

## Flush mounted Universal Actuator [AKU-x2UP.03]

A Shutter Actuator, a Switch Actuator or a Heating Actuator, the new flush mounted Universal Actuator AKU-x2UP.03 is versatile. The comprehensive application offers full functionality in all three tasks and a mixed operation of the functions is possible. A unique selling point in shutter operation is the integrated automatic sun shading with slat tracking by sun position calculation. The new series .03 of Universal Actuators from MDT has a range of functions that is not yet available on the KNX market. The new AKU-B2UP.03 comes with 4 potential-free binary inputs. With these for example, the window contacts can be directly connectet and conveniently processed internally. This saves wiring the contacts all the way into the sub-distribution. The remaining inputs can be used for conventional blind push-buttons, for example if desired. The application of the MDT Universal Actuator offers extensive settings for this. Thus, both one-button and two-button functions for dimming, switching, roller shutter/ blind and sending values can be parameterised.



### Overview - Shutter functions

#### Automatic shading with slat tracking by sun position calculation

Modern buildings are excellently insulated and have large window areas. As a result, the rooms heat up very quickly when exposed to sunlight. Therefore, an intelligent sun protection belongs to the basic equipment of a new house. The MDT Universal Actuator calculates the current position of the sun, i.e. azimuth (angle of the sun) and elevation (height of the sun). In addition to the time, date and location, it needs information about the brightness. One to three brightness values from a weather station (e.g. east, south and west), alternatively one or two threshold values from a brightness sensor or global radiation sensor are sufficient for this. With this information, roller shutters can automatically move to two different shading positions depending on the position and strength of the sun. In the case of blinds, the slats can be automatically tracked. When operated manually, the tracking is automatically interrupted. The automatic shading can be reactivated at any time by a release signal or by moving to the upper position. Each window can be set individually. The orientation of the windows according to the compass direction and possible shading by neighbouring buildings can be taken into account. Unlike other devices on the market, no expensive weather station with a built-in shading function is required here.

### Window opening/tilt function with practical ventilation function and lock-out protection

For the practical ventilation function, the state of the window or door is detected by means of a contact. If a window with closed roller shutter/blind is now tilted, the roller shutter moves up a few cm or the slats are tilted to the ventilation position. If a central DOWN command is executed during ventilation, the new function "limit lower position" can prevent the command on these windows or doors. If the window or patio door is fully opened, the roller shutter/blind moves to open. Depending on the parameterisation, the shading, absolute positions and if necessary the central commands are blocked (lock-out protection). As a special feature, the manual operation remains active even when the door is open, so that the position can be changed at any time. The usual alarm and lock functions do not allow manual operation.

### Shading function for optimal energy use and saving

For optimal energy use, the shading function can be controlled depending on the room temperature. If the room temperature is below a set value, the shading remains up and the additional heat yield of the sun is used. If the room temperature is reached, the shading moves down. Further heating of the room is prevented and otherwise necessary energy for cooling the room is saved.

### Wind alarm, rain alarm, fire alarm

If for example, the wind sensor of the MDT Weather Station Home triggers a wind alarm, all blinds and awnings can be automatically moved into their protective position. If the smoke detector or the fire alarm system reports a fire, all roller shutters immediately move up to clear the escape route. If the rain sensor detects precipitation, the roller shutter on the weather side can be lowered automatically or the awning retracted for protection. For each alarm type, different actions can be parameterised during and after the alarm is reset. The priority of the alarms can be set.

### Extended frost/ice protection for blinds

Manufacturers of blinds may require the blinds to be blocked at temperatures below 3 degrees and simultaneous precipitation. At temperatures above 5 degrees, the blinds are released again after a set time. Now this requirement can be implemented within the actuator without external logic.

### Advanced block function

In addition to the normal block function, the Universal Actuator has a significantly extended block function with an adjustable function block. Absolute positions / shading / ventilation function as well as scenes or central functions can be extensively blocked. For example, a "child sleep" function can be easily implemented: Manual operation automatically blocks the absolute position and central functions. The shading and central functions are only released again when the upper position is reached.

## Advanced scene and automatic function

The advanced scene function can not only move to positions, but also enable and disable any locks or a lower limit. For blinds it is also possible to change only the slat position. There are two automatic blocks with 4 positions each which are activated with 1 bit telegrams. In each channel, the position 1-4 to be approached can be parameterised as desired, as well as the behaviour per position when the automatic position is deactivated.

## Extensive status information for visualisation

The universal actuator has extensive status information such as current height position (1 byte), current slat position (1 byte), current/last direction (1 bit), shading status (1 bit), upper and lower position (1 bit) and lock/alarm status (1 bit). With the multitude of possible status information, the status of the blind can always be displayed exactly in every visualisation.

## Plain text diagnosis with 14 byte object

There is a 14 byte diagnosis object for automatic shading which reports the current state like "enabled / disabled", the active brightness threshold as well as the calculated position of the sun, i.e. azimuth and elevation. Each channel also has its own diagnosis object, which reports the last state of the channel. E.g. alarm, window open, or lock status. The diagnosis objects save time when reviewing and troubleshooting and simplify commissioning.

## Overview - Switch functions

### Threshold and impulse function

The channel can be switched when a temperature, brightness or humidity is reached. Various actions can be set for exceeding/falling below the threshold value. Short switching pulses of 500 ms for example, can be generated to switch the garage door or activate the doorbell.

### Extended staircase lighting function

By pressing the light button several times, the time in the MDT Universal Actuator can be added up and the staircase light can remain switched on longer as required. Furthermore, the switching time for the light in the staircase can be set separately for each floor. The prewarning can flash the push-button LEDs via an object. The actuator channel with staircase lighting function can be used in parallel as a switching channel with an additional switch object that can be activated.

### Extended logic and scene function

The extended logic function can use up to 3 objects in AND/OR/XOR or gate functions. The inputs can be inverted if required and set to a defined value after bus voltage recovery. This prevents undesired behaviour after a restart. In addition to switch the channel ON or OFF, the extended scene function can also lock or unlock. Furthermore, saved scenes are retained when the application is reprogrammed.

## Operating hours counter

The Universal Actuator has its own operating hours counter for each switch channel, which can be reset via a 1-bit object. Alternatively, a service counter can be activated for each channel, which sends a service message, for example "Filter change", after previously defined operating hours.

## Central switch function

The central switch function can be activated for each individual channel. This function enables easier programming of central functions. If the communication object of the central function is addressed, all channels with activated central function will be switched.

## Locking / priority/ forced control

In addition to the usual locking function, the Universal Actuator provides the priority/forced operation. With priority/forced operation, a switch channel can be switched permanently ON or OFF. 2 bit forced objects are supported as well. The behaviour in the event of bus voltage failure, bus voltage recovery, locking and unlocking or priority can be set differently. A release time can be set to switch back to the normal state after priority.

## Objects for channel status

The Universal Actuator provides status objects for each channel with adjustable transmission conditions and cyclical transmission. In addition, an inverted status object can be activated. This can be used for visualisations or logics.

## Overview - Heating function

### Heating control with PWM

When using an external (room) temperature controller, for example the room temperature controller Smart 55/60/63, it is possible to control the switching channels of the Universal Actuator via 1 byte control value (0-100 %). This can be used, for example, to switch infrared heaters, electric ceiling or floor heaters.

## General

### Updateable via DCA App

If necessary, the Universal Actuator can be updated via the MDT Update Tool (DCA). The download is available free of charge at [www.mdt.de](http://www.mdt.de) and [www.knx.org](http://www.knx.org).

### Long Frame Support

The MDT Universal Actuator supports "long frames" (longer telegrams). These contain more user data per telegram, which significantly reduces the programming time of the actuators with the ETS.