„ ETISIG - control buttons and signaling lamps manufactured by ETI Polam „

**Control buttons and signaling lamps are used in control- circuits to first-hand and remote controlling and supervising connecting processes in electric wirings, mostly in industrial plants, commercial buildings and household installations.**

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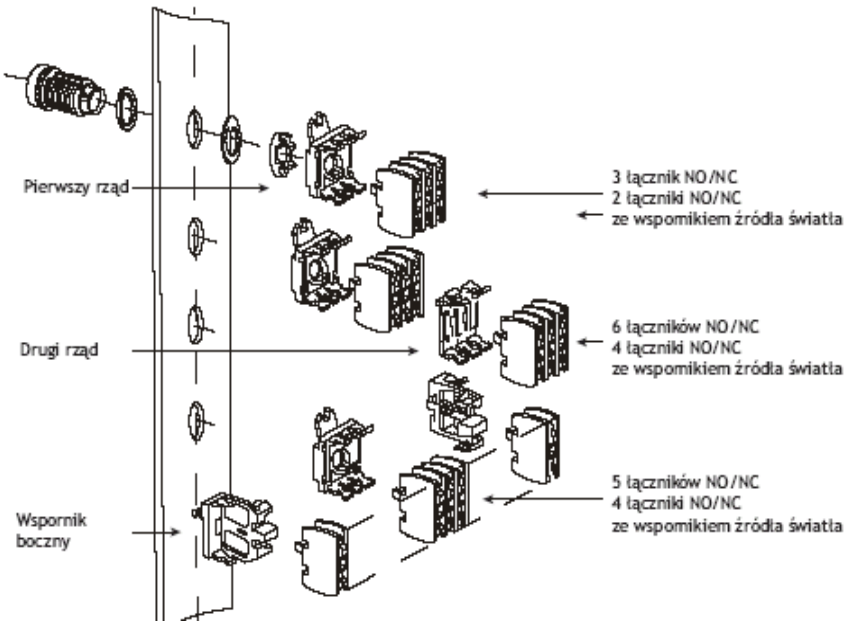
**Buttons and signaling lamps are designed for assembly in switch boxes, panels or in control panels openings with standardized diameter Ø 22, 3 mms. Wide offer selection, the mechanical damages resistance and simplicity of modular system configuration is first of all appreciated by manufacturers of electric switch boxes. Modular System (Fig. 1) contains the button drive, bracket and the suitable connector - NO - normally opened (green moving part) and NC - normally closed (red moving part). They are available as complete sets or as separate elements of the button or the lamp. This permits the flexible configuration choosing of the control-steering system in the dependence from needs. Besides, it diminishes the number of buttons, what simplifies the logistics and storage. ETISIG buttons and lamps series contains many versions and kinds :**

- **mono-stable (return) buttons- Fig. 10**
- **bi-stable buttons (irrevocable)- Fig. 2**
- **mushroom safety buttons - emergency - Fig. 11**
- **double-keyed buttons- Fig. 12**
- **twisted connector with blade - Fig. 13**
- **key twisted connectors - the Outline. 14**
- **safety mushroom connectors with lock - Fig. 15**
- **signaling lamps integrated with flat and notched lens - Fig. 9**

**Fig. 1 Modular system - driver with first bracket and cascaded mounted connectors**




**All buttons (except safety and double buttons) are available in 7 colors, in backlit and not backlit version and with outstanding and covered knob .Outstanding part of the button over the control panel has the black ring made from mechanically resistant materials ABS. The presence of this ring defines the letter C in type signature in button catalogue. To assembly the simple connector set of the tie one ought to install the drive (Fig. 2) has to be installed to the modular bracket (Fig. 3) and blocked with**

**special rotatory lever , and to the bracket to press (latched) the suitable quantity of NO and NC connectors (Fig. 4 ) or the modular bracket for light sources - HC61 (Fig. 5). Connecting set can be composed from one, two or three connectors arranged in tiers. If we want to obtain the backlit button , then with the central element in the set should be the bracket for light sources. To connect second and next tiers for the purpose of making vertical cascade , serve special HC1 brackets (Fig. 6). One can build also the horizontal cascade using NO and NC connectors. This can be achieved using side-bracket HC9 (Fig. 7). For every tier of connectors one can be used just one NO oe NC connector installed side by side. For backlit buttons and signaling lamps are light sources - BA9S bulbs (max. 11x28)- with maximum power 2, 6W and voltage - 6V, 12V, 24V, 48V, 110V and 230V. ETISIG system uses two kinds of signaling lamps- modular HBO (Fig. 8) fastened on brackets, and integrated LED (Fig. 9) fastened directly in the assembly- opening with the diameter Ř 22, 3 mm. A light source integrated in lamps is electroluminescence diode LED with rated voltage AC /DC 12V, 24V, 48V, 110V, 240V. Both have two kinds of shining lenses : smooth and notched.**

**Fig. 2 Drive with outstanding button Bi-stable HF45C**

**Fig. 3 Modular bracket – HC922**

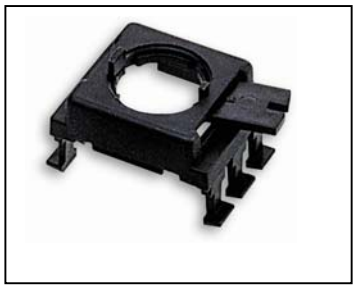


**Fig. 4 NO connector (normally opened) - HC61A2**

**Fig. 5 Bracket for light sources – HC61**

**Fig. 6 Cascade bracket HC1 - vertical**

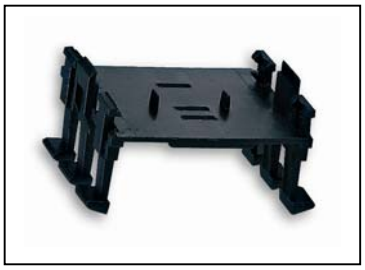


**Fig. 7 Cascade bracket HC9 - horizontal**

**Fig. 8 Signaling lamp Modular HBO**

**Fig. 9 Signaling lamp Integrated TLO**

**Fig. 10 Mono-stable button (return) with covered knob HD15C**

**Fig. 11 Mushroom button safety – emergency HD55C**

**Fig. 12 Two-keyed button HD 15G3**

**Fig. 13 Twisted drive with blade**

**Fig. 14 Twisted driver with key**

**Fig. 15 Emergency connector with lock**

**Fig. 16 Basic dimensions of the complete button (drive, bracket, connectors)**

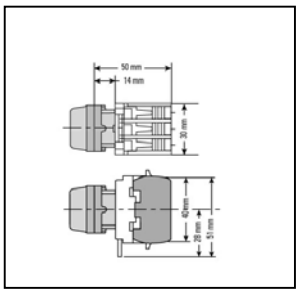


**Fig. 17 Control box JBBB2F100**


**Operational part of buttons - drives (except twisted and twisted with the key buttons) and lamps have the IP65 protection degree, and with the use of the suitable transparent cover - IP67. They can be used in control panels working in difficult industrial conditions. The Connecting elements structure with IP20 protection degree prevents against accidental touch of live clamps {connectors}. Basic technical parameters of the control-steering ETISIG devices are shown in Table 1.**
**Additional devices, which use in their own application buttons and signaling lamps, are control boxes - Fig. 17 - single, double and threefold. They are made from the ABS plastic in grey and yellow colors. Depending from design, they have inside installed NC, NO connectors or signaling modular lamps and are provided with descriptions signs - START, STOP, ON, OFF**

**Table 1.**

| **Technical parameters of control buttons** | | | | | | |
|---|---|---|---|---|---|---|
| **Insulation rated voltage** | | | | **600 V** | | |
| **Operational rated voltage (50/60 Hz )** | | **Cat.** | **V** | **110** | **230** | **440** | **500** |
| **Rated connecting current AC** | **Acc. IEC 947-3** | **AC21** | **A** | | | | |
| | **Acc. IEC 947-5-1** | **AC15** | **A** | | | | |
| **Operational rated voltage** | | | **V** | **24** | **48** | **110** | **220** |
| **Rated connecting current DC** | | **DC13** | **A** | **1,5** | **1,0** | **0,3** | **0,2** |
| **Electric stability** | **For AC21** | | **In= 6A** | **1 x $10^6$** | | | |
| | **For AC21** | | **In = 1A** | **1,5 x $10^6$** | | | |
| | **For AC15** | | **In = 1A** | **1 x $10^6$** | | | |
| | **For DC13 24V DC** | | **In = 1A** | **1 x $10^6$** | | | |
| **Mechanical stability: more than 3 x $10^6$ operations** | | | | | | |
| **Working temperature - backlit from -30°C to + 60°C, not backlit from -30°C to + 40°C** | | | | | | |
| **Dielectric voltage test for high voltage: 2,5 kV > from 60 s.** | | | | | | |
| **Wire clamps (wire and cable) - 2 x 1 $mm^2$ do 2 x 2,5 $mm^2$** | | | | | | |
| **Control boxes protection degree - IP65** | | | | | | |

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