

## R4 – IN MARITIME VERSION CERTIFICATE OF THE LLOYD'S REGISTER OF SHIPPING

The R4 relays with four changeover contacts, additional accessories and the CZT4 sockets for the relays have obtained the Certificate No. 03/00039 of the Lloyd's Register of Shipping of London which approves the maritime applications of the relays.

The Certificate came into effect on April 1, 2003. It approves of the operation of the relays in the environmental conditions of ENV2 and ENV3 categories.

Below are presented brief explanations of the categories:

**ENV2 Category** – closed rooms, exposed to temperature, humidity and vibrations;

**ENV3 Category** – closed rooms, exposed to the heat produced by other devices.

The LR (Lloyd's Register) Certificate is marked on the R4 relay cover with the wording: LLOYD'S REGISTER TYPE APPROVAL.

For designers of electrical systems of vessels and port facilities, this means the possibility of a wider range of applications of relays owing to the worldwide renowned authority of the certifying institution, and due to the equipment offered with the relays by the manufacturer.

In their standard equipment, the relays have mechanical flag indicators "W" and test buttons "T" which provide permanent latching of the contacts in the position "normally-open contacts closed" without the coil supply voltage ("WT" following the code of the relay). In case such function of the relay is not desired, as latching the contacts in the above position may accidentally be not reset by the staff, which may cause disturbances or failure of device operation, Relpol offers a new button "P" without the function. The button is ordered separately and replaced by the customer. The replacement is a simple operation to be performed with a screwdriver in a few



seconds. The manner of replacement is shown in the new catalog. The "P" buttons are available in the same colors as the "T" type buttons. The colors identify the coil supply voltage and, thus, the orange button is used for alternating voltage of coil supply whereas the sea-color button indicates the direct voltage.

Ordering codes of "P" buttons:

- P button No. 851494 - orange
- P button No. 851495 - sea-color.

The following may be additional accessories of relays with DC voltage coils:

- suppression diode "D" whose function is to suppress overvoltage on the coil from other devices. In addition, the diode determines the polarity of the coil supply and protects the system from a change in the polarity of supply voltage;
- unipolar light-emitting diode "L" whose function is to signal the state of the relay operation. This type of LED requires a defined polarization of the coil supply voltage. The polarity of the supply voltage must follow the drawing presented in the catalog.

The relays with AC coils may be additionally equipped with a light-emitting diode "L" whose function is to signal the state of the relay operation.

An example of the relay which meets the maritime requirements:

- R4 relay with 4 changeover contacts, coil of 24 V DC rated voltage, with mechanical flag indicator "W" and test button "T" (latching), suppression diode D, LED, in maritime version (Lloyd's Register Certificate) shall have the following code: R4-2014-23-1024-WTLD;
- R4 relay with 4 changeover contacts, coil of 230 V AC rated voltage, with mechanical flag indicator "W" and test button "P" (no latching function), LED, in maritime version (Lloyd's Register Certificate) shall have the following code: R4-2014-23-5230-WTL, and the additional remark: "and, additionally, the P button No. 851494 - orange, with which the customer will replace the "T" button themselves".

The information about the maritime certificate is shown on the relay cover, and it does not require extra marking in the code.

The GZT4 plug-in sockets offered for the R4 type relays are distinguished by the number of accessories offered for them. They provide for satisfying special requirements within the scope of signaling of the circuit state (normal operation, emergency, alarm, etc.) or protection of devices against the overvoltage effects. The M series signaling and/or overvoltage modules deserve particular attention. They are connected in parallel to the coil of the relay plugged in the socket. As desired, we may

choose a socket module of specific polarity of the supply voltage or a module of specific LED color (red or green). We may choose a module whose function is to suppress the overvoltages produced by the relay coil, or another which suppresses overvoltages and, at the same time, signals the operation mode of the relay. The relay is protected from slipping out of the socket due to mechanical factors (vibrations or mechanical impact) to which the devices with the relay are subject. Such protection is provided by a special thermoplastic clip GZT4-0040 which facilitates the replacement of the relay in the socket, or by G4 1052 clip of spring wire. The plug-in socket has a plate to identify the electrical circuits.

**The GZT plug-in sockets are designed both for mounting on 35 mm rails according to EN 50022 and for plate mounting with bolts.**

The R4 type relays were previously not certified for maritime applications, which did not allow their installation in vessels and maritime infrastructure facilities. Now, that the LR Certificate has been obtained for them, the possibility appeared.