INDUSTRIAL SAFETY CONTROLS INC.

PRODUCT OVERVIEW

DOLD

SAFETY DEVICES

MONITORING DEVICES

POWER ELECTRONICS

INSTALLATION ELECTRONICS

SAFETY SWITCH &

TRAPPED KEY INTERLOCKING SYSTEMS

CONTROL DEVICES

262.652.8660 • Fax: 262.652.1388 • www.safeworkplace.org

INDUSTRIAL SAFETY CONTROLS INTRODUCES... STERN SWITCHES

Stern's SmartSwitch® Piezo switches line, offers advanced technology in a high finish. Stern switches can be used in outdoor machines like fuel pumps, car wash stations, weighing stations etc, where they are exposed to harsh weather conditions. In applications where there is no need for machine status indication, Stern's non-illuminated range is advisable. Ring or dot illuminated switches, provides an advanced user interface in the form of visual operation-feedback or switch mode indication, and are advisable for more advanced applications.

BASIC PIEZO SWITCHES... operated by touch. The action force on the Piezo disk causes a voltage to be induced due to a charge transfer. The voltage generated is converted by the electronic connection into a polarity-neutral, electronic switch contact.

PROGRAMMABLE PIEZO SWITCHES... operated by touch and featuring various time-delay and automatic activation functions. Based on the basic Piezo switch, the programmable Piezo switch is an integral solution for any practical switch activation market.

ADVANTAGES... Rating IP68/IP69K/ATEX (explosion proof) • Extremely long lifetime • Operating cycles: >10 million • Maximum sealing and dirt protection • Easy activation by soft touch • Vandal proof one-piece – no moving parts • Various connectors available • RoHS compliant

Red Anodized Piezo Switch with Ring Illumination

Finger Guided Basic Piezo Switch

Switch Options

Switch Colors

Ring Illuminated Piezo Switch

PIEZO SWITCHES

 07225213 Basic	 07225203 Standard 22mm Stainless Steel Non-Illuminated with Finger Guard, cable	 07225195 Standard Basic 22mm All Stainless AISI 303, cable, flat head	 07225223 Non-Illuminated
 07225231 Basic	 07225199 White LED, Ring Illuminated, Stainless Steel, Standard 20cm cable, flat head	 07225220 White Illuminated	 07225204 Standard Basic 16mm Stainless Steel Non-Illuminated, cable, flat head
 07225197 Red LED, Ring Illuminated, Stainless Steel, Standard 20cm cable, flat head	 07225198 Blue LED, Ring Illuminated, Stainless Steel, Standard 20cm cable, flat head	 07225196 Green LED, Ring Illuminated, Stainless Steel, Standard 20cm cable, flat head	 Orange LED, Ring Illuminated, Stainless Steel, Standard 20cm cable, flat head

RELAY MODULES AND SAFETY SWITCH/TRAPPED KEY INTERLOCK SYSTEMS

Wherever people, machines and products must be protected against injury or damage and productivity increased, DOLD relay modules and interlocks have been successfully deployed worldwide for many decades. In addition to a variety of devices with standard functions, DOLD can fall back on many years of experience in developing tailor made and economic problem solving solutions.

Safety devices >
Page 4 - 10

Monitoring devices >
Page 11 - 14

Power electronics >
Page 15 - 18

Control devices >
Page 19-22

Installation electronics >
Page 23-25

Lockings (solenoid operated) >
Page 26

Safety switches >
Page 27

Lockings (mechanical) >
Page 28

EMERGENCY STOP MODULES / MONITORS

In 1988, DOLD developed their first emergency stop module BN 5983 for man-machine protection. Conventional contactor controls with their expensive interconnection wiring could be replaced with this product and a lot of space could be saved in the control cabinet. With current emergency stop modules featuring a width of only 17.5 mm and a depth of only 70 mm, DOLD has again set new standards for safety relay modules. In large installations with multiple emergency-stop buttons, it is useful to quickly know which emergency-stop button has been operated to minimise downtimes. For this application DOLD offer specific emergency stop button monitors with indication and bus outputs.

EMERGENCY STOP MODULES:

- Safety category up to EN 954, SC4
- Safe thanks to potential-free contacts
- Miniaturization space saving designs
- Gold-plated contacts, for low loads
- Easy wiring saves cost
- Tailored to your applications
- Quick module replacement via detachable terminals
- Preconfigured type-tested modules save time and cost

The function of an emergency-stop module is to quickly and reliably stop a dangerous movement in when a potential hazard is identified. This is why appropriate circuits are incorporated to prevent failure of devices downstream from an emergency-stop control device. Dependant upon a risk assessment and the resultant safety category, these circuits are designed with the following features:

- Redundancy
- Cyclically monitored
- Fail-safe operation

Further features:

- Potential-free outputs with positively driven contacts
- Compliance with EN 954

EMERGENCY STOP MONITORS:

- Quick identification of the depressed emergency-stop button via clear LED indication
- Reduced downtime, due to fast location of the depressed emergency-stop button
- A choice of signalling to primary controls and displays via bus interface or BCD coded outputs

The green status LED's are illuminated for non-operated emergency-stop buttons. When an emergency-stop button is depressed, the associated LED will go out. The emergency-stop buttons are series connected; this is why only one LED will go out if multiple emergency-stop buttons are operated. In this case, only the depressed emergency-stop button which is closest to the front position in the emergency-stop chain is signalled. When this emergency-stop button is unlocked, the next depressed emergency-stop button is indicated.

APPLICATIONS:

EMERGENCY STOP MODULES:

Stop dangerous movements or cut off energy in case of danger to protect man, machine and product. They are used in machinery and plants which may cause danger to man or machine, e.g. in the packaging industry, production plants, food industry, material handling, plastic processing, steel and aluminium industry, woodworking industry.

EMERGENCY STOP MONITORS:

Monitor emergency-stop buttons in large plants to quickly locate the depressed emergency-stop button, e.g. in industrial applications, materials handling, sewage treatment and woodworking plants.

SAFETY GATE MONITORS AND SAFETY SWITCHES

Safety gate monitoring modules watch the position of movable safety devices by interrogation of safety switches which are operated by safety device opening/closing.

APPLICATIONS:

SAFETY GATE MONITORING:

Safety gate monitors can be used for all applications where movable protective devices (safety gates) are required. This is the case where entering into or access to an area with dangerous movements for the purpose of machine operating, setting or fault elimi-nation require such a safety device.

SAFETY SWITCHES:

Proximity-operated safety switches are suited for position monitoring of sliding, hinged or detachable safety gates and guards, even in heavily polluted environments or for applications with stringent hygienic requirements. These products can also be used for sluggishly or inaccurately closing gates.

SAFETY GATE MONITORING:

- Wide range of products for a variety of applications
- All products comply with the safety category 4 acc. to EN 954
- Type-tested circuits in compliance with relevant norms
- Prewired modules for DIN rail mounting

Safety gate monitors are designed to comply with the safety category 4. Line faults and interruptions can be detected by XOR arrangement (combination of NO and NC contacts). Depending on model the position switches can be monitored for simultaneity with different time tolerances.

SAFETY SWITCHES:

- Reliable position monitoring of safety devices, e.g. safety gates
- Suited for raw environments thanks to hermetically sealed housing up to IP 67
- Long service life by wearless switching and proximity operation

Safety switches are available either as Reed switches or with semiconductor outputs. They consist of an actuator and a sensor as decoder. The actuator is magnetically encoded. Sensor contacts switch when the sensor detects the encoding of the actuator. DOLD's safety switch NE 5020 has a cross fault detection function. When a fault occurs the output contacts of the evaluator are cut off for safety reasons and a restart is prevented. The safety switches are protected against short-circuit currents and interfering voltage pulses.

LIGHT BARRIER CONTROLLERS

Light barriers belong to electro-sensitive protective equipment (ESPE) which cut off dangerous movements and initiate a safe condition when persons or objects approach to a dangerous location.

- Increase productivity by longer cycle times without loss of safety
- No need for mechanical safety devices
- Easy implementation of muting functions

The electro-sensitive protective equipment BWS-S, also referred to as type 4, is not affected by a farlure within the electro-sensitive protective equipment. Our solutions for this include:

- Type-tested evaluation circuits in compliance with relevant norms
- Prewired rail-mounted modules, also with muting function

APPLICATIONS:

Protection of operators on machinery who have to cyclically intervene in the process (dangerous area), e.g. loading and removal of process material/products. A typical application is the operation of presses.

TWO-HAND CONTROL MODULES

Two-hand controls on machinery and plants are used to protect operators against injuries by dangerous closing movements. The control unit is located outside the dangerous area to prevent the operator from getting into this area before a dangerous movement is actually stopped.

- Save cost by leaving out conventional contactor controls
- Type-tested circuits complying with the requirements from the employers' liability insurance association
- Compact prewired rail-mounted modules

Two-hand controls consist of an operating panel featuring two operating elements (control push buttons) which have to be arranged so that both hands must be used for operation. The DOLD evaluator module only releases once both control elements are operated simultaneously within 500 ms. The release command is present as long as both control elements remain operated. When one control element is unhanded a new control command can only occur if the other control element is also unhanded and both elements are operated again.

APPLICATIONS:

DOLD evalutor modules are used on all machines and plants where a dangerous closing movement may cause injuries of the operating personnel. Typical applications include the operation of...

• Presses • Hole punching machines • Cutting/shearing devices

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SAFETY MAT MODULES

Evaluation of safety mats These safeguard products generate a control command when exposed to an operating force and cause an immediate stop of a dangerous movement via an evaluator module.

- Specific adjustment to areas to be protected
- Type-tested solutions in compliance with relevant norms
- Permanent function monitoring of the safety mats
- Breaking current limiting to <10 mA protects the safety mat against electrical damage due to overcurrent in the case of short-circuit
- Rail-mounted modules
- Automatic or manual activation function
- Plug-type terminal blocks
- Safetycategory 4 acc. to EN 954-1

APPLICATIONS:

Safety mats are safeguard products designed to protect large-area dangerous areas and to control access to machinery.

STANDSTILL / SPEED MONITORING

Stand-still/speed relays monitor the rotation of drives to generate a control signal at zero speed or when a set speed is exceeded.

- Prewired rail-mounted modules
- Safety category 3 acc. to EN 954-1
- Positively driven output contacts
- Connection monitoring of the proximity switches

These modules have measuring circuits in redundant configuration with 2-channel control by proximity initiators, either as pnp or npn input. The thresholds are either fixed or can be adjusted up to 26000 IPM. Zero-speed monitors can also work without sensors by measuring the remanence voltage of the coasting motor and evaluating it at zero speed.

APPLICATIONS:

- Release safety gate interlocks when the stationary condition of a dangerous movement is detected
- Work with opened safeguard devices and reduced speed during the set-up mode of the machine

EXTENSION, DELAY AND COUPLING MODULES

EXTENSION MODULES: Extension modules can be used to multiply the output contacts of the basis modules. Also contact reinforcement by splitting into multiple control circuits is possible.

DELAY MODULES: The emergency-stop of a dangerous movement can be accelerated by a controlled stop operation according to the stop category 1 by allowing motor brake functions or controlled drive speed reduction to run during the cutout delay.

COUPLING MODULES: Coupling modules with positively driven contacts are used to switch safety-related functions as links between logic circuitry and load. The positively driven NC contacts can be used to monitor the closing contacts.

APPLICATIONS:

EXTENSION MODULES:
Multiplication of release circuits of a basis module to cut off any number of control circuits in a safety-related manner.

DELAY MODULES:
Quick stopping of a dangerous movement of drives with masses. A typical example are tools rotating with high speed, which still coast after cutoff for a longer time.

COUPLING MODULES:
Used, for example, for self-monitoring safety circuits, for the adjustment of control and power levels and for switching safety-related functions.

EXTENSION MODULES:
- Cost-saving contact multiplication, universal connectivity to all basis modules
- Monitor output contacts via a feedback loop through the relevant basis module
- Connect multiple extension modules to a single basis module by cascading

Compact module with positively-driven safety relays which is triggered by the associated function module (basis module) and monitored via a feedback loop. An extension module can only reach the basis module's safety category acc. to EN 954-1 as a maximum.

DELAY MODULES:
- Controlled stop operation of drives minimizes the risk of injuries
- No adverse effects on productivity as immediate restarting is possible
- High long-term stability by digital timer

Delay-release time-delay relay with or without auxiliary voltage and adjustable or fixed time setting. High long-term stability thanks to digital timer. Two time circuits working independent of each other to implement a cutoff redundancy. Positively driven release contacts.

COUPLING MODULES:
- Very safe switching behaviour by positively driven contacts
- Allow a regulation-compliant implementation of safety-related circuits
- Prevent retriggering in the case of an error

Coupling modules feature safety relays with positively driven contacts according to EN 50205. Positive-action is present if the contacts are mechanically linked to each other so that NC and NO contacts can never be closed at the same time. For this it must be ensured that a contact gap of at least 0.5 mm is present over the whole service life, even in fault condition.

MULTIFUNCTIONAL SAFETY SOLUTIONS

Apart from a variety of classic monofunctional safety modules, such as emergency stop modules, DOLD also offers multifunctional safety modules and systems. For this, DOLD integrates more and more functionality in less space. In the compact multifunctional SAFEMASTER®C safety module several safety-related inputs are assigned to a single output. The selection of available safety functions includes:

- Emergency stop
- Safety gate
- Electro-sensitive protective equipment (ESPE), e.g. light barriers
- Two-hand safety button type IIIA or IIIC acc. to EN 574
- Functions and operating modes can be easily selected by rotary switches.

With SAFEMASTER®M as a modular safety system it is possible to tailor the safety functions to the relevant application in a cost-saving manner. Evaluation includes:

- Emergency stop
- Safety gate
- Electro-sensitive protective equipment (ESPE), e.g. light barriers
- Two-hand safety button type IIIA or IIIC acc. to EN 574

Input modules with freely selectable safety functions can be assigned to different output modules. An optional field bus connection allows system status visualization.

APPLICATIONS:

DOLD's multifunctional safety systems provide optimized solutions for a variety of applications in machinery and plants, e.g.

- Paper and printing industry
- Forming
- Beverage industry
- Food industry
- Packaging industry
- Injection moulding machines
- Machine-tools
- Robot cells
- Wood working machines

SAFEMASTER®C:

- Save cost by multifunctionality
- Save space in switch cabinet compared with monofunctional safety modules
- Reduces stockkeeping
- Easy and quick setting of safety functions and operating modes

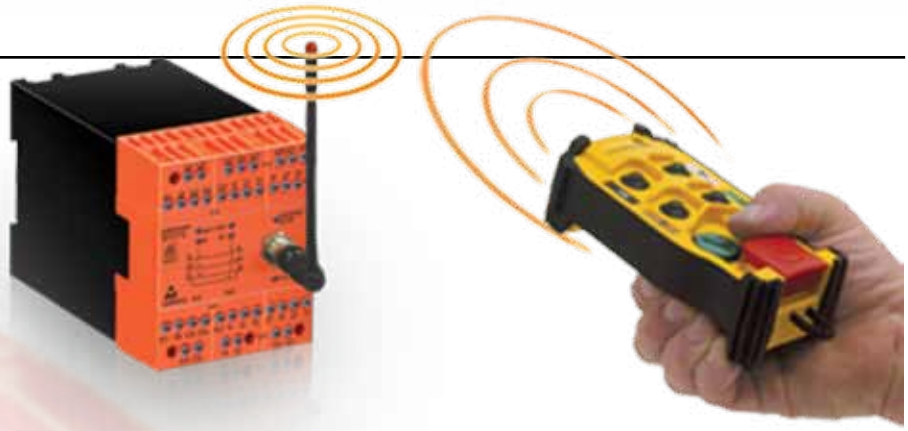
Complies with the European Directive on Machinery 98/37/EEC. Switchable via rotary switches for the connection of: - Emergency-stop buttons - ESPE (electro-sensitive protective equipment, e.g. light barriers) - Safety gates - Two-hand safety buttons type IIIA or IIIC acc. to DIN EN 574. Additional choice of: - Automatic or manual start (simulation button for safety gates) - Permanently monitored feedback loop to connect external contactors. Outputs: - 3x NO or 2x NO + 1x NC - 2 semiconductor outputs, short-circuit- and overload-proof. Undervoltage and overvoltage detection and signalling. Functions and operating modes can be selected by rotary switches under the front plate.

SAFEMASTER®M:

- Save cost thanks to multifunctionality, modular design and status signalling
- Save space in switch cabinet by optimized system tailoring to the application
- Reduces stockkeeping
- Device configuration without software
- Versatile
- Hierarchic grouping by incorporation of locally acting safety functions in overriding emergency-stop circuits
- Increase system availability by visualization
- Reduce downtimes by quick diagnosis of the cutoff cause
- Quick module mounting – detachable terminals and plug-type connections
- Flexible use with monitoring of a variety of safety sensors

Our Safemaster M as a compact modular safety system extends our consistent safety solution concept. It consists of 4 main modules: - Control module - Input module - Output module - Diagnosis module. The control module BH 5911 has inputs and outputs. It features the emergency-stop function, either 1- or 2-channel with manual or automatic start. 4 start keys as a maximum can be connected, which can be assigned to the control module or to the input modules in any combination. Depending on the model the safety-related output has either 3 NO contacts or 2 NO contacts plus 1 NC contact, each in redundant configuration. The input module BG 5913 has 8 safety-related inputs. Depending on the variant these inputs can be assigned to several safety functions. e.g. 1x safety gate + 1x ESPE + 1x emergency-stop or also 1x safety gate + 1x two-hand etc. These safety functions are processed in the input module and control the assigned output module(s). The output module BG 5912 consists of two positive-action relays, which may have a variety of contact complements depending on the variant. These include 3 or 4 redundant NO contacts or 2 NO contacts/1 NC contact or 3 NO contacts/1 NC contact. It goes without saying that also delayed safety-related outputs are available, with the time being adjustable on the module. Here, the combinations 3x NO or 2x NO/1x NC are possible.

WIRELESS SAFETY



Sometimes, persons must access dangerous areas of machinery and installations to carry out machine settings or fault elimination, for example. Because they are out of the reach, stationary emergency-stop buttons can not be reached early enough for a cutoff of the machinery within seconds. SAFEMASTER®W, a wireless companion for your safety, is the solution for this problem. It allows you to cut off dangerous movements within a fraction of a second.

APPLICATIONS:

The ideal solution for mobile and stationary machines and plants with dangerous areas. In automatic mode, e.g. for fault elimination, lubrication and adjustment operations. In set-up mode, e.g. for machine settings, maintenance, start-up procedures.

EXTENSION MODULES:

- Better availability of your machines and plants
- Mobile and flexible because it is portable or hand-held
- Versatile
- Safe, SK4 acc. to EN 954-1
- Radio technology, without wear and maintenance
- User-friendly and ergonomic
- Convenient one-hand operation

SAFEMASTER®W consists of a light-weight ultra-compact hand-held transmitter and a receiver with safety-related outputs. Signals are transmitted via both radio transmission and also infrared radiation. This ensures that the user of the hand-held transmitter can only start systems which are in his/her view.

Also suited for control functions:
Apart from the safety function the hand-held transmitter has optional free configurable keys and switches. They allow convenient

- Step-by-step controls
- Start/stop functions
- Speed adjustments
- Positioning and actuator selection

INSULATION MONITORS

Unscheduled downtimes of machines and plants mean a considerable cost factor. By early detection of insulation faults DOLD insulation monitors help to prevent failures of electrical equipment and thus ensure a better operating reliability and plant safety. They are used both in earthed and also non-earthed systems, but differ in their function principle: In **EARTHED SYSTEMS** (TN systems) DOLD differential-current monitors detect fault current with the principle of differential-current measurement and are mainly used to avoid cost-intensive downtimes and to prevent the risk of fire which is latent in the case of slowly evolving insulation faults. In **NON-EARTHED SYSTEMS** (IT systems), the insulation resistance to earth of the system to be monitored is measured. Such systems are secured by insulation monitors the use of them in IT systems is required by law by the norm "Safety of Machinery" DIN EN 60204-1 or DIN VDE 0100-410. Thanks to deliberately kept simple functionality of DOLD's insulation monitors customers benefit from a considerable cost advantage combined with the high quality standard accustomed from DOLD.

- Save space thanks to compact design
- Cost-effective and easy-to-use by kept simple functionality
- Flexible by extended application range of our insulation monitors for systems up to 500V AC and 1000 Hz, i.e. also application for 400V three-phase systems Monitor DC systems up to 280V without auxiliary voltage
- Improve efficiency: avoid unscheduled downtimes and data losses
- Improve operational reliability and safety: monitor also at standstill, no interruption of operation in the case of single-phase-to-earth fault
- Better fire safety: detect slowly evolving insulation faults, minimize accidental arcs as frequent fire cause, split and separetely monitor systems in fire- and exlosion-prone areas
- Improve workplace safety: no malfunctions of machinery and systems due to earth faults
- Save time during maintenance and repair: reduce cost by early detection of insulation faults and well-aimed repair

APPLICATIONS:

Differential-current and insulation monitors are used for early detection of insulation faults in applications where unscheduled downtimes of machinery would have serious consequences. They are used in earthed systems for reasons of efficiency and protection against fire and accidents, but they are required by law in non-earthed systems for the same reasons according to DIN VDE 0100-410 and DIN EN 60204-1. Applications include:

- Wood working industry: fire prevention
- Chemical industry: prevent the interruption of chemical production processes
- Automotive: prevent downtime of entire production lines if one partial area fails
- Food industry: prevent consequential losses, e.g. failure of a cooling plant
- Medical: prevent the failure of live-saving facilities
- Data processing: prevent data loss in computer centers, data processing equipment and systems

Moreover, insulation monitors are used to monitor cut off consumers, which are only needed in certain situations, but must then function without problems, flue gas extraction systems in case of a fire, for example.

DIFFERENTIAL-CURRENT MONITORS

Unscheduled downtimes of machines and plants mean a considerable cost factor. By early detection of insulation faults DOLD insulation monitors help to prevent failures of electrical equipment and thus ensure a better operating reliability and plant safety. They are used both in earthed and also non-earthed systems, but differ in their function principle: In **EARTHED SYSTEMS** (TN systems) DOLD differential-current monitors detect fault current with the principle of differential-current measurement and are mainly used to avoid cost-intensive downtimes and to prevent the risk of fire which is latent in the case of slowly evolving insulation faults. In **NON-EARTHED SYSTEMS** (IT systems), the insulation resistance to earth of the system to be monitored is measured. Such systems are secured by insulation monitors the use of them in IT systems is required by law by the norm "Safety of Machinery" DIN EN 60204-1 or DIN VDE 0100-410. Thanks to deliberately kept simple functionality of DOLD's insulation monitors customers benefit from a considerable cost advantage combined with the high quality standard accustomed from DOLD.

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MEASURING RELAYS

DOLD measuring devices reliably monitor electrical quantities such as current, voltage, power, resistance etc. and signal fault conditions and disturbances. Thus, these products also protect complex systems and ensure an optimal production sequence. LEDs on the front provide visual status indications. Output contacts or interfaces to bus systems allow information transmission.

Customers benefit from DOLD's complete functional range. Our experienced engineers give you proficient advice when it comes to the selection of products perfectly tailored to customers' requirements for a variety of monitoring and measuring applications. It goes without saying that also customer-specific adjustments are possible (e.g. modification of voltage ratings, contact materials, etc.). So we offer solutions optimized for your monitoring and measuring requirements - all from one hand. Our competitive edge becomes yours. We offer both mono- and also multifunctional relays allowing our customers to configure at their own discretion solutions either with a minimum of investment or also with a maximum of flexibility and functionality.

APPLICATIONS:

DOLD monitoring and measuring relays are used in all industrial areasand in a variety of applications. Some application examples for the differentdevice groups are mentioned below:

PHASE

Relays for system monitoring are used to protectequipment and plants, to supply emergency light systems, to detect neutral-conductor interruptions and short-time voltage interruptions. The products are equipped with differentfunctions depending on the application and compliance requirements.

- Undervoltage and overvoltage relays, voltage monitors, single- and three-phase.
- Phase-sequence relays.
- Unbalance relays, phasemonitors, phase indicators.
- Neutral monitors.
- Frequency relay.
- Insulation/differential-currentmonitors.

LOAD

- Current relays.
- Underpower monitors.
- Load monitors, overload monitors, load transformers.

INSTALLATIONS

- Speed/zero-speed relays.
- Temperature relays, thermistor motor protection relays.
- Level sensing relay.

MONITORING OF MULTIPLE QUANTITIES/SPECIFIC APPLICATIONS

- Multifunctional relays.
- Measuring relay for specific applications.

FAULT ANNUNCIATORS

By lamps, buzzers or also in form of clear text DOLD fault annunciators inform on faults and conditions in electrical installations in industrial facilities and buildings. They also inform on work operations to be done. DOLD fault annunciators considerably reduce the time for fault finding in particular in complex machines and plants. Thus they help to minimize downtimes of production plants and save cost. Apart from simple electrical group fault, new-value and first-up annunciators, electronic clear text fault annunciating systems are available for complex applications. Especially when programmable logic controllers (PLC) or management systems are used it is indispensable to install fault alarm acquisition independent of the process level to keep control when the plant control fails and to avoid damages. Applications: Monitoring of machinery and plants of any kind and building monitoring.

APPLICATIONS:

DOLD fault annunciators are used to specify maintenance intervals for preventive maintenance and for general monitoring in following application areas (among others):

INDUSTRY:

- Production plants, production sequences and processes
- Machine functions, e.g. V-belt rupture, filter clogging, dry-running of pumps
- Compressors

BUILDINGS:

- Heating, ventilation and air condition (HVAC)
- Doors, gates and windows
- Transport and materials handling systems

ENVIRONMENT:

- Power stations
- Sewage treatment plants
- Waste incinerating plants

Group fault, new-value and first-up annunciators have normally acoustic and visual indicators and are designed for DIN rail mounting or also for front panel mounting. **Group fault annunciators** are available for 4 up to 160 signals and energize a relay when a fault signal occurs. Such a relay can be de-energized by an acknowledging key. A visual (flash lamp) or an acoustic (horn) transducer is connected to this relay output. New-value and first-up annunciators are used where the chronology of fault signals is essential.

The **new-value annunciator** signalizes that alarm among a number of alarms the status of which has changed last after the last acknowledgement. New-value annunciations are indicated by a flash lamp and after acknowldgement as permanent light until the fault is cleared. The **first-up annunciator** signalizes that alarm among a number of alarms the status of which has changed first after the last acknowledgement. The first occurred fault is indicated by a flash lamp and consequential faults by permanent light.

Text annunciator systems echo the correct sequence of the arrived fault signals. Stored alarms can be called up and viewed on the display. Text fault annunciator systems can be operated as new-value and also as first-up annunciators. Text fault annunciators have outputs for group annunciation, horn and system readiness. Inputs and outputs are metallically isolated and thus ensure a maximum of interference immunity. Beyond standard applications, statistics, analog processing, time interrupt functions, decentralized acquisition and output as well as multilingualism of the fault texts are customer-specific options. A printer can be used for logging, i.e. for printing date, time, test of the fault and the whole statistics memory of the system. With an appropriate programming software also other settings than message texts can be defined such as energized/de-energized-on-trip principle of inputs, delay of inputs as well as grouping and priority of outputs. A decentralized fault alarm acquisition in complex installations can be configured with up to 30 modules with 8, 16, 24 or 32 inputs each. Via a separate module, these modules are connected to a two-wire line which is connected to the central fault annunciator. A maximum of 957 fault alarms can be acquired with this. Additional remote control stations complete the system.

De-energized on trip principle. For safety reasons DOLD recommends the de-energized-on-trip principle for fault annunciators. Here, the contact falls back in its normal position when the operating condition is met. Operating condition is loss of voltage which may be either due to a fault to be annunciated or to a fault in measured current transmission (e.g. damage of the supply cable). Thus, the wiring itself is included in the monitoring. **Energized on trip principle.** The contact switches to its operated condition when the operating voltage is present, i.e. a fault alarm is initiated by an electric signal. Disadvantage: If the supply conductor to the fault annunciator is interrupted, neither this interruption nor any other fault can be indicated by the device. This is why DOLD recommends the de-energized-on-trip principle.

SEMICONDUCTOR RELAYS/-CONTACTORS

Solid-state contactors proved to be good in industrial applications where high switching frequencies or high switching cycles are required. With their long service life and wearless switching they solve switching and control tasks in specific applications in an extremely economic manner.

Ready-to-use products and easy installation ... Snap on - Wire - Done

Long service life

Long service life ... Noiseless switching thanks to the use of semiconductors instead of electromechanical contacts

Excellent EMC properties ... because of zero-voltage switching

Innovative technology ... DCB technology optimizes heat dissipation

Low space requirements ... thanks to compact design and optionally up to 3 separately triggerable solid-state contactors within a single housing

Customer-specific solutions and special-purpose variants ... e.g. with finely adjustable load circuit monitoring or with analog input for burst firing control for temperature controllers for cartridge-type heaters and other heating equiment

Suited for high switching frequencies

Low trigger current ... only 5 mA

Rough environmental conditions

High I^2t ... therefore no extra solid-state fuse needed

DOLD semiconductior contactors and relays dead easily to handle Ready-to-use products for your applications
With optimized parameters such as heat sink size, EMC, heat dissipation etc. To select the product which is best suited for your application it is enough to know the current flowing through your load.

QUICK AND EASY INSTALLATION:

Simply snap these ready-to-use products on the top hat rail or screw them directly on the mounting plate.

INNOVATIVE TECHNOLOGY:

Switching of high load currents results in considerable heating of semiconductior contactors and relays. Inacceptable temperature rises may cause device failures after a time. To counteract this risk DOLD developed advanced technologies. Thanks to the DCB (Direct Copper Bonding) method it is possible to optimize heat dissipation in the power output element of the semiconductior contactors and relays and to ensure the operational reliability of your systems.

APPLICATIONS:

- Extrusion and injection moulding plants
- Heating controls
- Soldering lines
- Hot-melt glueing robots
- Oven controls
- Three-phase motors
- Lighting controls
- Materials handling installations
- Dispensing equipment
- Packaging machines
- Automats
- Copying equipment
- Pumps
- Self-service automats
- Traffic lights
- and many more

SOFTSTARTERS

DOLD softstarters ensure a soft and jerkless starting of your asynchronous motors. This reduces wearing and improves the service life of your motors and mechanical drive components.

- Easy installation by snapping on a top hat rail
- Space-saving by compact design with integrated bypass relay
- Improve safety by integrated temperature monitoring
- Improve setting flexibility by separate setting of starting time, locked-rotor torque and deceleration time
- More application flexibility, suited for a wide motor voltage range
- Take off load from the supply system by reduction of starting currents

APPLICATIONS:

- Machines with geared, belt and chain drives
- Conveyors, fans, pumps, compressors
- Wood working machines, centrifuges
- Cranes, travelling and slewing gear, elevators

MOTOR BRAKE RELAYS

Motor brake relays are used with view to safety and efficiency. With braking currents up to 600 A DOLD braking units allow a reliable deceleration of asynchronous motors up to 160 kW. They can be used to bring your machines to a standstill within 10 s as required by the European Directive on Machinery.

- Easy installation, also in existing plants
- Free from wear and maintenance
- Adjustable braking currents allow optimal tailoring to machines and plants
- Automatic zero-speed monitoring ensures precisely accurate braking current cutoff and spares time-consuming readjustments
- Thermistor motor protection prevents inacceptable motor heating
- Wide voltage ranges allow a versatile use of the braking units

APPLICATIONS:

- Wood working machines
- Centrifuges, belt conveyor drives
- Textile machines
- Mills, grinding machines
- Materials handling

REVERSING CONTACTORS

DOLD solid-state reversing contactors are used where it is required to change the direction of rotation of three-phase motors, to start them softly and/or to monitor their load. Diverse diagnosis functions help to be kept always informed on the operational condition of the motor. Our devices save space, wiring expenses and cost. Depending on model DOLD reversing contactors have either a reversing function (BH 9253) or a combination of reversing and current monitoring (BH 9255), or as in our new product (BI 9254) even a combination of reversing, softstart and active-power monitoring - all within a single device. There is a range of reversing contactors for motor power ratings up to 5.5 kW at three-phase 400 V available

- Long service life by wearless switching
- Improved operational reliability by integrated electrical interlock
- Time-saving: easy start-up by potentiometers, independent of software
- Easy overview on machine condition by diagnostics
- Cost-saving: the BI 9254 can often be used instead of a frequency converter
- Space-saving and easy-to-wire: all functions within one enclosure

DOLD REVERSING CONTACTORS – DEAD EASILY TO HANDLE:

Electrical interlock: An integrated electrical interlock of the both directions of rotation ensures a troublefree and safe operation of your plants.

Exact zero-voltage switching: Switching of the semiconductors in the zero crossing of the alternating system voltage avoids EMC problems in neighbouring equipment.

No need of a very quick acting fuse: In principle a solid-state reversing contactor should be protected against short-circuit by a specific very quick acting fuse. This is to be selected on the basis of the semiconductor's I^2t value indicated in the data sheet. In practice, however, you can do without such a fuse. Then, the device must be protected by a commercially available motor protection switch.

Ready-to-use products for your applications: With optimized parameters such as heat sink size, EMC, heat dissipation etc. To select the product which is best suited for your application it is enough to know the current flowing through your load.

Quick and easy installation: Simply snap these ready-to-use products on the top hat rail or screw them directly on the mounting plate.

Innovative technology: Switching of high load currents results in considerable heating of semiconductior contactors and relays. Inacceptable temperature rises may cause device failures after a time. To counteract this risk DOLD developed advanced technologies. Thanks to the DCB (Direct Copper Bonding) method it is possible to optimize heat dissipation in the power output element of the semiconductior contactors and relays and to ensure the operational reliability of your systems.

APPLICATIONS:

Application areas of reversing contactors include:

- Extrusion and injection moulding machines
- Feed devices, e.g. in wood industry
- Servodrives in process technology
- Sewage treatment plants
- Carwash installations
- Materials handling
- Gate controls
- Pumps

SPEED CONTROLLERS AND PHASE CONTROLLERS

In particular for easy speed adjustment of fans and pumps DOLD developed a range of 1- and 3-phase speed controllers. Their function principle is based on the phase-angle control by thyristors.

- Easy speed variation to adjust the load to the driving machine
- Less EMC problems compared to frequency converters, therefore no need for shielded cables saves cost
- Phase-angle control to adjust the speed of non-complex pumps or fan drives
- Also suited for ohmic loads

APPLICATIONS:

To adjust the speed of exhaust air fans for canteen kitchens or for temperature control of electrical heaters, for example.

MULTIFUNCTIONAL MOTOR CONTROL UNIT

The multifunctional devices from our POWERSWITCH range combine motor control functions such as reversing and softstarting with monitoring functions, e.g. active-power or current monitoring. Also special-purpose devices such as solid-state contactors with integrated clock function for configuring large-scale reversing contactor circuits are available. Our intelligent devices are tailored to the requirements of our customers. Tell us your problem and we have the solution when it comes to control, monitoring and protection of your drives

- Reduce material cost
- Save time for wiring
- Save space and wiring expenses in switch cabinet
- Spare the frequency converter in many cases

DOLD SOLID-STATE CONTACTORS AND RELAYS – DEAD EASILY TO HANDLE:

Ready-to-use products for your applications
With optimized parameters such as heat sink size, EMC, heat dissipation etc. To select the product which is best suited for your application it is enough to know the current flowing through your load.

Innovative technology
Switching of high load currents results in considerable heating of solid-state contactors and relays. Inacceptable temperature rises may cause device failures after a time. To counteract this risk DOLD developed advanced technologies. Thanks to the DCB (Direct Copper Bonding) method it is possible to optimize heat dissipation in the power output element of the solid-state contactors and relays and to ensure the operational reliability of your systems.

APPLICATIONS:

Intelligent reversing contactors with further motor control and monitoring functions: Among others used in extruding and injection moulding machines, feed facilities in the wood working industry, actuators in process technology, sewage treatment plants, carwash systems, materials handling, gate controls, pumps. Semiconductor contactor with clock function IP 7854: Clocked switching, e.g. in cooling medium pumps for CNC machines. Semiconductor contactor with alternating pump control SX 9241: controls and monitors two water pumps.

TIMING DEVICES

Timers hardware belongs to the earliest subject areas DOLD has devoted to. Already many decades ago, DOLD set completely new standards with the development of compact and versatile timing contactors. Soon after this, DOLD timing relays made their arrival in a variety of time-dependent controls in industries and building services engineering. The MINITIMER and MULTITIMER brands became a synonym for precision and reliability in timing control. Today, with their complete range of electronic, electro-mechanical and electro-pneumatic timing relays DOLD offers also many customer-specific solutions for timing control problems apart from mono- and multifunctional standard products.

- A timing relay is a special relay variant which can be used to realize specific timing functions in a cost-effective manner
- Electronic timing relays with semiconductor outputs for frequent wearless switching
- Easy and cost-effective stockkeeping because of only a single device for many applications (multifunctional relays)
- Save space by narrow design
- Elapsed time indication for electromechanical timing relays
- Non-resetting on voltage failure designs for electromechanical timing relays
- Safe timer relay for the most demanding applications

Timer relays (relays with a defined timing function) are used in industry or building automation to achieve economic on or off delayed time functions. Electromechanical timers are normally synchronous motor driven, electro-pneumatic timers have a neumatic time arrangement and modern electronic timers a re controlled by microprocessors. Electronic timers incorporate conventionel relay contacts or semiconductor outputs.

APPLICATIONS:

- Delay on operate: Lead timing circuits (e.g. preheating); delay times in control systems: delayed starting of plant components, e.g. starting of slipringmotors (switching starting resistors), burner controls, escalators, elevators
- Release delay: After-run timing, e.g. fans, lighting controls, staircase lighting, minute lighting, delayed switching to emergency generating set/lighting
- Without auxiliary voltage: used for release times <5 minutes
- With auxiliary voltage: used for release times > 5 minutes and for very short operating times
- Flasher timers: trigger fault indicators or navigation lights: flashing lights on cranes, wind parks, airport lighting systems
- Cyclic timers: e.g. traffic light controls, automatic baking machines
- Fleeting action timers: dosing systems, washing facilities
- Pulse shapers: e.g. switch cabinet: setting the length of different signals
- Multifunction relays: versatile by function selection
- Star delta timers: e.g. automatic motor starting control

SPECIAL APPLICATIONS:

- Multifunction Safety Timers UG 6960 and UG 6961: Can be used for applications up to Performance Level (PL) e and Category 4 according to EN ISO 13849-1: 2008, SIL claimed level (SIL CL) 3 according to IEC/EN 62061, Safety Integrity Level (SIL) 3 to IEC/EN 61508 and also for safety relevant systems in process industry IEC/EN 61511.

BUS MODULES

Increasing complexity of control systems in machines and plants and a strong tendency to decentralization induced by an increasing use of intelligent subsystems explain the boosted communication needs between control and peripheral systems in todays machine and plant control. Ever-growing data amounts require a high-performance bus system which is able to transmit large bulks of data between intelligent control elements in a reliable and quick manner.

Input and output modules (I/O modules) are peripheral modules of a PLC in the bus system: Input modules collect information on the processes to be processed. Via the bus system data items are transmitted to the control unit where they are processed.

Again via the bus network control commands are transmitted to the output modules which pass them on to the actuators. Both analog and also digital DOLD bus modules for the CANopen field bus system are available. We also offer Suconet-compatible devices.

KEY DATA OF THE CAN-OPEN FILED BUS SYSTEM:

- Bus topology: Line with short stubs
- Twisted pair line, shielded
- Typical line impedance: 120 Ω (equivalent to line termination).
  Note: Reflections on the line ends can be avoided by bus line termination on both ends with the bus line's characteristic impedance (120 Ω).
- Max. 32 nodes without repeater, with repeater up to 128 nodes
- Max. stub length: 30 cm
- Relation between baud rate and bus length: 5000 m at 50 kBaud; 10 m at 1000 kBaud

APPLICATIONS:

- Mobile systems: Automotive, rail vehicles, ship building, special-purpose vehicles such as mobile machines for wood working
- Traditional machine controls
- Building system automation, e.g. market gardens
- Small power stations

DOLD bus modules:

- Compact, ideal for installation in distribution boards
- Potential-free relay outputs ensure trouble-free operation
- One-stop offering: I/O modules fitting to DOLD CANopen PLC
- Plug&Play mode: Save cost by sparing the sliprings for wireless transmission of multiple input and outputs

CANopen field bus system:

- Wide choice from compatible devices from different manufacturers
- Open standardized CANopen system offers independence of specific suppliers
- High extent of reliability and fault tolerance
- Fast transmission of small quantities of data
- Flexibility by freely configurable parameters, e.g. address, transmission rate

Field bus system, general:

- Easy and clear wiring
- High flexibility of systems with respect to changes and extensions
- Easy incorporation of control concepts in overriding management systems (gateway)
- Save up to 40% of cost for projecting, installation, commissioning and maintenance

CAN-OPEN PLC

Increasing complexity of control systems in machines and plants and a strong tendency to decentralization induced by an increasing use of intelligent subsystems explain the boosted communication needs between control and peripheral systems in todays machine and plant control. Ever-growing data amounts require a high-performance bus system which is able to transmit large bulks of data between intelligent control elements in a reliable and quick manner.

It goes without saying that the current-generation DOLD PLC is fieldbus-capable. Moreover, it is also available in the degree of protection IP67. An extensive range of fieldbus-capable input and output modules is also available, as peripheral modules of a PLC, for example.

"CIA® and CANopen® are registered Community Trademarks of CAN in Automation e.V."

DOLD CAN-OPEN PLC:

- Full-value very compact PLC, optionally in an IP 67 housing
- Easy to program by CoDeSys programming software as free download
- One-stop offering: DOLD's complete range includes input and output modules
- Battery-backed real-time clock, event memory
- More flexibility: configurable as Master/Slave

CAN-OPEN FIELD BUS SYSTEM:

- Wide choice from compatible devices from different manufacturers
- Open standardized CANopen system offers independence of specific suppliers
- High extent of reliability and fault tolerance
- Fast transmission of small quantities of data
- Flexibility by freely configurable parameters, e.g. address, transmission rate

FIELD BUS SYSTEMS, GENERAL:

- Easy and clear wiring
- High flexibility of systems with respect to changes and extensions
- Easy incorporation of control concepts in overriding management systems (gateway)
- Save up to 40% of cost for projecting, installation, commissioning and maintenance

KEY DATA OF THE CAN-OPEN FIELD BUS SYSTEM:

- Bus topology: Line with short stubs
- Twisted pair line, shielded
- Typical line impedance: 120 Ω (equivalent to line termination). Note: Reflections on the line ends can be avoided by bus line termination on both ends with the bus line's characteristic impedance (120 Ω).
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APPLICATIONS:

- Mobile systems: Automotive, rail vehicles, ship building, special-purpose vehicles such as mobile machines for wood working
- Traditional machine controls
- Building system automation, e.g. market gardens
- Small power stations

INTERFACE-/ SWITCHING RELAYS

APPLICATIONS:

DOLD latched/interface and switching relays are suited for all interface applications in demanding control systems.

Latching relays: e.g. in the control circuit of high voltage switchgear of electricity supply companies

Interface/switching relays: e.g. in materials handling, hoists, injection moulding machines, wood working machines

Notching relays: e.g. alternating pump controls

Latching/interface and switching relays are ideal connecting links between the highly-sensitive and low-power logic circuitry of a PLC, control system or process computer and the raw environment of the power level on a machine such as motor drives, magnetic clutches or hydraulic cylinders. The relays ensure a metallic isolation between logic and power circuitry.

There is a differentiation between bistable devices (latching relay) and monostable devices (cinterface or switching relay). The latter are available as power/industrial relays up to 16 A with pin base and socket for top hat rail mounting or as complete solution for installation in switch cabinets and distribution boards, or as positive-action devices for safety applications.

Inadvertent pulses on the input side of a control may cause false triggering or, if containing a larger amount of energy, serious damages to an electronic control system. On their output side, electronic control systems must be protected against short-circuits and reactions by inductive loads. DOLD coupling modules, both input (imod) and also output (omod) modules, meet following criteria and thus they are suited for all interface applications in demanding control systems:

- Safe electrical isolation between control and load circuits acc. to VDE 0106 Part 101 (e.g. between CPU and sensors or actuators)
- Highly effective interference suppression
- Signal conditioning

- **One-stop offering:** Wide choice from a complete range with several designs for a variety of applications
- **Save time for installation and maintenance** by pin bases snapping on top hat rails
- For medium or low switching frequency many times more **cost-effective alternative** compared to semiconductors Insensitive to overcurrent/overvoltage
- **Latching relays:** Energy-saving solution for applications with desired latching properties, the stored condition is kept even after removal of the control pulse or voltage drops

REMOTE CONTROL SWITCHES

Time and remote control switches are the both cornerstones of DOLD's installation electronics. They belong to the basis devices of modern building system automation and are mainly used for lighting control. Apart from classic staircase lighting time switches and remote-control switches also time switches which can be reset and cut off before time-out as well as remote control switches for central and group control belong to this wide-spread product range. This also includes the DOLD energy-saving switch combining the properties of time and remote control switch. Further installation devices such as louvre switches, load disconnecting relays or the innovative hybrid switching relay complete DOLD's installation hardware offering.

- Switching on/off of lighting possible from any number of locations
- Easy implementation of central control, i.e. additional possibility to switch from a central location
- Easy implementation of group control, i.e. additional possibility to switch several lamp groups from a central location
- Noiseless switching
- Save space and cost by compact solutions with multiple remote control switches within a single housing

- Remote control switches have an operating mechanism with 2 stable switching positions. Bistable relays can be used to implement especially low-noise electromechanical remote control switches.
- When a voltage pulse is applied to the coil the contact is switched and remains in this switching position until the next pulse follows.
- Any number of non-illuminated push buttons can be connected to a single remote control switch. The distance between push buttons and remote control switch is nearly not relevant.
- Glow lamp loads up to 10 mA can be parallel connected to DOLD remote control switches. In the case of higher loads the glow lamps must be directly connected to the supply voltage.

APPLICATIONS:

Switching of lighting systems and other electrical loads from any number of locations

- Lighting of:
  - corridors in residential, business and industrial buildings
  - larger rooms such as conference rooms, lounges, etc.
  - halls such as sport arenas, public swimming pools, concert halls, industrial halls and warehouses, etc.
- Implementation of central controls
- Apart from individual control by local push buttons remote control switches provide the possibility to switch on/off multiple remote control switches from a central location in a defined manner.
- Implementation of group controls with central switching on/off
- In large business buildings, factories, offices, hospitals, schools, public buildings, etc. it is often required to individually switch on/off several lamp groups from several locations. At the same time there is the requirement of switching on/off all lamps from a central location, e.g. in the morning or in the evening, with the possibility of being individually operated by doormen, groundskeepers or cleaning staff.

SPECIFIC INSTALLATION DEVICES

Time and remote control switches are the both cornerstones of DOLD's installation electronics. They belong to the basis devices of modern building system automation and are mainly used for lighting control. Apart from classic staircase lighting time switches and remote-control switches also time switches which can be reset and cut off before time-out as well as remote control switches for central and group control belong to this wide-spread product range. This also includes the DOLD energy-saving switch combining the properties of time and remote control switch. Further installation devices such as louvre switches, load disconnecting relays or the innovative hybrid switching relay complete DOLD's installation hardware offering.

- Save energy and cost by the energy-saving switches IK 8810/004 and IK 8813 which are combinations from time and remote control switch; it allows to switch off the lighting before the set time has lapsed
- Switch high inductive and capacitive loads by hybrid switching relay
- IK 3070/200 with long service life
- Avoid electric smog with the mains relay IK 9078; this device is used to disconnect the mains voltage when the electrical loads are switched off

- The energy-saving switch IK 8810/004 and IK 8813 is a combination from time and remote control switch. It allows to switch off the lighting before the set time has lapsed
- The hybrid switching relay hat an output relay with a parallel connected triac. In the moment of switching the triac carries the load. The continuous current, however, is carried by the relay contact because of the triac's higher power loss. Because the triac only cuts off in the zero crossing of the phase voltage this device is only suited for switching AC loads.
- The mains relay is used to cut off the mains voltage when the electrical loads are switched off. When the loads are switched off this device applies an extra-low a.c. voltage of approx. 3 V to the mains line and the current is monitored. When the current exceeds the threshold of the device because a load is switched on the phase voltage (230 V AC) is switched through.

APPLICATIONS:

- The energy-saving switch IK 8810/004 and IK 8813 is a combination from time and remote control switch. It allows to switch off the lighting before the set time has lapsed
- The hybrid switching relay hat an output relay with a parallel connected triac. In the moment of switching the triac carries the load. The continuous current, however, is carried by the relay contact because of the triac's higher power loss. Because the triac only cuts off in the zero crossing of the phase voltage this device is only suited for switching AC loads.
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TIME SWITCHES – MINITIMER

Time and remote control switches are the both cornerstones of DOLD's installation electronics. They belong to the basis devices of modern building system automation and are mainly used for lighting control. Apart from classic staircase lighting time switches and remote-control switches also time switches which can be reset and cut off before time-out as well as remote control switches for central and group control belong to this wide-spread product range. This also includes the DOLD energy-saving switch combining the properties of time and remote control switch. Further installation devices such as louvre switches, load disconnecting relays or the innovative hybrid switching relay complete DOLD's installation hardware offering.

- Save space by compact design, normally only 17.5 mm wide
- Save energy and cost by avoiding unnecessary long duty periods of lighting and other electrical loads
- Improve safety by warning before staircase lighting cutoff According to DIN 18015-2 the cutoff automatic for staircase lighting in apartment houses must have a warning function to prevent sudden darkness.
- Possibility to extend the lighting duration by resetting capability
- Steady light function, no interruption of lighting during longer work
- For 3- and 4-wire connection, more flexible for electricians
- 4-wire connection is common for new installations with separate line routing for push buttons and lamps.
- 3-wire connections are only used if the number of conductors is limited. However it does not meet the requirements of the DIN VDE0100-460 and this is why it is only used in older systems for replacement purposes.
- For currents up to 16 A
- For glow lamp loads up to 50 mA

APPLICATIONS:

- Staircase lighting time switches in residential, business and industrial buildings ensure a safe access to staircases and save energy.
- Lighting of long corridors with dimming, e.g. in hospitals, homes for the aged and public buildings
- Yard lighting with automatic cutoff
- Delay off control for bathroom and WC fans
- This switch immediately switches on the light, in a toilet, for example. The fan is started with a delay of approx. one minute. Once the light is off the fan continnest to run for the time set on the time switch.

LOCKINGS – SOLENOID OPERATED

SAFEMASTER® STS

Complete safety concept
Don't you wish you had a simple safety and key interlock system to protect your dangerous working areas. If you are looking for a reliable, expandable, flexible and cost saving solution, then you have found the perfect solution with **SAFEMASTER® STS.**

- Modular expandable system
- Robust stainless steel construction
- For use in extreme ambient temperatures and hostile conditions, e.g. dust, moisture, dirt, etc.
- Protection against being locked in
- Ergonomic key design
- Economic and easy to use

The SAFEMASTER® STS Program consists of modules that can be combined individually and adapted to your application. The modular design allows systems to assemble out of several units, or to modify and expand existing systems as required.

APPLICATIONS:

With effective safety solutions from DOLD you can protect your staff as well as your production machinery.

You can rely on our experience as long term manufacturer of safety modules and systems, monitoring devices and power electronics.

The modular Safety switch and key interlock system **SAFEMASTER® STS** has been designed to secure dangerous areas with guards and provide efficient operation with optimised protection for the machine operator. In addition it offers protection of being trapped in the dangerous area during repair or maintenance work.

SAFETY SWITCHES

SAFEMASTER® STS

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LOCKINGS – MECHANICAL

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ISC PRODUCTS & SERVICES

- EMERGENCY STOP BUTTONS
- CABLE OPERATED SWITCHES
- 2-HAND CONTROLS
- SAFETY RELAYS
- SAFETY MATS
- SAFETY EDGES
- EXPLOSION-PROOF PRODUCTS
- PROXIMITY SWITCHES
- SAFETY LIGHT CURTAINS
- TRAPPED KEY INTERLOCKING SYSTEMS
- SAFETY INTERLOCK SWITCHES
- SENSORS
- DISCONNECT SWITCHES
- NON-CONTACT SAFETY SWITCHES
- MACHINE SAFEGUARDING EVALUATIONS

Announcing that ISC is now the import partner for www.dold.com for their safety interlock products, safety relays, and industrial automation relays.

MANUFACTURERS & MACHINE SAFEGUARDING CONSULTING

MANUFACTURERS

- AEG
- Baco Controls
- Berstein
- Bircher
- BTI
- Castell Interlocks, Inc.
- Contrinex
- Dold Safety Relays
- Di-Soric
- EEC Controls
- Elobau
- Enclosure Solutions, Inc.
- Euchner
- Fortress
- HTP
- Idem
- Infra
- Leuze Electronic
- MicroSonic
- Pizzato
- Reer
- Rees
- Riese
- Roland Industrial Electronics
- Safeguard Technology
- Salzer
- Sensable
- TR Electronics
- Werma
- Zippswitch

MACHINE SAFEGUARDING CONSULTING

Stop Hazardous Situations! Start With... Industrial Safety Controls, Inc.

The Machine Safeguarding Professionals

ISC, Inc. will assist you with the interpretation of the various safety standards as they apply to your specific machinery. Our evaluation will allow you to gain a better understanding of your safeguarding needs. Our knowledge of proper product use and guarding methods will help you comply with all industry standards. OSHA is a volunteer system, however if you are caught not volunteering, there are fines, penalties, and sometimes prison. Our knowledge of guarding methods and proper product use will ensure that you are providing the best solution. The following are the most common standards you should be familiar with:

- American National Standards Institute (ANSI)
- National Fire Protection Association (NFPA)
- Occupational Safety & Health Administration (OSHA)
- Robotics Industries Association
- Your State Safety Council

Services Offered

Machine safeguarding continues to be one of the most frequently cited OSHA violations. Recent records indicate machine guarding ranks as one of the violations. ISC, Inc. will do a Machine Safeguarding Evaluation to determine if your machine(s) is properly guarded based upon operator interface with the machine(s), product handling and flow, maintenance requirements and relative OSHA and industry safety standards.* The following are a few companies we have served over the years.

• Pella • Rich's Dairy • Kraft • Klein Tools • Kurt Mfg. • Toro • Hon
• Cardinal IG • Medtronic • Case • Centro • Heinz • Pinnacle Foods

Services and Fees – Machine Safeguarding Evaluation

We will inspect current guarding systems of machinery for compliance based on production requirements, operator and maintenance personnel interfacing with the machine and provide a written report with suggestions to enhance safeguarding based on OSHA and current industry standards. Fees $1,000 per day or $600 per half-day (4 hours) plus expenses.

Reasons To Contact Us

- Confirm your current level of safeguarding meets industrial requirements and will best safeguard all personnel.
- Better educate your staff on current machine safeguarding standards and proper product application.
- Desire to improve the level of personnel safety through enhanced machine safeguarding.
- OSHA is or has visited your plant.
- Someone has been injured.

Let Industrial Safety Controls, Inc. help you stay safe because proper machine safeguarding is no accident. Contact us today by calling us at 262.652.8660 or sending an e-mail to safetysensing@earthlink.net. If you have any questions, you can also send a fax to 262.652.1388 or visit our web site at www.safeworkplace.org.

** OSHA 1910.212 General Requirements for all machine (a) machine guarding (1) types of guarding. One or more methods of machine guarding shall be provided to protect the operator and other employees in the machine area from hazards.*

INDUSTRIAL SAFETY CONTROLS INC.

P.O. Box 126 • 4112 Sheridan Road • Kenosha, WI 53141
262.652.8660 • Fax: 262.652.1388 • E-mail: safetysensing@earthlink.net • www.safeworkplace.org

Industrial Safety Controls, Inc. specializes in all aspects of machine safeguarding and sensing.
Serving KS, IA, IL, MN, MO, ND, NE, SD, and WI. * We do not represent all products in every state.