

Key Assignment and display: Fig. 1

Connection Diagram: Fig. 2

**!** The RouteControl unit 10772 must not be connected to any equipment made by other manufacturers; only to the Roco Central 10751, the Roco amplifier 10761/10764 or the Lenz LZ 100 and LV 101.

### General

The RouteControl permits easy control of turnouts with or without end-of-stroke disconnect or position controls for call-up of track routes. It can be used either at the **DataBUS** with Lokmaus 2®/R3® (10760/10790)/Power Mouse™(10860, US only) and the **amplifier 10761/10764** together with Lenz units, or at the **"Maus-Bus"** with the **Lokmaus 1® (10750)** and the central unit 10751. (GB)

The RouteControl announces itself after start of the "Lokmaus®" system, after being plugged into the "Lokmaus®" system or the return from the setting menu (refer to Settings), at first with "CON" (meaning "RouteControl"), followed by display of the number of the last activated magnetic device or of the last called track route.

When using the **"Maus-Bus"** system it is only possible to use a single RouteControl. Since the Central unit 10751 does not store the position of the turnout there is no return indication of the actual position of the turnout. The green and red light-emitting diodes (LEDs) merely represent the last issued command.

When using the DataBUS up to 10 units containing at most 2 RouteControl units can be used (the number depends on the booster or central unit in use). When using the RouteControl in conjunction with the Lokmaus 2®/R3® both LEDs will show the last issued turnout command. In this case of the Lokmaus 2®/R3® takes care of the storing of the turnout position. If neither of the two LEDs is illuminated the central unit (e.g. the Lokmaus 2®/R3® acting as master) has not yet indicated this turnout as having been operated.

The actual position of the turnout will only be shown at both LEDs if a return indication by the turnout or the switch receiver has been received and the amplifier or booster used supports this return indication (not when 10761/10764 or 10762/10765 is used!).

Number of controllable turnout numbers:

- > with "Maus-Bus" operation: 1 to 128
- > with DataBUS operation: 1 to 256

number of callable track routes: in both operating modes: 32

To change unit addresses refer to the tables "Menu system".

### "Maus-Bus"-Operation and DataBUS-Operation

To use the RouteControl it is necessary to use the matching cable depending on the system used (see fig. 2):

- > **„Maus-Bus“-operation:** use cable with 5-pole DIN plug (round) / western plug;
- > **DataBUS-operation:** use cable with 6-pole western plug / western plug (both ends). Only the slave socket of the amplifier 10761/10764 may be used!

### Control of turnouts and track routes

The number of the turnout to be operated is entered into the display using the keys 0...9 or the cursor keys. The turnout is operated with the **keys "straight/ok" or "diverging/esc"**. When running the **cursor** straight up the track route numbers will be found after the last turnout number 128 (Lokmaus 1® system) or 256 respectively (Lokmaus 2®/R3® system) starting with F.01.

The **green and red LED** provide information concerning the last given turnout command within the Maus-Bus or DataBUS system, also about the setting of the turnout as long as turnout motor and amplifier/booster are capable of giving return indications.

If a number is entered which exceeds the valid region the highest possible turnout address in the system is displayed. The input of the address 000 by single turnout control is not possible; neither is the input of zeros ahead of otherwise one- or two digit numbers. For instance: if turnout 5 shall be operated the input of "5" is sufficient: without any additional command the missing, leading zeros are automatically added to show "005" after 2 seconds (variable delay). If the direction key red or green is pressed immediately following the numerical input the leading zeros are immediately added.

Erroneous inputs are simply replaced by a repeated one-to-three digit numerical input or a change with the red or green direction keys. During prolonged activation of the direction keys the corresponding LED will blink to indicate that a setting command has already been given for this direction.

If the first number entered is a Zero the RouteControl switches to **track route operation**: the first position in the display will show ".F.!" A non-valid entry of "00" in the track route is automatically changed into "01". A missing numerical entry following ".F." will be corrected to ".F.01" or a single digit numerical input "5" to "05" following the ".F." within two seconds. An erroneous input of a track route number can also be corrected with the number keys (first input "0"! ) or with the cursor keys. The track route is activated with the green direction key. The display will show the separate positions and their turnout numbers. The LEDs will illuminate momentarily to show the corresponding settings. After overlay "P xy" and ".F.". The call-up of a track route can be stopped by again pressing and keeping depressed the direction green key or can be canceled by prolonged pressing of the red direction key (A cancellation occurs after display of the following position number). A call-up of an "empty" track route is shown by three horizontal lines in the display. The call-up of another track route can be done only after all setting commands of the preceding track route have been executed.

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### Emergency Stop

The Emergency Stop can neither be activated nor disabled from the RouteControl. If, however, the layout is in an "Emergency-Stop" status it is indicated by flashing of the appropriate display of the keyboard. Short-circuit and overload conditions are also shown during "Maus-Bus" operation in this manner; alternating vertical bars similar to those of Lokmaus 2®/R3® indicate these conditions during DataBUS operation. Operation of turnouts or call-up of track routes is not possible during emergency stop condition. If emergency stop or short-circuit status is triggered all further activation of setting commands is halted but will be continued automatically after the emergency stop has been resolved.

If programming is done with Lokmaus 2®/R3® (or Lenz LH 100) the display will show the indication "PA" indicating that at this time no setting- or search activity is possible.

### Settings (Changes are stored permanently)

To enter the **RouteControl setting menu** ist plug must be pulled, the "Straight/ok" key must be pressed and kept pressed while the plug is reinserted: the display shows "CO". The "Straight/ok" key serves to call up setting values as well as confirmation of changes after reprogramming, while moving through the menu. The "Divergence/esc" key is used to discontinue the search and return to layout operation from the menu. Value changes in the menu settings can only be carried out with the cursor keys but not with the numerical keys!

Example: All track routes have just been programmed and the protection against accidental change should be activated (see the following table "Menu System"):

	Sequence of key use	Display indication
1.	Unplug RouteControl	dark
2.	Press and keep depressed the "ok" direction key	dark
3.	Reconnect RouteControl for menu adjustments	C0
4.	Release "ok" direction key	C0
5.	With ▲ cursor key change parameter indication to C3	C3
7.	With ▼ cursor key change value to 000	000
8.	Confirm with direction key "ok"	C3
9.	a) Either use cursor key to select next parameter to be read or changed (ref. to step 5) or b) with direction key "esc" return to layout operation (Restart of the RouteControl)	C..

The following table lists all the variable Route-Control parameters:

parameter	range of values	default value	description
C0	1-31	3	DataBUS address
C1	4-256	256	permissible number of turnouts (with „Maus-Bus“ operation only 128 at most!)
C2	4-32	32	permissible number of track routes
C3	0/1	1	set of turnouts erasable (1) or not (0)
C4	1-9	2	time required for automatic completion of a numerical input
C5	0,1-9	5	time required for call-up of the track route editor when pressing the „esc“ key. The value 0 deactivates the key for this purpose (=child latch)
C6	1-3	3	scroll mode: cursor keys are active only for turnouts when set to (1), only track routes when set to (2), both turnouts and track routes when set to (3). The numerical keyboard is not influenced by this setting
C7	0/1	0	when set to (1) will reset all menu settings and cancel all track routes
C8	1-30	2	response time in 100ms
C9	1-30	8	dely time between two switching operations in 100ms
CA	0/1	1	DataBUS automatic configuration: 1=on, 0=off
Cb	??	2.0	software version READ ONLY
CC	??	3.0	DataBUS version READ ONLY
Cd	0-119	119	number of turnouts which can still be added to a track route. This number will be computed automatically by the RouteControl depending on the already programmed track routes READ ONLY

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### Programming turnout decoders

#### Programming of the turnout drive 42624 red housing with both ROCO-Lokmaus®-Systems:

1. Connect Lokmaus® and RouteControl to the Central unit/or amplifier;
2. Activate power supply;
3. Select the desired turnout address;
4. Press the emergency stop key of the Lokmaus®. At Lokmaus 1® (10750) the red LED will blink, at Lokmaus 2®/R3® and the RouteControl the display will blink;
5. Connect green cable of the turnout drive with one of the two rails (attach contact rail connector);
6. Press the emergency stop key of the Lokmaus®. LED at Lokmaus 1® will again be continuously illuminated. The display of the Lokmaus 2®/R3® does not blink any more;
7. Press "ok" key of the RouteControl;
8. Remove the green wire of the turnout drive from the rail.

#### Programming of the turnout drive 42624 red housing with the Lenz System:

1. Connect both LH 100 and the RouteControl to the Central unit;
2. Activate power supply;
3. Select the desired turnout address with the RouteControl;
4. Press the stop key and then "F" AND "0" of the LH 100. The display of the RouteControl will blink; at the LH 100 first "Stop" and "Aus\* F0" will appear alternating, then "Aus";

5. Connect green cable of the turnout drive with one of the two rails (attach contact rail connector);
6. Again press the stop key of the LH 100. Displays of the RouteControl and LH 100 does not blink any more;
7. Press "ok" key of the RouteControl;
8. Remove the green wire of the turnout drive from the rail.

**Programming of the turnout drive 42624 white housing:**

The following applies to both Lokmaus® systems and the Lenz system:

1. Connect Lokmaus®/LH100 and the RouteControl to the Central unit/amplifier;
2. Activate power supply;
3. Connect green cable of the turnout drive with one of the two rails (attach contact rail connector);
4. Select the desired turnout address with the RouteControl;
5. Press either direction key "esc" or "ok";
6. Remove the green wire of the turnout drive from the rail.

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**Programming and Connecting ROCO turnout quadruple decoder 10771:**

In both Lokmaus® systems and the Lenz system the turnout decoder 10771 is connected directly to the track or the output of the ROCO amplifier/booster or central unit via the terminal connector J/K. The polarity of the connections is not relevant.

For **Programming the addresses** of the four consecutive addresses which must be arranged in four-time sequences (i.e. 001 – 004, 005 – 008, 009 – 012 etc.) it is sufficient to:

1. press the programming key at the longitudinal side of the decoder for at least 5 seconds until the control LED at the narrow side of the decoder is lit and does not go dark;
2. call up any of the four addresses which belongs to the wanted group of four addresses and
3. press either the direction key "esc" or "ok".

All other addresses of the group of four are automatically allocated and can be called immediately.

In the Lokmaus 2®/R3® system the **attributes of the outputs** concerning switch-pulse-length, blinking or constant current supply can be changed: even with the standard program settings of the Lokmaus 2®/R3® ("P" and "F1" for output 1, "P" and "F2" for output 2, "P" and "F3" for output 3 and "P" and "Stop" for output 4) it is possible to vary the preset pulse length between 0 and 15 (for a pulse between 0.1 and 15 seconds length), 32 for continuous current and a value from 33 to 47 (for a blink frequency between 4 and 0.5 hz). For exact settings please refer to the instructions for the Quadruple Decoder 10771.

**Please note:**

Since address and output attributes of the quadruple decoder are not protected against changes as a result of other programming steps by the Lokmaus® even without operating the programming key it is urgently recommended to use a programming track for doing the locomotive programming. The layout running track can be disconnected for the time that locomotive programming is done. If several quadruple turnout decoders are in use care must be taken that when programming output attributes all decoders which are not "involved" have their digital power supply disconnected!

Basically this programming routine is similar to the eightfold decoder 10775. For the complete installation and use of this decoder please refer to the enclosed instruction manual.

**Editing of track routes – the programming, program changing, reading and erasing of track routes**

32 track routes can be defined and programmed with each RouteControl 10772. One track route can include at most 98 turnouts, twin-coil relays or magnet-operated signals. Altogether 119 magnetically operated objects or their positions as components of track routes can be determined. If one of two last mentioned numbers is exceeded the indication "Full" appears in the display. No additional positions can then be added to the track route(s). To avoid having to manually add up the number of positions of each track route the number of turnouts that can still be "accommodated" in track routes can be ascertained with the menu setting Cd.

Even though it is possible to work with the RouteController while running trains with the Lokmaus® it is recommended to stop running trains while programming or changing programs since it is necessary to test the functions

turnout or other magnetically operated articles. The editor must be called up and closed separately for each track route.

When calling up a track route the magnetically operated articles are activated in the **sequence of their inputs** i.e. their position numbers.

If there is doubt while running the layout following a break in the programming or operation when confronted with a three-digit number indication in the display if one is in layout- or editing mode help is available by pressing one of the cursor keys: if the position indication "P..." appears in the display it is a confirmation that the editing mode is still active.

**Track route programming**

Intended action	Key sequence	Display	Remarks
e.g. for Route 23	0 2 + 3	F. .. F.23	
Call-up Editor	press Key "resc" for 5 sec.	Edt P.01 End	editor for track 23 is activ Position 1 has end marking = track route is empty

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**Input of Contents:**

i.e. set turnout 4 input to divergent	4 esc ▲	004 004 (+red LED illuminated) P.02 End	turnout 4 divergent acknowledged
i.e. set turnout 5 input to straight	5 ok ▲	005 005 (+green LED illuminated) P.03 End	turnout 5 straight acknowledged
i.e. set turnout 123 input to divergent	1 + 2 + 3 esc ▲	123 123 (+red LED illuminated) P.04 End	turnout 123 divergent acknowledged – three positions are occupied!
Store the track route Yes, acknowledge	ok ok	Sto F.23	Store contents? stored!

If an input error of the turnout number or position is noticed before pressing the key "..." for the following position it is possible to overwrite this position immediately: if for instance the input for turnout 123 was incorrect and should have been 124, simply put in 124 and again press the "divergent/esc" key and then press the cursor key "▲" to get to position P.04.

If however all inputs made for the track route should be disregarded, i.e. not store the inputs and discontinue, press the key "esc" after the indication "P.04" and "End". The display shows "dEL" which is the question whether to erase this track route: in this case you answer the question with "yes" by pressing the key "ok". The display will now show again "F.23".

To **change the program of a track route** it is first called up as above and the editor is activated. With the cursor "up" and "down" every position of a defined track route can be reached. The content of each position can be written over the same as when programming. A particular position can also be erased by writing 000 over the contents. Positions can also be inserted by following the same procedure. Storing of a reprogrammed track route can be done after the position indication "End" by pressing of the "ok" key twice.

When **reading a track route** move through the positions only with the cursor keys and the "ok" key after call-up of the track route and the editor. Pressing the "ok" key twice returns to layout operation after reaching the last position.

**A track route can be erased completely** as described above if after it is called up and the editor is activated with the cursor "▲" the last position "End" is reached and subsequently the key "esc" is pressed. If at the indication "dEL" (question: Erase?) the "ok" key is used to acknowledge, the complete track route is erased.

### Special considerations for use of two RouteControl units

**GB** If **two RouteControl units** are used in the Lokmaus 2®/R3® system you have to address the turnouts in the system with the **same 128/256 separate addresses**. Different inputs are possible for the track routes of both RouteControls so that their number can be increased to  $2 \times 32 = 64$  **track routes**.

The **call-up of one track route** from each RouteControl is possible at **any time**. The "dispatcher" himself has to watch out that the two called up track routes will not cause any collisions!

The **position indication of single turnouts** is **mutually exchanged** with a maximum time delay of 2 seconds. This also takes place if i.e. a turnout 008 (called up on the display of RouteControl no.1 in single-turnout position) if a track route is set on RouteControl no.2 which includes the turnout 008.

### Accessories

Separately available are both cable sets which are furnished with the keyboard:

DataBUS cable:	art.no. 10756
"Maus-Bus" cable:	art.no. 109891
also available:	DataBUS spiral cable 10754