Radio transmission system for signals

Operating, adjustment transmitter

Attention!! Important note

It is not permitted to remove the accumulator of the transmitter, otherwise a destruction of the transmitter is possible.

Switch on the transmitter

The transmitter is in “on” position as long as pin 5 and pin 6 of the sensor/power supply plug are bridged.

Pin configuation transmitter

Antenna socket:

Pin ⏚ = transmitting antenna
Pin 4 = reception antenna

Sensor/power supply plug:

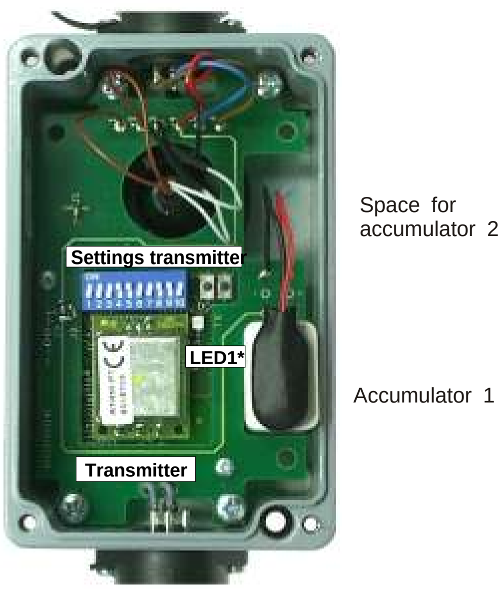
The pin numbers of the sensor/power supply are corresponding to the numbers of PCB’s soldered connections.

Pin 3 = - } 15 - 24 VDC from charging set
Pin 4 = + } or power supply

Pin 2 } Pt 100 +} thermocouple or
Pin 1 } external -} current/voltage

Pin 5 } bridged =
Pin 6 } transmitter “on”

View transmitter



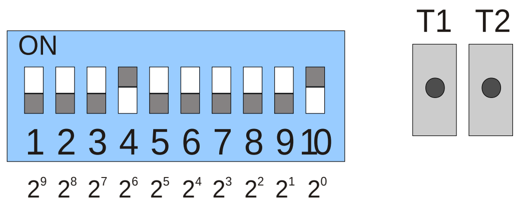
* LED1 normal mode: bright = transmitter broadcasts
LED1 setting mode: bright = settings stored

Settings transmitter

Every transmitter is factory-aligned. The following settings have to be carried out in case of changing the ground level state.

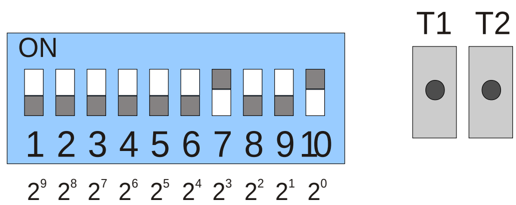
Setting address of transmitter

A clear address has to be assigned to every transmitter. The address has to be in between 1 and 255. Every address may occur only once in the system.
Example for set-up: The following example sets the transmitter to No. 65. Set the DIP-switches as shown in picture below ($2^6 + 2^0 = 64 + 1 = 65$). Then press key T1until LED1 brights permanent.



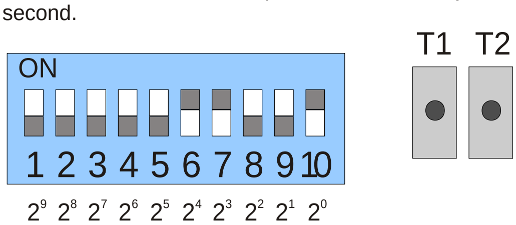
Setting number of transmitters

The number of transmitters in the system has to be entered. The number has to be in between 1 and 128.
Example for set-up: The following example sets the number of transmitters to 9. Set the DIP-switches as shown in the picture below($2^3 + 2^0 = 8 + 1 = 9$). Then press key T2 until LED1 brights



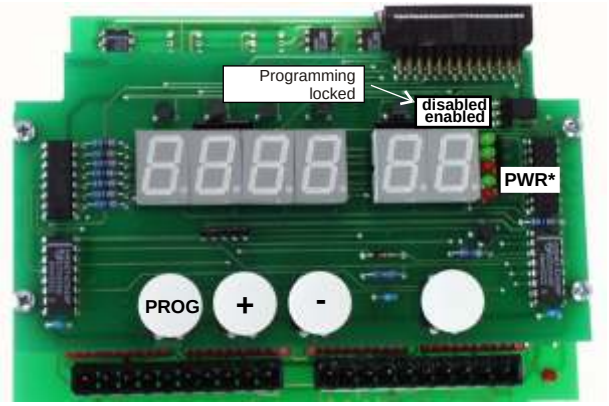
Setting transmitter’s cycle time

The transmitter’s cycle time is the period the transmitter broadcasts data to the receiver. When setting the cycle time the total number of transmitters in the system must be taken into account. With more than 2 transmitters the minimum of cycle time is: number of transmitters x 1,5s, 10 transmitters means a cycle time of 15 seconds.
Example for set-up: In the following example transmitter’s cycle time is set to 125 seconds. The value of the DIP-switch settings is to multiply by 5 seconds. Set the DIP-switches as shown in the picture below ($2^4 + 2^3 + 2^0 = 16 + 8 + 1 = 25$, 25 * 5 seconds = 125 seconds). Then press key T1 and T2 simultaneously until LED1 brights permanent.
All DIP-switches in “OFF” position means a cycle time of one second.



Operating, adjustment notes receiver

Display PCB



*PWR (power supply)

Adjustment

Attention!!! Necessary tip:

Program numbers, calibrating the signals from the receiver (eg PN 15), may be validated only (pressing push buttons "PROG" and "-" simultaneously), as long as the input signal of the transmitter has the correct value and the transmitter broadcasts without fault. Validating at random overwrites the existing programming and can cause malfunction of the receiver.

Selecting number of program

Press push button "PROG" and hold. Select with push button "+" the desired number of program. Let go off push button "PROG".

Setting of values and validating

Set with the push buttons "+" and "-" to the value you need under this number of program. Simultaneous pressing of push buttons "PROG" and "-" validates and stores the displayed value. For a short time the receiver is displaying "Stor".

The receiver changes from programming mode into standard mode if there is no push button pressed within 10 seconds. All changed values, which are not validated and stored, are lost.

Disable programming

In programming mode the jumper is plugged to "Enabled" . Plugging the jumper to "disabled" , the programming mode is blocked, an alteration of the settings by mistake is impossible.

Power supply PCB

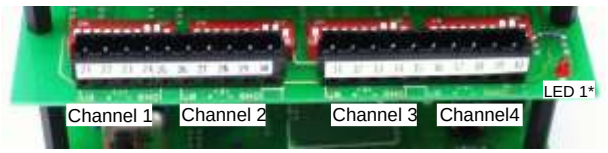
** Error exit (blocked on error)

1 Mains line (+)	11 Outgoing line RS232
2 Mains neutral (-)	12 Receiving line RS232
3 Earth	13 Point of reference RS232
4	14 Line A RS485
5	15 Line B B RS485
6	16 Point of reference RS485
7 Digital input (+)	17 Signal strength output (+)
8 Digital input (-)	18 Signal strength output (-)
9	19 Error output emitter
10	20 Error output collektor

Output PCB

DIP-switches to select output signal

Channel 1 Channel 2 Channel 3 Channel 4



*LED 1 bright = signal from transmitter OK

Connection terminal analog outputs

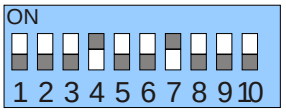
Channel 1	Channel 3
21	31
22 + Output signal	32 + Output signal
23 - Output signal	33 - Output signal
24	34
25	35
Channel 2	**Channel 4**
26	36
27 + Output signal	37 + Output signal
28 - Output signal	38 - Output signal
29	39
30	40

DIP-switches selecting output signal

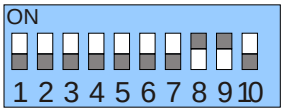
Switch 4, 7 in "ON"-position	output 0....10V
Switch 8, 9 in "ON"-position	output 0....20mA
Switch 8, 9 in "ON"-position	output 4....20mA

Example selecting output signal

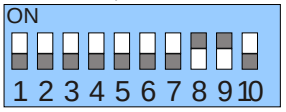
Channel 1, output 0...10 V



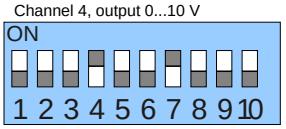
Channel 2, output 0...20 mA



Channel 3, output 4...20 mA

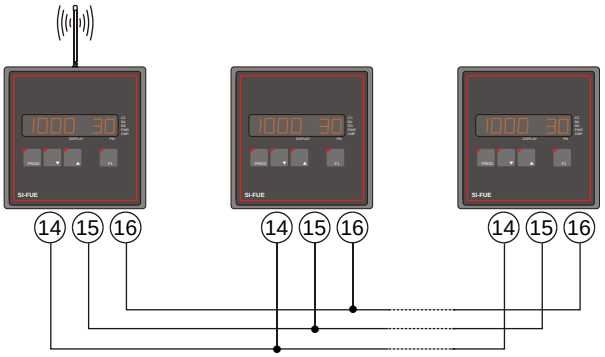


Channel 4, output 0...10 V



Connection master with slave via RS485

Master Slave 1 Slave 32



The master receives signals from all transmitters, is processing these signals and is transmitting them to the RS485-bus. Every master can recognize, which signal is meant for itself and is processing it.

Adjustment instructions of the system

For all numbers of program (PN) and options see page 7.

PN00: Version of software

Starting programming mode, the version of software of the controller built in is displayed. It is not possible to modify this value.

PN01: Shut down of display

The display of the receiver shuts down after the programmed time. Example: value 0 means permanet indication; value 7 means shut down after 7 minutes. A switched off display can be restarted by pressing any push-button.

PN02: Change of displayed value

The adjusted time determines the change of the displayed values among the channels which are active (max. 4). The data signals are indicated on the left display (setting with PN11 and PN12), the number of the channel is indicated on the right display.

PN03: Number of channels

The number of transmitters, which have to be processed by this module (max. 4) is set by PN03. Example: PN03 is set to value 2. The receiver now can receive signals from 2 transmitters. The numbers of program which are not active (in this example 30 - 48) are locked and not selectable.

PN04: Timeout

When the receiver gets no signals from one or several of the transmitters within the programmed time, the receiver changes into error mode for this transmitter and the error output (connectors 19 and 20) is to be set. The programmed cycle time for transmission of the transmitters determines the time which is set with PN04. The selected time should be double of the transmitters cycle time (setting see page 5). Example: The programmed cycle time of the transmitters is 60 seconds. The selected timeout has to be 120 seconds or more.

PN05: Behavior on error

When the receiver changes into error mode, the behavior of the faulty channel can be determined here.

PN99: System

The receiver can be reset to factory settings = state at time of delivery. The value to be set is 1.

PN10 to PN18

With these program numbers is given an example for the settings of channel 1. The channels 2 - 4 are analog to channel 1.

PN10: Decimal point

Here it's possible to set the receivers decimal point for standard displaying mode.

PN11: Displayed value 0%
PN12: Displayed value 100%

Here is adjusted the value which is indicated on the display at 0% and 100% input signal at the receiver. Example: For channel 1 is needed a indicated value of -10,0 to +100,0 so the value of PN11 is set to -100 and the value of PN12 is set to 1000 .

PN13: Number of transmitters

Every transmitter has its own address / number (settings at the transmitter see page 4). With this address the receiver identifies the transmitter, so the address of the transmitter is to be set here. Example: The transmitter of which signals are processed in receiver's channel 1 is set with the DIP-switches to 22 (number of transmitter). So with PN13 the value 22 is to be set.

PN14: Type of signal

Here is set the type of input signal of the transmitter.

PN15: Input signal transmitter 0%
PN16: Input signal transmitter 100%

With PN15 and PN16 the signal coming from the transmitter is fitted to the receiver. Example: The input signal of the receiver is a standard signal of 0 - 10 V. The steps for the programming of the receiver as follows:

It is necessary that only that transmitter is active which is assigned to the channel to be programmed. Possible existing further transmitters have to be deactivated during settings.

1. Set the input signal of the transmitter to 1,0 V.
2. Activate PN15 of the receiver
3. When the receiver has received a valid signal from the transmitter, the red LED brights (LED 1 on output PCB, see page .5)
4. Then validate the value receiving from the transmitter by pressing the push buttons "PROG" and "-" simultaneously.

   Note for setting Pt100 sensors: While programming PN15 it is necessary to set the input signal of the receiver to the value at 0°C. Then this value has to be validated.
5. Set the input signal of the transmitter to 10 V.
6. Activate PN16 of the receiver.
7. When the receiver has received a valid signal from the transmitter, the red LED brights (LED 1 on output PCB, see page .5)
8. Then validate the value receiving from the transmitter by pressing the push buttons "PROG" and "-" simultaneously.

PN17: Analog output 0%
PN18: Analog output 100%

Here is to set the analog output signal of the receiver, which is needed at 0% and 100% input signal at the transmitter. Example: The needed analog output signal is 4...20mA at 0...100% input signal at the receiver.

1 Set DIP-switches 8 + 9 for channel 1on the output PCB (page5) to "ON".

2 Connect a current meter to connectors 22 and 23 of output PCB .

3. Activate PN 17 and set the current meter with push buttons "+" and "-" to 4 mA. Then validate the value pressing the push buttons "PROG" and "-" simultaneously.

3. Activate PN 18 and set the current meter with push buttons "+" and "-" to 20 mA. Then validate the value by pressing the push buttons "PROG" and "-" simultaneously.

MANUAL - MANUAL - MANUAL - MANUAL - MANUAL - MANUAL - MANUAL - MANUAL - MANUAL - MANUAL - MANUAL - MANUAL

Program table

PN	Function	Option	Display
PN00	Version of software		
PN01	Display switching-off (in min)		0.....10
PN02	Display change (in s)		1.....10
PN03	Number of channels		1.....4
PN04	Timeout (in s)		0.....9999
PN05	Behavior on error	0 = no change 1 = analog output goes underflow 2 = analog output goes overflow 3 = analog output = 0% signal 4 = analog output = 100% signal	0.....4
PN99	System	1 = reset to factory settings	0.....99

Channel 1

PN10	Decimal point		X.X.X.X.
PN11	Displayed value 0%		0.....9999
PN12	Displayed value 100%		0.....9999
PN13	Device address (transmitter)		1.....255
PN14	Type of input signal transmitter	0 = standard signal 1 = Pt100 (-50....350°C)	0.....1
PN15	Input signal transmitter 0%		0.....4095
PN16	Input signal transmitter 100%		0.....4095
PN17	Analog output 0%		0.....4095
PN18	Analog output 100%		0.....4095

Channel 2

PN20	Decimal point		X.X.X.X.
PN21	Displayed value 0%		0.....9999
PN22	Displayed value 100%		0.....9999
PN23	Device address (transmitter)		1.....255
PN24	Type of input signal transmitter	0 = standard signal 1 = Pt100 (-50....350°C)	0.....1
PN25	Input signal transmitter 0%		0.....4095
PN26	Input signal transmitter 100%		0.....4095
PN27	Analog output 0%		0.....4095
PN28	Analog output 100%		0.....4095

Channel 3

PN30	Decimal point		X.X.X.X.
PN31	Displayed value 0%		0.....9999
PN32	Displayed value 100%		0.....9999
PN33	Device address (transmitter)		1.....255
PN34	Type of input signal transmitter	0 = standard signal 1 = Pt100 (-50....350°C)	0.....1
PN35	Input signal transmitter 0%		0.....4095
PN36	Input signal transmitter 100%		0.....4095
PN37	Analog output 0%		0.....4095
PN38	Analog output 100%		0.....4095

Channel 4

PN40	Decimal point		X.X.X.X.
PN41	Displayed value 0%		0.....9999
PN42	Displayed value 100%		0.....9999
PN43	Device address (transmitter)		1.....255
PN44	Type of input signal transmitter	0 = standard signal 1 = Pt100 (-50....350°C)	0.....1
PN45	Input signal transmitter 0%		0.....4095
PN46	Input signal transmitter 100%		0.....4095
PN47	Analog output 0%		0.....4095
PN48	Analog output 100%		0.....4095

Technical data

HF

Waveband:	70 cm (433,15...434,65 mHz) ISM-band
License:	towards ETS
Modulation:	FM
Transmitter power:	10 mW
Range:	approx. 300 m with free visibility

Input

Transmitter:	Pt 100 2-wire (-50...+350°C or thermocouple (with digital transmitter) or standard signal 0...1(10) V; 0(4)...20 mA or resistance strain gauge
Port facilities:	up to 128 modules possible

Output

Receiver:	0...1 V, 0...10 V, 0...20 mA; 4...20 mA (burden 500 ohms) - optional RS 232 (up to 9600 bps, 8N1) - optional RS 485 (up to 9600 bps, 8N1)
Port facilities:	up to 32 modules possible (1x master and 31x slave)

Accuracy

Measuring rate:	1 measurement/s down to 1 measurement/h
Linearity:	+/- 0,1% of end scale value
Temperature coefficient:	+/- 0,05% of end scale value
Resolution:	12 bit

Power supply

Internal supply transmitter:	Accumulator 9 VDC with external charge connector, - optional 2x 9VDC accumulators - optinal solar cell mounted in case lid
Power supply transmitter:	12...24 VDC or large accumulator in extra case
Power supply receiver:	115/230 VAC, optional 24 VDC

Ambient conditions

Operation temperature:	0...+60°C
Storing temperature:	-20...+80°C

Mechanics

Case:	transmitter: 120 x 80 x 57 mm receiver: 160 x 160 x 100 mm
Material of case:	transmitter: diecast aluminium receiver: diecast aluminium
Fixing:	Internal mounting holes in screw channels - optional clip-on transmitter
Colour:	transmitter: RAL 7001 silver grey receiver: bottom part RAL 7035 light grey cover RAL 7040 window grey
Degree of protection:	transmitter: IP 68 receiver: IP 65
Weight:	transmitter: 0,6 kg receiver: 2,1 kg
Antenna:	transmitter: double antenna with plug 692 series receiver: rubber helical antenna with BNC plug
Terminal:	transmitter: antenna with panel socket 692 series, sensor/power supply with panel plug 692 series receiver: BNC socket for antenna power supply/output: terminal screw in case cable entry: 1x M12x1,5 and 5x M20x1,5

MANUAL - MANUAL - MANUAL - MANUAL - MANUAL - MANUAL - MANUAL - MANUAL - MANUAL - MANUAL - MANUAL - MANUAL - MANUAL