ACTUMATIC without SRG

1 General

ACTUMATIC is an actuator control that can be parameterized. It contains the complete motor control, the processing of the actuating commands from and signals to the control room. Adjustments to final control element (e.g. tight closing) or to the control system (e.g. locking of actuator commands) are very easy due to the possibility of parameterizing.

Furthermore, due to the display of all input and output signals via LEDs, an excellent tool for start-up and diagnosis is available. Figure 1 shows the logic board.

2 Supply

An actuator with ACTUMATIC needs two power supplies, one for the supply of the logic board and the reversing starters, and one for the supply of the motor control. It is possible to interconnect the two supply voltages. A start-up of the motor in the wrong direction due to wrong phase sequence is avoided by the phase sequence detection. Do not connect the phase sequence detection in case of voltages over 3x415V!

ATTENTION: No positioning command has to be activated during the first start up operation!!!
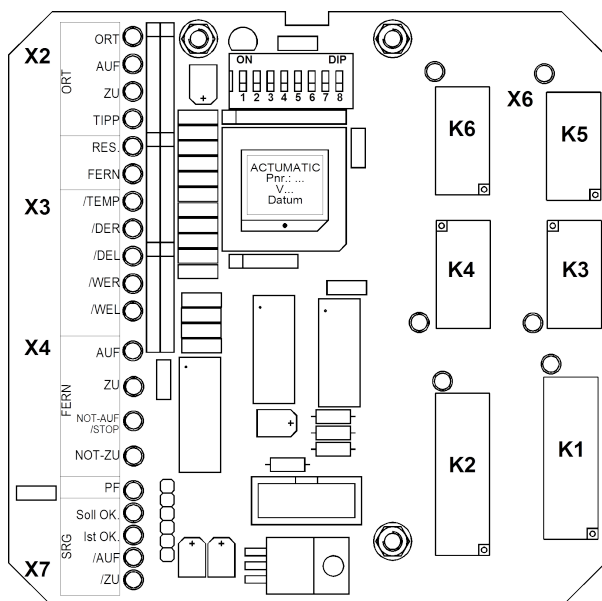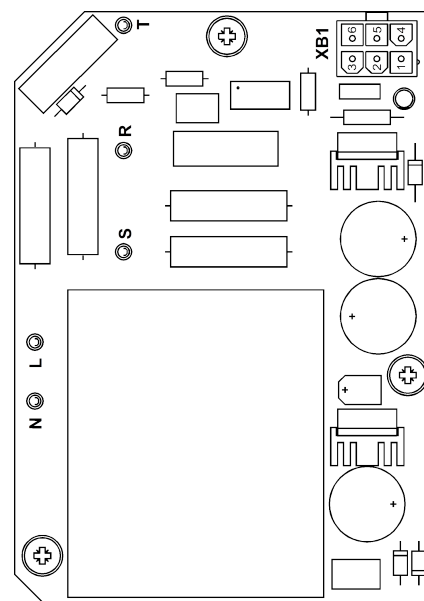

Figure 1: *Logic board*

Figure 2: *Power supply*

3 Functions

3.1 Selector switch S30

- Position LOCAL:The actuator can be actuated locally using the control switch S31 (OPEN-STOP-CLOSE). Using DIP switch no. 5, self-holding for LOCAL operation mode is activated. The external control commands EMERGENCY OPEN (switch 6 to OFF) and EMERGENCY CLOSE are active.

- Position OFF: Actuator can not be operated whether with local nor with remote commands.

- Position Remote: The input for the external control signals are activated.

3.2 Description of DIP switch functions:

- Torque depending closing:
  - OFF: The final position CLOSED is reached if the corresponding travel switch is actuated. If the torque switch is actuated, there is a failure.
  - ON: The final position CLOSED is reached only if the corresponding travel switch and the torque switch are activated. If the torque switch is actuated before the end position (travel switch), there is a failure.

- Torque depending opening:
  - OFF:The final position OPEN is reached if the corresponding travel switch is actuated. If the torque switch is actuated, there is a failure.
  - ON: The final position OPEN is reached only if the corresponding travel switch and the torque switch are activated. If the torque switch is actuated before the end position (travel switch), there is a failure.

- Non self-locking worm:
  - OFF: For actuators with a single threaded worm (output speeds below 120min^{-1}).
  - ON:For actuators with a triple threaded worm (non self-locking, output speeds from 120min^{-1}) the torque switches have to be locked additionally to avoid repeated start of the motor in the same direction after torque switch-off.

- Left-closing final control element:
  - OFF: Cw rotation of actuator means CLOSING the final control element.
  - ON: Cw rotation of actuator means OPENING the final control element.

- Self-holding LOCAL:
  - OFF: No self-holding in local operation, i.e. the actuator runs only as long as the control switch S31 is kept in the position OPEN-Tipp or CLOSE-Tipp (see Figure 3)
  - ON: Self-holding in local operation, i.e. the control switch S31 must be turned only once briefly in one of the two positions OPEN-Tipp or CLOSE-Tipp (see Figure 3, and the actuator then runs into the final position (push to run). If the actuator should be stopped, control switch S31 must be switched to STOP (see Figure 3)
    Note: Self-holding responds with delay (approx. 0.3 s), thus very short actuating pulses are possible without switching back to STOP.

Figure 3: *Control switch S31*

- REMOTE STOP signal:
  - OFF: No stop signal in remote operation. The external control signal EMERGENCY OPEN/STOP receives the function EMERGENCY OPEN.
  - ON: Additional stop signal in remote operation. The external control signal EMERGENCY OPEN/STOP receives the function STOP.
    ACHTUNG: If the ACTUMATIC is equipped with a positioner SRG, self holding (push to run) of the remote commands is not active.
    ACHTUNG: The external control signal STOP is processed active-low for safety reasons (e.g. wire fracture), i.e. STOP is activated if there is no voltage, the actuator is released, if 24VDC is applied. We advise to deactivate the external control signal STOP only if the actuator has to be activated.

- Function of external control commands (remote inputs)
  ACHTUNG: Only without SRG!!!

  – 7 OFF, 8 OFF: The commands OPEN, STOP and CLOSE are active only in position REMOTE of the selector switch S30. The commands EMERGENCY OPEN and EMERGENCY CLOSE are active in the positions LOCAL and REMOTE of the selector switch S30 and override all other commands. Note: If the commands REMOTE OPEN and REMOTE CLOSE and/or EMERGENCY OPEN and EMERGENCY CLOSE are applied at the same time, the actuator stops. The EMERGENCY command again overrides all other commands.

  – 7 OFF, 8 ON: External command OPEN active: Actuator closes.
    External command OPEN inactive: Actuator opens.

  – 7 ON, 8 OFF: External command OPEN active: Actuator opens.
    External command OPEN inactive: Actuator closes.

  – 7 ON, 8 ON: External command EMERGENCY OPEN/STOP active: Actuator is ready for LOCAL or REMOTE operation.
    External command EMERGENCY CLOSE is active in the positions LOCAL and REMOTE of the selector switch S30 and overrides all other commands.
    External command EMERGENCY OPEN/STOP inactive: Actuator is blocked

  ATTENTION: The function of the external control command EMERGENCY OPEN/STOP is determined by DIP switch no. 6

3.3 External control commands:

The selection of the external control commands is carried out with positive 24VDC signals, with minus connected to common. The signals are led via optocoupler and, thus, are separated galvanically from the internal control voltage of the actuator.
Their functionality is determined via the settings of the DIP-switches 7 and 8.

3.4 Signaling relays

Four signalling relays with the functions K3 = OPEN, K4 = CLOSED, K5 = READY and K6 = RUN are mounted on the logic board.
The signalling relay K3 = OPEN picks up in the final position OPEN of the actuator.
The signalling relay K4 = CLOSED picks up in the final position CLOSED of the actuator.
K5 are: excess of motor temperature, supply voltage failure (check fuse), wrong phase sequence (only with three-phase current), torque failure.
The signalling relay K6 = RUN picks up with running actuator if a flashing switch is not connected, and blinks if the flashing switch is led to the reserve input of the logic board.

3.5 Phase sequence detection:

A monitoring mechanism for wrong phase sequence is available in the ACTUMATIC power supply. This monitoring mechanism avoids a start-up of the three-phase motor in case of wrong phase sequence. This monitoring mechanism is separated galvanically from the ACTUMATIC supply. Thus, also a motor voltage can be monitored that is not connected with the ACTUMATIC voltage supply.

4 Elektromagnetic comaptibility:

The function of ACTUMATIC can be influenced by heavy electro-magnetic disturbances. After interference decay, the original function is restored and new alignment is not necessary.

5 Diagnosis

The LEDs on the logic board have the following meaning:

Local	Selector switch S30 in position LOCAL
Local Open	Control switch S31 in position OPEN
Local Close	Control switch S31 in position CLOSE

Local TIPP	Control switch S31 in one of the two extreme resilient positions
RES.	used with flashing switch
Remote	Selector switch S30 in position REMOTE
/TEMP.	Thermal switch OK
/DER	Torque switch cw rotation not actuated (active low)
/DEL	Torque switch ccw rotation not actuated (active low)
/WER	Travel switch cw rotation not actuated (active low)
/WEL	Travel switch ccw rotation not actuated (active low)
Remote Open	External command OPEN is applied
Remote Close	External command CLOSE is applied
Remote EM.-Open/Stop	External command EMERGENCY OPEN or STOP (active low) is applied
Remote EM.-Close	External command EMERGENCY CLOSE is applied
PF	Phase sequence error
SRG SP Ok.	Only with optional SRG
SRG AV Ok.	Only with optional SRG
SRG /Open	Only with optional SRG
SRG /Close	Only with optional SRG

6   Technical Data

6.1   General

Program numer: P1.0
Program version:. V1.51s
Product numer:
Logik board: SE160120 HEKR29626
Power supply board: SE160134 CLSC39635
Ambient temperature. . . . .-25...+60°C

6.2   Power pack

Supply voltage (L, N). 230V, 50Hz, 10VA
Phase sequence monitoring (L1, L2, L3) . . . . 3 x 400V, 50Hz
Internal supply for ESM 24VDC, 30mA

6.3   Logic board

External control commands . . . . OPEN, CLOSE, EMERGENCY OPEN/STOP,
                                                                                          EMERGENCY CLOSE
Input signal 24VDC
Signalling relay (change-over-contact). . . . . .K3: OPEN,
. . . . .K4: CLOSED,
. . . . .K5: READY,
. . . . .K6: RUN
Braking capacity (resistive load). . . . . .3A, 125VAC, 2x 10^5 cycles
. . . . .2A, 250VAC, 2x 10^4 cycles
mechanical life. . . . .10^7 cycles