8. Additional information about the FTS12

Control signals are fed into the RS485 bus by one or several FTS12EM button input modules each with 10 button inputs. They are coupled to the bidirectional bus via the FGW14 gateway. If the system is operated without FAM14 wireless antenna module, you require a separate SNT12-230V 12V DC power supply unit. The additional power connection is established by using jumpers via an existing terminal input by means of an FBA14. We recommend a separate 24V DC power supply as power supply for cable-bound buttons (8-230V UC are possible)

If more than 10 FTS12EM (100 inputs) input modules are required, use an FBV12 bus connector. This couples Bus 1 to Bus 2 and increases the number of ID addresses by 256 (BA position = 5) or 512 (BA - position = 6) depending on the operating setting so that up to 30 input modules (300 inputs) can be combined (see circuit diagram). The bus can be up to 100m long. If it is longer than 2 metres, it must be terminated by a 120 Ω terminating resistor. This allows the modules to be housed in several sub-distributor panels.

Recommendations for wiring on the control side:
A low control voltage up to 48V DC is suitable to activate the buttons. A wring cable, e.g. J-Y(ST)Y 10x2x0,8mm² is recommended for cost reasons and because it is simple to route.
A cross-section of 0.6mm² is less suitable as it is not adequately held by the device terminals.

Assigning the FTS12EM inputs:

Up to 10 binary signals (buttons, switches etc.) can be connected to the 10 inputs of the FTS12EM in-put module. Corresponding switching slopes are output in control telegrams onto the RS485 bus and can be saved in the actuators. Remember that the -A2 and -E2 terminals are connected to the button control voltage by the negative potential supply!

The rotary switch assigns a separate ID range to a maximum of 10 FTS12EM devices. This means that up to 100 addresses can be sent on the bus via connected contacts (switches, buttons or other binary contacts). This must be set on the front panel of the device before startup (position 1-91).

ID rotary switch
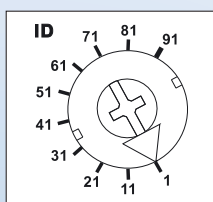
Standard setting ex works.
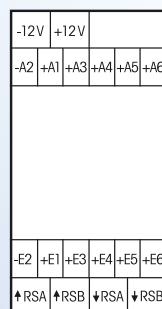
Pairing must be considered to connect a double button to the FTS12EM so that an actuator can execute both commands in a **direction button** (e.g. blind control UP/DOWN or dimmer ON/OFF). The following assignment applies to UP/DOWN or ON/OFF:

1st button pair	2nd button pair	3rd button pair	4th button pair	5th button pair
A1/A3	A4/A5	E1/E3	E4/E5	A6/E6

Each input has specific functions as listed in Table 1 below.

Table 1

Input FTS12EM	A1	A3	A4	A5	A6	E1	E3	E4	E5	E6
Universal button (also called changeover button)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Direction button command	ON/UP	OFF/DOWN	ON/UP	OFF/DOWN	ON/UP	ON/UP	OFF/DOWN	ON/UP	OFF/DOWN	OFF/DOWN
Central command	ON/UP	OFF/DOWN	ON/UP	OFF/DOWN	ON/UP	ON/UP	OFF/DOWN	ON/UP	OFF/DOWN	OFF/DOWN
Name of scene	2	4	1	3	2	2	4	1	3	4
ID same as rocker	Right	Right	Left	Left	Right	Right	Right	Left	Left	Right
For wireless button	Top	Bottom	Top	Bottom	Top	Top	Bottom	Top	Bottom	Bottom

A terminal overview in which all buttons, switches etc. are entered helps to provide a better overview of assignment on the FTS12. It is also important to have a clear overview of the actuators and their channels to the connected loads. Both are urgently required for startup and are decisive to ensure rapid and faultfree startup.

If signals from a weather station (MSR12 or LRW12D) are coupled to the input module, the following inputs may be used:

Input FTS12EM	A1	A3	A4	A5	A6	E1	E3	E4	E5	E6
Function	UP	DOWN	UP	DOWN	UP	UP	DOWN	UP	DOWN	DOWN
Sun (terminal 2)		x		x			x		x	x
Shade (terminal 3)	x		x		x	x		x		
Wind (terminal 4)	x		x		x	x		x		
Rain (terminal 5)	x		x		x	x		x		
Frost (terminal 6)	x		x		x	x		x		
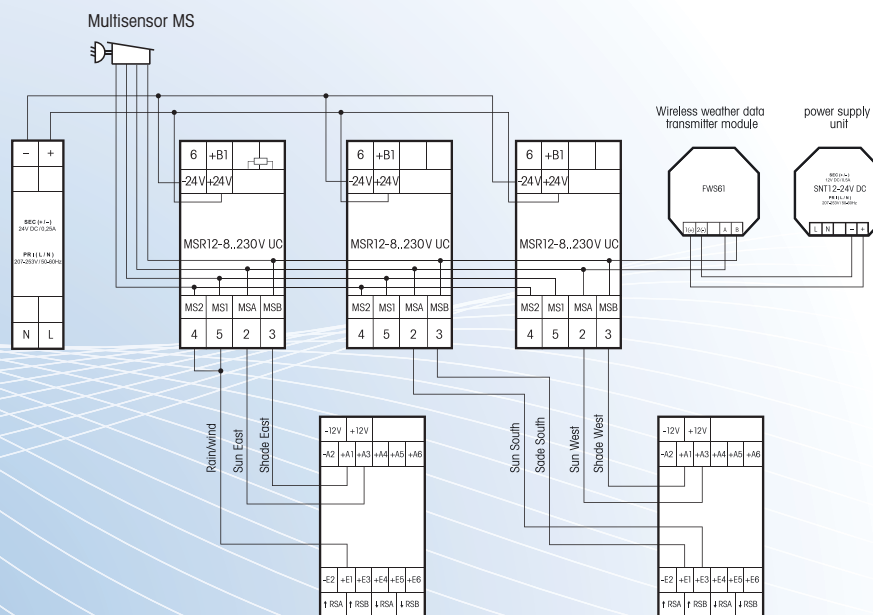
If more than one MSR12 is connected in parallel to the MS multisensor, terminating resistors must be removed from the other devices!

Startup with FTS12

Important information about the FGW14 gateway

On the FGW14 the rotary switch is set to Position 1 by default. Telegrams from the FTS12EM input modules are fed to the 14 bus via RSA2/RSB2 terminals. The Hold output of the FGW14 must then be linked to the Hold input of the FAM14 to ensure trouble-free bus operation. It is also possible to operate an FGW14 alone without an FAM14. In this case a 12 V DC voltage must be applied across a 1-10 kΩ resistor at the 12 V terminals of the FGW14. If a command is coupled in via the FGW14, its LED flickers briefly as a check.
The IDs of the FTS12EM telegrams are increased by 255 (0x100) by the FGW14 before output to the BR14 bus since the replies of the BR14 actuators occupy the ID range of 1-254.

Check the wiring of the input modules:

Check whether all FTS12EM modules are supplied by 12 V DC. Then make sure that no wires are interchanged within the bus connection and the bus is correctly looped through in compliance with the drawing. Make sure that the correct negative potential is applied to the inputs of terminals **-A2** and **-E2** (N or negative of the DC voltage). If everything is wired correctly, the LED behind the ID switch lights up when a signal is generated by a connected button.

Button input modules operate on the RS485 bus with the same hexcode structure as EnOcean wireless buttons. They can also be programmed as sensors in the PCT14 programming software. The table below contains all the codes which are possible with max 30 input modules.

Fixed hexcode to operate FST12EM button input modules on BR14 actuators via the FGW14 for programming with the PCT14 software

Explanation:
Body hexcode without using a bus connector (FBV12)   **00 00 01 xx**
Body hexcode when using a bus connector (FBV12) and increase by 256   **00 00 02 xx**
Body hexcode when using a bus connector (FBV12) and increase by 512   **00 00 03 xx**
xx is dependent on the rotary switch position (ID) of each FTS12EM. (see table below)

Input /ID range	Supplement the rump hex code depending on the position of the ID rotary switch										With universal button	With direction button*
	(1)	(11)	(21)	(31)	(41)	(51)	(61)	(71)	(81)	(91)		
A1	01	0B	15	1F	29	33	3D	47	51	5B	Right top	Right rocker
A3	01	0B	15	1F	29	33	3D	47	51	5B	Right bottom	Right rocker
A4	03	0D	17	21	2B	35	3F	49	53	5D	Left top	Left rocker
A5	03	0D	17	21	2B	35	3F	49	53	5D	Left bottom	Left rocker
A6	05	0F	19	23	2D	37	41	4B	55	5F	Right top	Left rocker
E1	06	10	1A	24	2E	38	42	4C	56	60	Right top	Right rocker
E3	06	10	1A	24	2E	38	42	4C	56	60	Right bottom	Right rocker
E4	08	12	1C	26	30	3A	44	4E	58	62	Left top	Left rocker
E5	08	12	1C	26	30	3A	44	4E	58	62	Left bottom	Left rocker
E6	0A	14	1E	28	32	3C	46	50	5A	64	Right bottom	Left rocker

* Direction buttons must be operated in pairs (+A1,+A3) / (+A4,+A5) / (+E4,+E3) / (+E4,+E5).
  The pair (+A6,+E6) can also be operated as direction button but it must be taught in separately.

Error detection:

The LED on the FTS12EM does not flicker when a button is operated:
          – Check the 12 V DC power supply.
          – Check that the bus line wiring is correct.
          – If an FTS12EM module is defective, it may destroy the bus. Please replace the device.
          – Is the correct negative potential applied to -A2 and -E2?

Pushbutton input modules FTS12EM combined with Series 14 – RS485 bus actuators
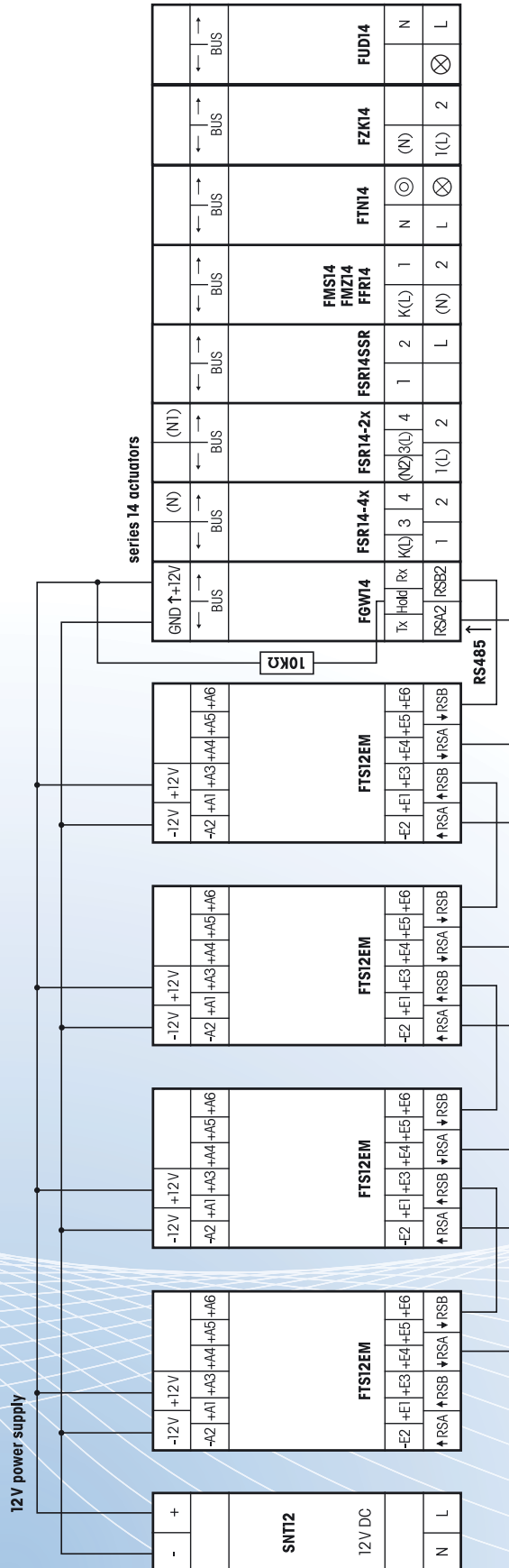
If the Series 14 bus must operate without the wireless antenna module FAM14 with integrated switch mode power supply unit, a switch mode power supply unit SNT12 is required for the power supply. An FGW14 is needed for bus access. Up to 10 FTS12EMs can be connected in this way.

Coupling in other FTS12 bus lines

12 V power supply

-	+

SNT12

12V DC

N	L

-12V	+12V

-A2	+A1	+A3	+A4	+A5	+A6

FTS12EM

-E2	+E1	+E3	+E4	+E5	+E6

↑RSA	↑RSB	↓RSA	↓RSB

-12V	+12V

-A2	+A1	+A3	+A4	+A5	+A6

FTS12EM

-E2	+E1	+E3	+E4	+E5	+E6

↑RSA	↑RSB	↓RSA	↓RSB

-12V	+12V

-A2	+A1	+A3	+A4	+A5	+A6

FTS12EM

-E2	+E1	+E3	+E4	+E5	+E6

↑RSA	↑RSB	↓RSA	↓RSB

For example, coupled-in BUS1 is increased by the value 256 when the BA rotary switch is set to 5

12 V Stromversorgung

-	+

SNT12

12V DC

N	L

-12V	+12V

-A2	+A1	+A3	+A4	+A5	+A6

FTS12EM

-E2	+E1	+E3	+E4	+E5	+E6

↑RSA	↑RSB	↓RSA	↓RSB

-12V	+12V

-A2	+A1	+A3	+A4	+A5	+A6

FTS12EM

-E2	+E1	+E3	+E4	+E5	+E6

↑RSA	↑RSB	↓RSA	↓RSB

-12V	+12V

-A2	+A1	+A3	+A4	+A5	+A6

FTS12EM

-E2	+E1	+E3	+E4	+E5	+E6

↑RSA	↑RSB	↓RSA	↓RSB

-12V	+12V

RSA1	RSB1

BA

4 5 6 7
3 8
2 9
1 10

FBV12

RSA2	RSB2

RSA2↓	RSB2↓

to any other FBV12s (RSA2/RSB2) and FGW14 (RSA2/RSB2)