# Machine Safety Sensing Control Products Automation Solutions 



## DOLD

REES

## COMITRONIC - BTI

 Es Electrotech
## :.....․․ Remote Control rechnology

## Enclosure <br> - olutions, Inc.

## (2) BERNSTEIN


SUNS ${ }^{\text {wrtewnatomen i.ue }}$ INDLISTRIFL SWITCHES

##  <br> The Switch Company <br> GREER

 CATTRON
## 

## 4- nizato

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## DOLD 蟹 <br> REES <br> BIRCHER <br> Reglomat

## GReeR

(1) pizzato

CCOMITRONIC - BTI
(5)BERNSTEIN
\& CATTRDN

## Machine Safety Products

# Wireless Emergency Stop Buttons 

## RADIO CONTROLLED SAFETY SYSTEM - PAIR MODE

The safety approved, bidirectional radio controlled safety system UH 6900 from the SAFEMASTER W series, is for the transmission of safety inputs such as E-stop and conventional control functions and offers great flexibility for the protection of hazardous areas. By implementing the latest radio controlled technologies, a high degree of availability, a wide range, and safety is achieved. Two safety zones can easily be connected wirelessly over a considerable distance. The main application areas include applications covering large areas and mobile applications such as fully automated conveyor systems and driverless transport systems. Simple and inexpensive retrofitting of existing safety systems can also be achieved wirelessly with this system.

- For safety applications up to Cat. 4 / PL e or SIL CL 3
- High availability with long transmission range
- Two-channel safety inputs and outputs
- Control inputs and outputs
- Quick Start, fast set-up procedure
- Convenient diagnostic options



## RADIO CONTROLLED SAFETY SYSTEM - GROUP MODE

## SAFEMASTER W - Wireless Safety Wireless Functional Safety in group mode

The radio controlled safety system UH 6900 of the SAFEMASTER W series comprising a group controller and up to 255 group receivers for the safety transmission of emergency-stop and control functions provides more flexibility when securing dangerous areas. The group controller can be used to let several receivers securely shut down through a unidirectional, safety radio transmission. Furthermore, the controller together with a receiver can exchange indicator, control and status information. The main application areas include mobile applications, such as completely-automated floor conveyors and automated guided vehicles.

- For safety applications up to

Cat. 4 / PL e or SIL CL 3

- High availability with long transmission range
- Two-channel safety inputs and outputs (Group receiver)
- Control inputs and outputs
- Quick Start, fast set-up procedure
- Convenient diagnostic options

Safety Rating: SIL3


# Wireless Emergency Stop Buttons 

## SAFEMASTER W

## Radio controlled safety system UH 6900 - in group mode

Safety Rating: SIL3

The radio controlled safety system UH 6900 of the SAFEMASTER W series, consisting of one group controller and up to 255 group receivers for the safety-related, wireless transmission of emergency stop and control functions, offers more flexibility in safeguarding hazardous areas. High availability, long range and safety are achieved by implementing the latest radio technologies. With the group controller, several receivers can be safely switched off via a unidirectional, safety-related radio link. Furthermore, the controller can exchange message, control and status informa-tion with a receiving device.

The devices enable the connection of up to 3 two-channel safety sensors (emergency stop, LC, safety door, two-hand etc.) and offer simple configuration as well as extensive evaluation and diagnostic options.

The main areas of application include mobile applications such as fully automated floor conveyors and driverless transport systems. A simple and cost-effective retro-fitting of existing safety systems can also be realized without wiring.

## Advantages and customer benefits:

- For safety applications up to Cat. 4 / PL e or SIL 3, TÜV certified
- Safety-related, unidirectional emergency-stop transmission in group mode
- High availability at long distance (up to 800 m )
- Quick start, fast set-up procedure
- Reliable data transmission and low susceptibility to interference
- Comprehensive fault localization and diagnosis
- Two-channel safety inputs / outputs
- Control inputs / outputs
- Integrated analysis of the existing radio network



## LITERATURE

- Wireless Pair Mode
- Wireless Group Mode
- SAFEMASTER W
- Wireless Pair Mode Manual
- Wireless Group Mode Manual
- SAFEMASTER W Group


## Emergency Stop Buttons

## REMTRON SAFE-T-STOP [WIRELLESS]

- Large red Safe-T-Stop button
- Up to seven functions possible
- Can be used in operations that require UL913

Intrinsically Safe
UL listed for Class 1, Division 1, Group D available for T09, T10, T14 and T18
Configurations
24T09-01 - Two pushbuttons (On/Alarm, Off/Stop), large red stop button 24T09-02 - Two pushbuttons (On/Alarm, Off/Stop) 3 rocker switches, large red stop button

Housing: IP65 enclosure
Frequency: 902 - 928 MHz
Commands: Up to seven functions including three rocker switches, On/Alarm and Off/Stop buttons


## IITERATURE

- Safe-T-Stop Industrial Wireless Remote Control
- Safe-T-Stop System


### 117.07.18 EN / OO1A VARIBOK EMERGENGY STOP DEVICE

- NI 5061.06: Emergency stop with 2 NC contacts (forced opening) NI 5061.43: Emergency stop with 2 NC contacts (forced opening) 1 NO contact
- M12-connection - NI 5061.06: 4-poles - NI 5061.43: 8-poles
- Twist release left or right
- Foolproof acc. to EN ISO 13850
- According to EN 60947-5-1, EN 60947-5-5
- Approvals and Markings: CE
- Degree of protection: IP 65
- Contacts: 4-poles 2 NC contacts (forced opening)

8 -poles 2 NC cont. (forced opening) + 1 NO cont.

- Force opening distance: > 3 mm



## Emergency Stop Buttons

22.5 MM<br>"HEAVY DUTY - A600 / N150"<br>Operator Color Red<br>Padlock Feature Yes<br>Switch Type Maintained UL/NISD<br>Positive Opening Contact Yes<br>Adapter Included No<br>Legend Plate Included No<br>Contact Block(s) Included 50703-NO/NC



### 22.5 MM

"HEAVY DUTY - A600 / N150"

Operator Color Red
Padlock Feature Yes
Switch Type Maintained UL/NISD
Positive Opening Contact Yes
Adapter Included No
Legend Plate Included No
Contact Block(s) Included
(2) 50703
(2) $\mathrm{NO} / \mathrm{NC}$


22102-122

### 22.5 MM

"HEAVY DUTY - A600 / N150"

| Operator Color | Red |
| :--- | :--- |
| Padlock Feature | No |
| Swith Type | Maintained UL/NISD |
| Positive Opening Contact | Yes |
| Adapter Included | No |
| Legend Plate Included | No |
| Contact Block(s) Included | 5071650723 |
|  | NC/NO |
|  | Make before Break |

## LITERATURE

- 22.5 mm Operators


## Emergency Stop Buttons

### 22.5 MM

"HEAVY DUTY - A600 / N150"

Operator Color Red
Padlock Feature
Yes
Switch Type Maintained UL/NISD
Positive Opening Contact Yes
Adapter Included
No
Legend Plate Included
Contact Block(s) Included
(2) 52702 NC

NC Opens upon Removal


### 30.5MM

"HEAVY DUTY - A600 / N150"

Operator Color
Operator Material, Size, Style
Padlock Feature
Switch Type
Positive Opening Contact
Contact Block(s) Included
Operating Force
Approx. Shipping Weight
Plunger Head Operator Replacement
Operating Type

Red
2.00 in. Plastic Mushroom

Yes
Maintained UL/NISD
Yes
50703-NO/NC
8.0 lb
0.80 lb

43200-042
Maintained

## Emergency Stop Buttons

```
30.5MM
    "HEAVY DUTY - A600 / N150"
```

Operator Color
Operator Material, Size, Style
Padlock Feature
Switch Type
Positive Opening Contact
Contact Block(s) Included

Operating Force
Approx. Shipping Weight Plunger Head Operator Replacement Operating Type

Red
2.00 in. Plastic Mushroom Yes Maintained UL/NISD No
(2) $52702+50724$
(2) $\mathrm{NC} /(1) \mathrm{NO}$

NC Opens upon Removal 12.0 lb
0.80 lb

43200-042
Maintained


### 2.25 INCH MUSHROOM PLUNGER WITTH SPRING LATCH

"HEAVY DUTY - A600 / N300"
Listed under UL 508 - File \# E 58589
Certified under CSA C22.2 - File \# LR 3648
CE Compliant IEC/EN 60947-5-1
Third party certified under DEMKO Certificate \# D-01496-M1

Plunger Color
Black
Cover Color Black
Operating Force Lock Hole Diameter Latch/Plunger Operation Positive Opening Contact Contact Arrangement Contact Type
Switches comply with
12.5 lb
0.31 in

Yes

Latches when depressed Operate latch to release
\#09 NO + NC
Slow-Make Slow-Break
IEC/EN 60947-5-1


## 22.5 \& 30 MM

 LEGEND PLATES

09022-004

## EMERGENCY STOP

Designed to mount to the single or double plunger pushbuttons and ring guards. Made from clear anodized aluminum with black lettering. Used on single plunger switches.


## EEARECACY STOP O

09001-004

## IITERATURE

- 2.25 inch Mushroom Plunger with Spring Latch


## Emergency Stop Buttons

## DUAL PURPOSE ILLUMINATED RING, EROUND SERIES

The new dual purpose illuminated ring is now available, in addition to the already existing versions with fixed or flashing light. This new version can have both fixed and flashing light through a simple wiring, thus avoiding the use of an external intervention. The dual purpose illuminated ring is provided with three supply wires: depending on the electrical connection, the light can be fixed or flashing. For example, this could be useful for a series of emergency buttons, each combined with the new illuminated ring and all con-


## IITERATURE

- Illuminated E-stops


## PUSH BUTTONS IP69K

Nominal thermal current : 10 A conforming to IEC 60947-5-1, NF C 63-140, UL 508, CSA 22-2 No. 14, VDE 0660 part 2, NEMA / UL Type A600-Q600. Nominal insulation voltage: 500 V conforming to NF C 20-040, VDE 0110, IEC 60158-1, 600 V conforming to UL 508. Contact operation: Slow- make N.O. or slow-break N.C. with direct opening operation conforming to EN60947-5-1 section 3. Approvals: UL/ cUL(E216958):push buttons and selector switches NEMA / UL Type A600Q600; pilot lights and illuminated push buttons direct supply ( 250 V max.); pilot lights and illuminated push buttons with transformer ( 600 V ) Conformity to standards : UL 508, IEC 60947-5-1, EN60947-5-1, IEC 60337-1, IEC 60337-2, VDE 0660 , CSA C 22-2


PB / PBM22

## PUSH BUTTONS IP69K

Nominal thermal current : 10 A conforming to IEC 60947-5-1, NF C 63-140, UL 508, CSA 22-2 No. 14, VDE 0660 part 2, NEMA / UL Type A600-Q600. Nominal insulation voltage: 500 V conforming to NF C 20-040, VDE 0110, IEC 60158-1, 600 V conforming to UL 508. Contact operation: Slow- make N.O. or slow-break N.C. with direct opening operation conforming to EN60947-5-1 section 3. Approvals: UL/cUL(E216958):push buttons and selector switches NEMA / UL Type A600-Q600; pilot lights and illuminated push buttons direct supply ( 250 V max.); pilot lights and illuminated push buttons with transformer ( 600 V ). Conformity to standards : UL 508, IEC 60947-5-1, EN60947-5-1, IEC 60337-1, IEC 60337-2, VDE 0660 , CSA C 22-2

P INTERNATIONAL, LLC INDUSTRIAL SWITCHES


PB / PBM22

## Enabling Switches

## ENABLING / CONTROL UNIT

Wired enabling / control unit with emergency stop and expandable functions.

## Customer benefits:



- Safe working in hazardous areas
- Ergonomic design and effortless operation
- Versatile, expandable and usable
- Safety during setup, operation or maintenance of machinery and plant

Highlights:

- Additional function buttons can be added for control functions
- Modular design
- 3-step enabling switch
- Integrated emergency-stop button
- Versatile command functions
- Robust IP 65 enclosure



## LITERATURE

- Enabling Switches


# Safety Relays - Multifunctional Safety Relays Standstill Monitoring Safety Relays Zero Speed Safety Relays - Time Delay Safety Relays Programmable Safety Relays 

## SAFETY TECHNOLOGY

## SAFEMASTER - Innovation solutions for every function

Safety technology is an essential product group of the business area of switching devices at DOLD. What began decades ago with the development of a two-hand switch relay has been decisively continued in the last 20 years and expanded into a universal device programme. Today, safety switching devices from DOLD monitor various safety functions such as emergency stop, two-hand switching, safety mat, safety door, light barrier and more.

- Safety switching devices
- Extension / delay time / interface modules
- Standstill / speed monitoring
- Multifunctional safety solutions
- Wireless safety systems
- Special devices



## SAFEMASTER C MULTIFUNCTIONAL SAFETY TIMER UG 6960

The multifunctional safety timer UG 6960 from the SAFEMASTER C family serves the protection of staff and machinery by releasing and interrupting safety circuits. The UG 6960 combines safety time functions and safety functions in one device. Five different time functions with delay times of up to 300 minutes can be implemented, and selected flexibly and without programming via latching rotary switches. Besides safety functions such as emergency stop, protective door, non-equivalent safety sensor, two-hand or light barrier, it also allows you to connect your safety-related safety-mats and safety edges. The fine adjustment of time which is also done gradually via latching rotary switches is particularly advantageous for an optimal adjustment of the device in accordance with your application.

- Output: $2 \mathrm{~N} / \mathrm{O}$ contacts instant contacts and $2 \mathrm{~N} / \mathrm{O}$ contacts delayed
- 2-channel design with digital timer
- Complies with - Performance Level (PL) e and category 4 in accordance with EN ISO 13849-1: 2008- Safety Integrity Claim Limit 3 (SIL CL) 3 according to IEC/EN 6206 Safety Integrity Level (SIL) 3 according to IEC/EN 61508 and IEC/EN 61511



## LITERATURE

- Functional Safety | Safety Relay Modules | DOLD


# Safety Relays - Multifunctional Safety Relays Standstill Monitoring Safety Relays Zero Speed Safety Relays - Time Delay Safety Relays Programmable Safety Relays 

## SAFEMASTER C MULTIFUNCTIONAL SAFETY MODULE UG 6970

The multifunctional safety module UG 6970 from the SAFEMASTER C family serves the protection of staff and machinery by releasing and interrupting safety circuits. Up to two independent safety functions which are selected in a simple way and without programming via latching rotary switches can be implemented in a single device. The flexible adjustment of the safety functions lead to a sustainable reduction in storage costs. Besides safety functions such as emergency stop, protective door, non-equivalent safety sensor, two-hand or light barrier, it also allows you to connect your safety-related mats and safety edges. The variable start configuration which can also be adjusted via rotary switches, allow for an optimal adjustment in accordance with the application. Besides the manual and automated start, the mutual manual start can also be selected for both safety functions. With its width of 22.5 mm , the multifunctional safety module UG 6970 supplies two N/O contacts and one semiconductor monitoring output for each safety function.In accordance with the requirements, the number of safety contacts can be multiplied via the related extension module UG 6929 or the combine extension module UG 6912.28.

- Output: 2 contacts per safety function
- 2-channel design
- Complies with - Performance Level (PL) e and category 4 in accordance with EN ISO 13849-1: 2008 - Safety Integrity Claim Limit 3 (SIL CL) 3 according to IEC/EN 62061 - Safety Integrity Level (SIL) 3 according to IEC/EN 61508 and IEC/EN 61511


SAFEMASTER - INNOVATION SOLUTIONS FOR EVERY FUNCTION


Safety switching devices


Extension / delay time / interface modules


Standstill / speed monitoring


Multifunctional safety solutions

## LITERATURE

- SAFEMASTER C Multifunctional Safety Module UG 6970


## Two Hand Control Solutions

## FLLT CHROME PLUNGER PUSH BUTTON SWITCHES

"HEAVY DUTY - A600 / N300"
Listed under UL 508 - File \# E 58589
Certified under CSA C22.2 - File \# LR 3648
CE Compliant IEC/EN 60947-5-1
Third party certified under DEMKO File \# FI-17205

Plunger Color Cover Color Operating Force
Positive Opening Contact
Contact Arrangement
Contact Type
Operating Type
2.75 " dia. Chrome

Yellow Dry Powder Paint 1.9 lb

No
\#64 2 NO + 2 NC
Snap-Action
Momentary

04957-012


## FLAT CHROME PLUNGER PUSH BUTTON SWITCHES

"HEAVY DUTY - A600 / N300"
Listed under UL 508 - File \# E 58589
Certified under CSA C22.2 - File \# LR 3648
CE Compliant IEC/EN 60947-5-1
Third party certified under DEMKO File \# FI-17205

Plunger Color Cover Color Operating Force
Positive Opening Contact
Contact Arrangement
Contact Type
Operating Type
2.25 " dia. Chrome Black Dry Powder Paint 2.5 lb

Yes
\#09 NO + NC
Slow-Make
Momentary

02653-112

### 2.25 INCH PLASTIC MUSHROOM PLUNGER

"HEAVY DUTY - A600 / N300"
Listed under UL 508 - File \# E 58589
Certified under CSA C22.2 - File \# LR 3648
CE Compliant IEC/EN 60947-5-1
Third party certified under DEMKO File \# FI-17205

Plunger Color
Green
Cover Color
Operating Force
Positive Opening Contact
Contact Arrangement
Contact Type
Operating Type

Black
4.3 lb

Yes
\#09 NO + NC
Slow-Make / Slow-Break Momentary


## LITERATURE

- Flat Chrome Plunger Push Button Switches


## Two Hand Control Solutions

### 2.25 INCH PLASTIC MUSHROOM PLUNGER

"HEAVY DUTY - A600 / N300"
Listed under UL 508 - File \# E 58589
Certified under CSA C22.2 - File \# LR 3648
CE Compliant IEC/EN 60947-5-1
Third party certified under DEMKO File \# FI-17205

| Plunger Color | Black |
| :--- | :--- |
| Cover Color | Black |
| Operating Force | 4.3 Ib |
| Positive Opening Contact | Yes |
| Contact Arrangement | \#09 NO + NC |
| Contact Type | Slow-Make / Slow-Break |
| Operating Type | Momentary |



### 2.25 INCH PLASTIC MUSHROOM PLUNGER

"HEAVY DUTY - A600 / N300"
Listed under UL 508 - File \# E 58589
Certified under CSA C22.2 - File \# LR 3648
CE Compliant IEC/EN 60947-5-1
Third party certified under DEMKO File \# FI-17205

| Plunger Color | Yellow |
| :--- | :--- |
| Cover Color | Black |
| Operating Force | 4.3 lb |
| Positive Opening Contact | Yes |
| Contact Arrangement | \#09 NO + NC |
| Contact Type | Slow-Make / Slow-Break |
| Operating Type | Momentary |



## PUSH BUTTON SWITCHES WITH LARGER MOUNTING PATTERN

"HEAVY DUTY - A600 / N300"
Listed under UL 508 - File \# E 58589
Certified under CSA C22.2 - File \# LR 3648
CE Compliant IEC/EN 60947-5-1
Third party certified under DEMKO File \# FI-17205

Plunger Color Cover Color Operating Force Intergral Ring Guard Positive Opening Contact Contact Arrangement Contact Type Operating Type
2.75 " dia. Chrome Plated Die Cast Yellow
2.0 lb

Yes
No
\#64 2 NO + 2 NC
Snap-Action
Momentary

04917-712


## LITERATURE

- 2.25 inch Plastic Mushroom Plunger


## Two Hand Control Solutions

### 2.25 INCH MUSHROOM PLUNGER WITH SPRING LATCH

"HEAVY DUTY - A600 / N300"
Listed under UL 508 - File \# E 58589
Certified under CSA C22.2 - File \# LR 3648
CE Compliant IEC/EN 60947-5-5
Third party certified under DEMKO File \# FI-17205

Plunger Color
Cover Color
Operating Force
Lock Hole Diameter
Latch/Plunger Operation
Positive Opening Contact
Contact Arrangement
Contact Type

Red
Yellow
12.5 Ib
0.31 in

Latches when depressed Operate latch to release
Yes
\#09 NO + NC
Slow-Make Slow-Break


02182-002

## RING GUARDS

- Additional length mounting screws are provided with each guard.
- Series 09002 legend plates can be mounted on these ring guards.

REES

The following guards are designed to mount to the single or double plunger push button switches. They are die cast from a high strength zinc alloy (Zamac \#3).

The usage chart below shows the minimum recommended guard to use to provide protection against inadvertent actuation caused by accidental contact of the switch plunger. Use of a taller guard is an acceptable alternate method.

Color Painted Powder Yellow
Height 1.00 in


04933-091

## PALM SWITCH GUARD/ACTUATOR

- Designed to replace the ring guard on REES palm operated switches.
- Sturdy zinc die cast and steel.
- Large operating pad which reduces the activation force on the center of the hand and directly on the ulnar artery and median nerve where they pass through the palm.

Guard Color
Orange
Operating Pad Color Yellow


04949-000

## Two Hand Control Solutions

## STANDARD AND LARGE ENCIOSURES

- Rated Nema 12/13, IP 65.
- 14 GA. sheet steel painted with a dry powder paint.

| 02261-000 |  | 3 Standard | 1" NPT | Orange |
| :---: | :---: | :---: | :---: | :---: |
| 02715-000 |  | 2 Standard | 1" NPT | Orange |
| 02718-000 | E E | 4 Standard | 1.25" NPT | Orange |
| 02765-000 | 8 | 1 Standard | 1" NPT | Black |
| 02765-100 |  | 1 Standard | 1" NPT | Yellow |
| 03007-000 |  | 5 Standard | 1.25 " NPT | Orange |
| 04938-100 |  | 1 Large | 1" NPT | Black |
| 04938-200 |  | 1 Large | (2) $1^{\prime \prime}$ NPT | Black |
| 04938-300 | $\square$ E E | 3 Large | (2) 1.25 " NPT | Orange |

## LITERATURE

- Standard and Large Enclosures


## Two Hand Control Solutions

## SAFEMASTER TWO-HAND SAFETY RELAY

- Performance Level (PL) e and category 4 to EN ISO 13849-1
- SIL Claimed Level (SIL CL) 3 to IEC/EN 62061
- Safety Integrity Level (SIL) 3 to IEC/EN 61508
- Safety Level Type III-C according to EN 574
- The safety regulations for two-hand controls on power-operated presses in metalworking ZH 1-456
- Inputs for 2 push buttons with 1 NC and 1 NO contact
- Output: 2 NO contacts, 1 NC contact or 3 NO contacts, 1 NC contact
- Overvoltage and short circuit protection
- Wire connection: also $2 \times 1.5 \mathrm{~mm} 2$ stranded ferruled (isolated), DIN 46 228-1/-2/-3/-4 or $2 \times 2.5 \mathrm{~mm} 2$ stranded ferruled DIN 46 228-1/-2/-3
- BG 5933: width 22.5 mm BH 5933: width 45 mm



## SAFEMASTER TWO-HAND SAFETY RELAY

- Performance Level (PL) e and category 4 to EN ISO 13849-1
- SIL Claimed Level (SIL CL) 3 to IEC/EN 62061
- Safety Integrity Level (SIL) 3 to IEC/EN 61508
- Safety level Type III-C to EN 574
- Inputs for 2 push buttons with 1 NC and 1 NO contact
- Output: 3 NO contacts, 1 NC contact
- Overvoltage and short circuit protection
- Wire connection: also $2 \times 1.5 \mathrm{~mm} 2$ stranded ferruled, or $2 \times 2.5 \mathrm{~mm} 2$ solid DIN 46 228-1/-2/-3/-4
- Removable terminal strips
- LG 5933: fixed screw terminals
- LG 5933 PS: plug in screw terminals
- LG 5933 PC: plug in cage clamp terminals
- Width 22.5 mm



## SAFEMASTER C MUITIIFUMCTIONAL SAFETY MODULE

- Complies with
- Performance Level (PL) e and category 4 in accordance with EN ISO 13849-1: 2008
- Safety Integrity Claim Limit 3 (SIL CL) 3 according to IEC/EN 62061
- Safety Integrity Level (SIL) 3 according to IEC/EN 61508 and IEC/EN 61511
- In accordance with EN 50156-1 for furnace installations
- Line fault detection at the start button
- Activation via start button or automatic start, joint start possible
- With or without cross fault detection
- 2-channel design
- Forcibly guided output contacts
- Output: 2 contacts per safety function
- 1 semiconductor monitoring output per safety function
- LED displays operating voltage, safety function 1, 2 and faults
- Pluggable terminal blocks for fast device change
- screw terminals
- cage clamp terminals
- double cage clamp terminals
- Sealable transparent cover
- Width 22.5 mm

BG 5933, BH 5933

# Two Hand Control Solutions 

## ENCLOSURE FOR AUTOMATION SECTOR

- Housing Polymer housing
- Protection degree IP65 according to IEC 60529.
- EAC Certificate
- EC Declaration of Conformity


## TWO-HAND DUAL-TECHNOLOGY TOUCH CONTROL BUTTON

## ЄCOMITRONIC - BTI

- Performance level with COM3C controller: PL = e
- Safety category with COM3C: IIIC (EN 574), 4 (ISO 13849-1)
- 'Failsafe' level with COM3C: SIL 3
- Time before dangerous failure: MTTFd = 100 years
- Activation distance: on touch (0 force = MSD reduction)
- Safety contacts: 1 x PNP NO/50mA OSSD and 1 x PNP NF/50mA OSSD
- Diagnostics: fraud, simultaneity, short-circuiting of contacts with multi-function illuminated ring
- Reset: automatic with two buttons correctly activated
- Attachment: Attachment: 51mm bore and 2 to 6 invisible D3 screws (not included)
- Mounting position: 1
- Material: TR90UV yellow
- Electrical connection: 6-way screwless push terminal $1.5 \mathrm{~mm}^{2}$


KOB101T

- Water resistance: IP 67 with silicone seal on the trim
- Temperature: $-25^{\circ} \mathrm{C}$ to $+60^{\circ} \mathrm{C}$
- Marking: screen printed + serial no. for traceability
- Recommendations: use gloves in accordance with EN 388


## TWO HAND CONTROLS ARE SAFEGUARDING DEVICES

These are safeguarding devices in the single stroke mode of operation on part revolution clutch presses. It is similar to the two-hand trip; this device keeps the operators hands away from the point of operation during the entire machine stroke.

Regulation: 29 CFR 1910.217
Press operations requiring more than one operator must provide eachmachine guarding, two-hand control, osha 10, construction safety operator with separate two-hand controls where each set must be engaged to complete a machine stroke. The removal of a hand from any control button will stop the slide.

Each two-hand control must meet the construction requirements of paragraph 29 CFR 1910.217(b)(7)(v).
The safety distance between each hand control device and the point of operation must be greater than the distance determined by the safety distance formula. Two-hand controls' position must be fixed so that only a supervisor of safety engineer is capable of relocating them.

## Two Hand Control Solutions

## TWO-HAND TOUCHSCREEN \& OPTICAL TWO-HAND CONTROL IPG9K TECHNOLOGY

Supply voltage : Standby current : Connections: Light ring : Contact specifications : Response time : Risk period: Desynchronism : Operating temperature Detection distance : Overall dimensions : Front sealing : Back sealing : Fastening : Housing material :

20 VDC to 30 VDC
60 mA
Push-in connector for wire up to 1.5 mm 2 Ring with 3 sectors
$1 \times$ NO and $1 \times N C$ PNP / 50 mA OSSD type 40 ms
4 msec
$\sim 400 \mathrm{msec}$
$-25^{\circ} \mathrm{C}$ to $+50^{\circ} \mathrm{C}$.
about 20 mm (depends on skin/glove color)
D61.5 mm x 42.2 mm
IP 69K (+ seal/nut)
IP 40
$1 \times$ PG42 nut
PC: HL3/R4 and M1/M2

## C COMITRONIC - BTI



FZ 50 BITECH Button for two-hand control
FZ 50 BITECH I 2 Button for two-hand control+ COM3C

## CONTROL DESK BIMANUELLE, ERGONOMIQUE, INOK, DECREASE TMS, COMPATIBLE WITH KOB101T

- Contacts are momentary action with a NO PNP and an NF PNP.
- KOB101T is a button that mixes two technologies, optical and capacitive.
- KOB101T kit allows a complete two-hand control (2xKOB101T + 1xCOM3C).


BX1 \& BX2

## TWO-HAND CONTROL EN 574 AND ISO 13849-1

- Performance level with AWAX controller: PL = e
- Safety category: IIIC
- Safety Integrity Level: SIL 3
- Time before dangerous failure: MTTFd $=190$ years
- Cycle before dangerous failure: $\mathrm{B} 10 \mathrm{~d}=100,000$ at 5 A
- Risk duration: 20 ms max.
- Safety contacts/diagnostics:
$3 \times$ NO $8 \mathrm{~A} / 250 \mathrm{~V}$ redundant / 1x NF 8A/250V parallel redundant
- Reset: automatic with simultaneity control at 400 ms
- Position control: high press position contact input
- Mounting: symmetrical DIN 35 mm rail on DIN 50022 -and- IP 20 electrical box
- Electrical connection: Maximum 14 AWG ( $2.08 \mathrm{~mm}^{2}$ ) / 250 V minimum
- Temperature: $-20^{\circ} \mathrm{C}$ to $+40^{\circ} \mathrm{C}$
- Certification: INERIS 0080.5486.520.04.12.0059



# Safety, Muting - Light Curtains - Safety Relays 

## MUITIFUNGTIONAL SAFETY RELLAYS

SAFEMASTER C - Safety plus multifunctionality
Whether it is used as an individual device or integrated in complex safety systems - with SAFEMASTER C, you always have the right solution for protecting people and machinery. With the compact multifunctional safety switching devices from DOLD, various safety-oriented inputs, such as emergency stop, safety door, et cetera, are assigned to a single output. An additional important advantage of SAFEMASTER C is the cost-savings as a result of its multifunctionality: through taking up less space in the control cabinet than monofunctional safety devices, through reduced storage needs and through the simple and fast calibration of the safety functions and operating modes.

## SAFEMASTER LIGHT CURTAIN CONTROLLER LG 5925/900

- Performance Level (PL) e and category 4 to EN ISO 13849-1-SIL Claimed Level (SIL CL) 3 to IEC/EN 62061 -Safety Integrity Level (SIL) 3 to IEC/EN 61508 and IEC/EN 61511
- According to EN 50156-2 for furnaces
- For light curtains with symmetric or asymmetric outputs adjustment with switch S1
- Output: max. 4 NO contacts, see contacts
- Single and 2-channel operation
- Line fault detection on On-button
- Manual restart or automatic restart, switch S2
- LED indicator for state of operation
- LED indicator for channel 1 and 2 and power
- Removable terminal strips
- Wire connection: also $2 \times 1.5 \mathrm{~mm} 2$ stranded ferruled, or $2 \times 2.5 \mathrm{~mm} 2$ solid DIN 46 228-1/-2/-3/-4


## Safety, Muting - Light Curtains - Safety Relays

## SAFETY LIGHT CURTAINS

Type 2, Type 4 safety light curtains for industrial applications
Safety Light curtains are electro sensitive devices using one or more light beams, emitted by an Emitter and received by a Receiver, to create an intangible controlled area.

Safety type - Defines the self-monitoring and safety principles contained in the device; it must be chosen as a function of the risk level characterising the machine.
Protected height - This is the height controlled by the light curtain. If it is positioned horizontally, this value shows the depth of the protected zone.
Range - This is the maximum working distance that may exist between the emitter and the receiver. When deflection mirrors are used, it is necessary to take into account the attenuation factor introduced by each of them, which it is about $15 \%$.


## WATERTICHT SAFETY LIGHT CURTAINS

IP69K and Ecolab "food-graded" certified models
Watertight enclosures allow light curtains and light grids to be used in a harsh working environments with exposure to water and steam.

The products protected by WT (WaterTight) cases are capable of resisting to water jets under pressure IP 69K protection rate. The WT housings furthermore comprise a valid mechanical protection of the light curtain.

- H version (Heated) has a thermostatically-controlled heating system and can work down to $-25^{\circ} \mathrm{C}$.
- F version (Food) with use of inert and non-toxic components allow WTF and WTHF enclosures to be used in the Food \& Beverage industry, where frequent washdown procedures are requested.



## EXPLOSION PROOF SAFETY LIGHT CURTAINS

## ATEX Zone 2, 22 compliant models

ATEX protective enclosures. Are designed to secure operators working in industrial potentially explosive atmospheres.

The cylindrical housing ATEX can fit the following safety light curtain ReeR familie: EOS.


## LITERATURE

- EOS4 safety light curtains and grids


## Safety, Muting - Light Curtains - Safety Relays

## ACGESSORIES FOR SAFETY LIGHT CURTAINS

Cables, brackets, floor-mounting columns, deflecting mirrors
The range of accessories include:

- columns and floor support columns
- deflection mirrors for the realization of perimeter protection
- laser alignment device
- anti-vibration dampers
- adjustable brackets
- test rod
- connection cables

GRef


## SAFETY CONTROLLERS

## Modular safety integrated controllers

Modular, configurable safety controller for protecting machines or plants.
Safety controller is capable of monitoring several safety sensors and commands, such as safety light curtains, laser scanners, photocells, mechanical switches, mats, emergency stops, two-hand controls, concentrating management of these in a single, flexible device. The analogue inputs expansion unit allows the connection of several analogue sensors such as loading cells, pressure switches, temperature, flow, level measurements, etc. The MSD software, installed on a PC, can be used to create complex logical conditions using logical operators and safety functions, such as muting, timer, counters, memories, etc. via an easy, intuitive graphic configuration interface. Configuration data are transferred to the M1 unit via a USB link. The configuration is transferred to the main module via a USB connection.


## SAFETY INTERFACES / SAFETY RELAYS

## Modules for safety light curtains, two-hand controls and e-stops

The Safety interfaces are a dedicated interfaces between safety light curtains equipped with self-controlled safety static outputs and control circuits of the machine or plant.

## Modules for safety light curtains and safety devices

AD SR0 and AD SR0A modules can only be connected to safety sensors equipped with feedback input for
monitoring external relays (EDM)
With guided-contact safety relays, $2 \mathrm{NO}+1 \mathrm{NC}$ (AD SRO) or 2 NO contacts (AD SR0A). Additional N.C. contact line for the monitoring by light curtain (EDM).


## Safety Interlocking Systems

## SAFEMASTER STS

Don't you wish you had a simple safety switch and trapped key interlock systemto protect your dangerous working areas. If you are looking for a reliable, expandable, flexible and cost saving solution, then you have found the perfect product with our TÜV-approved system SAFEMASTER STS.The SAFEMASTER STS Program consists of modules that can be individually combined and adapted to your application. They combine the advantages of safety switches, interlocks and key transfer in one system. The modular design allows systems to be assembled out of several units, or to modify and expand existing systems as required. All mechanical interlocks can be utilised in machine and plant concepts without wiring. They provide an economic and reliable proctection in wide applica-tions.With only a few single components, a number of individual interlock units can be assem-bled. The stainless steel units guarantee good stability. Extensive equipment allows a simple mounting.

# DDLD 皆 

 (2)
## SAFEMASTER STS - INDIVIDUAL MODULS

Flexibly, individually and perfectly adapted to your applications
The modularity of the SAFEMASTER STS allows individual adaptions to the corresponding applications. By means of bayonet locks (see accessory) any number of units can be mounted of only a few basic modules. The function of the units are defined from the way and arrangement of the modules, whereby several unities form a system. The possible combinations of the composed unities determine the individual functions of the total system.


## COMMAND DEVICES

The robust stainless steel option module expands the modular SAFEMASTER STS safety switch and key transfer system with variable command, indication, selection and emergency stop functions. This turns the system into a true "control centre" from where command functions, status displays, release signals, main and maintenance access points can be controlled. The option module is form-fitting and can be installed directly underneath safety switches or hold closed units thus enabling direct command execution at the access points for machines and systems. It can also be installed as a standalone command device. You too can benefit from the high degree of system flexibility.


## LITERATURE

- SAFEMASTER STS


## Safety Interlocking Systems

## SAFETY SWITCH

## Electromechanical safety switches monitor accesses and safety gates



## KEY TRANSFER

The key transfer system combines the advantages of none wiring, mechanical safety with electrical safety

The basic principle of the key transfer system ensures thi a machine or system is in a safe state before an access can be made. A further safety aspect is that a key is inserted either in a safety switch or can be used for openin a door lock. This property can be used to force a certain operating sequence, which can not be deviated from. As result, a high safety level is achieved and a large number of different danger areas can be ensured.


## LITERATURE

- SAFEMASTER STS


## Safety Interlocking Systems

## SAFETY HANDLES P-KUBE



## LITERATURE

- Safety Devices


## Safety Interlocking Systems

## SAFETY SWITCHES WITH SEPARATE ACTUATOR AND LOCK



FS series Technopolymer housing. Three knock-out threaded conduit entries.


## LITERATURE

- Safety Devices


## Safety Interlocking Systems

## SAFEMASTER STS - COMMAND FUNCTIONS

Guard lock with integrated command and indication functions.
The SAFEMASTER STS series safety switch with guard lock offers the possibility of integrating up to three command and indication functions. This allows control signals such as emergency stop or acknowledgement of the safety door to be triggered directly at the entrances of machines and plant access points. In addition emergency stop buttons, illuminated buttons, pushbuttons or selector switches are also available. The safety switch with guard lock is also available with auxiliary and emergency release as well as coded actuators. Due to its very slim design, the robust and attractive fibre reinforced polymer (FRP) enclosure can be mounted directly on safety fences to save space. The optional M23 plug connectors ensure

## DOLD



Mcolular and expandable
The moolinty makes ? possble to buld seveni uns into coe pytien or to astipt ind estend oiting spsems is required Modves can be mounted in 4 povitions rotesed troun $90^{\circ}$ : fast set-up and reduce the wiring effort to a minimum.

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The merruton of commind and inderton functoes in the gard loak int enicies mwomem powice saing and a redurnd orent tett

## Felectable commant divieres:



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## LITERATURE

- SAFEMASTER STS


# Keyed Interlock Safety Switches - <br> Latching Keyed Interlocks - Guard Lock Systems 

## guard Lock with integrated command AND INDICATION FUNCTIONS

The SAFEMASTER STS series safety switch with guard lock offers the possibility of integrating up to three command and indication functions. This allows control signals such as emergency stop or acknowledgement of the safety door to be triggered directly at the entrances of machines and plant access points. In addition emergency stop buttons, illuminated buttons, pushbuttons or selector switches are also available. The safety switch with guard lock is also available with auxiliary and emergency release as well as coded actuators.

## IITERATURE

- SAFEMASTER STS


## DOLD



## SOLENOID KEY-OPERATED INTERLOCK SWITCH

- Robust zinc die cast head assembly with glass fiber reinforced plastic or zinc die cast body
- Three solenoids voltages: $24 \mathrm{Vac} / \mathrm{dc}, 120 \mathrm{Vac}$ and 240 Vac
- Power-to-lock or power-to-unlock types for key trap
- Flexible switching arrangement
- $24 \mathrm{~V}, 110 \mathrm{Vac}$, and 230 Vac coil voltages
- Head may be rotated into 4 different positions
- Three conduit openings (knock-out style)
- Switch position provides status
- Choice of different contact blocks
- Positive Opening of NC contacts
- Cable entry available: M20, and 1/2"NPT
- Approval: CE, cULus (pending)
- Indicators for switch and solenoid status (optional)



# Keyed Interlock Safety Switches - <br> Latching Keyed Interlocks - Guard Lock Systems 

## SAFETY SWITCHES WITH SEPARATE ACTUATOR



## 4) izizato



## LITERATURE

- Safety Devices


## SAFETY SWITCHES WITH SEPARATE ACTUATOR

Safety switches with separate actuator are positive opening position switches. In terms of design, the switching element and actuator are separated. On actuation, the switching element and actuator are brought together or separated. The positive opening NC contact is always open when the actuator is withdrawn. These switches are assigned to Type 2.


# Non Contact Safety Switches - Coded - RFID Latching - Safety Proximity Switches \& Safety Relays 

## OPTO2S - MINIATURE SAFETY SWITCH

- Position control for doors / casings on hazardous machinery
- Contactless encoded electronic sensor with relay
- Category 3 total safety management without an external controller
- 12 V version for embedded applications
- Water resistance: IP 68
- Temperature: $-20^{\circ} \mathrm{C}$ to $+60^{\circ} \mathrm{C}$
- Level of performance without an external controller: PL = c
- Level of performance with AWAX controller: up to PL = e
- Safety category without an external controller: 1


## COMITRONIC - BTI



## AMK - SAFETY SWITCH STAND ALONE

- Controls the position of hazardous machine doors/cases with integrated self-checking
- Contactless coded sensor with electronic technology and relays
- IP68 PA6 / IP69K INOX316L
- Performance level and category without external controller: Cat 3 PL=d according to ISO 13849-1
- Performance level and category with AWAX controller: Cat 4 up to $\mathrm{PL}=\mathrm{e}$
- Integrated safety level: SIL 2 according to IEC 61508
- Water resistance: IP 68 (PA6) or IP 69 K with stainless steel - new generation
- Temperature: $-25^{\circ} \mathrm{C}$ to $+60^{\circ} \mathrm{C}$
- UL 508 / C22.2 no. 14 C-UL-US listed 34CB (file E214209)



## SM1 \& SM1-OK - ELECTROMAGNETIC LOCKING

- Electromagnetic safety lock control with 580 N force
- No power or under-voltage locking on machine casings
- Machine protection closing control for harsh environments
- 100\% stainless steel version available
- Water resistance: IP 67/68
- Temperature: $-25^{\circ} \mathrm{C}$ to $+50^{\circ} \mathrm{C}$
- Level of performance with AWAX controller: up to PL = e
- Safety category: up to 4 with AWAX controller or PLC SIL 3
- Maximum detection activation distance: 2 mm



# Non Contact Safety Switches - Coded - RFID Latching - Safety Proximity Switches \& Safety Relays 

## SM2-0K-ELECTROMAGNETIC LOCKING STAINLESS STEEL316L

- Electromagnetic safety lock control with 936 N force and 100\% stainless steel
- No power or under-voltage locking on machine casings
- Machine protection closing control for harsh environments
- Antimicrobial handle available
- Water resistance: IP 69K
- Temperature: $-25^{\circ} \mathrm{C}$ to $+50^{\circ} \mathrm{C}$ (thermal protection for suction cups in case of overheating due to a persistent command)
- Maximum detection activation distance: 2 mm
- Level of performance with AWAX controller: up to PL = e
- Safety category: up to 4 with AWAX controller or PLC SIL 3


## COMITRONIC - BTI



## AMKR-S - SAFETY SWITCH STAND ALONE WITH RFID CODING

- Controls the position of safety doors/casings with RFID encoding
- RFID sensor with 16 million codes
- Category 3 total security management without an external controller
- Programmable code through auto-learning (no software or PC)
- Level of performance with AWAX controller: up to PL = e
- Safety category without an external controller: 3 (EN 954-1)
- Cycle after dangerous failure: B10d = 2000000 at 2 Amps
- Electrical Connection: 3, 6, 12m cable (UL2464 PVC)
- Sealing: IP 67
- Temperature: $-20^{\circ} \mathrm{C}$ to $+60^{\circ} \mathrm{C}$


## COMITRONIC - BTI



## KORF-SA-MKT - NON-AUTONOMOUS SAFETY SWITCH WITH RFID CODING

- Controls the position of security doors with RFID encoding for wheeled vehicles
- RFID sensor with 16 million codes
- Suitable for metallic environments
- Programmable code through auto-learning (no software or PC)
- Level of performance with AWAX controller: up to PL = e
- Safety category: up to 4 (EN 954-1) with AWAX controller
- Time to dangerous failure: MTTFd = 40 years
- Sealing: IP 68
- Standing room temperature: $-30^{\circ} \mathrm{C}$ to $+50^{\circ} \mathrm{C}$.
- Storage temperature: $-40^{\circ} \mathrm{C}$ to $+85^{\circ} \mathrm{C}$
- Certificate: E2 10R-04 14053 (UTAC)


## ECOMITRONIC - BTI



# Non Contact Safety Switches - Coded - RFID Latching - Safety Proximity Switches \& Safety Relays 

## INDUCTIVE SAFETY PROXIIMITY SWITCH

- Double-sided detection with inverted output.
- Avoids unintentional triggering
- Cable outlet control (crushing, connection)
- Anbient temperature: $-25^{\circ} \mathrm{C}+70^{\circ} \mathrm{C}$, Storage $-30^{\circ} \mathrm{C}+80^{\circ} \mathrm{C}$
- Protection class: IP67 (IEC)
- Protection: Reserse polarity protection, Short-circuit protection
- Switching frequency: 1000 Hz
- Temperature variation: Max +- 20\% of an operation range at $+23^{\circ} \mathrm{C}$ in $-25^{\circ} \mathrm{C}$ to $+70^{\circ} \mathrm{C}$ temperature range


## Є COMITRONIC - BTI



## AWAX 26XXL - SAFETY RELAYS - SELF CHECK BOK

- Sensor controller on Acotom process / mechanical switches / emergency stops
- Output contacts $8 \mathrm{~A} / 250 \mathrm{~V}$
- Ultra-fast "DLC" short-circuit check :

Short-circuit detection in $2 \mu \mathrm{~s}$, self-resetting

- Safety management in a compact 22.5 mm format
- Anti-gluing control of the reset button
- 12 V version for embedded applications
- Performance level with AWAX controller: PL = e
- Safety category: 4
- Safety Integrity Level: SIL 3



## COM3C - TWO-HAND CONTROL EN 574 AND ISO 13849-1

- Two-hand control EN 574 and ISO 13849-1
- Version for mechanical or touch buttons KOB101T
- Controls the position of the press
- Removable terminals
- Mounting: IP 20 electrical box
- Electrical connection: Maximum 14 AWG $\left(2.08 \mathrm{~mm}^{2}\right)$ / 250V minimum
- Temperature: $-20^{\circ} \mathrm{C}$ to $+40^{\circ} \mathrm{C}$
- Performance level with AWAX controller: PL = e
- Safety category: IIIC
- Safety Integrity Level: SIL 3



# Non Contact Safety Switches - Coded - RFID Latching - Safety Proximity Switches \& Safety Relays 

## MP MAGNETIC SAFETY INTERLOCK SWITCH

- Glassfiber Reinforced Plastics housing
- High resistance to vibration
- High switching capacity
- EN 61496-1/EN 50022
- Ambient temperature : -25 to $70^{\circ} \mathrm{C}$ (-13 to $158^{\circ} \mathrm{F}$ )
- Degree of protection : IP68 (IEC/EN 60529)
- Switching voltage : 100V AC/DC
- Impact strength: $50 \mathrm{~g} / \mathrm{ms}$
- Shock resistance : $11 \mathrm{~g} / \mathrm{ms}$
- EMC compliance : In acc. with

SUNS EN 61496-1/EN 50022 Part A



## MF SERIES RFID NON-CONTACT SAFETY SWITCH

SUNS<br>INTERNATIONAL, LLC industrial switches

- Actuation without contact, using RFID technology
- Digitally coded actuator
- 3 LEDs for status display
- Connecting up to 32 sensors in series
- Short-circuit protection, polarity-reversing protection
- Safety category: up to SIL 3, PL e and Category 4
- Operating temperature: $-25 \sim+70^{\circ} \mathrm{C}\left(-13 \sim 158^{\circ} \mathrm{F}\right)$
- Switching frequency: 2 Hz
- Sensing distance: 10 mm
- Enclosure proctection: IP69K



## SAFETY CODED MAGNETIC SENSOR WITH ACTUATOR

- Housing: Polymer housing, right side connection
- Contacts: 2NC (with door closed)
- Type of cable or connector: PVC cable, length 0.1 m with M12 connector, 4 pole
- Actuator: Actuation distance 5 mm
- cULus Certificate
- EAC Certificate
- EC Declaration of Conformity
- TÜV SÜD Certificate



## LITERATURE

- Safety Devices


# Non Contact Safety Switches - Coded - RFID Latching - Safety Proximity Switches \& Safety Relays 



## LITERATURE

- Safety Devices


## CONTACTLESS SAFETY TECHNOLOGY

The use of contact-free locking facilities, in particular for monitoring movable safety guards, offers the following advantages:

- Simple adjustment
- No broken actuator
- High degree of tolerance to vibrations, moved doors and hoods
- No wear
- Exceptionally easy cleaning

BERNSTEIN offers two different technologies in the area of contactless safety technology:

- Safety sensors on RFID basis (SRF)
- Safety sensors on magnetic basis (MAK series)


SRF
RFID


Safety Magnetic
Controllers


Coded magnetic switches

## Cable \& Rope Operated Switches

## CABLE/ROPE OPERATED SWITCHES WITH BROKEN CABLE DETECTION

"HEAVY DUTY - A600 / N300"
CSA-US (File LR 3648)
Certified under CSA C22.2 - File \# LR 3648
CE Compliant IEC/EN 60947-5-5
Third party certified under DEMKO Certificate \# D-01901-M1 UL/NISD File E357870, Sec. 2
Trip Force
52 lb
Operating Force Between 10 ft . Supports $\quad 15.0 \mathrm{lb}$
Connector
None
Indicator Light
Contact Arrangement
Direction of Pull


04962-100

## CABLE OPERATED SWITCHES

"HEAVY DUTY - A600 / N300"
Listed under UL 508 - File \# E 58589
Certified under CSA C22.2 - File \# LR 3648
CE Compliant IEC/EN 60947-5-1
Third party certified under DEMKO Certificate \# D-01474-M1
Color
Trip Force
Black
Trp Force Fon 10 ft Suppor 3 lb
Operating Force Between 10 ft . Supports
3 lb
Reset Type
Contact Arrangement
$\mathrm{NO}+\mathrm{NC}$

> 04944-000


## CABLE OPERATED SWITCHES

"HEAVY DUTY - A600 / N300"
Listed under UL 508 - File \# E 58589
Certified under CSA C22.2 - File \# LR 3648
CE Compliant IEC/EN 60947-5-1
Third party certified under DEMKO Certificate \# D-01474-M1
Color Black
Trip Force $\quad 15 \mathrm{lb}$
Operating Force Between 10 ft . Supports 3.8 lb
Reset Typ Manual
Contact Arrangement
$2 N O+2 N C$

## LITERATURE

- Cable Operated Switches


## Cable \& Rope Operated Switches

## CABIE OPERATED SWITCHES

"HEAVY DUTY - A600 / N300"
Listed under UL 508 - File \# E 58589
Certified under CSA C22.2 - File \# LR 3648
CE Compliant IEC/EN 60947-5-1
Third party certified under DEMKO Certificate \# D-01474-M1

| Color | White |
| :--- | :--- |
| Trip Forc | 15 lb |
| Operating Force Between 10 ft . Supports | 3 lb |
| Reset Type | Manual |
| Contact Arrangement | NO + NC |



## NEW BI-DIRECTIONAL CABLE OPERATED SWITCH

"HEAVY DUTY - A600 / N300"
CSA-US (File LR 3648)
Certified under CSA C22.2 - File \# LR 3648
CE Compliant IEC/EN 60947-5-1
Third party certified under DEMKO Certificate \# D-01899

Trip Force
Contact Arrangement
Type / Style
$52 \mathrm{lb}(23.6 \mathrm{~kg})$ $2 \mathrm{NO}+2 \mathrm{NC}$
Bi-Directional


## CABLE OPERATED SWITCHES WITH DOUBLE FLLGG INDICATORISJ OR LATCH PLATES

"HEAVY DUTY - A600 / N150"
Listed under UL 508 - File \# E 58589
Certified under CSA C22.2 - File \# LR 3648
CE Compliant IEC/EN 60947-5-1
Third party certified under DEMKO File \# FI-17205
Trip Force per End $\quad 25 \mathrm{lb}$
Flag End Replaceable Both
Operating Force Between 10 ft . Supports 6 lb
Reset Type
Contact Arrangement
Contact Arrangement Each End
Type / Style
Manual
$\mathrm{NO}+\mathrm{NC}$
$\mathrm{NO}+\mathrm{NC}$
$\mathrm{NO}+\mathrm{NC}$
Flags
04954-202

## REES

## LITERATURE

- New Bi-Directional Cable Operated Switch


## Cable \& Rope Operated Switches

## ROPE OPERATED SEQUENCE SWITCHES

"HEAVY DUTY - A600 / N150"
Listed under UL 508 - File \# E 58589
Certified under CSA C22.2 - File \# LR 3648
CE Compliant IEC/EN 60947-5-1
Third party certified under DEMKO Certificate \# D-01891

Trip Force
10 lb
Operating Force Between 10 ft . Supports
1.2 lb

Reset Type
Manual
Contact Arrangement
$\mathrm{NO}+\mathrm{NC}$


## ROPE OPERATED SWITCH [ A600 / N150]

"HEAVY DUTY - A600 / N150"

Listed under UL 508 - File \# E 58589
Certified under CSA C22.2 - File \# LR 3648

Trip Force
Operating Force Between 10 ft . Supports
Operating Type
Contact Arrangement

10 lb
1.2 lb

Momentary
Held NO Block \#50702-000

04958-100

## TECHNICAL STANDARDS

The main standards references for conveyor applications are:

- ASME B20.1, 2015. Safety Standard for Conveyors and Related Equipment
- EN 617:2001+A1:2010, Continuous handling equipment and systems - Safety and EMC requirements for the equipment for the storage of bulk materials in silos, bunkers, bins and hoppers
- EN $618: 2002+\mathrm{A1}: 2010$, Continuous handling equipment and systems - Safety and EMC requirements for equipment for mechanical handling of bulk materials except fixed belt conveyors
- EN 619:2002+A1:2010, Continuous handling equipment and systems - Safety and EMC requirements for equipment for mechanical handling of unit loads
- EN 620:2002+A1:2010, Continuous handling equipment and systems - Safety and EMC requirements for fixed belt conveyors for bulk materials
Emergency stop devices (buttons, pull-cords and foot pedals) are covered by IEC 60947-5-5, Low voltage switchgear and control gear Part 5-5: Control circuit devices and switching elements-Emergency stop device with mechanical latching function. Each of these standards includes requirements for the emergency stop systems associated with conveyor systems. It's worth noting that there are other applications for pull-cord emergency stop devices that are not conveyor applications at all.


## LITERATURE

- Rope Operated Sequence Switches


## Cable \& Rope Operated Switches

## CP7 SERIES CABIE PUIL SAFETY SWITCHES

- Max span 80 meter (262 ft)
- Compatible to EN418 required with emergency stop button on the surface cover
- Works in two direction:tripped when the wire is pulled or breaking.
- Available in One-way actuation version
- Optional indicator light to show the state.
- Positive Opening of NC contacts
- Conform to EN60947-5-5, ISO13850, ISOTR 12100, IEC 60947-5-1, EN 418


## SELECTION GUIDE



Please contact us for other contact block configuration

SUNS ${ }^{\text {min }}$
INTERNATIONAL, LLC
INDUSTRIAL SWITCHES

| Operating Frequency | Mechanical: $\quad 120 \mathrm{ops} / \mathrm{min}$ Electrical: $\quad 30 \mathrm{ops} / \mathrm{min}$ |
| :---: | :---: |
| Insulation Resistance | >100Mne500V DC |
| Contact Resistance | $<25 \mathrm{mQ}$ (initial value) |
| Rated Current/Voltage | th:10A 600V AC (EN60947-5-1) |
|  | AC15 A600/DC13 Q300 |
| Dielectric Strength | 1000VAC for 1 min between current carrying parts 2500 VAC for 1 min between non-current carrying parts |
| Service Life | Mechanical: $\quad 1.0 \times 10^{6}$ (operations) Electrical: $\quad 5 \times 10^{5}$ (operations) |
| Operating Temperature | $-25 \sim+80^{\circ} \mathrm{C}\left(-13 \sim 176^{\circ} \mathrm{F}\right)$ |
| Humidity | <95\%RH |
| Degree of Protection | IP67 |

## CP8 SERIES CABLE PUIL SAFETY SWITCHES

- Max span 160m (524 ft) for CP8171,80m (262 ft) for CP8171R and CP8171L
- Compatible to EN418 required with emergency stop button on the surface cover
- Works in two direction:tripped when the wire is pulled or breaking.
- Optional indicator light to show the state.
- Positive Opening of NC contacts
- Conform to

EN60947-5-5, ISO13850, ISOTR 12100, IEC 60947-5-1, EN 418


SUNS ${ }^{\text {m }}$ INTERNATIONAL, LLC INDUSTRIAL SWITCHES

| Insulation Resistance | >100M 3 9500V DC |
| :---: | :---: |
| Contact Resistance | $<25 \mathrm{~m}$ Q (initial value) |
| Rated CurrentVoltage | thel10A 600V AC (EN60947-5.1) |
|  | AC15 A600 / DC13 Q300 |
| Dielectric Strength | 1000 VAC for 1 min between current carrying parts 2500VAC for 1 min between non-current carying parts |
| Service Lite | Mechanical: $1 \times 10^{6}$ (operations) <br> Electrical: $5 \times 10^{5}$ (operations) |
| Operating Temperature | $-25 \sim+80^{\circ} \mathrm{C}\left(-13 \sim 176^{\circ} \mathrm{F}\right)$ |
| Humidity | <95\% |
| Degree of Protection | \|P67 |

## SELECTION GUIDE

| CP 81 | 1 | SL6 | A - | R | 2 | 24 | E | N |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Pull direction |  | Conduits |  |  | LED | Emergency | One-way |
|  |  | - 4NC/2NO | - A: 1/2NPT |  | - Blank: Momentary | - Blank | stop button | or two-way |
|  | -71L: Loft |  | - C:M20 |  | R: Manual reset | - 24: 24VDC |  | - Blank: Two-way |
|  | -71R: Right |  |  |  |  | - 120: 120VAC |  | Acluation |
|  | -71: Left and right |  |  |  |  | - 240: 240 VAC | -Blank | N: One-way Actuation |
|  |  |  |  |  |  | - $240 \mathrm{OL}=12-250$ | -E:Emerger | stop button |

## Cable \& Rope Operated Switches

CABLE PUIL SAFETY SWITCHES [ONE - WAY ACTUATION]

SUNS:
INDUSTRIAL SWITCHES


SND2170-R


Order Cove
SND2170-SL-_R SND2170-SL1-_R SND2170-SL2-_R

## Contuct block

SND2170-SL7-_R

| SL | $\Theta$ | slow action | $1 \mathrm{NO}+1 \mathrm{NC}$ |
| :--- | :--- | :--- | :--- |
| BBM |  |  |  |
| SL 1 | $\Theta$ | slow action | $1 \mathrm{NO}+1 \mathrm{NC}$ |
| MBB |  |  |  |
| SL 2 | $\Theta$ | slow action | 2 NC |
| SL 7 | $\Theta$ | slow action | $2 \mathrm{NVC}+1 \mathrm{NO}$ |



## Cable \& Rope Operated Switches

## ROPE SAFETY SWITCH WITH RESET FOR EMERGENCY STOP

- Housing:
- Contact block:
- Head:

Metal housing, three threaded M20x1,5 conduit entries (FL series) $1 \mathrm{NO}+1 \mathrm{NC}$ slow action (B33)

- Protection degree: IP67 according to EN 60529
- Positive opening:

Yes

- CCC Certificate
- cULus Certificate
- EAC Certificate
- EC Declaration of Conformity
- IMQ Certificate



## ROPE SAFETY SWITCH WITH RESET FOR EMERGENGY STOP

- Housing:
- Contact block:
- Head:
- Protection degree: IP67 according to EN 60529
- Positive opening:
- CCC Certificate
- cULus Certificate
- EAC Certificate
- EC Declaration of Conformity
- IMQ Certificate

Yes
Metal housing, three threaded
M20x1,5 conduit entries (FL series)
$1 \mathrm{NO}+1 \mathrm{NC}$ slow action (B33)
Rope with reset for emergency stop, left transversal head
P67 according to EN 60529

## Cable \& Rope Operated Switches

## SAFETY ROPE PULL SWITCH SRO

MORE SAFETY ON THE PRODUCTION LINE
When it comes to maximum safety on the assembly line, in the production line, or directly at the machine, the Safety Rope Pull Switches from BERNSTEIN AG are a reliable and proven solution. BERNSTEIN has now added a particularly small and compact version to the product family of safety rope pull switches. Thanks to its modular design, the new SRO (Safety Rope Pull) is extremely space-saving as well as being highly versatile. The modular principle has the advantage of always being able to offer exactly the right product for a specific customer application.

## PRODUCT HIGHLIGHTS

- As metal or thermoplastic variant or as a combination of both
- Compact design for confined spaces
- Emergency stop button upon request
- Max. rope length of 30 m


## TECHNICAL DATA

- Metal or thermoplastic enclosure
- Up to 4 contacts
- Ambient temperature: $-30^{\circ} \mathrm{C}$ to $+75^{\circ} \mathrm{C}$



## Standard rope pull switch

 with IN73 (glassfibre reinforced thermoplastic) or MN78 (metal enclosure)

## Cable \& Rope Operated Switches

## WEATHER-PROOF ALL-ROUNDER SRM ROPE PULL SWITCH

## ( 5 ) BERNSTEIN

Even under extreme conditions, such as major temperature fluctuations, the SRM rope pull switch continues to work reliably.


## TECHNICAL DATA SRM

- Rated insulation voltage Ui 250 V AC
- Rated operating voltage Ue 240 V
- Utilization category / switching capacity:AC-15, $240 \mathrm{~V} / 3 \mathrm{~A}$; $120 \mathrm{~V} / 6 \mathrm{ADC}-13,250 \mathrm{~V} / 0,27 \mathrm{~A}$; $125 \mathrm{~V} / 0,55 \mathrm{~A}$
- Mechanical switching frequency max. $\leq 20 / \mathrm{min}$.
- Mechanical service life $1 \times 105$ switching cycles
- B10d: $2 \times 105$ million
- Admissible ambient temperature $-30^{\circ} \mathrm{C}$ to $+80^{\circ} \mathrm{C}$
- Protection class IP67 in accordance with IEC 60529
- Aluminium pressure die-casting enclosure
- Rope pull switch manufactured in accordance with IEC 60947-5-5 and ISO 13850
- Stable and durable metal housing (Aluminium pressure die-casting)
- Suitable for outdoor use
- Can be deployed at temperatures between $-30^{\circ} \mathrm{C}$ and $+80^{\circ} \mathrm{C}$
- Easy to fasten due to hole template patternscommon for most rope pull switch models
- Flexible handling with three M20 x 1.5 cable entries
- Easy installation due to the maximum connection space
- Up to four positively driven NC contacts
- Separate-action built-in switches
- Protection class IP67
- AS-i Safety at Work versions available



## Cable \& Rope Operated Switches

## [continued] <br> WEATHER-PROOF ALL-ROUNDERSRM ROPE PULL SWITCH

| Designation | Contact type | Max. span length | Features |
| :---: | :---: | :---: | :---: |
| SRM-U1Z/U1Z-QF-300 | 2NC / 2NO | 75 m | Quick-Fix QF |
| SRM-A2Z/U1Z-QF-300 | 3NC/1NO | 75 m | Quick-Fix QF |
| SRM-U1Z/U1Z-QF-300-E | 2NC / 2NO | 75 m | Quick-Fix QF, remote indicator E |
| SRM-A2Z/U1Z-QF-300-E | 3NC/1NO | 75 m | Quick-Fix QF, remote indicator E |
| SRM-U1Z/U1Z-QF-175 | 2NC / 2NO | $37,5 \mathrm{~m}$ | Quick-Fix QF |
| SRM-A2Z/U1Z-QF-175 | 3NC/1NO | 37,5 m | Quick-Fix QF |
| SRM-U1Z/U1Z-QF-175-E | 2NC / 2NO | 37,5 m | Quick-Fix QF, remote indicator E |
| SRM-A2Z/U1Z-QF-175-E | 3NC/1NO | $37,5 \mathrm{~m}$ | Quick-Fix QF, remote indicator E |
| SRM-U1Z/U1Z-LU-300 | 2NC/2NO | 75 m | Eye LU |
| SRM-A2Z/U1Z-LU-300 | 3NC/1NO | 75 m | Eye LU |
| SRM-U1Z/U1Z-LU-300-E | 2NC/2NO | 75 m | Eye LU, remote indicator E |
| SRM-A2Z/U1Z-LU-300-E | 3NC/1NO | 75 m | Eye LU, remote indicator E |
| SRM-U1Z/U1Z-LU-175 | 2NC/2NO | 37,5 m | Eye LU |
| SRM-A2Z/U1Z-LU-175 | 3NC/1NO | $37,5 \mathrm{~m}$ | Eye LU |
| SRM-U1Z/U1Z-LU-175-E | 2NC / 2NO | $37,5 \mathrm{~m}$ | Eye LU, remote indicator E |
| SRM-A2Z/U1Z-LU-175-E | 3NC/1NO | $37,5 \mathrm{~m}$ | Eye LU, remote indicator E |
| AS-i SRM-QF-175 |  | $37,5 \mathrm{~m}$ | Quick-Fix QF, AS-i Safety at Work |
| AS-i SRM-QF-300 |  | 75 m | Quick-Fix QF, AS-i Safety at Work |
| AS-i SRM-LU-175 |  | $37,5 \mathrm{~m}$ | Eye LU, AS-i Safety at Work |
| AS-i SRM-LU-300 |  | 75 m | Eye LU, AS-i Safety at Work |

SRM-U1Z/U1Z-QF-300-E-...


$\square$
U12

.. For special types please refer to separate information and product documentation

- E Electronics for monitoring rope tension

300 Newton max. spring force for tensioning rope
LU Pulling eye with rope thimble
QF "Quick-Fix" quick-action fastening and quick-connect system
$\mathbf{U 1 Z}=1 \mathrm{NC} / 1 \mathrm{NO} ; A 2 Z=2 \mathrm{NC}$ Switching function of built-in switch S2
$\mathrm{U} 1 \mathrm{Z}=1 \mathrm{NC} / 1 \mathrm{NO} ; \mathrm{A} 2 \mathrm{Z}=2 \mathrm{NC}$ Switching function of built-in switch S1
SRM Safety rope pull switch (switching device range)

## Foot Switches

## FOOT SWITCH WITH CONTROLLER OUTPUT [ANALOGUE OUTPUT]

- Variable controlling current and voltage output that is directly proportional to the pedal position.
- Teachable signalling output is additionally activated if a certain pedal position which has been adjusted before has been reached.
- Analogue output can be delivered in a $0-5 \mathrm{~V}, 0-10 \mathrm{~V}, 0-20 \mathrm{~mA}$ or 4-20 mA version.
- Available in single pedal version.



## FOOT SWITCHES WITH SAFETY LOCK WITH MANUAL RELEASE

- Pedal pressed up to pressure point: The make contact is closed and the work process is started.
- Pedal pressed beyond resistance of the pressure point in an emergency situation: The make contact is interrupted and locked, the work process is interrupted. In this phase the lock remains in the Off position even when the pedal is not pressed. This reliably prevents uncontrolled restart of the machine or moving parts.
- Release:

Only after the hazardous situation has been remedied does manual release (pushbutton on the side of the enclosure) release the contacts again and the work process can be restarted by pressing the pedal as far as the pressure point.


## SINGLE FOOT SWITCH WITH PROTECTION

- Housing:
- Protection type:
- Contact block:
- Protection degre: IP53
- Positive opening: Yes
- EAC Certificate
- EC Declaration of Conformity

Polymer housing, one threaded conduit entry M20x1,5
With protection, Yellow colour (RAL 1023) with M25 hole for VF KIT31

## 1NO+1NC fast action

Yes

## LITERATURE

- Safety Devices


## Foot Switches

## THREE-POSITION SAFETY FOOT SWITCHES [FF-61G-SP-S-ZR SINGIL PEDAL]

These foot switches are designed for some critical applications such press brake machine control. These footswitches have at least one of the pedals with 3 positions, with a pressure point, to control dangerous movements.For press brake control as an example:press the pedal to lower down a press brake. It has 4 working contacts ( $2 \mathrm{NC}+2 \mathrm{NO}$ ) to drive the movement andone safety switches ( 1 positive opening NC contact +1 NO ) to stop the movement. Pressing the foot pedal, untilthe pressure point where resistance is noticeable. This allows the changeover of the 2 working contacts andpress is moving downward. When press harder beyond the pressure point, the 2 working contacts return to theirfirst position and the positive opening safety contact is activated as redundant safety circuit in order to initiateimmediately the dangerous movement. A restart of the machine is only possible after releasing the foot switch.

## SPECIFICATIONS



| Operating Frequency | $60 \mathrm{ops} / \mathrm{min}$ |
| :--- | :--- |
| Insulation Resistance | $>100 \mathrm{MW} @ 500 \mathrm{~V}$ DC |
| Contact Resistance | $<25 \mathrm{~mW}$ |
| Rated Current/Voltage | 10A/600V AC A600/AC15 Q300/DC13 |
| Inrush Current | Complies with IEC947-5-1: AC15/DC13 |
| Dielectric Strength | 1000VAC for 1 min between current carrying parts <br> 2500VAC for 1 min between non-current carrying parts |
| Service Life | Mechanically $\quad 1 \times 10^{6}$ (operations) <br> Electrically $\quad 5 \times 10^{5}$ (operations) |
| Operating Temperature | -30~+80 ${ }^{\circ} \mathrm{C} \quad\left(-22 \sim 176^{\circ} \mathrm{F}\right)$ |
| Degree of Protection | IP65, NEMA type 2,4,13 <br> (IP68, NEMA type 6,6P available on request) |

DIMENSIONS (MM)


ACTUATION SEQUENCE DIAGRAM:

Start Position
Before PressurePoint
After Pressure Point

## Foot Switches

## FS-6 SERIES SAFETY FOOT SWITCHES WITH EMERGENCY STOP

This is a special design foot switch with twostage momentary contacts. There is noticableresistance between stage one and stage twoWhen pressing the pedal without reaching thepressure point, the foot switch operates in thenormal model. In case of emergency, the userdepresses the foot pedal even harder instead ofreleasing the pedal. This special safety foot switchwill break the electrical contact and lock. Themanual reset button needs to be pushed beforeit can operate in normal model again. This canquickly prevent damage to the machine or injury to human life.

## OPERATING SEQUENCE:


"OFF"
Step 1: The pedal is not depressed. The contacts are open. The machine is turned off.

## "ON"

Step 2: To start the machine, the pedal must be depressed until the "pressure point", where resistance is noticeable.
"EMERGENCY - OFF"
"RESET"
"ON"

Step 3: In an emergency, if the pedal is depressed beyond the pressure point, the machine will stop. Beyond the pressure point, the contacts are locked in the "OFF". Position. The machine cannot operate at this time. Note: The machine can also be stopped by releasing the pedal instead of depressing harder. (Back to Step 1)
Step 4: The push button on the side of the foot switch must be pushed by hand to enable the foot switch to start the machine function again.
Step 5: Return to condition described in Step 2.

## DIMENSIONS



## Foot Switches

## FS-6 SERIES SAFETY FOOT SWITCHES

- Robust aluminum alloy die cast body
- Choice of different type of contact blocks
- Galvanically separated contacts
- Double break contacts
- Screw terminals with self-lifting clamps for easy wiring
- Positive opening of NC contacts
- Safety reset option available
- UL/CSA approval(E216958)
- Threaded hole available in:

PG13.5, M20x1.5 and 1/2NPT

## SELECTION GUIDE



## DIMENSIONS

## $-)^{T M}$ <br> INTERNATIONAL, LLC

 INDUSTRIAL SWITCHES| Operating Frequency | $60 \mathrm{ops} / \mathrm{min}$ |
| :--- | :--- |
| Insulation Resistance | $>100 \mathrm{MR} @ 500 \mathrm{~V}$ DC |
| Contact Resistance | 25 mR (initial) |
| Rated Current/Voltage | 10A/600V AC |
| A600/AC15 Q300/DC13 |  |
| Inrush Current | Complies with IEC947-5-1: AC15/DC13 |



FS-61G (Anti-trip)




## Foot Switches

## FS-8 SERIES WIRELESS MEDICAL FOOT SWITCHES

- 2 wireless technologies available:
- 2.4GHz RF wireless
- Bluetooth wireless
- Removes clutter of wires
- Easy to clean and move around
- Multiple systems can be used in close vicinity
- RF wireless uses frequency-hopping spread spectrum (FHSS) RFID technology
- Transmitter powered by 4 (AA) batteries
- Long battery life


## SELECTION GUIDE

$$
\frac{\mathrm{RF}}{\frac{100}{\text { Wireless Technology }} \begin{array}{l}
\text { - BT: Bluetooth } \\
- \text { RF: } 2.4 \mathrm{GHz} \mathrm{RF}
\end{array}} \begin{aligned}
& \text { Rasge } \\
& - \text { Blank: } 10 \text { meters } \\
& 100: 100 \text { meters }
\end{aligned}
$$



DIMENSIONS

## $\underbrace{-1}$ <br> INTERNATIONAL, LLC

 INDUSTRIAL SWITCHES| Operating Frequency | $60 \mathrm{ops} / \mathrm{min}$ |
| :--- | :--- |
| Insulation Resistance | $>100 \mathrm{M} \Omega @ 500 \mathrm{~V}$ DC |
| Contact Resistance | $<25 \mathrm{~m} \Omega$ (initial) |
| Rated Current/Voltage | Receiver output 10A/250VAC |
| Service Life | Mechanically $1 \times 10^{6}$ (operations) |
| Operating Temperature | $-10 \sim+80^{\circ} \mathrm{C}\left(14 \sim 176^{\circ} \mathrm{F}\right)$ |
| Transmission Frequency | $2.40-2.483 \mathrm{GHz}$ |
| Protocols | IEC802.15.1 |
| Standards | EN 300 328,V1.7.1, EN612326-1(2006); |
| Degree of Protection | IP20 |



## Safety - Mats, Edges, Bumpers, Controllers

## SAFETY EDGES

The SENTIR edge safety edges of ASO Safety Solutions are pressuresensitive sensors applied to ensure the safety of closing edges at potential crushing or shearing points which are prone to accidents. They may be installed in the case of automatic gates, machines and other facilities for handling equipment or moving stage elements in order to protect individuals from bodily harm or machinery from damage.


## SAFETY BUMPERS

Adaptable, extremely versatile and totally reliable. These qualities are the hallmarks of our SENTIR safety bumper. They are highly valued as a guarantee of safety in transport vehicles and industrial trucks, highshelf warehouses, production lines, mobile systems. In fact, whenever great flexibility of safety equipment is required and a wide selection is demanded in terms of form, color and size.

Stops
Reliably and within Seconds.

## SAFETY MATS

SENTIR mat safety mats are laminar sections which are used to safeguard dangerous areas in the entire industrial and production automation. Stepping on the mat triggers an immediate "stop" signal in order to prevent endangering movements.

A single compound polyurethane material assures impermeability against oils, water and dirt. An anti-slip surface is also implemented into the design. Optional checkered surfaces in aluminum or high-grade steel can be used in areas where high mechanical demand is placed on the upper SENTIR mat surface. Individual design, various switching zones and full or partly colored mats are possible.


## Safety - Mats, Edges, Bumpers, Controllers

## SAFETY MATS

- Surface switch for convenience and safety applications
- System is simple to install
- Resistant to the effects of weather
- Thickness: $0.4^{\prime \prime} / 1 \mathrm{~cm}$
- Materials: Silicone free. PVC free upon request.
- Insulation strength: > 1500 VAC
- Isolation class: IEC IP67

For safe activation and deactivation of machines, devices and automatic doors. BBC Bircher Smart Access contact mats are used for detecting people or objects within a defined area. In conjunction with the EsMatix 3 safety switching device, they form a certified system for safeguarding danger zones, and thus for protecting people. In combination with the EsMatix 3 safety switching device, the BBC Bircher Smart Access safety contact mat according to EN 13856-1 is type-tested and corresponds to PLe, cat. 3 according to EN ISO 13849-1.

Reglomat


## SENSING EDGES

Electrical sensing edges for automatic gates, doors, public transport and industry. Suitable profile for every application. High mechanical load capacity. Conformity acc. to EN 12978.

Electrical sensing edges from BBC Bircher Smart Access are used for protecting crushing and shearing points on automatic doors, gates and grids. Profiles of different sizes in combination with various switching devices protect people and objects safely and reliably according to the applicable standards.

They are based on the tried-and-tested principle of the drawing the contact strip into the rubber profile. Even with only minimal pressure, the conductive rubber profiles are pressed against one another and the opening pulse is forwarded to a switching device or a transmission system. The technical design ensures high reliability even in unusual applications.

## BIRCHER

Reglomat


## SAFETY CONTROLLERS

- Easy installation
- Can be configured for a wide range of applications
- High level of safety thanks to tried-and-tested technology

Safety controllers from BBC Bircher Smart Access monitor the connected contact mats and safety edges for actuation and interrupts. They are also monitored for a change of the quiescent current. The clear LED and LCD displays show the status of the connected sensors at a glance. Since programming is performed at the factory and adjustments are really easy for the user to make, you can rely on getting your switching device started up quickly.


Reglomat


# Safety - Mats, Edges, Bumpers, Controllers 

## SAFETY RELAYS

ELMON safety relays serve to monitor tactile sensors such as SENTIR safety mats, edges and bumpers. All control units comply with EN 13849-1 and the new Machinery Directive 2006/42/EC. Ongoing research and development and the use of modern technology ensure a permanent improvement of our ELMON relays.


## SAFETY MAT MODULES

Switching device for safety-oriented safety mats and safety edges
Safety mat modules from DOLD to secure large hazardous areas and to serve as access controls to machines. These safety devices immediately stop hazardous movements when triggered by an actuating force, such as when a person steps on them, by issuing a control command that is conducted via the DOLD evaluation module. The safety mat modules are in accordance with safety category 4 / PL e as per DIN EN ISO 13849. Their functionality is continuously monitored and can be individually adjusted to the areas to be protected.


## SAFETY MAT DISTANCE CALCULATION

The minimum distance calculated is the minimum horizontal distance from the outer edge of the Safety Mat detection zone to the nearest part of the hazard.
THE EUROPEAN PREN-999 FORMULA FOR FLOOR MOUNTED SAFE-GUARDING MATS IS:
$S=(1600 \times T) 1200 \mathrm{~mm}$
S is the minimum safety distance is millimeters.
The factor of 1600 is based on the standard assumption of $1600 \mathrm{~mm} / \mathrm{s}$ as the approach speed.
$T$ is the overall stopping time in seconds.
The added 1200 mm take into account stride length and arm reach.
The overall stopping time T is made up of two parts: $\mathrm{T}=\mathrm{t} 1 \mathrm{xt2}$
(11) is the maximum time between actuation of the sensing function and the output signal switching devices being in the OFF state. For the RT6, $\mathrm{t} 1=20 \mathrm{mS}$
(t2) is the response time of the machine i.e. the time required to stop the machine of remove the risks after receiving the output from the ME151-4 Safe-Guarding Mat.
The response time of the machine used is the calculations needs to be the worst case time. Some machines have inconsistent response times, which are dependent upon mode of operation, nature of the workpiece and point in the operating cycle at which stopping is initiated. An allowance should be made for wear in brakes etc., if this can affect the response time. An allowance for further delays in the machine control system may be required in some circumstances.

## Press Brake Safety

## THREE-POSITION SAFETY FOOT SWITCHES


(FS-61G-SP-S-1ZR Single Pedal)
These foot switches are designed for some critical applications such press brake machine control. These foot switches have at least one of the pedals with 3 positions, with a pressure point, to control dangerous movements. For press brake control as an example: press the pedal to lower down a press brake. It has 4 working contacts ( $2 \mathrm{NC}+2 \mathrm{NO}$ ) to drive the movement and one safety switches (1 positive opening NC contact +1 NO ) to stop the movement. Pressing the foot pedal, until the pressure point where resistance is noticeable. This allows the changeover of the 2 working contacts and press is moving downward. When press harder beyond the pressure point, the 2 working contacts return to their first position and the positive opening safety contact is activated as redundant safety circuit in order to initiate immediately the dangerous movement. A restart of the machine is only possible after releasing the foot switch.

Dimensions (mm)


Specifications

| Operating Frequency | $60 \mathrm{ops} / \mathrm{min}$ |
| :--- | :--- |
| Insulation Resistance | $>100 \mathrm{MW@500V} \mathrm{DC}$ |
| Contact Resistance | $<25 \mathrm{~mW}$ |
| Rated Current/Voltage | $10 \mathrm{~A} / 600 \mathrm{~V}$ AC |
| A600/AC15 $\quad$ Q300/DC13 |  |
| Inrush Current | Complies with IEC947-5-1: AC15/DC13 |
| Dielectric Strength | 1000VAC for 1 min between current carrying parts <br> 2500VAC for 1 min between non-current carrying parts |
| Service Life | Mechanically $\quad 1 \times 10^{6}$ (operations) <br> Electrically$\quad 5 \times 10^{5}$ (operations) |

## Actuation Sequence Diagram:



## DOLD 戙


B Baycien
CONTRINEX SUNS INTERNATIDNAL ，LLC －1）pizzato ᄃ氟І
The Switch Company

Es Electrotech

## REES

IUNE INESEIK

An马GMAリア！

# Sensors／ Controls／ Automation 



## MONITORING DEVICES

## Early detection of critical limit value violations

DOLD offers you a comprehensive offer of measuring and monitoring relays for your individual needs. The devices detect and provide early notification if critical limits of electrical variables such as current, voltage, power, insulation resistance, et cetera are violated. This allows dangers to people and machinery to be reliably avoided. In addition, the availability of your machines and systems will be increased and production outages will be minimised. DOLD's portfolio ranges from standard devices for the monitoring of individual variables to multifunctional devices to flexible error message systems.


## CONTROL DEVICES

## Control technology for all requirements

DOLD is a pioneer in the field of control technology and present the first SPS in a standard housing in the automobile and tool machine industry in 1978. Benefit from this experience. DOLD offers you a universal portfolio of safe, efficient solutions for control technology that is tailored to your needs. A comprehensive palette of field bus-capable input and output modules are available for you.


## POWER ELECTRONICS

High-performance and flexible device solutions for demanding drive tasks

Demanding drive tasks call for high-performance and flexible device solutions. Power electronics from DOLD contain a wide range of product offers consisting of semiconductor contactors, soft start/brake devices as well as reversing contactors, speed controllers as well as multifunctional motor control devices. The products play a large role in part in modern motor control systems.


## TIMERS

## Safe relays for applications with high demands

DOLD has been a renowned, innovative manufacturer in the field of timer technology for decades that has continued to set standards with its developments. Time relays, that is, relays with specific time response, help you to cost-effectively realised start-up and shut-down delays in industry and building technology. The timer technology from DOLD includes both electro-mechanical and electro-pneumatic time relays as well as electronic devices on the basis of modern microprocessor technology.


## INSTALLATION ELECTRONICS

Innovative installation devices so that you aren't left standing in the dark

DOLD offers you a wide palette of products for installation technology. These basic devices for modern building automation ensure that you aren't left standing in the dark or ensure that energy is reasonably saved over the scope of the lighting controls. Alongside timers and remote switches, energy-saving switches and load shedding relays, additional installation devices, such as Venetian blinds switches, network relays or the innovative hybrid switch relays round out the coordinated DOLD program of installation devices.

## MINISTART

Smart motorstarter UG 9256 With motor protection function

Sophisticated drive tasks require powerful and flexible device solutions. The smart motorstarter UG 9256 of the MINISTART series from DOLD with load monitoring for motors up to 4 kW combines up to six functions in a space saving compact enclosure
 with only $22,5 \mathrm{~mm}$ width. Besides the reversal function our smart motorstarter also offers a soft start / soft stop function, a current monitoring as well as a motor protection function and a galvanic separation by an all pole disconnection when motor is switched off.

- Up to six functions in one device: reversing clockwise / anticlockwise, soft start, current monitoring or motor protection, galvanic separation, soft stop
- Space saving in switching cabinet
- Simple and time-saving commissioning as well as user-friendly operation, optionally with motor protection
- Robust power semiconductors up to 1500 V
- Increased system availability
- Higher lifetime by hybrid building
- Energy saving by fast over current protection


## SAFEMASTER S

## Standstill monitor UG 6946 -

## Safe sensorless standstill monitoring

Detects the standstill of 3-phase and 1-phase motors independent of the direction of rotation. This means sensors such as encoders or proximity switches are not required. Access to the danger zone of a system is only possible by the enabling signal of the standstill monitor after the drive has been switched off and run down. In order to detect a standstill, the remanence voltage induced by the motor windings is evaluated and provides safe standstill monitoring up to Cat. 4 / PL e or SIL 3, even if the motor has already been switched off. Using a conventional release via a time control, dangerous movement could not necessarily be excluded.

- Space saving in switch cabinet due to 22.5 mm width
- Adjustable response voltage 20-400 mV or 0.2-4 V
- Possibility of bridging the standstill monitoring
- Standstill detection without additional sensors
- For safety applications up to Cat. 4 / PL e or SIL 3
- Rotary switches protected by sealable transparent cover
- Can be combined with safety interlock SAFEMASTER STS


## CAPACITIVE SENSORS

## KAS High Performance Sensors

Rechner Sensors' High Performance capacitive sensor line features Rechner's industry leading Quattro EMC protection against interference voltage, electrostatic
 discharge, electromagnetic

PERFORMANCE radiation, and transient burst. The High Performance line also features superior temperature drift characteristics built into the sensor that keeps your machines running accurately on the coldest nights and hottest days. Additionally, High Performance sensors are linearly optimized so that they detect a large range of dielectric products at the same distance. This is useful if your product has the potential for variations in materials or in pellet size: like in mixed grains, or in regrind. All of these features translate into a much more stable signal for the customer. As an additional consequence of the signal stability, High Performance sensors are able to achieve a $25 \%$ larger sensing distance over all of the competition.

## KAS-NL Capacitive NormLine Sensors

The NormLine series maintains some of the same physical features as the HP models, including the 20-turn trim pot for up to 25X more precise adjustment control over traditional 3/4turn trim pots.

NL models are also available in a 32 mm variant which offers $20 \%$ more sensing distance of 30 mm models.


## KS Extreme Temperature Sensors

For applications where an extremely high or extremely low temperature rating is needed, the KS Series operates between $-328^{\circ} \mathrm{F}$ up to $+482^{\circ} \mathrm{F}\left(-200^{\circ} \mathrm{C}\right.$ to $\left.+250^{\circ} \mathrm{C}\right)$. That is an operating temperature between liquid nitrogen and the temperature of standard cooking equipment. This sensor can go where most other sensors can't.

## KAS-26 Series Level Sensors

The 26 Series of capacitive sensors proudly wears Rechner's HP badge while also having unique physical characteristics in shape and size of the sensor that all it to outperform any traditional sensor when it comes to
 ignoring material buildup.

With no moving parts, the 26 Series gets rid of the headaches of other finicky level sensors like: vibrating rods, tuning forks, and paddle wheels which are prone to cavitation, bridging, and seizing with material accumulation.

This series also includes two types of models: 1 model for High dielectric materials (like ketchup and bread batters), and 1 model for everything else (e.g. grains, flours, and alcohol products).

## KFS Level Probes

The KFS Series of level probes operates on Rechner Sensors 3-electrode Principle which has the unrivaled ability to give highly accurate point level detection of highly viscous materials (like hot melt glue up to $+482^{\circ} \mathrm{F}$ ) even in miniature tanks with diameters of only a few inches. The 3-Electrode Principle is a patented technology that uses the tank as part of the sensor to achieve level control as well-defined as 1 mm even when the sensor is coated in dried liquid or glue.


## KXS Extreme Range \& High Temp Sensors

The KXS Series is another member of the 3-Electrode family. By using the metal that the sensor is mounted in, or a metal plate opposite the material you are detecting, sensing distances of 10X those of standard capacitive sensors can be achieved. This allows you to detect far away targets, or targets that have very low dielectric properties (like foam packaging pellets, dielectric as low as 1.1). This series can reach high temperatures up to $+482^{\circ} \mathrm{F}$ by choosing metal + PTFE housing materials.

## EGI-RECHNER LOGIC CONTROLLERS

Rechner's line of EGI Rechner Logic Controllers make integrating sensors into new and existing projects easy. The EGI-RLC series controllers are a DC power supply, relay contacts, and logic - all in one easy to use package. The new Rechner Logic Controllers are the easiest way to integrate sensors in any project. It really is level control made easy.


Part Description: EGI-RLC Article Number: NA7001 Connection type: Screw Terminals Output signal: Relay (SPDT) Operating voltage: $100-240$ VAC in, 24 VDC out

Output current: $\quad 580 \mathrm{~mA}$ max Mounting: DIN Rail Housing material: Plastic Input signal: PNP or NPN IP rating: IP $20 / 30$

The core model (EGI-RLC) simplifies the use of DC sensors by combining a DC power supply, relay, and terminal blocks while also eliminating the need to cut, strip, tin, and label wires. This simplifies installations, saves space, and saves time all while increasing your company's productivity by automating tasks. The relay can be connected to control an AC pump or motor, or even be used to output a signal into a PLC.


| Part Description: | EGI-RLC-MM (Min-Max) |
| :--- | :--- |
| Article Number: | NA7003 |
| Connection type: | Screw Terminals |
| Output signal: | Relay (SPDT) with Min-Max Logic |
| Operating voltage: | $100-240$ VAC in, 24 VDC out |


| Output current: | 580 mA max |
| :--- | :--- |
| Mounting: | DIN Rail |
| Housing material: | Plastic |
| Input signal: | $2 \times$ PNP or NPN (NO only) |
| IP rating: | IP $20 / 30$ |

For a more completely automated system, a min-max model is also available (EGI-RLC-MM). Connect two sensors to this unit and place them at your low level and your high level points in a tank. When the level in the tank drops below the min sensor, the relay will energize to start a pump or a motor. The relay will remain energized until the tank has been filled to the max sensor. At this point, the relay will de-energize and stop the filling process. The relay will remain de-energized until the level drops below the min sensor again. The cycle then repeats to keep the tank filled. This model simplifies a complex task without the need to hire a PLC programmer.

## INDUCTIUE SENSORS

## Inductive BASIC

## $1+1=2$

Inductive MINIATURE


Inductive HIGH PRESSURE up to 1000 bar peak


## Inductive WASHDOWN



## Inductive DOUBLE-SHEET



## Inductive MARITIME



## Inductive EXTREME



## Inductive EXTRA TEMPERATURE

 up to $120^{\circ} \mathrm{C}$

Inductive ANALOG OUTPUT


## Inductive 2-WIRE



## Inductive SMART



## Stationary Legacy SYstems 27MHZ

Short Range Wireless<br>Remote Control Systems<br>UP TO 1/2 MILE<br>Remote Control Technology's Short Range Wireless Remote Control System includes builtin relays with several modes of operations and simple wireless PLC controls.

## Medium Range Wireless <br> Control and Telemetry

UP TO 2 MILES
A great solution for applications that do not require the full functionality of the Long Range System. Features include: plastic NEMA 4x enclosures, high-gain antennas, and 27 MHz communications for non-line-of-sight applications. The receivers come with 12VDC relays already installed.

## Long Range Industrial Remote Controls

OVER 2 MILES
Long Range Switching is Remote Control Technology's most advanced industrial radio remote control. Features include powdercoated steel NEMA 4x enclosures, high-gain antennas, and the option for Long Range RF or digital cellular communications.

## ADVANCED SYSTEMS 900MHZ

## Advanced Stationary System

Part \#:80660S 900 MHz radio frequency network with integrated I/O that can operate in most environments while eliminating the need for wiring runs. Wireless radio control systems are built around a Gateway, which acts as the wireless network master device, and one or more Nodes. It is an industrial wireless radio control I/O device with six discrete DIP switch selectable inputs, and six discrete (sourcing) outputs, with DIP switches for user configuration. It combines Frequency Hopping Spread Spectrum (FHSS) technology and Time Division Multiple Access (TDMA) control architecture to ensure reliable data delivery within the unlicensed Industrial, Scientific, and Medical (ISM) bands. The transceivers provide two-way communication between the Gateway and Node, including fully acknowledged data transmission site survey analyses. Lost RF links are detected, and relevant outputs set to user-defined conditions.

## Advanced Stationary System

900 MHz radio frequency network with integrated I/O that can operate in most environments while eliminating the need for wiring runs. Systems are built around a Gateway, which acts as the wireless network master device, and one or more Nodes. The Wireless Automation System combines Frequency Hopping Spread Spectrum (FHSS) technology and Time Division Multiple Access (TDMA) control architecture to ensure reliable data delivery within the unlicensed Industrial, Scientific, and Medical (ISM) bands. The transceivers provide two-way communication between the Gateway and Node, including fully acknowledged data transmission site survey analyses. Lost RF links are detected, and relevant outputs set to user-defined conditions. Part\#:80222S - two discrete inputs, two discrete (sourcing) outputs, two analog ( $0-20 \mathrm{~mA}$ ) inputs, and two analog ( $0-20 \mathrm{~mA}$ ) outputs. Part\#:80442S - four discrete inputs, four discrete (sourcing) outputs, two analog ( $0-20 \mathrm{~mA}$ ) inputs, and two analog ( $0-20 \mathrm{~mA}$ ) outputs.

## Advanced Cellular Controller

This versatile industrial wireless controller allows for cellular as well as local ISM band $(900 \mathrm{MHz})$ communication and Ethernet connectivity.

- Cellular communications via Verizon LTE (4G)
- Ethernet connectivity
- (4) Universal Inputs; (2) Discrete Outputs / (2) Analog Outputs
- MicroSD card for data logging
- Email and text alerts
- LCD display for I/O information

Cellular module is available for LTE (4G). Compatible with RCT's Advanced Switch Systems (900MHz) and can act as either a standard Gateway radio (for use with remote Node radios) or as
 a Multi-Mesh Master radio (for use with remote Repeater radios).
The controller is mounted in a NEMA-4X enclosure with 12VDC power supply, I/O terminal blocks and SPDT relays (if required). For cellular modules, a small rubber duck style antenna is provided standard; additional external antennas are available depending on signal strength and local cellular coverage.

## HANDHELD LEGACY SYSTEMS 27MHZ

Short Range Wireless System
UP TO 350 YARDS
Remote Control Technology offers the following FM transmitter and receiver products in its line of RF wireless short-range handheld industrial remote controls for PLC activation, conveyor control, lighting systems, and other industrial control applications.

## Long Range Wireless System <br> UP TO 2 MILES

Long range handheld wireless remote controller offers great range capabilities, durable transmitters and receivers, and the ability to control up to 16 outputs on one receiver and up to 199 receivers from one transmitter.

## HANDHELD ADVANCED SYSTEMS 9OOMHZ

Advanced Handheld 6 Station (with feedback)
Part \#: 80660HH

- The 902-928 MHz model requires line-of-sight but is more resistant to electrical noise
- Handheld transmitters are available in 8, 4, 2, and 1 buttons in a heavy-duty aluminum enclosure
- Receivers are available with 8, 4, 2, and 1 relay outputs ( 5 A at 250 V contact rating) in a plastic NEMA 4x enclosure
- Includes antenna, mount, and coaxial cable
- Replaces wire or conduit when repair or new installation is not possible or practical
- Performance Guaranteed


Short Range Wireless Switch System Handheld 900MHz
The Short Range Wireless Switch System Handheld (SRWSSHH) is designed for short range (up to 350 yards*) and simple wireless switching. The SRWSSHH the simple solution where faulty wire replacement is required, new installation is not possible or practical, or many different pieces of equipment need to be controlled.

The SRWSSHH consists of one, two, four, or eight-key handheld transmitters and a one, two, four, or eight-output (SPDT Class C relay) $902-928 \mathrm{MHz}$ frequency hopping receiver. Simply connect the devices you want to control to the SRWSSHH, and the SRWSSHH is ready for use and guaranteed to perform.



## ELECTROMECHANICAL AND ELECTRONIC COMPONENTS




## Wireless foot switches



## Toggle switches



## Shifter \& turn signal




Push buttons (22mm \& 30mm)


Pendant \& control stations


## IH series ignition switches



## Other products



The Switch Company

## INNOVATION / TECHNOLOGY / QUALITY



## (1) izizato

## POSITION SWITCHES



Position switches for
heavy applications


Switches for special applications


## HUMAN-MACHINE INTERFACE



## LITERATURE

- Safety Devices


## LIFT DEVICES



Switches with manual reset


Switches for over-speed devices with manual reset


## Signaling switches



## LITERATURE

- Safety Devices


## QUALITY AUTOMATION, CONTROL AND POWER PRODUCTS



Bilge pump monitoring


Circuit protection


## $16 \mathrm{~mm} \& 22 \mathrm{~mm}$ pilot devices



Wireless pushbuttons


Disconnects / disconnects in a box



Programmable relays / interface modules


## ENCLOSURES / JUNCTION BOKES

We bring the next generation of non-metallic electrical enclosures, cabinets, junction boxes, equipment protection, custom enclosures and custom products, all manufactured using the highest quality engineered thermoplastic materials.



Universal ${ }^{\text {TM }}$ Series of NEMA 4X Medium and Large PVC Enclosures


NEMA 4X Wireless


TrueCustom ${ }^{\text {TM }}$ PVC or ABS Custom Enclosures


## COUNTERS / TACHOMETERS / MEASURING INSTRUMENTS

Line Seiki products are designed and manufactured with the users in mind and are committed to providing only high quality and reliable products. They have a wide variety of products ranging from Counters, Measuring Instruments, Thermometers, Tachometers, Sensors and Laser Products to suit your needs. From a highly industrial applications (OEMs, industrial machine equipments, etc.) to "the everyday use" products (hobbyist, household, etc.), Line Seiki has something to satisfy your counting or measuring needs.

## Electronic Counters



Our Electronic Counters range consists of Totalizers,
Single/Multiple Preset type, Self-Powered, Communication type and Large Displays. These are available in LED or LCD display types and it comes in different panel sizes and digits sizes.

## Length Measuring Counters



Our Length Measuring Counters are designed specifically for length measuring or cut-tolength applications of various materials such as Plastic or Metal sheets, Textiles, Cables, etc.

## Timers



Our Timers range provides measurement of elapsed time in Hours, Minutes or Seconds.

Electromagnetic Counters


Our Electromagnetic Counters are available in Totalizer or Preset type. Choose from different mounting styles and sizes.

Shut Height Counter


Our Shut height Counters/Slide adjuster are designed for press machines and various machine tools to adjust the die height or the shut height. Upper and Lower limit output is available and it comes in different sizes.

## Measuring Instruments



Our Measuring Instruments range is a collection of test instruments using microprocessor technology to measure different parameters such as Temperature, Humidity, pH level, water quality, wind velocity, electrical, etc.

## Mechanical Counters



Our Mechanical Counters are designed and built to last for a long time with its robust and sturdy designs. Totalizer or Preset Types are available and it comes in different sizes and mounting styles.

## Tally Counters



Our Tally Counters makes counting easy even for the complicated tally counting application.

## Tachometers



Our Tachometers range is designed specifically for speed/rate measurement and control. Hand-held type and Panel Type tachometers are available to suit any degree of user.

## DOUBLE PLUNGER PUSH BUTTON SWITCHES


1.00 inch and 1.75 inch double plastic plunger

1.38 inch double plastic plunger



### 22.5 MM CONTROL UNITS

## 22.5 mm operators

Available in Lockable, Push-Pull, and Momentary versions, the following switches are hand operated, control circuit devices, rated 'Heavy Duty' normally for use with electromagnetic equipment. The body is made from die-cast zinc. The mushroom shaped plungers are molded from DuPont Delrin 100ST Acetal for improved impact resistance and are solid colors throughout.

- Nema 12/13, IP 65
- Gold Plated Contacts

Each operator will accept up to three tiers of two contact blocks for a total of six separate blocks. Each operator is supplied with all mounting hardware and a Buna-N (NBR) o-ring which provides an oil tight seal upon installation. The mechanical life
 of these units is $1,000,000$ operations.

## Contact blocks

These contact blocks are designed for use on ALL REES push button operators and selector switches as shown on the preceding pages. The mechanical life of these devices is $1,000,000$ operations. Each captive terminal on the contact block will accept (2) \# 14 AWG stranded wires and the contacts are gold plated to eliminate high resistance tarnishing. The 52702 block consists of a B block (50702) attached to an adapter. This adapter Opens the NC contact of the B block Upon Removal from the switch operator.


## 22mm legend plates



### 30.5 MM CONTROL UNITS

## 30.5 mm push buttons

These switches are hand operated, control circuit devices, rated 'Heavy Duty' normally for use with electromagnetic equipment. The body is made from die-cast zinc. The plungers are also made from diecast zinc with the 1.00 in . diameter style having a colored plastic (poly-carbonate) insert. The mushroom style plastic plunger heads are solid colors throughout. Each operator will accept up to three tiers of two contact blocks for a total of six separate circuits. Each operator is supplied with all mounting hardware and a solid neoprene rubber gasket which provides an oil tight seal upon installation. The mechanical life of these units is $1,000,000$ operations. These devices can be found on a variety of machinery, used to perform such operations as 'start', 'stop', 'top stop','inch', 'on', 'off', 'forward', 'reverse' etc.

## 30.5 mm mushroom and rope pull operators

These switches are hand operated, control circuit devices, rated 'Heavy Duty' normally for use with electromagnetic equip-
 ment. The body is made from die-cast zinc. The zinc plated ring eye operator is also made from die-cast zinc. The mushroom ergonomic shaped plungers are molded from DuPont Delrin 100ST Acetal for improved impact resistance and are solid colors throughout. Each operator will accept up to three tiers of two contact blocks for a total of six separate blocks. Each operator is supplied with all mounting hardware and a solid neoprene rubber gasket which provides an oil tight seal upon installation. The mechanical life of these units is $1,000,000$ operations. These devices can be found on a variety of machinery, used to perform such operations as 'start', 'stop', 'top stop', 'inch', 'jog', 'on', 'off', 'forward', 'reverse', etc.

## SINGLE PLUNGER PUSH BUTTON SWITCHES

## Push button switches with larger mounting pattern

These switches are hand operated, control circuit devices, rated 'Heavy Duty' normally for use with electromagnetic equipment. The body, painted with a dry powder paint, is made from die-cast zinc. The plunger head is powder painted or chrome plated die-cast zinc. The plunger head of the 04662 is plastic. Each switch is supplied with all mounting hardware and a solid santoprene rubber gasket which provides an oil tight seal upon installation. The mechanical life of these devices is 1,000,000 operations. These switches can be found on a variety of machines such as punch presses, press brakes, and spot-welding equipment as "RUN", "START" or "STOP" buttons. They are also used on transfer machines.


## Flat chrome plunger push button switches

These switches are hand operated, control circuit devices, rated 'Heavy Duty' normally for use with electromagnetic equipment. The cover, painted with a dry powder paint, and the chrome plated/painted plunger are made from die-cast zinc. Each captive terminal will accept (2) \#14 AWG stranded wires and the contacts are gold plated to eliminate high resistance tarnishing. The mechanical life of these devices is $1,000,000$ operations. These switches can be found on a variety of machines such as punch presses, press brakes, and spot-welding equipment as "RUN" or "START" buttons. Their rugged construction and long term reliability make these switches extremely well suited to function within various environments.

### 2.25 inch plastic mushroom plunger

The following switches are hand operated, control circuit devices, rated 'Heavy Duty' normall! for use with electromagnetic equipment. The body, painted with a dry powder paint, is made from die-cast zinc. The plunger heads are solid colors throughout. Each switch is supplied with all mounting hardware and a solid santoprene rubber gasket which provides an oil tight seal upon installation. The mechanical life of these devices is $1,000,000$ operations. These switches can be found on a variety of machines such as punch presses, press brakes, and spot-welding equipment as "RUN", "START" or "STOP" buttons. They are also used on transfer machines. Well suited to function within various industrial/ commercial environments.


### 2.25 inch metal mushroom plunger

Hand operated, control circuit devices, rated 'Heavy Duty' normally for use with electromagnetic equipment. The body, painted with a dry powder paint, is made from die-cast zinc. The plunger heads are powder painted or chrome plated zinc die-cast. Each switch is supplied with mounting hardware and a solid santoprene rubber gasket which provides an oil tight seal upon installation. The mechanical life of these devices is $1,000,000$ operations. Built for a variety of machines such as punch presses, press brakes and spot-welding equipment as "RUN", "START" or "STOP" buttons. The "Positive Break" styles comply with all standards for 'emergency stop' applications. The rugged construction and long term reliability make these switches extremely well suited to function within various industrial / commercial environments.

### 2.25 inch mushroom plunger with shield and weatherproof

Hand operated, control circuit devices, rated 'Heavy Duty' normally for use with electromagnetic equipment. The body with shield, painted with a dry powder paint, is made from die-cast zinc. The plunger head is powder painted or chrome plated steel. Supplied with all mounting hardware and a solid neoprene rubber gasket for an oil tight seal upon installation. The mechanical life of these devices is $1,000,000$ operations. These switches can be found on a variety of machines such as punch presses, press brakes, and spot-welding equipment as "RUN", "START" or "STOP" buttons. They also are used for "Pedestrian Cross-walks" and even found in parking garages and car wash applications. Their rugged construction and long term reliability make these switches extremely well suited to function within various industrial / commercial environments.


## AnコGYロIா

## DC UPS SYSTEM

- Output current $2,5 \mathrm{~A} \div 20 \mathrm{~A}$ even in case of power outage (shortage)
- Automatic allocation of available power between load and battery charging up to twice-rated output current
- Visual indication of "power shortage", "defective battery", "battery voltage< $30 \%$ ", "battery charging level", self-diagnostic with flashing LED code

- Warning relays: "main or back-up" and "defective/flat battery" with galvanic isolated output contacts NO-NC
- 3 charging levels: "boost", "trickle" and "recovery"
- Self-diagnosis "overload", "battery sulfutation", "reverse polarity connection", "elements in short circuit", "protection against short circuit"
- Compatible with a remote connection to select "boost" or "trickle" charging mode
- Accessories upon request: external temperature sensors; voltage drop compensation; remote LED display
- Compact dimensions
- Ambient temperature operation: $-10 \div 50^{\circ} \mathrm{C}$
- IP 20

YouTube video: https://www.youtube.com/watch?v=fRUXfmyLYz8\&t=2s

## POWER SUPPLIES

## Main features:

- Competitive price/performances ratio.
- 3 protective functions: Hiccup Mode, Fold Back, Restart after Main
- Declared ambient temperature operations field: 40,50 e $60^{\circ} \mathrm{C}$ (suitable for any type of applications)
- Only one product for 230-400-500 Vac
- Standards Conformity: EN 60204-1 and EN/IEC 60529 (IP20 protection class)
- DIN Rail Mounting
- Extremely small size


## The 3 protective functions:

- Hiccup Mode (Default)
- Fold Back (Continuous Output Mode)
- Restart after Main (Manual Reset)

YouTube video: https://www.youtube.com/watch?v=Kxj9AMO-vt8

## AロコGイニリコ！

| Product \＆ <br> Description | Part <br> Number |
| :--- | :--- |
|  |  |
| DC－UPS（Input：115－230－277 Vac Output：12VDC）－CLICK FOR MORE INFo |  |
| DC－UPS All In One In：115－230－277Vac Out：12V 3A | CBI123A |
| DC－UPS All In One In：115－230－277Vac Out：12V 6A | CBI126A |
| DC－UPS All In One In：115－230－277Vac Out：12V 10A | CBI1210A |
| DC－UPS All In One MODbus Connection In：115－230－277Vac Out：12V 35A | CBI1235A |
| DC－UPS All In One Parallel Connection In：115－230－277Vac Out：12V 35A | CBI1235AP |
|  | DC－UPS（Input：115－230－277 Vac Output：24VDC）－cLick For More INFo |
| DC－UPS All In One In：115－230－277Vac Out：24V 3A | CBI243A |
| DC－UPS All In One In：115－230－277Vac Out：24V 5A | CBI245ASD1 |
| DC－UPS All In One Shut Down 1＇In：115－230－277Vac Out：24V 5A | CBI245ASD3 |
| DC－UPS All In One Shut Down 3＇In：115－230－277Vac Out：24V 5A | CBI2410A |
| DC－UPS All In One In：115－230－277Vac Out：24V 10A | CBI2410ASD1 |
| DC－UPS All In One Shut Down 1＇In：115－230－277Vac Out：24V 10A | CBI2410ASD3 |
| DC－UPS All In One Shut Down 3＇In：115－230－277Vac Out：24V 10A | CBI2410A／S |
| DC－UPS All In One＋Battery start－up In：115－230－277Vac Out：24V 10A | CBI2420A |
| DC－UPS All In One MODbus Connection In：115－230－277Vac Out：24V 20A | CBI2420AP |
| DC－UPS All In One Parallel Connection In：115－230－277Vac Out：24V 20A |  |

FLEX（Switching power supplies－Input：115－230 Vac Output：24VDC）－CLICK FOR MORE INFO

| Power Supply（Industrial Line）In：115－230Vac Out：24V 3A | FLEX6024A |
| :--- | :--- |
| Power Supply（Industrial Line）In：115－230Vac Out：24V 5A | FLEX9024A |
| Power Supply（Industrial Line）In：115－230Vac Out：24V 7．5A | FLEX17024A |
| Power Supply（Industrial Line）In：115－230Vac Out：24V 14A | FLEX28024A |
| Power Supply（Industrial Line）In：115－230Vac Out：24V 25A | FLEX50024A |


| FLEX（Switching power supplies－Input：230－400－500 Vac $\mathbf{2}$ \＆ $\mathbf{3}$ Phase Output：24VDC）－CLICK FOR MORE TNFO |  |
| :--- | :--- |
| DC－UPS All In One In：230／400－500Vac Out：24V 5A； 2 Phase | FLEX9024B |
| DC－UPS All In One In：230／400－500Vac Out：24V 7．5A；2 Phase | FLEX17024B |
| DC－UPS All In One Shut Down 1＇In：230／400－500Vac Out：24V 14A；2 Phase | FLEX28024B |
| DC－UPS All In One Shut Down 3＇In：400－500Vac Out：24V 25A；3 Phase | FLEX50024B |


| FLEX（Switching power supplies－Input：115－230 Vac Output：48VDC）－CLICK FOR MORE INFO |  |
| :--- | :--- |
| DC－UPS All In One In：115－230Vac Out：48V 3．8 A | FLEX17048A |
| DC－UPS All In One In：115－230Vac Out：48V 7．5 A | FLEX28048A |
| DC－UPS All In One Shut Down 1＇In：115－230Vac Out：48V 12 A | FLEX50048A |

$\square=$ In－Stock．Three weeks for delivery of non－stock items．

P.O. Box 126-1706-22nd Avenue • Kenosha, WI 53140 262.652.8660 • E-mail: safetysensing@earthlink.net www.safeworkplace.org

