

## Underground garage control

### Task

“easy” is required to control the entrance of an underground garage as well as its lighting.

A roller shutter is used to secure the joint entrance and exit.

In Automatic mode, the roller shutter for the entrance / exit can be opened from inside and from outside using key switches. The shutter stays open for a set time after reaching the upper limit switch and then closes again. Shortly before closing starts, two indicator lights, one inside and one outside, warn of the closing of the shutter. If the roller shutter is opened from the outside, the garage lighting is switched on automatically for a set time. Several pushbuttons can be used to switch on the lighting from inside. For safety reasons, a contact strip is fitted to the bottom of the roller shutter which is not functional when the roller shutter (S4) is locked in order to prevent a possible break-in. If this contact strip is triggered by an object while the shutter is moving down, the shutter is stopped immediately and then moves upwards for a set time (default setting: 2 seconds). The tripping of the contact strip is permanently indicated by the indicator lights H1. Indication can only be switched off by another "Open shutter" command or by switching to Manual mode.

In Manual mode (S1) the P buttons on the “easy” can be used to open and close the roller shutter in jog mode for test purposes or after a fault.

The motor of the roller shutter is protected by a PKZ overload protective switch. If the overload protection trips, this is indicated by the fast flashing of indicator lights H1.

### Wiring

#### 1. Inputs:

- I1 Key switch S1 (Manual / Automatic)
- I2 Key switch S2 (outside)
- I3 Key switch S3 (inside)
- I4 Limit switch S4 (roller shutter closed)
- I5 Limit switch S5 (roller shutter opened)
- I6 PKZ overload protective switch S6
- I7 Safety strip S7
- I8 Pushbutton S8 (garage lighting)
- P2 “easy” button ▲ (jog upwards)
- P4 “easy” button ▼ (jog downwards)

#### 2. Outputs:

- Q1 Motor M1 (downwards)
- Q2 Motor M2 (upwards)
- Q3 Indicator lights H1 (contact strip / shutter downwards / fault)
- Q4 Garage lighting H2



### **3. Parameters:**

- T1 On-delay of indicator flash light H1
- T2 On-delay of motor M1 (downwards)
- T3 On pulse (safety opening 2 sec.)
- T4 On duration of garage lighting H2
- T5 Pulse duration indicator light H1 (shutter downwards)
- T6 Pulse duration indicator light H1 (fault PKZ)