## Sales conditions

## DELIVERY, FREIGHT

For any destination or sales conditions, the delivery is done immediately after the forwarder has collected the goods in our factory. The risks and responsibility are taken in charge by the purchaser at the moment of goods collection, even in case of Ex-works. The goods may be insured only on the express request of the purchaser at his cost. The purchaser should verify the goods after receiving them and reclaim to the forwarder in time if necessary.

## PAYMENT TERM

First order : payment in advance based on proforma invoice
Following orders: at 30 days net of invoice date by bank transfer
MINIMUM ORDER AMOUNT: 550 euros for distributors and 80 euros for customers.

## DELIVERY TIME

The delivery time has an indicative value and could not be a reason for any order cancellation or any com-pensation.

## COMPLAINT, WARRANTY

Any complaint concerning the quantity must be done within 4 days after the receipt of the products. Concerning the qua-lity, our responsibility is limited to the repairing or the replacement. This complaint can not be taken in any case as a request of compensation for replacement, for a stop of production...etc. The defective parts must have been delivered from our stock; we would have recognized them having a problem and they must have been sent back to us within one year after the delivery. Our warranty does not include the consequence of the normal wearing effect, the bad using of the product and a lack of maintenance.

## RETURN OF GOODS

We do not accept any return of goods and any credit note without our previous agreement.
Return of goods for defective items
The customer will be responsible to send the items back and after technical analysis, they will be replaced under the warranty terms and resent to the charge of the company Comitronic BTi. If it appears that the defect is caused by an inappropriate installation of the customer, no compensation will be accepted for the loss of the product or machine downtime costs. The customer can claim anyway the return of the product to its own charge.
Return of goods after order cancellation
No return of goods will be accepted for non-standard products (customized),
For automation products, a return of products is possible according to our preliminary agreement, in a maximum time of 1 month with a charge of $25 \%$ of the goods value.
For safety products, a return of products is possible according to our preliminary agreement, in a maximum time of 1 month with a charge of $35 \%$ of the goods value to respect our traceability engagement and for reconditioning and repackaging charges.

## SALES CONDITIONS

The mentioned characteristics, dimensions and weight have just an indicative value. The mentioned drawing, the risk analysis and the applications advice have only an indicative value. The purchase and the choice of the products is under the entire responsibility of the purchaser, the COMITRONIC Bti company and its partner can not be held responsible for the choice or the mounting of the products. At least, as the evolution of the standards is fast, the risk category of the products can be developed without warning.

## PRICES AND PAYMENT TERMS

Our prices are without taxes. The freight cost and packaging are at the charge of the purchaser, invoices are done with the current prices. Our invoicing is stopped on 25 th of each month but the considerated date is the date of the receipt of the goods. For every special products, a payment in advance of $30 \%$ will be required. Every amount which will be not paid at the expiry date will be raised through interests.

## RESERVE OF PROPERTY

COMITRONIC BTi holds the property of the products until the complete payment of the invoice. Until the complete payment of the invoice, the purchaser will be held responsible for any damage on the products.

## ORDER EXECUTION

We are free of the obligation to deliver any products in case of absolute necessity such as strike, accidents..
CONTESTING
In case of disagreement between the both parts, the «tribunal de Commerce de Bobigny » is the only court recognized by both companies

## TERRITORIALITY

The above sales conditions are applicable to the export market. By ordering by fax, phone or mail, the purchaser accepts the above sales conditions.

## DATA PROTECTION

The distributors are asked to not divulgate any confidential datas, images and documents to a public audience, like magazines, websites, etc. without the agreement of Comitronic Bti


## Worldwide authorized distributors

## Australia :

BALLUFF-LEUZE PTY LTD
Tel: 0061397204700
Fax: 0061397382677
Email : sales@balluff.com.au

## Austria :

LICO ELECTRONICS Gmbh - Kledering
Tel : 00431706430013
Fax: 004317064131
Email : office@lico.at

## Belgium :

RESTUTECH BVBA - Deurne
Tel : 003233267041
Fax : 003233267031
Email : purchase@restutech.com
DIGITRON - Pulderbos
Tel : 003234641015
Fax : 003234846323
Email : office@digitron.biz

## Brazil :

SGS Partners
Tel: 0055.11.3832.1671
Fax: 0055.11.3645.3290
Email : vendas@sgspartners.com.br

## China :

BEIJING RUILINGE TECHNOLOGY CO
LTD
Tel : 00861069727269 / 7209
Fax: 861069727243
Email : bjruilinge@sina.com
Shanghai Cankey
Tel: 00862161474207808
Fax: 00862161474208
Email : andywang@cankey.com

## Czech republic :

INFRASENSOR - Jesenice u Prahy
Tel : 00420 241940989
Fax : 00420241940989
Email : sensory@infrasensor.cz

## Denmark :

DOVITECH A/S - Broendby
Tel : 0045.70.25.26.50
Fax : 0045.70.25.26.51
Email : info@dovitech.dk

## Finland:

SKS AUTOMAATIO - Vantaa
Tel : 00358.9852.661
Fax : 00358.9852.6820
Email :automaation@sks.fi

## Germany :

HAAKE TECHNIK Gmbh - VREDEN
Tel : 0049256439650
Fax : 00492564396590
Email : info@haake-technik.com

## Ireland :

LONG DISTRIBUTORS - Ballyvolane
Tel : 00353214286966
Fax : 00353214286967
Email : info@longdistributors.com

## Italy :

TECNEL SYSTEM Srl - Milano
Tel : 0039022578803
Fax : 00390227001038
Email : info@tecnelsystem.it

## Japan :

LINE SEIKI Co. LTD
Tel : 0081337165151
Fax: 0081337104552
Email : webtrade@line.co.jp

## Morocco :

ECAI
Tel : 00212522863532
Fax: 00212522863532
Email : ecaimaroc@yahoo.fr

## Malta :

AIM ENTERPRISE - Paola
Tel : 0035621802828
Fax : 0035621803232
Email : info@aim.com.mt

## Netherlands :

RESTUTECH BV - Eindhoven
Tel : 0031402867040
Fax : 0031402858837
Email : purchase@restutech.com
ISOTRON - Hertogenbosch
Tel : 0031736391639
Fax : 0031736391699
Email : info@isotron.eu

## Poland :

INSTOM Sp. Z.O.O. - Lodz
Tel: 0048426407585
Fax: 0048426407622
Email : handlowy@instom.com.pl biuro@instom.com.pl

DACPOL - Piaseczno
Tel: 0048227035135
Fax: 0048227035101
Email : dacpol@dacpol.com.pl

## Slovakia :

EXIM-TECH LTD - Banska Bystrica
Tel : 00421484147086
Fax : 00421484147088
Email : eximtech@eximtech.sk

## Slovenia :

SENSOR Doo - Maribor
Tel : 00386.2.6131831
Fax: 00386.2.6132275
Email : sensor@siol.net

## South africa :

Atlas Industrial Systems
Tel : 0035621802828
Fax : 0035621803232
Email : herbert@atlassystems.co.za

## Spain :

EURO AUTOMATION - Barcelona
Tel : 0034932804549
Fax : 0034932052012
E mail : ventas@euro-automation.com

INTERTRONIC - Valencia
Tel : 0034963758050
Fax : 0034963751022
Email : info@intertronic.es

## Switzerland :

TRACO INDUSTRIECHNIK - Zurich
Tel : 004112842911
Fax : 0046 855596060
Email : info@traco.ch

## Turkey :

SIMEKS - Istanbul
Tel : 00902122386963
Fax: 00902122974682
Email: info@simeks.biz.tr
UK:
RAYLEIGH INSTRUMENT Ltd - Essex
Tel : 00441268749301
Fax : 00441268749309
Email: sales@rayleigh.co.uk

## United States :

EEC Controls and Safety - Brewster
Tel : 0018452785777
Fax: 0018452785444
Email : info@eecontrols-safety.com

## Company

## Providing greater protection from injury to machine operators and maintenance personnel.

COMITRONIC / BTI has always been ahead of its competitors by providing major technological innovations. For more than 15 years, we have developed safety switches and relays grace to our own research and development office and engineers. We have been the world's first manufacturer of multi-coded non-contact safety switches.

The dense network of domestic customers and foreign distributors gave us the advantage to design and market many innovative and customized products. They are installed on machines for safety and monitoring in a wide variety of industries.

Our products include coded non-contact safety switches in rugged plastic and stainless steel housings rated for washdown and corrosive atmospheres, contactless interlockings and a wide variety of safety relays.

They comply with the latest safety standards and approvals, and help to reduce the machine downtime due to faulty switches.
The company, the manufacturing plant and its R\&D department are located in France, in the suburb of Paris, which provides us with a faster response time in case of after-sales service and market, and quality is totally under control.

## History

## 1981

Creation of Comitronic.
Distribution of electrical and machine safety devices.

## 1993

Creation of the R\&D company BTI (manufacturing and design plant).
The first non contact and stand alone safety switch with the Acotom® 1Process, in conformity with the EN1088 and EN60204-1.

## 1995



Own designer and producer of safety components,
Implementation of the the Acotom® 2 process.
Improvement of the range: stainless steel, stand and non-stand alone, relays.

## 2000

Distributed in more than 35 countries worldwide: from USA to Japan, Brazil to Australia, and much more...

## 2001

Worldwide innovation: non contact, coded and stand alone safety switch Acotom® 3.
The switch is self-controlling all its internal components to each switching. This is the safest and most advanced system, in conformity with the EN1088, EN60947-5-1 and EN954-1.
The safety is also provided even in case of failure or manipulation.

## 2008

Certification ISO 9001:2008 of BTi in regards of all the quality efforts made in the production and design.


## 2010

New technologies developped: non-contact and coded interlocking Vigilguard and Anaguard, RFid access control Akkef, power line carrier Pixcom, touch-sensitive buttons Kapix...


## Standard and norms in the machine safety

## How to use the standard ISO 13849-1

## 1. Introduction <br> 1-1) Objectives

The objective of this standard is to reduce the risk associated with a hazard or a dangerous situation in all the using conditions of the machine. This can be achieved by implementing various prevention measures (both in materials or outside) in order to achieve a safe state.

## 1-2) The key issues of the norm

The ability of the safety related parties to perform a safety function under foreseeable conditions are classified into five levels called performance levels (PL). These performance levels are defined in terms of probability of dangerous failure of the system.

The probability of dangerous failure of the system depends on several factors, such as system structure, the extent of defect detection, the diagnostic coverage (DC) , the component reliability, the mean time to dangerous failure (MTTFd), the common cause failure (CCF), the environmental conditions and methods of operation.

This standard takes into account two types of failure: systematic failures and random failures.
Performance levels and categories may apply to:

- Control systems of all kinds of machines, ranging from simple (such as small kitchen machines) production facilities (eg packaging machines, printing machines, presses)
- Control systems of protective equipment (eg two-hand control devices, locks and interlocks), electrosensitive guards (eg light curtains), pressure-sensitive devices.


## 2. Operation mode

## 2-1) The risk evaluation

It uses the ISO 14121 and EN 62061 for estimating risk. This allows you to find the first parameter is the level of performance required (PLr) per table below.


| Acc. to ISO 14121 | Acc. to EN 62061 |
| :---: | :---: |
| S Severity of injury |  |
| S1 Slight (normally reversible injury) S2 Serious (normally irreversible injury |  |
| F Frequency and/or exposure time to the hazard |  |
| F1 Seldom to quite often and/or the exposure time is short F2 Frequent to continuous and/or the exposure time is long | Frequency (for an exposition $>10 \mathrm{~min}$ ) <br> - $\quad<1 \mathrm{~h}$ (5 points) <br> - $\quad 1 \mathrm{~h}$ to 1 day ( 5 points*) <br> - 1 day to 2 weeks ( 4 points*) <br> - 2 weeks to 1 year ( 3 points*) <br> - $\quad>1$ year ( 2 points*) <br> * if the exposure time is less than 10 min , move to the lower level |
| P Possibility of avoiding the hazard or limiting the harm |  |
| P1 Possible under specific conditions P2 Scarcely possible | $\begin{array}{ll} \text { - } \quad \text { Impossible (5 points) } \\ \text { - } \quad \text { Rare (3 points) } \\ \text { - } \quad \text { Possible (1 point) } \end{array}$ |

## Standard and norms in the machine safety

## 2-2) Values of ISO 13849-1

The safety category: We use the table below which sets the safety category B, 1, 2, 3 or 4. It is possible that the PLr previously found corresponds to several risk categories. In this case, we choose the higher category.

The mean time to dangerous failure: MTTFd.
The average coverage of diagnosis: DCavg.
The average defect rate: PFHd (valid for SIL and not discussed here).


Note: PFHd concerns the SIL integrity level of components related to EN 61508. In this paper we focus only on mechanical components, electro-mechanical, electronic free software.

## 3) Application in real conditions: preparation of document management

## 3-1) From the devices to the safety module

We must first specify the particular conditions of use by formalizing it in the operation manual of the machine. For example:

- For emergency push-buttons: only one button is pressed at the time (to be justified)
- For sensors / door switches: one component is activated at a time (to be justified)
- Solenoid valves: one valve is actuated at a time (to be justified)

Note: the safety control unit may be a safety module.
If the procedure can not justify a single element is actuated at a time, then one must consider the number of elements simultaneously driven and justify it. This will be useful in calculations of the parameters relating to the ISO13849-1 machine.

## 3-2) From the safety module to the power contactors

Unlike to §3-1), the functionning of this part is mandatory linked. One must take into consideration the simultaneity of these two parts. So the switching of the safety module will inevitably actuate also the power contactors.

## Standard and norms in the machine safety

## 3-3) Provide the durations and the machine cycles

To each element is assigned settings.
Those for mechanical actuators such as mechanical switches or reed switches are not obtained in the same manner as those of electronic or electromechanical sensors. But all converge towards the same goal: to define the MTTFd, DC and PL.

- Mechanical switches

$$
M T T F d=\frac{B_{\text {101 }}}{\left(0,1+n_{w}\right)} \quad n_{a p}=\frac{\left(d_{e^{*}}+h_{c q} * 3600_{z i n}\right)}{t_{\text {ovle }}}
$$

In this case, the MTTFd parameter depends of the machine utilization.

- Electronic/electromechanical components

The datas MTTFd, DC and CCF are provided by the manufacturer.

- Components with software and/or programmable

The datas are provided by the manufacturer. The parameters are differents because they refer to the EN 61508 standard and the SIL.


## 5) Formulas for the ISO13849-1 implementation

$$
\text { MTTFd }=\frac{2}{3}\left[\text { MTTF }_{c I}+\text { MTTF }_{c z}-\frac{1}{\left(\frac{1}{M T T F d_{c l}}+\frac{1}{M T T F d_{c q}}\right)}\right]
$$



$$
\begin{aligned}
& M T T F d=\frac{B_{101}}{\left(0,1 * n_{o p}\right)} \\
& n_{o p}=\frac{\left(d_{o p} * h_{e p} * 3600_{g ; p}\right)}{t_{\text {sule }}}
\end{aligned}
$$

nop : mean number of actuation per year
B10d : equals the mean number of cycles until 10\% of a given batch failed to danger (EN 60947-5) hop [h/d]: Working hours per day dop [j/an]: Working days per year tcy [s]: Cycle time (s/cycle)

## Standard and norms in the machine safety

## 6) Real case application

## 6-1) Emergency stop

Consider a machine with two emergency stops. The manufacturer of the machine used the ISO 14121 and EN 62061 to estimate the PIr. The application requires a level of performance $\mathrm{PLr}=\mathrm{c}$. The machine manufacturer has justified that it is not possible to operate two emergency stops at the same time. These are mechanical components, refer to § 3.3.

It is shown and admitted by the table "C1 ISO 13849-1, that an emergency stop has a B10d = 6050 cycles in the worst case. It is advisable to work with this information otherwise the manufacturer will have to justify it or the manufacturer of the component clearly indicates the B10d. However, please pay attention to conditions for which the B10d is given (current rating ... etc.).

## Formulas implementation (\$3-3 and \$5)


hop [h/d]: Working hours per day
dop [j/an]: Working days per year
tcy [s]: Cycle time (s/cycle)

The real issue for the machine manufacturer is to determine the parameters hop, dop and Tcy.

## Exemple :

dop=365 d/year
hop=16 hours
Tcy=14400 s/cycles
We obtain MTTFd = 41 years, which is ranked high in Table § 2-2. The more Tcy is low the more the MTTFd will be low. Using an emergency stop with force guided contacts (EN1088/EN412), we will reach the category 1 at the best. The MTTFd being high, the table §2-2 provides a PL= b for category 1. We see that Plr> PL, then we must add a controller to reach the higher level. The two emergency stops are mounted in serie on a safety controller with integrated reset named CO13XXL. BTI gives as a manufacturer the following information for the CO13XXL: MTTFd $=320$ years, $\mathrm{DC}=99.5 \%, \mathrm{PL}=\mathrm{e}$. We apply the formulas of $\S 5$ since the components are mounted in serie.

Knowing that the CO13XXL reaches category 3, we get gency stop and d2 the safety controller.
The table §2-2 give sus a PL=d. So PL>PLr, this solution meets the requirements.

## 6-2) Reed safety switch

We replace the previous emergency stops by reed switches. These components are mounted on doors or machine guards. In some cases it will be difficult or impossible to justify that only a single switch is activated at a time (eg double hinge door).

This component is classified as a mechanical switch but one must be very careful in the value of $\ln$ (rated current contact). Reed bulbs are fragile and sensitive components and B10d is given to $20 \%$ of In in accordance with the specifications of ISO 13849-1.

Generally $\mathrm{In}=10 \mathrm{~mA}$ thus B 10 d is given for $\mathrm{Id}=2 \mathrm{~mA}$. In the best case we find products with $\mathrm{In}=100 \mathrm{~mA}$ and thus a given B 10 d for Id $=20 \mathrm{~mA}$. The problem is that most safety controllers or even simple relays require a higher current to 20 mA . In addition we bring the standard of inviolability Ci in these applications because the manipulation is taken into account.

Due to their operating principle, these components have a medium Ci rank.
It is not interesting to present these products knowing that their B10d does not reflect the utilization conditions. The approach would be to ask the B10d for current use but it will be very difficult.

## Standard and norms in the machine safety

## 6-3) Safety switch with process ACOTOM ${ }^{\hat{a}}$

The reed switches are replaced by $\mathrm{ACOTOM}_{3}{ }^{\hat{a}}$ safety swicthes. These components are mounted on machine guarddoors.
They resolve all the reed switches problems :

- stand-alone
- high Ci
- high switching power
- weak hysterese
- high safety category.

These products are based on a complexe electronic architecture and we get the following MTTFd and DC parameters published by the BTI manufacturer.

The safety switch AMX3 :
MTTFd=210 years
DC=99,5 \%
Category=3
PL=e
In the case of two single doors (single door) we get PL=e>>PLr and a category 3.
In the case of a double hinge door (one switch per door) we would have get MTTFd=105 years, PL=e, category 3 which is ranking also very high.

## 6-4) The mechanical switches

We replace the AMX3 by mechanical switches. The manufacturer gives a $B 10 \mathrm{~d}=2.10^{6}$ and a category 1 . The manufacturer's datas are different compared with the case of the EPB because they are highly sollicitated.

Exemple : case of a machine in real condition
dop=365 d/year
hop=16 hours
Tcy=360 s/cycles
With the help of the formula of $\S 5$ we find MTTFd=34 years which is ranking high. The PL can be obtained only thanks to an external safety controller. Let's use the CO13XXL of BTI (see §6-1).

In the case of two single doors (single door) we get PL=e>>PLr and a category 3.
In the case of a double hinge door (one switch per door) we would have get MTTFd=17 years, PL=c, category 3 which is less performant and more expensive than the stand-alone AMX3. The criteria manipulation Ci is weak because it is easy to manipulate these products.

## 7) Some installation exemples

## 7-1) Monitoring the guarddoor of a meat sawband

An installation has two single doors switching a 4 KW tri-phased motor. The customer use the diagram of $\S 4$ to justify its operation manual. The customer is calculating with the condition that only one single door is open at a time.

- The input datas are : $\mathrm{PL}=\mathrm{c}, \mathrm{Ci}=$ high, category $=2$
- Material list : 2 safety switches 5SSR24BX, one controller CO13XXL and one power contactor LC1D09B7.
- Manufacturer's datas :
- 5SSR24BX : MTTFd=50 years, DC=99 \%, CCF=90 \%
- CO13XXL : MTTFd=320 years, DC=99,5 \%, CCF=90 \%

LC1D09B7 : B10d=1 369863 for In (rated current contact), DC=99 \%
The auxiliary contacts ' F ' and 'O' of the power contactors LC1D09 to LC1D150 are mechanically linked on the same mobile contactholder to the power contactors. They are in conformity with the standard IEC 947-4-5.
Power contactors LC1Dx with auxiliary contacts LADN :
The association LC1D + LADN (instantaneous auxiliary contacts) allows to mechanically link all the ' $O$ ' and ' $F$ ' contacts but on two mobile contact-holder. It is also in conformity with the standard IEC 947-4-5.

The datas of the machine manufacturer:

- dop=365 d/year
- hop=16 hours
- Tcy= 720 s/cycles


## Standard and norms in the machine safety

- Implementation of the formulas of $\S 5$ :

$$
\begin{aligned}
& \text { MTTFaLCi=} \frac{B 10 d}{(0,1 * \text { nop })} \text { so nop }=29200 \\
& \text { MTTFd }=\left(\frac{1}{50}+\frac{1}{320}+\frac{1}{469}\right)^{-1}=40 \text { years } \\
& \text { DCavg }=\frac{\left(\frac{0.905}{50}+\frac{0.995}{320}+\frac{0.99}{165}\right)}{\left(\frac{1}{50}-\frac{1}{320}+\frac{1}{460}\right)} \\
&
\end{aligned}
$$

Refering to the tables of §2-2 we get:
MTTFd=high, DCavg=high and CCF $>65 \%$ so $\mathrm{PL=}$ d and category 2 because there is no redundancy of the power contactor but a test loop.

Conclusion : This installation meets the requirements of the PLr because PL>PLr.

## 7-2) Monitoring of solenoid valves

We replace the 5SSR24BX of the $\S 7-1$ by solenoid valves.
Manufacturer's datas :

- solenoid valve : $\mathrm{B} 10 \mathrm{~d}=20.10^{6}$ cycles, $\mathrm{DC}=0 \%$
- CO13XXL : MTTFd=320 years, $D C=99,5 \%, C C F=90 \%$
- LC1D09B7 : B10d=1 369863 for $\ln$ (rated current contact)

The datas of the machine manufacturer:

- dop=365 d/year
- hop=16 hours
- Tcy $=5$ s/cycle

Implementation of the formulas of $\S 5$ :
$M T T F d L C l=\frac{B 10 d}{(0,1 * \text { nop })}$ so nop $=4204800$ actions per year so MTTFd $=48$ years
$M T T F d=\left(\frac{1}{50}+\frac{1}{320}+\frac{1}{48}\right)^{-1}=23$ years
DCavg $=\frac{\left(\frac{0,995}{50}+\frac{0,995}{320}\right)}{\left(\frac{1}{50}+\frac{1}{320}+\frac{1}{48}\right)}$ so DCavg $=52 \%$

Refering to the tables of §2-2 we get:
MTTFd=medium, DCavg=none et CCF > 65 \% so PL=b and category B.
Conclusion : this installation does not reach the required PLr because PL<PLr. The installation must be fitted in an other way.


## All the non-contact safety switches are the same...



## This is not correct!

Everyone believes that a non-contact safety switch is based on two reed buld simply activated by a two magnets:

This is not correct!

Only the Acotom3 coding principle is operating with a $100 \%$ electronic selfcontrolled detection, which provides a high safety category and level (category 3 Ple in stand-alone operation mode and category 4, even connected in serie, on a safety controller) thanks to the automatic internal control to each switching.

## Standard and norms in the machine safety

The ideal solution is to apply the «redundancy and the self-control». But it is impossible to meet the requirements of the self-control if the switch is made of reed bulbs (ILS). In this case, it is mandatory to connect it to a safety controller, which will consequently increase the global price.

Our switches use the Acotom3 process with specific relays. Our technology, based on internal electronic, allows the system to be selfcontrolled. It meets consequently the requirements of the system self-control. It is not necessary to use a safety controller to reach the safety category 3 in conformity with the EN954-1.

To conclude, by using the safety switches with the Acotom3 process, you meet the requirements of the Machine Directive 89/392/CEE.
Stability criterias of the safety category
The safety category described by the EN954-1 can change depending on the installation. Indeed, whathever the material used, the safety category 4 is valid only for one safety switch (EN1088/EN60947-5) monitored by one safety controller (EN954-1) of category 4. You you have to install several switches on the same controller, so the safety category will decrease.

The safety switches AMX4 and AMX5 innovate by offering the category 4 even if they are connected in serie on a safety controller.

Why can we not reach the safety category 4 with several switches on a safety controller?


## Our Acotom3 Process


switch \#1



The safety switches AMX4 and AMX5 innovate by offering the category 4 even if they are connected in serie on a safety controller because theit internal components are internally self-controlled.

## Non contact coded safety switches

## The company

Since 1981 COMITRONIC is the market leader for the stand-alone and coded safety switches.
The company has always been ahead of its competitors by providing major technological innovations, including standalone non-contact safety switches. The innovative decoding process provides a very high manipulation safety of the switch.

A reliable non contact safety switch



## Non contact coded safety switches

## Presentation of the benefits

## The stand-alone safety switches

How to protect your guarddoors?
$\Rightarrow$ Mechanical switches

We can quickly identify the problems and disadvantages when using mechanical switches. The most obvious are:

- not cost effective solution if we consider also the mounting costs (cable wiring, adjustment on the door...),
- almost no misalignment authorized because of the key movement, not suitable for food industry because of the holes.


## $\Rightarrow$ Magnetic switches

The reed contact system seemed to be improved compared to mechanical switches, but new problems have appeared:

- This switch can be easily manipulated by means of a simple magnet or a "horseshoe" magnet,
- High hysteresis $(10 \mathrm{~mm})$,
- Perturbation by magnetic poles,
- Very sensitive to the vibrations and shocks,
- Very low switching capacity,
- Activation of contacts delayed,

Limited number of switches in series (generally six) as the LED does not work,

- Auxiliary line and LED do not indicate the state of the whole switch.


## $\Rightarrow$ Ferro-resonant switch

Instability over the time
Limited coding power

## The technology of COMITRONIC

The electromechanical switch AMX

## The ACOTOM®3 Process



High coding power with dual channel

- Multi- or simple coding
- Integrated self-control system (no external safety module)
- $\quad$ Safety category from 1 up to 4 , and up to PLe
- High misalignment authorized in all axis (+/-7mm)
- High detection distance ( 10 mm or more upon request)
- Constant small hysteresis <2mm
- Up to 30 switches connected in serie on a safety relay
- LED and auxiliary line showing the exact state of the coding system
- Polycarbonate version for common use
- 316L stainless steel version with laser marking for harsh use
- Version for high temperature $+110^{\circ} \mathrm{C}$
- Version with built-in or pig-tail connector
- Version with a removed key or locked key
- Miniature version for the manholes

The ACOTOM®3 technology


## COMITRONIC offers 3 years warranty on its products

All the safety switches are available with the standard cable length 3M, 6 M or 12 M .

Many types are also available with M12 built-in or pig-tail connector.

All the COMITRONIC products are "RoHS" free.

## Non contact coded safety switches

Housing in Stainless Steel 316L


IP69K allows the switches to be installed in rough environments.
Some of our switches can operate from $-30 \mathrm{C}^{\circ}$ to $+110 \mathrm{C}^{\circ}$
The housing in Stainless steel 316L provides a real solution : a wide Polymer seal allows a perfect insulation of the switch.


## Outstanding capacities:

- Very high waterproofness (fresh, salted, chlorinated water)
- Very high resistance to the temperature: $-30 \mathrm{C}^{\circ}+110 \mathrm{C}^{\circ}$
- Very high resistance to torsions, vibrations, shocks
- Resist to cleaning and disinfectant products
- Complete polymer sealing
- Resists to UV



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## Overview

## Stand－alone operation without additional safety relay

All our switches fullfill the ISO13849－1／UL508 NKCR／C22．2 14M91 norms．
Low－voltage switchgear and controlgear including dimensional standardization is EN 60947－5－1：2004／A1：2009
All the safety switches and safety modules are designed and manufactured following UL508／CSAC22．2 regulation．
All switches EMC Standards：
EN 61000－6－2 ：2006，EN 61000－6－4 ： 2007
All switches ：EN 60947－5－1

| REFERENCE | EN 954－1 | ISO 13849－1 | MTTFd／DC | Certification |
| :---: | :---: | :---: | :---: | :---: |
| VIGIL SXRS | Cat 4 | PLe | 115 years／99，2\％ | CE／TUV |
| VIGIL SXR | Cat 3 | PLe | 115 years／99，2\％ | CE／TUV |
| AMX R | Cat 3 | PLd | 40 years／90\％ | CE |
| AMX 5 | Cat 3 | PLe | 210 years／99．5\％ | CE／UL／CSA／TUV |
| AMX 5 －OX | Cat 3 | PLe | 210 years／99．5\％ | CE／UL／CSA／TUV |
| AMX5－CK | Cat 3 | PLe | 210 years／99\％ | CE／TUV＊ |
| AMX5－CM 12 | Cat 3 | PLe | 210 years／99\％ | CE／TUV＊ |
| AMX 4 | Cat 3 | PLe | 210 years／99．5\％ | CE／UL／CSA／TUV |
| AMX 3 | Cat 3 | PLe | 210 years／99．5\％ | CE／UL／CSA／TUV |
| AMX3 MKT | Cat 3 | PLe | 210 years／99．5\％ | CE／UL／CSA／TUV |
| AMX 3 －OX | Cat 3 | PLe | 210 years／99．5\％ | CE／UL／CSA／TUV |
| BOSTER 4KGS | Cat 3 | PLe | 210 years／99\％ | CE／TUV＊ |
| 2SSR24V | Cat 1 | PL c | 50 years／ $99 \%$ | CE |
| 2SSR24BX | Cat 1 | PL c | 50 years／ $99 \%$ | CE |
| 3SSR 24V | Cat 1 | PL c | 50 years／ $99 \%$ | CE |
| 4SSR24BX | Cat 1 | PLC | 50 years／ $99 \%$ | CE |
| 5SS range | Cat 1 | PL c | 50 years $99 \%$ | CE |
| 7SSR24V | Cat1 | PL c | 50 years $99 \%$ | CE |
| Massimotto X5 M12 SR | Cat 3 | PLe | 210 years／ $99 \%$ | CE／TUV＊ |
| Massimotto X5 M12 AR | Cat 3 | PLe | 210 years／ $99 \%$ | CE／TUV＊ |
| Massimotto X5．2 M12 AR | Cat 3 | PLe | 210 years／ $99 \%$ | CE／TUV＊ |
| Massimotto X5．2 M12 AR | Cat 3 | PLe | 210 years／ $99 \%$ | CE／TUV＊ |
| OPTO 2 S | Cat 1 | PL c | 118 years／90\％ | CE |

＊Process Acotom 3 approved by Tüv

RoHS

Stand-alone operation without additional safety relay

VIGIL
p. 23

- SXR Cat. 3 PLe*
- SXRS Cat. 4 PLe (integrated safety loop)*
- 2 NO safety outputs +1 NC auxiliary output
- Cable wiring
- Polycarbonate housing
- $2 \mathrm{~A} / 48 \mathrm{~V}$ switching capacity
- Built-in LED


AMX SERIE
p. 24

- AMX3 2 NO safety outputs +1 NC auxiliary output
- AMX4 2NO safety outputs
- AMX5 2NO safety outputs + 1NC auxiliary output
- Cat. 3 PLe*
- Cable or built-in M12 quick-connector or MKT pig-tail connector
- Polycarbonate and Stainless Steel 316L housing
- 2A/48V switching capacity
- 10 mm switching distance and 7 mm misalignment
- Built-in LED

AMX R
p. 27

- Cat. 3 PLd*
- 2 NO safety outputs +1 NC auxiliary output
- 2A/48V switching capacity
- Cable wiring
- PA6 housing, reinforced with glassfiber,
- RFID coding
- 17 mm switching distance and 12 mm misalignment
- Built-in LED

AMX 5 CK
p. 28

- Cat. 3 PLe*
- 2 NO safety outputs +1 NC auxiliary output
- $2 \mathrm{~A} / 48 \mathrm{~V}$ switching capacity
- Built-in M12 quick connector
- Safe key-transfer system
- Makes impossible to restart the machine unless the key is correctly inserted and locked into the switch, to avoid the unique operator to be trapped into the dangerous zone
- Cat. 3 PLe*

BOSTER

- 2 NO safety outputs +1 NC auxiliary output
p. 29
- $2 \mathrm{~A} / 48 \mathrm{~V}$ switching capacity
- Stainless Steel 316L housing and laser marking
- permanent magnetic holding 4 KG
- Front screw holes


MASSIMOTTO
p. 30

- Cat. 3 PLe*
- 2 NO safety outputs +1 NC auxiliary output
- $2 \mathrm{~A} / 48 \mathrm{~V}$ switching capacity
- X5 M12 AR with built-in Reset
- X5 M12 SR with automatic Reset
- Built-in M12 quick connector (double connector in option)
- Polycarbonate housing
- Double emitter in option (1007D)

SSR SERIE
p. 34

OPTO 25
p. 38

- 3SSR 1 NO safety output
- 4SSR 2NO safety outputs
- 5SSR 2NO safety outputs + 1NC auxiliary output
- (BXUS: 1 bicolor LED, BX : 1 monocolor LED)
- Cat. 1 PLc*
- Cable or MKT pig-tail connector
- Polycarbonate and Stainless Steel 316L housing
- $2 \mathrm{~A} / 250 \mathrm{~V}$ switching capacity
- 10 mm switching distance and 10 mm misalignment
- Cat 1 PLc*
- 2NO safety outputs
- $250 \mathrm{~mA} / 48 \mathrm{~V}$ switching capacity

- Polycarbonate housing
- 7 mm switching distance and 3 mm misalignment
- Cable wiring
- For small guarddoors
* safety category in stand-alone operation mode without safety relay


## VIGIL

－Integrated self－control „ACOTOM ${ }^{\oplus} 3^{\prime}$
－LED status display of the correct code recognition
－Built－in Reset（SXRS），Testloop
－Highest safety category and performance level PLe Cat． 4
－No additional safety relay necessary：easy to implement into an existing sys－
tem wihtout modifying all the electrical diagrams
－Up to 128 codes on request

（ $\in$
Technical datas
Switching distance Sn（closing）：
Switching distance Sn（opening）：
Hysteresis／Misalignment：
Power supply：
Current consumption：
Safety outputs：
Auxiliary output：
Electronic double coding with self－control

Temperature operation：
Max．switching frequency：
Resistance to vibration：
Shock stress
Protection class：
Mechanical life expectancy：
MTTFd／DC
Housing：
Connection：
Standards：
Electromagnetic immunity ：
Weight Emitter／Receiver：

Safety classification：
Acc．to EN ISO 13849－1

Certification：


7 mm
10 mm
＋2 mm／$\pm 9 \mathrm{~mm}$
24 V AC／DC $-15 \% /+10 \%, 50 / 60 \mathrm{~Hz}$
$70 \mathrm{~mA} / \mathrm{DC}, 140 \mathrm{~mA} / \mathrm{AC}$
2 NO outputs 48 V AC， 30 V DC， 2 A
PNP－NC， 250 mA
$\mathrm{ACOTOM}^{\circledR} 3$
$-20^{\circ} \mathrm{C}$ to $+60^{\circ} \mathrm{C}$
2 Hz
$10-55 \mathrm{~Hz}, 1,5 \mathrm{~mm}$
$10 \mathrm{~g} / 11 \mathrm{~ms}$
IP67
50.000 .000 operations

115 years／99，2\％
Polycarbonate，yellow
Cable 10－pin， $3 \mathrm{~m} / 6 \mathrm{~m} / 12 \mathrm{~m}$
EN60947－5－1，EN954－1，EN13849－1
Acc．to IEC 61000－6－2，acc．to IEC 61000－6－4
$140 \mathrm{~g} / 380 \mathrm{~g}$

Up to Ple cat． 4 （SXRS），up to PLe cat． 3 （Typ．SXR）
The category will remain the same even in case of 30 switches connected in serie．

CE，TÜV

Wiring diagram


Dimensions


## Note：

Vigil is the only safety switch with both safety lines opened in case of failure


| VIGIL SXR／3m | VIGIL SXRS／3m |
| :--- | :--- |
| VIGIL SXR／6m | VIGIL SXRS／ $6 m$ |
| VIGIL SXR／12m | VIGIL SXRS $/ 12 m$ |

## Non contact coded safety switches - Stand alone operation

## AMX3/4/5

- Integrated self-control „ACOTOM ${ }^{\oplus}$ "
- LED status display of the correct code recognition
- High safety category and performance level: PLe Cat. 3
- Wide range of options
- No additional safety relay necessary: easy to implement into an existing sys-

tem wihtout modifying all the electrical diagrams


## Process ACOTOM3®

( $૯$ © ©

## Technical datas

Switching distance Sn (closing):
Switching distance Sn (opening):
Hysteresis/Misalignment:
Power supply:
Current consumption:
Safety outputs:
Auxiliary output:
Electronic double coding with self-control
Temperature operation:
Max. switching frequency:
Resistance to vibration:
Shock stress
Protection class:
Mechanical life expectancy:
MTTFd/DC
Housing:
Connection:
Standards:
Electromagnetic immunity :
Weight Emitter/Receiver:

Acc. to EN ISO 13849-1

Certification:

## Safety classification:

1 switch up to PLe cat. $3^{*}$
Serie wiring possible with 30 switches on a safety relay, up to PL4e

CE, TÜV, UL/CSA

* without additional safety relay

Wiring diagram


Exemple of application AMX5


Pin connection


Ordering-Nr.

| AMX3/3m | AMX4/3m | AMX5 $/ 3 m$ |
| :--- | :--- | :--- |
| AMX3/6m | AMX4/6m | AMX5/6m |
| AMX3/12m | AMX4/12m | AMX5/12m |
| AMX3/MKT |  | AMX5/MKT |

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## AMX3／5／MKT／INOX

－Integrated self－control „ACOTOM ${ }^{\oplus} 3$
－LED status display of the correct code recognition
－High safety category and performance level：PLe Cat． 3
－Perfect for the implementation in severe environments
－No additional safety relay necessary：easy to implement into an existing sys－
tem wihtout modifying all the electrical diagrams

（ $\mathcal{E}$ ©

## Technical datas

Switching distance Sn（closing）：
Switching distance Sn （opening）：
Hysteresis／Misalignment：
Power supply：
Current consumption：
Safety outputs：
Auxiliary output：
Electronic double coding with self－control
Temperature operation：
Max．switching frequency：
Resistance to vibration：
Shock stress
Protection class：
Mechanical life expectancy：
MTTFd／DC
Housing：
Connection：
Standards：
Electromagnetic immunity ：
Weight Emitter／Receiver：

## Safety classification：

Acc．to EN ISO 13849－1

Certification：
Wiring diagram

Ordering－Nr．

| AMXXOX／3m | AMX5OX／3m |
| :--- | :--- |
| AMX3OX／6m | AMX5OX／6m |
| AMX3OX／12m | AMX5OX／12m |
| AMX3OX／MKT | AMX5OX／MKT |

without additional safety relay

Serie wiring possible with 30 switches on a safety relay，up to PL4e

CE，TÜV，UL／CSA
7 mm

10 mm
$+2 \mathrm{~mm} / \pm 7 \mathrm{~mm}$

24 V AC／DC－15\％／＋10\％，50／60 Hz
$40 \mathrm{~mA} / \mathrm{DC}, 50 \mathrm{~mA} / \mathrm{AC}$

2 NO outputs 48V AC，30V DC， 2 A
PNP－NC， 250 mA
$\mathrm{ACOTOM}^{\circledR} 3$
$-20^{\circ} \mathrm{C}$ to $+60^{\circ} \mathrm{C}$
2 Hz
$10 \mathrm{~g} / 11 \mathrm{~ms}$
$10-55 \mathrm{~Hz}, 1,5 \mathrm{~mm}$
IP67
50.000 .000 operations

210 years／99\％
Stainless Steel 316L
MKT pigtail 8－pin with 20 cm cable
EN60947－5－1，EN954－1，EN13849－1
Acc．to IEC 61000－6－2，acc．to IEC 61000－6－4 200g／330g

1 switch up to PLe cat．3＊


Application exemple AMX5


## Dimensions

Transmitter ：


Receiver：


Pin connection


Wiring diagram

## AMX5 CM12

- Integrated self-control „ACOTOM ${ }^{\text {® }}$ "
- LED status display of the correct code recognition
- High safety category and performance level: PLe Cat. 3

- Plug and play thanks to the built-in M12 connector
- No additional safety relay necessary: easy to implement into an existing sys-

- Self-control up to 30 switches in serie
c


## Technical datas

Switching distance Sn (closing):
Switching distance Sn (opening):
Hysteresis/Misalignment:
Power supply:
Current consumption:
Safety outputs:
Auxiliary output:
Electronic double coding with self-control
Temperature operation:
Max. switching frequency:
Resistance to vibration:
Shock stress
Protection class:
Mechanical life expectancy:
MTTFd/DC
Housing:
Connection:
Standards:
Electromagnetic immunity :
Weight Emitter/Receiver:

Safety classification:
Acc. to EN ISO 13849-1

Certification:


Ordering-Nr.
AMX5C/M12

## AMX R

－Integrated self－control „ACOTOM ${ }^{\text {® }}$＂
－Up to 16 million codes
－Self－learning，no programmation required
－LED status display of the correct code recognition
－High operation safety thanks to the uniquely coded emitter

－No additional safety relay necessary：easy to implement into an existing sys－
tem without modifying all the electrical diagrams

## C



## AMX5CK

- Integrated self-control „ACOTOM ${ }^{\text {® }} 3^{\text {" }}$
- LED status display of the correct code recognition
- High safety category and performance level: PLe Cat. 3
- Avoid an operator to be trapped inside a dangerous area
- No additional safety relay necessary: easy to implement into an existing system wihtout modifying all the electrical diagrams


## Technical datas

Switching distance Sn (closing):
Switching distance Sn (opening):
Hysteresis/Misalignment:
Power supply:
Current consumption:
Safety outputs:
Auxiliary output:
Coding principle
Temperature operation:
Max. switching frequency:
Resistance to vibration:
Shock stress
Protection class:
Mechanical life expectancy:
MTTFd/DC
Housing:
Connection:
Standards:
Electromagnetic immunity :
Weight Emitter/Receiver:

Safety classification:
Acc. to EN ISO 13849-1

Certification:
C

7 mm
10 mm
$+2 \mathrm{~mm} / \pm 9 \mathrm{~mm}$
$24 \mathrm{~V} \mathrm{AC} / \mathrm{DC}-15 \% /+10 \%, 50 / 60 \mathrm{~Hz}$
$40 \mathrm{~mA} / \mathrm{DC}, 50 \mathrm{~mA} / \mathrm{AC}$
2 NO outputs $48 \mathrm{~V} \mathrm{AC}, 30 \mathrm{~V} \mathrm{DC}$,2 A
PNP-NC, 250 mA
ACOTOM ${ }^{\circledR} 3$
$-20^{\circ} \mathrm{C}$ to $+60^{\circ} \mathrm{C}$
2 Hz
$10 \mathrm{~g} / 11 \mathrm{~ms}$
$10-55 \mathrm{~Hz}, 1,5 \mathrm{~mm}$
IP67
50.000 .000 operations
210 years / $99 \%$
Por

Wiring diagram


Application exemple


Dimensions


Receiver
Operation mode
AMX5 CK. Control and interiocking of 2 doors


Ordering-Nr.
AMX5C/M12

## Non contact coded safety switches - Stand alone operation

## BOSTER

- Integrated self-control „ACOTOM ${ }^{\circledR} 3$
- High safety category and performance level: PLe Cat. 3
- Perfect for the implementation in severe environments
- Continuous 4 KG magnetic holding force
- No additional safety relay necessary: easy to implement into an existing sys-
tem wihtout modifying all the electrical diagrams

c $\epsilon$


## Technical datas

Switching distance Sn (closing):
Switching distance Sn (opening):
Hysteresis/Misalignment:
Power supply:
Current consumption:
Safety outputs:
Auxiliary output:
Coding principle
Temperature operation:
Max. switching frequency:
Resistance to vibration:
Shock stress
Protection class:
Mechanical life expectancy:
MTTFd/DC
Housing:
Connection:
Standards:
Electromagnetic immunity :
Weight Emitter/Receiver:

Safety classification:
Acc. to EN ISO 13849-1

Certification:


## Ordering-Nr.

## Non contact coded safety switches - Stand alone operation

## MASSIMOTTO/X5/M12/AR

- With reset loop integrated
- Integrated self-control „ACOTOM ${ }^{\circledR} 3^{\text {" }}$
- LED status display of the correct code recognition
- High safety category and performance level: PLe Cat. 3
- No additional safety relay necessary: easy to implement into an existing sys-
tem wihtout modifying all the electrical diagrams

- Option double emitter for double hinge-doors
c $\epsilon$


## Technical datas

Switching distance Sn (closing):
Switching distance Sn (opening):
Hysteresis/Misalignment:
Power supply:
Current consumption:
Safety outputs:
Auxiliary output:
Coding principle
Temperature operation:
Max. switching frequency:
Resistance to vibration:
Shock stress
Protection class:
Mechanical life expectancy:
MTTFd/DC

Housing:
Connection:
Standards:
Electromagnetic immunity :
Weight Emitter/Receiver:

Safety classification:
Acc. to EN ISO 13849-1

Certification:


Ordering-Nr.
MASSIMOTTO/X5M12AR
MASSIMOTTO/X5M12AR/D

## MASSIMOTTO／X5．2／M12／AR

－With reset loop integrated and double M12 connector
－Integrated self－control „ACOTOM ${ }^{\oplus}$＂
－LED status display of the correct code recognition
－Very practical solution to daisy chain safety switches around a machine
－No additional safety relay necessary：easy to implement into an existing sys－
tem wihtout modifying all the electrical diagrams
－Option double emitter for double hinge－doors


## Technical datas

Switching distance Sn（closing）：
Switching distance Sn （opening）：
Hysteresis／Misalignment：
Power supply：
Current consumption：
Safety outputs：
Auxiliary output：
Coding principle
Temperature operation：
Max．switching frequency：
Resistance to vibration：
Shock stress
Protection class：
Mechanical life expectancy：
MTTFd／DC
Housing：
Connection：
Standards：
Electromagnetic immunity ：
Weight Emitter／Receiver：

Safety classification：
Acc．to EN ISO 13849－1

Certification：
c


$$
1 \mathrm{PNP} / \mathrm{NC}, 250 \mathrm{~mA}
$$

$$
\mathrm{ACOTOM}^{\circledR} 3
$$

$$
-20^{\circ} \mathrm{C} \text { to }+60^{\circ} \mathrm{C}
$$

$$
10 \mathrm{~ms}
$$

$$
10 \mathrm{~g} / 11 \mathrm{~ms}
$$

$$
10-55 \mathrm{~Hz}, 1,5 \mathrm{~mm}
$$

IP67
50.000 .000 operations

210 years／80\％
Polycarbonate，yellow
Built－in M12 connector，8－pin
EN60947－5－1，EN954－1，EN13849－1
Acc．to IEC 61000－6－2，acc．toIEC 61000－6－4
$66 g / 148 g$

1 switch up to PLe cat．3＊
Serie wiring possible with 30 switches on a safety relay，up to PL4e

CE
＊without additional safety relay



Ordering－Nr．
MASSIMOTTO／X5．2M12AR
MASSIMOTTO／X5．2M12AR／D

## MASSIMOTTO/X5/M12/SR

- With automatic reset integrated

- Option double emitter for double hinge-doors
c $\epsilon$


## Technical datas

Switching distance Sn (closing):
Switching distance Sn (opening):
Hysteresis/Misalignment:
Power supply:
Current consumption:
Safety outputs:
Auxiliary output:
Coding principle
Temperature operation:
Max. switching frequency:
Resistance to vibration:
Shock stress
Protection class:
Mechanical life expectancy:
MTTFd/DC

Housing:
Connection:
Standards:
Electromagnetic immunity :
Weight Emitter/Receiver:

Safety classification:
Acc. to EN ISO 13849-1

Certification:


MASSIMOTTO/X5M12SR
MASSIMOTTO/X5M12SR/D

## MASSIMOTTO／X5．2／M12／SR

－With automatic reset integrated
－Integrated self－control „ACOTOM ${ }^{\oplus} 3$＂
－LED status display of the correct code recognition
－High safety category and performance level：PLe Cat． 3
－No additional safety relay necessary：easy to implement into an existing sys－
tem wihtout modifying all the electrical diagrams
－Option double emitter for double hinge－doors

## C



## Technical datas

Switching distance Sn（closing）：
Switching distance Sn （opening）：
Hysteresis／Misalignment：
Power supply：
Current consumption：
Safety outputs：
Auxiliary output：
Coding principle
Temperature operation：
Max．switching frequency：
Resistance to vibration：
Shock stress
Protection class：
Mechanical life expectancy：
MTTFd／DC
Housing：
Connection：
Standards：
Electromagnetic immunity ：

Weight Emitter／Receiver：

Safety classification：
Acc．to EN ISO 13849－1

Certification：


Ordering－Nr．
MASSIMOTTO／X5．2M12SR
MASSIMOTTO／X5．2M12SR／D

## 2SSR24V / 2SSR24BX

- Coded „ACOTOM ${ }^{\text {®. }}$
- LED status display of the correct code recognition
- Easily replaces mechanical safety swicthes
- Available with different 8 codes
- High switching capacity


C

## Technical datas

Switching distance Sn (closing):
Switching distance Sn (opening):
Hysteresis/Misalignment:
Power supply:
Current consumption:
Safety outputs:

Auxiliary output
Coding principle
Temperature operation:
Max. switching frequency:
Resistance to vibration:
Shock stress
Protection class:
Mechanical life expectancy:
MTTFd/DC
Housing:
Connection:
Standards:
Electromagnetic immunity :
Weight Emitter/Receiver:

Safety classification:
Acc. to EN ISO 13849-1

Certification:

1 switch up to PLc cat. 1
Serie wiring possible with 30 switches on a safety relay, up to PL3c (PL4c if only one)

CE

$20^{\circ} \mathrm{C}$ to $+60^{\circ} \mathrm{C}$

2 Hz
$10 \mathrm{~g} / 11 \mathrm{~ms}$
$10-55 \mathrm{~Hz}, 1,5 \mathrm{~mm}$
IP67
50.000.000 operations

50 years / 90\%
STAR2E, yellow
Cable 6-pin., 3m/6m/12m
EN60947-5-1, EN954-1, EN13849-1
Acc. to IEC 61000-6-2, acc. to IEC 61000-6-4

50g / 195g


## Non contact coded safety switches - Stand alone operation

## 3SSR24V / 4SSR24BX / 5SSR24BX

- Coded „ACOTOM ${ }^{\text {®u }}$
- Easily replaces mechanical safety swicthes
- High switching capacity
- LED status display of the correct code recognition
- 4SSR24BX and 5SSR24BXUS: bicolor red/green LED
- 5SSR24BX: monocolor LED


## Technical datas

Switching distance Sn (closing):

## Switching distance Sn (opening):

Hysteresis/Misalignment:
Power supply:
Current consumption:
Safety outputs:

Auxiliary output:
Coding principle
Temperature operation:
Max. switching frequency:
Resistance to vibration:
Shock stress
Protection class:
Mechanical life expectancy:
MTTFd/DC
Housing:
Connection:
Standards:
Electromagnetic immunity :
Weight Emitter/Receiver:

## Safety classification:

Acc. to EN ISO 13849-1

Certification:

## C

outputs $250 \mathrm{~V} / 2 \mathrm{~A}$
2NO (4SSR24V and 5SSR24BX and 5SSR24BXUS) 1NO/NC (3SSR24V)

1 PNP/NC 250mA (5SSR24BX)
$\mathrm{ACOTOM}^{\circledR}$
$-20^{\circ} \mathrm{C}$ to $+60^{\circ} \mathrm{C}$

2 Hz
$10 \mathrm{~g} / 11 \mathrm{~ms}$
$10-55 \mathrm{~Hz}, 1,5 \mathrm{~mm}$
IP67
50.000.000 operations

50 years / 90
STAR2E, yellow
Cable 8-pin., 3m/6m/12m, or M12 pigtail 8-pin (on 5SSR24BX)

EN60947-5-1, EN954-1, EN13849-1
Acc. to IEC 61000-6-2, acc. to IEC 61000-6-4
70g / 205g

1 switch up to PLc cat. 1
Serie wiring possible with 30 switches on a safety relay, up to PL3c (PL4c if only one)

CE

Wiring diagram


Application exemple 5SSR24BX


Dimensions


## 5SSR24BX/INOX

- Coded „ACOTOM ${ }^{\text {®u }}$

- Easily replaces mechanical safety swicthes
- High switching capacity
- LED status display of the correct code recognition
- Stainless Steel 316L housing for severe environments


C

## Technical datas

Switching distance Sn (closing):
Switching distance Sn (opening):
Hysteresis/Misalignment:
Power supply:
Current consumption:
Safety outputs:
Auxiliary output:
Coding principle
Temperature operation:
Max. switching frequency:
Resistance to vibration:
Shock stress
Protection class:
Mechanical life expectancy:
MTTFd/DC
Housing:
Connection:
Standards:
Electromagnetic immunity :
Weight Emitter/Receiver:

Safety classification:
Acc. to EN ISO 13849-1
1 switch up to PLc cat. 1
Serie wiring possible with 30 switches on a safety relay, up to PL3c (PL4c if only one)

Certification:


## Non contact coded safety switches - Stand alone operation

## 7SSR24V

- Coded „ACOTOM ${ }^{\text {®u }}$
- CuNi housing M30x1,5
- LED status display of the correct code recognition
- Cylindrical design
c




## Non contact coded safety switches - Stand alone operation

## OPTO2S

- Coded „Aсотом ${ }^{\text {® }}$
- Easily replaces mechanical safety swicthes
- High switching capacity
- LED status display of the correct code recognition



## Technical datas

Switching distance Sn (closing):
Switching distance Sn (opening):
Hysteresis/Misalignment:
Power supply:
Current consumption:
Safety outputs:
Auxiliary output:
Coding principle
Temperature operation:
Max. switching frequency:
Resistance to vibration:
Shock stress
Protection class:
Mechanical life expectancy:
MTTFd/DC
Housing:
Connection:
Standards:
Electromagnetic immunity :
Weight Emitter/Receiver:

Safety classification:
Acc. to EN ISO 13849-1

Certification:
1 switch up to PLc cat. 1
Serie wiring possible with 30 switches on a safety
relay, up to PL3c (PL4c if only one)
CE
Notice:
The OPTO2S can not be connected to the safety
relay AWAX26XXL with the automatic Reset mode.


OPTO2S/3m
OPTO2S/6m
OPTO2S/12m

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## Non stand-alone operation



Non contact coded safety switches - Non stand-alone operation

The non stand alone safety switches are designed to operate in connection with a safety relay.

The COMITRONIC technology:

- High coding power with dual channel
- Ideal solution for vibrating environment
- Safety category : up to PLe ca4
- High misalignment authorised in all axis (+/-7mm)
- $\quad$ High detection distance ( 10 mm or more on request)

Constant small hysteresis < 2 mm
Up to 30 switches connected in series

- LED and auxiliary line showing the exact state of the coding system An external AWAX module is needed

Electronic safety switch


Resists even to shocks stronger than 30G

The ACOTOM®2 Process
A global safety solution
Up to 30 Guarddoors can be monitored with an AWAX safety relay


Non stand-alone safety switches


Safety relay AWAX
POWER
SUPPLY
SAFETY SWITCH


## Overview <br> Non stand alone operation with an additional safety relay

Our safety switches fullfill the ISO13849－1／UL508 NKCR／C22．2 14M91 standards．
ANATOM switches must be connected on AWAX module to guarantee a safety level．
－One switch per AWAX reaches category 4
－$\quad$ Several switches per AWAX reach category 3
All switches EMC Standards ：
EN 61000－6－2 ：2006，EN 61000－6－4 ： 2007
All switches ：EN 60947－5－3

| REFERENCE | EN 954－1 | ISO 13849－1 | MTTFd／DC | Certification |
| :---: | :---: | :---: | :---: | :---: |
| XORF | Cat 3 | PLd | pending | CE |
| ANATOM 6S | Cat 4 | PLe | 335 years／ $99 \%$ | CE／UL／CSA |
| ANATOM 6S M12 | Cat 4 | PLe | 335 years／ $99 \%$ | CE／TUV＊ |
| ANATOM78S | Cat 4 | PLe | 335 years／ 99.5 \％ | CE／UL／CSA／TUV |
| ANATOM78S－OX | Cat 4 | PLe | 335 years／99．5\％ | CE／UL／CSA／TUV＊ |
| ANATOM 78S M12 | Cat 4 | PLe | pending | CE |
| ANATOM 78 S SES M12 | Cat 4 | PLe | pending | CE |
| ANATOM 78 S SRM M12 | Cat 4 | PLe | pending | CE |
| ANATOM98S | Cat 4 | PLe | 335 years／ 99.5 \％ | CE／UL／CSA／TUV |
| ANATOM 98S M 12 | Cat 4 | PLe | pending | CE／UL／CSA／TUV＊ |
| ANATOM M18 | Cat 4 | PLe | 225 years／80\％ | CE |
| EPINUS OX 2KGS | Cat 4 | PLe | 360 years／ $93 \%$ | CE |
| EPINUS OX 4KGS | Cat 4 | PLe | 314 years／ $91 \%$ | CE |
| Massimotto ANA78S． 2 M 12 | Cat 4 | PLe | 335 years／ $99 \%$ | CE |
| Massimotto ANA98S． 2 M12 | Cat 4 | PLe | 335 years／ $99 \%$ | CE |
| OPTOPUS DEC | Cat 4 | PLe | 423 years／ $99 \%$ | CE／TUV＊ |
| OPTOPUS DEC－OX | Cat 4 | PLe | 423 years／ $99 \%$ | CE／TUV＊ |
| SM1－OP＝E VERSION | Cat 4 | PLe | 300 years／ $90 \%$ | CE |
| VSR OP DEC＝R VERSION | Cat 4 | PLe | 300 years／ $90 \%$ | CE |
| SM2 E and R Version | Cat 4 | PLe | 300 years／ $90 \%$ | CE／TUV＊ |
| TRITHON | Cat 4 | PLe | 430 years／ $94 \%$ | CE／UL／CSA／TUV＊ |

＊Process Acotom 3 approved by Tüv

ANATOM M18 p. 43<br>OPTOPUS DEC p. 44<br>ANATOM 78S \& 98S p. 47

ANATOM 6 S p. 52

- Power supply directly from AWAX26XXL
- Cat. 2 PLd in serie
- 2 NO safety outputs
- Polycarbonate housing
- Cable and built-in M12 available

- Cat. 3 PLe in serie
- 2 NO safety outputs + 1 NC auxiliary output
- Polycarbonate and Stainless Steel 316L housing
- Cable and M12 pigtail (MKT) available
- Cylindrical design
- Cat. 3 PLe in serie
- 2 NO safety outputs + 1 NC auxiliary output
- Built-in M12 connector
- CuNi housing
- 5 mm switching distance and 3 mm misalignment
- Cat. 3 PLe in serie
- 78S : 2 NO safety outputs + 1NC auxiliary output
- 98S : 2 NO safety outputs + 1 NO auxiliary output
- Polycarbonate and Stainless Steel 316L housing
- Cable and built-in M12 and M12 pigtail (MKT) available
- 10 mm switching distance

- RFID unique coding

XORF
p. 54

- Cat. 3 PLe in serie
- 2 NO safety output
- PA6 housing, Glassfiber reinforced, resistant to the cutting oil
- 25 mm switching distance and 15 mm misalignment

EPINUS

- 2KG permanent magnetic holding(Teflon cable up to $90^{\circ} \mathrm{C}$ )

- 4KG permanent magnetic holding
- Cat. 3 PLe in serie
- 2 NO safety outputs + 1NC auxiliary output
- Stainless Steel 316L housing
- Avoid the door chating and unwanted opening
- Waterproof and meets hygiene requirements


TRITHON

- Special for the food industry from $-25^{\circ} \mathrm{C}$ to $+110^{\circ} \mathrm{C}$
- Cat. 3 PLe in serie
- 2 NO safety outputs +1 NC auxiliary output
- Stainless Steel 316L housing
- Teflon Cable

MASSIMOTTO ANA

- ANA 78S. 2 and ANA 98S. 2
- 2 NO safety outputs +1 NC auxiliary output 78S \& 98S
- Cat. 3 PLe in serie
- Built-in M12 connector(double in optio)
- Polycarbonate housing
- Double emitter in option (1007D)

SUPERMAGNET
1 \& 2
p. 60

- Electromagnetic holding
- Supermagnet 1 with 20 or 50 kg holding
- Locked when energized or when un-energized
- Supermagnet 2 with 40 or 100 kg holding
- Cat. 3 PLe in serie
- Buil-in M12 connector



## Non contact coded safety switches－Non stand－alone operation

## ANATOM M18

－Decoding by „ACOTOM ${ }^{\text {®＂}} 2$ Process
－LED status display of the correct code recognition
－Misalignment ：$\pm 30^{\circ}$ in rotating movement
－Auxiliary output for automation control or light
－Metal housing CuNi with M12 quick connector
－Static outputs
－Unlimited life expectancy

## ©



Ordering－Nr．
ANATOM／M18

## Non contact coded safety switches - Non stand-alone operation

## OPTOPUS DEC

- Decoding by „ACOTOM ${ }^{\circledR \text { " }} 2$ Process
- LED status display of the correct code recognition
- Auxiliary output for automation control or light
- Static outputs
- Wide range of options
- Small size for tiny access
c $\epsilon$


## Technical datas

Switching distance Sn (closing):
Switching distance Sn (opening):
Hysteresis/Misalignment:
Power supply:
Current consumption:
Safety outputs:
Auxiliary output:
Coding principle
Temperature operation:
Max. switching frequency:
Resistance to vibration:
Shock stress
Protection class:
MTTFd/DC
Housing:

Acc. to EN ISO 13849-1

Certification:

[^0]Electromagnetic immunity :
Weight Emitter/Receiver:

## Safety classification:

Connection:
Standards:


Ordering-Nr.
OPTOPUS/DEC/3m
OPTOPUS/DEC/6m
OPTOPUS/DEC/12m

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## OPTOPUS DEC/MKT

- Decoding by „ACOTOM ${ }^{\circledR 4} 2$ Process
- LED status display of the correct code recognition
- Auxiliary output for automation control or light
- Static outputs
- M12 pigtail quick-connector
- Small size for tiny access


## ©



Ordering-Nr.
OPTOPUS/DEC/MKT

## Non contact coded safety switches - Non stand-alone operation

## OPTOPUS DEC/INOX

- Decoding by „ACOTOM ${ }^{\circledR \times 2} 2$ Process
- LED status display of the correct code recognition
- Auxiliary output for automation control or light
- Static outputs
- Stainles steel 316L for severe environments
- Small size for tiny access


## Temperature operation:

Max. switching frequency:
Resistance to vibration:
Shock stress
Protection class:
MTTFd/DC
Housing:
Connection:
Standards:

Electromagnetic immunity :
Weight Emitter/Receiver:

Safety classification:
Acc. to EN ISO 13849-1

Certification:
Technical datas
Switching distance Sn (closing):
Switching distance Sn (opening):
Hysteresis/Misalignment:
Power supply:
Current consumption:
Safety outputs:
Auxiliary output:
Coding principle


C



Application exemple


Dimensions


OPTOPUS/DEC/INOX/3m
OPTOPUS/DEC/INOX/6m
OPTOPUS/DEC/INOX/12m
OPTOPUS/DEC/INOX/MKT
COMITRONIC BTI- ZI Nord des richardets - 34, Allée du closeau - 93160 NOISY LE GRAND - France
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## Non contact coded safety switches - Non stand-alone operation

## ANATOM 78S and 98S

- Decoding by „ACOTOM ${ }^{\text {®r }} 2$ Process
- LED status display of the correct code recognition
- Auxiliary output for automation control or light
- Static outputs
- Large switching distance



## Technical datas

Switching distance Sn (closing):

## Switching distance Sn (opening):

Hysteresis/Misalignment:
Power supply:
Current consumption:
Safety outputs:
Auxiliary output:

Coding principle
Temperature operation:
Max. switching frequency:
Resistance to vibration:
Shock stress
Protection class:
MTTFd/DC
Housing:
Connection:

## Standards:

Electromagnetic immunity :
Weight Emitter/Receiver:

Safety classification:
Acc. to EN ISO 13849-1

Certification:

| 10 mm |
| :---: |
| $\pm 7 \mathrm{~mm}$, |
| $+2 \mathrm{~mm}$ |
| 24V AC/DC; $-15 \% /+10 \%, 50 / 60 \mathrm{~Hz}$ |
| $30 \mathrm{~mA} / \mathrm{DC} ; 70 \mathrm{~mA} / \mathrm{AC}$ |
| 2 static outputs ; 24 V DC/800mA @ $25^{\circ} \mathrm{C}$ |
| 1 PNP/NO, 250mA (78S); <br> 1 PNP/NC,250mA (98S) |
| ACOTOM ${ }^{\text {®. }} 2$ |
| $-20^{\circ} \mathrm{C}$ to $+60^{\circ} \mathrm{C}$ |
| 10 ms |
| $30 \mathrm{~g} / 11 \mathrm{~ms}$ |
| $10-55 \mathrm{~Hz}, 1,5 \mathrm{~mm}$ |
| IP67 |
| 335 years / 99\% |
| STAR2E, yellow |
| Cable 8-pin, 3/6/12 m |
| EN60947-5-3, EN954-1, EN13849-1, EN55022, EN61000-6-2; 01/2006; EN61000-6-4; 03/2007 |
| Acc. to IEC 61000-6-2, acc. toIEC 61000-6-4 |
| $80 \mathrm{~g} / 100 \mathrm{~g}$ |

$80 \mathrm{~g} / 100 \mathrm{~g}$

1 switch up to PLe cat. 4
Serie wiring possible with 30 switches on a safety relay, up to PLe cat. 3

CE, TÜV, UL/CSA


Application exemple


Dimensions


## Ordering-Nr.

| ANATOM78S/3m | ANATOM98S $/ 3 \mathrm{~m}$ |
| :--- | :--- |
| ANATOM78S/6m | ANATOM98S/6m |
| ANATOM $78 \mathrm{~S} / 12 \mathrm{~m}$ | ANATOM $98 \mathrm{~S} / 12 \mathrm{~m}$ |

## ANATOM 78S MKT

- Decoding by „ACOTOM ${ }^{\circledR \text { ®" }} 2$ Process
- LED status display of the correct code recognition
- Auxiliary output for automation control or light
- Static outputs
- Large switching distance

- M12 pigtail connector


## Technical datas

Switching distance Sn (closing):
Switching distance Sn (opening):
Hysteresis/Misalignment:
Power supply:
Current consumption:
Safety outputs:
Auxiliary output:
Coding principle
Temperature operation:
Max. switching frequency:
Resistance to vibration:
Shock stress
Protection class:
MTTFd/DC
Housing:
Connection:
Standards:
Electromagnetic immunity :
Weight Emitter/Receiver:

Safety classification:
Acc. to EN ISO 13849-1

Certification:



Ordering-Nr.
ANATOM78S/MKT

## Non contact coded safety switches - Non stand-alone operation

## ANATOM 78S/INOX

- Decoding by „ACOTOM ${ }^{\text {®u }} 2$ Process
- LED status display of the correct code recognition
- Auxiliary output for automation control or light
- Static outputs
- Large switching distance
- Stainless Steel 316L for the food industry



## Technical datas

Switching distance Sn (closing):

## Switching distance Sn (opening):

Hysteresis/Misalignment:
Power supply:
Current consumption:
Safety outputs:
Auxiliary output:
Coding principle
Temperature operation:
Max. switching frequency:
Resistance to vibration:
Shock stress
Protection class:
MTTFd/DC
Housing:
Connection:
Standards:

Electromagnetic immunity :
Weight Emitter/Receiver:

## Safety classification:

Acc. to EN ISO 13849-1

Certification:
10 mm
$\pm 7 \mathrm{~mm}$,
+2 mm

24V AC/DC; $-15 \% /+10 \%, 50 / 60 \mathrm{~Hz}$
$30 \mathrm{~mA} / \mathrm{DC} ; 70 \mathrm{~mA} / \mathrm{AC}$
2 static outputs ; 24 V DC/800mA @ $25^{\circ} \mathrm{C}$
1 PNP/NO, 250mA
ACOTOM ${ }^{\text {®^2 }}$
$-20^{\circ} \mathrm{C}$ to $+60^{\circ} \mathrm{C}$
10 ms
$30 \mathrm{~g} / 11 \mathrm{~ms}$
$10-55 \mathrm{~Hz}, 1,5 \mathrm{~mm}$
IP69K
335 years / 99\%
Stainless steel 316L
Cable 8 -pin, $3 / 6 / 12 \mathrm{~m}$; or M12 pigtail 8 -pin
EN60947-5-3, EN954-1, EN13849-1, EN55022,
EN61000-6-2; 01/2006; EN61000-6-4; 03/2007
Acc. to IEC 61000-6-2, acc. toIEC 61000-6-4
$190 \mathrm{~g} / 190 \mathrm{~g}$

1 switch up to PLe cat. 4
Serie wiring possible with 30 switches on a safety relay, up to PLe cat. 3

CE, TÜV, UL/CSA


Ordering-Nr.


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## Non contact coded safety switches - Non stand-alone operation

## ANATOM 78S M12

- Decoding by „ACOTOM ${ }^{\text {®" }} 2$ Process
- LED status display of the correct code recognition
- Auxiliary output for automation control or light
- Static outputs
- Large switching distance
- Built-in M12 connector



## Technical datas

Switching distance Sn (closing):
Switching distance Sn (opening)
Hysteresis/Misalignment:
Power supply:
Current consumption:
Safety outputs:
Auxiliary output:
Coding principle
Temperature operation:
Max. switching frequency:
Resistance to vibration:
Shock stress
Protection class:
MTTFd/DC
Housing:
Connection:
Standards:

Electromagnetic immunity :
Weight Emitter/Receiver:

Safety classification:
Acc. to EN ISO 13849-1

Certification:

Ordering-Nr.
ANATOM78S/M12

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Tel: +33 (0)143030303-Fax: +33 (0)143046222

## Non contact coded safety switches－Non stand－alone operation

## ANATOM 98S M12

－Decoding by „ACOTOM ${ }^{\text {®＂}} 2$ Process
－LED status display of the correct code recognition
－Auxiliary output for automation control or light
－Static outputs
－Large switching distance
－Built－in M12 connector


## Technical datas

Switching distance Sn（closing）：

## Switching distance Sn （opening）

Hysteresis／Misalignment：
Power supply：
Current consumption：
Safety outputs：
Auxiliary output：
Coding principle
Temperature operation：
Max．switching frequency：
Resistance to vibration：
Shock stress
Protection class：
MTTFd／DC
Housing：
Connection：
Standards：

Electromagnetic immunity ：
Weight Emitter／Receiver：

## Safety classification：

Acc．to EN ISO 13849－1

Certification：
8 mm
$\pm 7 \mathrm{~mm}$
+3 m

24V AC／DC；$-15 \% /+10 \%, 50 / 60 \mathrm{~Hz}$
$42 \mathrm{~mA} / \mathrm{DC} ; 70 \mathrm{~mA} / \mathrm{AC}$
2 static outputs ； 24 V DC／800mA＠ $25^{\circ} \mathrm{C}$
1 PNP／NC， 250 mA
ACOTOM ${ }^{\text {®＂}} 2$
$-20^{\circ} \mathrm{C}$ to $+60^{\circ} \mathrm{C}$
$500 \mu \mathrm{~s}$
$30 \mathrm{~g} / 11 \mathrm{~ms}$
$10-55 \mathrm{~Hz}, 1,5 \mathrm{~mm}$
IP67
335 years／99\％
Polycarbonate，yellow
Built－in M12－8－pin
EN60947－5－3，EN954－1，EN13849－1，EN55022，
EN61000－6－2；01／2006；EN61000－6－4；03／2007
Acc．to IEC 61000－6－2，acc．toIEC 61000－6－4
$80 \mathrm{~g} / 100 \mathrm{~g}$

1 switch up to PLe cat． 4
Serie wiring possible with 30 switches on a safety relay，up to PLe cat． 3

CE

Wiring diagram


Application exemple


Pin connection
Male input connector：
1 white T11
2 brown 24 V
3 green AUX NO
4 yellow T21
5 grey T12
6 pink T22
6 pink T22
8 red AUX NO
Accessory：
FKT M12 with
2,5 or 10 M cable

Ordering－Nr．
ANATOM98S／M12

## Non contact coded safety switches - Non stand-alone operation

## ANATOM 6S

- Decoding by „ACOTOM ${ }^{\text {®" }} 2$ Process
- LED status display of the correct code recognition
- Auxiliary output for automation control or light
- Static outputs
- Large switching distance
- Energised by the relay Awax (up to 5 switches)

(€ ®-


## Technical datas

Switching distance Sn (closing):
Switching distance Sn (opening):
Hysteresis/Misalignment:
Power supply:
Current consumption:
Safety outputs:
Auxiliary output
Coding principle
Temperature operation:
Max. switching frequency:
Resistance to vibration:
Shock stress
Protection class:
MTTFd/DC
Housing:
Connection:
Standards:

Electromagnetic immunity :
Weight Emitter/Receiver:

Safety classification:
Acc. to EN ISO 13849-1

Certification:

[^1]Ordering-Nr.
ANATOM6S/3m
ANATOM6S $/ 6 \mathrm{~m}$
ANATOM6S/12m

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## ANATOM 6S M12

- Decoding by „ACOTOM ${ }^{\circledR \times} 2$ Process
- LED status display of the correct code recognition
- Auxiliary output for automation control or light

- Static outputs
- Large switching distance

- Built-in M12 connector


## ©



Ordering-Nr. ANATOM6S/M12

## Non contact coded safety switches - Non stand-alone operation

## XORF

- RFid technology
- Up to 16 million codes
- Self-learning, no programmation required
- LED status display of the correct code recognition
- Auxiliary output for automation control or light

- Static outputs
- Large switching distance
c


## Technical datas

Switching distance Sn (closing):
Switching distance Sn (opening):
Hysteresis/Misalignment:
Power supply:
Current consumption:
Safety outputs:
Auxiliary output:
Coding principle
Temperature operation:
Max. switching frequency:
Resistance to vibration:
Shock stress
Protection class:
MTTFd/DC
Housing:
SAFETY RELAYS
Connection:
Standards:

Electromagnetic immunity :
Weight Emitter/Receiver:

Safety classification:
Acc. to EN ISO 13849-1

[^2]Certification:

Ordering-Nr.

XORF/3m
XORF/6m
XORF/12m

## Non contact coded safety switches - Non stand-alone operation

## EPINUS 2KG

- Decoding by „ACOTOM ${ }^{\circledR ،} 2$ Process
- Permanent 2 kgs magnetic holding

- Teflon cable resistant up to $90^{\circ} \mathrm{C}$
c $\epsilon$


Ordering-Nr.
EPINUS/OX/2K/3m
EPINUS/OX/2K/6m
EPINUS/OX/2K/12m

## Non contact coded safety switches - Non stand-alone operation

## EPINUS 4KG

- Decoding by „ACOTOM ${ }^{\circledR \times 2} 2$ Process
- Permanent 4kgs magnetic holding
- Auxiliary output for automation control or light
- Static outputs
- Large switching distance

- Stainless Steel 316L for the food industry
- Laser marking


## ©

## Technical datas

Switching distance Sn (closing):
Switching distance Sn (opening):
Hysteresis/Misalignment:
Power supply
Current consumption:
Safety outputs:
Auxiliary output:
Coding principle
Temperature operation:
Max. switching frequency:
Resistance to vibration:
Shock stress
Protection class:
MTTFd/DC
Housing:
Connection:
Standards:

Electromagnetic immunity :
Weight Emitter/Receiver

Safety classification:
Acc. to EN ISO 13849-1

Certification:

Ordering-Nr.

| EPINUS/OX/4K/3m | EPINUS/OX/4K/MKT |
| :--- | :--- |
| EPINUS/OX/4K/6m |  |
| EPINUS/OX/2K/12m |  |

Wiring diagram


Application exemple


Dimensions


## Non contact coded safety switches - Non stand-alone operation

## TRITHON

- Decoding by „ACOTOM ${ }^{\text {®r }} 2$ Process
- Resists up to $110^{\circ} \mathrm{C}$ temperature
- Auxiliary output for automation control or light
- Static outputs
- Stainless Steel 316L for the food industry
- Laser marking

- Teflon cable


## c

## Technical datas

Switching distance Sn (closing):
Switching distance Sn (opening):
Hysteresis/Misalignment:
Power supply:
Current consumption:
Safety outputs:
Auxiliary output:
Coding principle
Temperature operation:
Max. switching frequency:
Resistance to vibration:
Shock stress
Protection class:
MTTFd/DC

Housing:
Connection:
Standards:

Electromagnetic immunity :
Weight Emitter/Receiver:

## Safety classification:

Acc. to EN ISO 13849-1

Certification:

## 9 mm

$\pm 30^{\circ}$ rotation
$+2 m m$
24 V DC; $-15 \% /+10 \%$;
$30 \mathrm{~mA} / \mathrm{DC}$
2 static outputs ; 24 V DC/ 800 mA bei $25^{\circ} \mathrm{C}$
1 PNP/NC 250mA; oder 1 NPN/NC 250mA
ACOTOM ${ }^{\text {®" }} 2$
$-25^{\circ} \mathrm{C}$ to $+110^{\circ} \mathrm{C}$
$500 \mu \mathrm{~s}$
$30 \mathrm{~g} / 11 \mathrm{~ms}$
$10-55 \mathrm{~Hz}, 1,5 \mathrm{~mm}$
IP69K
430 years / 94\% (AC1: 600000; AC15: 350000 ) (1A/30V DC)

Stainless Steel 316L
Cable Teflon 8-pin; 3/6/12m
EN60947-5-3, EN954-1, EN13849-1, EN55022,
EN61000-6-2; 01/2006; EN61000-6-4; 03/2007
Acc. to IEC 61000-6-2, acc. to EC 61000-6-4 $100 \mathrm{~g} / 300 \mathrm{~g}$

1 switch up to PLe cat. 4
Serie wiring possible with 30 switches on a safety relay, up to PLe cat. 3

CE


Dimensions


Ordering-Nr.
TRITHON/3m
TRITON/6m
$\xrightarrow{\text { TRITON/ } 6 m}$ TRITON/12m

## Non contact coded safety switches - Non stand-alone operation

## MASSIMOTTO ANA78S. 2 M12

- Decoding by „ACOTOM ${ }^{\text {®" }} 2$ Process
- LED status display of the correct code recognition
- Very easy daisy chain around a machine or on modular elements thanks to
the double M12 connector
- Option double emitter for double hinge-doors
- NC auxiliary output


MASSIMOTTO ANA78S.2M12


MASSIMOTTO ANA78S.2M12 D

## ©

## Technical datas

Switching distance Sn (closing):
Switching distance Sn (opening)
Hysteresis/Misalignment:
Power supply:
Current consumption:
Safety outputs:
Auxiliary output:
Coding principle
Temperature operation:
Max. switching frequency:
Resistance to vibration:
Shock stress
Protection class:
MTTFd/DC
Housing:
Connection:
Standards:

Electromagnetic immunity :
Weight Emitter/Receiver:

Safety classification:
Acc. to EN ISO 13849-1

Certification:


MASSIMOTTO/ANA78S.2M12
MASSIMOTTO/ANA78S.2M12/D

## MASSIMOTTO ANA98S. 2 M12

- Decoding by „ACOTOM ${ }^{\circledR \times 2} 2$ Process
- LED status display of the correct code recognition
- Very easy daisy chain around a machine or on modular elements thanks to
the double M12 connector
- Option double emitter for double hinge-doors
- NO auxiliary output


MASSIMOTTO ANA98S.2M12


MASSIMOTTO ANA98S.2M12 D

## ©



[^3]

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## Electromagnetic Holding with built－in safety switch

## Operation mode：

The supermagnet is a range of electromagnetic holding with a built－in safety switch．It allows to keep your door closed as well as monitor the safety function． It offers a safe alternative to existing mechanical technology．
These innovative magnets combine safety door monitoring with an electroma－ gnetic holding of 20 daN（SM1－OP）or 40 daN（SM2）in one unit．

The devices have two potential－free NO contacts（in case of opened door）moni－ tored by a safety relay Awax．

## Version E（locked when un－energised）

To separate the two parts，one have to apply a voltage of 24 V to the magnet． When they will not be energised，then they will not hold each other
When the two parts will be holding each other，then the 2 NO safety lines close and the auxiliary output（on SM1－OP）will open．

## Version R（locked when energised）

To keep the two parts sticking together，one have to apply a voltage of 24 V to the magnet．When they will be un－energised，they will not hold each other．
When the two parts will be holding each other，then the 2 NO safety lines close and the auxiliary output（on SM1－OP）will open．

## Super Magnet 1

Completely sealed Stainless steel 316L coming in June 2011


Holding force：Version R－50daN＝VSR OP DEC
Version E－20daN＝SM1 OP

## Super Magnet 2

Completely sealed Stainless steel 316L coming in June 2011


## Haltekraft：Version R－100daN

With one built－in M12 connector $=$ SM2 1R
With two built－in M12 connector $=$ SM2 2R

## Version E－40daN

With one built－in M12 connector $=$ SM2 1E With two built－in M12 connector $=$ SM2 2E

Operation mode of the SM1—OP
（locked when un－energised， 20 Kg holding force）

Important ：These magnets are only allowed to be used as guard locking if there is no hazard due to inertia machine movements．The guard loc－ king is，only used for process protection．

－The SM1 is not energised
－The SM1 is locked and the doors closed Machine is running


Operator can open the door safely，and the auxiliary output indicates the status of the guarddoor．

## SM1-OP

- Decoding by „ACOTOM ${ }^{\text {®" }} 2$ Process
- Magnetically locks doors closed
- LED status display of the correct code recognition
- Auxiliary output for automation control or light
- Static outputs to be monitored by the Awax
- Built-in M12 connector
- Requires a safety relay for the safety monitoring


C


Pin connection
EN60947-5-3, EN13849-1, EN55022, ISO18000-2
EN61000-6-2; 01/2006; EN61000-6-4; 03/2007
Acc. to IEC 61000-6-2, acc. to IEC 61000-6-4
$250 \mathrm{~g} / 440 \mathrm{~g}$

1 switch up to PLe cat. 4
Serie wiring possible with 30 switches on a safety relay, up to PLe cat. 3

CE
Wiring diagram


Dimensions


SM1-OP
FKT: Female Molded Cable

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## Electromagnetic Holding with built－in safety switch

## VSR－OP－DEC

－Decoding by „ACOTOM ${ }^{\circledR \text { ®＂}} 2$ Process
－Magnetically locks doors closed
－LED status display of the correct code recognition
－Auxiliary output for automation control or light
－Static outputs to be monitored by the Awax
－Built－in M12 connector
－Requires a safety relay for the safety monitoring

Technical datas
Power supply：
Current consumption：
Safety outputs：
Auxiliary output：
Coding principle
Holding force
Temperature
Shock stress
Max．switching frequency：
Protection class：
MTTFd／DC
Housing：
Connection：
Standards：
Electromagnetic immunity ：
Safety classification：

Acc．to EN ISO 13849－1

Certification：

24V AC／DC；＋10\％／－15\％
$40 m A-250 m A$
2 static outputs ；40V AC／DC；300mA
1 PNP／NO 250mA
ACOTOM ${ }^{\text {®＂}} 2$
Locked when energised
50 daN
$-25^{\circ} \mathrm{C}$ to $+50^{\circ} \mathrm{C}$
$30 \mathrm{~g} / 11 \mathrm{~ms}$
$10-55 \mathrm{~Hz}, 1,5 \mathrm{~mm}$
IP67
300 years／90\％
Polycarbonate，yellow
Built－in M12；8－pin
EN60947－5－3，EN13849－1，EN55022，ISO18000－2
EN61000－6－2；01／2006；EN61000－6－4；03／2007
Acc．to IEC 61000－6－2，acc．to IEC 61000－6－4
$250 \mathrm{~g} / 440 \mathrm{~g}$

1 switch up to PLe cat． 4
Serie wiring possible with 30 switches on a safety relay，up to PLe cat． 3

CE
c

Dimensions


Pin connection


## Ordering－Nr．

VSR－OP－DEC
Accessories
FKT：Female Molded Cable


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## Electromagnetic Holding with built-in safety switch

## SM2-R

- Decoding by „ACOTOM ${ }^{\text {®u }} 2$ Process
- Static outputs to be monitored by the Awax
- Single (ref. SM2 1R) or double (ref. SM2 2R) built-in M12 connector
- Requires a safety relay for the safety monitoring
- Locked when energised



## ©



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## Accessories for safety switches

\left.|  |  |  |
| :--- | :--- | :--- |
|  |  |  |
| Emitters for stand alone switches |  |  |$\right]$



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## Safety relays



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AWAX 26 XXL AWAX 26 XXLP AWAX 25 XL
p. 70 to 72

AWAX 27 XXL
p. 73

AWAX 28 XL
p. 74

## CO13 XXL

 C013 Lp. 76 and 77

COM 3C
p. 78

SPEEDTRONIC
p. 79

## Overview

## SAFETY RELAYS

- Monitoring of up to 30 safety switches with 2 NO
- Dip-switch to choose the reset mode: manual or automatic (on AWAX26XXL and XXLP)
- DLC-System for the overcurrent control<20ms
- $\quad 8 \mathrm{~A} / 250 \mathrm{Vac}$ or $8 \mathrm{~A} / 250 \mathrm{Vdc}$ switching capacity
- $\quad 3 \mathrm{NO}+1 \mathrm{NC}$


## SAFETY RELAY (TWO ZONES MONITORING)

- Monitoring of up to 30 safety switches with 2 NO
- Dip-switch at the back of the module to choose the reset mode: manual or automatic
- DLC-System for the overcurrent control < 20 ms
- $8 \mathrm{~A} / 250 \mathrm{Vac}$ or $8 \mathrm{~A} / 250 \mathrm{Vdc}$ Switching capacity
- $2 \times 3 \mathrm{NO}+1 \mathrm{NC}$

SAFETY RELAY

## EMERGENCY STOP RELAY

- Monitoring of EPB with one or two contacts
- Monitoring of mechanical safety switches
- Dip-switch at the back of the module to choose the reset mode: manual or automatic (on CO13XXL)


## TWO HAND CONTROL RELAY

- Monitoring of buttons with each one NO and one NC contacts
- $\quad 2 \mathrm{NO}+1 \mathrm{NC}$
- DLC-System for the overcurrent control< 20 ms


## MOTOR STILLSTAND SAFETY RELAY

- Control of 3 phased motor: remanence voltage from $0,02 \mathrm{~V}$ to $0,7 \mathrm{~V}$
- No sensor requested
- $\quad 3$ NC +1 NO 8A/250V Switching capacity
- $\quad$ Safe time delaying to monitor interlockings(from 2 to 7 secondes)
- Compatible with Frequency variator


## EXELTRONIC XXL,

 XXLv and XXLpp. 80 and 81

## digital timing and safety module

- Activation trough a 2NC button
- Selfcontrol of the button
- Monitoring of BTI-Safety switches
- $\quad 3 \mathrm{NO}$ undelayed output contact
- $2 N O+1$ NC delayed contact output
- Delaying from 0 to 999s, easily adjustable

TIMTRONIC XXL
p. 82

C4TN
p. 83

C4CK
p. 84

VALTRONIC
p. 85
digital timing module

- Activation by the opening of a NO contact
- Delaying from 0 to 999 s ,
- 2 NO-delayed contact: $8 \mathrm{~A} / 250 \mathrm{~V}$
- 1 NC-delayed contact: $8 \mathrm{~A} / 250 \mathrm{~V}$

DIGITAL TIMING MODULE FOR MACHINES

- Delaying from 1 to 22 s


## SAFETY CONTACTOR MONITORED WITH A KEY

Version A

- Key inserted and locked : 4NO+1NC 8A/250V
- Key out : 4NC+1NO 8A/250V

Version B

- Key inserted and locked : 4NC+1NO 8A/250V
- Key out : 4NO+1NC 8A/250V

Versions $A$ and $B$

- 1 contact for the test loop and 2 LED's
- Can be associated to the AMX5CK key safety switch


## SAFETY RELAY FOR SAFE RESTARTING

- Monitoring of dead zone
- Protects the operator in the dangerous Zone
- Intermediary time adjustable


## Safety relays

## BTI-Safety relays

## Benefits

## The AWAX-range: 26XXL, 27XXL, 45XXL2

Offering a complete solution, these modules may control mechanical switches, emergency stops and the BTI non stand alone switches with ACOTOM process. These modules can be supplied with 24 Vac and dc or $85 \sim 265 \mathrm{Vac}$ with only one input.
The user can choose either automatic or manual reset mode by means of a dipswitch.
These modules use our DLC technology and dispose of the 8A 250 Vac or 50 Vdc contacts.

The new cost effective Awax range: 25XL, 28XL
These new relays offer the essential safety functions.

## The cost effective range : AWAX25 and CO13L

Designed to monitor safety switches and EPB, they do not integrate the famous DLC, have only one front LED and lose the dip-switch at the back.

## Special purpose relays

New digitally based technological process has been used in order to obtain several extra safety functions at a really competitive price. Examples : a standstill safety controller (Speedtronic XXL), delayed outputs (Timtronic XXL) with a variator (Exeltronic XXL) or a two-hands control device (COM3C).

## Interlocking solution

A solution for interlocking consists of a safety contactor (C4CK), a safety switch of cat. 3 with a key (AMX5CK) and a lack of voltage interlocking device.
This system can work independently or by means of the transfer of the key between C4CK and AMX5CK.
The C4CK contactor can be used also to shunt one dangerous zone.
The key stays locked or unlocked on the switch or on the contactor depending on the application required.


## An innovative technology



The response time of our DLC process provides the safety category 4 even in severe environments.
In case of direct short-circuit, The AWAX will protect the whole chain of safety switches. The current will be limited to 300 mA by the DLC, providing the perfect relaibility and non-destruction of your safety circuit.

The safety modules from BTI are designed and manufactured following UL508 / CSA C22.2 regulation.

## Safety relays

## AWAX 26XXL

- Reaches the highest safety level: PLe Cat. 4
- Low consumption inputs
- Control of switches with Acotom process
- Control of mechanical safety systems (grip switch, foot switch...)
- Dip switch at the back to choose reset mode (automatic/manual)
- DLC electrical protection system
- Polyvalent power supply $24 \mathrm{Vac} / \mathrm{dc}$
- $22,5 \mathrm{~mm}$ housing
- Can energise up to 5 BTI switches without individual power supply
- Monitors the safety of up to 30 switches connected in serie

| Technical datas |  | Wiring diagram |
| :--- | :--- | :--- |

Power supply:
Current consumption:
Safety outputs:
Auxiliary output:
Switching power
Electrical protection
Temperature operation:
Protection class:
Resistance to vibration:
MTTFd/DC
Housing:
Connection:
Dimensions (W x H x D)
Weight
Standards:

## Safety classification

Acc. to EN ISO 13849-1
Certification:

24V AC/DC; -15\% / +10\%
$<2$ W (DC); < 5 VA (AC)
3 NO; 8A/250V AC
1 NC; 8A/250V AC
50 mW to 2000 W
DLC : Electronic current-limiting circuit-breaker
$-20^{\circ} \mathrm{C}$ to $+60^{\circ} \mathrm{C}$
IP20
< 20 ms
463 years / 99,5\%
Polycarbonate, yellow
Plug-in terminals
$22,5 \times 100 \times 111 \mathrm{~mm}$
178 g
ISO 13849-1
EN 60947-5-1
UL508 NRNT
NRNT7 C22.2 n ${ }^{\circ} 14-\mathrm{M} 91$
EN 61000-6-2 : jan 2006
EN 61000-6-4 : mar 2007

PLe Cat. 4
CE, UL/CSA, (E214209), TÜV


Wiring diagram


Application exemple
Safety lines: 13-14, 23-24, 33-34, 41-42


IMPORTANT:
check the position of switch N/SR at the back of the device

## Safety relays

## AWAX 26XXL P

- Reaches the highest safety level: PLe Cat. 4
- Low consumption inputs
- Control of switches with Acotom process
- Control of mechanical safety systems (grip switch, foot switch...)
- Dip switch at the back to choose reset mode (automatic/manual)
- DLC electrical protection system
- Polyvalent power supply $24 \mathrm{Vac} / \mathrm{dc}$
- 22,5 mm housing
- Can energise up to 5 BTI switches without individual power supply
- Monitors the safety of up to 30 switches connected in serie


## C



| Technical datas |  | Application exemple Cat. 4 <br> Safery lines: 13-14, 23-24, 33-34 Auxiliary line : 41-42 |
| :---: | :---: | :---: |
| Power supply: | 24V AC/DC; -15\% / +10\% | 24 VACIDC MAX1250VAC |
| Current consumption: | < 2 W (DC); < 5 VA (AC) |  |
| Safety outputs: | 3 NO; 8A/250V AC | $\mathrm{A} 1 \mathrm{~T} 11^{\text {T } 21} \mathrm{C}$ |
| Auxiliary output: | $1 \mathrm{NC} ; 8 \mathrm{~A} / 250 \mathrm{~V}$ AC |  |
| Switching power | 50 mW to 2000 W | $51+7$ r--or EPB |
| Electrical protection | DLC : Electronic current-limiting circuit-breaker | - - - |
| Temperature operation: | $-20^{\circ} \mathrm{C}$ to $+60^{\circ} \mathrm{C}$ |  |
| Protection class: | IP20 | A2 T12 T22 V |
| Resistance to vibration: | <20 ms | 14 24 34 42 |
| MTTFd/DC | 463 years / 99,5\% |  |
| Housing: | Polycarbonate, yellow |  |
| Connection: | Plug-in terminals | $41-42$ can alto be used as an auriliary line for PLC |
| Dimensions ( $\mathrm{W} \times \mathrm{H} \times \mathrm{D}$ ) | $22,5 \times 100 \times 111 \mathrm{~mm}$ |  |
| Weight | 178 g |  |
| Standards: | ISO 13849-1 <br> EN 60947-5-1 <br> UL508 NRNT <br> NRNT7 C22.2 n ${ }^{\circ} 14-\mathrm{M} 91$ <br> EN 61000-6-2 : jan 2006 <br> EN 61000-6-4 : mar 2007 |  |
| Safety classification |  |  |
| Acc. to EN ISO 13849-1 | PLe Cat. 4 |  |
| Certification: | CE |  |
|  |  | Note: the auxiliary output is individualised |
|  |  | for each channel, which offers a perfect |
|  |  | retraceabilty of your system |

Ordering-Nr.
AWAX26XXL P

## Safety relays

## AWAX25XL

- Power supply 24 VDC
- Manages up to 30 non stand-alone switches or mechanical switches with 2NO safety lines
- $8 \mathrm{~A} / 250 \mathrm{Vac}$ or $8 \mathrm{~A} / 250 \mathrm{Vdc}$
- 3 safety lines NO + 1 aux line NC
- Category 3 or 4 depending the reset mode
- Dual channel operation, with short circuit/link monitoring of e-stop input.
- Internal auxiliary power supply protection with automatic reset: DLC sys tem
- 1 LED status display
c $\epsilon$


| Technical datas |  | Application exemple |
| :--- | :--- | :--- |

Power supply:
Current consumption:
Safety outputs:
Auxiliary output:
Switching power
Electrical protection

Temperature operation:
Protection class:
Reaction time:
MTTFd/DC
CCF
Housing:
Connection:
Dimensions (W x H x D)
Weight
Standards:

## Safety classification

Acc. to EN ISO 13849-1
Certification:

24VDC; - $15 \% /+25 \%$
< 4 W peak 30 ms and then < 2 W
2 NO; 8A/250V AC
1 NC; 8A/250V AC
50 mW to 2000 W
This safety module does not accept ANATOM6S or any constant short circuit
$-20^{\circ} \mathrm{C}$ to $+60^{\circ} \mathrm{C}$
IP20
< 20 ms ( $13 / 14$ or 23/24 opening)
463 years / 99,5\%
90 \%
Polycarbonate, yellow
Plug-in terminals
$22,5 \times 100 \times 111 \mathrm{~mm}$
178 g
ISO 13849-1
EN 60947-5-1
UL508 NRNT
NRNT7 C22.2 n 14 14-M91
EN 61000-6-2 : jan 2006
EN 61000-6-4 : mar 2007

PLe Cat. 4
CE

Ordering-Nr.
AWAX25XXL

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## Safety relays

## AWAX27XXL

- Reaches the highest safety level: PLe Cat. 4
- Monitors two independant areas
- Control of switches with Acotom process
- Control of mechanical safety systems (grip switch, foot switch...)
- Dip switch at the back to choose reset mode (automatic/manual)
- DLC electrical protection system
- Polyvalent power supply $24 \mathrm{Vac} / \mathrm{dc}$
- 45 mm housing
- Can power supply up to 5 BTI switches without individual power supply
- Monitors the safety of up to 30 switches connected in serie



## C



## Safety relays

## AWAX28XL

- Reaches the highest safety level: PLe Cat. 4
- Control of switches with Acotom process
- Control of mechanical safety switches
- DLC electrical protection system
- 45 mm housing
- Monitors the safety of up to 30 switches connected in serie


Ordering-Nr.
AWAX28XL

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## Safety relays

## AWAX45XXL

- Reaches the highest safety level: PLe Cat. 4
- Control of switches with Acotom process
- Control of mechanical safety systems (grip switch, foot switch...)
- Dip switch at the back to choose reset mode (automatic/manual)
- DLC electrical protection system
- Polyvalent power supply 85/265 Vac
- 67.5 mm housing
- Can power supply up to 5 BTI switches without individual power supply
- Monitors the safety of up to 30 switches connected in serie

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## Safety relays

## CO13XXL/24V

- Control of emergency stops buttons
- Control of mechanical switches
- Independent supply inputs to avoid in-rush current
- Internal electrical protection, auto-resetting
- Plug-in terminals
- Dip-switch to choose the reset mode (automatic/manual)

c $\epsilon$


Ordering-Nr.
CO13XXL

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## Safety relays

## C013L

- Control of emergency stops buttons
- Control of mechanical switches
- Independent supply inputs to avoid in-rush current
- Internal electrical protection, auto-resetting
- Plug-in terminals


## ( $\epsilon$



| Technical datas |  | Wiring exemple in PLb cat. 2 <br> Safety outputs: 13-14, 23-24, <br> Auxiliary lines: 31-32 |
| :---: | :---: | :---: |
| Power supply: | 24V AC/DC; -15\%/+10\%; 50Hz-60Hz |  |
| Current consumption: | < 2,5 W / 24 VDC or < $4 \mathrm{VA} / 24 \mathrm{VAC}$ | PB |
| Safety outputs: | $2 \mathrm{NO} ; 8 \mathrm{~A} / 250 \mathrm{~V}$ AC | 4 AT 11 C |
| Auxiliary output: | 1 NC; 8A/250V AC |  |
| Switching power | 50 mW to 2000 w | --t-7 |
| Electrical protection | This product can not monitor the safety switches with Acotom process. |  |
| Temperature operation: | $-20^{\circ} \mathrm{C}$ to $+60^{\circ} \mathrm{C}$ | , $\quad \square \mathrm{km1}$ |
| Protection class: | IP20 | $\begin{array}{\|l\|l\|l\|l\|} \hline \text { A2 } & \text { E1 } & \text { E2 } & \text { V } \\ \hline 14 & 24 & 32 & \text { X2 } \\ \hline \end{array}$ |
| Reaction time: | < 20 ms |  |
| MTTFd/DC CCF | $\begin{aligned} & 320 \text { years / 99,5 \% } \\ & 90 \% \end{aligned}$ |  |
| Housing: | Polycarbonate, yellow |  |
| Connection: | Plug-in terminals | Wiring exemple in PLe cat. 3 |
| Dimensions ( $\mathrm{W} \times \mathrm{H} \times \mathrm{D}$ ) | $22,5 \times 100 \times 111 \mathrm{~mm}$ |  |
| Weight | 125 g | 位 swich or |
| Standards: | ISO 13849-1 <br> EN 60947-5-1 <br> EN 61000-6-2 : jan 2006 <br> EN 61000-6-4 : mar 2007 |  |
| Safety classification |  |  |
| Acc. to EN ISO 13849-1 | Ple Cat. 3 (dual channel) or PLb Cat. 2 (single channel) |  |
| Certification: | CE |  |

Ordering-Nr.
CO13L

## Safety relays



## Safety relays

## SPEEDTRONIC

- Monitors the stillsand of a 3 phased motor
- level of $0,02 \mathrm{~V}$ to $0,7 \mathrm{~V}$ remanence voltage
- Timing adjustable from 2 to 7 scdes to open interlocks
- 3 contacts NO +1 contact NC $8 \mathrm{~A} / 250 \mathrm{~V}$
- $\quad$ Selectable manual or automatic reset at the back of the module
- Control of starting circuit
- Compatible with frequency variator
- Power supply : 24Vac/dc

©

Safety classification

## Acc. to EN ISO 13849-1

Certification:

24V AC/DC; -15\%/+10\%; $50 / 60 \mathrm{~Hz}$
150 mA (DC)
3 NO; 1 NC 8A/250V AC
ERROR: output PNP 24V DC/150 mA
OK: output PNP 24V DC/150 mA
RESET: imput PNP 24V DC
+V/0V: 24V DC
Max. $3 \times 690$ V AC
20 mV to 700 mV (adjustable on the front face)
2 s to 7 s (adjustable on the front face)
Galvanic insulation
$-20^{\circ} \mathrm{C}$ to $+60^{\circ} \mathrm{C}$
IP20
120 years / 99,9\%
AC1: 860000, AC15: 300000, DC13: 300000
Polycarbonate, yellow
Plug-in terminals
$45 \times 100 \times 111 \mathrm{~mm}$
300 g
ISOEN13849-1
EN 55022
EN 60947-5-3
EN 61000-6-2 : jan 2006
EN 61000-6-4 : mar 2007

PLe Cat. 4
CE

## Application exemple



## Safety relays

- Polyvalent power supply $24 \mathrm{Vac} / \mathrm{dc}$
- 3NO instantaneous outputs
- $2 \mathrm{NO}+1 \mathrm{NC}$ delayed outputs to monitor an interlocking system
- Digital timing adjustable on the front side
- 3LEDs for easy diagnostic
- Can power supply up to 5 BTI switches without individual power supply
- Monitors the safety of up to 30 switches connected in serie


## Technical datas

Power supply:
Current consumption:
Instantaneous safety outputs:
Delayed safety outputs
Auxiliary output
Output delaying
Minimal switching power
Electrical protection
Temperature operation:
Protection class:
Reaction time:
MTTFd/DC
B10d
Housing:
Connection:
Dimensions (W x H x D)
Weight
Standards:

## Safety classification

Acc. to EN ISO 13849-1
Certification:
c $\epsilon$

< $20 \mathrm{~ms}(13 / 14)$; < $20 \mathrm{~ms}(47 / 48)$

150 years / 99,1\%
AC1: 860000, AC15: 300000, DC13: 300000
Polycarbonate, yellow
Plug-in terminals
$45 \times 100 \times 114 \mathrm{~mm}$
320 g
ISO 13849-1
EN 55022
EN 60947-5-1
EN 61000-6-2 : jan 2006
EN 61000-6-4 : mar 2007

PLe Cat. 4
CE
24V AC/DC; -15\%/+10\%; $50 / 60 \mathrm{~Hz}$
< 6,5 W(DC); < 10 VA (AC)
3 NO; 8A/250V AC
2 NO; 8A/250V AC
$1 \mathrm{NC} ; 8 \mathrm{~A} / 250 \mathrm{~V}$ AC
From 0 to 999 s
$>50 \mathrm{~mW}$
DLC : Electronic current-limiting circuit-breaker
$-20^{\circ} \mathrm{C}$ to $+60^{\circ} \mathrm{C}$
IP20


## Application exemple

Safety lines: 13/14, 23/24, 33/34
Delayed safety lines : 47/48, 57/58, 65/66


EXELTRONIC/XXL

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Safety relays

## EXELTRONIC XXLV

- Very accurate digital timing
- Reaches the highest safety level: PLe Cat. 4
- Activation by a dual-channel PB with 2 NC
- Control of switches with Acotom process
- Dip switch at the back to choose reset mode (automatic/manual)
- DLC electrical protection system
- Polyvalent power supply $24 \mathrm{Vac} / \mathrm{dc}$
- 3NO instantaneous outputs
- $2 \mathrm{NO}+1 \mathrm{NC}$ delayed outputs to monitor a variator
- Digital timing adjustable on the front side
- 3LEDs for easy diagnostic
- Can power supply up to 5 BTI switches without individual power supply
- Monitors the safety of up to 30 switches connected in serie
©




## Safety relays

## TIMTRONIC/XXL

- Very accurate digital timing
- Activation by an opening of a NO contact
- Reset to zero each time the contact closes (LED lit off)
- Blinking LED during timing
- Closing of contacts after timing
- Timing adjustable by incremental coders from 0 to 999 s
- 2 NO delayed lines $8 \mathrm{~A} / 250 \mathrm{~V}$
- 1 NC delayed line $8 \mathrm{~A} / 250 \mathrm{~V}$
- Power supply : 24Vac/dc
- $22,5 \mathrm{~mm}$ housing
c


Technical datas

Power supply:
Current consumption:
Delayed outputs:
Auxiliary output:
Timing range
Electrical protection
Temperature operation:
Protection class:
MTTFd/DC
B10d
Housing:
Connection:
Dimensions (W x H x D)
Weight
Standards:

Safety classification
Acc. to EN ISO 13849-1
Certification:

24V AC/DC; -15\%/+10\%; 50/60 Hz
$<4,5 \mathrm{~W}(\mathrm{DC}) ;<8 \mathrm{VA}(\mathrm{AC})$
2 NO; 8A/250V AC
1 NC; 8A/250V AC
0 to 999 s
DLC : Electronic current-limiting circuit-breaker
$-20^{\circ} \mathrm{C}$ to $+60^{\circ} \mathrm{C}$
IP20
320 years / 90\%
AC1: 860000, AC15: 300000, DC13: 300000
Polycarbonate, yellow
Plug-in terminals
$22,5 \times 100 \times 111 \mathrm{~mm}$
161 g
ISO 13849-1
EN 55022
EN 60947-5-1
EN 61000-6-2 : jan 2006
EN 61000-6-4 : mar 2007

PLe Cat. 3


Application exemple


Ordering-Nr.
TIMTRONIC/XXL

## Safety relays

## C4TN

- Timing module for machine energization/un-energization
- Timing adjustable from 1 to 22 scdes
- Easy to implement and cost effective solution



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## Ordering-Nr.

 C4TN
## Safety relays

## C4-CK

CAPTIVE KEY MODULE : the key position overpasses the switch status

## Version A

- Key locked and turned : 4NO+1NC 8A/250V
- Key removed : 4NC+1NO 8A/250V


## Version B

- Key locked and turned : 4NC+1NO 8A/250V
- Key removed : 4NO+1NC 8A/250V

Versions A and B
1 line for test loop and 2 LEDs

| Technical datas |  | Wiring diagram |
| :---: | :---: | :---: |
| Power supply: | 24V AC/DC; -15\%/+10\%, 50/60 Hz |  |
| Current consumption: | <3,5 W (DC); < 6,5 VA (AC) |  |
| Safety outputs: | 4 NO; 8A/250V AC |  |
| Auxiliary output: | 1 NC; 4A/250V AC resistive | $\square$ |

Electrical protection
Temperature operation:
Protection class:
Resistance to vibration:
MTTFd/DC
B10d
Housing:
Connection:
Dimensions (W x H x D)
Weight
Standards:

Safety classification
Acc. to EN ISO 13849-1
Certification:
(€


Surge protector
$-20^{\circ} \mathrm{C}$ to $+60^{\circ} \mathrm{C}$
IP20
< 20 ms
90 years / 99.9\%
AC1: 860000, AC15: 300000, DC13: 300000
Polycarbonate, yellow
Plug-in terminals
$45 \times 100 \times 111 \mathrm{~mm}$
227 g
ISO 13849-1
EN 55022
EN 60947-5-1
EN 61000-6-2 : jan 2006

EN 61000-6-4 : mar 2007

PLe Cat. 4
CE
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## Application exemple

Safety lines: 13-14, 23-24, 33-34, 43-44 Auxiliary line : 51-52


Ordering-Nr.
C4-CK

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## Safety relays

## VALTRONIC

- Validates the restarting of a machine thanks to 2 reset buttons
- Protection of an operator placed in a death zone
- 2 independent lines of command to activate up to 2 safety systems \& 1 NC auxiliary line
- Pushing on 2 buttons of which 1 is priority
- Delaying time adjustable by incremental coders
- Timing range: $0,2,4,6,8,12,16,18,20,22 \mathrm{~s}$
- Easy to implement and cost effective solution


## c




Certification:

Ordering-Nr. VALTRONIC

## Safety relays

## C4SX/24V

- Safety extension module
- Non overlapping, linked contacts of A class
- 4 NO outputs +1 NC output $8 \mathrm{~A} / 250 \mathrm{~V}+1$ test loop
- Plug-in terminals



Ordering-Nr.
C4SX/24V

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## Safety relays

## C5SX/24V

- Solid state relay
- Safety interface for light barriers with static outputs
- Extension of safety contacts
- $8 \mathrm{~A} / 250 \mathrm{~V}$
- Plug-in terminals



## ©



## Safety relays



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## Power supply

## BA8F/1524

Power supply for safety devices

## ( $€$



| Technical datas |  | Wiring diagram |
| :---: | :---: | :---: |
| Input voltage (primary): | 85V to 265 V AC $50 / 60 \mathrm{~Hz}$ |  |
| Output voltage (secondary): | 24 V DC | $\mathrm{II}+\mathrm{\square}$ |
| Output current: | 0,63 A; 15 W | $02+-\quad$ O2-maxi |
| Electrical protection DLC: | Short-circuit, Overcurrent | $12+\longrightarrow$ - |
| Temperature: | $0^{\circ} \mathrm{C}$ to $+70^{\circ} \mathrm{C}$ |  |
| Insulation I/O: |  | schaltnetzteil $-\mathbf{S 2}{ }^{-}$OV |
| Industrie BA8F1524. | 3000 V |  |
| MedicalBA8F1524M: | 4000 V |  |
|  |  | Application exemple |
| Frequency: | 47 Hz to 440 Hz | $85-265 \mathrm{~V} \quad+24 \mathrm{Vdc}$ |
| Ripple / Noise: | 100 mV |  |
| Hold up time 20ms: | 20 ms | $\mathrm{A} 1 \mathrm{I}+\mathrm{I2+}$ |
| Efficiency: | 78\% | $\mathrm{O} 1+\mathrm{O} 2+\mathrm{S} 1$ |
| Einschaltstrom: | 20/100V; 40A/200V |  |
| Collector-emitter voltage max | 300 V |  |
| Input voltage range: | 5 V bis 24 V DC | Output1 Output |
| Reaction time: | $<3 \mathrm{~ms}$ | fovac |
| Kollektorstrom: | 150 mA |  |
| Protection class: | IP20 | $\mathrm{O} 1-\mathrm{O2}-\mathrm{S} 2$ |
| Housing: | Polycarbonate, yellow | A2 $11-12-$ |
| Connection: | Plug-in terminals | $1$ |
| Dimensions $\mathrm{B} \times \mathrm{H} \times \mathrm{T}$ : | $45 \times 100 \times 111 \mathrm{~mm}$ |  |
| Weight: | 200 g |  |
| Standards: | EN60950, EN50081-1, EN50082-1, IEC950, EN6060-1, UL1950, UL2601, CSA22. 2 |  |
| Certification: | $\begin{aligned} & \text { TÜV - B990622749017 } \\ & \text { UL—E167432 } \end{aligned}$ |  |


| Ordering-Nr. | Industrie | BA8F1524 |
| :--- | :--- | :--- |
|  | Medical | BA8F1524M |

## Machine safety in EX Environment



## Machine safety in EX Environment

## How to determine the ATEX zone and category ?

According to the directive 94/9/EC
An explosive atmosphere is defined as a mixture:

- of flammable substances in the form of gases, vapours, mists or dusts,
- with air,
- under atmospheric conditions,
- in which, after ignition, the combustion spreads to the entire unburned mixture.

An atmosphere becoming explosive due to local and/or operational conditions, is called a potentially explosive atmosphere. The electrical equipment used in these areas must be designed as not to create sources of ignition capable of igniting these mixtures.
The directive divided equipment into two groups. Group I is applied for mining, and Group II for Surface industries. Group II is divided in subgroup (from the leak risk level IIA to the high level IIC). In the table below you can see the details about group II.

| TABLE 1 |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| Ex-Env. | Risk | Zone | Category | Equipment |
| Gas, steam and fog | Permanent or frequent | 0 | II 1 G | Very high level of protection (2 independant means in order to ensure the protection and the safety) |
|  | Occasional | 1 | II 2G | High level of protection (safe even in case of unusual conditions of functionning) |
|  | Occasional or for a short time | 2 | II 3 G | Normal level of safety (safe in case of usual conditions of functionning) |
| Dust | Permanent or frequent | 20 | 111 D | Very high level of safety (2 independant means in order to ensure the protection and the safety) |
|  | Occasional | 21 | II 2 D | High level of safety (safe even in case of unusual conditions of functionning) |
|  | Occasional or for a short time | 22 <br> conduktive dust / non conductive dust | II 2 D | High level of safety |
|  |  |  | II 3 D | Normal level of safety |

## Machine safety in EX Environment

## Certified by the INERIS

N ${ }^{\circ} 06$ ATEX 0007
Guideline 94//9//CE

## AWAX26XXL-EEX

Ex-Safety relay
Cat. 4 acc. to EN 954-1



## ANATOM 78S-EEX

- LED showing the decoding status
- 12M-cable length
- Housng in Polyamid or Stainless Steel 316L

Anatom78S-PL-EEX: II 1 GD-EEx ia IIC T4 Anatom78S-OX-EEX: II 2 GD-EEx ia IIC T4
and
RDX8

- up to 30 switches in serie


## Machine safety in Ex-environment

## We help you to determine:

- ATEX-Zone and Ex-Category
- Temperature classe (T1 to T6) - an ideal and cost-effective solution


## Machine safety in EX Environment

## Signification of the zones

A. Gas

Zone 0: Frequent risk
Zone 1: Occasional risk
Zone 2: Low probability of risk and for short time

## B. Dust

Zone 20: Frequent risk
Zone 21: Occasional risk
Zone 22: Low probability of risk and for short time

## Die Technologische BTI Lösung

Zone 0 or Zone 20: Anatom78S-PL-EEX in Polyamid and AWAX26XXL-EEX
Zone 1 or Zone 21: Anatom78S-OX-EEX in Stainless Steel and AWAX26XXLEEX

Our safety switches Anatom78S-EEX in connection with the relay AWAX26XXL EEX do not only reach the highest Ex-level but also the Cat. 4 acc. to EN954-1. The decoding system allows a high manipulation degree even in magnetic field.

## How to avoid the explosion?

The risk in potentially explosive atmospheres is due to mixtures of gas/air, vapour/air, dust/air or other flammable

## combinations.

We can avoid the explosion by eliminating sources of ignition such as sparks, hot surfaces or static electricity.

| TABLE 2 |  |  |
| :---: | :---: | :---: |
| MODES OF PROTESTION ASAINST <br> THE IGNITION | THIS IDENTIFICATION CAN BE USED IN ZONE | PRINCIPLE OF SAFETY |
| Increased safety | EEx e 1 |  |
| Anti-spark equipment | EEx nA 2 | sparks or hot surfaces |
| Antiexplosive covering | EEx d 1 | controls the |
| Encapsulation of sand | EExq 1 | but not the |
| Device for <br> protected commutation | EEx nc 2 | the flame |
| Intrinsic safety (specific demands) | EEx ia 0 | limits the energy |
| Intrinsic safety | EEx ib 1 | of a spark and the temperature |
| Equipment for limiting energy | EEx nL 2 | of the surface |
| Encapsulation | EEx m 1 |  |
| Encapsulation of oil | EEXO 1 |  |
| Pressurisation | EExp 1 | distinguishes the source of ignition |
| Simplified pressurisation | EEx nP 2 | and the ATm.EXpl. |
| Protective covering against the vapour | EEx nR 2 |  |

## Machine safety in EX Environment

## Temperature classes

Various substances may ignite in different temperatures．These substances are considered as the most dangerous ones when they may ignite under very low temperature．The temperature class is indicated by a marking on the equipment．The maximum surface tem－ perature of apparatus must be lower than this of self－ignitable mixtures being present in the dangerous area．

Materials used in explosive atmosphere are classified from T1 to T6 according to their generated maximum surface temperature．（See table 3）．Materials in class T 6 （the lowest temperature）are the most dangerous and may be obviously used for other classes（T1 to T5） The equipment marked with EEx．．．IICT6 can be used for any mixture of atmospheres existing．In explosive dust atmosphere，the maxi－ mum surface temperature is mentionned in ${ }^{\circ} \mathrm{C}$ ．


## Machine safety in EX Environment

## AMATOM78S-PL-EEX in Polyamid-Housing

## II 1GD-EEX ia IIC T4

The EX-safety switch ANATOM78S-PL-EEX can be used in the temperature range T4. What is T4?
T4 is the maximum temperature on the surface of the product $\left(135^{\circ} \mathrm{C}\right)$. It covers almost all gases. As the unit ANATOM78S PL-EEX can be used in T4 condition (the most dangerous), it means that it can be appllied in $\mathrm{T} 1, \mathrm{~T} 2$ and T 3 condition which are less dangerous.

## AMATOM78S-OX-EEX in Stainless Steel Housing II 2GD-EEX ia IIC T4

The unit is designed for application in hard environment where agressive materials are used for cleaning and mechanical wear occurs, but the risk category decreases to 1 .

## AWAX 26 XXL EX

This safety module provides a high safety category in EX as well as machine safety. A dual channel and category «a» Zener barrer is embedded. The safety contacts are rated up to $8 \mathrm{~A} / 250 \mathrm{~V}$. The plug-in terminal offers an easy maintenance. A dip-switch allows also to choose the reset mode (auto/manual) when the module is energized or when it has detected a failure. The front LED (V1 and V2) gives a display status of the both channels.

ATEX-Application fields

| APPLICATION FIELDS | Ignition temperature |  | II A |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 11 B |  |  | II C |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  |  |  |  |  | $\frac{\frac{8}{6}}{\frac{8}{2}}$ |  | $\begin{aligned} & 0 \\ & \frac{0}{C} \\ & \frac{0}{O} \\ & \frac{E}{E} \\ & \hline \end{aligned}$ |  |  | $\begin{aligned} & \text { e } \\ & \frac{5}{5} \\ & \frac{0}{o} \\ & \frac{9}{1} \end{aligned}$ |  | $\left\|\begin{array}{\|c} \stackrel{0}{4} \\ \stackrel{H}{4} \\ \hline 0 \end{array}\right\|$ | $\begin{aligned} & \stackrel{\oplus}{\mathrm{C}} \\ & \text { N } \\ & \frac{\mathrm{C}}{\omega} \\ & \text { © } \end{aligned}$ | $\frac{\frac{\partial}{6}}{\frac{\omega}{x}}$ |  |  |  |  |  |  |  |  |  |  |  |  | $\begin{aligned} & \frac{g}{\frac{0}{5}} \\ & \frac{0}{3} \\ & \frac{0}{3} \\ & \frac{0}{2} \\ & \frac{c}{8} \\ & \frac{8}{6} \\ & 0 \end{aligned}$ | 른 $\frac{C}{3}$ $\frac{5}{0}$ 4 |
|  |  | Group of Gas | $\begin{aligned} & 0 \\ & 0 \\ & 0 \\ & 0 \\ & \hline \end{aligned}$ | $\begin{array}{\|l\|} \hline 0 \\ \text { in } \\ \text { in } \\ \hline \end{array}$ | $\begin{array}{\|c\|} \hline 0 \\ \text { in } \\ \text { N } \\ \hline \end{array}$ | $\begin{array}{\|l\|} \hline 0 \\ i n \\ 0 \\ \hline \end{array}$ | 0 0 0 ${ }_{N}^{0}$ |  |  | $\begin{array}{\|l\|} \hline 0 \\ 8 \\ 50 \\ \hline 8 \end{array}$ |  | 0 <br> 8 <br> 8 <br> 0 | 0 <br> 0 <br> $\stackrel{\rightharpoonup}{c}$ <br> a |  | 0 in in N | 0 <br> 2 <br> 0 | $\begin{array}{\|c\|} \hline 0 \\ 8 \\ 0 \\ \hline \end{array}$ | 0 $\frac{0}{2}$ N |  | $\begin{array}{\|l\|} \hline 0 \\ 0 \\ 5 \\ \hline \end{array}$ |  | $\begin{aligned} & 0 \\ & 0 \\ & \text { N } \\ & \frac{1}{3} \end{aligned}$ |  | $\begin{array}{\|c\|} \hline 0 \\ 0 \\ \text { 答 } \\ \hline \end{array}$ |  |  |  | $\begin{array}{\|l\|} \hline 0 \\ i n \\ y \\ \hline \end{array}$ |  | 0 <br> 0 <br> 8 <br> 8 |  |
| Industry of cleaning products | $245^{\circ} \mathrm{C}$ | Her HB |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | $\times$ |  |  |  |  |  |
| Pharmaceutical industry | $90^{\circ} \mathrm{C}$ | II or IIC |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | - |  |  |  |  |  |  |
| Industry of colouring agents | $385{ }^{\circ} \mathrm{C}$ | II or IIA |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Industry of artificial rubber | 3008 C | II or IIC |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | $\leq$ |
| Perfumery | $375^{\circ} \mathrm{C}$ | II or IIA |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Alcohols | $375{ }^{\circ} \mathrm{C}$ | II or IIA |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Artificial essences of fruits | $90{ }^{\circ} \mathrm{C}$ | II or IIA |  |  | $\leq$ |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Manufacture of artificial textile | $90^{\circ} \mathrm{C}$ | II or IIC |  |  |  |  |  |  |  |  | < |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Painting industry | $343{ }^{\circ} \mathrm{C}$ | II or IIB |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Manufacture of fats | 3439 C | II or IIB |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Fat solvents | $465^{\circ} \mathrm{C}$ | II or IIA |  |  |  |  |  |  |  | - |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Resin solvents | $465^{\circ} \mathrm{C}$ | II or IIA |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Manufacture of plastic matters | 30 FC | II or IIC |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | $\times$ |  |  | $\times$ |  | $\bigcirc$ |
| Hydrocarbons | $90^{\circ} \mathrm{C}$ | II or IIC |  |  |  |  |  |  | , |  |  |  |  |  |  |  |  | < |  |  |  |  |  |  |  |  |  |  |  | $\leqslant$ |  |
| Gas used as fuel | $309{ }^{\circ} \mathrm{C}$ | II or IIC |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | $x$ |
| Agricultural fertilizers industry | satpe | Her IIC |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

## Note: The mixtures of gas are mentionned as information only.

ANATOMT8S-PL-EEX+AWAX26XXL-EEX:
GAS Ex ia IIC T4
DUST: 111 GD IP $6 \mathrm{X}-\mathrm{T} 135^{\circ} \mathrm{C}$
ANATOMTBS-OX-EEX +AWAX26XXLL-EEX:
GAS : EEx is IIC T4
DUST : 112 GD IP6X-T135 "C

## USE OF TABLE:

Example of "manufacture of plastic matters". The " X " in the table show the presence of the gas. For the gas that has the
lowest temperature of self-ignition $\left(300^{\circ} \mathrm{C}\right)$, the electrical equipment which is installed must have a temperature less than $300^{\circ} \mathrm{C}$, so be classed T3, T4, T5 and T6.
the most explosive gas is the acethylene (Group II C). The equipment must be classed at least IIC T3
Our equipment is not designed to be used with the following gas: Nitrite of ethyl and carbon bisulphide (red boxes)

## Machine safety in EX Environment

| ZONE 0 AND 20 |
| :--- |
| The AWAX－EEX can |
| monitor only one switch |
| 78S－EEX |

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Ordering－Nr．


## Ordering-Nr.

## Machine safety in EX Environment

ZONE 2 （3G）AND 22 （3D）
The AWAX－EEX3 can
monitor up to 30 switches
RDX8
EEx nC IIC T6 X
（ $\epsilon$


## AWAX 26 XXL－EEX 3

The safety relay AWAX26XXL－EEX3 is intended to monitor any type of sensor in explosive atmospheres．It provides redundant channel，a zener barrier and the whole solution meets the EN954－1／ISO13849－1 stan－ dard．

Category ：II 3 G EX
This product is equipped with a dual channel ATEX barrier（conformity EN50020）as well as a processing logic conform to the requirements of the machine safety EN954－1（category 4）．It is intended to control mecha－ nical sensors，ANATOM78S－EEX，RDX8 or EPB which are EEX certified with at least 2 NC contacts powered at 12 Vdc （consult us）．This module has three NO safety lines and one NC auxiliary lines with each a swit－ ching capacity of $8 \mathrm{~A} / 250 \mathrm{Vac}$ ．This product is energized with $24 \mathrm{Vac} / \mathrm{dc}$ and can be used in all applications that require the highest safety and／or a high switching power．This module is easily installed on DIN－rail enclo－ sure．

RDX8
The RDX8 safety switch controls the opening of movable guard doors．It is manipulation free thanks to the coded process．It is suitable for area ATEX 2 and 22．It meets the requirements of the standard 94／9／CE．As the overheating is very low，the magnetic switches RDX8 are particularly adapted for high room temperature，because they never reach the igni－ tion temperature of the gas or the dust，even when energized．When they are monitored by the safety relay AWAX26XXL－EEX3，which integrates a zener barrier with dual channel，one can connect up to 30 switches in serie．

Category ：II 3GD
Ex Protection ：EEx nC IIC T6 X
Protection class：IP67－T80 ${ }^{\circ} \mathrm{C}$
Operating temperature ：$-25^{\circ} \mathrm{C}$ to $+70^{\circ} \mathrm{C}$
To comply with the ATEX requirements（94／9／CE），the RDX8 must be connected to an intrinsic zener barrier with dual channel such as our ZRX8．But to be in compliance with the ATEX and machine safety stan dards（guideline 2006／42／CE），the RDX8 must be connected to a safety relay such as the AWAX26XXL－EEX3 in which the zener barrier is em－ bedded．


KM1 and KM2 are optionnal
power contactors．
IMPORTANT：
Check the dip－switch status（N／SR）
at the back of the device

## Ordering－Nr．

RDX8
AWAX26XXL－EEX－3

## Machine safety in EX Environment

## EX BARRIER ZRX8 WITH HIGH SWITCHING POWER

The ZRX8 intrinsic safety barrier is used to isolate 2 independant electrical information to move beyond a ATEX zone 2 or 22 outer the area.
It meets the essential requirements for the Guideline 94/9/EC and for which a declaration of conformity is available.
It provides 2 NO safety outputs and 2 NC safety outputs with $8 \mathrm{~A} / 250 \mathrm{~V}$ switching power, and is well suited to magnetic switches RDX8.
The two T11/T12 and T21/T22 inputs are connected to the switch in the ATEX zone thanks to a specific cable. The output contacts of the barrier are potential free and their switching power is $8 \mathrm{~A} / 250 \mathrm{~V}$.

Category : II 3GD
Ex Protection : [EEx ia IIC]
Operating temperature : $-25^{\circ} \mathrm{C}$ to $+40^{\circ} \mathrm{C}$

## Operation

ZRX8: The two T11/T12 and T21/T22 inputs are connected to the switch in the ATEX area thanks to a specific cable. The output contacts of the barrier are potential free and their switching power is $8 \mathrm{~A} / 250 \mathrm{~V}$.

fety contacts : 13-14, 23-24
Auxiliary contact: 31-32, 41-42, Y1-Y2

KM1 and KM2 are optionnal power contactors.

IMPORTANT:
Check the dip-switch status (SR/N) at the back of the device

## Ordering-Nr.



This range of safety non-contact interlocking device with coded bolt has been developped in collaboration with some machine builders and end users, in food, machine tool, paletiser, in order to offer them a reliable solution.

Monitoring a mobile guard is recommended when personnel require intermittent to frequent access to a hazardous area. If the guard is moved or opened, the interlocking switch prevents cycle initiation or sends a stop signal to the machine control.

By locking the guard closed, our range will prevent access to the machine till it has come to a safe stop, and differentiates from the main competitors by the smooth design, allowing a much longer life expectancy.
Moreover, some interlocking switches do not integrate the safety position of the bolt/key, so another safety switch is required to detect the position of the door and prevent a restarting of the machine even if the interlocking has extracted the bolt/lock.

This range was especially designed to overpass the main mechanical switches limits, mainly in environments where you find:

- heavy contamination,
- high vibration,
- poor actuator/switch alignment.


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## Non contact coded safety solenoid interlocking

## Stand alone operation mode


ANAGUARD 2S solenoid interlocking (with coded bolt and plate)
Stand alone Cat.2 PLd

| Ordering-Nr. | Locking mode | Connection |  |
| :--- | :--- | :--- | :--- |
| Anaguard 2 Gsm |  | LOCK |  |
| Anaguard 2 Gsw |  |  |  |

## Non stand alone operation mode

| Non stand alone operation mode |  |  |  |
| :---: | :---: | :---: | :---: |
| ANAGUARD solenoid interlocking (with coded bolt and plate) |  |  |  |
| Ordering-Nr. | Locking mode | Connection |  |
| Anaguard Gsm |  | 1 M 12 |  |
| Anaguard Gsw | Locked when un-energized | 1 Cable | $\operatorname{LOCK} \square)$ |
| Anaguard Gim |  | 1 M 12 |  |
| Anaguard Giw | Locked when energized | 1 Cable | cylindrical bolt |
| AT- 09-GAN 01 | Only the coded plate |  |  |

The items are also available without safety category only for automation needs.
Please contact us for more details.


## Non contact coded safety solenoid interlocking

 Stand alone operation
## VIGILGUARD

- Built-in self control „ACOTOM ${ }^{\text {®u }} 3$
- Available with
- 1 M12 connector (ref. 1GS)
- 2 M12 connector (ref. 2GS)
- Monitors both the door position and locking confirmation thanks to the coded bolt
- high mechanical power to allow the bolt to easily extract,
- automatic locking of serial wired devices (low power requested),
- easy daisy-chained with its double connector M12 (in option),
- its unique design simplifies the cleaning and compliance with new hygiene requirements, IP66,
- very strong holding force 2500 daN / high resistance to shearing 1000 daN

c $\epsilon$
- 3 LEDs to show operating system status: On, Eco, Locked door
- no minimum bending radius contrary to mechanical switches,

The main innovations are:

- the washable receiving strike plate, thanks to a central hole for water release,
- the double M12 connector available, to ease the serial wiring, and facilitate the automatic serial locking,
- an energy saving mode, to avoid unnecessary consumption (96W inrush power for 0.1 sec then $1,5 \mathrm{~W}$, whatever the number of devices connected in serial),
- and a temperature control (the power supply is off if the heat is up $70^{\circ} \mathrm{C}$ ) and overvoltage control (the power supply is off if $+10 /-$ $15 \%)$.
- duty cycle $100 \%$.

The Acotom®3 Technology



## Non contact coded safety solenoid interlocking

Stand alone operation

## VIGILGUARD

- Available with
- 1 M12 connector (ref. 1GS)
- 2 M12 connector (ref. 2GS)

c€

Locked when energized: Vigilguard GI Locked when un-energized: Vigilguard GS

Technical datas
Power supply:
Current consumption:
Safety outputs:
Auxiliary output:
Locking activation
Holding force
Locking mode

Coding principle
Temperature
Bolt stroke / switching distance
Max. length of the connection cable:
Protection class:
MTTFd/DC
Housing:
Connection:

Standards:

Electromagnetic immunity :
Weight Emitter/Receiver:
Standards

Safety classification:
Acc. to EN ISO 13849-1

Certification:

24 V DC; $\pm 20 \%$
Ignition: 96W; stand-by 1,5W
2 NO-outputs ; 50V; 2A
1 PNP-NC, 24V; 400mA
PNP 5-24V DC
$5000 \mathrm{~N} / 20000 \mathrm{~N}$
Locked when energized: Vigilguard GI
Locked when un-energized: Vigilguard GS
ACOTOM ${ }^{\text {®" }} 2$
$-5^{\circ} \mathrm{C}$ to $+40^{\circ} \mathrm{C}$
$14 \mathrm{~mm} / 9 \mathrm{~mm}$
$L=5 /(0,32+0,04(N-1))$
IP66
300 years / 90\%
Zamak
$1 \times$ M12 connector; 8-pin (ref. 1GI)
$2 \times$ M12 connector; 8-pin (ref. 2GI)
EN60947-5-1, EN13849-1, NFS61937; ISO14119;
ISO12100-1
Acc. To IEC 61000-6-2, acc. To IEC 61000-6-4
$1150 \mathrm{~g} / 260 \mathrm{~g}$
ISO 13849-1/EN 60947-5-1
NF S 61 937/ISO 14119
ISO 12100-1

1 switch up to PLe cat. 4
Serie wiring possible with 30 switches on a safety relay, up to PL4e

CE

Application exemple with $\mathbf{2 x}$ M12


Application exemple with $1 \times$ M12


Pin connection


Male inlet:
1 White NO1 5 Grey NO1
2 Brown 24V 6 Pink NO2
3 Green nc 7 Blue 0V
4 Yellow NO2 8 Red LOCK (nc : non connected)

Authorized mounting

VIGILGUARD1-GI
VIGILGUARD2-GI

VIGILGUARD1-GS
VIGILGUARD1-GS

## Non contact coded safety solenoid interlocking <br> Stand alone operation

ANAGUARD 2S<br>- Available with<br>- 1 M12 connector (ref. GSM)<br>- 1 cable (ref.GSW)<br>- Stand alone cat. 2 PLd<br>- smart size<br>- very strong composite plastic housing<br>- its unique design simplifies the cleaning, IP66<br>- suitable for food industry (EN 1672-2),<br>- screw cover to comply with new requirements<br>- emergency manual release with its key<br>- no minimum bending radius contrary to mechanical switches<br>Locked when un-energized

c


| Technical features |  | Application exemple with cable |
| :---: | :---: | :---: |
| Power supply: | 24V DC; $\pm 20 \%$ | ANA |
| Current consumption: | Ignition: 64W; stand-by 1W | $\square$GUARD <br> W-type$\quad\ulcorner-\quad$ Green $\square$ Pink Green $\square$ Pink Green $\square$ |
| Safety outputs: | 2 NO-outputs ; 48V; 2 A |  |
| Auxiliary output: | 1 PNP-NC, 24V; 400mA | 10 䂝 |
| Locking activation | PNP 5-30V DC | 䎹 율 |
| Holding force | 5000N / 2000N | $3 \|$Test  <br> a  <br> Safety  <br> Safety HOCK <br> UNLOCK  |
| Locking mode | Locked when un-energized | $24 \mathrm{Vdc} \pm \xlongequal{\text { loop }} \quad . \quad \text { line1 } \quad \text { line 2 }$ |
| Coding principle | ACOTOM ${ }^{\text {®." }} 2$ |  |
| Temperature | $-5^{\circ} \mathrm{C}$ to $+40^{\circ} \mathrm{C}$ | Dimensions |
| Bolt stroke / switching distance | $9 \mathrm{~mm} / 3 \mathrm{~mm}$ |  |
| Protection class: | IP65 | $20 \sim$ (1) |
| MTTFd/DC | - years / 91,5\% |  |
| Housing: | Grivory plastic |  |
| Connection: | Cable and M12; 8-pin | + |
| Standards: | EN60947-5-1, EN13849-1, NFS61937; ISO14119; ISO12100-1 |  |
| Electromagnetic immunity : | Acc. to IEC 61000-6-2, acc. to IEC 61000-6-4 | illustration picture |
| Weight Emitter/Receiver: | 500g /150g |  |
| Standards | EN 954-1/EN 60947-5-3 NF S 61 937/ISO 12100-1 ISO 14119 / EN1672-2 |  |
| Safety classification: |  |  |
| Acc. to EN ISO 13849-1 | 1 switch up to PLd cat. 2 |  |
|  | Serie wiring possible with 30 switches on a safety relay, up to PL4e | $\square$ |
| Certification: | CE |  |

Ordering-Nr.
ANAGUARD 2 GSM (M12) ANAGUARD 2 GSW (cable 3m)


## Non contact coded safety solenoid interlocking Non stand alone operation

## ANAGUARD/GIM (GIW)

- Available with
- 1 M12 connector (ref. GSM)
- 1 cable (ref.GSW)
- Up to 30 switches with a safety relay AWAX26XXL
- very strong composite plastic housing
- easy cleaning, IP66
- suitable for food industry (EN 1672-2),
- screw cover to comply with new requirements
- emergency manual release with its key
- no minimum bending radius contrary to mechanical switches



## Locked when energized

## Technical features

Power supply:
Current consumption:
Safety outputs:
Auxiliary output
Locking activation
Holding force
Locking mode
Coding principle
Temperature
Bolt stroke / switching distance
Protection class:
MTTFd/DC
Housing:
Connection:
Standards:

Electromagnetic immunity :
Weight Emitter/Receiver:
Standards

## Safety classification:

Acc. to EN ISO 13849-1

Certification:


[^4]
## Non contact coded safety solenoid interlocking Non stand alone operation

## ANAGUARD/GIM (GIW)

- Available with
- 1 M12 connector (ref. GSM)
- 1 cable (ref.GSW)
- Up to 30 switches with a safety relay AWAX26XXL
- very strong composite plastic housing
- easy cleaning, IP66
- suitable for food industry (EN 1672-2),
- screw cover to comply with new requirements
- emergency manual release with its key
- no minimum bending radius contrary to mechanical switches


Locked when un-energized

## C

| Technical features |  | Wiring diagram |
| :---: | :---: | :---: |
| Power supply: | 12 V DC to 30V DC |  |
| Current consumption: | Ignition: 64 W ; stand-by 1W |  |
| Safety outputs: | 2 NO-outputs; 48V; 2A |  |
| Auxiliary output: | 1 PNP-NC, 24V; 400 mA | $\left.10 \quad \frac{\frac{x}{b}}{\frac{b}{a}} \right\rvert\,$ |
| Locking activation | PNP 5-25 VDC | 寀 |
| Holding force | $5000 \mathrm{~N} / 2000 \mathrm{~N}$ |  |
| Locking mode | Locked when un-energized | $24 \mathrm{Vdc} \pm \square$ |
| Coding principle | ACOTOM ${ }^{\text {®" }} 2$ |  |
| Temperature | $-25^{\circ} \mathrm{C}$ to $+60^{\circ} \mathrm{C}$ | Pin |
| Bolt stroke / switching distance | $9 \mathrm{~mm} / 3 \mathrm{~mm}$ | M12-type |
| Protection class: | IP66 | 3 O |
| MTTFd/DC | 1x10^6 / 91,5\% | $4{ }^{1} 54$ Yellow NO2 8 Red START |
| Housing: | Grivory plastic |  |
| Connection: | $1 \times$ M12 8-pin or cable 8-pin 3m |  |
| Standards: | EN60947-5-3, EN13849-1, NFS61937; ISO14119; ISO12100-1, EN1672-2 |  |
| Electromagnetic immunity : | Acc. to IEC 61000-6-2, acc to IEC 61000-6-4 |  |
| Weight Emitter/Receiver: | $1150 \mathrm{~g} / 260 \mathrm{~g}$ |  |
| Standards | ISO 13849-1/EN 60947-5-3 NF S 61 937/ISO 12100-1 |  |
| Safety classification: |  |  |
| Acc. to EN ISO 13849-1 | 1 switch up to PLe cat. 4 |  |
|  | Serie wiring possible with 30 switches on a safety relay, up to PL3e |  |
| Certification: | CE |  |

Ordering-Nr. ANAGUARD/GIM (Stecker M12)
ANAGUARD/GIW (Cable 3m)
ANAGUARD/GSM (Stecker M12)
ANAGUARD/GSW (Cable 3m)


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## ROTATING GATE VALVE LOCKOUTS

Manufactured from tough lightweight dielectric Xenoy thermoplastic these rotational valve covers can withstand extreme conditions: Temperature range -46 C to 177 C

- Outward/Inward rotation allows for easier installation \& storage
- Surrounds the valve handwheel to protect against accidental operation
- 5 sizes available, each size nests within the next larger size for easy storage
- $\quad$ Supplied with "Do Not Operate" warning message

V-Safe valve covers are a simple, low cost, effective way to prevent unauthorised operation of valves.
Valve covers consist of two flattened half moons that completely cover the valve handwheel. Once locked, the cover rotates freely around the handwheel preventing operation.

Adjustable Gate Valve Lockout
This versatile valve handwheel lockout adjusts to fit valve handwheels from 25.4 mm to 165 mm ( 1 " to $6.1 / 2^{\prime \prime}$ ) diameter.
Manufactured from durable polypropylene and can withstand temperature changes from -45 C to 182 C

## Universal Valve Lockout

The Universal Lockout device is a modular system which enables you to lock out valves of different types and sizes.


No other device offers such flexibility and security. There are two sizes available: large and small.


- Modular system makes your investment economical and flexible
- Can be used to lock out large levers, T-handles and other hard-to-secure mechanical devices
- New open-ended clamp fits over closed rings, wide handles
- Locks out valves in open and closed positions
- Made from industrial-grade steel and nylon for rugged durability, chemical and corrosion resistance

B-Safe Butterfly Valve Lockouts
The B-Safe butterfly valve lockout is a simple, effective way to secure your butterfly valves to prevent unauthorised operation.
Ball Valve Lockouts
Manufactured from ultra-tough polypropylene, the two halves of the device encompass the ball valve lever to secure it from inadvertent activation of the valve.


## Other products

## INDUCTIVE SWITCH WITH DOUBLE SENSING FACE (NPN AND PNP OUTPUT)

## Application field

IB30S has a double detection of near $4 \mathrm{~mm}+-10 \%$ with double NO outputs PNP / NPN NO which can be connec ted to our safety relay AWAX26XXL or our zener barriers and reach the safety category 4 acc.to ISO13849-1.
IB30S solves technological problems in the safety of automation such as:

- Checking the direction of moving parts,

Security control of valve position.
When installing 2 sensors of the same model face-to-faceor in parallel, separate by the distance specified in the following table to prevent interference.


NOTE: D: sensor diameter, Sn : sensing distance
The detecting distance varies according to target material. The charts show the percentage of detecting distance for common materials when iron is $100 \%$. However, as the rate varies depending on the sensor model, refer to the characteristics chart "detecting distance vs. Size and material of target" for each model. Note that metal-plated targets will affect the detecting distance.

- Wiring diagram

NPN N.O. +PNP N.O.


- Performance(DC)

| Model Number Item | IBT30-S04NY-D4Y2/N |
| :---: | :---: |
| Sensing range | $4 \mathrm{~mm}=10 \%$ |
| Sensing object | Steel $12 \times 12 \times 1 \mathrm{~mm}$ |
| Supply voltage | DC10-30V |
| Voltage drop | $\leqslant 1.8 \mathrm{~V}$ |
| Load current | $\leqslant 200 \mathrm{~mA}$ |
| Consumption | $\leqslant 15 \mathrm{~mA}$ |
| Repeat accuracy | $\leqslant 2 \%$ |
| Switching frequency | 1000 Hz |
| Leakage current | $\leqslant 0.01 \mathrm{~mA}$ |
| Protection | Reverse polarity protection, Short-circuit protection |
| Ambient temperature | -25 to $+70{ }^{\circ} \mathrm{C}$, Storage -30 to $+80^{\circ} \mathrm{C}$ |
| Ambient humidity | 45 to85\%RH(with no dew nor ice condensation), storage: 45 to85\%RH |
| Temperature variation | Max. $\pm 20 \%$ of an operation range at $+23^{\circ} \mathrm{C}$ in -25 to $+70{ }^{\circ} \mathrm{C}$ temperature range |
| Insulation resistance | Min. $50 \mathrm{M} \Omega$ between the liveparts and enclosureat 500 DC |
| Dielectric resistance | 1000 V AC $50 / 60 \mathrm{Hza}$ pplied between the lie parts and enclosure for 1 min |
| Vibration resistance | 1.5 mm amplitude at the frequence of 10 to 55 Hz in each of $\mathrm{X}, \mathrm{Y}$ and Z direction for two hours each in the power state |
| Shock resistance | $500 \mathrm{~m} / \mathrm{S}$ (approx50G)/mpulseineach of $\mathrm{X}, \mathrm{Y}$ and Z direction for 10 times in the power OFF state |
| Protection class | IP67(IEC) |
| House material | CuZnNi |
| Sensing face material | PC |

## Dimensions

## Sensing face



## Other products

## MUSCA 4-FOLD, COMPACT HAND-HELD TRANSMITTER



The Musca 4 -fold is particularly suitable for carrying out less complex orders for which a remote control with two functions suffices. The hand-held transmitters of the Tyro Musca range have a maximum of four functions and are the most compact and economical of our range of products.

The Tyro Musca is very popular thanks to its compact size. Its great design but also the comfortable rubber grip on the sides means that this hand-held transmitter has a perfect grip. Its compact size makes it ideal to carry in a trouser pocket but it is also equipped with a belt clip.

The hand-held transmitter was designed for intensive use, also in exceptional conditions, and this water and dirt resistant hand-held transmitter has a highquality industrial keyboard foil, which is easy to clean and offers excellent protection to the controls.

| Communication complete systems |  |
| :---: | :---: |
| Frequency | 868 MHI (Muitiple frequendes possitile) |
| Communication / modulation | FM |
| Iransmitting power | $\leqslant 10 \mathrm{~mW}$ |
| RF sensibility | -215 d |
| Reactiontime after pressing a button | < 100 ms |
| L. ${ }^{\text {b }}$. code | 24 - bit |
| Channel distance / hamming distance | 200 kHz |
| Range under normal circumstances | 350 meters |
| Range under normal circurnstances incl. RF amplifier | 700 meters |
| Emergency button on trantmitter | Complies to CE requirements |
| Temperature resistance | $30^{\circ} \mathrm{C} / 75^{\circ} \mathrm{C}$ |
| Number of tranamitters per receiver | Standard up to 54 |
| Transmitter powersupply |  |
| Powersupply | 1x9V block |
| Service time | 4 -2 years under normal circumstances |
| Power withdrawal | 3.5 mA |
| Transmitter foil |  |
| Number of function keys | 2 or 4 |
| Emergency button | Present |
| Trammitter endosure |  |
| Weigth | 192 gr |
| Resistance to damp and dirt | IP 65 |
| Material | ABS ( Impact-resistant / 2 metres fall guaranteed) |
| Recelver endosure |  |
| Weigth | 480 gr |
| Resistance to damp and dirt | IP 68 (100\% waterproof) |
| Material | Polyurethane ( impact-resistant/ mutes vibrations) |
| Recelver marimum conflyuration |  |
| Power | $8-38 \mathrm{Vdc}$ ( various voltages possible) |
| Number of switching units | Max6 |
| Type of switching unit | Mosfet |
| Fuse | 10 Amp fast-glassfuse integrated $5 \times 20 \mathrm{~mm}$ |
| Short circuit protection | Present on every output |
| Max, Load | 4 A (Larger currents are possible) |
| Didtal Inputy |  |
| Number of digital inputs | 1 |
| Max, Load | 38 V |
| Low detection | 44 V |
| High detection | $>6 \mathrm{~V}$ |
| PWMM output |  |
| Number of PWM outputs | 2 |
| Max. Frequency | 2 KHz |
| Sufety |  |
| Max, safety category | Category 3 EN 954-1/150 13849-1 |

- Guaranteed safety (EMC/E11 Certificate/R\&TTE/CE)
- Extremely reliable, very powerful
- Water and dirt resistant
- Compact design, impact-resistant and shockproof
- Comfortable rubber grip and belt clip
- $100 \%$ waterproof receiver (IP68)
- Safety Cat. 3 EN 954-1/ISO 13849-1 (optional; active emergency stop)


Max, safety category
Category 3 EN 954-1/15O 13849-1

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[^0]:    CODED AND NON-CONTACT
    SOLENOID INTERLOCKING

[^1]:    CODED AND NON-CONTACT
    SOLENOIDINTERLOCKING

[^2]:    CODED AND NON-CONTACT
    SOLENOID INTERLOCKING

[^3]:    Ordering-Nr
    MASSIMOTTO/ANA98S.2M12
    MASSIMOTTO/ANA98S.2M12/D

[^4]:    ANAGUARD/GIM (Stecker M12)
    ANAGUARD/GIW (Kabel 3m)
    ANAGUARD/GSM (Stecker M12)
    ANAGUARD/GSW (Kabel 3m)

