20 (NOT
SUPPLIED)

- Rods with 4 maintained positions every 90°.
- 4 snap action switches with 1NO+1NC contacts or slow action switches with 1NC contact.
- 3 outputs for cable clamps.
- Insulation category: Class I.
- Cable entry: M20.
- Operation frequency: 3600 operations/hour max.
- Overall dimensions (without rods): 143 x 90 x 95 mm (HxLxW).

Switch specifications

- Utilization category: AC 15 / 3 A / 250 Vac.
- Rated thermal current: 10 A.
- Rated insulation voltage: 300 Vac.
- Mechanical life: 1x10⁶ operations.
- Connections: screw-type terminals.



- Rods with 4 maintained positions every 60°.
- Slow action switches with 1NC or 1NO contacts.
- Available with 2, 3 or 4 switches and different rod lengths.
- Insulation category: Class II.
- Cable entry: cable gland M20.
- Operation frequency: 3600 operations/hour max.
- Overall dimensions (without rods): 112 x 70 x 103.3 mm (HxLxW).

Switch specifications

- Utilization category: AC 15 / 3 A / 250 Vac.
- Rated thermal current: 10 A.
- Rated insulation voltage: 500 Vac.
- Mechanical life: 1x10⁶ operations.
- Connections: screw-type terminals.



X-FSC



X-FRZ



MAX. WITH
DEDICATED
CABLE
CLAMP M20

- X-FSC features cross rods with 3 or 4 maintained positions or T rods with 3 maintained position, movement every 90°.
- X-FRZ has a single rod or a rod with roller with 65° movements and spring return.
- 2 snap action switches with 1NO+1NC contacts or slow action switches with 1NC contact.
- Insulation category: Class II.
- Cable entry: cable gland M20.
- Operation frequency: 3600 operations/hour max.
- Overall dimensions (without rods): 113 x 72 x 62 mm (HxLxW).

Switch specifications

- Utilization category: AC 15 / 3 A / 250 Vac.
- Rated thermal current: 10 A.
- Rated insulation voltage: 300 Vac.
- Mechanical life: 1x10⁶ operations.
- Connections: screw-type terminals.



- Four product families: Standard Ino, Double lever Ino, Wired Ino, Safety Ino.
- 10 different switches: snap action with 2NC or 1NO+1NC contacts, slow action simultaneous with 2NC or 2NO contacts, slow action break before make with 1NO+1NC, 1NO+2NC or 2NO+1NC contacts, slow action make before break with 1NO+1NC contacts, and slow action simultaneous with 3NC and 3NO contacts.
- Insulation category: Class I or Class II (depending on material casing).
- Cable entry: PG 13.5, 1/2" NPT, PG 11, M16 x 1.5, M20 x 1.5 (depending the version).
- Operation frequency: 3600 operations/hour max.
- Casing available in different width and with different cable entries: 30 mm with 1 cable entry, 35 mm wired, 40 mm with 1 cable entry, 50 mm with 2 or 3 cable entries and 60 mm with 3 cable entries.

Switch specifications

- Utilization category: AC15, DC13.
- Rated operational current:
 - Standard Ino and Safety Ino: 10 A / 24 Vac / 50/60 Hz / AC15
6 A / 120 Vac / 50/60 Hz / AC15
4 A / 400 Vac / 50/60 Hz / AC15 - 1.8 A
6 A / 24 Vdc / DC13 - 2.8 A
0.55 A / 125 Vdc / DC13
0.4 A / 250 Vdc / DC13 - 0.27 A
 - Double lever Ino: 3 A / 250 Vac / AC15
 - Wired Ino: 3 A / 240 V / AC15
2.8 A / 24 V / DC13
0.55 A / 125V / DC13
0.27A / 250V / DC13
- Rated thermal current: 10 A, 4 A (depending the version).
- Rated insulation voltage: 500 V, 400 V, 300 V, 250 V (depending the version).

SLIP RING COLLECTORS

Four series of slip ring collectors where rings coupled with brushes are used to transfer current from a stationary unit to a rotating one.

FEATURES

- Suitable for transferring current at 50/60 Hz frequency.
- Enclosures with small holes to allow air circulation (Slip ring collectors 10A/30A and 50A).
- Lower plates with holes to drain moisture (Slip ring collectors 10A/30A and 50A).
- Atex versions available.

MATERIALS

- Shock-resistant thermoplastic protection to prevent accidental contacts with live parts (Slip ring collectors 10A/30A, 50A).
- Enclosure made of steel, stainless steel AISI 304 or 316L, aluminum, galvanized or epoxy powder varnished steel resistant to marine and aggressive environments (Slip ring collectors Pegasus).
- Phosphor bronze, graphite or metalgraphite (graphite with copper) brushes.
- Silver or gold signal rings (Slip ring collectors Pegasus).

DIRECTIVES AND STANDARDS

- Conformity to Community Directives: 2014/35/UE, 2006/42/CE.
- Conformity to CE Standards: EN 60204-1, EN 60309-1, EN 60529.

10A

CE EAC



- 4 rings.
- Available with driving slots.
- Available with coupling flange.
- Insulation category: Class I.
- Operating positions: any position.
- Overall dimensions:
 - without driving slots: 79.5 x 80.5 x 63 mm (HxLxW)
 - with driving slots: 107 x 80.5 x 63 mm (HxLxW).

Electrical specifications

- Rated operational current: 10 A.
- Rated operational voltage: 400 Vac.
- Rated insulation voltage: 660 Vac.
- Max. rotation speed: 3 rev./min.
- Connections: 6.3 mm Faston taps.

10A / 30A

CE EAC



- Up to 40 rings coupled with brushes.
- Available with 30A line rings only or with 30A line rings and 10A auxiliary rings.
- Insulation category: Class I.
- Cable entry: cable glands M20 - M25.
- Operating positions: any position.
- Overall dimensions (depending on the number and type of rings (HxLxW):
 - 10A-30A: min. 178 x 195 x 135 mm - max. 178 x 483 x 135 mm
 - 30A: min. 178 x 179 x 135 mm - max. 178 x 451 x 135 mm.

Electrical specifications

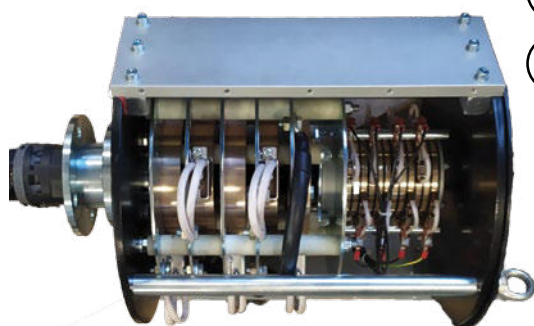
- Rated operational current: 10 A - 30 A.
- Rated operational voltage: 400 Vac.
- Rated insulation voltage: 660 Vac.
- Max. rotation speed: 3 rev./min.
- Connections:
 - clamps with Ø 4 mm hole
 - clamps with M4 screw accepting eyelet terminals.



- Up to 16 50A line rings coupled with brushes.
- Insulation category: Class I.
- Cable entry: cable glands M20 - M25.
- Operating positions: any position.
- Overall dimensions (depending on the number of rings) (HxLxW):
 - min. 203 x 174 x 150 mm
 - max. 203 x 447 x 150 mm.

Electrical specifications

- Rated operational current: 50 A.
- Rated operational voltage: 400 Vac.
- Rated insulation voltage: 660 Vac.
- Max. rotation speed: 3 rev./min.
- Connections: clamps with M6 screw accepting eyelet terminals.



- Available versions: up to 400 A, up to 500 A, up to 650 A.
- Power rings coupled with signal rings and customized to meet different requirements.
- Silver or gold signal rings.
- Cables entry: customized cable glands.
- Overall dimensions: depending on the number and dimensions of the rings or on amperage and voltage.

Electrical specifications

- Rated operational current: up to 650A.
- Rated operational voltage: up to 680 Vac.
- Rotation speed: up to 30 rev./min.
- Suitable for transferring AC/DC current.

Transmission protocol specifications

- Data transmission protocol: Ethernet CAT 5, Profibus, Profinet, LAN, Can-BUS, Can-Open.
- Max. speed: 100 Mbit/s.

CABLE AND HOSE REELS

Two versions of cable and hose reels, motor or spring driven, designed to supply control current, data and electric or fluidic power (compressed air, gases, oil hydraulics) to mobile units.

FEATURES

- Powered by a three-phase torque electric motor (motor cable reels) or operated by Archimedes spiral springs (spring cable reels).
- Equipped with an electric slip ring collector designed to transfer current from a stationary point to rotating parts, transmitting power and both analogue and digital control signals.
- Atex versions available.
- Reels suitable for marine environment available.

MATERIALS

- Stainless steel slip ring collector carter. Die cast aluminum motor housing, painted aluminum or cast iron gearbox support. Spool made of painted shaped sheet metal or of hot painted drawn sheet metal (motor cable and hose reels) and spiral springs made of high quality spring steel (spring cable and hose reels).
- Bronze alloy power rings, brass auxiliary rings, gold or silver-plated signal rings and patented metal brushes.

DIRECTIVES AND STANDARDS

Conformity to Community Directives:
2006/42/CE.

- Conformity to CE Standards:
EN 60309-1-2, EN 60204-1, 60947-1-1.

Apollo motor reels



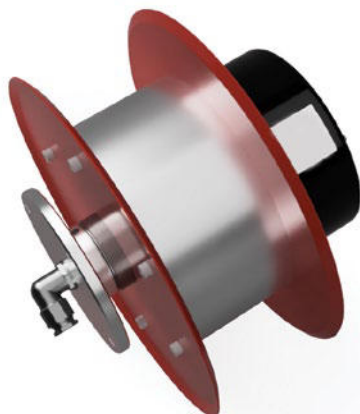
- Motor cable and hose reels powered by a three-phase torque electric motor.
- Suitable for transferring current to mobile units by means of low voltage cables.
- They can be equipped with data transmission or power transmission slip ring collectors, featuring up to 42 power rings coupled with signal rings and customized to meet different requirements.
- Bronze alloy power rings, brass auxiliary rings, gold or silver-plated signal rings and patented metal brushes.
- Overall dimensions: depending on the slip ring collector dimensions, on voltage and amperage of the cables and on their length.

Electrical specifications

- Rated operational current: 400 A max.
- Rated operational voltage: 690 Vac.
- Motor rated operational voltage: 230/400 Vac.
- Motor frequency: 50Hz.

Distributed by TER srl a socio unico. Designed by TER srl a socio unico and SPM Special Machines srl. Manufactured by SPM Special Machines srl.

Apollo spring reels



- Spring cable and hose reels operated by Archimedes spiral springs.
- Suitable for transferring current to mobile units by means of low voltage cables.
- They can be equipped with data transmission or power transmission slip ring collectors, featuring up to 42 power rings coupled with signal rings and customized to meet different requirements.
- Bronze alloy power rings, brass auxiliary rings, gold or silver-plated signal rings and patented metal brushes.
- Archimedes spiral springs made of high quality spring steel.
- Overall dimensions: depending on the slip ring collector dimensions, on voltage and amperage of the cables and on their length.

Electrical specifications

- Rated operational current: 250 A max.
- Rated operational voltage: 400 / 1000 Vac max.

Distributed by TER srl a socio unico. Designed by TER srl a socio unico and SPM Special Machines srl. Manufactured by SPM Special Machines srl.

FOOTSWITCHES

Two series of footswitches used to control industrial machine tools.

FEATURES

- Single or double footswitches with emergency stop mushroom pushbutton and mini-footswitches.
- Version for pneumatic valves.
- "Lock-release" device to keep the pedal in the ON position and safety device preventing the accidental use of the pedal.
- Emergency stop mushroom pushbutton complying with ISO13850 (6100/6200).

MATERIALS

- Footswitches 6100/6200 are available either in thermoplastic material or in die-cast aluminium.
- Omicron is available with base, cover and pedal made of shock resistant ABS material or of self-extinguishing polycarbonate/ABS-V0, or cover made of die-cast aluminium and base and pedal made of self-extinguishing polycarbonate/ABS-V0.

DIRECTIVES AND STANDARDS

- Conformity to Community Directives: 2014/35/UE, 2006/42/CE.
- Conformity to CE Standards: EN 60204-1, EN 60947-1, EN 60529, ISO13850.

6100/6200



- Available in thermoplastic material or in die-cast aluminium.
- Available with standard protection cover or large cover for safety shoes.
- Special footswitch design for pneumatic valve with fixing plate.
- Snap or slow action switches with 1NO+1NC contacts, or slow action switches with 2NO+2NC contacts.
- Insulation category: Class I.
- Cable entry: cable gland M20.
- Overall dimensions simple footswitches:
 - 6100: standard cover 118 x 234 x 122 mm (HxLxW)
 - 6100: large cover 143 x 245 x 141 mm (HxLxW)
 - 6200: 130 x 231 x 130,5 mm (HxLxW).

Switch specifications

- Utilization category:
 - AC 15 / 3 A / 250 Vac
 - AC 15 / 1.9 A / 380 Vac.
- Rated thermal current: 10A.
- Rated insulation voltage: 300 Vac / 500 Vac.
- Mechanical life: 1x10⁶ operations.
- Connections: screw-type terminals.

Omicron



MINI-FOOTSWITCH



FOOTSWITCH WITH COVER

- Salt mist resistant (footswitch with cover).
- Available in different configurations featuring various operation modes, cover color (grey, yellow or red) and switches.
- 1 or 2 switches with 1NO+1NC slow or snap action contacts.
- Positive opening NC contacts for safety functions (not available for mini-footswitch configurations).
- Cable entry:
 - mini-footswitch: cable gland Ø 6, 8.5 max.
 - footswitch with cover: cable gland M20.
- Overall dimensions:
 - mini-footswitch: 35 x 101 x 75 mm (HxLxP).
 - footswitch with cover: 138 x 280 x 140 mm (HxLxP).

Switch specifications

- Utilisation category: Footswitch with cover AC 15 - DC 13.
- Rated operational current:
 - mini-footswitch: 3 A / 250 Vac, 0.06 A / 230 Vdc
 - footswitch with cover: A600, Q600, 10 A / 24 Vac / AC15, 6 A / 240 Vac / AC 15, 4 A / 400 Vac / AC 15, 6 A / 24 Vdc / DC 13, 0.55 A / 125 Vdc / DC 13, 0.4 A / 250 Vdc / DC 13.
- Conventional free air thermal current $\theta < 40^{\circ}\text{C}$:
 - mini-footswitch: 15A
 - footswitch with cover: 10A.
- Rated insulation voltage:
 - mini-footswitch: 250 V
 - footswitch with cover: 690 V degree of pollution 3.
- Mechanical life:
 - mini-footswitch: 10x10⁶ operations
 - footswitch with cover: 30x10⁶ operations.

ELECTRONIC DEVICES

One series of cable transducers for industrial applications needing measurement of linear displacements.

Three series of 100% electronic limit switches designed to record absolute positions.

One series of multiple position limit switches.

Six absolute encoders suitable for reading the shaft position.

FEATURES

- Electronic control of linear and/or rotary movements.
- Analog and/or digital signal outputs.
- Safety devices featuring fully redundant control systems.

MATERIALS

- Cable transducers Pandia feature wear-resistant technopolymer cases and stainless steel measuring wires.
- Electronic limit switches Atlante, Atlante EVO, Base EVO and encoders Egon 36-S and Egon 36-RS feature wear-resistant technopolymer cases.
- Multiple position limit switches 7551 EVO are made of die-cast aluminium alloy to guarantee maximum resistance to violent impact, chemical aggression and rust; bushes are made of sinterized material.

DIRECTIVES AND STANDARDS

- Conformity to Community Directives: 2014/35/UE, 2006/42/CE.
- Conformity to CE Standards: EN 60204-1, EN 60309-1, EN 60529, EN 17206:2020 only for Base EVO (pending).

Electronic cable transducer Pandia



- **Cable transducer** suitable for industrial applications needing measurement of linear displacements.
- Measurement range: 3000 mm or 5000 mm.
- Measurement method: magnetic.
- Overall dimensions: 74.5 x 104 x 90 mm (HxLxW).

Electrical specifications

- Linearity: $\pm 0.5\%$.
- Accuracy: $\pm 0.5\%$.
- Cable gland M16 for analog version with 4 relays.
- 2 connectors M12 - 5 PIN for redundant analog or digital version.
- 1 connector M12 - 5 PIN for digital version or for analog version without relays.

Input

- V_{in} 12...30 Vdc.
- I_{max} 50 mA for normal version.
- I_{max} 80 mA for redundant version.

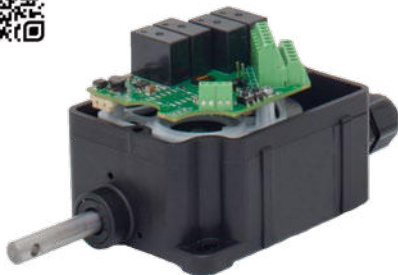
Outputs

- Analog 4...20 mA for both normal/redundant versions.
- CAN bus for both normal/redundant versions.
- Up to 4 relays 1 A / 125 Vac for cam emulation.

Configuration

- By 4 key switches menu for analog version.
- By CAN bus for digital version.

Electronic limit switch Base EVO



Compact electronic rotary limit switch.

- Revolution ratios: 1:15, 1:20, 1:25, 1:50, 1:75, 1:100, 1:150.
- Equipped with relays emulating up to 4 cams.
- Up to 6 positions for each electronic cam, totally 24 setting positions per limit switch.
- Maximum precision and extremely low hysteresis.
- Safety line signaling possible "faults" to the system.
- Maximum rotation speed: 800 rpm.
- Overall dimensions: 89 x 98 x 70 mm (HxLxW)

Electrical specifications

- Single turn resolution: 12 bit (4096 points per revolution), for internal process use.
- Linearity: $\pm 0.25\%$.
- Accuracy: $\pm 0.5\%$.
- Reverse polarity and short-circuit protection.

Input

- V_{in} 24 Vdc $\pm 20\%$.
- I_{max} 80 mA.

Outputs

- 2 or 4 configurable relays 24/250 Vac, 3/5 A, NC or NO

Configuration

- By 4 key switches menu.



- **Electronic multiturn magnetic absolute encoder** featuring integrated SSI interface.
- Maximum rotation speed: 6000 rpm.
- Overall dimensions: 109 x 194 x 75 mm (HxLxW).

Electrical specifications

- Number of turns: $\leq 4096 / 12$ bit.
- Single turn resolution: 10 bit (1024 points per revolution).
- Linearity: $\pm 0.5\%$
- Accuracy: $\pm 0.5\%$.
- 8 PIN connector.

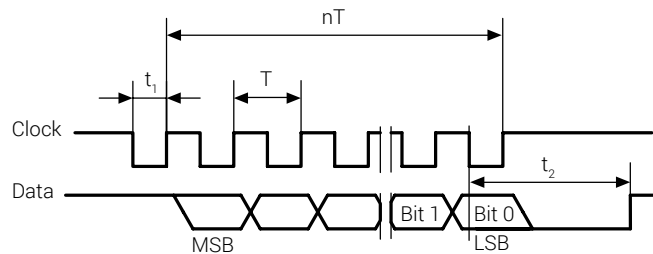
Input

- V_{in} 12...30 Vdc.
- I_{max} 60 mA.
- Zero terminal for zeroing position.
- DIR terminal for CW/CCW direction selection.

Output

- SSI RS422 differential data driver.
- Clock frequency: max. 2 Mhz.

$T = 0.5...10 \mu s$
 $t_2 \leq 20 \pm 2 \mu s$
 $t_1 = 0.25...5 \mu s$
 $f_{max.} = 2 \text{ MHz}$



- **High resolution electronic multiturn magnetic absolute encoder** (28 bit overall resolution).
- Equipped with relays emulating up to 6 cams.
- Each emulated cam can have up to 5 activation positions that are fully software programmable.
- Maximum rotation speed: 800 rpm.
- Overall dimensions: 90 x 102 x 69.7 mm (HxLxW).

Electrical specifications

- Single turn resolution: 12 bit (4096 points per revolution).
- Multiturn resolution: 16 bit (65535 revolutions).
- Linearity: $\pm 0.25\%$.
- Accuracy: $\pm 0.5\%$.
- Reverse polarity and short-circuit protection.
- Backup autonomy: ~ 6 years.

Input

- V_{in} 24 Vdc $\pm 20\%$.
- I_{max} 240 mA.

In/Out

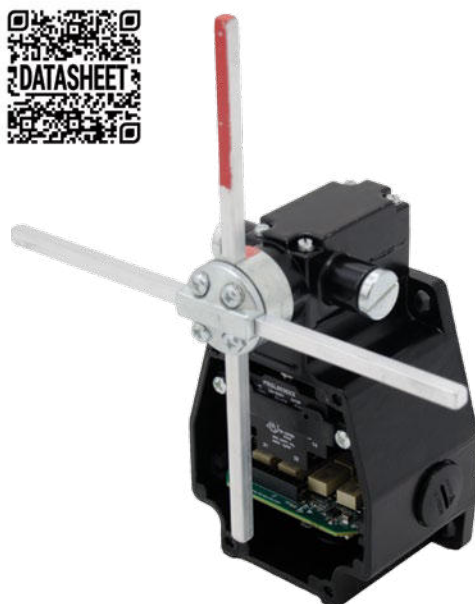
- Modbus RTU protocol over RS-485 bus.
- CAN bus (coming soon).

Outputs

- Up to 6 configurable relays 60/125V, 3/10A, NC or NO, 2 of which with safety function.

Configuration

- By PC configurator (Windows).
- By Modbus RTU protocol over RS-485 bus.
- By Bluetooth through mobile application (coming soon).



MAX. WITH
DEDICATED
CABLE GLAND
M20

- **Multiple position limit switch** designed to ensure flawless operation in the most severe operating conditions.
- Rods with movement in 16 (standard) or 32 binary positions every 90°.
- The detected position is maintained even after an ON/OFF power cycle.
- Binary output code.
- Operation frequency: 3600 operations/hour max.
- Overall dimensions (without rods): 143 x 90 x 95 mm (HxLxW).

Electrical specifications

- Cable entry: cable gland M20.
- With or without safety line clean relay contacts.

Input

- V_{in} 24 Vdc \pm 20%.
- I_{max} 65 mA.
- Zero terminal for zeroing position.

Outputs

- 4 (standard) or 5 binary output code relays 24/250Vac, 3/5 A, NO or NC.
- 1 relay output that can be used as a diagnostic safety line for error detection.

Configuration

- By 4 key switches menu.



- **Electronic magnetic technology position sensor.**
- For use on rotary limit switches Fox, Oscar and Top.
- Maximum rotation speed: 800 rev/min.
- Overall dimensions: 19.1 x 43.3 x 55.9 mm (HxLxW).

Electrical specifications

- Free rotation: 360° absolute single turn.
- Resolution: 10 bit (1024 points per revolution).
- Linearity: \pm 0.25%.
- Accuracy: \pm 0.5%.
- Connections: screw-type terminal board.
- Reverse polarity protection.

Input

- V_{in} 12...48 Vdc / Vac.
- I_{max} 50 mA.
- Zero terminal for zeroing position.
- DIR terminal for CW/CCW direction selection.

Output

- Analog output (one of the three available, depending on the version):
 - Voltage 0...10 V
 - Current 4...20 mA
 - PWM 0...100%



- **Single-turn redundant absolute angular transducer.**
- Emulating traditional potentiometer operations.
- Suitable for reading the shaft position and converting it into a corresponding analog signal.
- Detection technology: magnetic sensor.
- Shaft position: range 0°...360°.
- Current or voltage calibrated output.
- Redundant double analog outputs.
- Possible changes of power supply do not affect the output signal.
- Immunity to interference.
- Overall dimensions: H 48.7 Ø 37 mm.

Electrical specifications

- Single turn resolution: 12 bit (4096 points per revolution).
- Linearity: $\pm 0.25\%$.
- Accuracy: $\pm 0.5\%$.
- Input/output over-current and over-voltage protection.

Input

- Vin 12...30 Vdc.
- I_{max} 35 mA for normal version.
- I_{max} 55 mA for redundant version..

Output

- Analog output (one of three three available, depending on the version):
 - Voltage 1...5 V
 - Voltage 2...10 V
 - Current 4...20 mA



- **Single-turn redundant absolute angular transducer.**
- Suitable for reading the shaft position and converting it into a corresponding analog signal.
- Detection technology: magnetic sensor.
- Shaft position: range 0°...360°.
- Current or voltage calibrated output.
- Redundant double analog outputs.
- Possible changes of power supply do not affect the output signal.
- Immunity to interference.
- Overall dimensions:
 - version with shaft: 64.5 x 42.7 x 53.2 mm (HxLxW)
 - contactless version: 34.5 x 42.7 x 53.2 mm (HxLxW).

Electrical specifications

- Single turn resolution: 12 bit (4096 points per revolution).
- Linearity: $\pm 0.25\%$.
- Accuracy: $\pm 0.5\%$.
- Input/output over-current and over-voltage protection.

Input

- Vin 12...30 Vdc.
- I_{max} 35 mA for normal version.
- I_{max} 55 mA for redundant version.

Output

- Analog output (one of the three available, depending on the version):
 - Voltage 1...5 V
 - Voltage 2...10 V
 - Current 4...20 mA

* Pending

Absolute encoder Egon 36-RS



• Digital multiturn magnetic absolute encoder.

- Suitable for counting shaft revolutions and working even without power supply.
- Detection technology: magnetic sensor.
- Available in configurations with shaft or with contactless magnet and bush.
- Overall dimensions:
 - version with shaft: 64.5 x 42.7 x 53.2 mm (HxLxW)
 - contactless version: 34.5 x 42.7 x 53.2 mm (HxLxW).

Electrical specifications

- Multiturn resolution: 14 bit (16384 revolutions) / 16 bit (65535 revolutions).
- Single turn resolution: 10 bit (1024 points per revolution) / 12 bit (4096 points per revolution).
- Linearity: $\pm 0.25\%$.
- Accuracy: $\pm 0.5\%$.
- Input/output over-current protection.
- Over-voltage and reverse polarity protection.
- Backup autonomy: ~ 5 years.

Input

- Vin 12...30 Vdc / I_{max} 20 mA

Output

- Modbus RTU protocol over RS-485 bus.

* Pending

Absolute encoder Egon 58-D



• Multi-turn magnetic angular sensor.

- Suitable for detecting the shaft position within a programmable range, converting it into an analog 4-20 mA or a CAN-bus signal.
- Detection technology: magnetic sensor.
- The output can be used as percentage on the revolutions or as absolute angle.
- Possible changes of power supply do not affect the output signal.
- Immunity to interference.
- Overall dimensions: H 74.6 Ø 56 mm.

Electrical specifications

- Single-turn resolution: 12 bit (4096 points per revolution).
- Multi-turn resolution: ± 15 bit (± 32768 revolutions).
- Analog output resolution: 14 bit (16384 points).
- Linearity: $\pm 0.25\%$.
- Accuracy: $\pm 0.5\%$.
- 1 male connector M12 - 8 PIN for digital version.
- Input/output over-current and over-voltage protection.
- Backup autonomy: 6 years.

Input

- Vin 12...30 Vdc / I_{max} 50 mA @ 24Vdc.

Outputs

- Analog 4...20 mA
- CAN-bus with proprietary application protocol
- Output programmable range: ± 32767 revolutions (default 10 rev.).

Absolute encoder Egon 58-V



• Multi-turn magnetic angular sensor.

- Suitable for detecting the shaft position within a programmable range, converting it into a CAN-bus signal.
- Detection technology: magnetic sensor.
- The output can be used as percentage on the revolutions or as absolute angle.
- Possible changes of power supply do not affect the output signal.
- Immunity to interference.
- Overall dimensions: H 74.6 Ø 56 mm.

Electrical specifications

- Single turn resolution: 12 bit (4096 points per revolution).
- Multi-turn resolution: ± 15 bit (± 32768 revolutions).
- Linearity: $\pm 0.25\%$.
- Accuracy: $\pm 0.5\%$.
- 1 male connector M12 - 8 PIN.
- Input/output over-current and over-voltage protection.
- Backup autonomy: 6 years.

Input

- Vin 12...30 Vdc / I_{max} 35 mA @ 24Vdc.

Output

- CAN-bus with proprietary application protocol.

RADIO REMOTE CONTROLS

Four series of radio remote controls, with hand-held or belly-box transmitters, suitable for controlling industrial machinery or construction lifting machines.

FEATURES

- Quick and easy installation.
- It is possible to change the frequency, to program automatic switch-off functions, to enable low power start-up, to program the auxiliary button functions.
- Receivers available for mounting inside the electric panel (RX DIN) and in an IP65 watertight case for outdoor installation.
- Supplied with a sturdy and reliable waterproof antenna or with an internal antenna.
- Directional and high-gain antennas also available.

MATERIALS

- Tough nylon casing for protection against shocks and scraping, resistant to acids, oils and chemical agents.

DIRECTIVES AND STANDARDS

- Conformity to Community Directives: R&TTE 99/05/CE, LVD (2006/95/CE).
- Conformity to CE Standards: EN 301 489-3, EN 300 220-2, EN 60950-1, EN 60204-32, EN 13557, EN 61000-6-2, EN ISO 13849-1:2006.
- Performance Level (T3 - T5 - T7, Brick, Pail): Category 3 PL d / Category 2 PL c.
- Performance Level (Genesis): Category 4 PL e / Category 3 PL d.

Manufactured by REMdevice srl – Distributed by TER srl a socio unico.

T3 - T5 - T7



Specifications of transmitter unit

- Configurations from 3 to 7 actuators plus Start and Stop.
- Frequency:
 - UHF 433-870 MHz Unified
 - 915 MHz for Usa and Canada
 - 418 MHz for China.
- Output power: from 1 to 10 mW.
- Response time: 50 ms.
- Active Emergency/Stop response time: 50 ms.
- Passive Emergency response time: 1 s.
- Operating range: 100 m.
- Stop control classification: Cat 3 PL-D
- Battery: Li-ion 3.6V
- Battery life: up to 1200 hours. (20°C).
- Overall dimensions: 174 x 85 x 37 mm (HxLxW).

Specifications of receiver unit

- Control relay contact rating: 4 A /115 Vac
- Stop relay contact rating: 4 A /115 Vac
- Power supply: 12-24 Vdc / 24-115 Vac / 230 Vac.

Brick



Specifications of transmitter unit

- Configurations from 9 to 12 actuators plus Start and Stop.
- Frequency:
 - 433 MHz
 - 870 MHz
 - 418 MHz for China.
- Output power: from 1 to 10 mW.
- Response time: 45 ms.
- Active Emergency/Stop response time: 45 ms.
- Passive Emergency response time: 1 s.
- Operating range: about 100 m.
- Stop control classification: Cat 3 PL-D.
- Battery: integrated 3x1 x 1.2 V - 1800 mA.
- Battery life: ≈ 35 hours. (20°C).
- Overall dimensions: 210 x 80 x 40 mm (HxLxW).

Specifications of receiver unit

- Control relay contact rating: 4 A /115 Vac
- Stop relay contact rating: 4 A /115 Vac
- Power supply: 12-24 Vdc / 24-115 Vac / 230 Vac.



Specifications of transmitter unit

- Frequency:
 - 433 MHz
 - 870 MHz
 - 418 MHz for China.
- Output power: from 1 to 10 mW.
- Response time: 45 ms.
- Active Emergency/Stop response time: 45 ms.
- Passive Emergency response time: 1 s.
- Operating range: about 100 m.
- Stop control classification: Cat 3 PL-D.
- Battery: integrated 3x1 x 1.2 V - 1800 mA.
- Battery life: ≈ 35 hours. (20°C).
- Overall dimensions: 200 x 130 x 135mm (HxLxW).

Specifications of receiver unit

- Control relay contact rating: 4 A /115 Vac
- Stop relay contact rating: 4 A /115 Vac
- Power supply: 12-24 Vdc / 24-115 Vac / 230 Vac.



Specifications of transmitter unit

- Multiband working frequency Full-Duplex, 72 channels - ISM band.
- Output power: from 1 to 10 mW.
- Response time: from 20 ms to 80 ms depending on configuration.
- Active Emergency/Stop response time: from 20 ms to 80 ms depending on configuration.
- Passive Emergency response time: 1 s.
- Operating range: 100 m.
- Stop control classification: Cat 4 PL-E (ISO 13849-1) and SIL 3 (EN 62061).
- Joystick controls (UMFS) classification: Cat 3 PL-D and SIL 2.
- Battery:
 - integrated 3x1 x 1.2 V = battery life 30 hours
 - external LI-ION 7.4 V = battery life 20 hours.
- Overall dimensions: 310 x 193 x 163 mm (HxLxW).

Specifications of receiver unit

- Control relay contact rating: 4 A (DC1/AC1) /115 Vac.
- Stop relay contact rating: 4 A (DC1/AC1) /115 Vac.
- Safety relay contact rating: 8 A (DC1/AC1) /115 Vac
- Power supply: 12-24 Vdc / 24-115 Vac / 230 Vac.

EXPLOSION PROOF SERIES

Two series of pendant control stations, two series of rotary or position limit switches, slip ring collectors and cable reels designed for heavy industry in potentially explosive areas.

FEATURES

- All materials and components used are wear resistant and guarantee protection of the unit against water and dust.

DIRECTIVES AND STANDARDS

- Conformity to Atex Standards: EN 60079-0, EN 60079-1, EN 60079-31.
- Conformity to IECEx Standards: IEC 60079-0, IEC 60079-1, IEC 60079-31.
- Certifications: INERIS 13ATEX0020X (Limitex AG, Limitex AP, Mike-X), IECEx INE 13.0051 X (Limitex AG, Limitex AP, Mike-X), INERIS 12ATEX0085X (SPA Explosion Proof), IECEx INE12.0059X (SPA Explosion Proof).

Limitex AG

CE Ex IEC IECEx EAC



- Rotary limit switch designed for potentially explosive areas.
- Revolution ratios: from 1:15 to 1:499.
- It can be equipped with a cam set with 2-3-4 switches.
- Snap action switches with 1NO+1NC contacts.
- Cable entry: 2 M20x1.5 / 2 M25x1.5 / 2 ½ NPT.
- Maximum rotation speed: 800 rev./min.
- Overall dimensions: 120 x 211.76 x 146 mm (HxLxW).

Switch specifications

- Utilization category: AC 15 / 3 A / 250Vac.
- Rated thermal current: 10 A.
- Rated insulation voltage: 300 Vac.
- Mechanical life: 1x10⁶ operations.
- Connections: 6.3 mm Faston taps or screw-type terminals.

Certifications for group I, IIA, IIB with the marks

- MINING: I M2 Ex d I Mb (ATEX) / Ex d I Mb (IECEx)
- GAS Zone 1 and 2: II2G Ex d IIB T6 Gb or Ex d IIC T6 Gb (ATEX) / Ex d IIB T6 or Ex d IIC T6 Gb (IECEx)
- DUST Zone 21 and 22: II2D Ex tb IIIC T85°C Db IP66 (ATEX) / Ex tb IIC T85°C Db IP66 (IECEx)
- DUST&GAS: II2GD / Ex d IIB or IIC T6 Gb / Ex tb IIC T85°C Db IP66

Manufactured by COEL Motori srl – Distributed by TER srl a socio unico.

Limitex AP

CE Ex IEC IECEx EAC



- Position limit switch designed for potentially explosive areas.
- Cross rods with to 3 or 4 maintained positions every 90°.
- 2 or 4 snap action switches with 1NO+1NC contacts.
- Cable entry: 2 M20x1.5 / 2 M25x1.5 / 2 ½ NPT.
- Operation frequency: 3600 operations / hour max
- Overall dimensions: 122.9 x 157 x 133.8 mm (HxLxW).

Switch specifications

- Utilization category: AC 15 / 3 A / 250Vac.
- Rated thermal current: 10 A.
- Rated insulation voltage: 300 Vac.
- Mechanical life: 1x10⁶ operations.
- Connections: screw-type terminals.

Certifications for group I, IIA, IIB with the marks

- MINING: I M2 Ex d I Mb (ATEX) / Ex d I Mb (IECEx)
- GAS Zone 1 and 2: II2G Ex d IIB T6 Gb or Ex d IIC T6 Gb (ATEX) / Ex d IIB T6 or Ex d IIC T6 Gb (IECEx)
- DUST Zone 21 and 22: II2D Ex tb IIIC T85°C Db IP66 (ATEX) / Ex tb IIC T85°C Db IP66 (IECEx)
- DUST&GAS: II2GD / Ex d IIB or IIC T6 Gb / Ex tb IIC T85°C Db IP66

Manufactured by COEL Motori srl – Distributed by TER srl a socio unico.



- Pendant control station for auxiliary control designed for potentially explosive areas.
- Configurations from 2 to 12 actuators arranged on a double row.
- 1 or 2 speed switches with NO or NC contacts
- Overall dimensions (depending on the number of actuators):
 - min. 320 x 135 x 99 mm (HxLxW)
 - max. 424 x 135 x 99 mm (HxLxW).

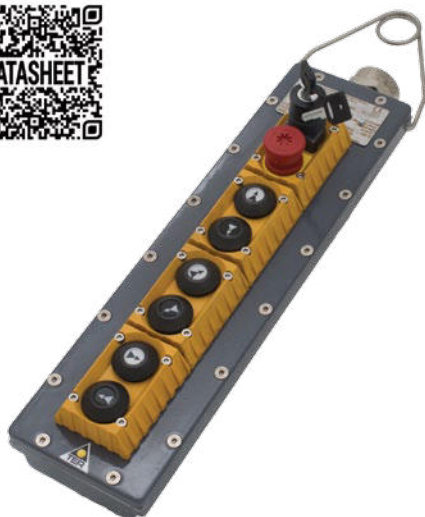
Switch specifications

- Utilization category: AC 15 / 1.9 A / 380 Vac.
- Rated thermal current: 10 A.
- Rated insulation voltage: 500 Vac.
- Mechanical life: 1x10⁶ operations.

Certifications for group I, IIA, IIB with the marks

- DUST&GAS: Ex d IIB or IIC T6 Gb
- Ex tb IIIC T85°C Db IP66

Manufactured by ARIET Di T. Cereda – Distributed by TER srl a socio unico.



- Pendant control station for auxiliary control designed for potentially explosive areas.
- Configurations from 4 to 16 actuators.
- 2 speed pushbuttons and key-selector switches in various operation configurations.
- 2 speed switches with NO or NC contacts.
- Bridge connections (upon request) to reduce wiring time.
- Available with thermal protectors and resistances functioning as anti-moisture heater.
- Overall dimensions (depending on the number of actuators):
 - min. 243 x 107x 129 mm (HxLxW)
 - max. 483 x 254 x 129 mm (HxLxW).

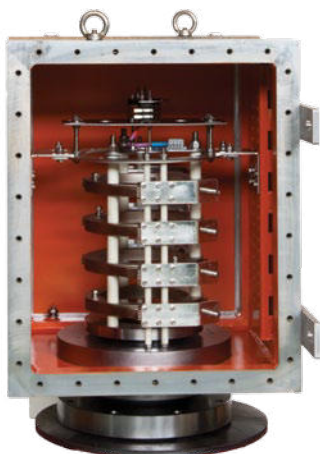
Switch specifications

- Utilization category:
 - max. 250 Vdc / 1.1 A
 - max. 240 Vac / 3 A
- Rated frequency: 50/60 Hz.
- Wires: min. 0.75 mm² – max. 2 mm² (ATEX and IEC Ex).

Certifications for group I, IIA, IIB with the marks

- Ex II 2G Ex db IIC T6 Gb (ATEX).
- Ex II 2D Ex tb IIIC T90°C Db (ATEX).
- Ex db IIC T6 Gb (IECEx).
- Ex tb IIIC T90°C Db (IECEx).

Manufactured by COEL Motori srl – Distributed by TER srl a socio unico.



- Slip ring collectors designed for potentially explosive areas.
- Suitable for combination of power and signal applications (Profinet, Profibus, CAN bus).
- High degree of customization thanks to fully modular construction system.
- Overall dimensions: depending on the slip ring collector dimensions, on voltage and amperage of the cables and their length.

Certifications

- Atex Directive 2014/34/UE.
- Conformity to Atex Standards EN 60079-0:2012, EN 60079-1:2014, EN 60079-14.
- Certification CY 19 Atex 0206266 X-type, CY 19 Atex 0206265 X-type.
- II 2G Ex db IIB T5 Gb Tamb (-40+60°C) marking.
- COC IECEx SCHEME.

Distributed by TER srl a socio unico. Designed by TER srl a socio unico and SPM Special Machines srl. Manufactured by SPM Special Machines srl.



- Motor and spring driven cable reels designed for potentially explosive areas.
- Suitable for combination of power and signal applications (Profinet, Profibus, CAN bus).
- High degree of customization thanks to fully modular construction system.
- Overall dimensions: depending on the slip ring collector dimensions, on voltage and amperage of the cables and their length.

Certifications

- Atex Directive 2014/34/UE, Annex VIII.
- Certification CY 19 Atex 0206266 X-type, CY 19 Atex 0206266 X-type, Notification register of the technical file at O.N.
- Conformity to Atex Standards EN 60079-0:2012, EN 60079-1:2014, EN 60079-14, EN 80079-36, EN 80079-37.
- COC IECEx SCHEME.

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