



# 2 Hand Control Stations - Type TouchSafe

## Operating Instructions



### DESCRIPTION:

IDEM two-hand control stations are designed to satisfy the requirements of ISO 13851.

The TouchSafe stations are intended for use as part of a two-hand control system for powered machinery.

The two-hand control station is permanently situated a specified distance away from the hazard and confirms the operators position such that the machine function will stop before the operator could reach the hazard.

- Robust die-cast metal construction.
- IP65 construction.
- Facility to fit 22mm auxiliary Emergency Stop buttons or diagnostic lamps.
- Various wiring entry points.

They can be fitted with either:

#### Type ZF buttons.

##### **Touch-activated devices (zero force needed).**



Designed to eliminate hand or wrist stresses associated with frequent repetitive machine operations. They are solid state construction and benefit from LED indication of status.

#### Type MF buttons.

##### **Spring loaded button – snap action contacts.**



Designed for applications with less frequent operational use.



#### IDEM SCR-2H Control Relay.

The buttons will connect to most recognised two-hand safety control relays to achieve type IIIC safety to ISO 13851.

The MF and ZF buttons are designed to be operated by hand to maintain electrical outputs to a control circuit whilst direct hand contact is maintained. The MF version is a spring loaded button requiring mechanical operation by depressing and holding down the button.

The ZF version is electronic and senses an operators hand for proximity.

When fitted to the control housing and monitored by an external controller they satisfy the requirements to detect an operator's position relative to a machine control function, (see ISO 13851) i.e.

Prevention of **defeat using one hand** - the separation of the control actuating devices by at least 260 mm (internal dimension).

Prevention of **defeat using the hand and elbow of the same arm** –the shielding and separation of the control actuating devices by at least 550 mm (internal dimension).

To satisfy the measures to prevent **defeat by using other parts of the body (e.g. knee, hip) in conjunction with one hand**, the control actuating devices (buttons) should be on a horizontal or nearly horizontal surface which is at least 1100 mm above the floor or level of access.

### INSTALLATION: Installation must only be carried out by competent personnel and in accordance with these instructions.

**IMPORTANT** – When using a two hand control to safeguard a hazard zone, the minimum allowed safety distance between the hazardous machines must be calculated in order to ensure that the hazardous machine motion will be stopped before it can be reached.

The minimum safety distance is calculated according to the formula:  **$S = (K \times T) + C$**  (See ISO 13855).

Where:

**S** = minimum safety distance (mm)

**K** = approach speed of a human body; 1600 mm/s

**T** = the total time from opening of the guard until the hazardous machine movement has stopped, i.e. including control system reaction times and other delays (s)

**C** = an additional safety distance (mm) taken from ISO 13855, if it is possible to push fingers or hand towards the hazard before a stop signal is generated. At least 250mm minimum.

**IMPORTANT** – The two hand control device must be mounted horizontal or nearly horizontal on a surface which is at least 1100 mm above the floor or level of access. This is intended to prevent actuation by the hip or knee.

**IMPORTANT** – Synchronous actuation (ISO 13851). For type IIIC safety, the buttons shall be actuated with a tolerance on the simultaneity of actuation less than or equal to 0,5 s between the actuation of one button and the actuation of the second button. This is considered to be synchronous operation. To achieve Type IIIC safety the buttons **MUST be connected** to a certified safety controller marked for Type IIIC and shall comply with the PL e / Cat.4 performance level according to ISO 13849-1.

**IMPORTANT:** After installation and during use, the system shall be verified according to ISO 13851 (Table 2).

**IMPORTANT:** To achieve the IP seal it is required ensure all unused cable entries are securely sealed.

Disconnect electrical supply before any cleaning or hose down.

### MAINTENANCE:

Every month: Check all circuits for correct function. If the buttons or housing display signs of mechanical damage then remove and replace.

IDEM will not accept responsibility for failure of the switch functions if the installation and maintenance requirements are not implemented.

**THESE INSTRUCTIONS FORM PART OF THE PRODUCT WARRANTY.**

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## TECHNICAL SPECIFICATION:

### Type MF buttons (Spring Return Loaded)



NC - Terminals 11/12  
NO - Terminals 23/24

Quick Connect (QC) M12 5-pin Male Plug on 300 mm flying lead	
Pin view from Switch	
1	Not used
2 (White)	NC Contact
3	Not used
4 (Black)	NO Contact
5 (Grey)	Common

#### Specification Type MF:

Insulating housing: Polyester  
Operating Temperature: -20C. to +40C.  
Mechanical Life (B10d): 1,000,000 cycles  
Output Contacts: Rated 240V. 3A. (A300)  
Operating Force: 20N.  
IP65 capability when fitted to 2 Hand Control Housing (see below)

#### Information with regard to UL Standards:

Type 1 enclosure. Maximum temperature 40°C.  
Intended for same polarity use. A300 Pilot Duty. 240V. 3A. PF 0.38 or greater, tested for 6,000 cycle's endurance.  
Terminal tightening torque 7lbs ins (0.8Nm).  
Intended for same polarity use.  
For Use on a Flat Surface of a Type 1 Enclosure or equivalent.

### Type ZF buttons (Zero Force Actuation)



Quick Connect (QC) M12 5-pin Male Plug on 300 mm flying lead	
Pin view from Switch	
1	+24V.dc
2	NC Contact
3	0V.dc
4	NO Contact
5	Common

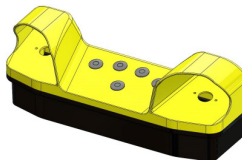
#### Specification Type ZF:

Insulating housing: Polyester  
Operating Temperature: -20C. to +40C.  
Operating Voltage: 24V.dc (+/- 10%)  
Use SELV / PELV Power Supply.  
Output Circuits: Rated 24V.dc 0.1A.  
Operating Force: Zero  
LED: Green – activated Red – waiting.  
IP65 capability when fitted to 2 Hand Control Housing (see below)

#### Information with regard to UL Standards:

Type 1 enclosure. Maximum temperature 40°C.  
Use Class 2 Supply. 24V.dc only.  
Output Circuits: Rated 24V.dc 0.1A.  
For use in NFPA 79 Applications only (or equivalent).

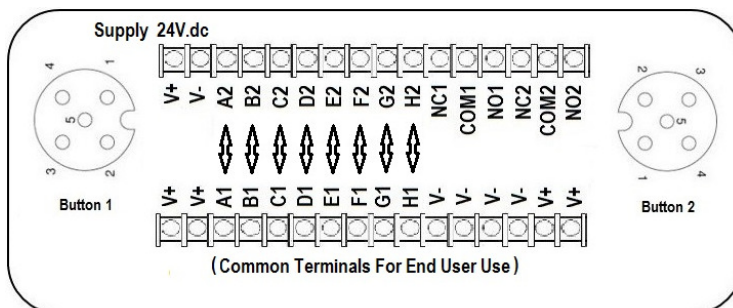
### 2 Hand Control Housing



#### Specification:

Housing: Die-Cast painted yellow.  
Conduit Entries: 2 x M20 2 x M25 2 x ½" NPT 2 x ¾" NPT.  
Control Lamps / Buttons: 5 x 22.5mm holes provided.  
IP65 – ensure all entry seals are tightened at least 1Nm (9 inch/lbs).

**INTERNAL CONNECTION PCB:** 24V.dc only. Use 16-28AWG stranded copper conductors (rated 90°C). Terminal Torque 6 lb ins. (0.7Nm).



NC1 Button 1 Normally Closed Circuit.  
NO1 Button 1 Normally Open Circuit.  
C1 Button 1 Common.

NC2 Button 2 Normally Closed Circuit.  
NO2 Button 2 Normally Open Circuit.  
C2 Button 2 Common.

V+ D.C. Supply - required when using ZF type buttons.  
V- D.C. Supply - required when using ZF type buttons.

All other V+ V- are common for end user use.

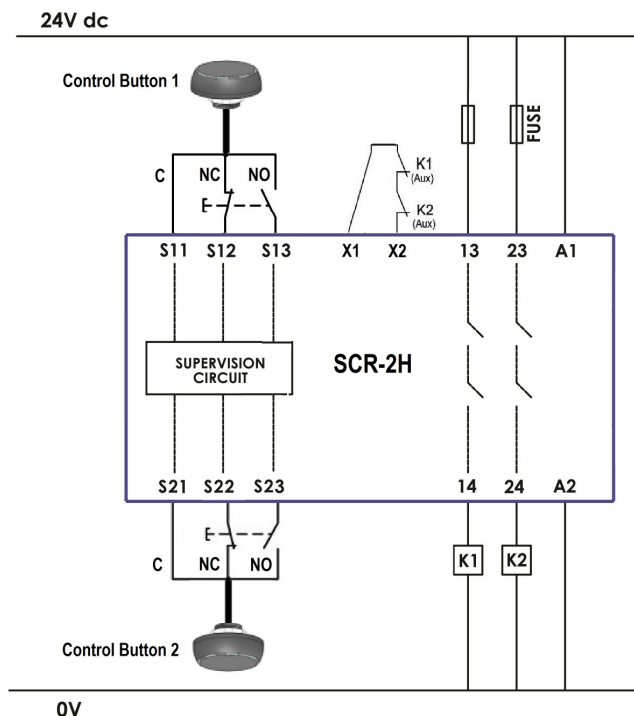
#### Notes:

- 1) NC / NO represented in button released condition.
- 2) **The housing must be earthed using the internal earth terminal.**

A1 through A2 - common link connection for end user use (max. 3A. current).  
B1 through B2 - common link connection for end user use (max. 3A. current).  
C1 through C2 - common link connection for end user use (max. 3A. current).  
D1 through D2 - common link connection for end user use (max. 3A. current).  
E1 through E2 - common link connection for end user use (max. 3A. current).  
F1 through F2 - common link connection for end user use (max. 3A. current).  
G1 through G2 - common link connection for end user use (max. 3A. current).  
H1 through H2 - common link connection for end user use (max. 3A. current).

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## SCHEMATIC / CONNECTION EXAMPLE – shown with IDEM SCR-2H:



The IDEM two-hand safety relay SCR-2H is suitable for setting up and monitoring two-hand control buttons.

Dangerous work steps can only be triggered when both two-hand buttons are operated simultaneously, i.e. within 0.5s.

It is ensured a single fault or a malfunction does not result in the loss of the safety function and every fault is detected by the cyclic self-monitoring at the latest prior to the next actuation.

When the operating voltage is applied to A1-A2 and the feedback loop X1-X2 is closed, the SCR-2H is ready for use.

To be able to initiate a switching operation, the SCR-2H output relays must be de-energized. The SCR-2H output relays only switch to the energized position when the two-hand buttons are operated simultaneously, i.e. within 0.5s.

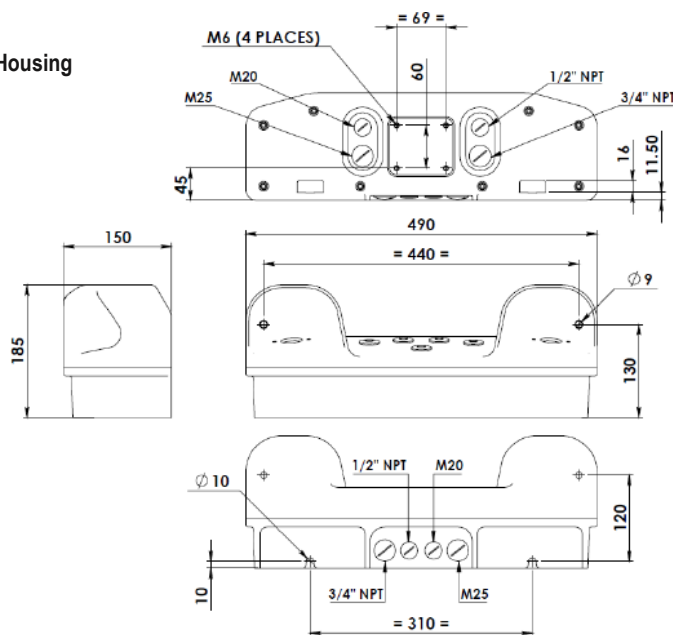
The circuit is shown ready to initiate the SCR-2H.

The feedback circuit (X1-X2) is connected closed through the series connection of auxiliary contacts of both machine contactors K1 and K2.

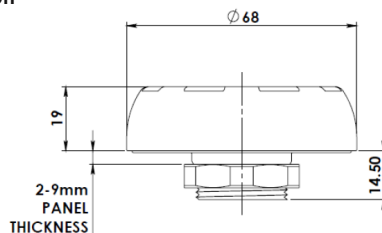
Once actuated the SCR-2H contacts 13/14 and 23/24 will energise and enable the machine to run.

## DIMENSIONS (mm):

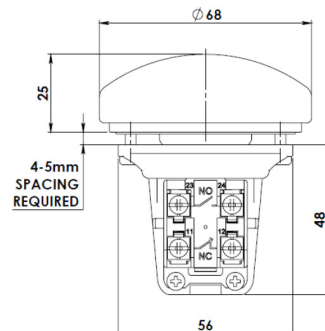
### Control Housing



### ZF button



### MF button



#### WARNING:

DO NOT DEFEAT, TAMPER, OR BYPASS THE SAFETY FUNCTION. FAILURE TO DO SO CAN RESULT IN DEATH OR SERIOUS INJURY.

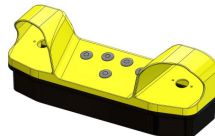

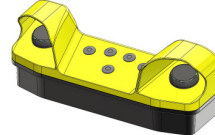

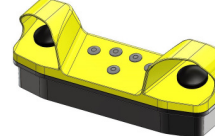








#### AVERTISSEMENT:

NE PAS DESACTIVER, MODIFIER, RETIRER, OU CONTOURNER CETI INTERVERROUILLAGE IL PEUT EN RESULTER DES BLESSURES GRAVES DU PERSONNEL UTILISATEUR

#### Original Instructions

To request this datasheet in other languages please contact [info@idemsafety.com](mailto:info@idemsafety.com)  
Um dieses Datenblatt in Deutscher Sprache wenden Sie sich bitte anfordern [info@idemsafety.com](mailto:info@idemsafety.com)  
Pour obtenir cette fiche en Francais, veuillez contacter [info@idemsafety.com](mailto:info@idemsafety.com)  
Para solicitar esta hoja de datos en Espanol, por contacto con [info@idemsafety.com](mailto:info@idemsafety.com)

## 2 Hand Control Stations - Type TouchSafe

Sales Number	Description	
2H-240000	Two-hand control - housing only (Die-Cast painted yellow)	 
2H-240001	Two-hand control station (Die-Cast painted yellow) fitted with 2 x ZF buttons	 
2H-240002	Two-hand control station (Die-Cast painted yellow) fitted with 2 x MF buttons	 
2H-240021	Two-hand control button only - Type ZF	 
2H-240022	Two-hand control button only - Type MF	 
SCR-2H-180030	SCR2H Control relay Type IIIC 24V.dc supply (for use with ZF or MF control buttons) DIN rail mounting 22.5mm wide	  

**READ AND UNDERSTAND THESE INSTRUCTIONS BEFORE INSTALLING, OPERATING, OR MAINTAINING THIS EQUIPMENT.**

The product is designed to be a component of a customized safety oriented control system. It is the responsibility of the user to ensure the correct overall functionality of its systems and machines. IDEM, its subsidiaries and affiliates, are not in a position to guarantee all of the characteristics of a given system or product not designed by IDEM.