MDT Solution Proposal

Solution proposals for Dimming Actuators

Possible applications:

Simple solutions for frequently used scenarios are described below.
Valid for MDT Dimming Actuators from series .02

Used devices:

MDT Dimming Actuator

AKD-0201.02

AKD-0401.02

Content

Solution example 1: Staircase light function

The staircase light function allows the channel to be switched off after a certain time. To be able to parameterise the staircase light function further, it has to be activated first. This is activated in the settings for the respective channel:

You can also select the switch-on behaviour with which the dimmer is to switch on when the staircase timer starts. Here it is possible to set a fixed switch-on value for day/night or use time-dependent dimming. This allows the brightness to be switched on according to the time of day when the staircase timer is started.

When selecting "Time dependent dimming", a new "Time dependent dimming" tab appears in the left-hand selection menu in which the values for time-dependent dimming can be set:

After the staircase light function has been activated, a new "Staircase light function" tab appears in the left-hand selection menu for the relevant channel. Here, the other settings are made:

Global setting	Duration of staircase light	90	s
A: Channel A Settings	Prewarning	○ not active ○ active	
Staircase light function	Object "Staircase light with time"	not active ▼	
Block and Force functions	Extend staircase light	restart time ▼	
	Manual switching off	○ not active ○ active	

The following parameters can then be set:

The **duration of staircase light** indicates how long the channel should remain switched on after an ON-telegram.

The **prewarning** can be activated if required. Once the prewarning has been activated, further parameters are available:

Prewarning	○ not active ● active
Prewarning duration	10 s
Value of dimming up	20% ▼
Dimming time	● soft dimming (1s) ○ hard switching (0s)
Prewarning object	○ not active ● active

In these parameters, the prewarning duration, the dimming value, the dimming time and a prewarning object can now be set according to the application.

With "**Object - Staircase light with time**", it is possible to activate an object with length 1 byte or 2 bytes, which can then be used to start the staircase lighting with an external time specification.

The "**Extend staircase light**" parameter can also be activated for the staircase lighting process. This determines whether the staircase lighting time can be extended and whether the time should be restarted or added up.

The "**Manual switching off**" parameter can be used to decide whether an OFF telegram to the staircase lighting object leads to immediate switch-off of the channel.

Depending on the settings, only the necessary group addresses need to be created and linked accordingly.

Solution example 2: Time depending dimming

With time dependent dimming, each channel can be dimmed automatically during the course of the day depending on a fixed time or the sunrise/sunset.

Time dependent dimming has to be activated in the channel settings for the respective channel:

After activation, a new tab card "Time dependent dimming" appears in the left-hand selection menu. The corresponding values are set here:

In this tab you can also select whether switching times for the brightness thresholds should be carried out with a fixed time or depending on sunrise/sunset.

When the dimming actuator is switched on, it switches on with the dimming value set for this time. The dimming actuator calculates its value as a smooth transition for times between the set support points. For example, if the light is to have 50% at 6:00 a.m. and 100% at 8:00 a.m., the brightness level changes slowly over these two hours so that 100% is reached at 8 a.m. If, for example, the light is switched on at 7:00 a.m., it is switched on with a dimming level of 75%.

Depending on the settings, only the necessary group addresses need to be created and linked accordingly.

Only three group addresses are required for the function "time dependent dimming":
1. Switching object to switch the channel On/Off
2. Time
3. Date

The dimmer necessarily needs the current time and date to execute the function correctly!

	Number	Name	Object Function	Description	Group Ad	Length	C	R	W	T	U	Data Type
	0	A: Channel A	Switch	switching channel A	0/0/3	1 bit	C	-	W	-	-	switch
	4	A: Channel A	Dim relatively			4 bit	C	-	W	-	-	dimming control
	5	A: Channel A	Dim absolutely			1 byte	C	-	W	-	-	percentage (0..100%)
	6	A: Channel A	State On/Off			1 bit	C	R	-	T	-	state
	7	A: Channel A	State of dimming value			1 byte	C	R	-	T	-	percentage (0..100%)
	16	A: Channel A	Time dependent dimming -...			1 bit	C	-	W	-	-	switch
	17	A: Channel A	Time dependent dimming -...			1 bit	C	R	-	T	-	state
	128	Central	Switch			1 bit	C	-	W	-	-	switch
	129	Central	Dim relatively			4 bit	C	-	W	-	-	dimming control
	130	Central	Dim absolutely			1 byte	C	-	W	-	-	percentage (0..100%)
	131	Central	Scene			1 byte	C	-	W	-	-	scene number
	132	Time	Receive current value	Time	2/0/5	3 bytes	C	-	W	T	U	time of day
	133	Date	Receive current value	Date	2/0/6	3 bytes	C	-	W	T	U	date

Solution example 3: Blocking function

With the help of the blocking function, the dimming actuator can be set to a fixed state via a separate object. Here is an example of a panic circuit, where the light should come on 100% when the "panic" is triggered. Only when the action has ended should the actuator be operable again and the light automatically dim to the previous state.

A separate menu is available for each channel for the "block and force functions" in which two independent block functions can be set. Each blocking function can be activated or deactivated by a 1bit object, a 2bit object or a 1byte object.

In our example we use the 1bit object. Here a 1 blocks the actuator channel and a 0 unblocks the actuator channel again:

Global setting	Block object 1 - datapoint type	1Bit Object ▼
A: Channel A Settings	Action at object value = 1	⦿ block ○ unblock/enable
	Action at object value = 0	unblock/enable
Block and Force functions	Block object 1 -> Action at locking	brightness value ▼
Time dependent dimming	Brightness value	100% ▼
	Block object 1 -> Action at unlocking	update value ▼
	Dimming speed	2 ▲▼ s
	Release time block object 1 (0=not active)	0 ▲▼ s
	Block object 2 - datapoint type	not active ▼

Now only the necessary group addresses have to be created and linked accordingly:

	Number ▲	Name	Object Function	Description	Group Ad	Length	C	R	W	T	U	Data Type
■↕	0	A: Channel A	Switch	switching channel A	0/0/3	1 bit	C	-	W	-	-	switch
■↕	4	A: Channel A	Dim relatively			4 bit	C	-	W	-	-	dimming control
■↕	5	A: Channel A	Dim absolutely			1 byte	C	-	W	-	-	percentage (0..100%)
■↕	6	A: Channel A	State On/Off			1 bit	C	R	-	T	-	state
■↕	7	A: Channel A	State of dimming value			1 byte	C	R	-	T	-	percentage (0..100%)
■↕	8	A: Channel A	Block 1		2/0/7	1 bit	C	-	W	-	-	enable
■↕	10	A: Channel A	Block state		2/0/8	1 bit	C	R	-	T	-	state

Via "Block state" it can be visualised whether the channel is currently blocked or unblocked.
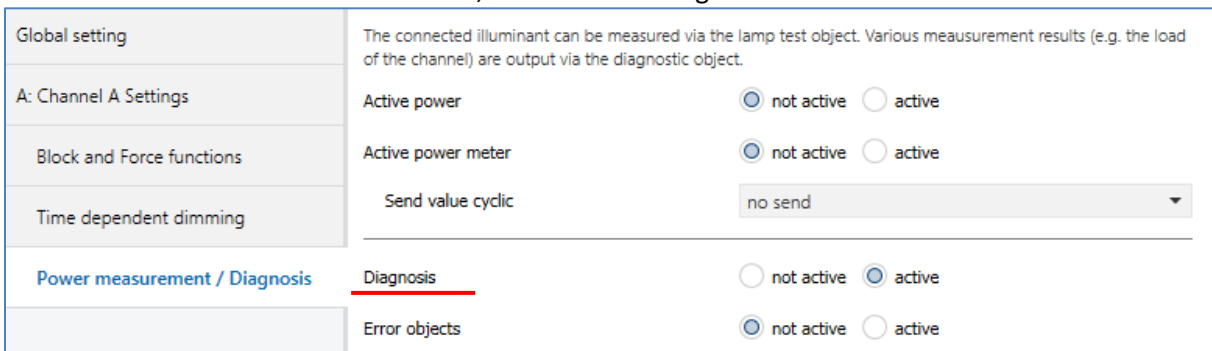
Solution example 4: Lamp test

The lamp test can be used to determine the utilisation of the dimming channel in %. This can then be used to determine the maximum number of lamps to be connected to the dimming channel.
The prerequisite is, of course, that the correct load type has been set in the channel settings to match the connected lamps!
The lamp test can be enabled separately for each channel in the channel settings. To do this, the "Power Measurement/Diagnosis" function has to be activated:

Power measurement / Diagnosis	○ not active ● active

After activation a new tab card "Power measurement / Diagnosis" appears for the corresponding channel in the left-hand selection menu, in which the "Diagnosis" has to be activated:

Global setting	The connected illuminant can be measured via the lamp test object. Various meausurement results (e.g. the load of the channel) are output via the diagnostic object.	
A: Channel A Settings	Active power	● not active ○ active
Block and Force functions	Active power meter	● not active ○ active
Time dependent dimming	Send value cyclic	no send
Power measurement / Diagnosis	Diagnosis	○ not active ● active
	Error objects	● not active ○ active

Activating the diagnosis function causes two communication objects to be displayed.
Now create group addresses for these and link them accordingly:

⇄	27	A: Channel A	Start lamp test	2/0/9	1 bit	C	- W - -	start/stop
⇄	28	A: Channel A	Diagnosis test	2/0/10	14 bytes	C R - T -	Character String (IS...

The lamp test is started with a "1" on the object "Start lamp test". In the lamp test, the peak current and peak power are determined by controlling different brightness levels and output via the diagnostic object as the result "Load in percent".

Here in the example a GU10 LED lamp with 4.2W was connected and the test was started:

Quellname	Zieladresse	Zielname	Rout	Typ	DPT	Info
						Aufzeichnung wurde gestartet, Host=TECHNIK1, Verbindung=MDT...
-	0/1/5	Leuchtmitteltest starten	6	GroupValueW...	1.010 Start...	$01	Start
AKD-0401.02 Dimmaktor 4-fach	0/1/6	Diagnosetext	6	GroupValueW...	16.001 Zei...	49 4E 46 4F 3A 50 6F 77 65 72 20 4F 6B 20	INFO:Power Ok
AKD-0401.02 Dimmaktor 4-fach	0/1/6	Diagnosetext	6	GroupValueW...	16.001 Zei...	4C 45 44 5F 41 62 5F 32 30 30 57 00 00 00	LED_Ab_200W
AKD-0401.02 Dimmaktor 4-fach	0/1/6	Diagnosetext	6	GroupValueW...	16.001 Zei...	49 4E 46 4F 3A 20 30 32 25 20 50 20 20 20	INFO: 02% P

The test takes about 30 seconds and has given the following information about the "diagnosis":
The message "Info Power Ok" shows that the channel is powered.
"LED_Ab_200W" shows that the channel is working as trailing-egde dimmer (Ab) and can be loaded with maximum 200W. At the end of the test the percentage load of the channel is displayed. In this example it is 2%. With this value the maximum number of lamps can be calculated.

Here a recording with 4 lamps of the same type as in the lamp test before:

-	0/1/5	Leuchtmitteltest starten	6	GroupValueW...	1.010 Start...	$01	Start
AKD-0401.02 Dimmaktor 4-fach	0/1/6	Diagnosetext	6	GroupValueW...	16.001 Zei...	49 4E 46 4F 3A 50 6F 77 65 72 20 4F 6B 20	INFO:Power Ok
AKD-0401.02 Dimmaktor 4-fach	0/1/6	Diagnosetext	6	GroupValueW...	16.001 Zei...	4C 45 44 5F 41 62 5F 32 30 30 57 00 00 00	LED_Ab_200W
AKD-0401.02 Dimmaktor 4-fach	0/1/6	Diagnosetext	6	GroupValueW...	16.001 Zei...	49 4E 46 4F 3A 20 30 39 25 20 50 20 20 20	INFO: 09% P