Connection and installation manual

Self-learning radio system BT 40
1-channel receiver board BT40-ST, BT40-TT6
1-channel receiver BT40-cable (with connection cable), BT40-SO (with connection socket)
General warning and safety notes

- Installation, adjustment and maintenance may only be carried out by trained personnel!
- Carrying out works at the receiver is only admissible after the power supply has been turned off!
- Only turn on the power supply again after another check!
- Never feed 230V power supply to low voltage input - This will destroy your unit, no guarantee.
- Please consider polarity for DC use!
- A proper operation is only given, when these installation instructions are strictly followed.
- Protect the transmitters against heat and wetness and don’t expose them to direct solar radiation for a longer period of time.
- Used batteries may not be disposed of in the usual household waste, but have to be brought to a collecting point.

Safety
- Store transmitters and batteries out of children’s reach (risk of suffocation through small parts, risk of injury through unintended operation of the gate facility).
- If the battery is swallowed by a child, please call a doctor immediately.
- Don’t use the transmitter in explosion hazardous areas and also in areas, where the usage of radio systems (e.g. mobile phones,…) is forbidden.
- The Tousek transmitters may only be used for devices and facilities, where no danger for persons or things arises from a malfunction of transmitter or receiver, or where this risk is covered by other safety devices.
- The remote controlling of devices and plants with an increased accident risk (e.g. crane facilities) is forbidden!
- For safe operation the local valid safety regulations for the plant have to be kept!
- The owner/user has to be informed that facilities with an increased accident risk may only be operated at direct intervisibility.

Mounting

Pluggable receiver boards (BT40-TT6, BT40-ST):
- Installation in dry rooms only!
- For a differing installation, an according protective housing (e.g. IP65) has to be foreseen.

Receiver in housing (BT40-SO24V, BT40-SO230V and BT40-cable):
- When using the radio receiver in extreme weather conditions, we recommend using a protective enclosure IP65.

1. General

Self-learning radio system BT 40

General features
- The radio receiver of the series BT are performed in self-learning technology, i.e. the coding of the hand transmitter is taught into the receiver. For the use of transmitters BT40-xB or of Mini-transmitter MT40-A1 the jumper J1 for 2-stage operation code switch on the receiver must be set!
- Up to 64 different codes of the transmitter BT 40-xB can be taught in. Furthermore there is the possibility to erase taught encodings or the complete memory.
- In combination with antenna FK 4/2 the range can be increased to approx. 100m
- Enclosed antenna (1,8m length)

Technical data

Technical data Receiver
Receiver frequency : 40,685 MHz
Internal oscillator frequency: 40,230 MHz
Sensitivity: 1 µV
Intermediate frequency: 455 kHz
Impedance antenna input: 50 W
Operating temperature: -20 up to +55°C
Delay 2-stage system: 300 ms
Delay 3-stage system: 80 ms
Switch-off 2-stage system: 600 ms
Switch-off 3-stage system: 300 ms

Technical data transmitter
Frequency: 40,685 MHz
Tolerance range: 30 ppm of -10°C bis +55°C
Radiated power: 200 µW
Modulation: AM/ASK
Average Power Consumption: 40 mA
Operating temperature: -10°C up to +55°C
Number of combinations (2-stage): 1024
Available channels: 1, 2 or 4

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2. Receiver

Self-learning radio system BT 40

1-channel Receiver in housing

1 1-channel receiver with 11-pole plug socket
BT40-SO24V 24 V a.c./d.c. Art.No. 13260020
BT40-SO230V 230 V a.c. Art.No. 13260010

2 1-channel receiver with 4-pole connection cable
BT40-cable 24 V a.c./d.c. Art.No. 13260080

1-channel receiver boards

3 1-channel receiver board with connector strip
pluggable into garage door operator TT60/120 K3
BT40-TT6 Art.No. 13260040

4 1-channel receiver board with connector strip
pluggable into control boards ST3 and PULL X/1
BT40-ST Art.No. 13260030

Antenna looped onto board

* plug-in terminals for antenna connection

3. Transmitter models BT 40

Self-learning radio system BT 40

for more detailed information see the corresponding manual

• Transmitter BT40
12 V, 40 MHz, grey keypad, compatible with previous wireless system HS40)

BT40-1B 1-channel Art.No. 13150010
BT40-2B 2-channels Art.No. 13150020
BT40-4B 4-channels Art.No. 13150030
4. Connection of receivers

When using the radio receiver in extreme weather conditions, we recommend using a protective enclosure IP65.

1. Receiver with plug socket (11 poles)
   - BT40-SO230V
   - BT40-SO24V
   - Connection examples receiver boards (pluggable)
     - BT40-TT6
     - BT40-ST

2. Receiver with cable connection
   - Connection example BT40-cable

3. Connection examples receiver boards (pluggable)
   - e.g. control board TT60 K3
   - e.g. control board ST3

4. Antenna connection
   - For optimum function an antenna necessarily needs to be connected.
   - Normally the enclosed wire antenna is sufficient (wire from 1.8 m length), this one must be cross-clamped in full-length and connected onto the receiver antenna input. Longest range results in a installation away by a large distance to metal parts (heating pipes, concrete ceilings, cables, etc.). The ideal location has to be determined by doing tests.
   - Under certain circumstances, and to increase the range and a coordinated rod antenna can be used (model FK 4/2). It is important that the shield is connected as indicated.

Important:
- Place J1 Jumper onto 2-stage code switch ("BIN.")!
4. Coding and key assignment of transmitter BT 40

The transmitters BT40-1B, BT40-2B and BT40-4B (with gray keypad) feature a 2-step code switch for assigning the code or the channel (i.e., each switch can be either “ON” or “OFF”).

For settings on the code switch you need to open the transmitter (remote control).

To do this, place the cover between thumb and forefinger and push the lid of the remote control firmly together and upwards.

- 1- and 2-channel transmitters
  have a 12 digit code switch:
  
  Switch 1–10: code adjustment
  
  Switch 11–12: channel assignment (K1–K4):

  With 1-channel transmitters the transmitter button 1 can be assigned to any of the channels (K1–K4).
  
  With 2-channel transmitters the transmitter key 1 has a fixed assignment to K1. The button 2 can be assigned via DIP 11 and 12 to one of the channels K2–K4.

- 4-channel transmitters
  have a 10 digit code switch:

  Switch 1–10: code adjustment

- Coding of mini-transmitter MT40-A1

  see corresponding additional user manual
5. Delete / Saving of transmitters

1) After having performed the connection, turn on the power supply.
2) Before you program the transmitters, delete the entire memory contents of the receiver for safety reasons. (see delete the complete memory contents)

Programming new transmitters

In the memory of the receiver up to 64 different codes can be taught in. It is therefore possible to open a certain door/gate with transmitters in different encodings. Before starting the learning process, set a personal code in the transmitter.

Attention: The switch positions “all ON” or “all OFF” are not permitted.

Now press the receiver button P1 and hold it. After about 0.8 sec. the red LED will glow on.

In addition to P1 Press and release the button on the transmitter to be learned. The red LED begins to flash. The remote control code is therefore stored. If additional transmitters are taught, the complete procedure must be repeated.

Attention

If the code can not be memorised into receiver then this is due to different reasons:
  • The code is already in the memory
  • The memory is full (max. 64 different codes are possible)
  • The DIP Switches in transmitter are all set to ON or OFF.
  • Assignment 2-stage, 3-stage coding not applicable.

Delete a single transmitter code from the memory.

Press the receiver button P2 and keep it pressed. After about 0.8 sec. the red LED on the receiver begins blinking slowly. Press and release the individual button on the transmitter to be deleted. Once it is deleted, the LED blinks quickly.

Delete of complete memory

Press the receiver buttons P1 and P2 at the same time and keep them pressed. The red LED on the receiver starts blinking. After 8 seconds (approx. 15 blink cycles) the LED illuminates permanently. Now the memory content is deleted and you can release the buttons.
### 6. Error diagnosis

<table>
<thead>
<tr>
<th>Error</th>
<th>Possible reason</th>
<th>Check</th>
</tr>
</thead>
<tbody>
<tr>
<td>Relay of receiver does not switch during transmission signal</td>
<td>no power supply</td>
<td>Is the radio receiver supplied by the correct voltage? receiver board correctly plugged to connector strip?</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>transmitter not memorized</td>
<td>see Delete and programm new transmitters</td>
<td></td>
</tr>
<tr>
<td>transmitter defective</td>
<td>check battery, resp. let transmitter be controlled</td>
<td></td>
</tr>
<tr>
<td>Transmitters only have a small range of transmission</td>
<td>battery in transmitter empty</td>
<td>check batteries</td>
</tr>
<tr>
<td>Poor Antenna Relocation. Antenna not or wrongly connected</td>
<td>see antenna connection</td>
<td></td>
</tr>
</tbody>
</table>

### 7. Overview of Radio system BT 40

**RADIO RECEIVER**

<table>
<thead>
<tr>
<th>Power supply</th>
<th>Protection class</th>
<th>Number of channels</th>
<th>max. control load</th>
<th>DP-Switches for adjustments</th>
<th>ST3 push-pull X3,T7X0 X3</th>
<th>Article-No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>BT 40-ST</td>
<td>12V d.c.</td>
<td>IP00</td>
<td>-</td>
<td></td>
<td></td>
<td>13260030</td>
</tr>
<tr>
<td>BT 40-TT6</td>
<td>12V d.c.</td>
<td>IP00</td>
<td>-</td>
<td></td>
<td></td>
<td>13260040</td>
</tr>
<tr>
<td>BT 40-Kabel</td>
<td>24V a.c./d.c.</td>
<td>IP20</td>
<td>1</td>
<td>230V/60W</td>
<td></td>
<td>13260080</td>
</tr>
<tr>
<td>BT 40-SO24V</td>
<td>24V a.c./d.c.</td>
<td>IP20</td>
<td>1</td>
<td>230V/60W</td>
<td></td>
<td>13260020</td>
</tr>
<tr>
<td>BT 40-SO230V</td>
<td>230V a.c. +6%, -10% 50 Hz ± 0,5%</td>
<td>IP20</td>
<td>1</td>
<td>230V/60W</td>
<td></td>
<td>13260010</td>
</tr>
</tbody>
</table>

**TRANSMITTERS**

<table>
<thead>
<tr>
<th></th>
<th>channels</th>
<th>power supply</th>
<th>key colour</th>
</tr>
</thead>
<tbody>
<tr>
<td>transmitter BT 40-1B</td>
<td>1</td>
<td>12V alkaline battery (L1028)</td>
<td>gray</td>
</tr>
<tr>
<td>transmitter BT 40-2B</td>
<td>2</td>
<td>12V alkaline battery (L1028)</td>
<td>gray</td>
</tr>
<tr>
<td>transmitter BT 40-4B</td>
<td>4</td>
<td>12V alkaline battery (L1028)</td>
<td>gray</td>
</tr>
</tbody>
</table>

**Optional equipment:**

- Battery for transmitter BT 40, 12V alkaline, L1028 13140010
- Antenna FK4/2 for 40MHz, with 2m coaxial cable for increased range 13250100
- Wall bracket incl. clip, for transmitter BT 40 / RS 433 (black) 13150070
- Plastic housing für Funkempfänger, IP 65, HxWxD: 200 x 155 x 80mm 12140190
tousek PRODUCTS

- sliding gate operators
- cantilever systems
- swing gate operators
- garage door operators
- folding door operators
- traffic barriers
- electronic controls
- radio remote controls
- key operated switches
- access control
- safety devices
- accessories

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