

MDT solution proposal

Setpoint adjustment and operating mode preselection with the *Glass Push Button II Smart* and the *Heating Actuator AKH-0x00.03*

Possible applications:

With the *Glass Push Button II Smart with temperature sensor*, it is possible to adjust the heating setpoint individually for different rooms. In addition, the *Glass Push Button II Smart* offers the possibility of clearly visualising operating modes, current temperature value and setpoint temperature.

Info: The setpoint adjustment can also be realised with the *Push Button Smart 86 with temperature sensor*. Both devices use the same database. Only the *Glass Push Button II Smart* is mentioned in the following example.

Used devices:

MDT Glass Push Button II Smart (Push Button Smart 86),
with temperature sensor

BE-GT2TW.01/ BE-GT2TS.01 (BE-TAS86T.01)

MDT Heating Actuator

AKH-0400.03/ AKH-0600.03/ AKH-0800.03

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Simple troubleshooting via diagnosis object:

The diagnosis object can be activated for each channel and provides valuable information in case of an error.

1.1.10 AKH-0800.03 Heating Actuator 8-fold, 4SU MDRC, 24/230VAC > Channel A: Room 1 > Output

Setup general	Valve type	<input checked="" type="radio"/> not energized closed <input type="radio"/> not energized opened
Channel selection	PWM cycle time	10 min
Channel A: Room 1	Minimum limitation of control value	0%
Basic setting	Maximum limitation of control value during Heating	100%
Controller	Limitation over object	not active
Output	Control value at lower deviation of minimum limitation	<input checked="" type="radio"/> 0% = 0% otherwise use minimum set value <input type="radio"/> 0% = minimum set value
+ Scenes	Send control value cyclically	5 min
	Object valve state	<input checked="" type="radio"/> actual valve state (1=closed, 0=opened) <input type="radio"/> 1 if control value > 0%
	Consider channel in Heating/Cooling request and max. control value	<input type="radio"/> not active <input checked="" type="radio"/> active
	Forced position	<input checked="" type="radio"/> not active <input type="radio"/> active
	Additional sensor for flow temperature	<input checked="" type="radio"/> not active <input type="radio"/> active
	Emergency mode	<input type="radio"/> not active <input checked="" type="radio"/> active
	Emergency operation at failure of temperature value after...	30 Minutes
	Control value for emergency operation	50%
	Lock object for control value Heating	not active
	Send diagnosis text	send at changes

This activates a new object for the corresponding channel.

28	Channel A: Room 1	Diagnosis status	diagnostics	0/0/4	14 bytes	C	R	-	T	-	Character String (ISO 8859-1)
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Here is an example of the output after a restart of the AKH-0800.03. The channel is in winter mode, set to heating, comfort mode and the control value is 0.

1.1.11	BE-GT2Tx.01...	0/0/1	current temperature	9.001 temperature (°C)	0D 28 26.4 °C
1.1.10	AKH-0800.03...	0/0/3	current setpoint	9.001 temperature (°C)	0C 1A 21 °C
1.1.10	AKH-0800.03...	0/0/4	diagnostics	16.001 Character String (ISO...	57 69 20 48 20 48 6F 6D 66 6F 72 74 20 30 Wi H Komfort 0

The explanation of the possible diagnostic outputs can be found as plain text at chapter 4.1.8.1 in the technical manual of AKH-0x00.03.

Solution example 1: Setpoint shift via 1 bit (step)

Settings on Glass Push Button II Smart with temperature sensor:

- Push button functions -> two-button function


1.1.11 BE-GT2Tx.01 Glas Push Button II Smart with temperature sensor > Operation / Display > Push button functions

Hardware selection	Display mode	<input checked="" type="radio"/> 6 functions / 1-2 levels <input type="radio"/> 4 functions / 1-3 levels
- Operation / Display	2. level / 12 functions	<input checked="" type="radio"/> not active <input type="radio"/> active
General settings	Level 1 (Push buttons 1/2 top, push buttons 3/4 central, push buttons 5/6 bottom)	
Display setting	Push button 1/2 (left, right)	two-button function
Information screen	Push buttons 3/4 (left, right)	not active
Push button functions	Push buttons 5/6 (left, right)	not active
PB1/2: setpoint shift	Slap / Cleaning function	<input checked="" type="radio"/> not active <input type="radio"/> active
+ Status LED	Reaction time at the push of button	fast
+ Logic	Time for long push of button	0,4 s

- Two-button function -> temperature shift

- Temperature shift -> 1bit temperature shift

1.1.11 BE-GT2Tx.01 Glas Push Button II Smart with temperature sensor > Operation / Display > PB1/2: setpoint shift

Hardware selection	Description of objects	setpoint shift
- Operation / Display	Two-button function	temperature shift
General settings	Temperature shift	1Bit temperature shift
Display setting	Use internal temperature	<input type="radio"/> not active <input checked="" type="radio"/> active
Information screen	With left push button move down and with right push button move up	
Push button functions	Repeated sending at pressed key	<input checked="" type="radio"/> not active <input type="radio"/> active
PB1/2: setpoint shift	Function name	over text input
+ Status LED	Text	
+ Logic	Color of symbol	red
+ Temperature measurement		
	Label for actual value of temperature	Ist
	Label for setpoint temperature	Soll
	Blocking Object	<input checked="" type="radio"/> not active <input type="radio"/> active

- Send measurement value at change -> 0,2 °C
- Send measurement value cyclically -> 10 min.

1.1.11 BE-GT2Tx.01 Glas Push Button II Smart with temperature sensor > Temperature measurement > Basic setting

Hardware selection	Temperature measurement	<input type="radio"/> not active <input checked="" type="radio"/> active
Operation / Display	Send measurement value at change	0,2 °C
General settings	Send measurement value cyclically	10 min
Display setting	Sensor internal/external	internal 100%
Information screen	Adjustment value for internal temperature	0 x0,1 K
Push button functions	Temperature for upper message value	not active
PB1/2: setpoint shift	Temperature for lower message value	not active
Status LED		
Logic		
Temperature measurement		
	Basic setting	

Settings on Heating Actuator:

Activate the desired channel in the channel selection:

1.1.10 AKH-0800.03 Heating Actuator 8-fold, 4SU MDRC, 24/230VAC > Channel selection

Setup general	Channel A	active
Channel selection	Channel B	not active
Channel A: Room 1	Channel C	not active
Basic setting	Channel D	not active
Controller	Channel E	not active
Output	Channel F	not active
Scenes	Channel G	not active
	Channel H	not active

Basic setting:
 Controller type -> integrated controller

1.1.10 AKH-0800.03 Heating Actuator 8-fold, 4SU MDRC, 24/230VAC > Channel A: Room 1 > Basic setting

Setup general	Description of channel/objects	Room 1
Channel selection	Additional text	
- Channel A: Room 1	Controller type	integrated controller
Basic setting	Standalone system	<input checked="" type="radio"/> not active <input type="radio"/> active
Controller	Operating mode	Heating
Output	Setpoint	<input checked="" type="radio"/> continuous PI control <input type="radio"/> 2-step control (switching)
+ Scenes	Heating system	Underfloor Heating (4K / 150min)
	Additional level	<input checked="" type="radio"/> not active <input type="radio"/> active

Controller:
 We recommend the use of independent setpoints. The setpoint shift is set to 1 bit, the step range is 0.5 K per keystroke and the maximum setpoint shift is 5 K.

1.1.10 AKH-0800.03 Heating Actuator 8-fold, 4SU MDRC, 24/230VAC > Channel A: Room 1 > Controller

Setup general	Priority	<input checked="" type="radio"/> Frost(Heating) protection/Comfort/Night/Stan... <input type="radio"/> Frost(Heating) protection/Night/Comfort/Stan...
Channel selection	Setpoints for Standby/Night	<input checked="" type="radio"/> independent setpoints <input type="radio"/> dependent of sepoint comfort (basic)
- Channel A: Room 1	Setpoint Comfort (Basic)	21 °C
Basic setting	Setpoint Standby	19 °C
Controller	Setpoint Night	18 °C
Output	Setpoint Frost protection setting	<input checked="" type="radio"/> global <input type="radio"/> individual
+ Scenes	Separate objects for setpoints Comfort/Standby/Night/Frost protection	not active
	Maximum setpoint shift	5 K
	Set point shift over 1Bit/1Byte object	18bit
	Step range	0,5 K

Group addresses:

The following figure shows the linking of the group addresses for the setpoint shift via 1 bit:

Number	Name	Object Function	Description	Group	Length	C	R	W	T	U	Data Type
1.1.10 AKH-0800.03 Heating Actuator 8-fold, 4SU MDRC, 24/230VAC											
1	Channel A: Room 1	Receive temperature value	current temperature	0/0/1	2 bytes	C	-	W	T	U	temperature (°C)
2	Channel A: Room 1	Preset setpoint			2 bytes	C	-	W	-	-	temperature (°C)
8	Channel A: Room 1	Send current setpoint	current setpoint	0/0/3	2 bytes	C	R	-	T	-	temperature (°C)
9	Channel A: Room 1	Manual setpoint shift (2byte)			2 bytes	C	-	W	-	-	temperature difference (K)
10	Channel A: Room 1	Manual setpoint shift (1=+ / 0=-)	setpoint shift	0/0/2	1 bit	C	-	W	-	-	step
12	Channel A: Room 1	Control value Heating: Send status			1 byte	C	R	-	T	-	percentage (0..100%)
15	Channel A: Room 1	Send valve state			1 bit	C	R	-	T	-	state
17	Channel A: Room 1	Mode selection			1 byte	C	-	W	-	-	HVAC mode
19	Channel A: Room 1	Switch Comfort operating mode			1 bit	C	-	W	-	-	switch
20	Channel A: Room 1	Switch Night operating mode			1 bit	C	-	W	-	-	switch
21	Channel A: Room 1	Switch Frost protection operating...			1 bit	C	-	W	-	-	switch
22	Channel A: Room 1	DPT_HVAC Mode: Send controle...			1 byte	C	R	-	T	-	HVAC mode
28	Channel A: Room 1	Diagnosis status	diagnostics	0/0/4	14 bytes	C	R	-	T	-	Character String (ISO 8859-1)
35	Channel A: Room 1	Fault in case of mains failure / sh...			1 bit	C	R	-	T	-	alarm
321	Summer = 1 / Winter = 0	Switchover			1 bit	C	-	W	T	U	switch
327	Fault	At power failure/short circuit			1 bit	C	R	-	T	-	alarm
332	Scene	Activate			1 byte	C	-	W	-	-	scene number
334	Lead value (Outside temper...)	Receive measured value			2 bytes	C	-	W	T	U	temperature (°C)
1.1.11 BE-GT2Tx.01 Glas Push Button II Smart with temperature sensor											
0	PB1/2: setpoint shift	Setpoint shift (1Bit)	setpoint shift	0/0/2	1 bit	C	-	-	T	-	step
2	PB1/2: setpoint shift	State current setpoint	current setpoint	0/0/3	2 bytes	C	-	W	T	U	temperature (°C)
106	Day / Night	Day = 1 / Night = 0			1 bit	C	-	W	T	U	boolean
107	Presence	Input			1 bit	C	-	W	T	U	switch
108	Temperature measured value	Output	current temperature	0/0/1	2 bytes	C	R	-	T	-	temperature (°C)
112	Time	Receive current value			3 bytes	C	-	W	T	U	time of day
114	Time/Date	Receive current values			8 bytes	C	-	W	T	U	date time
119	Message text (lowest priority)	Input			14 bytes	C	-	W	T	U	Character String (ASCII)
120	State text 1	Input			14 bytes	C	-	W	T	U	Character String (ASCII)
121	State text 2	Input			14 bytes	C	-	W	T	U	Character String (ASCII)
126	Push button operation	Output			1 bit	C	R	-	T	-	state

Solution example 2: Setpoint shift via 1 byte (counter pulses)

Settings on Glass Push Button II Smart with temperature sensor:

- Push button functions -> two-button function


1.2.11 BE-GT2Tx.01 Glas Push Button II Smart with temperature sensor > Operation / Display > Push button functions

Hardware selection	Display mode	<input checked="" type="radio"/> 6 functions / 1-2 levels <input type="radio"/> 4 functions / 1-3 levels
- Operation / Display	2. level / 12 functions	<input checked="" type="radio"/> not active <input type="radio"/> active
General settings	Level 1 (Push buttons 1/2 top, push buttons 3/4 central, push buttons 5/6 bottom)	
Display setting	Push button 1/2 (left, right)	two-button function
Information screen	Push buttons 3/4 (left, right)	not active
Push button functions	Push buttons 5/6 (left, right)	not active
PB1/2: setpoint shift	Slap / Cleaning function	<input checked="" type="radio"/> not active <input type="radio"/> active
+ Status LED	Reaction time at the push of button	fast
+ Logic	Time for long push of button	0,4 s

- Two-button function -> temperature shift

- Temperature shift -> 1Byte temperature shift

1.2.11 BE-GT2Tx.01 Glas Push Button II Smart with temperature sensor > Operation / Display > PB1/2: setpoint shift

Hardware selection	Description of objects	setpoint shift
- Operation / Display	Two-button function	temperature shift
General settings	Temperature shift	1Byte temperature shift
Display setting	Use internal temperature	<input type="radio"/> not active <input checked="" type="radio"/> active
Information screen	With left push button move down and with right push button move up	
Push button functions	Step width	0.5 K
PB1/2: setpoint shift	Lower limit	-5 K
+ Status LED	Upper limit	5 K
+ Logic	Repeated sending at pressed key	<input checked="" type="radio"/> not active <input type="radio"/> active
+ Temperature measurement	Switchover considers status object	<input checked="" type="radio"/> yes <input type="radio"/> no
	Function name	over text input
	Text	
	Color of symbol	red
		

- Send measurement value at change -> 0,2 °C
- Send measurement value cyclically -> 10 min.

1.2.11 BE-GT2Tx.01 Glas Push Button II Smart with temperature sensor > Temperature measurement > Basic setting

Hardware selection	Temperature measurement	<input type="radio"/> not active <input checked="" type="radio"/> active
Operation / Display	Send measurement value at change	0,2 °C
General settings	Send measurement value cyclically	10 min
Display setting	Sensor internal/external	internal 100%
Information screen	Adjustment value for internal temperature	0 x0,1 K
Push button functions	Temperature for upper message value	not active
PB1/2: setpoint shift	Temperature for lower message value	not active
+ Status LED		
+ Logic		
- Temperature measurement		
	Basic setting	

Settings on Heating Actuator:

Activate the desired channel in the channel selection:

1.2.10 AKH-0800.03 Heating Actuator 8-fold, 4SU MDRC, 24/230VAC > Channel selection

Setup general	Channel A	active
Channel selection	Channel B	not active
+ Channel A: Room 1	Channel C	not active
+ Scenes	Channel D	not active
	Channel E	not active
	Channel F	not active
	Channel G	not active
	Channel H	not active

Basic setting:

Controller type -> integrated controller

1.2.10 AKH-0800.03 Heating Actuator 8-fold, 4SU MDRC, 24/230VAC > Channel A: Room 1 > Basic setting		
Setup general	Description of channel/objects	Room 1
Channel selection	Additional text	
- Channel A: Room 1	Controller type	integrated controller
Basic setting	Standalone system	<input checked="" type="radio"/> not active <input type="radio"/> active
Controller	Operating mode	Heating
Output	Setpoint	<input checked="" type="radio"/> continuous PI control <input type="radio"/> 2-step control (switching)
+ Scenes	Heating system	Underfloor Heating (4K / 150min)
	Additional level	<input checked="" type="radio"/> not active <input type="radio"/> active

Controller:

We recommend the use of independent setpoints. The setpoint shift is set to 1 byte, the step range is 0.5 K per keystroke and the maximum setpoint shift is 5 K.

1.2.10 AKH-0800.03 Heating Actuator 8-fold, 4SU MDRC, 24/230VAC > Channel A: Room 1 > Controller		
Setup general	Priority	<input checked="" type="radio"/> Frost(Heating) protection/Comfort/Night/Stan... <input type="radio"/> Frost(Heating) protection/Night/Comfort/Stan...
Channel selection	Setpoints for Standby/Night	<input checked="" type="radio"/> independent setpoints <input type="radio"/> dependent of sepoint comfort (basic)
- Channel A: Room 1	Setpoint Comfort (Basic)	21 °C
Basic setting	Setpoint Standby	19 °C
Controller	Setpoint Night	18 °C
Output	Setpoint Frost protection setting	<input checked="" type="radio"/> global <input type="radio"/> individual
+ Scenes	Separate objects for setpoints Comfort/Standby/Night/Frost protection	not active
	Maximum setpoint shift	5 K
	Set point shift over 1Bit/1Byte object	1Byte
	Step range	0,5 K

Group addresses:

The following figure shows the linking of the group addresses for the setpoint shift via 1 byte:

Number	Name	Object Function	Description	Group	Length	C	R	W	T	U	Data Type
1.2.10 AKH-0800.03 Heating Actuator 8-fold, 4SU MDRC, 24/230VAC											
1	Channel A: Room 1	Receive temperature value	current temperature	0/0/5	2 bytes	C	-	W	T	U	temperature (°C)
2	Channel A: Room 1	Preset setpoint			2 bytes	C	-	W	-	-	temperature (°C)
8	Channel A: Room 1	Send current setpoint	current setpoint	0/0/7	2 bytes	C	R	-	T	-	temperature (°C)
9	Channel A: Room 1	Manual setpoint shift (2byte)			2 bytes	C	-	W	-	-	temperature difference (K)
10	Channel A: Room 1	Manual setpoint shift (1byte)	setpoint shift	0/0/6	1 byte	C	-	W	-	-	counter pulses (-128..127)
12	Channel A: Room 1	Control value Heating: Send status			1 byte	C	R	-	T	-	percentage (0..100%)
15	Channel A: Room 1	Send valve state			1 bit	C	R	-	T	-	state
17	Channel A: Room 1	Mode selection			1 byte	C	-	W	-	-	HVAC mode
19	Channel A: Room 1	Switch Comfort operating mode			1 bit	C	-	W	-	-	switch
20	Channel A: Room 1	Switch Night operating mode			1 bit	C	-	W	-	-	switch
21	Channel A: Room 1	Switch Frost protection operating...			1 bit	C	-	W	-	-	switch
22	Channel A: Room 1	DPT_HVAC Mode: Send controle...			1 byte	C	R	-	T	-	HVAC mode
28	Channel A: Room 1	Diagnosis status	diagnostics	0/0/8	14 bytes	C	R	-	T	-	Character String (ISO 8859-1)
35	Channel A: Room 1	Fault in case of mains failure / sh...			1 bit	C	R	-	T	-	alarm
321	Summer = 1 / Winter = 0	Switchover			1 bit	C	-	W	T	U	switch
327	Fault	At power failure/short circuit			1 bit	C	R	-	T	-	alarm
332	Scene	Activate			1 byte	C	-	W	-	-	scene number
334	Lead value (Outside temper...)	Receive measured value			2 bytes	C	-	W	T	U	temperature (°C)
1.2.11 BE-GT2Tx.01 Glas Push Button II Smart with temperature sensor											
0	PB1/2: setpoint shift	Setpoint shift (1Byte)	setpoint shift	0/0/6	1 byte	C	-	-	T	-	counter pulses (-128..127)
2	PB1/2: setpoint shift	State current setpoint	current setpoint	0/0/7	2 bytes	C	-	W	T	U	temperature (°C)
3	PB1/2: setpoint shift	State setpoint shift	setpoint shift	0/0/6	1 byte	C	-	W	T	U	counter pulses (-128..127)
106	Day / Night	Day = 1 / Night = 0			1 bit	C	-	W	T	U	boolean
107	Presence	Input			1 bit	C	-	W	T	U	switch
108	Temperature measured value	Output	current temperature	0/0/5	2 bytes	C	R	-	T	-	temperature (°C)
112	Time	Receive current value			3 bytes	C	-	W	T	U	time of day
114	Time/Date	Receive current values			8 bytes	C	-	W	T	U	date time
119	Message text (lowest priority)	Input			14 bytes	C	-	W	T	U	Character String (ASCII)
120	State text 1	Input			14 bytes	C	-	W	T	U	Character String (ASCII)
121	State text 2	Input			14 bytes	C	-	W	T	U	Character String (ASCII)
126	Push button operation	Output			1 bit	C	R	-	T	-	state

Solution example 3: Setpoint shift via 2 byte (temperature difference)

Settings on Glass Push Button II Smart with temperature sensor:

- Push button functions -> two-button function

1.3.11 BE-GT2Tx.01 Glas Push Button II Smart with temperature sensor > Operation / Display > Push button functions


Hardware selection	Display mode	<input checked="" type="radio"/> 6 functions / 1-2 levels <input type="radio"/> 4 functions / 1-3 levels
- Operation / Display	2. level / 12 functions	<input checked="" type="radio"/> not active <input type="radio"/> active
General settings	Level 1 (Push buttons 1/2 top, push buttons 3/4 central, push buttons 5/6 bottom)	
Display setting	Push button 1/2 (left, right)	two-button function
Information screen	Push buttons 3/4 (left, right)	not active
Push button functions	Push buttons 5/6 (left, right)	not active
PB1/2: setpoint shift	Slap / Cleaning function	<input checked="" type="radio"/> not active <input type="radio"/> active
+ Status LED	Reaction time at the push of button	fast
+ Logic	Time for long push of button	0,4 s

- Two-button function -> temperature shift

- Temperature shift -> 2Byte temperature shift

1.3.11 BE-GT2Tx.01 Glas Push Button II Smart with temperature sensor > Operation / Display > PB1/2: setpoint shift

Hardware selection	Description of objects	setpoint shift
- Operation / Display	Two-button function	temperature shift
General settings	Temperature shift	2Byte temperature shift
Display setting	Use internal temperature	<input type="radio"/> not active <input checked="" type="radio"/> active
Information screen	With left push button move down and with right push button move up	
Push button functions	Step width	0.5 K
PB1/2: setpoint shift	Lower limit	-5 K
+ Status LED	Upper limit	5 K
+ Logic	Repeated sending at pressed key	<input checked="" type="radio"/> not active <input type="radio"/> active
+ Temperature measurement	Switchover considers status object	<input checked="" type="radio"/> yes <input type="radio"/> no
	Function name	over text input
	Text	
	Color of symbol	red



- Send measurement value at change -> 0,2 °C
- Send measurement value cyclically -> 10 min.

1.3.11 BE-GT2Tx.01 Glas Push Button II Smart with temperature sensor > Temperature measurement > Basic setting

Hardware selection	Temperature measurement	<input type="radio"/> not active <input checked="" type="radio"/> active
Operation / Display	Send measurement value at change	0,2 °C
General settings	Send measurement value cyclically	10 min
Display setting	Sensor internal/external	internal 100%
Information screen	Adjustment value for internal temperature	0 x0,1 K
Push button functions	Temperature for upper message value	not active
PB1/2: setpoint shift	Temperature for lower message value	not active
Status LED		
Logic		
Temperature measurement		
	Basic setting	

Settings on Heating Actuator:

Activate the desired channel in the channel selection:

1.3.10 AKH-0800.03 Heating Actuator 8-fold, 4SU MDRC, 24/230VAC > Channel selection

Setup general	Channel A	active
Channel selection	Channel B	not active
Channel A: Room 1	Channel C	not active
Basic setting	Channel D	not active
Controller	Channel E	not active
Output	Channel F	not active
Scenes	Channel G	not active
	Channel H	not active

Basic setting:

Controller type -> integrated controller

1.3.10 AKH-0800.03 Heating Actuator 8-fold, 4SU MDRC, 24/230VAC > Channel A: Room 1 > Basic setting		
Setup general	Description of channel/objects	Room 1
Channel selection	Additional text	
- Channel A: Room 1	Controller type	integrated controller
Basic setting	Standalone system	<input checked="" type="radio"/> not active <input type="radio"/> active
Controller	Operating mode	Heating
Output	Setpoint	<input checked="" type="radio"/> continuous PI control <input type="radio"/> 2-step control (switching)
+ Scenes	Heating system	Underfloor Heating (4K / 150min)
	Additional level	<input checked="" type="radio"/> not active <input type="radio"/> active

Controller:

We recommend the use of independent setpoints. The maximum setpoint shift is 5 K and the step range is 0.5 K per keystroke.

1.3.10 AKH-0800.03 Heating Actuator 8-fold, 4SU MDRC, 24/230VAC > Channel A: Room 1 > Controller		
Setup general	Priority	<input checked="" type="radio"/> Frost(Heating) protection/Comfort/Night/Stan... <input type="radio"/> Frost(Heating) protection/Night/Comfort/Stan...
Channel selection	Setpoints for Standby/Night	<input checked="" type="radio"/> independent setpoints <input type="radio"/> dependent of sepoint comfort (basic)
- Channel A: Room 1	Setpoint Comfort (Basic)	21 °C
Basic setting	Setpoint Standby	19 °C
Controller	Setpoint Night	18 °C
Output	Setpoint Frost protection setting	<input checked="" type="radio"/> global <input type="radio"/> individual
+ Scenes	Separate objects for setpoints Comfort/Standby/Night/Frost protection	not active
	Maximum setpoint shift	5 K
	Set point shift over 1Bit/1Byte object	1Bit
	Step range	0,5 K

Group addresses:

The following figure shows the linking of the group addresses for the setpoint shift via 2 byte (temperature difference):

Number	Name	Object Function	Description	Group	Length	C	R	W	T	U	Data Type
1.3.10 AKH-0800.03 Heating Actuator 8-fold, 4SU MDRC, 24/230VAC											
1	Channel A: Room 1	Receive temperature value	current temperature	0/0/9	2 bytes	C	-	W	T	U	temperature (°C)
2	Channel A: Room 1	Preset setpoint			2 bytes	C	-	W	-	-	temperature (°C)
8	Channel A: Room 1	Send current setpoint	current setpoint	0/0/11	2 bytes	C	R	-	T	-	temperature (°C)
9	Channel A: Room 1	Manual setpoint shift (2byte)	setpoint shift	0/0/10	2 bytes	C	-	W	-	-	temperature difference (K)
10	Channel A: Room 1	Manual setpoint shift (1=+ / 0=-)			1 bit	C	-	W	-	-	step
12	Channel A: Room 1	Control value Heating: Send status			1 byte	C	R	-	T	-	percentage (0..100%)
15	Channel A: Room 1	Send valve state			1 bit	C	R	-	T	-	state
17	Channel A: Room 1	Mode selection			1 byte	C	-	W	-	-	HVAC mode
19	Channel A: Room 1	Switch Comfort operating mode			1 bit	C	-	W	-	-	switch
20	Channel A: Room 1	Switch Night operating mode			1 bit	C	-	W	-	-	switch
21	Channel A: Room 1	Switch Frost protection operating...			1 bit	C	-	W	-	-	switch
22	Channel A: Room 1	DPT_HVAC Mode: Send controle...			1 byte	C	R	-	T	-	HVAC mode
28	Channel A: Room 1	Diagnosis status	diagnostics	0/0/12	14 bytes	C	R	-	T	-	Character String (ISO 8859-1)
35	Channel A: Room 1	Fault in case of mains failure / sh...			1 bit	C	R	-	T	-	alarm
321	Summer = 1 / Winter = 0	Switchover			1 bit	C	-	W	T	U	switch
327	Fault	At power failure/short circuit			1 bit	C	R	-	T	-	alarm
332	Scene	Activate			1 byte	C	-	W	-	-	scene number
334	Lead value (Outside temper...)	Receive measured value			2 bytes	C	-	W	T	U	temperature (°C)
1.3.11 BE-GT2Tx.01 Glas Push Button II Smart with temperature sensor											
0	PB1/2: setpoint shift	Setpoint shift (2Byte)	setpoint shift	0/0/10	2 bytes	C	-	-	T	-	temperature difference (K)
2	PB1/2: setpoint shift	State current setpoint	current setpoint	0/0/11	2 bytes	C	-	W	T	U	temperature (°C)
3	PB1/2: setpoint shift	State setpoint shift	setpoint shift	0/0/10	2 bytes	C	-	W	T	U	temperature difference (K)
106	Day / Night	Day = 1 / Night = 0			1 bit	C	-	W	T	U	boolean
107	Presence	Input			1 bit	C	-	W	T	U	switch
108	Temperature measured value	Output	current temperature	0/0/9	2 bytes	C	R	-	T	-	temperature (°C)
112	Time	Receive current value			3 bytes	C	-	W	T	U	time of day
114	Time/Date	Receive current values			8 bytes	C	-	W	T	U	date time
119	Message text (lowest priority)	Input			14 bytes	C	-	W	T	U	Character String (ASCII)
120	State text 1	Input			14 bytes	C	-	W	T	U	Character String (ASCII)
121	State text 2	Input			14 bytes	C	-	W	T	U	Character String (ASCII)
126	Push button operation	Output			1 bit	C	R	-	T	-	state

Solution example 4: Setpoint shift via 2 byte (absolute value)

Settings on Glass Push Button II Smart with temperature sensor:

- Push button functions -> two-button function

1.4.11 BE-GT2Tx.01 Glas Push Button II Smart with temperature sensor > Operation / Display > Push button functions


Hardware selection	Display mode	<input checked="" type="radio"/> 6 functions / 1-2 levels <input type="radio"/> 4 functions / 1-3 levels
Operation / Display	2. level / 12 functions	<input checked="" type="radio"/> not active <input type="radio"/> active
General settings	Level 1 (Push buttons 1/2 top, push buttons 3/4 central, push buttons 5/6 bottom)	
Display setting	Push button 1/2 (left, right)	two-button function
Information screen	Push buttons 3/4 (left, right)	not active
Push button functions	Push buttons 5/6 (left, right)	not active
PB1/2: setpoint shift	Slap / Cleaning function	<input checked="" type="radio"/> not active <input type="radio"/> active
+ Status LED	Reaction time at the push of button	fast
+ Logic	Time for long push of button	0,4 s

- Two-button function -> temperature shift

- Temperature shift -> 2Byte shift of basis comfort setpoint value

1.4.11 BE-GT2Tx.01 Glas Push Button II Smart with temperature sensor > Operation / Display > PB1/2: setpoint shift

Hardware selection	Description of objects	setpoint shift
Operation / Display	Two-button function	temperature shift
General settings	Temperature shift	2Byte shift of basis comfort setpoint value
Display setting	Use internal temperature	<input type="radio"/> not active <input checked="" type="radio"/> active
Information screen	With left push button move down and with right push button move up	
Push button functions	Step width	0.5 K
PB1/2: setpoint shift	Lower limit	16 °C
+ Status LED	Upper limit	26 °C
+ Logic	Repeated sending at pressed key	<input checked="" type="radio"/> not active <input type="radio"/> active
+ Temperature measurement	Switchover considers status object	<input checked="" type="radio"/> yes <input type="radio"/> no
	Function name	over text input
	Text	
	Color of symbol	red



- Send measurement value at change -> 0,2 °C
- Send measurement value cyclically -> 10 min.

1.4.11 BE-GT2Tx.01 Glas Push Button II Smart with temperature sensor > Temperature measurement > Basic setting

Hardware selection	Temperature measurement <input type="radio"/> not active <input checked="" type="radio"/> active
Operation / Display	Send measurement value at change 0,2 °C
General settings	Send measurement value cyclically 10 min
Display setting	Sensor internal/external internal 100%
Information screen	Adjustment value for internal temperature 0 x0,1 K
Push button functions	Temperature for upper message value not active
PB1/2: setpoint shift	Temperature for lower message value not active
Status LED	
Logic	
Temperature measurement	
Basic setting	

Settings on Heating Actuator:

Activate the desired channel in the channel selection:

1.4.10 AKH-0800.03 Heating Actuator 8-fold, 4SU MDRC, 24/230VAC > Channel selection

Setup general	Channel A active
Channel selection	Channel B not active
Channel A: Room 1	Channel C not active
Scenes	Channel D not active
	Channel E not active
	Channel F not active
	Channel G not active
	Channel H not active

Basic setting:

Controller type -> integrated controller

1.4.10 AKH-0800.03 Heating Actuator 8-fold, 4SU MDRC, 24/230VAC > Channel A: Room 1 > Basic setting

Setup general	Description of channel/objects	Room 1
Channel selection	Additional text	
- Channel A: Room 1	Controller type	integrated controller
Basic setting	Standalone system	<input checked="" type="radio"/> not active <input type="radio"/> active
Controller	Operating mode	Heating
Output	Setpoint	<input checked="" type="radio"/> continuous PI control <input type="radio"/> 2-step control (switching)
+ Scenes	Heating system	Underfloor Heating (4K / 150min)
	Additional level	<input checked="" type="radio"/> not active <input type="radio"/> active

Controller:

We recommend the use of independent setpoints. The maximum setpoint shift is 5 K and the step range is 0.5 K per keystroke.

1.4.10 AKH-0800.03 Heating Actuator 8-fold, 4SU MDRC, 24/230VAC > Channel A: Room 1 > Controller

Setup general	Priority	<input checked="" type="radio"/> Frost(Heating) protection/Comfort/Night/Stan... <input type="radio"/> Frost(Heating) protection/Night/Comfort/Stan...
Channel selection	Setpoints for Standby/Night	<input checked="" type="radio"/> independent setpoints <input type="radio"/> dependent of sepoint comfort (basic)
- Channel A: Room 1	Setpoint Comfort (Basic)	21 °C
Basic setting	Setpoint Standby	19 °C
Controller	Setpoint Night	18 °C
Output	Setpoint Frost protection setting	<input checked="" type="radio"/> global <input type="radio"/> individual
+ Scenes	Separate objects for setpoints Comfort/Standby/Night/Frost protection	not active
	Maximum setpoint shift	5 K
	Set point shift over 1Bit/1Byte object	18bit
	Step range	0,5 K

Group addresses:

The following figure shows the linking of the group addresses for the setpoint shift via 2 byte (temperature integer):

Number	Name	Object Function	Description	Group	Length	C	R	W	T	U	Data Type
1.4.10 AKH-0800.03 Heating Actuator 8-fold, 4SU MDRC, 24/230VAC											
1	Channel A: Room 1	Receive temperature value	current temperature	0/0/13	2 bytes	C	-	W	T	U	temperature (°C)
2	Channel A: Room 1	Preset setpoint	setpoint value	0/0/14	2 bytes	C	-	W	-	-	temperature (°C)
8	Channel A: Room 1	Send current setpoint	current setpoint	0/0/15	2 bytes	C	R	-	T	-	temperature (°C)
9	Channel A: Room 1	Manual setpoint shift (2byte)			2 bytes	C	-	W	-	-	temperature difference (K)
10	Channel A: Room 1	Manual setpoint shift (1=+ / 0=-)			1 bit	C	-	W	-	-	step
12	Channel A: Room 1	Control value Heating: Send status			1 byte	C	R	-	T	-	percentage (0..100%)
15	Channel A: Room 1	Send valve state			1 bit	C	R	-	T	-	state
17	Channel A: Room 1	Mode selection			1 byte	C	-	W	-	-	HVAC mode
19	Channel A: Room 1	Switch Comfort operating mode			1 bit	C	-	W	-	-	switch
20	Channel A: Room 1	Switch Night operating mode			1 bit	C	-	W	-	-	switch
21	Channel A: Room 1	Switch Frost protection operating...			1 bit	C	-	W	-	-	switch
22	Channel A: Room 1	DPT_HVAC Mode: Send controle...			1 byte	C	R	-	T	-	HVAC mode
28	Channel A: Room 1	Diagnosis status	diagnostics	0/0/16	14 bytes	C	R	-	T	-	Character String (ISO 8859-1)
35	Channel A: Room 1	Fault in case of mains failure / sh...			1 bit	C	R	-	T	-	alarm
321	Summer = 1 / Winter = 0	Switchover			1 bit	C	-	W	T	U	switch
327	Fault	At power failure/short circuit			1 bit	C	R	-	T	-	alarm
332	Scene	Activate			1 byte	C	-	W	-	-	scene number
334	Lead value (Outside temper...)	Receive measured value			2 bytes	C	-	W	T	U	temperature (°C)
1.4.11 BE-GT2Tx.01 Glas Push Button II Smart with temperature sensor											
0	PB1/2: setpoint shift	Basis comfort setpoint	setpoint value	0/0/14	2 bytes	C	-	-	T	-	temperature (°C)
2	PB1/2: setpoint shift	State current setpoint	current setpoint	0/0/15	2 bytes	C	-	W	T	U	temperature (°C)
3	PB1/2: setpoint shift	State basis comfort setpoint	current setpoint	0/0/15	2 bytes	C	-	W	T	U	temperature (°C)
106	Day / Night	Day = 1 / Night = 0			1 bit	C	-	W	T	U	boolean
107	Presence	Input			1 bit	C	-	W	T	U	switch
108	Temperature measured value	Output	current temperature	0/0/13	2 bytes	C	R	-	T	-	temperature (°C)
112	Time	Receive current value			3 bytes	C	-	W	T	U	time of day
114	Time/Date	Receive current values			8 bytes	C	-	W	T	U	date time
119	Message text (lowest priority)	Input			14 bytes	C	-	W	T	U	Character String (ASCII)
120	State text 1	Input			14 bytes	C	-	W	T	U	Character String (ASCII)
121	State text 2	Input			14 bytes	C	-	W	T	U	Character String (ASCII)
126	Push button operation	Output			1 bit	C	R	-	T	-	state

Additional function:





Operating mode selection:

Settings on *Glass Push Button II Smart* with temperature sensor:

1.5.11 BE-GT2Tx.01 Glas Push Button II Smart with temperature sensor > Operation / Display > Push button functions

Hardware selection	Display mode	<input checked="" type="radio"/> 6 functions / 1-2 levels <input type="radio"/> 4 functions / 1-3 levels
Operation / Display	2. level / 12 functions	<input checked="" type="radio"/> not active <input type="radio"/> active
General settings	Level 1 (Push buttons 1/2 top, push buttons 3/4 central, push buttons 5/6 bottom)	
Display setting	Push button 1/2 (left, right)	two-button function
Information screen	Push buttons 3/4 (left, right)	single-button function
Push button functions	Push buttons 5/6 (left, right)	not active

1.5.11 BE-GT2Tx.01 Glas Push Button II Smart with temperature sensor > Operation / Display > PB3: operating mode

Hardware selection	Description of objects	operating mode
Operation / Display	Single-button function	mode selection
General settings	Switching values	Comfort / Standby / Night
Display setting	Long keypress	<input checked="" type="radio"/> not active <input type="radio"/> active
Information screen	Switchover considers status object	<input checked="" type="radio"/> yes <input type="radio"/> no
Push button functions	Function name	over text input
PB1/2: setpoint shift	Text	
PB3: operating mode	Color of symbol for comfort mode	foreground color
PB4: Push button 4		
+ Status LED	Color of symbol for standby mode	foreground color
+ Logic		
+ Temperature measurement	Color of symbol for night mode	foreground color
		
	Color of symbol for frost protection mode	foreground color
		
	Status display	HVAC-Mode
	Blocking Object	<input checked="" type="radio"/> not active <input type="radio"/> active

Group addresses:

The following are the required links between the *Glass Push Button II Smart* and the Heating Actuator AKH-0x00.03, based on solution example 1.

Number	Name	Object Function	Description	Group	Length	C	R	W	T	U	Data Type
1.5.10	AKH-0800.03 Heating Actuator	8-fold, 4SU MDRC, 24/230VAC									
11	Channel A: Room 1	Receive temperature value	current temperature	0/0/1	2 bytes	C	-	W	T	U	temperature (°C)
12	Channel A: Room 1	Preset setpoint			2 bytes	C	-	W	-	-	temperature (°C)
18	Channel A: Room 1	Send current setpoint	current setpoint	0/0/3	2 bytes	C	R	-	T	-	temperature (°C)
19	Channel A: Room 1	Manual setpoint shift (2byte)			2 bytes	C	-	W	-	-	temperature difference (K)
10	Channel A: Room 1	Manual setpoint shift (1=+ / 0...)	setpoint shift	0/0/2	1 bit	C	-	W	-	-	step
12	Channel A: Room 1	Control value Heating: Send st...			1 byte	C	R	-	T	-	percentage (0..100%)
14	Channel A: Room 1	Control value > 0%: send status	control value > 0 %	0/0/19	1 bit	C	R	-	T	-	state
17	Channel A: Room 1	Mode selection	operating mode selection	0/0/17	1 byte	C	-	W	-	-	HVAC mode
19	Channel A: Room 1	Switch Comfort operating mode			1 bit	C	-	W	-	-	switch
20	Channel A: Room 1	Switch Night operating mode			1 bit	C	-	W	-	-	switch
21	Channel A: Room 1	Switch Frost protection operati...			1 bit	C	-	W	-	-	switch
22	Channel A: Room 1	DPT_HVAC Mode: Send contro...	operating mode status	0/0/18	1 byte	C	R	-	T	-	HVAC mode
28	Channel A: Room 1	Diagnostis status	diagnostics	0/0/4	14 bytes	C	R	-	T	-	Character String (ISO 8859-1)
35	Channel A: Room 1	Fault in case of mains failure /...			1 bit	C	R	-	T	-	alarm
321	Summer = 1 / Winter = 0	Switchover			1 bit	C	-	W	T	U	switch
327	Fault	At power failure/short circuit			1 bit	C	R	-	T	-	alarm
332	Scene	Activate			1 byte	C	-	W	-	-	scene number
334	Lead value (Outside temper...)	Receive measured value			2 bytes	C	-	W	T	U	temperature (°C)
1.5.11	BE-GT2Tx.01 Glas Push Button II Smart with temperature sensor										
10	PB1/2: setpoint shift	Setpoint shift (1Bit)	setpoint shift	0/0/2	1 bit	C	-	-	T	-	step
12	PB1/2: setpoint shift	State current setpoint	current setpoint	0/0/3	2 bytes	C	-	W	T	U	temperature (°C)
10	PB3: operating mode	Mode selection (HVAC-Mode)	operating mode selection	0/0/17	1 byte	C	-	-	T	-	HVAC mode
11	PB3: operating mode	State HVAC-Mode	operating mode status	0/0/18	1 byte	C	-	W	T	U	HVAC mode
15	PB4: Push button 4	Toggle			1 bit	C	-	-	T	-	switch
16	PB4: Push button 4	Value for toggle			1 bit	C	-	W	T	U	switch
77	LED 1	Switch	control value > 0 %	0/0/19	1 bit	C	-	W	T	U	switch
78	LED 2	Switch	control value > 0 %	0/0/19	1 bit	C	-	W	T	U	switch
106	Day / Night	Day = 1 / Night = 0			1 bit	C	-	W	T	U	boolean
107	Presence	Input			1 bit	C	-	W	T	U	switch
108	Temperature measured value	Output	current temperature	0/0/1	2 bytes	C	R	-	T	-	temperature (°C)
112	Time	Receive current value			3 bytes	C	-	W	T	U	time of day
114	Time/Date	Receive current values			8 bytes	C	-	W	T	U	date time
119	Message text (lowest priority)	Input			14 bytes	C	-	W	T	U	Character String (ASCII)
120	State text 1	Input			14 bytes	C	-	W	T	U	Character String (ASCII)
121	State text 2	Input			14 bytes	C	-	W	T	U	Character String (ASCII)
126	Push button operation	Output			1 bit	C	R	-	T	-	state

Heating message via Glass Push Button II Smart LEDs:

It is possible to display a heating message via the LEDs of the *Glass Push Button II Smart*. If the control value is $> 0\%$, the LEDs around the setpoint shift function should light up red for example.

Settings on Glass Push Button II Smart with temperature sensor:

1.5.11 BE-GT2Tx.01 Glas Push Button II Smart with temperature sensor > Status LED > ...

Hardware selection	LED active	<input type="radio"/> no <input checked="" type="radio"/> yes
+ Operation / Display	LED reacts to:	external object and buttons activation
- Status LED	Datapoint type	1Bit DPT 1.001 Switch
LED basic setting	LED display behavior	
LED 1 (top left)	At day (value ON)	red
LED 2 (top right)	At day (value OFF)	black
LED 3 (middle left)	Behavior at day (value ON)	<input checked="" type="radio"/> permanent <input type="radio"/> blinking
LED 4 (middle right)	At night (value ON)	red
LED 5 (bottom left)	At night (value OFF)	black
LED 6 (bottom right)	Behavior at night (value ON)	<input checked="" type="radio"/> permanent <input type="radio"/> blinking
LED A (top left, standby in the...)	Object for priority	not active
LED B (top right, standby in th...)		

Settings on Heating Actuator:

1.5.10 AKH-0800.03 Heating Actuator 8-fold, 4SU MDRC, 24/230VAC > Channel A: Room 1 > Output

Setup general	Valve type	<input checked="" type="radio"/> not energized closed <input type="radio"/> not energized opened
Channel selection	PWM cycle time	10 min
- Channel A: Room 1	Minimum limitation of control value	0%
Basic setting	Maximum limitation of control value during Heating	100%
Controller	Limitation over object	not active
Output	Control value at lower deviation of minimum limitation	<input checked="" type="radio"/> 0% = 0% otherwise use minimum set value limitation <input type="radio"/> 0% = minimum set value
+ Scenes	Send control value cyclically	5 min
	Object valve state	<input type="radio"/> actual valve state (1=closed, 0=opened) <input checked="" type="radio"/> 1 if control value $> 0\%$

Group addresses:

The following are the required links between the *Glass Push Button II Smart* and the Heating Actuator AKH-0x00.03, based on solution example 1.

Number	Name	Object Function	Description	Group	Length	C	R	W	T	U	Data Type
1.5.10	AKH-0800.03 Heating Actuator	8-fold, 4SU MDRC, 24/230VAC									
11	Channel A: Room 1	Receive temperature value	current temperature	0/0/1	2 bytes	C	-	W	T	U	temperature (°C)
12	Channel A: Room 1	Preset setpoint			2 bytes	C	-	W	-	-	temperature (°C)
18	Channel A: Room 1	Send current setpoint	current setpoint	0/0/3	2 bytes	C	R	-	T	-	temperature (°C)
19	Channel A: Room 1	Manual setpoint shift (2byte)			2 bytes	C	-	W	-	-	temperature difference (K)
10	Channel A: Room 1	Manual setpoint shift (1=+ / 0...)	setpoint shift	0/0/2	1 bit	C	-	W	-	-	step
12	Channel A: Room 1	Control value Heating: Send st...			1 byte	C	R	-	T	-	percentage (0..100%)
14	Channel A: Room 1	Control value > 0%: send status	control value > 0 %	0/0/19	1 bit	C	R	-	T	-	state
17	Channel A: Room 1	Mode selection	operating mode selection	0/0/17	1 byte	C	-	W	-	-	HVAC mode
19	Channel A: Room 1	Switch Comfort operating mode			1 bit	C	-	W	-	-	switch
20	Channel A: Room 1	Switch Night operating mode			1 bit	C	-	W	-	-	switch
21	Channel A: Room 1	Switch Frost protection operati...			1 bit	C	-	W	-	-	switch
22	Channel A: Room 1	DPT_HVAC Mode: Send contro...	operating mode status	0/0/18	1 byte	C	R	-	T	-	HVAC mode
28	Channel A: Room 1	Diagnostis status	diagnostics	0/0/4	14 bytes	C	R	-	T	-	Character String (ISO 8859-1)
35	Channel A: Room 1	Fault in case of mains failure /...			1 bit	C	R	-	T	-	alarm
321	Summer = 1 / Winter = 0	Switchover			1 bit	C	-	W	T	U	switch
327	Fault	At power failure/short circuit			1 bit	C	R	-	T	-	alarm
332	Scene	Activate			1 byte	C	-	W	-	-	scene number
334	Lead value (Outside temper...	Receive measured value			2 bytes	C	-	W	T	U	temperature (°C)
1.5.11	BE-GT2Tx.01 Glas Push Button II Smart with temperature sensor										
0	PB1/2: setpoint shift	Setpoint shift (1Bit)	setpoint shift	0/0/2	1 bit	C	-	-	T	-	step
2	PB1/2: setpoint shift	State current setpoint	current setpoint	0/0/3	2 bytes	C	-	W	T	U	temperature (°C)
10	PB3: operating mode	Mode selection (HVAC-Mode)	operating mode selection	0/0/17	1 byte	C	-	-	T	-	HVAC mode
11	PB3: operating mode	State HVAC-Mode	operating mode status	0/0/18	1 byte	C	-	W	T	U	HVAC mode
15	PB4: Push button 4	Toggle			1 bit	C	-	-	T	-	switch
16	PB4: Push button 4	Value for toggle			1 bit	C	-	W	T	U	switch
77	LED 1	Switch	control value > 0 %	0/0/19	1 bit	C	-	W	T	U	switch
78	LED 2	Switch	control value > 0 %	0/0/19	1 bit	C	-	W	T	U	switch
106	Day / Night	Day = 1 / Night = 0			1 bit	C	-	W	T	U	boolean
107	Presence	Input			1 bit	C	-	W	T	U	switch
108	Temperature measured value	Output	current temperature	0/0/1	2 bytes	C	R	-	T	-	temperature (°C)
112	Time	Receive current value			3 bytes	C	-	W	T	U	time of day
114	Time/Date	Receive current values			8 bytes	C	-	W	T	U	date time
119	Message text (lowest priority)	Input			14 bytes	C	-	W	T	U	Character String (ASCII)
120	State text 1	Input			14 bytes	C	-	W	T	U	Character String (ASCII)
121	State text 2	Input			14 bytes	C	-	W	T	U	Character String (ASCII)
126	Push button operation	Output			1 bit	C	R	-	T	-	state