Eltako – The System in the Building

Operating manual for Series 14 RS485 bus DIN rail mounted devices

Content

1. Technical planning guide Wireless Building with the Series 14

First, the bus system is described for activation with wireless sensors. Alternatively cable-bound activation is also possible. This is described in detail in Chapters 7 and 8.

Series 14 devices are fitted to DIN-EN 60715 TH35 rails and their RS485 bus. They are also connected to the power supply by jumpers. Consumers are activated centrally from a main distribution panel or several subdistribution panels.

The bidirectional FAM14 wireless antenna module is the interface between wireless sensors (e.g. pushbuttons) and all Series 14 actuator. It receives, sends and checks all signals from the wireless transmitter and repeaters within its reception range. A sub-bus comprising up to 3 additional FEM wireless receiver modules may be added at any time to increase reception range.

Received wireless signals are passed on to downstream switch actuators via an RS485 interface in the FAM14. Up to 126 channels can be connected to each FAM14 antenna module. A flexible BBV14 bus connector or an FBA14 bus coupler permits wire connections across several rails. The necessary 12 V DC voltage supply is already included in the FAM14 and supplies all system components and actuators up to a power output of 8 W* via jumpers.

The maximum power requirements of each connected device must be added in order to calculate the total power requirement of the 12 V DC power supply. If the power requirement is greater, an additional FSNT14-12 V/12 W switch mode power supply unit must be used for every 12 watts required. In addition, an TB14 disconnecting link must be plugged into the device instead of a standard jumper in order to disconnect the additionally powered group.

The table below is a simple aid showing how to determine total power requirement.

Device	Maximum power requirement (existing relay excited)
F2L14	**0,14 W**
F3Z14D	**0,10 W**
F4HK14	**0,70 W**
F4SR14-LED	**1,00 W**
FAE14LPR	**0,42 W**
FAE14SSR	**0,40 W**
FDG14	**0,40 W**
FFR14	**0,63 W**
FGSM14	**0,20 W**
FGW14	**0,50 W**
FGW14-USB	**0,30 W**
FHK14	**0,42 W**
FMS14	**0,63 W**
FMSR14	**0,10 W**
FMZ14	**0,40 W**
FPLG14	**0,40 W**
FPLT14	**0,40 W**
FRP14	**0,50 W**

Device	Maximum power requirement (existing relay excited)
FSB14	**0,42 W**
FSDG14	**0,40 W**
FSG14/1-10V	**0,20 W**
FSM14	**0,10 W**
FSR14-2x	**0,14 W**
FSR14-4x	**0,70 W**
FSU14	**0,14 W**
FTD14	**0,53 W**
FTN14	**0,14 W**
FTS14EM	**0,13 W**
FTS14FA	**0,50 W**
FTS14GBZ	**0,10 W**
FTS14TG	**0,42 W**
FUD14	**0,20 W**
FUD14/800W	**0,20 W**
FWG14MS	**0,30 W**
FWZ14-65A	**0,10 W**
FZK14	**0,14 W**

Wiring recommendations:

If several loads in one room are supplied by a circuit breaker, wiring can be saved by routing NYM-J 7x1.5 or 10x1.5. The continuous power supply with 3 wires and all the other 4 or 7 wires can then be used as hook-up wires.

* The switch mode power supply unit included in the FAM14 isolates the electronics of all connected devices from the 230V mains power supply. As a result, the devices are not exposed to voltage peaks and other faults which are becoming increasingly frequent on mains power supplies. This protection significantly increases the expected service life of the devices as opposed to decentralised mounted actuators.

2. Explanation of terms/legend

Universal button UT

The switching state of a universal button is not clearly defined after operation. The only thing that occurs is that one contact switches over from one state to the other. For example, a contact changes from closed state to open state. In the case of a dimmer, what is meant is the changeover from bright to dark by holding down the button.
Similar terms include single button, changeover switch, toggle, switch back and forth; these terms are used to describe the changeover from two possible states to the other state. The 4-channel wireless pushbuttons can be assigned with up to 4 universal pushbuttons.

Direction button RT

The mode of functioning of the direction button is the specific switching to a desired switching state. As there are 2 switching states (ON/OFF or UP/DOWN), two signals are required for direction control and therefore means that button design is highly complex. Direction buttons are more convenient since switching or dimming is direct. 4-channel wireless pushbuttons can be assigned with 2 direction pushbuttons (double rocker). 1-channel wireless pushbuttons cannot be used for this. It is sufficient to operate the ON (UP) button to teach in the two direction commands. The opposite command OFF (DOWN) is taught in automatically.

Central commands ZE and ZA

Central control is always used when more than one actuator must be switched to a specific state at the same time. Just as for the direction button, a separate control signal is required to achieve each switching state. Here are some application examples:
– Central lowering of blinds when the sun shines too hot;
– Central switch-on for panic lighting;
– Central OFF function to save energy when owners leave the house empty;
Central buttons with priority (safety functions) have priority. They are required to control blinds in case of wind, rain or frost, for example. Activation by local buttons is no longer possible as long as this signal is present.

Scene pushbutton

An existing lighting setting can be saved to a light scene button and recalled exactly at any time later. The switching states (ON/OFF) or the dimming values are saved in each of the actuators. The lighting setting can be reproduced by simply pressing the button briefly.
The same applies to sunshading adjustments. Blinds, awnings or venetian blinds can be moved to saved positions. Important: When a scene is recalled, the previous switching states are not saved. It is therefore not possible to switch a scene on and then off again later using the same button.

Switch functions

The ON switch function corresponds to the UP switch function (for blind control).
The OFF switch function then corresponds to the DOWN switch function.

ES

Electronic impulse switch

ESV

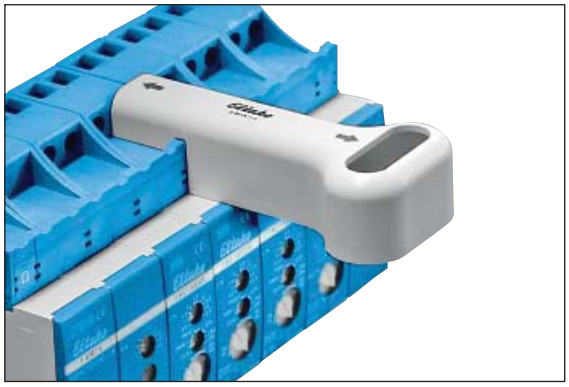
Electronic impulse switch with off delay

ER

Electronic relay, switching relay

3. Startup

1. Mounting in the distribution panel: The arrangement order of the devices on the DIN mounting rail is freely definable. We advise you to start on the left-hand side with the FAM14 or FTS14KS. At a load of greater than 50% of the rated power of 8W, use the DS14 spacer to adjust an air gap of half a pitch unit on the left-hand side.
   Use the enclosed 4-pole jumpers to cross-wire the bus and the power supply. **Only fit the jumpers after completing all the electrical connections to the devices!** The torque exerted when tightening the screw terminal may displace the devices on the rail slightly to one side. This force is transferred to the jumpers and could damage the internal contacts permanently.
   When inserting or removing the jumpers, only use the SMW14 jumper tool and move it vertically to the rail.



   If you fit an FUD14 dimmer equal to or greater than 200W, use DS14 spacers to ensure there is an air gap to the devices mounted on either side.
   The bus connection to the devices across several rails is provided by the flexible BBV14 bus connector. The connection starts from the last device on the right to the first device on the left on the next rail. Alternatively, you can use an FBA14 bus coupler. If other devices are placed in a different distribution panel, the wiring can be extended there in the form of a bus. When the Hold wire is also routed across several levels as well as an RSA/RSB, a GND wire must also be routed. A screened telecommunication cable, or even better a CAT7 cable, is urgently required to connect the two distribution panels. Plug in the second terminal resistor supplied with the FAM14 or FTS14KS to the final actuator.
   All HOLD terminals from the devices on the bus must be connected together. Make sure that the GND potential of all associated bus groups (e.g. with additional UVs) are connected together. The bus communication (regulation of the bus access, against collision) will only work correctly if this connections are done.
   Several FEM devices in a SUB-bus must be wired using a line in the form of a chain, as specified for RS485 bus systems. A star-shaped wiring topology with one line per FEM is not permitted. The jumper must be plugged in a different position for each of the three FEM wireless receiver modules.
   Before issuing addresses, check the bus and all its jumpers using a measuring instrument as described in Chapter 6.

2. Device address assignment: Before startup, one of the 126 available device addresses should be assigned to every device. Assigning a device address is recommended in all cases. Only then can you use the PCT14 software to carry out readout, change and save operations. Without a device address the following devices cannot be taught-in to the actuators in the GFVS Visualisation software: FSU14, FMSR14, F3Z14D, FSDG14, FWZ14, FWG14MS, DSZ14!

   Please proceed carefully when assigning addresses to avoid issuing an address twice. Otherwise the addresses cannot be read out by the PCT14 software!
   See Point B) below for the safest way to assign addresses using the PCT14 software.

   A) Manual device address assignment: Turn the BA operating mode rotary switch on the FAM14 or FTS14KS to Pos. 1. Its LED lights up red. Turn the middle rotary switch of only one actuator at a time to LRN. Its LED flashes at a low rate (Caution: on the FSR14, FAE14 and F4HK14 the lower rotary switch must also be set to the required channel). After several seconds, an address is assigned; then the LED on the FAM14 or FTS14KS lights up for 5 seconds. The next device can only be addressed after the LED switches back to red. Multi-channel actuators automatically receive consecutive addresses for all channels when addresses are assigned.

When the BA rotary switch is turned to pos. 1, the LEDs of all devices (except display units) which have received a device address light up for approx. 5 seconds one after the other. A new device address can be assigned without deleting the old one. This may be necessary if several devices receive the same device address by accident.

B) Device address assignment using the PCT14 software: Before you can set up a connection to the PCT14, the BA rotary switch on the FAM14 or the FTK14KS must be positioned between pos. 2 and 8. Then set up the connection. Turn the middle rotary switch to LRN only on one actuator. Its LED flashes slowly. (Important! On FSR14, FAE14 and F4HK14, turn the lower rotary switch to Channel 1..2 or 1..4). Only when the left window displays a device list can you select the function "Search device to assign address". Right-click on the actuator found and highlighted in pink and choose "Edit and transfer device address..." Finally, assign a free address. The flashing LED on the actuator goes out. Then you can assign addresses to other actuators in the same way.

Device address assignment for other bus devices

Device	Prepare device address assignment	Ready for teach-in when	After address assignment
DSZ14	1x select; repeat select >3 sec.	Device address visible	Standard display
F3Z14D	1x Mode, 7x Set, 1x Mode	Z 1 in display flashes	Standard display
FDG14	Turn large rotary switch to ADR	LED flashes	LED goes out
FGSM14	Turn rotary switch to 10	LED flashes	LED goes out
FGW14	Turn rotary switch to 10	LED flashes	LED goes out
FGW14-USB	Turn rotary switch to 10	LED flashes	LED goes out
FMSR14	1x Mode, 6x Set, 1x Mode	FWS in display flashes	Standard display
FPLG14	Turn large rotary switch to ADR	LED flashes	LED goes out
FSDG14	Turn rotary switch to ADR	LED flashes	LED goes out
FSU14	1x Mode, 3x Set, 1x Mode	CH 1 in display flashes	Standard display
FTD14	Turn rotary switch to LRN	LED flashes	LED goes out
FTS14TG	Turn rotary switch to 10	LED flashes	LED goes out
FWG14MS	Turn rotary switch to 10	LED flashes	LED goes out
FWZ14	Turn rotary switch to LRN	LED flashes	LED goes out

3. Important mode settings:

FAM14 BA 1 Device address assignment
BA 2 Bidirectional bus mode with feedback, **default setting**
e.g. when visualisation software is used
BA 8 Unidirectional bus mode without feedback, receive only
BA 2-4 If internal device addresses need to be edited, e.g. FSU14, FMSR14 or FWG14MS

The lower rotary switch is used to teach in encrypted sensors. In operation, turn it to AUTO 1. It is not necessary to teach in unencrypted sensors in the FAM14. For further information on encryption and operating mode settings, see the FAM14 operating instructions.

FGW14 Position 1 If FTS12EM and FEM is connected
Position 2 Same as 1 but with ID filter
Position 3 If BR12 actuators are connected
Position 4 Coupling between two BR14 bus lines
Position 5 Connection of a PC at RS232, 9600 bauds
Position 6 Same as 5 but 56K bauds

4. Teaching-in sensors in actuators: The wireless sensor and the actuator are interconnected by carrying out the LRN teach-in process (saving codes) and saved in the actuator. The actuator is set to a teach-in mode and then saves an address and a set function. The function can be cleared as required (see Chapter 5).
   Internal bus control commands from the timer FSU14, the sensor relay FMSR14 and the weather data transmitter module FWG14MS can only be taught in on the actuator in position LRA when the BA rotary switch of the FAM14 or FTS14KS points to 10. Status telegrams from actuators can also be taught in in other actuators, if the upper rotary switch from the FAM14 or from the FTS14KS is placed on position 2.
   Each actuator can save up to 120 IDs. The settable functions include universal button, direction button, central function, scene function, PC signals etc.

   FSR14...
   1. Use the lower rotary switch to select the required channel (1 to 4 or 1..4).
   2. Use the upper rotary switch to select the required teach-in function (see chapter 4).
   3. Set the middle rotary switch to LRN. The LED flickers at a low rate.
   4. Then operate the sensor to be taught-in (button). The LED goes out.

   To teach-in other sensors, turn the middle rotary switch briefly away from position LRN and continue the procedure from step 1 again. After teaching-in, turn the lower and middle rotary switch to Auto and turn the upper rotary switch to the required time delay time (default=0)

   FUD14
   1. Turn the upper rotary switch to the required teach-in function (see chapter 4).
   2. Set the middle rotary switch to LRN. The LED flickers at a low rate.
   3. Then operate the sensor to be taught-in (button).

   If other sensors are to be taught-in, turn the middle rotary switch briefly away from Position LRN and start at step 1 again. After teaching-in with the top rotary switch, set the load type (Standard = AUTO). Use the middle rotary switch to set minimum brightness. Use the lower rotary switch to set the dimming speed.

   FDG14
   Before teaching in the sensors, all DALI devices must first be parameterised in groups or scenes via a DALI interface module using suitable configuration software.
   1. Turn the upper rotary switch to the required group. The numerals here mean 0 - 8 = groups; 9 = broadcast
   2. Turn the lower rotary switch to the required teach-in function (see Section 4). The LED flashes slowly.
   3. Then press the sensor to be taught in (pushbutton) twice quickly in a row. The LED goes out.

   If other sensors need to be taught in, turn away the lower rotary switch briefly from the position and start again at step 1. After teach-in turn the lower rotary switch to AUTO. You can configure groups and scenes as of 9 using the PCT14.
   Note:
   Check the correct settings in the DALI driver. They have a major influence on dimming and switching behaviour.
   Recommended settings: Fade Time 0,7 - 2 s Fade rate 32 or 45 steps

   FSB14
   First check the rotation direction of the connected motor! (Terminals 1 and 3 = down; terminals 2 and 4 = up). Turn the lower rotary switch of the FSB14 to one of the arrow symbols and check whether the rotation direction of the connected motors match. Alternatively, change over the motor lines or change the rotation direction using the PCT14. Only then carry out a teach-in.
   1. Turn the upper rotary switch to the required teach-in function (see chapter 4).
   2. Set the middle rotary switch to LRN. The LED flickers at a low rate.
   3. Then operate the sensor to be taught-in (button). The LED goes out. To teach-in other sensors, turn the middle rotary switch briefly away from position LRN and continue the procedure from step 1 again. After teach-in, set the time delay RV, the turning time WA (as required 0) and AUTO (1 or 2 for latching mode, 3 for touch-lock mode or 4 for pushbutton operation).

FMS14

1. Turn the upper rotary switch to the required teach-in function (see chapter 4).
2. Turn the middle rotary switch to LRN. The LED flickers at a low rate.
3. Then operate the sensor to be taught-in (button). The LED goes out.

To teach-in other sensors, turn the middle rotary switch briefly away from position LRN and continue the procedure from step 1 again. After teach-in, turn the middle rotary switch to AUTO.

FHK14 / F4HK14 / FAE14

1. Select the required channel (1 to 2 or 1 to 4) with the lower rotary switch on the FAE14 and F4HK14.
2. Turn the upper rotary switch to the required teach-in function (see chapter 4).
3. Turn the middle rotary switch to LRN. The LED flickers at a low rate.
4. Press the sensor to be taught in (room controller, pushbutton). The LED goes out.

If other sensors are to be taught-in, turn the middle rotary switch briefly away from position LRN and start again at 1. After teach-in with the upper rotary switch, set the hysteresis (default = 0.5 or 1K). Turn the middle rotary switch to the required AUTO or PWM function. Turn the lower rotary switch to Heat (H) or Cool (K) or NC or NO.

FSU14:

The timer FSU14 can only drive actuators if it was previously assigned a device address and the time channels were taught-in in the actuators. Every actuator can teach in a timer channel as direction command ON (UP) **and** OFF (DOWN) or as a single command **only** ON or **only** OFF.

When you teach in a direction command, only the ON (UP) command is sent. After that, the two switch commands ON (UP) **and** OFF (DOWN) can be used. Except for FSB14 actuators, the central commands CENTRAL ON **or** CENTRAL OFF can be alternatively taught in separately. For settings, see page 10.

Teach in all actuators, which will carry out a switching operation in a group, to the identical timer channel.

MODE means: Confirm > Go to next parameter; SET changes the displayed value.

Teach in timer channels to actuators: Turn the BA rotary switch on the FAM14 or FTS14KS to pos. 10. The LED lights up green. Turn the upper rotary switch on the actuator to the required function and turn the middle rotary switch to LRA (on the FSR14, also select the channel); the LED flashes. Press MODE on the FSU14 and then press SET to search for the LRN function. Press MODE to select. When CH appears, press SET to select the channel and press MODE to confirm. Then press SET to toggle between ON (UP) and OFF (DOWN). For example, if you confirm ON by pressing MODE, LRN+ blinks. Press SET to save the ON function to the actuator which is prepared for teach-in. The blinking LED goes out. You can now teach in other channels or functions. When you press MODE for longer than 2 seconds, the standard display appears. Finally turn the upper rotary switch on the FAM14 wireless antenna module to Pos. 2.

60 switching programmes are available to save each channel (1 to 8), function (ON or OFF), switching time and week day.

Alternatively the FSU14 can be easily programmed using the PCT14 software. First, enter the decimal device address of the timer channel as sensor ID to the actuator channel.

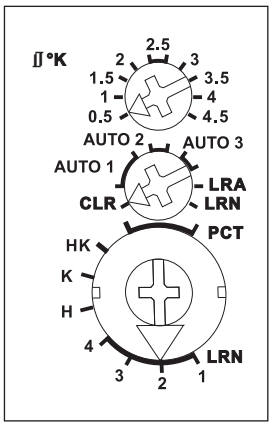
Teach in feedbacks from other actuators to FSR14:

Feedback telegrams from switch actuators and dimmers can be taught-in to other FSR14 switch actuators. The FAM14 must then be turned to Pos.2. First switch off the actuator whose feedback you want to teach in. The easiest way to do this is to use the outer rotary switch for the test function. On the FSR14 switch actuator to be taught-in, select the channel on the lower rotary switch and the 0 function on the upper rotary switch. Once the middle rotary switch is turned to LRA, the LED starts to blink. Then manually switch on the actuator whose feedback is to be taught-in using the rotary switch. After several seconds, the LED goes out and the feedback (ON and OUT) is taught-in. Finally, turn the rotary switches to the operating position. In order to utilise the feedback from a dimmer, use the PCT14 to activate the "Confirmation telegram with pushbutton telegram" parameter.

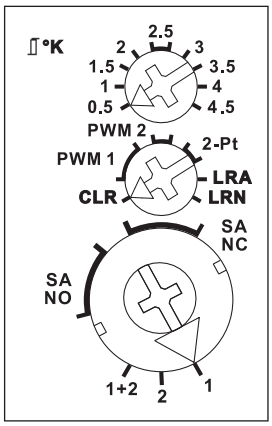
Another option is to edit using the PCT14 software. As feedback, enter the decimal device address of the monitored channel in the feedback actuator as direction pushbutton.

Overview of function rotary switches in teach-in list – Pictures display standard factory settings:

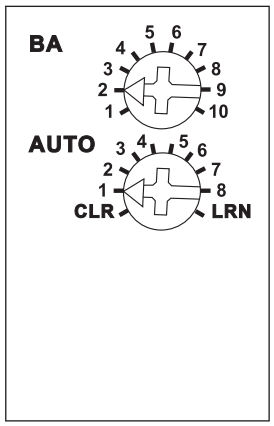
F4HK14



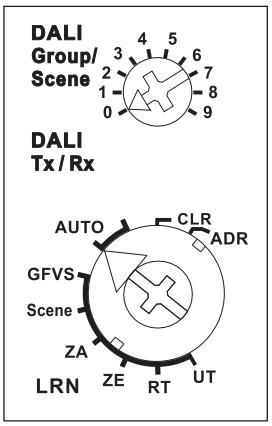
FAE14



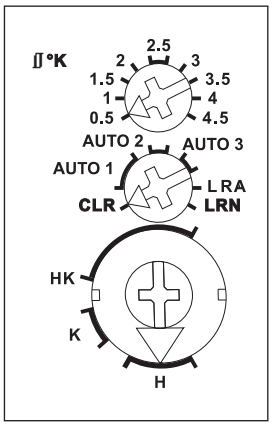
FAM14



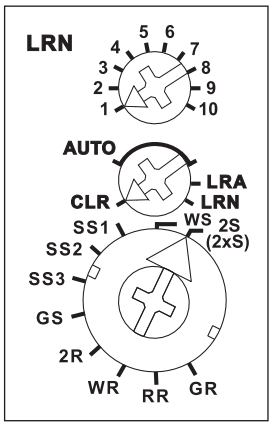
FDG14



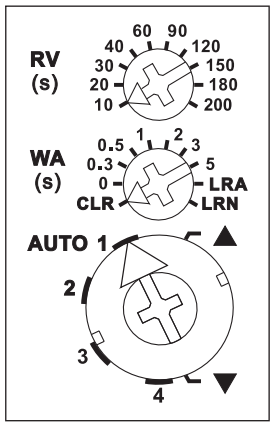
FHK14



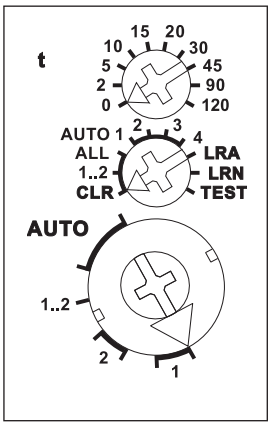
FMS14



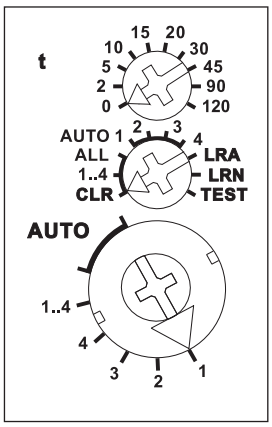
FSB14



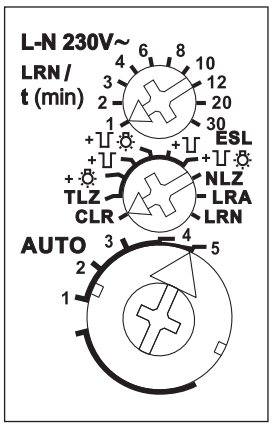
FSR14-2x



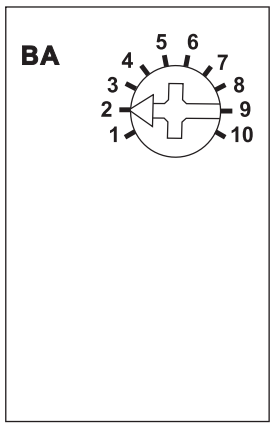
FSR14-4x



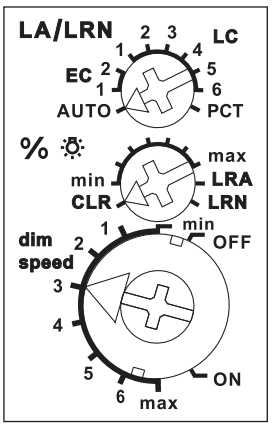
FTN14



FTS14KS



FUD14



4. Teach-in list

Teach-in settings of upper selector switch for the most common Series 14 devices

Teaching-in function	F4HK14 FAE14 FHK14	FDG14	FMS14	FSB14	FSR14 F4SR14	FTN14	FUD14
Universal pushbutton/toggle / switch over (On/Off)		UT	3 channel 1+2 7 channel 1 8 channel 2	20 channel 1 40 channel 2	5 Switch 10 Relay	3	EC 2
Direction pushbutton		RT	5 channel 1+2 9 channel 1 10 channel 2	10 channel 1 30 channel 2	0		LC 2
On/Central On		ZE	4		45	4	LC 1
Off/Central Off		ZA	2		90	2	EC 1
Sequential light scene push-button							LC 3
4-way direct light scene pushbutton				180 channel 1 200 channel 2	30		LC 4
Single light scene pushbutton		Scene (Dali)					LC 5
Staircase light switch						3	LC 6
Wireless Visualisation and Control Software GFVS wibutler ProHome server	4,5	GFVS	9 channel 1 10 channel 2	180 channel 1 200 channel 2	0	2 Off 4 On	PCT
FTK window/door contact/ FHF window handle	4,5			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						

Other functions can be parameterised using the PCT14 software!

5. Various clearing procedures

Clearing memory content (taught-in sensors):

a) Clear all taught-in sensors: The teach-in memory is empty on delivery from the factory. If you are unsure whether something was already taught-in, clear the memory content completely. Set the middle rotary switch to CLR (to position ALL for FSR14 actuators). The LED flashes nervously. Within the next 10 seconds, turn the upper rotary switch three times to right stop (turn clockwise) and away again. The LED stops flickering and goes out after 2 seconds. All taught-in sensors are cleared.

b) Clear single taught-in sensors: Same as for teach-in except you turn only the middle rotary switch to CLR instead of LRN and then operate the sensor. The LED previously flashing nervously goes out.

Resetting device configuration to factory settings:

Device confirmation means convenience settings which can be set especially using the PCT14 software. Turn the middle rotary switch to CLR resp. ALL. The LED flashes nervously. Within the next 10 seconds, turn the upper rotary switch three times to left stop (turn anticlockwise) and away again. The LED stops flickering and goes out after 5 seconds. The factory settings are restored. Taught-in sensors are not cleared.

Resetting device configuration to factory settings and clearing device address:

Turn the middle rotary switch to CLR resp. ALL. The LED flashes nervously. Within the next 10 seconds, turn the upper rotary switch six times to left stop (turn anticlockwise) and away again. The LED stops flickering and goes out after 5 seconds. The confirmation is reset to the factory settings and the device address is cleared.

Clear device address: FMSR14, FSU14 and F3Z14D

Press MODE and then press SET to search for GA in the display. Now press SET to switch between the device address and 000. When you press MODE to confirm 000, the device address is cleared. The display returns to the standard view.

Clear device address: FWG14MS

Turn the rotary switch 8 times to right stop (turn clockwise) and back again within 10 seconds. The red LED lights up for 10 seconds and then goes out. The device address is cleared.

Clear device address: DSZ14DRS, DSZ14WDRS

Press briefly the SELECT pushbutton. The background lighting switches on. When you press the SELECT pushbutton again for longer than 3 seconds, the device address appears in the display. Then press and hold down the SELECT pushbutton for at least 5 seconds. The device address is set to zero.

Clear all entered IDs (filters, feedbacks): FGW14, FTS14TG and FGSM14

Turn the rotary switch 5 times to right stop (turn clockwise) and back again within 10 seconds. The LED lights up for 10 seconds and then goes out. All IDs (filters and feedbacks) are cleared.

Clear device address and IDs: FGW14, FSDG14, FTS14TG and FGSM14

Turn the rotary switch 8 times to right stop (turn clockwise) and back again within 10 seconds. The LED lights up for 10 seconds and then goes out. In addition all IDs (filters) are cleared in the FGW14.
In addition all IDs (feedbacks) are cleared in the FTS14TG and FGSM14.

6. Troubleshooting bus faults

General bus faults:
- Voltage reset, switch the power supply of the FAM14 or FTS14KS off briefly and then back on.
- There may be a contact problem on the bus jumpers. Check the bus using a tester. (See Figs 1 and 2)
- To do this, disconnect the bus centrally and measure in both directions to locate the fault faster.
- Reduce the bus system into smaller bus groups to locate the fault even further.
- If required, measure the bus connection inside the devices to detect a cold solder joint or a short circuit. (See Figs 3 and 4).
- Check the levels and measured values. (See Fig 5)
- All HOLD terminals must be connected together.
- If there are several sub-distributions, all bus sections must be connected to the GND potential (-12V) of the FAM14!
- Ideally, use the HOLD and GND conductors from a twisted conductor pair.

The FAM14 does not flash when a wireless signal is sent:
- Check the power supply 230V and bus voltage 12V DC.
- Check whether the antenna is connected.
- Check whether the upper rotary switch is pointing to one of the positions between 2 and 8.

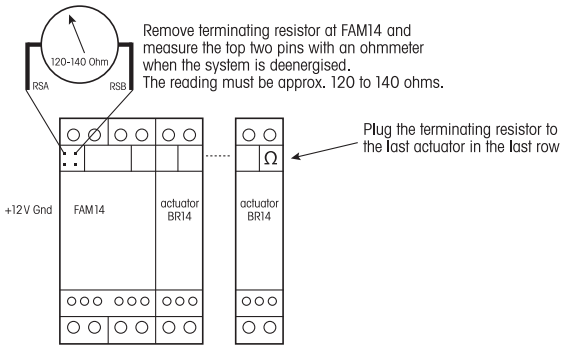
An actuator cannot be taught in; the flashing LED does not go out:
- No connection is allowed to be made with PCT14. The LED on the FAM14 may not light up green. If necessary, carry out a bus reset.
- Check whether a rotary switch was turned to LRA instead of LRN during teach-in.
- Check whether the signals are processed via FAM14, FTS14EM, FGW14 or FTS14TG. An LED must flash on the appropriate device when the pushbutton is pressed.

The actuators do not react to signals from FSU14 or FMSR14:
- The BA rotary switch on the FAM14 is not pointing to 2, 3 or 4.
- No device address was assigned yet.
- The wrong operating mode was selected. On the FSU14 switch the channel operating mode to automatic or central on/off. On the FMSR14 do not select the operating mode 'OFF'.

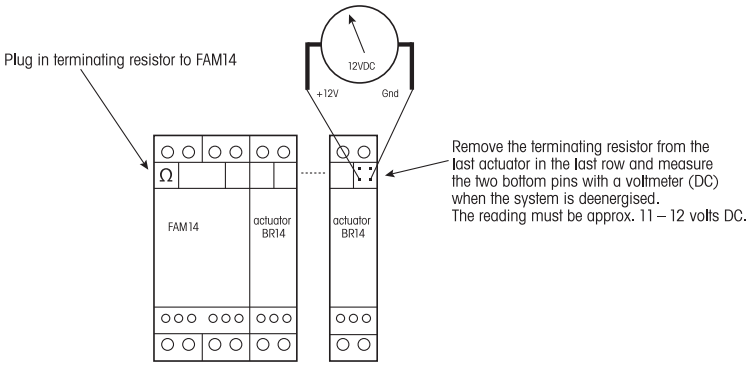
The connected PCT14 software signals an exception error:
- See also general bus faults.
- Switch off and switch on the connection to the FAM14 or FTS14KS.
- A device address was assigned twice. Delete and try again.
- Remove all jumpers to the actuators using the jumper installation tool SMW14. Set up a connection to the PCT14 and extend the bus system by one actuator at a time while assigning device address with the PCT14 software; this cancels any double address assignment.

Check the bus jumpers

1)



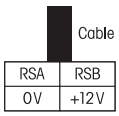
2)



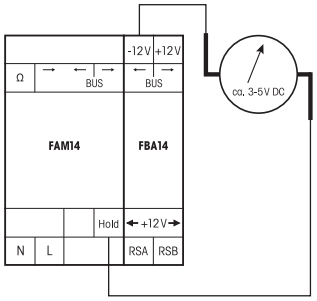
3) Bus slot assignment, top view

RSB	RSA	RSB	RSA
+12V	0V	+12V	0V

4) BBV14 assignment, top view of contacts



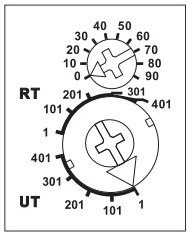
5)



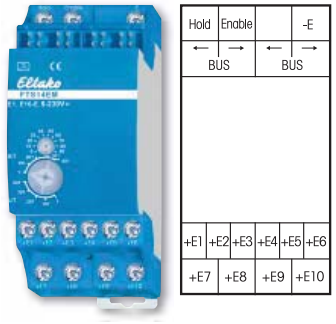
When the HOLD line is connected and the system is switched on, use a DC voltmeter to measure between GND or -12V and HOLD. Approx. 3 to 5V DC should read here when the system is in idle.

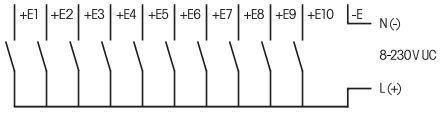
7. Remote sensing system FTS14

Function rotary switches



Standard setting ex works.





Control inputs FTS14EM

Functional principle:

The input modules FTS14EM each with 10 inputs inject control signals into the RS485 bus.

Starting in Production Week 44/15, the control inputs can be activated either for pushbuttons (as-delivered state), window/door contacts or motion detectors.

- for pushbuttons (as-delivered state): Turn the lower rotary switch within 3 seconds 5 times to left stop and back; the LED lights up for 2 seconds.
- for window contacts: Turn the upper rotary switch within 3 seconds 5 times to left stop and back; the LED lights up for 4 seconds.
- for motion detectors: Turn the upper rotary switch within 3 seconds 5 times to right stop and back; the LED lights up for 6 seconds.

They generate exactly the same telegram structure as wireless building sensors and can therefore be taught-in directly in actuators of the Series 14. Up to 5 telegrams from the FTK wireless window/door contact and 5 telegrams from the FBH motion detector/brightness sensor are generated by the FTS14KEM contact input module.

Connections:

Due to the floating universal control voltage of 8 to 230 V UC, the sensors (contacts) can either be connected directly to the mains voltage or supplied with low voltage (recommended 24 V DC). Then a separate switch mode power supply unit SNT12/24 V must be used.

All input terminals (E1 to E10) are arranged in the lower terminal blocks and a terminal for the common pushbutton reference potential (-E) is located on the upper terminal block.

The FTS14EM resp. FTS14KEM devices can be configured by 2 rotary switches so that up to 50 devices with up to 500 contacts, e.g. pushbuttons, switches etc. can be connected in a bus installation. The telegram of each pushbutton input in the entire bus is available over the bus system simultaneously for all actuators connected. It is therefore possible to install central and group pushbuttons rapidly by using few wires. The related pushbuttons are simply taught-in in the required actuators on the bus.

Recommendations for hook-up on the control side: A hook-up wire, e.g. J-Y(ST)Y 10x2x0.8mm², is recommended for cost reasons and because it is easy to route. A cross-section of 0.6 mm² is less suitable since it is not retained sufficiently in the device terminals.

ID range:

The lower rotary switch defines the group to which an FTS14EM resp. FTS14KEM belongs. A total of 5 groups are available (1, 101, 201, 301 and 401) each with 100 IDs. The decade ID within a group, which can contain max 10 FTS14EM resp. FTS14KEM devices, is set using the upper rotary switch (0-90). The ID range then results from the combination of upper and lower rotary switches and must be set differently on each FTS14EM resp. FTS14KEM. Every FTS14EM can be set either to UT (= universal pushbutton) or to RT (= direction pushbutton) using the lower rotary switch. The LED under the upper rotary switch flickers briefly when a connected pushbutton is pressed.

Function test:

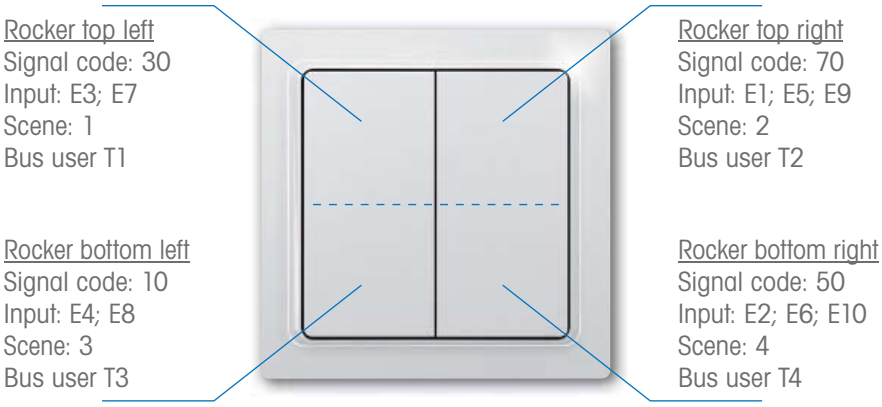
The LED under the upper rotary switch flashes briefly when a connected sensor is operated.

All HOLD terminals from the devices on the bus must be connected together. The bus communication (regulation of the bus access, against collision) will only work correctly if this connections are done.

In addition connect the ENABLE terminal of every tenth input module to the connected HOLD terminals.

When the HOLD wire is also routed across several levels as well as RSA/RSB, the GND wire must also be routed in all cases. It is urgently required to use a screened telecommunication wire, or even better a CAT7 cable.

Overview of telegrams:
Derive telegram between wireless pushbuttons, inputs FTS14EM, bus users and signal code



The 10 inputs of input module FTS14EM generate 5 or 10 different control telegrams which are derived from the wireless pushbutton. The operating mode is dependent on the lower rotary switch (UT or RT).

Operating mode UT (universal pushbutton)
In UT mode, the FTS14EM generates a consecutive ID for each of the 10 terminals and their ID range is dependent on a combination of the two rotary switch positions. In addition, the signal generated also contains a code for the rocker half or rocker end derived from the wireless pushbutton. This must be considered when programming manually with PCT14.

Example:

ID	Input	Rocker half	Rocker end
0000100**1**	E1	right	top
0000100**2**	E2	right	bottom
0000100**3**	E3	left	top
0000100**4**	E4	left	bottom
0000100**5**	E5	right	top
0000100**6**	E6	right	bottom
0000100**7**	E7	left	top
0000100**8**	E8	left	bottom
0000100**9**	E9	right	top
000010**10**	E10	right	bottom

Operating mode RT (direction pushbutton)

The RT mode is preferred for Venetian blind control and saves a lot of time for teach-in since only a couple of commands need to be taught in. In RT mode, the FTS14EM generates 5 even-numbered IDs per terminal pair and their ID range is dependent on a combination of the two rotary switch positions. In addition, the signal generated also contains a code for the rocker half or rocker end derived from the wireless pushbutton. This must be considered when programming manually with PCT14. When RT mode is used, the pair formation (E1/E2) and switch function assignment (E1=up; E2=down) must be considered. In case mixed RT and UT commands are required on an input module, select the UT group. In this case, the two input commands must be taught in separately for direction pushbutton functions.

Example:

ID	Input	Rocker half	Rocker end	Switch function assignment
0000100**2**	E1/E2	right	E1=top; E2=bottom	E1=On (Up); E2=Off (Down)
0000100**4**	E3/E4	left	E3=top; E4=bottom	E3=On (Up); E4=Off (Down)
0000100**6**	E5/E6	right	E5=top; E6=bottom	E5=On (Up); E6=Off (Down)
0000100**8**	E7/E8	left	E7=top; E8=bottom	E7=On (Up); E8=Off (Down)
000010**10**	E9/E10	right	E9=top; E10=bottom	E9=On (Up); E10=Off (Down)

Structure of ID HEX code

To considerably speed up derivation of the hex code ID for input into the PCT14 from the terminal description and rotary switch setting, they are generated in "quasi-decimal" notation.

Here is an example:
The ID codes generated in the FTS14EM always consist of the basic hex code 00 00 1x xx.

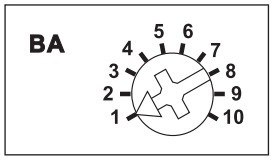
x xx is dependent on the two rotary switch settings (group below, decade above) and terminal:

x -- rotary switch below: Group e.g. **1** 0 1
- **x**- Upper rotary switch: Decade e.g. **2** 0
- -**x** Input terminal: e.g. E **5**

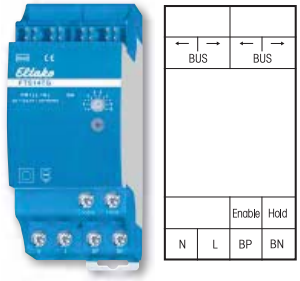
This results in the ID: 00001 125

8. FTS14TG pushbutton gateway and pushbutton bus coupler or bus switch

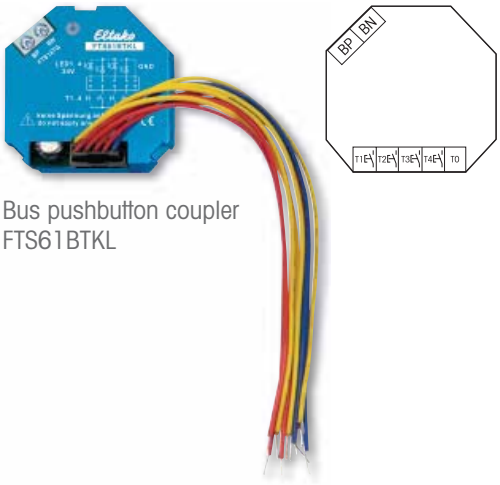
Function rotary switches



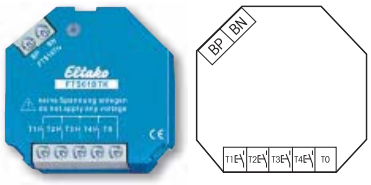
Standard setting ex works.



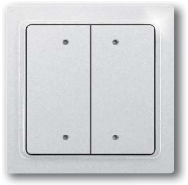
Pushbutton gateway FTS14TG



Bus pushbutton coupler
FTS61BTKL



Bus pushbutton coupler
FTS61BTK



Bus pushbutton
B4T65/B4FT65

Operating principle:

Use the FTS14TG pushbutton gateway to enter command signals to the RS485 bus from a separate 2-wire bus connected to an pushbutton bus coupler and a bus switch. The gateway generates the same telegram structure as wireless building pushbuttons. Therefore commands can be taught-in directly into Series 14 actuators.

A maximum of 30 bus users can be connected to a pushbutton gateway FTS14TG. The maximum possible is 3 pushbutton gateways FTS14TG with a total of 90 bus devices. An existing bus topology can use used to generate up to 120 command signals in each line. Feedbacks over the same bus can be displayed by the bus pushbutton with integrated LEDs or by bus pushbutton coupler FTS61BTKL. Data transfer and power supply between bus modules and the gateway are routed over only 2 conductors.

The bus coupler has a maximum line length of 2 metres and up to four conventional pushbuttons/switches can be connected to terminals T1 - T4. The pairs T1/T3 and T2/T4 can be defined as direction pushbuttons. The opposite pole in each case is T0. On the FTS14BTKL the pushbuttons are connected to the four connecting lines T1-T4 and the common blue T0. The associated LEDs are connected to the four yellow connecting lines and the common blue GND.
The permitted total line length of the 2-wire bus is 200 m. The RLC device enclosed with the FTS14TG must be connected to the terminals BP and BN on the furthest bus pushbutton or bus pushbutton coupler.

Connections:

Connect the bus to BP and BN. Make sure the polarity is correct!

Please use only conventional bus or telephone lines.

Do not apply an external control voltage.

The bus communication (regulation of the bus access, against collision) will only work correctly if this connections are done. Only the first FTS14TG pushbutton gateway requires an additional connection to the Enable terminal. A power supply of 230V is required to generate the internal 29V DC bus voltage at L and N. It is electrically isolated from the RS485 bus.

Issuing device addresses:
Device addresses for bus devices are issued one after the other using the rotary switch on the FTS14TG. Only one device can be addressed with the factory setting Add. 0. Prewiring is therefore not suitable. Only after a single newly added device is issued with an address can another device be added and addressed in the wiring.
Connect the first bus user to bus terminals BP and BN. The LED on the bus device lights up red. Briefly turn the rotary switch on the FTS14TG to pos. 1 and back to 2. The LED on the bus user lights up green. Only then connect the second bus device and repeat the procedure. When an address is issued by the FTS14TG pushbutton gateway, its lower LED lights up green for several seconds. The lowest free address is always issued automatically, i.e. when several bus couplers are addressed, all couplers already addressed must remain in the bus, otherwise the address is issued several times. No addresses can be issued specifically. It is highly advisable to label bus devices already addressed for documentation.

Replacement and re-addressing:
If a replacement bus user is to receive the same device address as its predecessor, the new device must absolutely be without a device address. When you briefly turn the rotary switch on the FTS14TG to pos. 1, the new bus user automatically receives the lowest free device address which is therefore the same. This dispenses with teach-in in the actuators.

Delete device address:
Only connect one bus user on the FTS14TG to bus terminals BP and BN. The LED on the bus user lights up green. Turn the rotary switch to pos. 9. The LED lights up red. If an address was deleted by the pushbutton gateway FTS14TG, its lower LED also lights up green for a few seconds.

ID range:
In operating mode, the rotary switch BA defines the ID range and the ID structure. Up to 3 bus lines are possible. Each pushbutton gateway must be set to a different operating mode to avoid duplicating IDs. (See the table on pages 21 to 23).
Pos. 2, 3, 4: Each bus user uses only one ID. (Use as direction pushbutton).
Pos. 5, 6, 7: Each bus user uses its own one ID per pushbutton. (Use as universal pushbutton; prescribed setting for relay function).
In addition, the modules send 4 different control signals per pushbutton:
T1 sends 0x30, pushbutton T2 sends 0x70, pushbutton T3 sends 0x10, pushbutton T4 sends 0x50

Information on the PCT14:
If you configure the FTS14TG with the PCT14, the FAM14 or FTS14KS must first issue a device address. Then you can make assignments between actuators and feedback LEDs in an ID table. The PCT14 is unable to read out addressed bus switches or pushbutton bus couplers. ID detection (right-hand column) must be switched on in order to display the address bus switches or pushbutton bus couplers. After operating a switch, the IDs are then displayed (see pages 21-23).

Testing the installation:
Turn the rotary switch of the FTS14TG to Pos. 8 to test the installation and data transfer over the 2-wire bus. In this operating mode, no pushbutton telegrams are sent to the Eltako RS485 bus. Press all pushbuttons several times on the bus users.
The lower green LED lights up briefly every time a pushbutton is pressed. The automatic reset is not active, i.e. if an error occurs in the 2-wire bus, the lower red LED lights up permanently.

LED displays in operation on the FTS14TG:
The upper red LED lights up briefly when a confirmation telegram is output by an actuator to the 2-wire bus. The lower red LED lights up briefly when a pushbutton telegram is output to the Eltako RS485 bus. The lower green LED lights up briefly when a bus user pushbutton is pressed. The lower green LED lights up permanently as long as the rotary switch is at Pos. 10 or when there is an active link to the PCT14.

Status display with bus pushbutton:
Bus pushbuttons with LED or FTS61BTKL bus pushbutton couplers can display feedbacks of switch actuators or dimmers. This is achieved in the PCT14 software by assigning each pushbutton with the decimal device address of the actuator and the related function in the FTS14TG (usually ON). In order to utilise the feedback from a dimmer, use the PCT14 to activate the "Confirmation telegram with pushbutton telegram" parameter.

Error messages on the FTS14TG:
The lower red LED flashes continuously when no bus user is connected or when no device address has yet been assigned. The lower red LED flashes for 2 seconds if an error occurs during data transfer in the 2-wire bus. In operating modes pos. 2 to 7, an automatic reset is triggered after 2 seconds when there is a fault. The connected bus users are re-initialised and operation then continues normally.

Overview of telegrams:

Only one ID is used per module (see blue fields) in BA rotary switch positions 2, 3 and 4.
In rotary positions 5, 6 and 7 four different IDs are used per module.
BA rotary switch pos. 2 or 5 = line 1
BA rotary switch pos. 3 or 6 = line 2
BA rotary switch pos. 4 or 7 = line 3

Line 1 BA = 2 or 5			Line 2 BA = 3 or 6			Line 3 BA = 4 or 7		
		Device No.			Device No.			Device No.
1501	T1 = top left	1	**1601**	T1 = top left	1	**1701**	T1 = top left	1
1502	T2 = top right		1602	T2 = top right		1702	T2 = top right	
1503	T3 = bottom left		1603	T3 = bottom left		1703	T3 = bottom left	
1504	T4 = bottom right		1604	T4 = bottom right		1704	T4 = bottom right	
1505	T1 = top left	2	**1605**	T1 = top left	2	**1705**	T1 = top left	2
1506	T2 = top right		1606	T2 = top right		1706	T2 = top right	
1507	T3 = bottom left		1607	T3 = bottom left		1707	T3 = bottom left	
1508	T4 = bottom right		1608	T4 = bottom right		1708	T4 = bottom right	
1509	T1 = top left	3	**1609**	T1 = top left	3	**1709**	T1 = top left	3
150A	T2 = top right		160A	T2 = top right		170A	T2 = top right	
150B	T3 = bottom left		160B	T3 = bottom left		170B	T3 = bottom left	
150C	T4 = bottom right		160C	T4 = bottom right		170C	T4 = bottom right	
150D	T1 = top left	4	**160D**	T1 = top left	4	**170D**	T1 = top left	4
150E	T2 = top right		160E	T2 = top right		170E	T2 = top right	
150F	T3 = bottom left		160F	T3 = bottom left		170F	T3 = bottom left	
1510	T4 = bottom right		1610	T4 = bottom right		1710	T4 = bottom right	
1511	T1 = top left	5	**1611**	T1 = top left	5	**1711**	T1 = top left	5
1512	T2 = top right		1612	T2 = top right		1712	T2 = top right	
1513	T3 = bottom left		1613	T3 = bottom left		1713	T3 = bottom left	
1514	T4 = bottom right		1614	T4 = bottom right		1714	T4 = bottom right	
1515	T1 = top left	6	**1615**	T1 = top left	6	**1715**	T1 = top left	6
1516	T2 = top right		1616	T2 = top right		1716	T2 = top right	
1517	T3 = bottom left		1617	T3 = bottom left		1717	T3 = bottom left	
1518	T4 = bottom right		1618	T4 = bottom right		1718	T4 = bottom right	
1519	T1 = top left	7	**1619**	T1 = top left	7	**1719**	T1 = top left	7
151A	T2 = top right		161A	T2 = top right		171A	T2 = top right	
151B	T3 = bottom left		161B	T3 = bottom left		171B	T3 = bottom left	
151C	T4 = bottom right		161C	T4 = bottom right		171C	T4 = bottom right	
151D	T1 = top left	8	**161D**	T1 = top left	8	**171D**	T1 = top left	8
151E	T2 = top right		161E	T2 = top right		171E	T2 = top right	
151F	T3 = bottom left		161F	T3 = bottom left		171F	T3 = bottom left	
1520	T4 = bottom right		1620	T4 = bottom right		1720	T4 = bottom right	
1521	T1 = top left	9	**1621**	T1 = top left	9	**1721**	T1 = top left	9
1522	T2 = top right		1622	T2 = top right		1722	T2 = top right	
1523	T3 = bottom left		1623	T3 = bottom left		1723	T3 = bottom left	
1524	T4 = bottom right		1624	T4 = bottom right		1724	T4 = bottom right	
1525	T1 = top left	10	**1625**	T1 = top left	10	**1725**	T1 = top left	10
1526	T2 = top right		1626	T2 = top right		1726	T2 = top right	
1527	T3 = bottom left		1627	T3 = bottom left		1727	T3 = bottom left	
1528	T4 = bottom right		1628	T4 = bottom right		1728	T4 = bottom right	

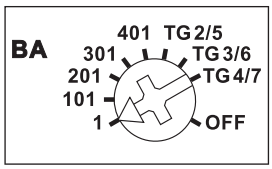
Line 1 BA = 2 or 5			Line 2 BA = 3 or 6			Line 3 BA = 4 or 7		
		Device No.			Device No.			Device No.
1529	T1 = top left	11	**1629**	T1 = top left	11	**1729**	T1 = top left	11
152A	T2 = top right		162A	T2 = top right		172A	T2 = top right	
152B	T3 = bottom left		162B	T3 = bottom left		172B	T3 = bottom left	
152C	T4 = bottom right		162C	T4 = bottom right		172C	T4 = bottom right	
152D	T1 = top left	12	**162D**	T1 = top left	12	**172D**	T1 = top left	12
152E	T2 = top right		162E	T2 = top right		172E	T2 = top right	
152F	T3 = bottom left		162F	T3 = bottom left		172F	T3 = bottom left	
1530	T4 = bottom right		1630	T4 = bottom right		1730	T4 = bottom right	
1531	T1 = top left	13	**1631**	T1 = top left	13	**1731**	T1 = top left	13
1532	T2 = top right		1632	T2 = top right		1732	T2 = top right	
1533	T3 = bottom left		1633	T3 = bottom left		1733	T3 = bottom left	
1534	T4 = bottom right		1634	T4 = bottom right		1734	T4 = bottom right	
1535	T1 = top left	14	**1635**	T1 = top left	14	**1735**	T1 = top left	14
1536	T2 = top right		1636	T2 = top right		1736	T2 = top right	
1537	T3 = bottom left		1637	T3 = bottom left		1737	T3 = bottom left	
1538	T4 = bottom right		1638	T4 = bottom right		1738	T4 = bottom right	
1539	T1 = top left	15	**1639**	T1 = top left	15	**1739**	T1 = top left	15
153A	T2 = top right		163A	T2 = top right		173A	T2 = top right	
153B	T3 = bottom left		163B	T3 = bottom left		173B	T3 = bottom left	
153C	T4 = bottom right		163C	T4 = bottom right		173C	T4 = bottom right	
153D	T1 = top left	16	**163D**	T1 = top left	16	**173D**	T1 = top left	16
153E	T2 = top right		163E	T2 = top right		173E	T2 = top right	
153F	T3 = bottom left		163F	T3 = bottom left		173F	T3 = bottom left	
1540	T4 = bottom right		1640	T4 = bottom right		1740	T4 = bottom right	
1541	T1 = top left	17	**1641**	T1 = top left	17	**1741**	T1 = top left	17
1542	T2 = top right		1642	T2 = top right		1742	T2 = top right	
1543	T3 = bottom left		1643	T3 = bottom left		1743	T3 = bottom left	
1544	T4 = bottom right		1644	T4 = bottom right		1744	T4 = bottom right	
1545	T1 = top left	18	**1645**	T1 = top left	18	**1745**	T1 = top left	18
1546	T2 = top right		1646	T2 = top right		1746	T2 = top right	
1547	T3 = bottom left		1647	T3 = bottom left		1747	T3 = bottom left	
1548	T4 = bottom right		1648	T4 = bottom right		1748	T4 = bottom right	
1549	T1 = top left	19	**1649**	T1 = top left	19	**1749**	T1 = top left	19
154A	T2 = top right		164A	T2 = top right		174A	T2 = top right	
154B	T3 = bottom left		164B	T3 = bottom left		174B	T3 = bottom left	
154C	T4 = bottom right		164C	T4 = bottom right		174C	T4 = bottom right	
154D	T1 = top left	20	**164D**	T1 = top left	20	**174D**	T1 = top left	20
154E	T2 = top right		164E	T2 = top right		174E	T2 = top right	
154F	T3 = bottom left		164F	T3 = bottom left		174F	T3 = bottom left	
1550	T4 = bottom right		1650	T4 = bottom right		1750	T4 = bottom right	

Line 1 BA = 2 or 5			Line 2 BA = 3 or 6			Line 3 BA = 4 or 7		
		Device No.			Device No.			Device No.
1551	T1 = top left	21	**1651**	T1 = top left	21	**1751**	T1 = top left	21
1552	T2 = top right		1652	T2 = top right		1752	T2 = top right	
1553	T3 = bottom left		1653	T3 = bottom left		1753	T3 = bottom left	
1554	T4 = bottom right		1654	T4 = bottom right		1754	T4 = bottom right	
1555	T1 = top left	22	**1655**	T1 = top left	22	**1755**	T1 = top left	22
1556	T2 = top right		1656	T2 = top right		1756	T2 = top right	
1557	T3 = bottom left		1657	T3 = bottom left		1757	T3 = bottom left	
1558	T4 = bottom right		1658	T4 = bottom right		1758	T4 = bottom right	
1559	T1 = top left	23	**1659**	T1 = top left	23	**1759**	T1 = top left	23
155A	T2 = top right		165A	T2 = top right		175A	T2 = top right	
155B	T3 = bottom left		165B	T3 = bottom left		175B	T3 = bottom left	
155C	T4 = bottom right		165C	T4 = bottom right		175C	T4 = bottom right	
155D	T1 = top left	24	**165D**	T1 = top left	24	**175D**	T1 = top left	24
155E	T2 = top right		165E	T2 = top right		175E	T2 = top right	
155F	T3 = bottom left		165F	T3 = bottom left		175F	T3 = bottom left	
1560	T4 = bottom right		1660	T4 = bottom right		1760	T4 = bottom right	
1561	T1 = top left	25	**1661**	T1 = top left	24	**1761**	T1 = top left	25
1562	T2 = top right		1662	T2 = top right		1762	T2 = top right	
1563	T3 = bottom left		1663	T3 = bottom left		1763	T3 = bottom left	
1564	T4 = bottom right		1664	T4 = bottom right		1764	T4 = bottom right	
1565	T1 = top left	26	**1665**	T1 = top left	26	**1765**	T1 = top left	26
1566	T2 = top right		1666	T2 = top right		1766	T2 = top right	
1567	T3 = bottom left		1667	T3 = bottom left		1767	T3 = bottom left	
1568	T4 = bottom right		1668	T4 = bottom right		1768	T4 = bottom right	
1569	T1 = top left	27	**1669**	T1 = top left	27	**1769**	T1 = top left	27
156A	T2 = top right		166A	T2 = top right		176A	T2 = top right	
156B	T3 = bottom left		166B	T3 = bottom left		176B	T3 = bottom left	
156C	T4 = bottom right		166C	T4 = bottom right		176C	T4 = bottom right	
156D	T1 = top left	28	**166D**	T1 = top left	28	**176D**	T1 = top left	28
156E	T2 = top right		166E	T2 = top right		176E	T2 = top right	
156F	T3 = bottom left		166F	T3 = bottom left		176F	T3 = bottom left	
1570	T4 = bottom right		1670	T4 = bottom right		1770	T4 = bottom right	
1571	T1 = top left	29	**1671**	T1 = top left	29	**1771**	T1 = top left	29
1572	T2 = top right		1672	T2 = top right		1772	T2 = top right	
1573	T3 = bottom left		1673	T3 = bottom left		1773	T3 = bottom left	
1574	T4 = bottom right		1674	T4 = bottom right		1774	T4 = bottom right	
1575	T1 = top left	30	**1675**	T1 = top left	30	**1775**	T1 = top left	30
1576	T2 = top right		1676	T2 = top right		1776	T2 = top right	
1577	T3 = bottom left		1677	T3 = bottom left		1777	T3 = bottom left	
1578	T4 = bottom right		1678	T4 = bottom right		1778	T4 = bottom right	

FTS14FA optional:
Pushbutton telegrams on the bus can be sent directly to the Wireless Building System with a wireless output module FTS14FA, e.g. to control decentralised actuators.

A rotary switch defines the FTS14EM or FTS14TG group to which an FTS14FA belongs. Therefore a maximum of 8 FTS14FAs can be connected to a bus. Every button telegram from an FTS14EM or FTS14TG is sent with its own ID to the Eltako Building Wireless System.

Rotary switch on FTS14FA: Sends telegrams of all FTS14EMs set to 1.
Rotary switch on FTS14FA at Position 101: Sends telegrams of all FTS14EMs set to 101.
Rotary switch on FTS14FA at Position 201: Sends telegrams of all FTS14EMs set to 201.
Rotary switch on FTS14FA at Position 301: Sends telegrams of all FTS14EMs set to 301.
Rotary switch on FTS14FA at Position 401: Sends telegrams of all FTS14EMs set to 401.
Rotary switch on FTS14FA at Position TG2/5: Sends telegrams to all FTS14TGs which are at 2 or 5.
Rotary switch on FTS14FA at Position TG3/6: Sends telegrams to all FTS14TGs which are at 3 or 6.
Rotary switch on FTS14FA at Position TG4/7: Sends telegrams to all FTS14TGs which are at 4 or 7.
Rotary switch on FTS14FA at Position OFF: The FTS14FA is switched off.
The green LED under the rotary switch flashes briefly when a wireless telegram is sent.
Incoming telegrams from an FAM14 device in the bus are not resent by the FTS14FA.



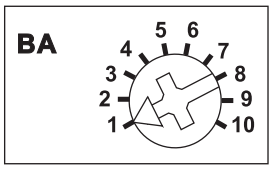
Standard setting ex works.

FGW14-USB:
The gateway has multiple uses: to connect a Smart Home central control unit GFVS-SafeIV or a PC via a USB interfaces, to couple up to three FEM devices, to connect to bus components of the older Series 12, or as bus connector for two Series 14 RS485 buses. When an ID is transferred via the gateway, the green LED blinks briefly. The maximum permitted cable length for USB is 4.5m. Longer sections can only be operated reliably by using an active USB hub.

Overview of rotary switch functions:
Pos. 1: Bus12 -> Bus14
Pos. 2: Bus12 -> Bus14 with ID filter
Pos. 3: Bus14 -> Bus12
Pos. 4: Bus14 an RSA2/RSB2 -> Bus14 with ID filter
Pos. 5: Bus14 <-> USB 9600 Baud
Pos. 6: Bus14 <-> USB 58K Baud
Pos. 7: CLR ID 9600 Baud
Pos. 8: LRN ID 9600 Baud
Pos. 9: PCT14 communication

For a more detailed description see the operating instructions.

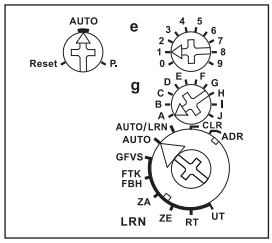
Operating mode rotary switch



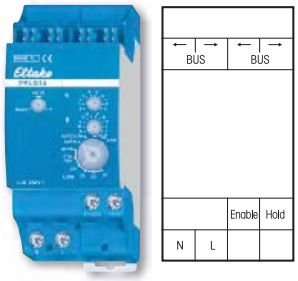
Standard setting ex works.

9. Powerline gateway FPLG14

Function rotary switches



Standard setting ex works.



Powerline gateway FPLG14

Operating principle:
This gateway translates wireless and Powerline telegrams in both directions. When you use the GFVS visualisation software, we recommend connection using an FGW14-USB!

All Powerline telegrams from the electricity wiring system are automatically translated into RS485 bus telegrams and may also be sent as wireless telegrams by connected FTD14 devices.

Only wireless and RS485 bus telegrams taught into the FPLG14 are translated into Powerline telegrams and modulated onto the electricity wiring system. Up to 120 different addresses. Teach-in takes place by means of rotary switches on the front of the devices or using the PCT14 as described in the user`s manual.

Connections:
This device needs 230 V as power supply. Over this connection are also sent the Powerline signals. All HOLD terminals from the devices on the bus must be connected together.
The bus communication (regulation of the bus access, against collision) will only work correctly if this connections are done. The ENABLE terminal must only be connected to the HOLD terminal if the bus is working without FAM14.

Assign device address for FPLG14:
To be ready to work, an address must be assigned from the FAM14 to the FPLG14. Set the rotary switch on the FAM14 to position 1, its lower LED flashes red. Set the lower rotary switch of the FPLG14 to ADR. The LED flashes at a low rate. Once the address has been assigned by the FAM14, its lower LED flashes green for 5 seconds and the LED of the FPLG14 goes out.

Assigning a domain (home address):
Switch on the main fuse. The red LED below the left rotary switchof the unconfigured FPLG14 flickers. Press the pushbutton (switch) of apreviously installed and configured Powerline device **5 times (10 times)** within 5 seconds. The actuator/sensor input transfers its domains (home address) to the FPLG14.

PL-address range
The address is configurable on the PL devices with 2 rotary switches. 15 group addresses (g) and 16 element addresses are available.
With the software Sienna-Professional®, the element addresses (e) from 1 to 127 are configurable. This address range can also be controlled from the FPLG14. With the software Sienna-Professional®, the group adress (g) A to Z are configurable. **The FPLG14 can only control group adresses from A to O.** (A notification appears in the software Sienna-Professional)

Teach-in wireless sensors via rotary switches:
Set the middle rotary switch to the desired group address g. Set the upper-right rotary switch to the desired elementary address e. Set the lower rotary switch to the required teach-in function. Press the button to be taught in twice quickly in succession ('double click'). The LED goes out.

Teaching-in a pushbutton of a Powerline sensor input into RS485 bus actuators:
At first, check that the PL-module has an adress (g) and (e). Select the desired teach-in function at the bus-actuator using the upper rotary switch (for FSR14 and F4HK14, set the lower rotary switch to the desired channel). Set the middle rotary switch to LRN. The LED flashes at a low rate. Operate the pushbutton. The LED goes out. To teach-in PL telegrams generated from the Software Sienna-Professionnal into a RS485 bus actuator, the lower rotary switch must be on AUTO/LRN.

Address assignment via PCT14:
The HEX address assigment results from the group address (g) and from the element address (e).

This table shows how to translate the addresses into HEX numbers.

Group address into HEX number:

(g)	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	-
HEX	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	-

Element address into HEX:

(e)	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
HEX	00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	0F	
More addresses are available with the software Sienna®-Professional																	
(e)	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	bis 127
HEX	10	11	12	13	14	15	16	17	18	19	1A	1B	1C	1D	1E	1F	bis 7F

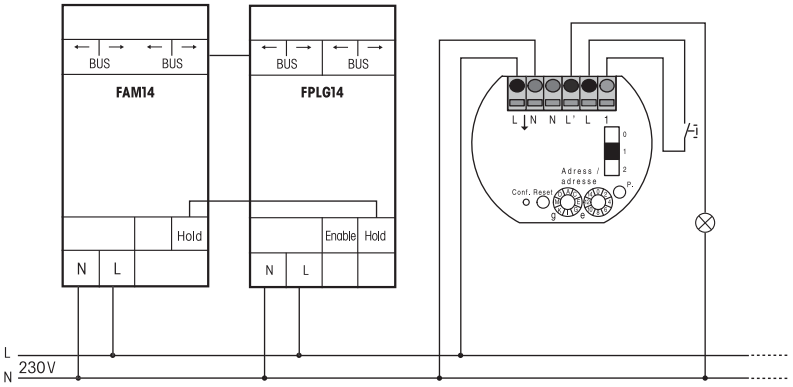
PL-Sensor-Telegrams for pushbuttons and control commands: range: 00004100 - 00004F7F
The base ID **00004** is always present additionally to the group and element adresses 00004(g)(e)
Example:
Group address A and element address 1 **00004 1 01**
Group address D and element address 12 **00004 4 0C**
Group address F and element address 127 00004 F 7F

PL-Actuator-State-Telegrams for feedback: range: 00005**100** – 00005**F7F**
The base ID 00005 is always present additionally to the group and element adresses 00005(g)(e)
Example:
State telegram from the PL module with group address A and element address 1 **00005 1 01**
State telegram from the PL module with group address O and element address 15 **00005 F 0F**

Settings in operation mode:
In operation, the left and lower right rotary switches must be placed on AUTO.

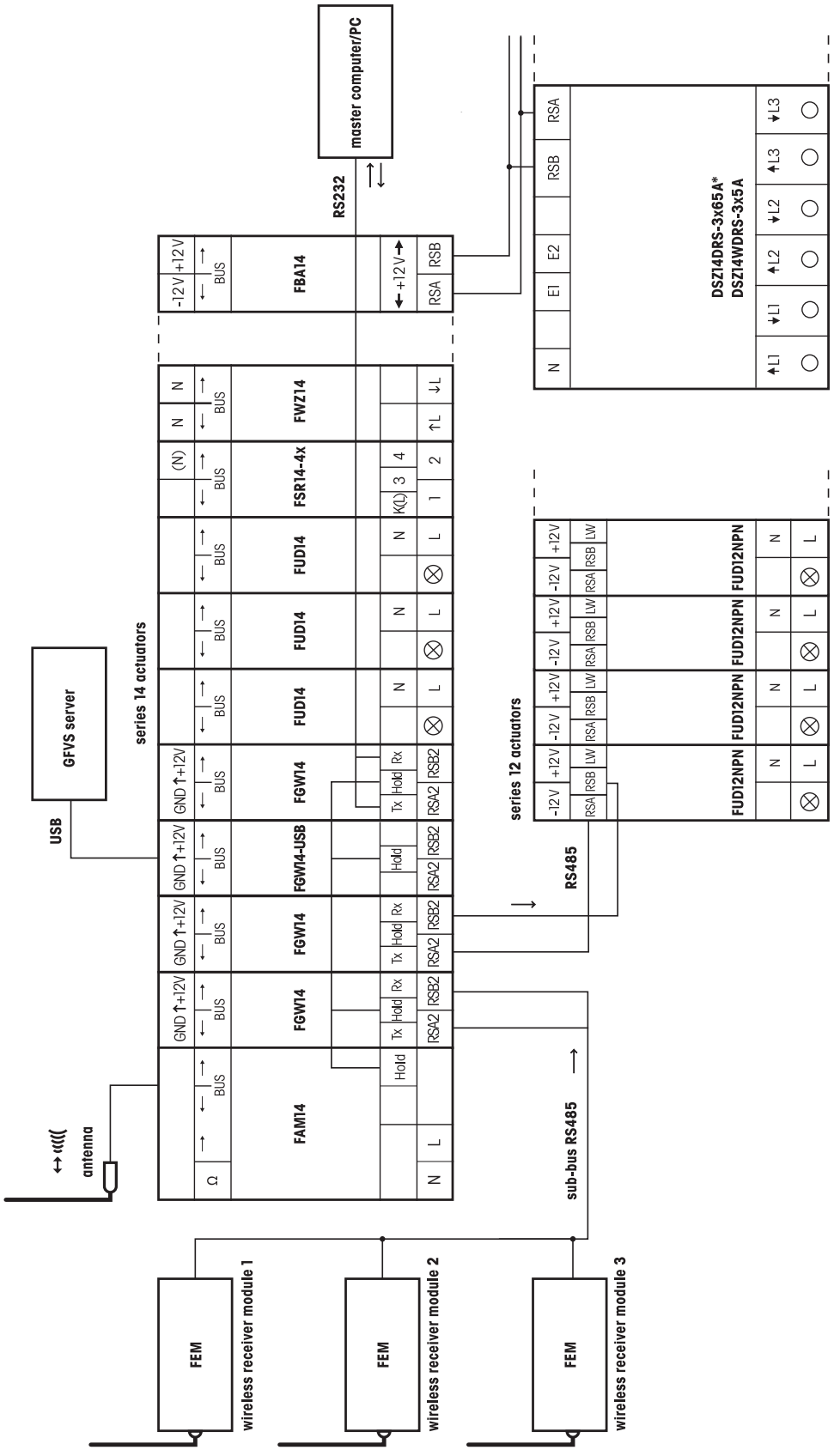
LED in operation mode:
Signal transits over the gateway are shown by the LED. The red LED from the upper right rotary switch is showing the wireless telegrams. The green LED from the lower rotary switch is showing the Powerline telegrams.

Typical connection:



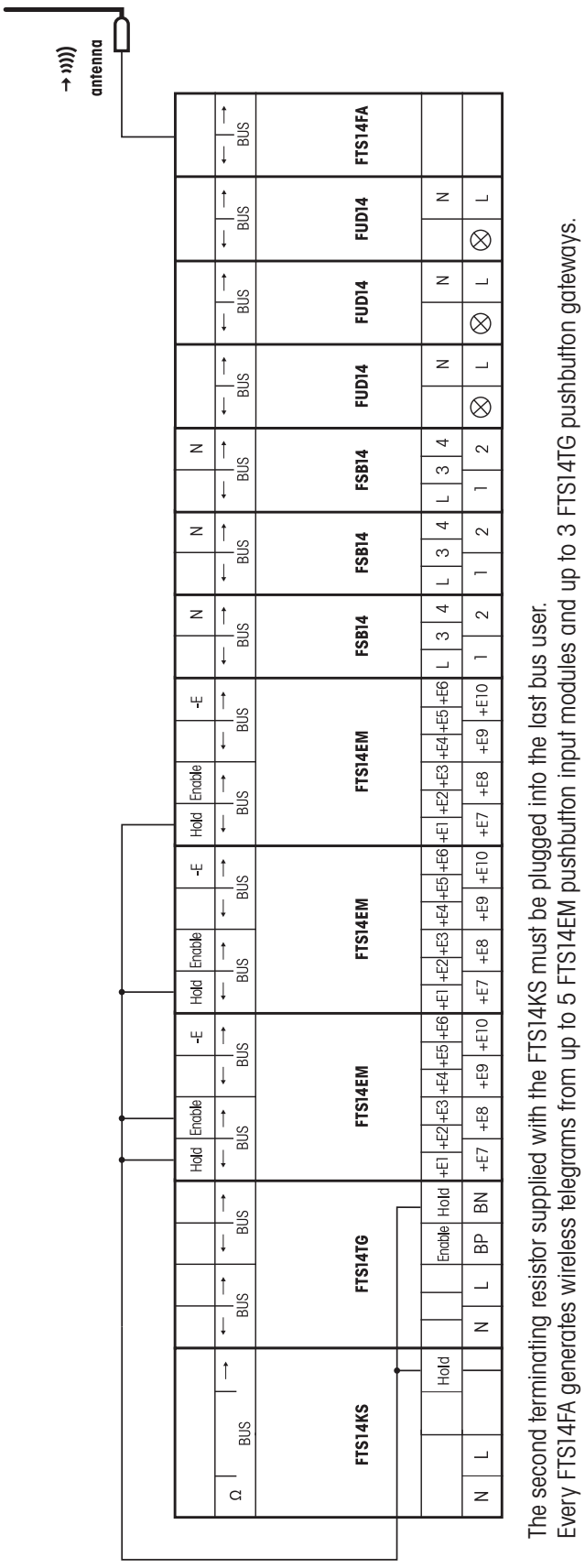
RS485 Bus Telegram Duplicator FTD14 (optional)
All Powerline telegrams from the electricity wiring system are automatically translated into RS485 bus telegrams and may also be sent as wireless telegrams by connected FTD14 devices. The telegrams of taught-in IDs are duplicated and directly sent into the Eltako wireless network with a new output ID. These wireless telegrams can be specifically taught-in in decentralized actuators. A total of 120 memory locations are available.

10. Circuit diagrams

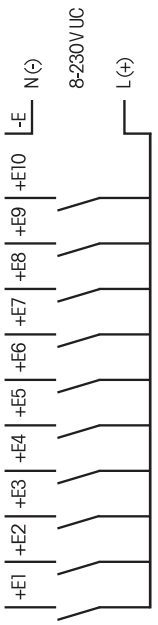


* Three-phase energy meters DSZ14 must be connected to the end of a bus line..
The second terminating resistor enclosed to the FAM14 should be connected to the last actuator, or a terminating resistor should be clamped to the terminals RSB/RSA of the last meter (120 Ω, not included).

The wireless output module FTS14FA with FTS14TG, FTS14EM and actuators

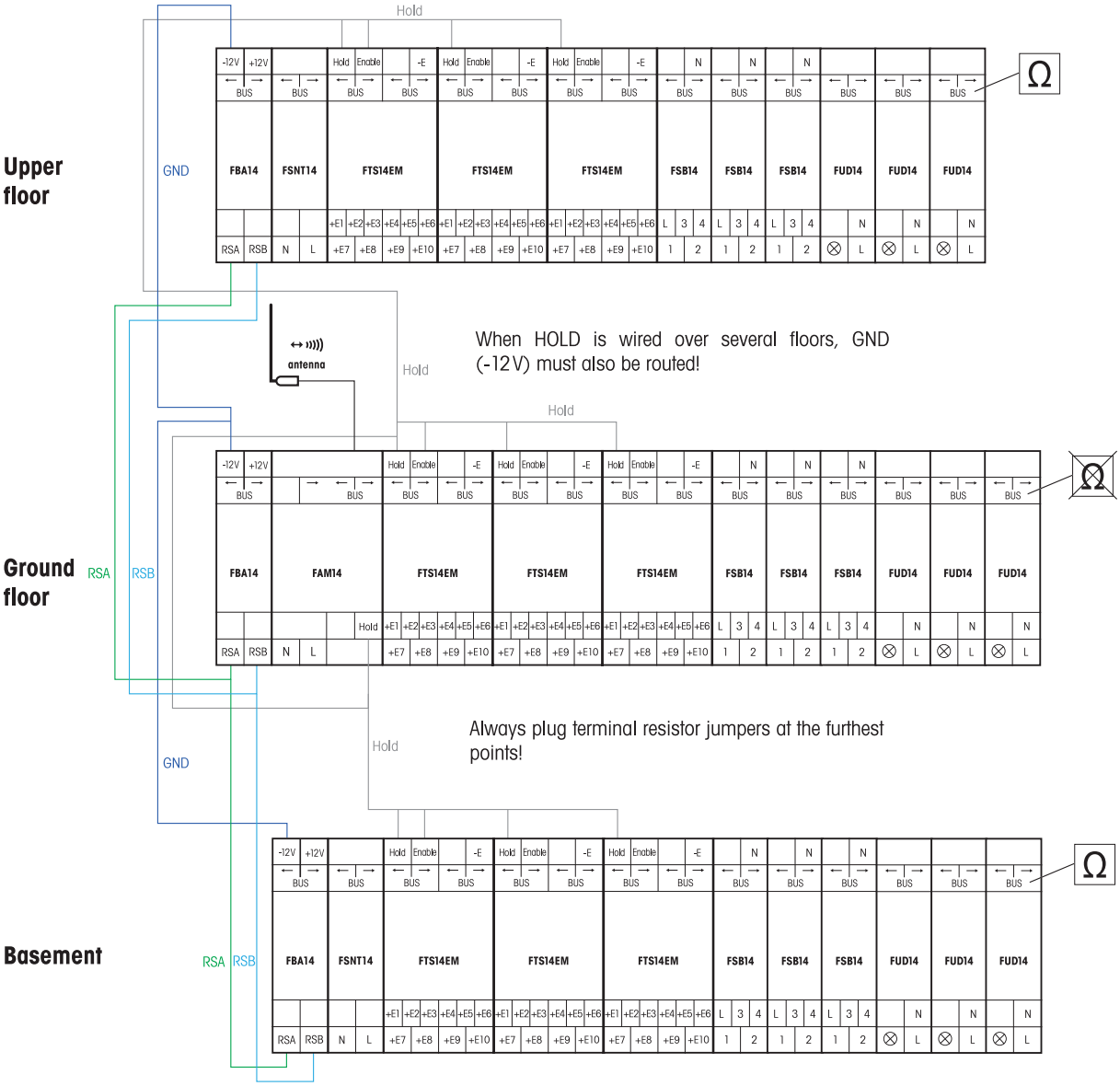


The second terminating resistor supplied with the FTS14KS must be plugged into the last bus user.
Every FTS14FA generates wireless telegrams from up to 5 FTS14EM pushbutton input modules and up to 3 FTS14TG pushbutton gateways.

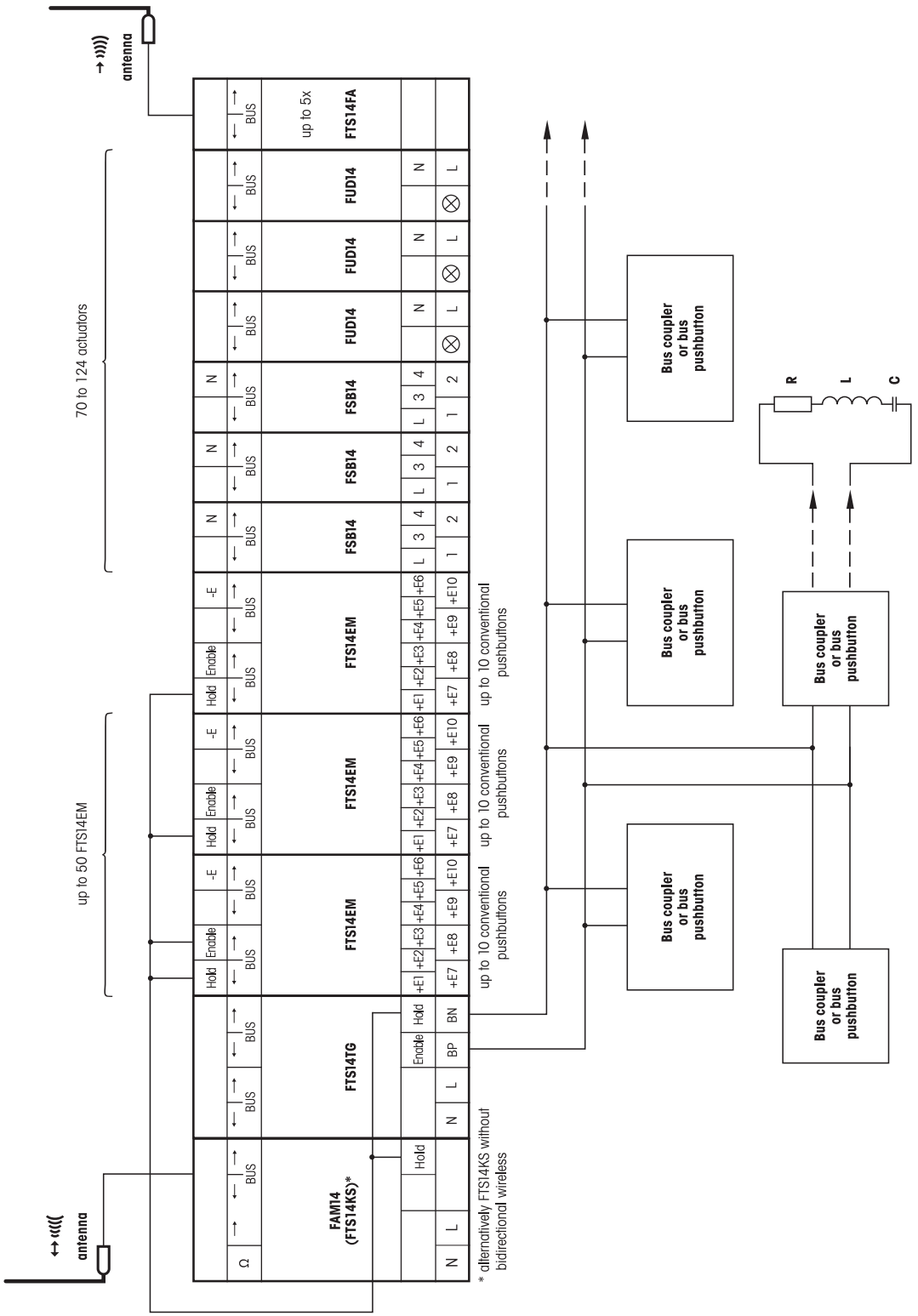


Control inputs FTS14EM

BR14 bus over 3 floors



The pushbutton gateway FTS14TG with bus pushbutton coupler or bus pushbutton



Plug the two terminal resistors which come with the FTS14KS to the last bus user. Up to 30 bus users can be connected via a pushbutton gateway FTS14TG. A simple 2-wire line supplies the bus pushbutton coupler with power. At the same time, the wires transfer pushbutton information. Here you can select any topology for the 2-wire connection.
The RLC device enclosed with the FTS14TG must be connected to the terminals BP and BN on the furthest bus pushbutton or bus pushbutton coupler.

11. QR codes - additional aids

You'll find help and useful information in the following QR codes

Videos
Here you'll find helpful short videos on the Series 14:
Topics: Topology, address assignment and teach-in procedures

Enhancing wireless range
Access technical details on the range of sensors and actuators here.

Other manuals

Technical support:
+49 176 13582514 thuente@eltako.de

Export Sales Manager:
+49 173 3180383 export@eltako.de

Eltako GmbH
Hofener Straße 54,
D-70736 Fellbach

+49 711 94350000 +49 711 5183740
info@eltako.de eltako.com eltako-wireless.com tap-radio.com

enocean alliance Member