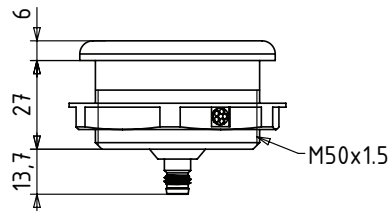
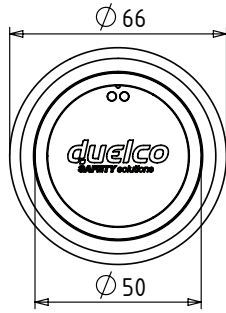


# INSTRUCTION SHEET

## DUELCO Hand Sensor Actuator TST-4



**DK** Håndsensortasterne er uundværlige i forbindelse med presse- og stansemaskiner af hensyn til operatørens effektivitet. De gængse trykknapper, der allerede findes på markedet, kræver et tryk på op til 1 kg og med typisk 1000 aktiveringer daglig på f.eks. et 2-håndsrrelæ, bliver det en daglig belastning for operatøren på 2 tons.

Duelcos TST-4 håndsensortaste kræver kun et let tryk og har yderligere den egenskab at have en optimal tæthedegrad, som opfylder forudsætningerne i henhold til DIN VDE 0470-1.

Håndsensortasterne har derfor med rette holdt sit indtog, hvor der køres med en høj aktiveringsfrekvens, typisk på presse- og stansemaskiner. Ved at anvende Duelco's håndsensortaster kan en meget høj grad af ergonomi opnås, og herved optimale arbejdsbetingelser for operatøren.

Duelco's håndsensortaster er baseret på kapacitive kredsløb med så høj følsomhed, at operatøren selv ved brug af arbejdshandsker kan aktivere sine håndsensortaster.

Duelco's håndsensortaster TST-4 opfylder kravene i EN 60 204-1 om dublering og overvågning.

**GB** Hand sensor keys are indispensable in connection with presses and punching machines for reasons of operator efficiency. The common press buttons already available on the market require a pressure of up to 1 kg and given, for example, a typical 1000 activations per day on a 2-handed relay, this amounts to a daily load on the operator of 2 tons.

Duelcos TST-4 hand sensor key, require only a light pressure and have the added feature of optimal seal which fulfils the requirements of DIN VDE 0470-1.

The hand sensor keys have therefore won a justified foothold where a high level of activating frequency is required, typically on presses and punching machines. By using Duelco's hand sensor keys, a very high level of ergonomically efficient work practice, and hence optimal working conditions for the operator, is achievable.

Duelco's hand sensor keys are based on capacitive circuits with a degree of sensitivity so fine that the operator can activate his hand sensor keys even when using working gloves.

Duelco's hand sensor key TST-4 fulfils the requirements acc. to EN 60204-1 regarding duplication and monitoring.

### DK SIKKERHEDSFORANSTALTNINGER

Tasten må kun installeres og ibrugtages af hertil instrueret eller uddannet personel, der er bekendt med indholdet i denne manual og respektive forskrifter vedr. arbejdssikkerhed.

#### BESTEMMELSER

Tasten er konstrueret som aktiveringsaggregat til 2-hånds styreanordninger, eksempelvis bestående af 2-håndskontrolrelæ HR-2007 og 2-håndspanel PCB3/SD (afskærmning), til styring af farlige maskiner såsom presse- / stanse-/valsemaskiner (BILAG IV maskiner jf. maskindirektivet 2006/42/EF).

#### TYPEGODKENDELSE

Duelco Håndsensortaste TST-4 er CE-mærket jf. EMC-direktivet. TST-4 opfylder derfor gældende krav til emission (EN61000-6-3) og immunitet (EN61000-6-2). Der er endvidere udformet en EU overensstemmelseserklæring.

CE-mærket i overensstemmelse med MD, EMC og LVD

#### BEMÆRK!

- *Tasten må ikke anvendes som selvstændigt sikkerhedsudstyr. Skal tasten anvendes i forbindelse med farlige arbejdsrutiner, eksempelvis ved presse-/stanse-/valseoperationer, skal denne tilsluttes et styrende sikkerhedsrelæ såsom et 2-håndsrrelæ eller lignende.*

#### BELASTNING AF UD GANGSKONTAKTERNE

Anvendes tasten i anden forbindelse end ved tilslutning til et styrende 2-håndsrrelæ, eksempelvis HR-2007, bør der ved kapacitiv og induktiv belastning af udgangskontakterne træffes de nødvendige forholdsregler mod overbelastning i form af støj- / transientbeskyttelse ell. lignende.

### GB SAFETY ARRANGEMENTS

The button must only be connected and used of instructed or trained personnel and who are familiar with the contents of this manual and respective regulations regarding working security.

#### REGULATIONS

The button is constructed as a activation unit for use with a two hand control relay, for example Duelco HR-2007 and a two hand panel PCB3/SD (screening), for controlling dangerous machines like punching and printing machinery. (ANNEX IV machines referring to the Machinery Directive 2006/42/EC).

#### TYPE APPROVAL

The Duelco TST-4 hand sensor button is CE-marked according to the EMC directive. TST-4 fulfils the requirements concerning emission (EN61000-6-3) and immunity (EN61000-6-2). Furthermore there is worked out a EC Declaration of Conformity. CE-marked according to MD, EMC and LVD

#### NOTE!

- *The button may not be used as a independent safety equipment. If the button must be used in relation to for example dangerous punching and printing machinery, it must be connected to a controlling safety relay like a two hand relay or the like.*

#### LOAD AT THE OUTPUTCONTACTS

If the button is used in another application than by connection to a controlling two hand relay, like for example HR-2007, you should by capacitive and inductive load of the outputcontacts, ought to take precautions against overloads, such as noise- / transientprotection or the like.

### DK SIKKERHEDSAFSTAND:

Anbringelse af tasten i forbindelse med styring af farlige arbejdsrutiner ved presse-/stanse-/valseoperationer, bør ske under hensyntagen til maskinens indretning. Operatørens sikkerhedsafstand til maskinen skal derfor vurderes.

Ved beregning af sikkerhedsafstanden for 2-hånds kontrolenheder jf. EN 999 anvendes følgende formel:

$S = (K \times T) + C$ ; hvor  $K = 1600 \text{ mm/s.}; C=250 \text{ mm}$

Dvs.:

$S = (1600 \times T) + 250^*$

hvor S = samlet minimum-/sikkerhedsafstand i mm. fra fare zonen til detekteringspunktet.

T = maskinens stoptid + styreenhedens reaktionstid i sek.

\* Hvis risikoen for indtrængning med hænderne eller dele af hænderne i farezonen er elimineret, mens tasten er aktiveret, f.eks. ved tilstrækkelig afskærmning, så må C være nul, ved en tilladt minimumsafstand for S på 100 mm. **S må aldrig blive mindre end 100 mm.**

**Bemærk:** EN 574 giver anvisninger om afskærmning for at forhindre, at en styreenheds tilsigtede virkemåde blokeres.

#### FEJLSØGNING, TST-4

- Kontroller at forsyningsspændingen er korrekt tilsluttet terminalerne 1(+)/3(-). Ved korrekt tilslutning: Ca. 24 VDC mellem terminalerne 1(+)/3(-).
  - Kontroller at tasten er forbundet korrekt til et 2-håndsrrelæ HR-2007. Se tilslutningseksempel.
  - Kontroller at indkoblingsproceduren er blevet fulgt.
  - Kontroller at aktiveringsfladen på tasten er fri for magnetiske metaldele.
  - Kontroller at tasten ikke er udsat for HF-felter fra mobiltelefoner, svejseapparat eller lignende.
- Bemærk:** Visse væsker, støv og andet materiale samt kraftig elektrisk / magnetisk indstråling, kan påvirke funktionaliteten.

#### SERVICE

Ved fejl på tasten kan dette returneres til producentens distributør / forhandler for fejlsøgning og evt. reparation.

### GB SAFETY-DISTANCE:

The placing of the button in relation to controlling dangerous work routines by punching and printing machinery, should be done with consideration to the arrangement of the machine. The user's safety distance therefore has to be estimated.

When calculating the safety distance for two-hand controls, cf EN 999, the following formula is employed:

$S = (K \times T) + C$ ; where  $K = 1600 \text{ mm/s.}; C=250 \text{ mm}$

Thus:

$S = (1600 \times T) + 250^*$

where S = total minimum distance/safety distance in mm from the danger zone to the detection point.

T = the machine stopping time + the control reaction time in seconds

\* If, during key activation, the risk of hands or parts of the hands entering the danger zone has been eliminated, for instance through sufficient shrouding, C may be zero at a permissible minimum distance for S of 100 mm. S must never become less than 100 mm. **Note:** EN 574 gives advice on shrouding to prevent defeating the intended operation of a control.

#### FAULT LOCATION, TST-4

- Check that the supply voltage is correctly connected to the terminals 1(+)/3(-). By correct connection: Approx. 24 VDC between the terminals 1(+)/3(-).
  - Check that the buttons are secured properly to 2-handed relay HR-2007. See connection example.
  - Check that the coupling procedure instructions have been followed.
  - Check that the activation surface on the button is free from magnetic metal parts.
  - Check that the button is not exposed to HF-fields from mobile telephones, welding apparatuses or the like.
- Note:** Certain fluids, dust, and other material, as well as strong electrical/magnetic influx may affect the functioning.

#### SERVICE

In the event of a defect, the button can be returned to the distributor/dealer for investigation and repair if necessary.

DANSK Tekniske data	ENGLISH Technical data	
Forsyningsspænding:	Power supply:	24 V DC
Fors. Tolerance:	Supply tolerance:	± 10%
Kontaktbelastning:	Contact load:	100 mA
Udgang:	Output:	PhotoMOS-Relay NC/NO
Udgangssignal:	Output signal:	Continuous signal when actuated
LED 1:	LED 1:	Green LED
LED 2:	LED 2:	Yellow LED
Polaritetsbeskyttelse:	Reverse polarity protection:	+VDC and 0 V
Kortslutningssikring:	Short-circuit protection:	Not available
Effektforbrug:	Current consumption:	Max. 10 mA @ 24 V
Driftstemperatur:	Operating temperature:	-25..+70°C
Type operation:	Type of operation:	Capacitive
Aktiveringskraft:	Activating force:	No activating force required
Isolations-spænding:	Rated insulation voltage:	32 V
Udkoblingsforsinkelse:	Switch-off-delay:	Max. 50 ms
Indkoblingsforsinkelse:	Switch-on-delay:	Max. 25 ms
<b>MTTF values according to EN/IEC 61709 (SN 29500)</b>		
MTBF:		244,9 years
MTTF:		244,9 years
MTTFd:		489,8 years
Worst case MTTFd:		48,98 yers
Fit:		466
B <sub>10d</sub>		- (only applies to products with relay output)

## ACCESSORIES



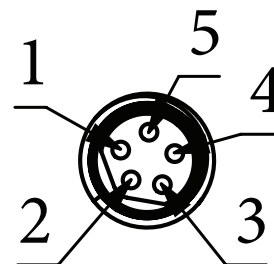
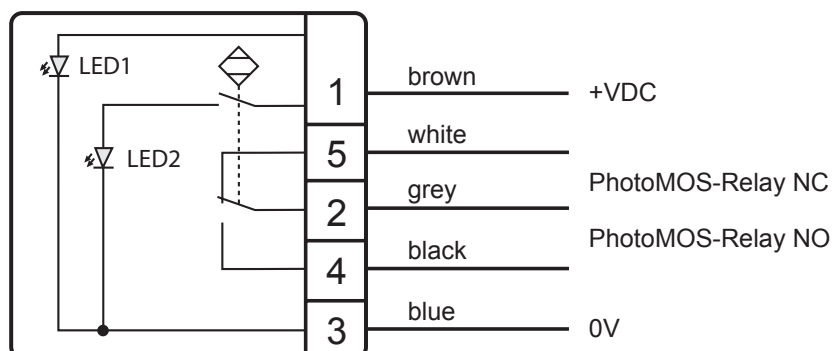
Typ.no.: 42800006



Typ.no.: 42800010



Typ.no.: 42000011

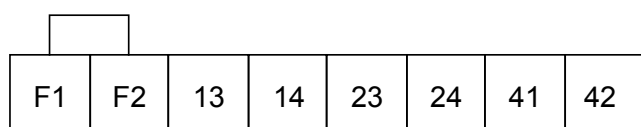


### BEMÆRK (VIGTIGE NOTER ANGÅENDE FUNKTIONALITETEN AF TASTEN)!

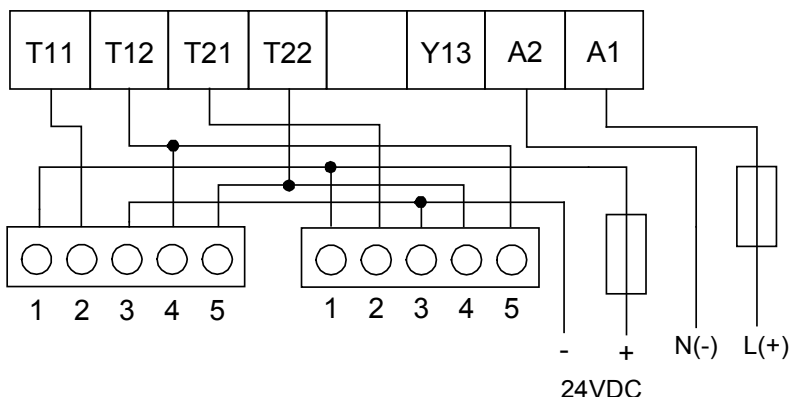
- Tastens udgangskontakter **MÅ IKKE** bypasses eller af brydes ved eventuel defekt.
- Duelco garanterer ikke for tastens funktionalitet, hvis tasten afdækkes med et fremmed materiale.
- Visse væsker (Specielt væsker indeholdende vand), støv og andet materiale på berøringsfladen af tasten, kan bevirke at tasten **ikke** virker efter hensigten!
- Kraftig elektrisk / magnetisk indstråling kan påvirke tastens funktionalitet!
- Enheden må ikke anvendes, før defekten er blevet rettet.
- Uautoriseret ændring eller reparation af enheden **MÅ IKKE** foretages, da det kan påvirke tastens funktion. Endvidere annullerer det enhver garanti.

### NOTE (IMPORTANT NOTES REGARDING THE FUNCTIONALITY OF THE BUTTON)!

- The button output contacts **MUST NOT** be bypassed or cut-out in the event of any defect.
- Duelco does not guarantee key functionality, if the key is covered by extraneous material.
- Certain fluids (especially fluids containing water), dust and other kinds of material on the key face of contact may result in the key **not** working as intended!
- Strong electrical/magnetic irradiation may affect key functionality!
- The unit must not be used before the defect is rectified.
- Unauthorized modifications or repairs of the unit **MUST NOT** be carried out because it can affect the safety functions. Furthermore it nullifies any guarantee.



HR-2007



Duelco a/s accepts no responsibility for possible errors and deficiencies in brochures, catalogues and other printed material.

Duelco a/s reserves the right to alter its products without prior notice. This also applies to products already on order provided that such alterations can be made without subsequential changes being necessary in specifications already agreed.

Duelco a/s guarantees correct function only when connections are made in accordance with instructions.

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