Shutter / blind actuator with mounting frame, 1 x 6A UP 520/03	5WG1 520-2AB03

Product- and Applications Description

The UP 520/03 shutter / blind actuator with mounting frame is a KNX device with one relay output and a Bus Transceiver Interface (BTI). The device is installed in a flush-mount wall box (60 mm Ø, depth 60 mm). The bus is connected via a bus terminal block. The actuator electronics are supplied via the bus voltage.

The UP 520/03 may be used to control blinds, shutters, awnings, windows, or doors.

The device is designed to drive (per channel) one AC 230V drive (motor) with electromechanical limit switches or with integrated electronics for disconnection at the limit positions.

For drives with electromechanical limit switches the actuator can be configured to detect the status of the electromechanical limit switches such that the travel time between the end positions can be measured via a synchronization run. The travel time of the blind / shutter is automatically measured from the upper end position to the lower end position and vice versa. The measurement is only reliable for drives with electromechanical limit switches. The travel time cannot be automatically adjusted for drives with integrated electronics for disconnection at the limit positions. These drives have to be controlled via a time limit. Their travel times have to be manually measured as precisely as possible and configured in the application program.

Parallel operation of several drives on one channel requires the intermediate switching of a special separation relay. If such a separation relay is connected to the output to drive several drives in parallel, then the travel time has to be configured manually.

If the device is configured for automatic detection of the travel time, then parallel operation of several drives with electromechanical limit switches or mixed operation with drives with integrated electronics for disconnection at the limit positions is not permitted.

DELTA bus wall switches or other application units (bus device) with BTI interface are plugged onto the BTI interface of the actuator. Any bus device, which can be slipped onto a bus coupling unit (BTM) UP 117, may be slipped onto this actuator.

Detection of final positions, Automatic detection of travel times

The device can detect if the blind / shutter is in the upper or lower end position. This detection depends on the solar protection drive (motor) itself and on the wiring and specifically cannot be guaranteed for drives with integrated electronics for disconnection at the limit positions. Hence, the detection can be disabled by a parameter. If automatic detection of end positions is enabled, the travel time is set to the maximum value after a download of the configuration. If the end positions were detected successfully and the solar protection moved without interruption from the lower position to the upper position, then the parameter value for the travel time is updated and saved. The same applies to the travel time from the upper to the lower end position.

When the end position is detected, then the parameter value for the travel time extension is set to 10% of the travel time. In principal, the travel time, i.e. the time the relay contacts are closed, is determined based on the configured value or the parameter value updated based on the travel times measured between end positions

After a download of the application program respectively of addresses and parameters the solar protection must be synchronized. This is triggered when a telegram "solar protection up/down" or "central up/down" is received. The solar protection then performs a synchronization run. First it briefly moves down, then fully into the upper end position. Then it moves from the upper end position to the lower end position measuring the associated travel time. Finally, it moves from the lower end position to the upper end position measuring the associated travel time. After this procedure the solar protection is synchronized and remains in the upper end position until a motion is triggered by another telegram.

If the actuator does not detect the upper end position at the start of the synchronization run, then the measurement travels are not executed. In that case, the actuator

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is not synchronized. The synchronization run has to be initiated again as described above.

Any additional telegram "solar protection up/down" or "central up/down" received during the synchronization run is ignored. If a telegram "slats open/close" is received this is interpreted as stop and the solar protection is stopped without finalizing the synchronization of the actuator. The synchronization run has to be initiated again as described above.

If a message "block motion" is received during the synchronization run, then the synchronization run is aborted. It can only be initiated again, when the motion blockage is ended by a respective telegram.

All other telegrams received after a download before and during a synchronization run are ignored.

If the solar protection shall move to the upper or lower end position in normal operation, the travel time is calculated such that the drive reaches the respective end position. The actuator stops the motion when the end position is detected. A possible short opening movement of the slats or a short lifting of a roller shade is immediately executed after stopping the motion.

When a change of the solar protection travel times of more than +-5% is detected during normal operation based on the end position detection, then the travel time configuration settings are corrected and saved accordingly.

Because the electromechanical end position switch does not close at the same time the solar protection leaves the end position, it is necessary to block evaluation of the end position for this period. This "blocking period" can be configured via a parameter. Typical values for the blocking period" are 0.5 to 1.0 seconds.

Behavior at bus voltage failure / recovery
In the event of bus voltage failure the current positions of solar protection and slats as well as the travel time configuration is permanently saved to be restored on bus voltage recovery. Object values are not saved.
Status objects are not read after a bus reset.
Actions configured for execution on bus voltage failure are only executed, if no alarm or blockage is active.

Actions configured for execution on bus voltage recovery are only executed and possible new positions transmitted, if no alarm or blockage was active before bus voltage failure. The information (not the object values) about alarm and blockage before bus voltage failure is only saved for the initialization phase after bus voltage recovery. It is reset (no alarm active, no blockage active) after initialization. Consequently, if e.g. before bus voltage failure a blockage was active, the solar protection cannot be moved into a configured position on bus volt-

age failure or on bus voltage recovery. If after bus voltage recovery further messages to move the solar protection are received, then these are executed because the blockage present before bus voltage failure is not saved. Thus an explicit release of a blockage after bus voltage recovery is not required.

If alarm surveillance periods are configured, then these are restarted on bus voltage recovery.

The synchronization is retained on bus voltage failure and recovery. Yet, the actuator assumes that any function configured for bus voltage failure has been fully executed. If this is not the case, the calculated position may deviate from the actual position until the solar protection has been moved to an end position.

Behavior on unloading the application program
When the application program is unloaded with ETS the device does not function.

Resetting the device to ex-factory settings
When the programming button is pressed for more than 20 seconds the device is reset to the ex-factory settings. All configuration settings are lost.

The device is configured and commissioned with the ETS (Engineering Tool Software) version ETS3 v3.0f or later.

Application Program
The UP 510/03 Binary output (relay) needs the application program "07 B0 A1 Shutter Actuator 982A01".

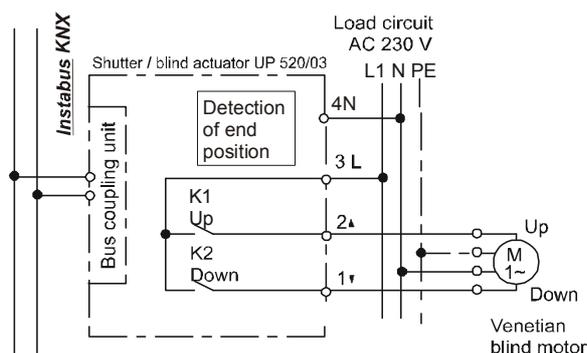| Shutter / blind actuator with mounting frame, 1 x 6A UP 520/03	5WG1 520-2AB03

Example of Operation

figure 1: Example of Operation

Installation Instructions

- The device may be used for permanent interior installations in dry locations within flush-mount boxes.

⚠ **DANGER**

- The device must be mounted and commissioned by an authorized electrician.
- A safety disconnection of the device must be possible.
- The device may be mounted to switch and socket combination box mounts provided VDE-certified devices are used exclusively.
- The device must not be opened.
- For planning and construction of electric installations, the relevant guidelines, regulations and standards of the respective country are to be considered.
- **When looping through the L-conductor, take care that the maximum permissible terminal load current of 16A is not exceeded!**

Technical Data

Power Supply
- via the bus line and the 230 V mains connection
- KNX bus voltage: DC 24V (DC 21...30V) via KNX/EIB bus line
- KNX bus current: < 10 mA

Output voltage and current via BTI
- DC 5V, 10mA
- DC 20V, 25mA

Outputs
- Mains connection:
  carried out via the terminals for L and N of the actuator
- 1 drive channel with 2 relay contact outputs,
  - rated voltage: AC 230 V, 50/60 Hz
- rated current: 6A (resistive load)
- switching current at AC 230 V:
  - 0,01 ... 6 A resistive load
  - tubular motors with auxiliary phase capacitor $\leq$ 14 µF, max. power 500 VA at 20000 load switching cycles (UP-DOWN-STOP) respectively max. 750 VA at 12000 load switching cycles
  - total maximum load at $\cos\varphi = 0,4$; 750 VA
- switching current at DC 24 V:
  - 6 A resistive load,
  - 4 A inductive load (L/R = 7 ms)

Control Elements
- 1 learning button: for switching between normal operating mode and addressing mode

Display Elements
- 1 red LED:
  for monitoring bus voltage and displaying / addressing mode

Connections
- Bus line : screwless bus connection block (red-black) 0.6...0.8 mm Ø single core, strip insulation 5mm
- 10-pin socket (BTI): for connection of DELTA switches and wall box mounted control devices with BTI plug
- inputs/outputs: screwless terminals 0.5 ... 2.5mm² single-core, stranded or multi-core, untreated, strip insulation 9 ... 10mm

Physical specifications
- housing: plastic
- dimensions (L x W x D): 71 x 71 x 41,5 mm
- weight: approx 90 g
- fire load: approx. 1300 kJ

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GAMMA *instabus*

Technical Product-Information

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Electrical safety
- fouling class (according to IEC 60664-1): 2
- protection (according to EN 60529): IP 20
- overvoltage class (according to IEC 60664-1): III
- bus: safety extra low voltage SELV DC 24 V
- the device complies with EN 50428

Electromagnetic compatibility
complies with EN 50428

Environmental specifications
- climatic conditions: EN 50090-2-2
- ambient temperature operating: - 5 ... + 45 °C
- ambient temperature non-operating: - 25 ... + 70 °C
- relative humidity (non-condensing): 5 % bis 93 %

Reliability
- Failure rate: 700 fit at 40°C

Markings
KNX *EIB*

CE mark
complies with the EMC regulations (residential and functional buildings), and low voltage regulations

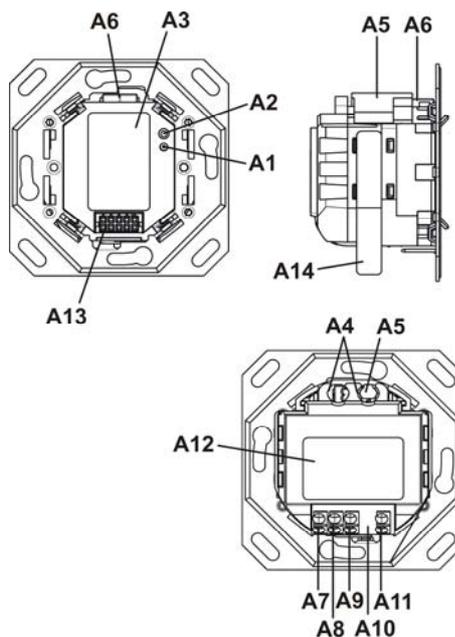**Location and Function of the Display and Operating Elements**

figure 2: Location and Function of the Display and Operating Elements

A1 LED for indicating normal operating mode (LED off) or addressing mode (LED on); returns to normal operating mode automatically after receiving the physical address
A2 Learning button for switching between normal operating mode and addressing mode and for receiving the physical address
A3 Type label (with space for physical address of the actuator)
A4 clamping slots for anchoring the bus lines
A5 Snap-on cover for bus line and single bus wires
A6 Bus connection block for single core conductors with 0,6...0,8 mm Ø
A7 Terminal Channel A, down
A8 Terminal Channel A, up
A9 Terminal L
A10 Distance plate
A11 Terminal N
A12 Label with terminal descriptions
A13 Bus Transceiver Interface (BTI) socket for connecting an application unit with BTI plug
A14 Identification number of the device

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Mounting and Wiring

General description
The connection to the bus line is established via bus connection block 193 (screwless plug-in terminals for single core conductors). The application unit is slipped onto the actuator via guide and mounting clamps and, depending on the device type, fastened with screws.

Note

The actuator must be mounted with the Bus Transceiver Interface (BTI) situated at the bottom (see Figure 3). Thus, the application unit will be oriented properly when slid onto the BTI. Use bus devices with mounting screws only to achieve a permanently stable contact at the BTI.

Mounting

B1 wall box (60 mm Ø, according to DIN 49073)
B2 mounting slots
B3 Bus Transceiver Interface (BTI)
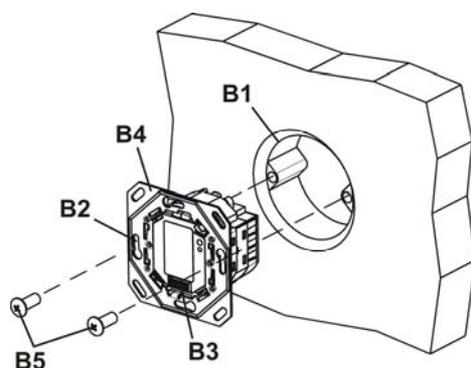B4 Actuator
B5 mounting screws

figure 3: mounting

Slipping off/on bus connection blocks

The bus connection block (C2) is situated on the back of the actuator (C3).
It consists of two components (C2.1 and C2.2) with four terminal contacts each. Take care not to damage the two test sockets (C2.3) by accidentally connecting them to the bus cable or with the screw driver (e.g. when attempting to unplug the bus connection block).

Slipping off bus connection blocks
- Put the screw-driver between the cover (C1) and the actuator (C3) from the side and lever out the cover.
- Carefully put the screw driver to the wire insertion slit of the bus connection block's grey component (C2.2) and
- pull the bus connection block (C2) from the actuator (C3).

Note

Don't try to remove the bus connection block from the bottom side. There is a risk of shorting-out the device!

Slipping on bus connection blocks
- Slip the bus connection block (C2) onto the guide slot of the actuator (C3) and
- press the bus connection block (C2) down to the stop.
- press the sheathing of the cut-off insulation bus line projecting >3mm into the open clamping slot (C4). If a further bus line shall be connected break out the closed clamping slot with a screw-driver and press it into the clamping slot as described above. Press the single bus wires into the recess below the bus connection block and snap on the cover (C1)
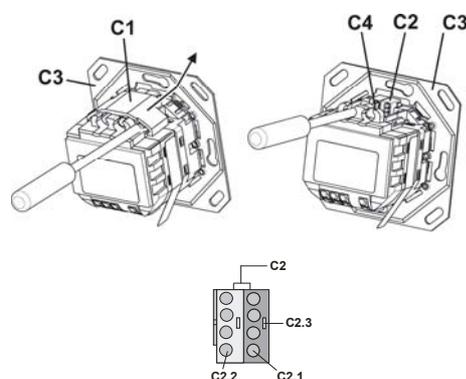

figure 4: Slipping off/on bus connection blocks

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Connecting bus cables
- The bus connection block (D1) can be used with single core conductors Ø 0.6...0.8 mm.
- Remove approx. 5 mm of insulation from the conductor (D2) and plug it into the bus connection block (D1) (red = +, grey = -)

Disconnecting bus cables
- Unplug the bus connection block (D1) and remove the bus cable conductor (D2) while simultaneously wiggling it.
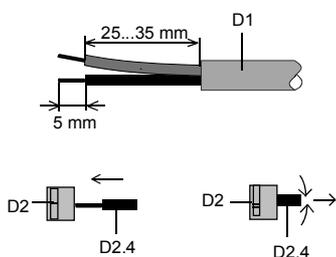

figure 5: Connecting / Disconnecting bus cables

Connecting/disconnecting mains and load circuit:
Connect wires
- The load circuits are connected via screwless plug-in terminals (E1).
- Remove approx. 9...10 mm of insulation from the wire (E 1.1) and plug it into the terminal (E1).
- The terminals are designed for connection of two wires allowing to loop through the terminal block.
Note:
The maximum permissible terminal load current is 16A.

Remove wires
- Press the terminal interlocking of the terminal (F1) with a screw-driver and remove the wire (F2) from the terminal (F1).
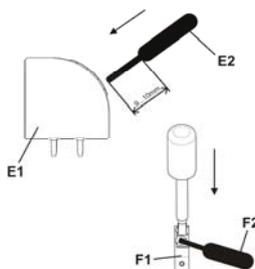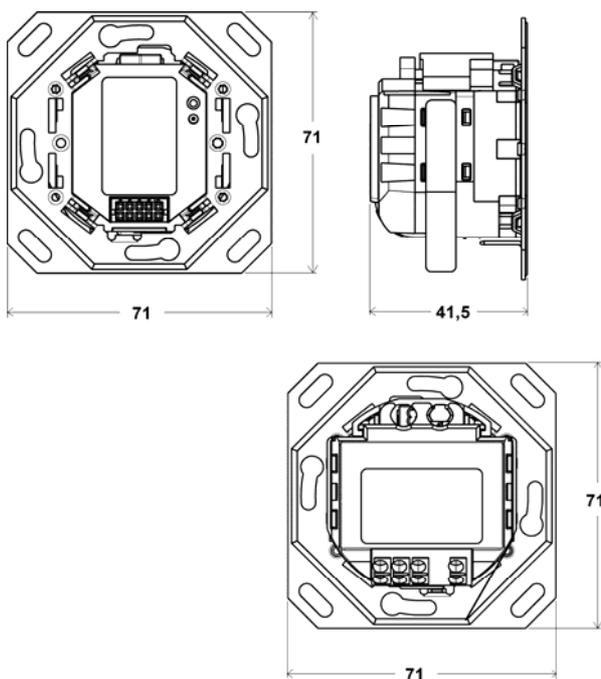

figure 6: Connecting/disconnecting mains and load circuit

Dimension drawing

Dimensions in mm

General Notes

· The operating instructions must be handed over to the client.
· Any faulty device is to be sent together with a return delivery note of the local Siemens office.
· For any technical questions, please consult:

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