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ALL SPECIFICATIONS AT A GLANCE

Technical data of the wireless actuators, teach-in list, operating distances and contents of Eltako Wireless telegrams

The Eltako wireless sytem works with the reliable and worldwide standardized EnOcean wireless technology in 868 MHz.
It transmits ultra short and interference-proof signals with a range of up to 100 meters in halls.
Eltako wireless pushbuttons reduce the electrosmog load since they emit high-frequency waves that are 100 times weaker than conventional light switches. There is also a significant reduction in low-frequency alternating fields since fewer power cables need to be installed in the building.

TECHNICAL DATA – SWITCHING ACTUATORS AND DIMMING ACTUATORS FOR THE ELTAKO RS485 BUS

Type	F4HK14 FHK14 FSB14 FSR14-4x	FUD14 FUD14/800W [7]	FSG14/1-10V [b]	F2L14[b] F4SR14-LED FMS14, FMZ14 FSR14-2x[b] FTN14[b]	FSR14SSR
Contacts					
Contact material/contact gap	$AgSnO_2$/0.5 mm	Power MOSFET	$AgSnO_2$/0.5 mm	$AgSnO_2$/0.5 mm	Opto-Triac
Test voltage control connections/contact	–	–	–	2000 V	4000 V
Rated switching capacity each contact	4 A/250 V AC	–	600 VA [5]	16 A/250 V AC; FMZ14: 10 A/250 V AC F4SR14: 8 A/250 V AC	up to 400 W [6]
incandescent lamps and halogen lamp load 230 V [2]	1000 W I on ≤ 10 A/10 ms	up to 400 W; FUD14/800 W: up to 800 W [1][3][4]	–	2000 W F4SR14: 1800 W I on ≤ 70 A/10 ms	up to 400 W [6]
Fluorescent lamp load with KVG* in lead-lag circuit or non compensated	500 VA	–	–	1000 VA	–
Fluorescent lamp load with KVG* shunt-compensated or with EVG*	250 VA, I on ≤ 10 A/10 ms	–	600 VA [5]	500 VA	up to 400 VA [6]
Compact fluorescent lamps with EVG* and energy saving lamps ESL	up to 200 W [9]	up to 400 W [9][1]	–	up to 400 W [9]	up to 400 W [6][9]
Inductive load cos φ = 0,6/230 V AC inrush current ≤ 35 A	650 W [8]	–	–	650 W [8]	–
230 V LED lamps	up to 200 W [9]	up to 400 W [9][1]	–	up to 400 W [9]	up to 400 W [6][9]
Max. switching current DC1: 12 V/24 V DC	4 A	–	–	8 A (not FTN14 and FZK14)	–
Life at rated load, cos φ = 1 or for incandescent lamps 500 W at 100/h	$>10^5$	–	$>10^5$	$>10^5$	∞
Service life at rated load, cos φ = 0,6 at 100/h	$>4x10^4$	–	$>4x10^4$	$>4x10^4$	∞
Max. operating cyles	10^3/h	–	10^3/h	10^3/h	10^3/h
Maximum conductor cross-section (3-fold terminal)	6 mm^2 (4 mm^2)	6 mm^2 (4 mm^2)	6 mm^2 (4 mm^2)	6 mm^2 (4 mm^2)	6 mm^2
Two conductors of same cross-section (3-fold terminal)	2.5 mm^2 (1.5 mm^2)	2.5 mm^2 (1.5 mm^2)	2.5 mm^2 (1.5 mm^2)	2.5 mm^2 (1.5 mm^2)	2.5 mm^2 (1.5 mm^2)
Screw head	slotted/crosshead, pozidriv	slotted/crosshead, pozidriv	slotted/crosshead, pozidriv	slotted/crosshead, pozidriv	slotted/cross- head, pozidriv
Type of enclosure/terminals	IP50/IP20	IP50/IP20	IP50/IP20	IP50/IP20	IP50/IP20
Electronics					
Time on	100%	100%	100%	100%	100%
Max./min. temperature at mounting location	+50°C/-20°C	+50°C/-20°C	+50°C/-20°C	+50°C/-20°C	+50°C/-20°C
Standby loss (active power)	0.1 W	0.3 W	0.9 W	0.05-0.5 W	0.1 W
Local control current at 230 V control input	–	–	–	5 mA	–
Max. parallel capacitance (approx. length) of local control lead at 230 V AC	–	–	–	FTN14: 0.3 μF (1000 m)	–

* EVG = electronic ballast units; KVG = conventional ballast units
[b] Bistable relay as relay contact. After installation, wait for short automatic synchronisation before teaching-in the wireless pushbuttons.
[1] If the load exceeds 200 W, a ventilation clearance of 1/2 pitch unit to adjacent devices must be maintained.
[2] Applies to lamps of max. 150 W.
[3] Per dimmer or capacity enhancer it is only allowed to use max. 2 inductive (wound) transformers of the same type, **furthermore no-load operation on the secondary part is not permitted. The dimmer might be destroyed.** Therefore do not permit load breaking on the secondary part. Operation in parallel of inductive (wound) and capacative (electronic) transformers is not permitted!
[4] When calculating the load a loss of 20% for inductive (wound) transformers and a loss of 5% for capacitive (electronic) transformers must be considered in addition to the lamp load.
[5] Fluorescent lamps or LV halogen lamps with electronic ballast.
[6] Applies to one contact and the sum of both contacts.
[7] Capacity increase for all dimmable lamp types with Capacity Enhancer FLUD14.
[8] All actuators with 2 contacts: Inductive load cos φ = 0.6 as sum of both contacts 1000 W max.
[9] Generally applies to energy saving lamps (ESL) and 230 V LED lamps. Due to different lamp electronics, switch on/off problems and a restriction in the maximum number of lamps, however, the dimming ranges may be limited depending on the manufacturer; in particular when the connected load is very low (e.g. with 5 W LEDs). The dimmer switch comfort settings EC1, EC2, LC1, LC2 and LC3 optimise the dimming range, however, the maximum power is then only up to 100 W. In these comfort settings, no inductive (wound) transformers may be dimmed.

The second terminating resistor has to be plugged to the last actuator included in the FAM14 respectively FSNT14 scope of supply.
Eltako Wireless is based on the EnOcean wireless standard for 868 MHz, frequency 868.3 MHz, data rate 125 kbps, modulation mode ASK, max. transmit power 7 dBm (<10 mW).

To comply with DIN VDE 0100-443 and DIN VDE 0100-534, a Type 2 or Type 3 surge protection device (SPD) must be installed.

Compliance with: EN 61000-6-3, EN 61000-6-1 and EN 60669

Type	**FSUD FUD61NP FUD61NPN**	**FUD70S FUD71 FUD71L**	**FKLD61[a] FLD61[a] FRGBW71L[a] FWWKW71L[a]**	**FDH62, FHK61, FLC61, FMS61, FMZ61, FSHA, FSR61, FSR61LN, FSR70S, FSR71, FSSA, FSSG, FSVA, FTN61**	**FSG71/1-10V**	**FHK61SSR FSR61G**	**FSB61 FSB71 FSR71NP-4x**
Contacts							
Contact material/contact gap	Power MOSFET	Power MOSFET	Power MOSFET	$AgSnO_2$/0.5 mm [b]	$AgSnO_2$/0.5 mm [b]	Opto Triac	$AgSnO_2$/0.5 mm [b]
Spacing of control connections/contact	–	–	6 mm	3 mm	–	–	3 mm
Test voltage control connections/contact	–	–	–	2000 V	–	–	2000 V
Rated switching capacity each contact	–	–	–	10 A/250 V AC FSR71: 16 A/250 V AC	600 VA [4]	–	4 A/250 V AC
Incandescent lamp and halogen lamp load [1] 230 V, I on ≤ 70 A/10 ms	up to 300W [2]	up to 400 W [2] FUD71L: up to 1200 W [2]	–	2000 W	–	up to 400 W	1000 W
Fluorescent lamp load with KVG* in lead-lag circuit or non compensated	–		–	1000 VA	–	–	500 VA
Fluorescent lamp load with KVG* shunt-compensated or with EVG*	–	–	–	500 VA	600 VA [4]	up to 400 VA	250 VA
Compact fluorescent lamps with EVG* and energy saving lamps	up to 300 W [3] (not FUD61NP)	up to 400 W [3] FUD71L: up to 1200 W [3]	–	up to 400 W [3]	–	up to 400 W [3]	up to 200 W [3]
Inductive laod cos φ = 0.6/230 V AC inrush current ≤ 35 A	–	–	–	650 W [5]	–	–	650 W [5]
Dimmable 230 V LED lamps	up to 300 W [3] (not FUD61NP)	up to 400 W [3] FUD71L: up to 1200 W [3]	–	up to 400 W [3] I on ≤ 120 A/5 ms	–	up to 400 W [3] I on ≤ 120 A/20 ms	up to 200 W [3] I on ≤ 10 A/ 10 ms
Dimmable LED lamps 12-36 V DC	–	–	FLD61: 4 A FKLD61: 30 W FRGBW71L: 4x2 A FWWKW71L: 2x4 A	–	–	–	–
Max. switching current DC1: 12 V/24 V DC	–	–	–	8 A (not NP, FSHA, FSSA, FSVA, 70, 71)	–	–	–
Service life at rated load, cos φ = 1 or incandescent lamps 500 W at 100/h	–	–	–	$> 10^5$	$> 10^5$	∞	$> 10^5$
Service life at rated load, cos φ = 0.6 at 100/h	–	–	–	$> 4x10^4$	$> 4x10^4$	–	$> 4x10^4$
Max. operating cyles	–	–	–	10^3/h	10^3/h	10^3/h	10^3/h
Maximum conductor cross-section	4 mm^2	4 mm^2	4 mm^2	4 mm^2	4 mm^2	4 mm^2	4 mm^2
Two conductors of same cross-section	1.5 mm^2	1.5 mm^2	1.5 mm^2	1.5 mm^2	1.5 mm^2	1.5 mm^2	1,5 mm^2
Screw head	slotted/cross-head	slotted/cross-head	slotted/cross-head	slotted/cross-head	slotted/cross-head	slotted/cross-head	slotted/cross-head
Type of enclosure/terminals	IP30/IP20	IP30/IP20	IP30/IP20	IP30/IP20	IP30/IP20	IP30/IP20	IP30/IP20
Electronics							
Time on	100%	100%	100%	100%	100%	100%	100%
Max./min. temperature at mounting location	+50°C/-20°C	+50°C/-20°C	+50°C/-20°C	+50°C/-20°C	+50°C/-20°C	+50°C/-20°C	+50°C/-20°C
Standby loss (active power)	0.7 W	0.6 W FUD71: 0.7 W	0.2-0.6 W	0.3 W-0.9 W	1.4 W	0.8 W	0.8 W
Control current universal control voltage 8/12/24/230 V (<5 s)	–	–	2/3/7/4(100) mA	–	–	–	–
Local control current at 230 V control input, only on Series 61	1 mA	–	–	3,5 mA; FSR61/8-24 V UC at 24 V DC: 0.2 mA	–	3.5 mA	3.5 mA
Max. parallel capacitance (approx. length) of local control lead at 230 V AC	0.06 µF (200 m)	–	0.3 µF (1000 m)	3 nF (10 m)	–	3 nF (10 m)	3 nF (10 m)

[a] Secondary cable length with a maximum of 2m. [b] Bistable relay as relay contact. After installation, wait for short automatic synchronisation before teaching-in the wireless pushbuttons. [1] Applies to lamps of max. 150 W. [2] Also max. 2 induction transformers of the same type (L load) and electronic transformers (C load). [3] Generally applies to energy saving lamps (ESL) and 230 V LED lamps. Due to different lamp electronics, switch on/off problems and a restriction in the maximum number of lamps, however, the dimming ranges may be limited depending on the manufacturer; in particular when the connected load is very low (e.g. with 5 W LEDs). The dimmer switch comfort settings EC1, EC2, LC1, LC2 and LC3 optimise the dimming range, however, the maximum power is then only up to 100 W. In these comfort settings, no inductive (wound) transformers may be dimmed. [4] Fluorescent lamps or LV halogen lamps with electronic ballast. [5] All actuators with 2 contacts: Inductive load cos φ = 0.6 as sum of both contacts 1000 W max.
* EVG = electronic ballast units; KVG = conventional ballast units.

Eltako Wireless is based on the EnOcean wireless standard for 868 MHz, frequency 868.3 MHz, data rate 125 kbps, modulation mode ASK, max. transmit power 7 dBm (<10 mW).

To comply with DIN VDE 0100-443 and DIN VDE 0100-534, a Type 2 or Type 3 surge protection device (SPD) must be installed.

Compliance with: EN 61000-6-3, EN 61000-6-1 and EN 60 669

TEACH-IN LIST – WIRELESS SENSORS THAT CAN BE TAUGHT-IN IN WIRELESS ACTUATORS

Sensors **Actuators**	**Pushbuttons, handheld transmitters and remote controls** B4, F1, F2, F4, F4T65B, FF8, FFD, FFT55, FHS, FKD, FMH, FMT55, FSTAP, FT55, FTTB	**Trans-mitter modules** FASM60 FSM14 FSM60B FSM61 FSU… FTS14EM F4USM61B	**Card switch, pull switch and smoke alarm** FHMB FKF FRW FRWB FZS	**Window/ door contact** FFKB FFTE FPE FTK FTKB FTKE	**Window handle sensor and window/ door contact** FFG7B FTKB-hg	**Motion/ brightness sensors** FABH65S FB… FBH…	**Brightness sensors** FAH60 FAH60B FAH65S FHD60SB FIH65S	**Temperature controller/ sensors** FFT… FFT60SB FTF65S FTFB FTFSB FTR… FUTH…	**Air quality sensor** FLGTF	**Control from the Smart Home control unit SafeIV with software GFVS**
F2L14	X	X		X	X			X	X	
F4HK14	X	X		X	X	X [3]		X [1]	X [1]	X
F4SR14-LED	X	X	X	X	X	X	X			X
FAE14…	X	X		X	X	X [3]		X [1]	X [1]	X
FDG14	X	X		X		X				X [2]
FFR14	X	X								X
FHK14	X	X		X	X	X [3]		X [1]	X [1]	X
FMS14	X	X	X							X
FMZ14	X	X	X	X	X					X
FSB14	X	X		X	X		X			X [2]
FSG14/1-10V	X	X		X		X	X			X [2]
FSR14…	X	X	X	X	X	X	X			X
FTN14	X	X		X	X	X				X
FUD14…	X	X		X		X	X			X [2]
FZK14			X	X	X	X [3]				
FAC…	X			X	X	X		X [1]	X [1]	
FD62…	X	X				X				X
FDG71	X	X		X		X				X [2]
FFR61-230V	X	X								X
FGM	X	X	X	X		X [3]				X
FHD62NP	X	X		X	X					X [2]
FHK61	X	X		X	X	X [3]		X [1]		X [2]
FJ62…	X	X		X	X					X
FKLD61	X	X				X	X			X [2]
FL62…	X	X	X			X				X
FLC61NP-230V	X	X	X			X	X			X
FLD61	X	X				X	X			X [2]
FMS61NP-230V	X	X								X
FMZ61-230V	X	X	X	X						X
FR62…	X	X		X	X					X
FRGBW71L	X	X				X	X			X [2]
FSB61…	X	X		X	X		X			X [2]
FSB71…	X	X		X	X		X			X [2]
FSG71/1-10V	X	X		X						X [2]
FSHA-230V	X	X		X	X	X [3]		X [1]	X [1]	X [2]
FSR61…	X	X	X	X	X	X	X			X
FSR71…	X	X	X	X	X	X	X			X
FSR70S-230V	X	X	X			X [3]	X			X
FSSA-230V	X	X		X						X
FSUD-230V	X	X								X [2]
FSVA-230V	X	X		X						X
FTN61NP-230V	X	X		X	X	X				X
FUA12-230V	X	X	X	X	X	X	X			X
FUD61…	X	X				X	X			X [2]
FUD71	X	X		X		X	X			X [2]
FUD70S-230V	X	X								X [2]
FUTH…				X	X					
FWWKW71L	X	X				X	X			X [2]
FZK61NP-230V			X	X	X	X [3]				

[1]Only evaluation of temperature [2]Also controllable by activation telegrams from the GFVS software [3]Only motion detection

TEACH-IN SETTINGS OF LOWER ROTARY SWITCH FOR THE MOST CUSTOMARY DEVICES OF SERIES 61*

Type	**FMS61** from week 08/13	**FMZ61** from week 18/11	**FSB61** from week 39/12	**FSR61** from week 41/12	**FSR61** from week 11/14	**FTN61** from week 25/11	**FUD61NP** from week 38/12	**FUD61NPN** from week 40/12
Teaching-in function				Phase-out-model				
Universal pushbutton / toggle / switch over (On/Off)	UT1 = channel 1 UT2 = channel 2	(2)	2	60	80	Approx. middle	2	LC2
Universal pushbutton NC contact				120	120			
Direction pushbutton	RT1 = channel 1 RT2 = channel 2	1h	min		40		max	EC1
On / central ON resp. UP			3	∞	∞	20	3	LC3
Off / central OFF resp. DOWN		(1)	1	2	2	1	1	LC1
FTK as NC contact		0.5s	2	2	2	20		
FTK as NO contact		(3)		∞	∞	1		
FBH as motion detector					∞ (Slave)	20	max	EC1
FBH as motion detector with brightness sensor					2..120	1...20	min...3	AUTO...EC2
FAH as twilight sensor			min..max	2..120	2..120			AUTO...EC1
FSU or pushbutton as wake-up light								EC2
Wireless Visualisation and Control Software GFVS / LZ light scene	RT1 = GFVS RT2 = GFVS		max	6 = LZ	80 = GFVS 6 = LZ		min	AUTO

Additional information:

Clear all addresses:

Turn position CLR and the other rotary switches 3 times from centre to right. Centre-right-centre-right-centre-right.

Activate or deactivate feedback:

Turn position CLR and the other rotary switches 3 times from centre to left. Centre-left-centre-left-centre-left.

Activate or deactivate Repeater Level 1:

Switch off power, depress pushbutton connected to the pushbutton input and switch power back on.

*Printed date may deviate in case of earlier production date.

TEACH-IN SETTINGS OF UPPER ROTARY SWITCH FOR THE MOST CUSTOMARY DEVICES OF SERIES 14

Type	FAE14 FHK14	FMS14	FSB14	FSR14	FTN14	FUD14
Teaching-in function						
Universal pushbutton / toggle / switch over (On/Off)		3 channel 1+2 7 channel 1 8 channel 2	20 channel 1 40 channel 2	5 switch 10 relay	3	EC2
Direction pushbutton		5 channel 1+2 9 channel 1 10 channel 2	10 channel 1 30 channel 2	0		LC2
On / Central On		4	180 channel 1 200 channel 2	45	4	LC1
Off / Central Off		2		90	2	EC1
Sequential light scene pushbutton						LC3
4-way direct light scene pushbutton			180 channel 1 200 channel 2	30		LC4
Single light scene pushbutton						LC5
Staircase light switch					3	LC6
Wireless Visualisation and Control Software GFVS	4,5	9 channel 1 10 channel 2	180 channel 1 200 channel 2	0	2 off 4 on	PCT
FTK window/door contact			20 channel 1 40 channel 2	0	LC2 as NO contact LC3 as NC contact	LC2 as NO contact LC3 as NC contact
FAH brightness sensor			150 both channels	0-120		LC5 as switch LC6 as dimmer
FSU or pushbutton as wake-up light						AUTO
FBH as motion detector with brightness sensor	4,5			0-120	1....20	AUTO
Central control without priority			60 both channels	45 on 90 off		
Central control with priority, first signal starts priority, second signal stops it			90 both channels			
Central control with priority as long as signal is applied			120 both channels	15 on 20 off		
FTR temperature controller	4,5					

OPERATING DISTANCES BETWEEN SENSORS AND ACTUATORS.

Compared with hard-wired systems, EnOcean wireless systems are highly flexible and simple to install. The following instructions simplify installation. You will find detailed instructions on wireless network planning in the 12-page booklet "EnOcean Wireless Systems – Range planning Guide" that you can download from www.enocean.com.

1. Wireless signal range

Wireless signals are electromagnetic waves. The field strength at the receiver decreases the further the distance away from the transmitter. The wireless range is therefore limited.

Obstacles standing in the radio field the also shorten range compared with line-of-sight links:

OBSTACLE	REDUCED RANGE
Wood, plaster, glass uncoated, with no metal	0 – 10 %
Brick, particle board	5 – 35 %
Concrete with iron reinforcement bars	10 – 90 %
Metal, aluminium cladding	see 2.

The geometric shape of a room determines the radio range since propagation is not in the form of a beam but requires a certain volume of space (the radio beam from the transmitter and receiver ellipsoidal at their points of focus). Narrow corridors with solid walls are bad for propagation.
External antennas typically have better radio characteristics than flush-mounted receivers installed in walls. The type of fitted for the antennas and the spacing from ceilings, floors and walls all play a role.
People and obstacles in a room may reduce range.
It is therefore essential to integrated some reserve when performing range planning to ensure the reliable functioning of the wireless system even in poor conditions.

A sturdy, reliable installation in a building is achieved by integrating sufficient range reserves.
Recommendations from everyday practice:

RANGE	CONDITIONS
> 30 m	Under excellent conditions: Large free room, optimum antenna design and good antenna position.
> 20 m (planning safety)	If there are furniture and persons in the room, through up to 5 dry plasterboard walls or 2 brick/aerated concrete walls: For transmitters and receivers with good antenna design and good antenna position.
> 10 m (planning safety)	If there are furniture and persons in the room, through up to 5 plasterboard drywalls or 2 brick/aerated concrete walls: For receivers fitted in wall or in ceiling. Or small receiver with internal antenna. Or together with switch/wire antenna on/near metal. Or a narrow corridor.
Dependent on reinforcement and antenna design	Vertical through 1-2 ceilings

2. Partitioning

So-called radio shadows form behind metal surfaces, e.g. behind metal partition walls and metal ceilings, behind metal foils of heat insulation and solid reinforcement in concrete walls. Single thin metal strips have very little influence, for example the profile sections in a plasterboard drywall.

It has been observed that radio communications also works with metal room dividers. This occurs by reflections: metal and concrete walls reflect radio waves and they travel to neighbouring corridors or rooms through openings, e.g. in a wooden door or a glass partition. The range may be strongly reduced depending on the location. An additional repeater at a suitable location can easily offer alternative radio paths.

Important conditions that reduce radio range:

- Metal partition walls or hollow walls filled with insulation wool backed by metal foil
- Suspended ceilings with panels made of metal or carbon fibre
- Steel furniture or glass with metal coating
- Fitting the pushbutton on a metal wall (typical range loss: 30%)
- Use of metal pushbutton frames (typical range loss: 30%)

Firewalls, staircases and building services areas should be regarded as partitions.

A partition can be avoided by repositioning the transmitter/receiver antenna out of the radio shadow or by using a repeater.

OPERATING DISTANCES BETWEEN SENSORS AND ACTUATORS.

3. Penetration angle
The angle at which the transmitted signal impinges on the wall plays a special role. Signals should penetrate masonry as vertically as possible. Wall niches must be avoided.

4. Antenna installation
The receive antenna or a **receiver with an integrated antenna** should not be installed on the same side of the wall as the transmitter. It is better to install the antenna on adjacent or opposite walls. The antennas should be spaced from the room corner at a distance of >10 cm as far as possible.

The ideal installation location for the receive antenna is a central position in the room.

A **"magnet foot antenna"** (e.g. Eltako FA200 or FA250) must adhere on a metallic surface that is as large as possible in order to create a sufficient opposite pole. For example, the simplest installation can be on a ventilation pipe.

5. Spacings between receiver and other interference sources
The spacing between the receiver and other transmitters (e.g. GSM/DECT/Wireless LAN) and high-frequency interference sources (computer, audio and video systems) should be >50 cm.

Eltako transmitters, on the other hand, can be installed without any problem next to other transmitters and interference sources.

6. Use of repeaters
In case of problems with reception quality, it may be helpful to use a wireless repeater. The Eltako Repeater FRP61 (see chapter Z) requires no configuration, only a mains connection. If receives the wireless signal and passes it on. This almost doubles the range. Eltako repeaters are switchable to 2-level function and allow more than two repeaters to be cascaded.

7. Field strength measuring instrument
The wireless level meter Probare P10 (see chapter Z) helps to find the best position for transmitter and receiver.
Moreover, it can be used to test link interferences in installed devices and even identify an interfering transmitter.

8. Installation in residential buildings
Here there is no real necessity to overcome large radio links.
If necessary, a central wireless repeater can be installed to amplify the signal.

9. Installation in industrial buildings
To cover large premises, a wireless gateway is typically used as an automation bus (TCP/IP, EIB/KNX, LON, etc.). Planning with a range radius of 10-12 m offers sufficient security, even if there are the usual changes to the environmental conditions later.

Eltako

COMMUNICATION WITHIN ELTAKO WIRELESS BUILDING

All Eltako wireless sensors and Eltako wireless actuators communicate within the Eltako wireless network by means of wireless telegrams that are formatted using the world-wide standard of EnOcean Alliance. These are the EEPs as described below; some of them are partly modified to a certain extent. The feedback from the bidirectional actuators to confirm the switch position correspond to those of the PTM215 wireless modules but without the telegram sent when the button is released.

SENSOR TELEGRAMS

F1T65, F1FT65, F1T55E, FET55E, FKD, FMH1W, FNS55B, FNS55EB, FNS65EB, FPE-1 (EEP F6-01-01)

ORG = 0x05
Data_byte3 = push = 0x10, release = 0x00

F2T65, F2T65B, F2FT65, F2FT65B, F2ZT65, F2FZT65B, F2T55E, F2T55EB, F2ZT55E, FZT55, FHS2, FMH2, FMH2S (EEP F6-02-01)

ORG = 0x05
Data_byte3 = push up = 0x70, push bottom = 0x50, release = 0x00

F3Z14D (EEP A5-12-01, 02, 03)

Electricity EEP A5-12-01
ORG = 0x07
Data_byte3 to Data_byte1 form a 24-bit binary coded number
Data_byte3 = Data Byte 3 (MSB) 0...16777215
Data_byte2 = Data Byte 2 0...16777215
Data_byte1 = Data Byte 1 (LSB) 0...16777215
Data_byte0 = DB0_Bit4 = -
DB0_Bit3 = LRN Button (0 = teach-in telegram, 1 = data telegram)
DB0_Bit2 = data content switchover:
1 = momentary power in watts, 0 = meter status in 0.1 KW/h
DB0_Bit1 = 0 (fix)
DB0_Bit0 = 1 (fix)
Possible values in data telegram:
DB0 = 0x09 -> meter status normal rate in 0,1 KW/h
DB0 = 0x0C -> momentary power in W, normal rate active
DB0 = 0x1C -> momentary power in W, off-peak rate active
Teach-in telegram: 0x48080D80
ID = Base-ID of FAM14 + device addresses of F3Z14D
Gas EEP A5-12-02 Teach-in telegram: 0x48100D80
Water EEP A5-12-03 Teach-in telegram: 0x48180D80

F4T65, F4T65B, F4FT65, F4FT65B, F4PT, FT4F, F4T55E, F4T55EB, F4PT55, FHS4, FMH4, FMH4S, FF8, FMH8 (EEP F6-02-01)

ORG = 0x05
Data_byte3 = push top right = 0x70, push bottom right = 0x50,
push top left = 0x30, push bottom left = 0x10,
release = 0x00

F4T55B, FT55 (EEP F6-02-01)

Data_byte3 = 0x70/0x50 (with rocker)
= 0x70/0x50/0x30/0x10 (with double rocker)
release = 0x00

F4USM61B

EEP A5-07-01
Data_byte3 = -
Data_byte2 = -
Data_byte1 = E2, E4 = 0xC8 = semi-automatic motion detection
E1, E3 = 0xFF = fully automatic motion detection
Data_byte0 = 0x08
Teach-in telegram: 0x1C080D80

EEP A5-08-01
ORG = 0x07
Data_byte3 = -
Data_byte2 = -
Data_byte1 = -
Data_byte0 = 0x0D = motion
0x0F = no motion
Teach-in telegram: 0x20080D85

EEP A5-38-08
Data_byte3 = 0x01
Data_byte0 = E2, E4 = 0x08 = OFF
E1, E3 = 0x09 = ON
Teach-in telegram: 0xE0400D80

EEP D5-00-01
ORG = 0x06
Data_byte3 = contact closed -> 0x09
contact open -> 0x08
EEP F6-02-01
ORG = 0x05
Data_byte3 = E1 = 0x70, E2 = 0x50, E3 = 0x30, E4 = 0x10, release = 0x00

F6T65B, F6T55B (EEP F6-02-01)

ORG = 0x05
Data_byte3 = 0x70/0x50/0x30/0x10
Data_byte3 = 0x70/0x50

Presence telegram according to EEP A5-07-01
Data_byte3 = operating voltage 0..5 V (0..250)
Data_byte2 = -
Data_byte1 = 0xFF
Data_byte0 = 0x08
Teach-in telegram: 0x1C080D80

FABH130

ORG = 0x05
Data_byte3 = 0x70 = motion
0x00 = no motion

SENSOR TELEGRAMS

FABH65S, FBH65, FBH65S, FBH65TF (EEP A5-08-01 EXCEPTIONS BY ELTAKO)

Expanded brightness range, no Occupancy Button in DB0_Bit0)
ORG = 0x07
Data_byte3 = operating voltage 0..5,1 V (0..255)
Data_byte2 = brightness 0..2048 lux (0..255)
Data_byte1 = -
Data_byte0 = 0x0D = motion
0x0F = no motion
Teach-in telegram: 0x20080D85

only FBH65TF additionally EEP A5-04-02
Data_byte2 = rel. air humidity 0..100% (0..250)
Data_byte1 = temperature -20..+60°C (0..250)
Teach-in telegram: 0x10100D87
ORG = 0x05
Data_byte3 = On = 0x70, Off = 0x50

FAH65S, FIH65S (EEP A5-06-01 EXCEPTIONS BY ELTAKO)

ORG = 0x07
Data_byte3 = brightness 0..100 lux (0..100)
(only valid if DB2 = 0x00)
Data_byte2 = brightness 300..30.000 lux (0..255)
Data_byte1 = -
Data_byte0 = 0x0F
Teach-in telegram: 0x18080D87

FASM60, FSM14, FSM61

ORG = 0x05
Data_byte3 = 0x70/0x50
only FSM14 additionally 0x30/0x10

FB65B, FB55B, FBH65SB, FBH55SB, FBHF65SB (EEP A5-07-01 OR A5-08-01)

EEP A5-07-01
Data_byte3 = -
Data_byte2 = -
Data_byte1 = 0xC8 = semi-automatic motion detection
0xFF = fully automatic motion detection
Data_byte0 = 0x08
Teach-in telegram: 0x1C080D80

Only FBH65SB, FBH55SB, FBHF65SB
FBH mode data telegram acc. to EEP A5-08-01
ORG = 0x07
Data_byte3 = operating voltage 0..5,1 V (0..255)
Data_byte2 = brightness 0..510 lux (0..255)
Data_byte1 = -
Data_byte0 = 0x0D = motion
0x0F = no motion
Teach-in telegram: 0x20080D85

FCO2TF65, FCO2TS (EEP A5-09-04)

ORG = 0x07
Data_byte3 = humidity 0..100% (0..200)
Data_byte2 = CO_2 value 0..2550ppm (0..255)
Data_byte1 = temperature 0..51°C (0..255)
Teach-in telegram: 0x24200D80

FDT65B, FDT55B, FDT55EB, FDTF65B (EEP A5-38-08)

ORG = 0x07
Data_byte3 = 0x02
Data_byte2 = dimming value in % (0..100)
Data_byte1 = 0x01
Data_byte0_Bit0: 1 = On, 0 = Off
Teach-in telegram: 0xE0400D80

FFD

ORG = 0x05
Data_byte3 = 0x70/0x50/0x30/0x10

Dimming value acc. to EEP A5-38-08
ORG = 0x07
Data_byte3 = 0x02
Data_byte2 = dimming value in % (0..100)
Data_byte1 = 0x01
Data_byte0_Bit0: 1 = On, 0 = Off
Teach-in telegram: 0xE0400D80

FFG7B (EEP A5-14-09 OR EEP F6-10-00)

ORG = 0x07
Data_byte3 = operating voltage: 0..5 V (0..250)
Data_byte0 = 0x08 = window closed
0x0E = window open
0x0A = window tilted
Teach-in telegram: 0x50480D80

EEP F6-10-00
ORG = 0x05
Data_byte3 = 0xF0 = window closed
0xE0 = window open
0xD0 = window tilted

FFGB-hg (EEP A5-14-0A, A5-14-09, A5-14-01, A5-14-03, A5-14-07, A5-14-08 or F6-10-00)

FFT65B, FFTF65B, FFT55B, FTFB, FTFSB, FFT60SB (EEP A5-04-02 OR A5-04-03)

EEP A5-04-02
Data_byte2 = rel. air humidity 0..100% (0..250)
Data_byte1 = temperature -20..+60°C (0..250)
Teach-in telegram: 0x10100D87

EEP A5-04-03
Data_byte3 = rel. air humidity 0..100% (0..255)
Data_byte2 und 1 = temperature -20..+60°C (0..1023)
Teach-in telegram: 0x10180D80

FHD60SB (EEP A5-06-01 UND A5-38-08)

FAH-Modus: Data telegram acc. to EEP A5-06-01
Data_byte3 = brightness 0..100 lux (0..100)
(only valid if DB2 = 0x00)
Data_byte2 = brightness 300..30.000 lux (0..255)
Data_byte1 = -
Data_byte0 = 0x09
Teach-in telegram: 0x18080D80

TF-Modus: data telegram acc. to EEP A5-38-08
Data_byte3 = 0x01
Data_byte0 = 0x08 = OFF
0x09 = ON
0x28 = unlock
Teach-in telegram: 0xE0400D80

SENSOR TELEGRAMS

FHD65SB (EEP A5-06-02 EXCEPTIONS BY ELTAKO)

ORG = 0x07
Data_byte3 = operating voltage 0..5,1 V (0..255)
Data_byte2 = brightness 0..1020 lux (0..255)
Data_byte1 = -
Data_byte0 = 0x0F
Teach-in telegram: 0x18100D87

FHMB, FRWB (EEP A5-30-03)

ORG = 0x07
Data_byte3 = 0x00
Data_byte2 = temperature 0..40°C (255..0)
Data_byte1 = 0x0F = alarm, 0x1F = no alarm
Data-Byte0 = 0x08
Teach-in telegram: 0xC0182D80

FKF65

ORG = 0x05
Data_byte3 = 0x10/status (hex) KCG = 0x20
KCS = 0x30

FKS-H (EEP A5-20-04)

Data_byte3 = Valve position 0-100% (0..100)
Data_byte2 = (if data_byte0 = 08) flow temperature 20..80°C (0..255)
Data_byte2 = (if data_byte0 = 0A) setpoint temperature 10..30°C (0..255)
Data_byte2 = (if data_byte0 = 09)
Error code 0x12 = battery empty
Data_byte1 = actual temperature 10..30°C (0..255)
Teach-in telegram: 0x80204580

FLGTF65, FLGTF55 (EEP A5-09-0C AND A5-04-02)

TVOC data telegram acc. to EEP A5-09-0C
Data_byte3 + Data_byte2 = 0..65535 ppb (0..255)
Data_byte1 = -
Data_byte0 = 0x0A
Teach-in telegram: 0x24600D80

Temperature humidity data telegram acc. to EEP A5-04-02
Data_byte3 = -
Data_byte2 = rel. air humidity 0..100% (0..250)
Data_byte1 = temperature -20..+60°C (0..250)
Data_byte0 = 0x0F
Teach-in telegram: 0x10100D87

FMMS44SB, FMS55SB, FMS55ESB, FMS65ESB (EEP D2-14-41, D2-14-40, A5-04-01, A5-04-03, A5-02-05, A5-06-02, A5-06-03, A5-14-05, ONLY FMMS44SB ADDITIONALLY D2-00-01)

FNS55B, FNS55EB, FNS65EB (EEP F6-01-01)

ORG = 0x05
Data_byte3 = Hand in the detection area = 0x10, Hand away = 0x00

FRW

ORG = 0x05
Data_byte3 = 0x10 = alarm
0x00 = alarm-end
0x30 = battery voltage < 7.2 V

FSM60B

ORG = 0x05
Data_byte3 = 0x70 / 0x50 / 0x10 / 0x00

EEP A5-30-01
ORG = 0x07
Data_byte1 = 0x00 / 0xFF

EEP A5-30-03
ORG = 0x07
Data_byte1 = 0x0F / 0x1F

FSU65D/230V, FSU55D/230V

ORG = 0x05
Data_byte3 = 0x70 = switch on, 0x50 = switch off

Clock telegramm nach EEP A5-13-04
Teach-in telegram: 0x4C200D80

Tap-radio telegram acc. to EEP A5-38-08
Teach-in telegram: 0xE0400D80

FSDG14, FWZ14, FWZ12, DSZ14DRS, DSZ14WDRS (EEP A5-12-01)

ORG = 0x07
Data_byte3 to Data_byte1 form a 24-bit binary coded number
Data_byte3 = Data Byte 3 (MSB) 0...16777215
Data_byte2 = Data Byte 2 0...16777215
Data_byte1 = Data Byte 1 (LSB) 0...16777215
Data_byte0 = DB0_Bit4 = tariff changeover (0 = Normal rate, 1= Off-peak rate)
DB0_Bit3 = LRN Button (0 = teach-in telegram, 1 = data telegram)
DB0_Bit2 = data content switchover:
1 = momentary power in watts, 0 = meter status in 0.1 KW/h
DB0_Bit1 = 0 (fix)
DB0_Bit0 = 1 (fix)
Possible values in data telegram:
DB0 = 0x09 -> meter status normal rate in 0.1 KW/h
DB0 = 0x19 -> meter status off-peak rate in 0.1 KW/h
DB0 = 0x0C -> momentary power in W, normal rate active
DB0 = 0x1C -> momentary power in W, off-peak rate active
Teach-in telegram: 0x48080D80 (is sent once at every power-up)
ID = base-ID des FAM14 + device address of DSZ14(W)DRS
In addition, the meter serial number printed on the meter is transmitted every 10 minutes.
The data is divided into 2 consecutive telegrams.
1. part: DB0 = 0x8F -> meter serial number = S-AABBCC (A,B,C = 0..9)
DB1 = 0x00 -> the first 2 digits of the serial number in DB3
DB2 = 0x00
DB3 = AA
2. part: DB0 = 0x8F -> meter serial number = S-AABBCC (A,B,C = 0..9)
DB1 = 0x01 -> the last 4 digits of the serial number in DB2 and DB3
DB2 = BB
DB3 = CC

FSR61VA, FSVA-230V (EEP A5-12-01)

ORG = 0x07
Data_byte3 to Data_byte1 form a 24-bit binary coded number
Data_byte3 = Data Byte 3 (MSB) 0...16777215
Data_byte2 = Data Byte 2 0...16777215
Data_byte1 = Data Byte 1 (LSB) 0...16777215
Data_byte0 = DB0_Bit4 = 0 (fix)
DB0_Bit3 = LRN Button
(0 = teach-in telegram, 1 = data telegram)
DB0_Bit2 = switchover data content:
1 = momentary power in watts,
DB0_Bit1 = 0 (fixed)
DB0_Bit0 = 1 (fixed)
Possible values in data telegram:
DB0 = 0x0C -> momentary power in W, normal rate active
Teach-in telegram: 0x48080D80 (is sent once on every power-up)

FSTAP

ORG = 0x05
Data_byte3 = 0x70 = key right
0x50 = key left
0x00 = key center

SENSOR TELEGRAMS

FTF65S (EEP A5-02-05)
ORG = 0x07
Data_byte3 = -
Data_byte2 = -
Data_byte1 = actual temperature 0..40°C (255..0)
Data_byte0 = 0x0F
Teach-in telegram: 0x08280D87

FTK, FTKB-RW, FFKB, FTKB-gr (EEP D5-00-01)
ORG = 0x06
Data_byte3 = contact closed -> 0x09
contact open -> 0x08
Data_byte2 = -
Data_byte1 = -
Data_byte0 = -
Teach-in telegram: 0x00000000

only FTKB-rw and FFKB additionally
ORG = 0x07
Data_byte2 = battery voltage 0..5V (0..255)
Data_byte3 = battery voltage 0..5V (0..255)

FTKB-hg (EEP A5-14-0A)
ORG = 0x07
Data_byte3 = operating voltage 0..5 V (0..250)
Data_byte0 = 0x08 = window closed
0x0E = window open
0x0A = window tilted
Data_byte0.0: 0 = no alarm, 1 = alarm
Teach-in telegram: 0x50501680

FTKE, FFTE
ORG = 0x05
Data_byte3 = 0xF0 = window closed
0xE0 = window open

FTR65DSB, FTR55DSB, FTR65HB, FTRF65HB, FTR55HB, FTR65SB, FTRF65SB, FTR55SB
Operating mode TF61: EEP A5-38-08
Teach-in telegram: 0xE0400D80
Data telegram: OFF = 0x01000008
ON = 0x01000009
Hysteresis: 1°

Operating mode FHK: EEP A5-10-06
Teach-in telegram: 0x40300D87
Data_byte2 = Setpoint temperature 0..40°C (0..255)
Settable range: 12..28°C
Frost symbol = 8°C
Data_byte1 = actual temperature 0..40°C (255..0)
Data_byte0 = 0x0F

FTR65HS, FTAF65D (EEP A5-10-06 PLUS DATA_BYTE3)
ORG = 0x07
Data_byte3 = night reduction 0-5°K in 1° steps
0x00 = 0°K, 0x06 = 1°K, 0x0C = 2°K, 0x13 = 3°K, 0x19 = 4°K, 0x1F = 5°K
Data_byte2 = Setpoint temperature 0..40°C (0..255)
Settable range: 12..28°C
Data_byte1 = actual temperature 0..40°C (255..0)
Data_byte0 = 0x0F
Teach-in telegram: 0x40300D87

FTR78S (EEP A5-10-03)
ORG = 0x07
Data_byte3 = -
Data_byte2 = setpoint temperature 8..30°C (0..255)
Data_byte1 = actual temperature 0..40°C (255..0)
Data-byte0 = -
Teach-in telegram: 0x40182D80

FTR86B (EEP A5-10-06)
ORG = 0x07
Data_byte2 = setpoint temperature 0..40°C (0..255)
Settable range: 12..28°C
Data_byte1 = actual temperature 0..40°C (255..0)
Data_byte0 = 0x0F
Teach-in telegram: 0x40300D87

FTS14EM (ONLY TELEGRAMS FOR THE ELTAKO-RS485-BUS)
Depending on the set ID range (addition of lower rotary switch + upper rotary switch + 1000) the following basic ID's arise.
Example for group 1: 1 (bottom rotary switch) +0 (top rotary switch) +1000
= basis- ID = 1001
Example for group 1: 1 (bottom rotary switch) +90 (top rotary switch) +1000 =
basis- ID = 1091
Example for group 5: 401 (bottom rotary switch) +30 (top rotary switch)
+1000 = basis- ID = 1431

ORG = 0x05

Setting UT
Data_byte3 = control of +E1 -> 0x70 (basis-ID +0)
control of +E2 -> 0x50 (basis-ID +1)
control of +E3 -> 0x30 (basis-ID +2)
control of +E4 -> 0x10 (basis-ID +3)
control of +E5 -> 0x70 (basis-ID +4)
control of +E6 -> 0x50 (basis-ID +5)
control of +E7 -> 0x30 (basis-ID +6)
control of +E8 -> 0x10 (basis-ID +7)
control of +E9 -> 0x70 (basis-ID +8)
control of +E10 -> 0x50 (basis-ID +9)
Automatically pairs are formed with straight ID. when set to RT:
+E1/+E2, +E3/+E4, +E5/+E6, +E7/+E8, +E9/+E10
If the control of a control input will be finished, a telegram with the respective ID and Data_byte3 = 0x00 will be created.
Data_byte2 = not used (0x00)
Data_byte1 = not used (0x00)
Data_byte0 = not used (0x00)
The control inputs can either be activated for buttons (delivery status), window-door contacts or motion detectors.
All control inputs can be inverted.

FTTB (EEP A5-07-01)
ORG = 0x07
Data_byte3 = operating voltage 0..5V (0..255)
Data_byte2 = -
Data_byte1 = 0xF0
Data_byte0 = 0x0F
Presence telegram: 0x1C080D80

Pushbutton telegram:
ORG = 0x05
Data_byte3 = 0x70

SENSOR TELEGRAMS

FUTH65D, FUTH55D (EEP A5-10-06 AND A5-10-12)

EEP A5-10-06
Data_byte3 = night reduction 0..5°K in 1° steps
Data_byte2 = setpoint temperature 0..40°C (0..255)
Settable range: 8..40°C
Data_byte1 = actual temperature 0..40°C (255..0)
Data_byte0 = 0x0F
Teach-in telegram: 0x40300D87

EEP A5-10-12
Data_byte3 = setpoint air humidity 0..100%
Settable range: 10..90%
Data_byte2 = rel. air humidity 0..100% (0..250)
Data_byte1 = temperature 0..40°C (0..250)
Data_byte0 = 0x08
Teach-in telegram: 0x40900D80

FWS61 (EEP A5-13-01 AND 02)

The FWS61 has two telegrams to one data set, which are sent successively.
In the telegrams last Byte (UU oder YY) it can be identified, which telegram part is involved.
Telegram part 1: 0xRRSSTTUU
- RR is the twilight sensor which supplies data from 0..1000Lux (0..255)
e.g.: 0x7A = 122; 122*1000/255 = 478lux
- SS is the temperature which lies between -40°C..+80°C (0..255)
e.g.: 0x2C = 44; 44*120/255 = 20,7 a lower 40 after that -40+20,7 = -19,3°C
e.g.: 0x6F = 111; 111*120/255 = 52,2 a not lower then 40 after that 52,2-40 = 12,2°C
- TT is the wind speed which lies between 0..70 m/s (0..255)
e.g.: 0x55 = 85; 85*70/255 = 23 m/s
- UU is either 0x1A with "rain" or 0x18 with "no rain".
Telegram part 2: 0xVVWWXXYY
- VV is the solar value of the west sensor 0..150kLux (0..255)
e.g.: 0x44 = 68; 68*150/255 = 40 klux
- WW is the solar value of the south sensor 0..150kLux (0..255)
- XX is the value of the east sensor 0..150kLux (0..255)
- YY is always 0x28
Teach-in telegram: 0x4C080D80

FWS81 (EEP F6-05-01)

ORG = 0x05
Data_byte3 = 0x11 Status 0x30 = water
0x11 Status 0x20 = no water

FZS65

ORG = 0x05
Data_byte3 = 0x30

ACTIVATION TELEGRAMS FROM THE GFVS SOFTWARE

FSR61, FSR61NP, FSR61G, FSR61LN, FLC61NP

Direct switching command, FUNC=38, Command 1, (like EEP A5-38-08).

There is the possibility to **block** the switching state with absolut priority so that it cannot be changed by other taught-in pushbuttons.

ORG = 0x07
Data_byte3 = 0x01
Data_byte2 = no used
Data_byte1 = no used
Data_byte0 = DB0_Bit3 = LRN Button
(0 = teach-in telegram, 1 = data telegram)
DB0_Bit2 = 1: block switching state,
0: do not block switching state
DB0_Bit0 = 1: switching output ON,
0: switching output OFF

Teach-in telegram DB3..DB0 must look like this: 0xE0, 0x40, 0x0D, 0x80

Data telegrams have to look like date:
0x01, 0x00, 0x00, **0x09** (switching output ON, not blocked)
0x01, 0x00, 0x00, **0x08** (switching output OFF, not blocked)
0x01, 0x00, 0x00, **0x0D** (switching output ON, blocked)
0x01, 0x00, 0x00, **0x0C** (switching output OFF, blocked)

FSB14, FSB61, FSB71

Direct drive command with specification of runtime in s. FUNC=3F, Typ=7F (universal). Separately for each channel.

ORG = 0x07
Data_byte3 = runtime in 100ms MSB
Data_byte2 = runtime in 100ms LSB, or runtime in seconds 1-255 dec, the runtime setting on the device is ignored.
Data_byte1 = command:
0x00 = Stop
0x01 = Up
0x02 = Down
Data_byte0 = DB0_Bit3 = LRN Button
(0 = teach-in telegram, 1 = data telegram)
DB0_Bit2 = Lock/unlock the actuator for pushbutton
(0 = unlock, 1 = lock)
DB0_Bit1 = change between runtime in seconds or in 100 ms.
(0 = runtime only in DB2 in seconds)
(1 = runtime in DB3 (MSB) + DB2 (LSB) in 100 ms.)

Teach-in telegram BD3..DB0 must look like this: 0xFF, 0xF8, 0x0D, 0x80
It is possible to interrupt at any time by pressing taught-in buttons!

FSR14-2X, FSR14-4X, FSR14SSR, FSR71

Direct switching command, FUNC=38, Command 1, (like EEP A5-38-08). Separately for each channel.

There is the possibility to block the switching state with absolut priority so that it cannot be changed by other taught-in pushbuttons.

ORG = 0x07
Data_byte3 = 0x01
Data_byte2 = no used
Data_byte1 = no used
Data_byte0 = DB0_Bit3 = LRN Button
(0 = teach-in telegram, 1 = data telegram)
DB0_Bit2 = 1: **block switching state,**
0: do not block switching state
DB0_Bit0 = 1: switching output ON,
0: switching output OFF

Teach-in telegram DB3..DB0 must look like this: 0xE0, 0x40, 0x0D, 0x80

Data telegrams have to look like date:
0x01, 0x00, 0x00, **0x09** (switching output ON, not blocked)
0x01, 0x00, 0x00, **0x08** (switching output OFF, not blocked)
0x01, 0x00, 0x00, **0x0D** (switching output ON, blocked)
0x01, 0x00, 0x00, **0x0C** (switching output OFF, blocked)

FDG14, FDG71L, FKLD61, FLD61, FRGBW71L, FSG14/1-10V, FSG71/1-10V, FSUD-230V, FUD14, FUD14-800W, FUD61NP, FUD61NPN, FUD71

Direct transfer of dimming value from 0 to 100%, similar to FUNC=38, Command 2 (like EEP A5-38-08).

ORG = 0x07
Data_byte3 = 0x02
Data_byte2 = dimming value in % from 0 to 100 dec.
Data_byte1 = dimming speed
0x00 = the dimming speed set on the dimmer is used.
0x01 = very fast dimming speed .... to ...
0xFF = very slow dimming speed
Data_byte0 = DB0_Bit3 = LRN Button
(0 =)
DB0_Bit0 = 1: Dimmer ON, 0: Dimmer OFF.
DB0_Bit2 = 1: Block dimming value
0: Dimming value not blocked

Teach-in telegram BD3..DB0 must look like this: 0xE0, 0x40, 0x0D, 0x80
only FSUD-230V: 0x02, 0x00, 0x00, 0x00

Data telegrams BD3..DB0 must look like this, for example:

0x02, 0x32, 0x00, 0x09 (dimmer on at 50% and internal dimming speed)
0x02, 0x64, 0x01, 0x09 (dimmer on at 100% and fastest dimming speed)
0x02, 0x14, 0xFF, 0x09 (dimmer on at 20% and slowest dimming speed)
0x02, 0x.., 0x.., 0x08 (dimmer off)

ONLY FRGBW71L AND FWWKW71L: FREE PROFILE (EEP 07-3F-7F)

Teach-in telegram DB3..DB0: 0xFF, 0xF8, 0x0D, 0x87

Confirmation telegram: DB3..DB0: 0xFF, 0xF8, 0x0D, 0x86

Data telegrams:
Data_byte0 = 0x0F = GFVS (FRGBW71L master)
0x0E = confirmation telegram
Data_byte1 = 0x02 = request confirmation telegram
0x10 = dimming value red
(DB3-DB2 = dimming value in 10Bit)
0x11 = dimming value green
(DB3-DB2 = dimming value in 10Bit)
0x12 = dimming value blue
(DB3-DB2 = dimming value in 10Bit)
0x13 = dimming value white
(DB3-DB2 = dimming value in 10Bit)
0x30 = dim up
(DB3 = dimming speed, DB2 = colour)
Bit0 = red, Bit1 = green, Bit2 = blue, Bit3 = white)
0x31 = dim down
(DB3 = dimming speed, DB2 = colour)
0x32 = dimming stop
(DB3 = dimming speed, DB2 = colour)

data telegrams FWWKW71L:
Data_byte0 = 0x0F = GFVS (FWWKW71L master)
0x0E = confirmation telegram
Data_byte1 = 0x02 = request confirmation telegram
0x10 = dimming value warm white
(DB3-DB2 = dimming value in 10Bit)
0x11 = dimming value cold white
(DB3-DB2 = dimming value in 10Bit)
0x30 = dim up
(DB3 = dimming speed, DB2 = colour,
Bit0 = warm white, Bit1 = cold white)
0x31 = dim down
(DB3 = dimming speed, DB2 = colour)
0x32 = dimming stop
(DB3 = dimming speed, DB2 = colour)

ACTIVATION TELEGRAMS FROM THE GFVS SOFTWARE

FHK61SSR

Direct transfer of PWM value from 0 to 100%.

ORG = 0x07
Data_byte3 = 0x02
Data_byte2 = PWM value in % from 0 to 100 dec.
Data_byte1 = PWM basic time T in 10 second steps from 1-100 dec., e.g. 12:T = 120 seconds
Data_byte0 = DB0_Bit3 = LRN Button (0 = teach-in telegram, 1 = data telegram)
DB0_Bit1 = 1: Repeater on, 0: Repeater off.
DB0_Bit0 = 1: PWM on, 0: PWM off.

Teach-in telegram DB3..DB0 have to look like this: 0xE0, 0x40, 0x00, 0x80

Data telegrams DB3..DB0 have to look like this for example:
0x02, 0x2D, 0x0A, 0x09 (PWM on with 45% and T = 100 seconds, repeater off)
0x02, 0x64, 0x18, 0x09 (PWM on with 100% and T = 240 seconds, repeater off)
0x02, 0x14, 0x12, 0x0B (PWM on with 20% and T = 180 seconds, repeater on)

FD62NP-230V, FD62NPN-230V

Direct transfer of dimming value from 0 to 100%, similar to FUNC=38, Command 2 (like EEP A5-38-08).

ORG = 0x07
Data_byte3 = 0x02
Data_byte2 = dimming value in % from 0 to 100 dec.
Data_byte1 = dimming speed: 0x01 = very fast -0xFF = very slow
Data_byte0 = DB0_Bit3 = LRN Button (0 = teach-in telegram, 1 = data telegram)
DB0_Bit0 = 1: Dimmer ON, 0: Dimmer OFF.
DB0_Bit2 = 1: Block dimming value, 0: Dimming value not blocked
DB0_Bit5 = 1: Teach-in mode activation, 3x within 2s = delete GFVS-ID

Teach-in telegram: 0xE0400D80

Unlock teach-in mode: 0x00000028

Request confirmation telegram: 0x00000008

FJ62/12-36V DC, FJ62NP-230V

Direct drive command with specification of runtime in s. FUNC=3F, Typ=7F (universal).

ORG = 0x07
Data_byte3 = Runtime in 100ms MSB
Data_byte2 = Runtime in 100 ms LSB, or runtime in seconds 1-255 dez.
Data_byte1 = command: 0x00 = Stop, 0x01 = Up, 0x02 = Down
Data_byte0 = DB0_Bit3 = LRN Button (0 = teach-in telegram, 1 = data telegram)
DB0_Bit2 = Lock/unlock the actuator for pushbutton (0 = unlock, 1 = lock)
DB0_Bit1 = change between runtime in seconds or in 100ms.
(0 = runtime only in DB2 in seconds)
(1 = runtime in DB3 (MSB) + DB2 (LSB) in 100ms.)
DB0_Bit5 = 1: Teach-in mode activation, 3x within 2s = delete GFVS-ID

Teach-in telegram: 0xFFF80D80

Unlock teach-in mode: 0x00000028

FL62-230V, FL62NP-230V, FR62-230V, FR62NP-230V

Direct switching command, FUNC=38, Command 1, (like EEP A5-38-08).

There is the possibility to **block** the switching state with absolut priority so that it cannot be changed by other taught-in pushbuttons.

ORG = 0x07
Data_byte3 = 0x01
Data_byte2 = no used
Data_byte1 = no used
Data_byte0 = DB0_Bit3 = LRN Button (0 = teach-in telegram, 1 = data telegram)
DB0_Bit2 = 1: block switching state, 0: do not block switching state

DB0_Bit0 = 1: switching output ON, 0: switching output OFF

DB0_Bit5 = 1: Teach-in mode activation, 3x within 2s = delete GFVS-ID

Teach-in telegram: 0xE0400D80

Unlock teach-in mode: 0x00000028

Request confirmation telegram: 0x00000008

CONFIRMATION TELEGRAMS OF BIDIRECTIONAL ACTUATORS

FHK61U-230V

Every time the internal switching relay changes state, a PTM200 telegram containing the unique ID of the integrated TCM300 is sent after approx. 300 ms.

ORG = 0x05
Data_byte3 = 0x70 = relay ON, 0x50 = relay OFF
Remark: ON 0x00 (would be equivalent to button released) is never sent.

FHK61-230V, FHK61SSR-230V

PTM200 telegram

ORG=0x05

Data_byte3 = 0x70 = normal mode,
0x50 = night reduction (-4°K)

0x30 = setback mode (-2°K), 0x10 = OFF
(frost protection active)

In addition every telegram received from a taught-in temperature sensor (e.g. B. FTR55H) is repeated as a confirmation telegram.

FHK61SSR-230V

Every time a PWM data telegram is received the same telegram is send with the unique ID of the integrated TCM 300.

At activation or deactivation of the thaw signal input a PTM200 telegram containing the unique ID of the integrated TCM 300 will be send.

Cyclically every 15 minutes a status signal will be send.

ORG = 0x05
Data_byte3 = 0x70 = thaw signal input active,
0x50 = thaw signal input inactive

FMS61NP-230V

Every time the internal switching relay 1 changes state, a PTM200 telegram containing the unique ID of the integrated TCM300 is sent after approx. 300ms. Relay 2 sends this message after approx. 1000 ms.

With central commands (ZE/ZA), the relay state is also sent if the state already corresponds to the desired state.

ORG = 0x05
Data_byte3 = 0x70 = channel 1 ON, 0x50 = channel 1 OFF
0x30 = channel 2 ON, 0x10 = channel 2 OFF
Remark: ON 0x00 (would be equivalent to button released) is never sent.

FMZ61-230V

Every time the the internal switching relay changes state, a PTM200 telegram containing the unique ID of the integrated TCM300 is sent after approx. 300-400 ms.

With central commands (ZE/ZA), the relay state is also sent if the state already corresponds to the desired state.

ORG = 0x05
Data_byte3 = 0x70 = relay ON, 0x50 = relay OFF
Remark: ON 0x00 (would be equivalent to button released) is never sent.

FSB61NP-230V, FSB71, FJ62/12-36V DC, FJ62NP-230V

ORG= 0x05
Data_byte3 = 0x70 = upper stop position,
0x50 = lower stop position,
0x01 = Start up, 0x02 = Start down

If the actuator is stopped before the end of RV, only the actual elapsed time is sent indicating the direction in a ORG7 message with the same ID! This is also the info that the engine has stopped now.

ORG = 0x07
Data_byte3 = driving time in 100 ms MSB
Data_byte2 = driving time in 100 ms LSB
Data_byte1 = 0x01 = driven up or 0x02 = driven down
Data_byte0 = 0x0A (not blocked) or 0x0E (blocked)

Remark: The RV time must be set on the device so that the end position is always reached. If the roller shutter is already at an end position, the relay is switched on receipt of a drive command anyway (0x01 or 0x02 is sent) and it is switched off on expiry of the RV. (0x70 or 0x50 is sent).

FLC61NP-230V, FSR61-230V, FSR61/8-24V, FSR61LN-230V, FSR61NP-230V, FSR61VA-10A, FSR71, FSSA-230V, FSVA-230V, FTN61NP-230V, FL62-230V, FL62NP-230V, FR62-230V, FR62NP-230V

Every time the the internal switching relay state changes, a PTM200 telegram containing the unique ID of the integrated TCM300 is sent after approx. 300-400 ms. With central commands (ZE/ZA) the relay state is also sent if the state already corresponds to the required state.

ORG = 0x05
Data_byte3 = 0x70 = relay ON, 0x50 = relay OFF
Remark: ON 0x00 (would be equivalent to button released) is never sent.

FDG71L, FRGBW71L, FSG71/1-10V, FSUD-230V, FUD61NP-230V, FUD61NPN-230V, FUD71, FD62NP-230V, FD62NPN-230V

Every time the dimmer is switched on or off, a PTM200 telegram containing the unique ID or base ID of the integrated TCM300 is sent after approx. 300-400 ms.

ORG = 0x05
Data_byte3 = 0x70 = dimmer ON, 0x50 = dimmer OFF

In addition, approx. 1 second after reaching the required dimming value, a 4BS telegram containing the unique ID or base ID of the integrated TCM300 is also sent.

ORG = 0x07
Data_byte3 = 0x02
Data_byte2 = dimming value in % of 0-100 dec .
Data_byte1 = 0x00
Data_byte0 = 0x08 = dimmer OFF, 0x09 = dimmer ON.
Caution: No teach-in telegram containing ORG=7 can be generated. Caution: Two telegram kinds (ORG=5, ORG=7) containing the same ID are sent!

only FRGBW71L: channel1 red = Base ID+1
channel2 green = Base ID+2
channel3 blue = Base ID+3
channel4 white = Base ID+4
all channels = Base ID+5
Master telegramm = Base ID+6

only FWWKW71L: channel1 warm white = Base ID+1
channel2 cold white = Base ID+2
all channels = Base ID+3
Master telegramm = Base ID+4

To teach-in reply confirmation telegrams of bidirectional actuators into other actuators or into the software GFVS the local control input has to be used to change the switching position and to simultanously send the confirmation telegrams.

Eltako

SERIES 14 CONFIRMATION TELEGRAM

As soon as Series 14 actuators receive a device address, the FAM14 can request actuators for confirmation telegrams. The confirmation telegrams are then radioed by the FAM14. The ID of the radioed telegrams is identical to the Base ID of the TCM300 in the FAM14 plus the device address. Multichannel actuators have consecutive device addresses corresponding to the number of channels.

Note: Depending on the number of actuators on the bus, there may be a time lapse of up to 10 seconds before a confirmation telegram is requested and radioed. If fast confirmation is expected by certain actuators, a device list for confirmation telegrams must be generated via the PCT14. The actuator must be entered several times in the device list. The FAM14 must then be operated in operating mode 5.

CONFIRMATION TELEGRAMS OF BIDIRECTIONAL ACTUATORS.

FDG14, FSG14/1-10V, FUD14, FUD14/800W

Here you can select 2 confirmation telegrams in the PCT14 configuration independently of each other.

1. PTM200 telegram ORG=0x05
   Data_byte3: 0x70 = Dimmer ON,
   0x50 = Dimmer OFF
2. 4BS telegram with dimming value
   ORG = 0x07
   Data_byte3 = 0x02
   Data_byte2 = Dimming value in %
   Data_byte1 = 0x00
   Data_byte0 = 0x08 = Dimmer OFF,
   0x09 = Dimmer ON

FSB14

Per channel: PTM200 telegram
ORG=0x05
Data_byte3 = 0x70 = end position top,
0x50 = end position bottom
0x01 = start up,
0x02 = start down

If the actuator is stopped before the end of RV, only the actual elapsed time is sent indicating the direction in a ORG7 message with the same ID! This is also the info that the engine has stopped now.

ORG =	0x07
Data_byte3 =	driving time in 100ms MSB
Data_byte2 =	driving time in 100ms LSB
Data_byte1 =	0x01 = driven up or 0x02 = driven down
Data_byte0 =	0x0A (not blocked) or 0x0E (blocked)

Remark: The RV time must be set on the device so that the end position is always reached. If the roller shutter is already at an end position, the relay is switched on receipt of a drive command anyway (0x01 or 0x02 is sent) and it is switched off on expiry of the RV. (0x70 or 0x50 is sent).

FAE14LPR, FAE14SSR, F4HK14, FHK14

Per channel: PTM200 telegram
ORG=0x05
Data_byte3 = 0x70 = normal mode,
0x50 = night reduction (-4°K)
0x30 = setback mode (-2°K), 0x10 = OFF
(frost protection active)

In addition every telegram received from a taught-on temperature sensor (e.g. FTR55H) is repeated as a confirmation telegram.

FMSR14

The FMSR14 evaluates the MS multisensor data which is fed to the Eltako wireless network by the FWS61 transmitter module. The data contains measured values for sunlight from 3 cardinal points, light values to evaluate twilight, and wind speed in m/s.

In addition there are signals for rain and frost.

The device occupies 5 device addresses, providing confirmation telegrams for each of the 3 parameters and the 2 signals containing confirmation telegrams with an individual ID.

Limits can be set using the PCT14 configuration for the measured values of sunlight, twilight and wind speed. If these parameters are exceeded or overshot, telegrams containing Data_byte3 = 0x70 or 0x50 (selectable) are generated.

As soon as the limits are no longer exceeded or overshot, a telegram containing Data_byte3 = 0x00 is generated.

The signals for frost and rain are also converted into telegrams containing

Data_byte3 = 0x70 or 0x50 (selectable).

When the signals are cancelled, telegrams containing Data_byte3 = 0x00 are generated.

FSU14

The 8 timer channels correspond to the 8 device addresses of the FSU14. Switch on/off commands are generated in the form of confirmation telegrams depending on the programmed switching times for the individual channels:

PTM200 telegrams ORG=0x05
Data_byte3 = 0x70 = switch ON,
0x50 = switch OFF

Clock telegram (EEP A5-13-04) with the current time (hour and minute) and the day of the week.

Teach-in clock telegram DB3..DB0: 0x4C, 0x20, 0x0D, 0x80

F2L14, FMS14, FMZ14, FSR14-2X, FSR14-4X, FSR14SSR, FTN14

With multichannel actuators per channel:

PTM200 telegram ORG=0x05
Data_byte3: 0x70 = relay ON, 0x50 = relay OFF