Uhlenbrock digital

Intellibox II

The shortest connection between technology and pleasure

Manual for Software Version 1.0

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1. The Digital Center Intellibox II

The Intellibox II is not only a Digital Center, but a complete System in a Box. It has all the functions which previously one had to labouriously assembled, and with all that it is efficient and compact.

With the Intellibox II it does not matter whether you control your digital model railway in Motorola, DCC or Selektrix format. The Intellibox II utilise the various data formats simultaneously, on the same track, and is therefore a genuine multi-protocol digital center.

1.1 Description

Large, high resolution Display

The high resolution display is 98 x 42 mm (visible diagonal 105 mm) and allows a detailed representation of information in plain text or as symbols.

Night design

The Display and the keys have backlighting with which you can also see during the night phase when using an IntelliLight.

Two Throttles

Two locomotives can be controlled independently with the two large rotary controls. When the locomotive is changed these clever throttle controls without end stops automatically restore the saved speed of the selected locomotive. They can be operated in DC and AC throttle mode.

The display shows the locomotive name or number, the speed (absolute and relative to the highest speed) and the direction of both the locomotives that are actually being controlled by the throttles.

The light and 4 special functions can be switched by the function keys. In DCC operation up to 28 special functions can be switched by the keys beside the display.

Booster

The high performance Booster has an output capacity of 3A and is short circuit protected.

Switch panel

The Intellibox II can control 320 Märklin and/or 2048 DCC solenoids. Groups of 8 or 16 in each case can be directly accessed by the key block. The state of turnouts and signals is indicated with the appropriate symbols in the centre of the display.

Route control

The Intellibox II internal route memory can hold up to 80 routes with 24 entries each. These can be called up by feedback contacts. Further routes that are stored in external devices can be called up by the Intellibox or merged into internal routes.

Feedback Mode

Up to 2048 feedbacks in groups of 8 or 16 are shown in the centre of the display by selectable symbols. Feedbacks can also be triggered directly from the key block.

Large Locomotive Database

The empty locomotive data base can store one's own locomotive data records. Data entered can be address, name, data format, symbols for special functions and the setting for the maximum speed in km/h.

Locomotive Position Indication

In conjunction with the Individual Locomotive Control System "LISSY" the actual position of the locomotive can be displayed at top the display when it is called up.

DirectDrive

Control of a locomotive can be taken over by a throttle with a simple key press and without entering the locomotive address or name, when it passes a selected LISSY receiver in LISSY-Mode.

Infrared Receiver

The integrated Infrared receiver allows wireless control of model railway layouts with our IRIS infrared remote control. If desired, in difficult space arrangements, 2 additional external receivers can be connected.

Model Time Clock

The Intellibox II integrated model clock can be blended into the middle part of the display. It indicates the time and weekday. The model time can be accelerated relative to the real time by factors between 1 and 127. This provides possibilities such as timetabled trips and the synchronization of further LocoNet clocks, like in the LocoNet display 63450, IntelliLight 28000 and SoundDircetor 38000.

Locomotive Programmer

The Intellibox II provides simple menu driven programming of DCC, Motorola and mfx locomotive decoders. For DCC compatible decoders there is not only simple plain text programming, but also CV programming, main track programming, register programming and CV paged programming.

Motorola decoders are programmed using Motorola CV programming.

- **Various Data Formats**

The Intellibox II can control a mixture of makes of locomotive, function and turnout decoders on a layout.

The following data formats can be transmitted **simultaneously**:

- **Motorola Data Format**

Uhlenbrock, Märklin, Viessmann

- **Extended Motorola Data Format (Spur I)**

Uhlenbrock, Märklin AC Spur I format

- **DCC Data Format**

Uhlenbrock, Märklin Gleichstrom, Arnold, Digitrax, Lenz, LGB, Roco and all DCC compatible decoders.

- **Selectrix Data Format**

Trix, Rautenhaus

9999 Decoder Addresses, 128 Speed Steps

Intellibox II supports all addresses and speed steps of the individual decoder makes.

- **Märklin Motorola Decoder**

80 addresses, 14 Speed steps

- **Märklin mfx Decoder**

255 addresses, 14 Speed steps

- **Uhlenbrock Motorola Decoder**

255 addresses, 14 Speed steps

- **Uhlenbrock DCC Decoder**

9999 addresses, 128 Speed steps

- **DCC compatible Decoder**

9999 addresses, 14, 28, 128 Speed steps, depending on model

- **Trix Selectrix Decoder**

112 addresses, 31 Speed steps

Extended Locomotive Special Functions

For each Locomotive address 32767 special functions (for some DCC decoders) are available for switching of lights, sound etc.

With USB Interface

The Interface at 115200 Baud offers the fast connection to the computer. It not only makes it possible to use PC programs to control the model railway layout but also serves for data protection of the Intellibox II and for updating system software.

With Help Function

The context sensitive help function almost makes a manual redundant. Help for the current operating situation is directly available at any time.

Non-volatile Memory

All settings which have been carried out on the Intellibox II remain permanent even when the equipment is switched off.

Updatable System Software

The Intellibox II system software can be updated anytime via the integrated USB Interface.

Compatible with many other devices

On the back of the Intellibox II, besides the sockets for transformer, track and programming track, there are sockets for DCC booster, Märklin Motorola booster, LocoNet, s88-feedback modules, IRIS auxiliary receiver, and also the USB computer.

Operation as Auxiliary Device

The Intellibox II can be connected at another LocoNet center (Intellibox II, Intellibox IR, Intellibox Basic, IB-COM or TwinCenter) as an accessory device and then takes on the functions of a control desk, 3A booster and LocoNet power feed. In addition a further s88 feedback input and a USB Port are available.

1.2 Quick guide

Important! *Please use this quick guide only in the beginning if you want to try out the Intellibox. Please read the entire manual to be fully informed about all functions and options of the device.*

Connecting the Cable

The 16V AC from a 70 VA transformer and the Track are connected to the 6 way screw terminal plug as described in Chapter 2.

NOTE! *Incorrect connection can destroy the device because connecting additional digital components can cause a short circuit between the transformer power and digital output.*

Connecting the Device

If the plug is inserted into the Intellibox and the transformer power is switched on the green [go]-key at the top right of the Intellibox II will light up after approximately 5 seconds and indicating that the device is in the ready state.

Presets

Ex-factory the Intellibox II has the following settings:

Speed display	Speed steps indication
Throttle	AC throttle
Default data format for Locos	Motorola
Default data format for turnouts	Motorola

If the configuration for your layout is correct you place the first locomotive onto the track. Alternatively you must look in the “Basic Settings” Menu and make the necessary changes.

A complete description of the operation as well as all settings can be found in Chapters 3 and 4.

Calling up a Locomotive

- Press the left or right [lok]-Key
- Use the numeric keys to enter the locomotive address
- Confirm with the [↵]-key

Controlling a Locomotive

- Increase the speed by turning the knob to the right
- Decrease the speed by turning the knob to the left
- Press on the control knob when the locomotive is stationary to change direction

Switching Light

The [f0]-key switches the Light on or off

Switching Special functions

- Press one of the Special function keys [f1] [f2] [f3] [f4]
- If you press the context sensitive key beside the display you operate functions f0 to f28 on DCC decoders (see Chapter 5.4).

Note: *All entries must be made on the controller on which the locomotive address or name was originally entered!*

Changing the data for a single Locomotive

- Press the [lok]-key of the right or left controller twice
- With the Scroll key scroll down to the "Change Loco data entry" item
- Confirm the selection with the Select Key (Auswahltaste)
- Then make change to the desired setting for this locomotive address

Switching Turnouts

Turnouts are switched from the key block. With the eight pairs of keys the turnouts or signals with addresses 1 to 8 can be switched. The respective position is indicated by a turnout symbol in the middle part of the display. The allocation of the keyboard can be easily changed at any time (see Chapter 6.5).

1.3 Overview of the Commands

Very important! *Use this brief description only if you want a quick reference to a little information. Please read the entire manual to be fully informed about all functions and options of the device.*

Switch off track power

- [stop]

Switch on track power

- [go]

Select Locomotive by Address

- [lok] + Address entry + [↵]

Select Locomotive by Name

- [lok] + Select key

Change Speed

- Turn the throttle knob

Change Direction

- With locomotive stationary press on the controller knob

Emergency stop of the controlled locomotive

- Press on the controller knob

Switch the Light function

- The [f0]-key switches the light on or off

Switch Special functions f1-f4

- [f1] [f2] [f3] [f4]

Switch Special functions f0-f28

- Press the context sensitive keys beside the display
  Active functions are indicated with a tick.

Selecting the Device Mode

- Press [mode]-key
- Select with the keys on the right of the Display

Change Control Panel Mode Key Assignment

- Press [mode]-key
- Select panel with the keys on the right of the Display
- [menu] + Number 1 Key + [↵] (Factory setting 1)

Change Feedback Mode Key Assignment

- Press [mode]-key
- Select feedback with the keys on the right of the Display
- [menu] + Number 1 Key + [↵] (Factory setting 1)

Configure the Data format individual Decoder

- [lok] + address entry + [↵] or [lok] + Select key
- Press [lok]-key x2 + with Scroll key scroll to "Change Loco Data"
- "Change Loco Data" + select "Change Data format"
- Select the desired Data format + "Save"

Change Basic Setting

- Press [mode]-key
- Select Basic Settings with the Select key on the left side of the display
- Confirm the setting with Select key
- Return control mode with [menu]-key

1.4 Technical Data

- **Input power**

Maximum allowable of 18V AC

- **Maximum Power loading**
  3.5 A to the layout track
  0.5 A on LocoNet B output
  0.5 A on LocoNet T output
  All outputs have short circuit protection!
- **Maximum number of Feedback modules**
  A total of 2048 feedback contacts can be connected.
- **Locomotive Address range**
  DCC Data format: 1-9999, Motorola-Data format: 1-255
- **Turnout Address range**
  DCC Data format: 1-2048, Motorola Data format: 1-320
- **Usable Transformer**
  16-18V AC, 52-70VA, e.g. Uhlenbrock 70VA Transformer 20070
- **Dimensions**
  180 x 136 x 80 mm

2. The Intellibox II Connections

The following section describes Intellibox II Connections and what must be noted when the devices are connected.

2.1 Definition of the individual Sockets

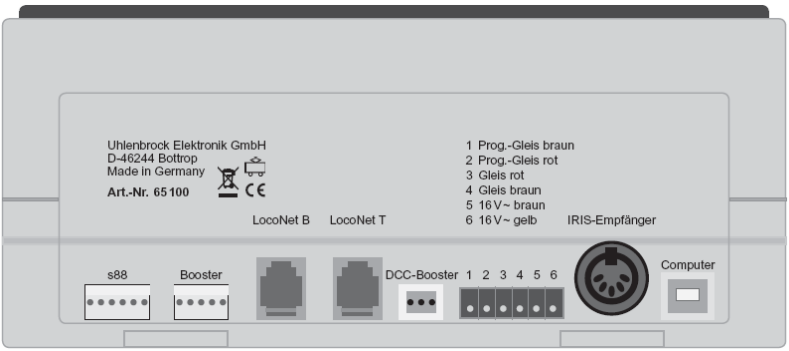


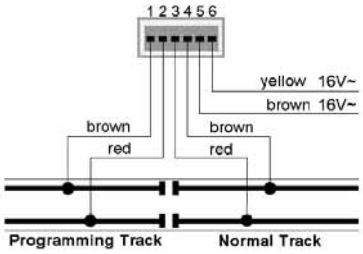
Figure 2.11 The rear view of the Intellibox II with its connections

6-way Header:	s88-Feedback
5-way Header:	Märklin Booster
RJ12 Socket:	LocoNet B (Booster)
RJ12 Socket:	LocoNet T (Throttle)
3-way Header:	DCC Booster
6-way Header:	Transformer, Track, Programming Track
5-way DIN Socket:	additional IRIS receiver
USB Socket:	USB Computer connection

2.2 Connecting Transformer, Track and Programming Track

The included 6-way plug for connecting the transformer, Track and Programming Track is a screw terminal plug, to which the wires are connected by tightening the screws.

The image to the right shows the assignment of the terminals of the plug.



The terminal assignment of the 6-way connector is shown in the diagram on the left.

Note: *For the transformer and track connection you should use wire with as large a cross sections as possible (at least 0.5 mm²). The connection to the track should be made at several locations of the layout. We recommend feed points with a separation of approx. 1m for H0.*

Transformer

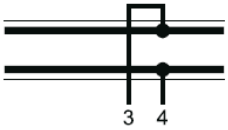
For trouble free operation a transformer of min. 52VA and 16V AC is required. With full loading we recommend the Uhlenbrock transformer 20 070 with 70VA. The transformer output potential should not exceed 18V ~.

The transformer's AC potential is connected to terminal 5 (brown) and 6 (yellow) of the 6-way connecting plug.

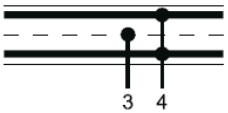
Important: *Incorrect connection can destroy the device because additional digital devices may cause a short circuit between the transformer output and the digital power.*

Track

2-Rail track is connected to terminals 3 and 4 of the 6-way connecting plug.



For 3- Rail track (Märklin) the centre rail is connected to terminal 3 (red Märklin cable) and the track body to terminal 4 (brown Märklin cable) of the 6-way connecting plug.



Programming Track

The Programming track is a section of track is specially setup for programming and reading of locomotive decoders.

This track is connected to terminal 1 (brown) and 2 (red) of the 6-way connecting plug.

Important: *The track must definitely be isolated on both sides - with Märklin track it is essential to isolate the centre rail and outer rails. During programming the isolation point must not be bridged (e.g. by bogie or lighted wagon).*

Note: *The programming track can be used for programming and reading of decoders. It can equally be used for normal train traffic when the Intellibox is not in programming mode.*

2.3 Connecting LocoNet

The Intellibox supports all devices which have a LocoNet interface.

LocoNet boosters such as Power 2, 4 and 7 are connected to LocoNet B since the digital rail signal is available here. Connection LocoNet T is only suitable for manual control devices and devices that do not need a digital rail signal. We recommend connecting LocoNet boosters on large layouts to the LocoNet B socket only.

All other devices can be connected to LocoNet T.

Note: *Behind a LocoNet power feed unit no track signal is available even if its input is connected to the LocoNet B socket.*

2.4 USB Computer Interface

Attention: *Before the Intellibox II is connected to the PC the driver software for the interface must be installed (see Chapter 15.3). The driver software can be found on the included CD.*

For connecting the Intellibox to a computer you use a USB lead with type A and B plugs, Part No. 61070. This type of cable is also used for connecting the computer with a USB printer.

The Intellibox USB interface is set to a data transmission rate of 115200 Baud.

2.5 Connecting DCC Boosters

Boosters with DCC Booster interface can be connected to the DCC booster socket. Both the DCC and the Motorola data format are output.

A 3-way clamp connector is provided for connecting to the device. The cables of braid or wire to be attached are stripped approx. 6 mm, carefully twisted, and tinned if possible.

Using a narrow screw driver (2 mm) which fits in the opening of the plug apply light pressure to open the clamp terminal contacts. The stripped end of the cable is inserted into the clamp terminal plug. When pressure from the screw driver is released the cable is fixed to that contact.

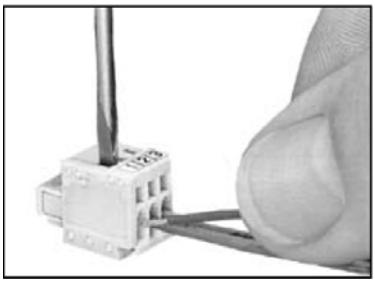


Figure 2.51 Attaching the cable to the clamp plug

Lenz Booster

Both signal lines C and D as with the short circuit line E are connected to the 3-way clamp terminal plug.

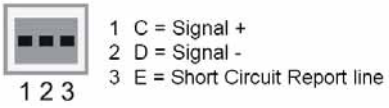


Figure 2.52 Assignment of the contacts of the 3-way connector (Cable side)

Other DCC Boosters

Other DCC Boosters normally have two connecting cables which are connected to terminals 1 and 2 of the 3-way clamp terminal plug.

Note: *Because of the missing short circuit line "E", these boosters have no way of reporting a short circuit to the Intellibox. They are normally equipped with there own short circuit protection.*

Märklin and Arnold Digital= Boosters

Märklin Digital= Booster (6016) and Arnold Digital= Booster (86015) are connected with the help of the Uhlenbrock Adapters 61 030 to the DCC Booster socket.

2.6 Connecting Märklin Boosters

Märklin boosters (6015/6017) and all boosters using the Motorola format that have a Märklin booster compatible connection can be attached to the Märklin booster socket. Connect the booster with the Märklin booster socket of the Intellibox II using the enclosed flat strip cable (see the booster operating instructions).

The plugs must be connected to the so that the cable on the Intellibox and the Booster 6017 go to the top and on the Booster 6015 to the bottom (as shown in the diagram).

Note: *If the Booster Power 4 (Part No. 63 240) is to transmit the Selectrix Format it must be connected to the Intellibox Märklin Booster socket.*

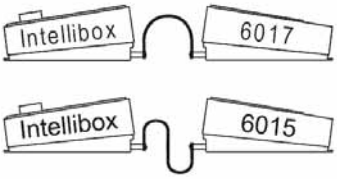


Figure 2.61 Connection of the flat cable

Tip: *The Märklin Booster outputs the DCC Format when Special option 901 is set to "3" (Setting see Chapter 4.10), otherwise the Intellibox will report the error „Short Circuit" as soon as the Märklin Booster is connected and the DCC Format is output.*

2.7 Connecting s88 Modules

Feedback modules serve to monitor track sections and trains in automatic operations on a model railway layout.

All feedback modules that conform to the Märklin s88 standard can be used on the s88 feedback input.

The flat cable supplied with the module is used to connect the module to the Intellibox s88 input socket. On both devices the plug must be connected so that the flat cable goes downwards.

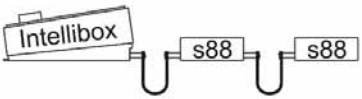


Figure 2.71 Connection of flat cables

If more modules are used the flat cable is connected from output of the last module to the input of the next module so that all modules are daisy chained and connected to the s88 feedback bus (see also the manual of the particular module).

2.8 Connecting IRIS Receivers

Receiver

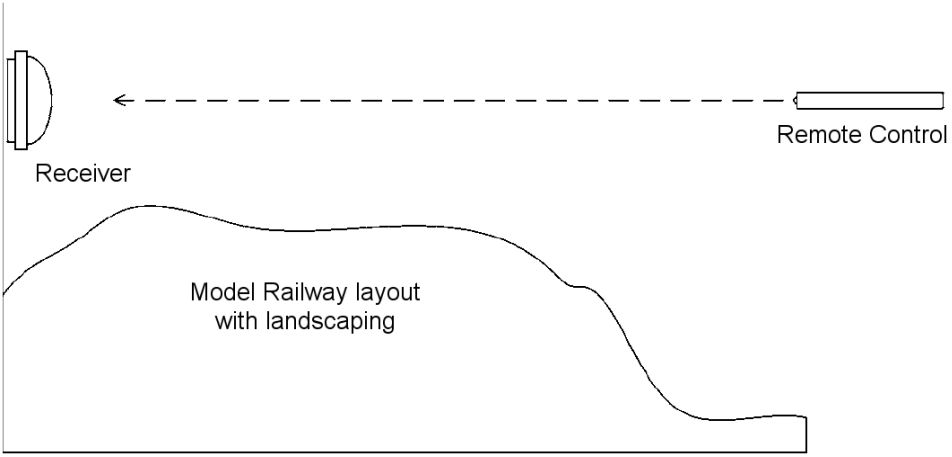
The built-in receiver is located under the front panel to the right of the [C]-key. During operation the remote control IRIS (Part No. 66510) should always be held in the direction of the receiver (see illustration).

In difficult situations such as a model railway layout in two rooms, two further external receivers can be used.

Auxiliary Receiver

Auxiliary receivers (Part No. 66520) are connected to the 5-pole DIN-socket, designated "IRIS receiver". A single auxiliary receiver can be connected directly. When two auxiliary receivers are used they are connected to the Intellibox via a Y-cable.

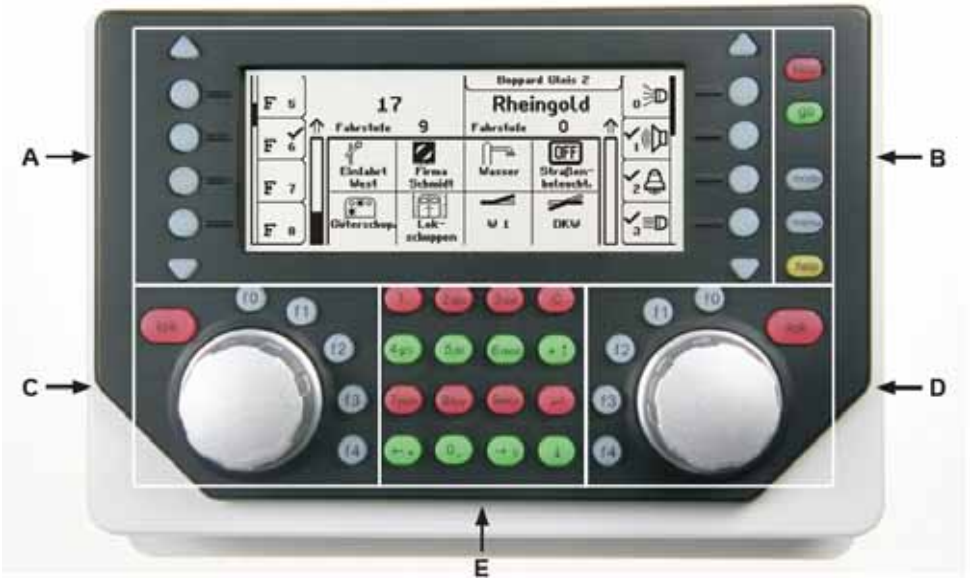
The receiver is attached to the back wall of the model railway layout using the provided double sided adhesive pad. As shown in the sketch, the area between the receiver and the transmitter must be free from obstacles. For trouble-free operation, the receiver must always “see” the transmitter so that trouble free operation is possible. The most sensitive direction of the receiver is perpendicular to the center of the cover dome to the rear wall of the receiver.



During operations the remote control should be always held toward a receiver. A red control LED under the transparent dome of the receiver blinks when the receiver has received the infrared signal from a remote control.

3. The Operating Elements

3.1 Overview of the Operating Elements



A. Backlit LCD with associated display keys with information about locomotive address or name, speed and driving direction and the current operating mode, e.g. in control desk mode shows turnout or signal status. The display keys are for selecting entries from the lists which are shown down the side of the display, e.g. in the control desk mode the list of special functions

B. Key area with operational status indicator, main control keys and help function

C. Left Controller with function keys and locomotive selection key

D. Right Controller with function keys and locomotive selection key

E. Key block with telephone keyboard and special keys

stop/go

Operating status and key for interrupting and restarting of running operations

mode

Selection of the operating mode e.g. operating desk mode, feedback mode, route mode, LISSY mode, programming mode, etc.

menu

Setting options related to the current operating mode and return to the operating desk mode from each submenu

help

Help for every operating situation

Left Controller

With endless rotary control, direction switch, f0 for switching light function, 4 function keys and locomotive selection key.

Right Controller

With endless rotary control, direction switch, f0 for switching light function, 4 function keys and locomotive selection key.

Centre Key block

Telephone key pad for entering digits and characters. With special keys for easy entry of addresses and working in the individual modes.

LCD Display

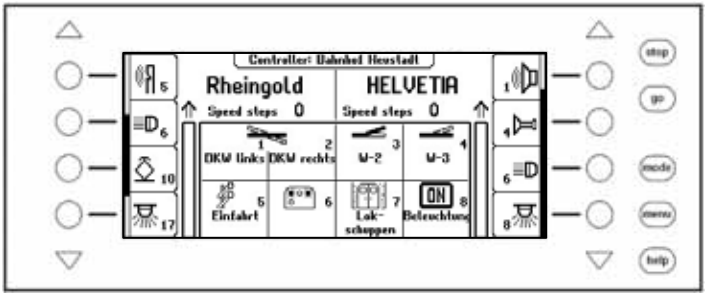
The large backlit LCD Display provides information about both currently controlled vehicles, currently selected operating mode (e.g. in control desk mode, display of turnout or signal status) and the assignment of the display keys, which always match the individual operating situations.

Display keys

For selecting entries from the lists which are shown down the side of the display, e.g. in the control desk operation the list of the special functions or the selection of individual menu items.

3.2 The Display with the Display keys

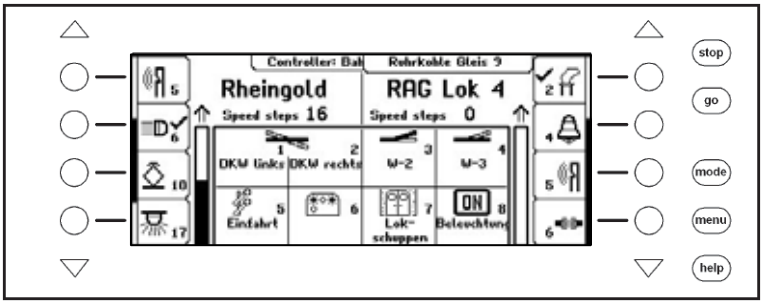
The large backlit LCD Display is clearly arranged on the panel. The three part display provides a clear overview of the current running status at all times.



The top area shows the current selected vehicle for each of the controllers along with their speed and driving direction.

The special functions are switched by the round display keys beside the display. If the controlled locomotive has more than 4 special functions, then the scrollbar indicates the active items in the list. The triangular keys (= Scroll keys) can page through this list upward or downward. Their background light indicates the possible direction.

If the LISSY system is connected to the Intellibox the messages indicating the current state of the locomotive is shown above the locomotive name. This information is stored in the Intellibox and displayed again when the locomotive is next called. The display is updated whenever the locomotive passes another place on the layout that is being monitored by the LISSY system.



The middle has information about the current operating mode, e.g. in the control desk mode the state of turnouts or signals.

3.3 The Controller

Locomotives can be called and controlled by the control desk. The Intellibox has two independent integrated controllers. They are on the left and right side of the unit.

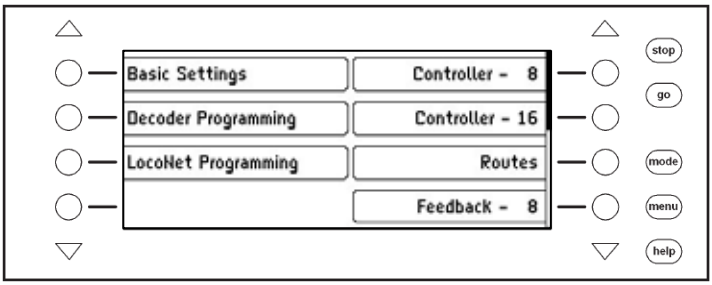
Digital decoders with different data formats can be controlled simultaneously.

The controllers are also operational during programming or while changing presets.

Each control desk consists of the throttle control knob for changing locomotive speed and driving direction as well as of the f0 to f4 special function keys. The [lok]-key on each control desk serves to select new locomotives on the controller.

3.4 Menu Operation

The Intellibox is operated by three main control keys [mode], [menu] and [help]. [Mode]-key switches between the device modes. If it is pressed the main selection menu appears and shows all the modes. On the left side are the modes that fully utilize the display and on the right are the modes which represent the control desk in the display in combination with other control elements (control desk, routes, etc.) in the middle display area.

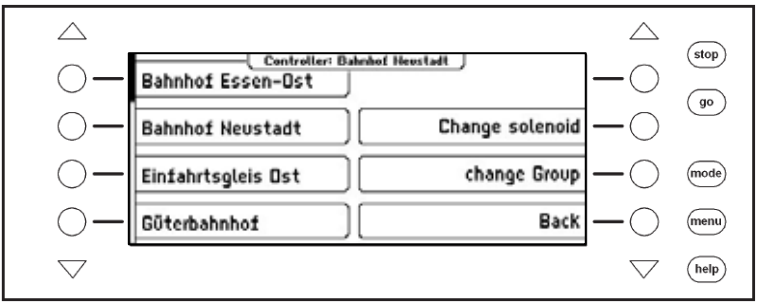


The [Menu]-key leads to selection or configuration menus, which belong to each device mode. In the control desk mode e.g. a new control desk is selected or a solenoid is linked with a name and a symbol. A further press of the [menu]-key returns back to the Control Desk.

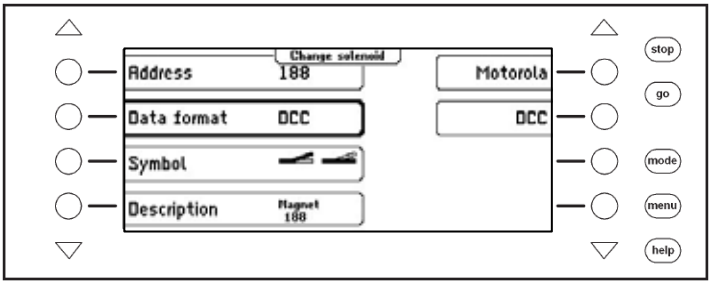
The [help]-key can be call context sensitive help at any time.

The individual menus are always navigated with the display keys beside the left and on the right the display. Depending upon the operation the display gives the meaning of these keys. If more than four options are available the triangular scroll keys light up. A scrollbar indicates if different options are still present above or below the four represented. These other options can be accessed with the triangular scroll keys.

The menus are constructed in such a way that the left side has the main options. The right side shows associated control steps or a submenu which belong to one of the options on the left side. Here one often also finds the “Back” key to exit the menu or with which to return to a parent menu. For example the control desk menu:



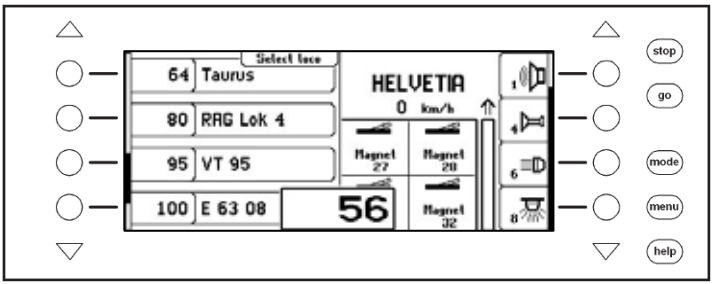
If an option on the left side is activated by key press, this is represented by a frame around the menu element, e.g.:



The right side now shows options for this point. In this example the data format for solenoids can be set. The submenu is faded out again by another operation of the left selection key. If a selection key on the right is pressed the selection for this parameter (here the data format) is accepted and indicated left.

3.5 Entry of Numerals

If during the course of operating the device input of a number of sequences is required to enter a locomotive or a solenoid address it is done with the alphanumeric keyboard in the centre of the unit (key block). As soon as a digit key is pressed an input field appears. The input can be completed in the field and confirmed with [↵]-key. The last entered digit can be deleted with the [C]-key. The [+↑]-key increments the number in the input field by one, while [↓]-key decrements the number by one.

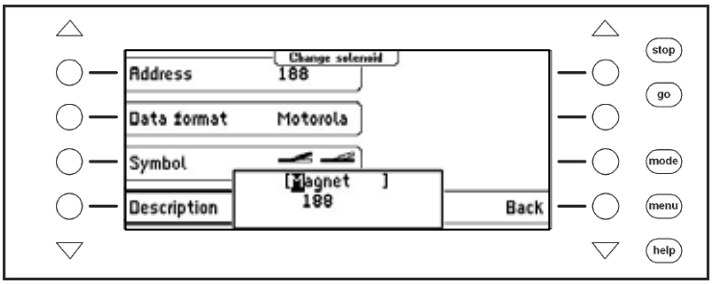


3.6 Entry of Names

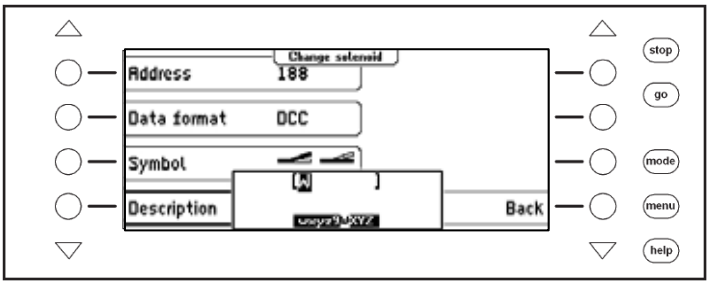
While operating the device input of names may be necessarily to provide a locomotive or a turnout with a name. This input can be done with the alphanumeric keyboard in the centre of the unit (key block). As soon as a change of name is selected, depending upon context, a one or two line input field appears.

The actual line in which the text can be entered is marked by square brackets. The Curser position at which next character will be changed is shown inverted. The arrow keys [←] and [→] can move the cursor within the line. The arrow keys [↓] and [↑] can be changed between the lines. The [C]-key will delete the character at the input position.

The character input is ended with the [↵]-key.



When an alphanumeric key is pressed a list of characters which can be inserted appears. As is the case for mobile phones repeated pressing of the key selects characters from this list. If the key is then released for a short time or if another key is pressed the character at the cursor position is used.



Here are the symbols assigned to the alphanumeric keys 0-9:

Key	Assignment
1	-1.,()<>_:+*/#!
2	abc2ABCäÄ
3	def3DEF
4	ghi4GHI
5	jkl5JKL

Key	Assignment
6	mno6MNOöÖ
7	pqrs7PQRSß
8	tuv8TUVüÜ
9	wxyz9WXYZ
0	(space)0

Note: *Key [0] will overwrite the existing character at the cursor position either with a blank or the number "0" inserted.*

4. Basic Settings Menu

The Basic Setting of the Intellibox II can be changed by menu driven options and are then saved to non-volatile memory.

The Basic Settings Menu is reached by pressing the [mode]-key and selecting “Basic Settings” submenu.

The Basic Settings Menu has the following items:

- Operation
- Language
- Loco data format
- Turnout setting
- Hand Control
- Display
- Programming track
- Interface
- s88-Settings
- Special options
- Software Version
- Start mode
- Database
- Feedback

To leave the main menu press the [mode]-key.

4.1 Menu Item Operation

4.1.1 Speed Display

The display of the vehicle speed can be in one of three ways.

Speed Step display

The display is directly in speed steps according to the decoder data format 0-14, 0-28, 0-31 or 0-126 speed steps.

Percent Display

The display is in percent of the maximum speed irrespective of the data format being used.

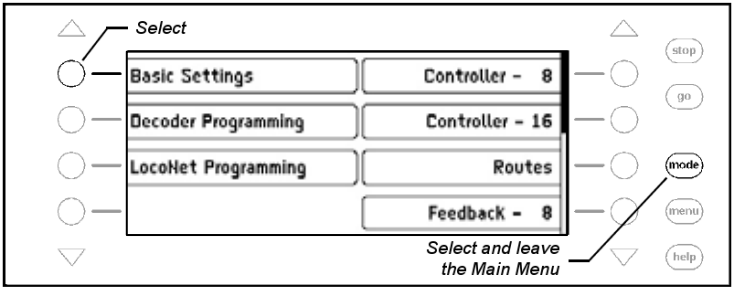
Display in km/h

If the individual locomotive address in the database has a top speed assigned to it (see Chapter 5.6.5) the speed can be calculated and displayed in km/h.

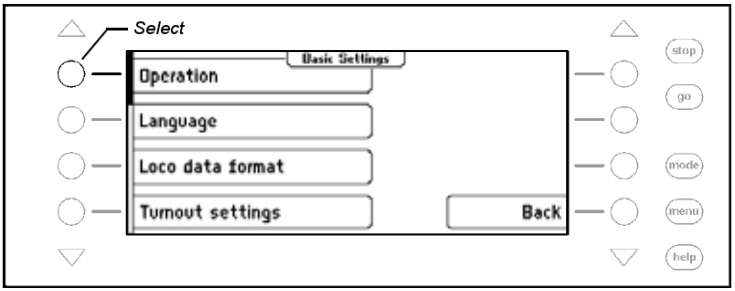
The display is preset to “Speed Step display”.

Procedure:

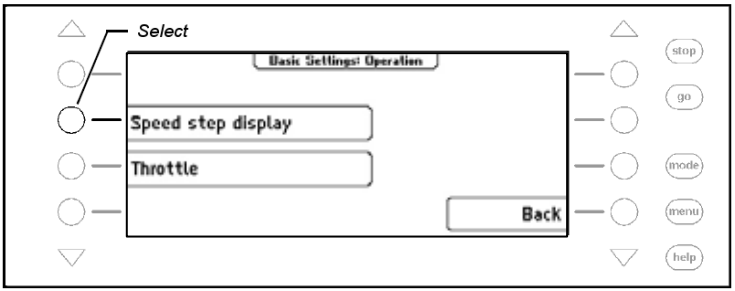
Step 1



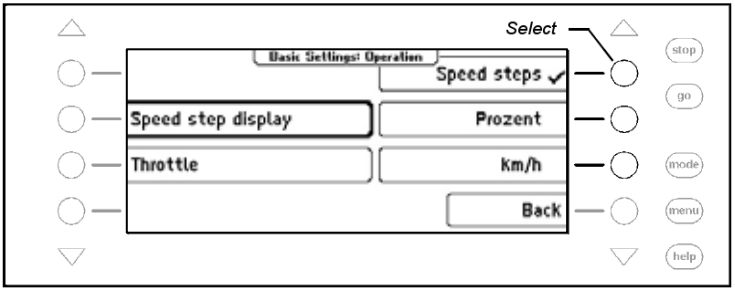
Step 2



Step 3



Step 4



4.1.2 Throttle

The throttle controls on the Intellibox II can be selected to operate like a DC throttle or an AC throttle.

The factory default setting is “AC throttle”.

AC Throttle Mode

The AC Throttle Mode is set up to control locomotives like the AC transformers in 3-rail systems.

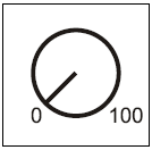


Figure 4.1.2.1 Principle of an AC throttle

In this operating mode the speed increases by turning the knob to the right and decreases by turning the knob to the left. When either the maximum speed or the zero speed is reached further rotation in the same direction of the knob has no effect. In this operating mode the direction is switched with a light pressure on the throttle knob.

If the reversing switch is activated while the vehicle is running the vehicle will firstly stop and only then switch the direction over. It depends on the decoder data format if this causes an emergency (Motorola, DCC) or stops using the setup deceleration (Selectrix).

DC Throttle Mode

The DC Throttle Mode controls the locomotives as is common in the 2-rail DC systems.

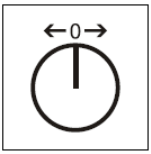


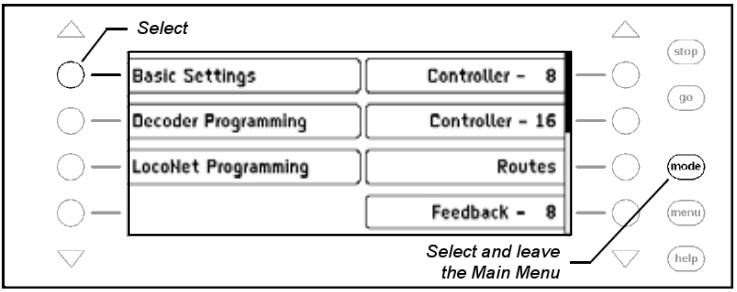
Figure 4.1.2.2 Principle of a DC throttle

In DC operating mode a right turn of the control knob, starting from speed step zero, the locomotive will move in a direction. When the control is turned back the speed is reduced until the loco stops. A further turn to the left will cause the locomotive to accelerate in the opposite direction.

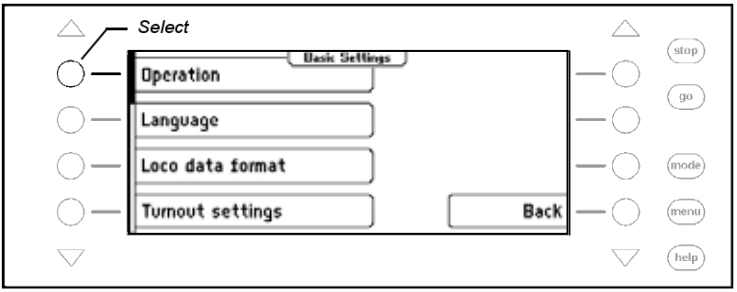
If the maximum speed of the loco is reach further turns in that direction has no effect. In this operating mode a light pressure on the control knob will cause the vehicle to stop. It depends on the decoder data format if this causes an emergency (DCC) or stops using the setup deceleration (Motorola, Selectrix).

Procedure:

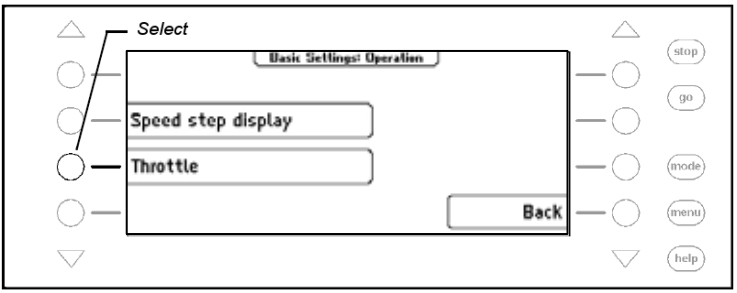
Step 1



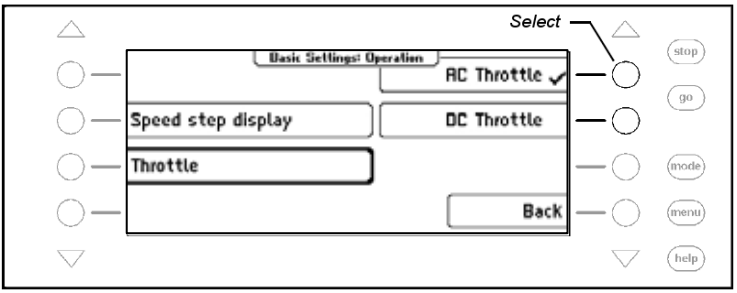
Step 2



Step 3



Step 4



4.2 “Language” Submenu

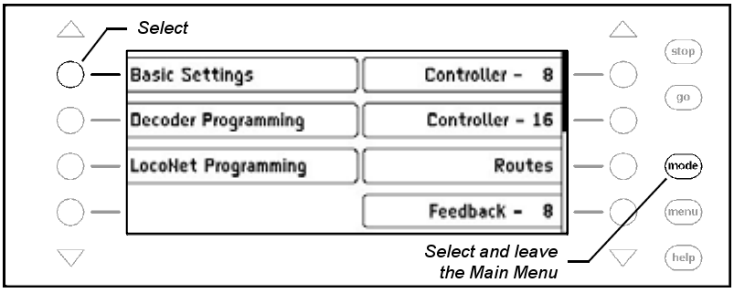
For the language of the text on the display the following languages can be selected:

- German
- English
- French
- Italian
- Dutch
- Swedish
- Spanish
- Portuguese
- Danish

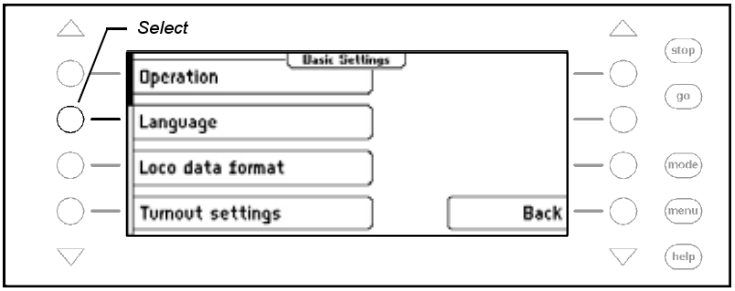
The preset is “German“.

Procedure:

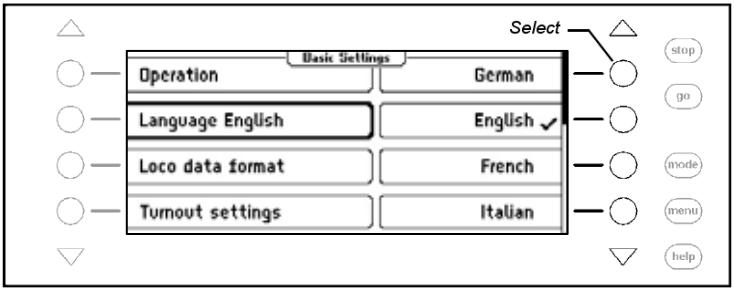
Step 1



Step 2



Step 3



4.3 ”Locomotive Data Format” Menu

Sets the locomotive data format that will be used for decoder the first time they are called up and when an individual data format is not assigned to it.

The data format you will use most should be set up here before the first time you use the Intellibox II. The preset value is the new Motorola data format.

Possible settings are:

Motorola - old

old Motorola Data format
Locomotive decoder with 14 speed steps, without special functions
Function decoder controls with special functions keys f1 to f4

Motorola - new

also Spur-I-Format with 14 speed steps, with locomotive special functions f1 to f4

DCC 14-28-128

DCC Format with 14, 28 or 128 speed steps, up to 32767 special functions

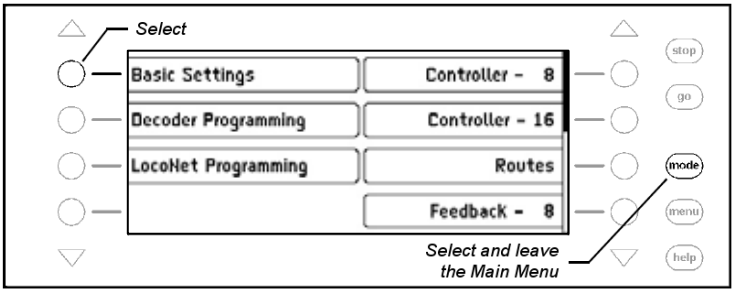
Selectrix

Trix Selectrix with 31 speed steps and 4 special functions

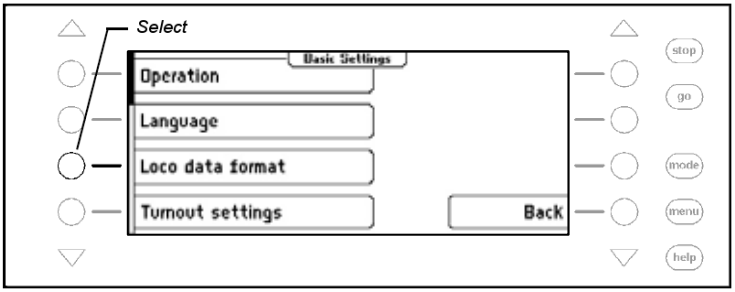
Note: *The format of individual decoders can easily be changed at any time independent of the locomotive data format in the “Change Loco Data” Option.*

Procedure:

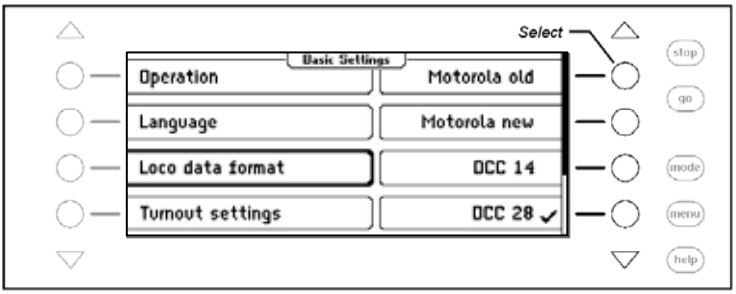
Step 1



Step 2



Step 3



4.4 "Turnout settings" Menu

Attention: *Turnout decoders from Märklin and Viessmann for the Motorola data format each control four turnouts. The address selected by the DIP switch on the decoder is not identical to the turnout addresses of the turnouts connected to the decoder.*

All setting menus in the Intellibox II use turnout addresses and *not* turnout *decoder* addresses.

The appendix has a Table showing the relationship of the DIP switch position and the turnout addresses and also the assignment of the Märklin Keyboards.

4.4.1 General Data format

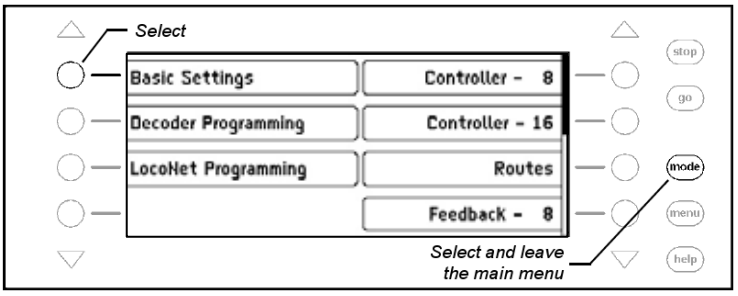
Sets the turnout data format that will be used for decoders the first time they are called up and when an individual data format is not assigned to them as outlined in Chapter 6.7.

The data format you will use most should be set up here before the first time you use the Intellibox II.

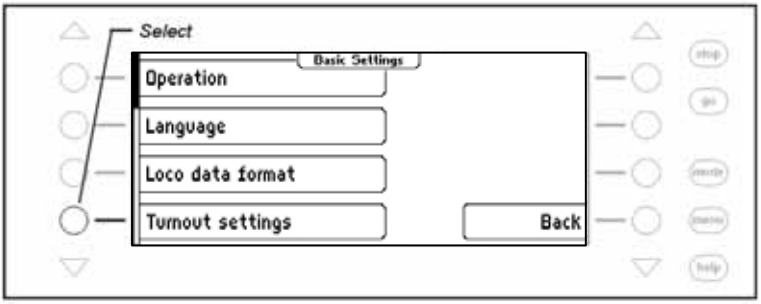
The preset value is the Motorola Data format.

Procedure:

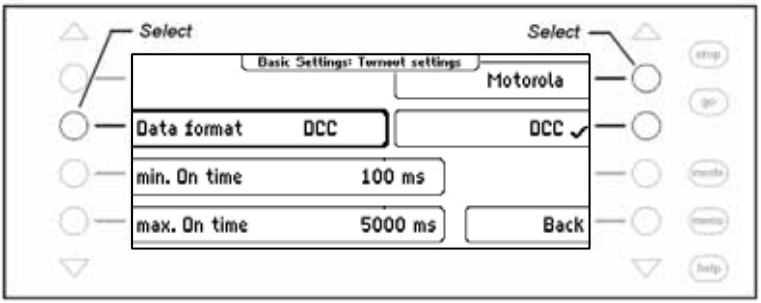
Step 1



Step 2



Step 3



4.4.2 Switching Times

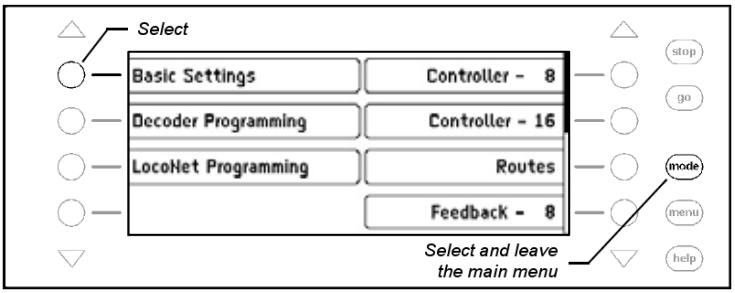
The switching pulse that is generated when a control key is pressed normally lasts as long as the key is held. To ensure that the switching function still works with a very short key press and the solenoid is not damaged by a long activation the Intellibox II has a minimum and maximum switching time. The factory defaults for the switching time is 100 ms (0.1 sec.) minimum time and 5000 ms (5 sec.) for the maximum time.

Valid vales are between 0 and 9999 ms.

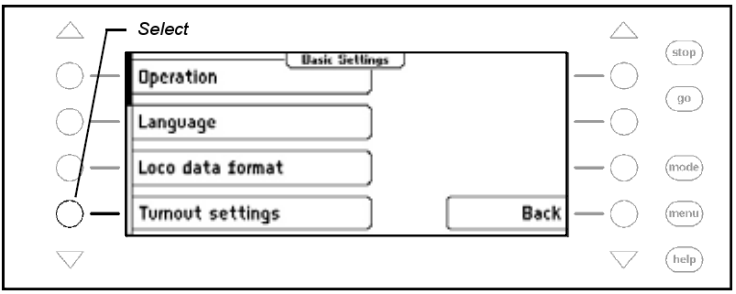
Note: *In DCC decoders the switching times can only be set for turnout decoders that are not configured for "continuous" operation.*

Procedure:

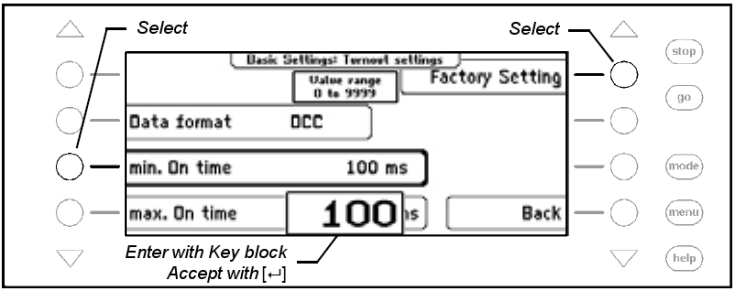
Step 1



Step 2



Step 3



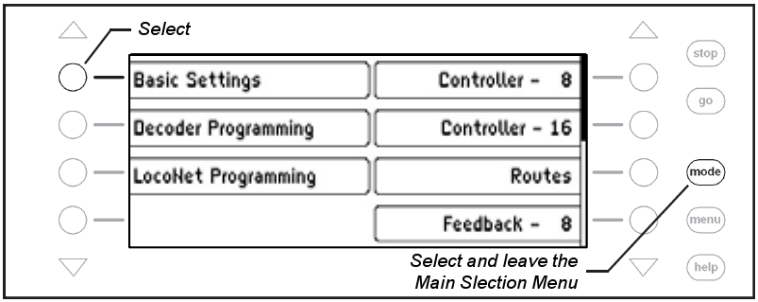
4.5 “Hand Controller” Menu

When an Uhlenbrock FRED hand controller is connected to Intellibox LocoNet for the first time, the center will automatically assign an internal Identification number (ID) to the FRED. The center can forward locomotive addresses to the FRED under this hand controller number.

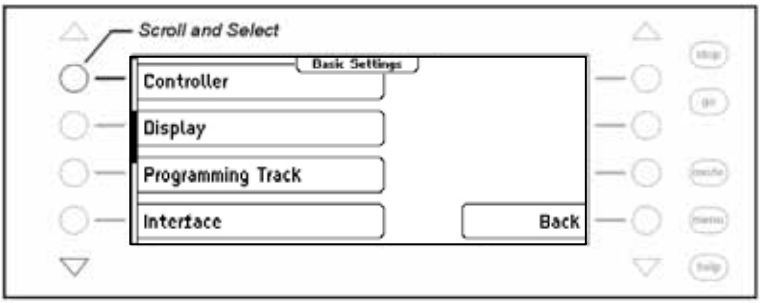
The Hand controller Menu can be used to display the assignment of the FRED number and matching ID and individual FREDs can be deleted.

Procedure:

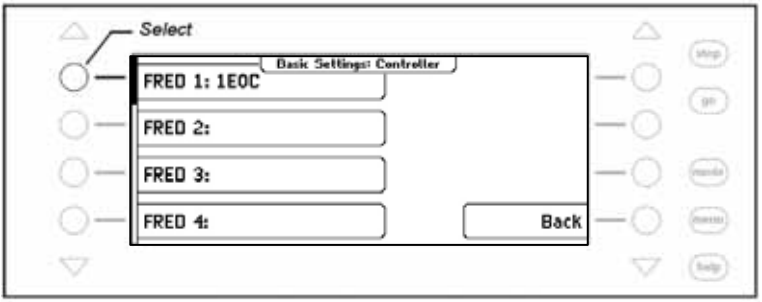
Step 1



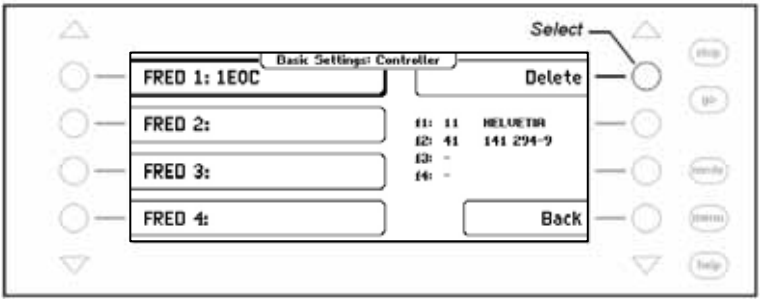
Step 2



Step 3



Step 4

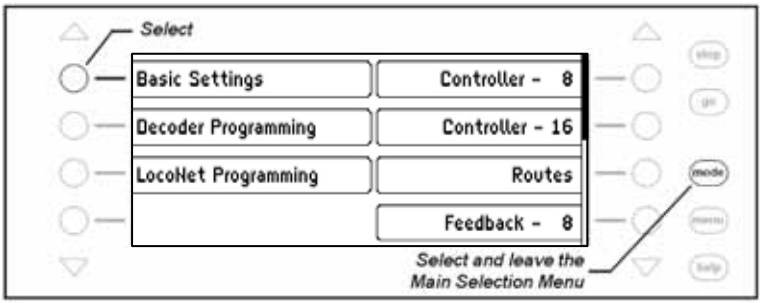


4.6 “Display” Menu

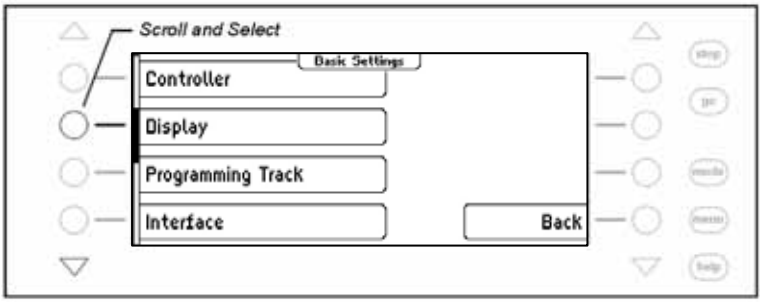
The Display Menu is used to set the brightness and Contrast of the display.

Procedure:

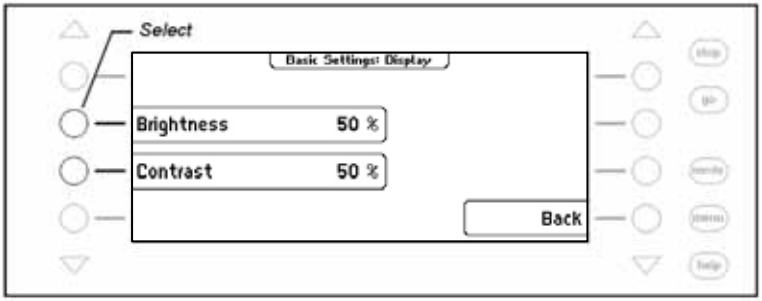
Step 1



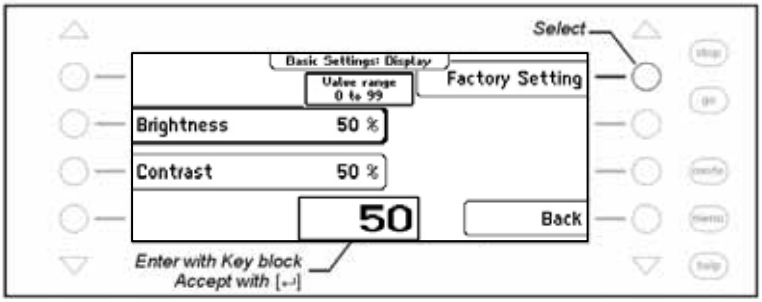
Step 2



Step 3



Step 4



4.7 “Programming Track” Menu

It is possible to select whether the connections for the programming track provides only programming power or if the output automatically switches between normal digital power and programming power.

Only Programming Track

There is no power on the programming track output, it is only fed with programming power during read and write operations.

Automatic

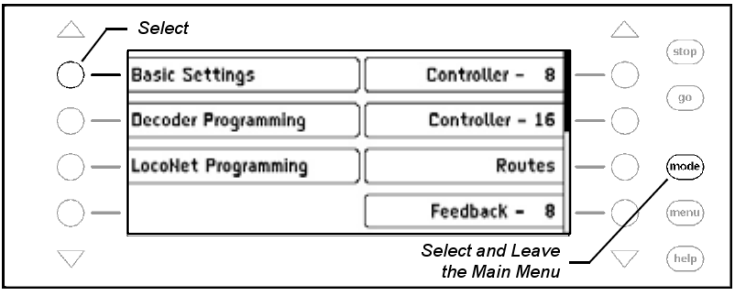
During normal running the programming track output provides normal digital power. It is automatically switched over to programming track power as soon as the Programming Menu is selected. That way a model railway layout can setup a siding to be the programming track and also a normal siding.

Very important: *The track segment must be isolated on both sides. It must not have any electrical connection with the rest of the layout and must be exclusively provided with power from the programming track output. The isolations must not be bridged by a vehicle during programming operations (bogie, lit wagon).*

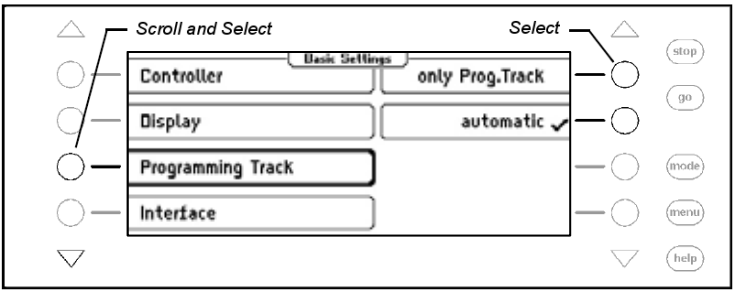
The preset value for the programming track is “automatic”.

Procedure:

Step 1



Step 2

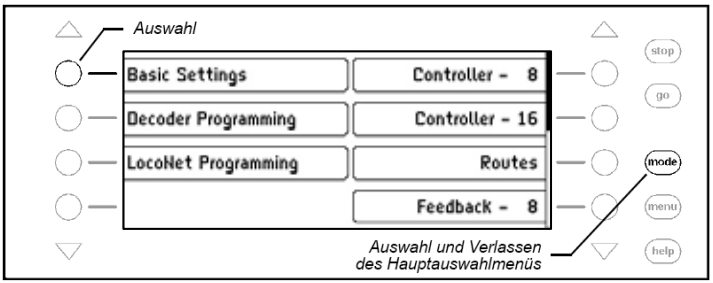


4.8 “Interface” Menu

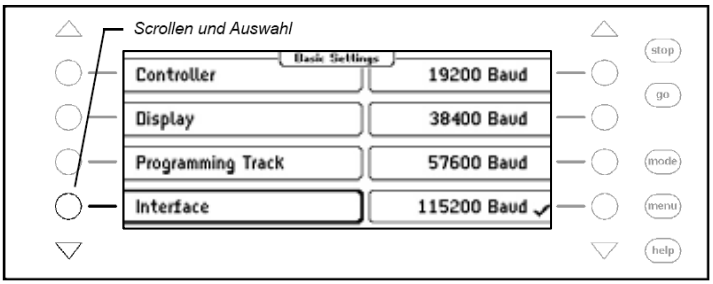
This menu is used to change the baud rate of the Intellibox II. The preset value is 115200 bit/s.

Procedure:

Step 1



Step 2



4.9 “s88 Setting” Menu

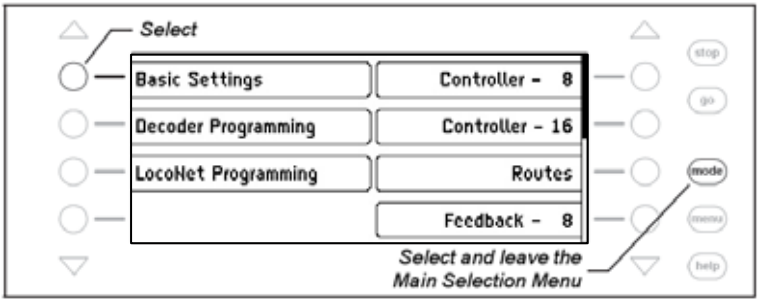
Unlike in other digital centers the Intellibox II stores the feedback signals.

To process this polling as fast as possible the Intellibox II needs to know how many s88 feedback modules are connected to the s88 feedback bus.

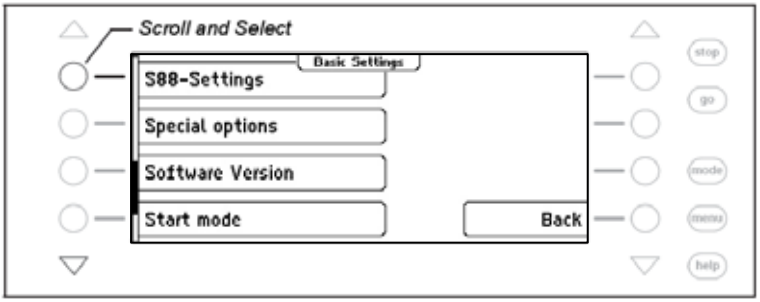
Using a Start address the s88 feedback modules are configured to use these feedback addresses in ascending order.

Procedure:

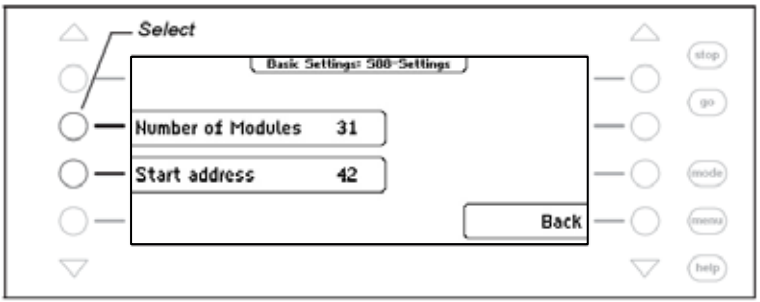
Step 1



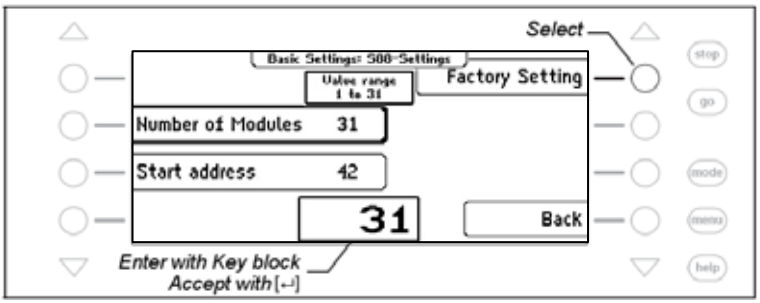
Step 2



Step 3



Step 4

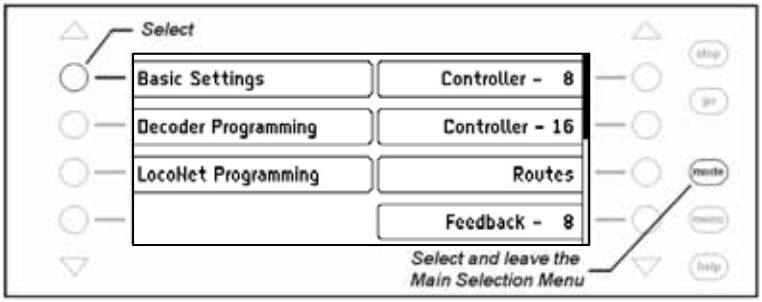


4.10 “Special Options” Menu

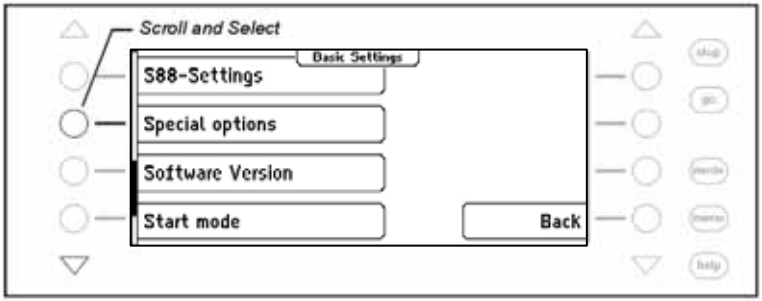
The Intellibox II has various special options which affect the operation of the device and can differ between software versions. Each special option can be selected with an identification number. The individual special options can be obtained in a separate list for the particular software. With later software changes a file containing the relevant explanation is included in the update package.

Procedure:

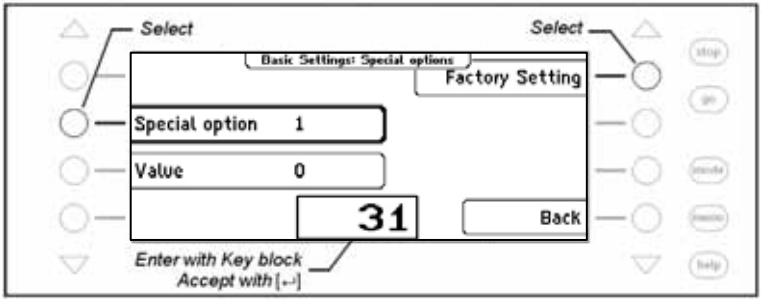
Step 1



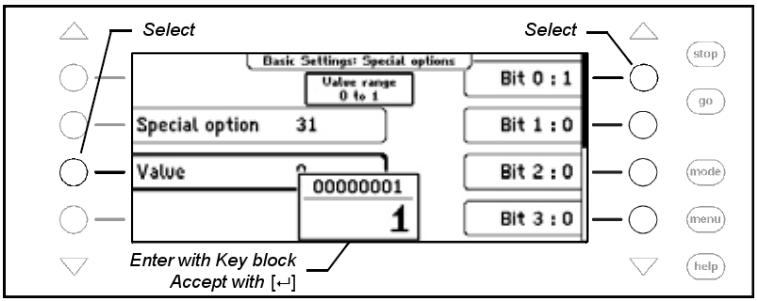
Step 2



Step 3



Step 4



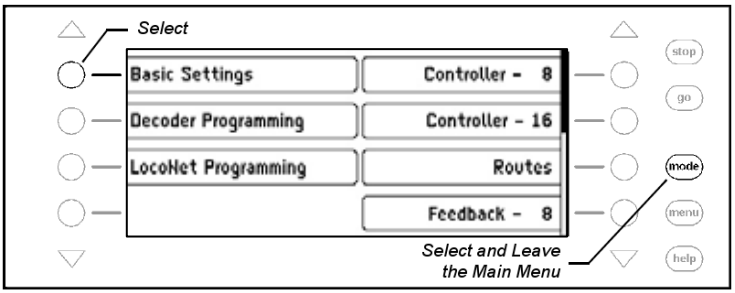
The right display keys can be used to set special option bits to 1 or 0.

4.11 “Software-Version” Menu

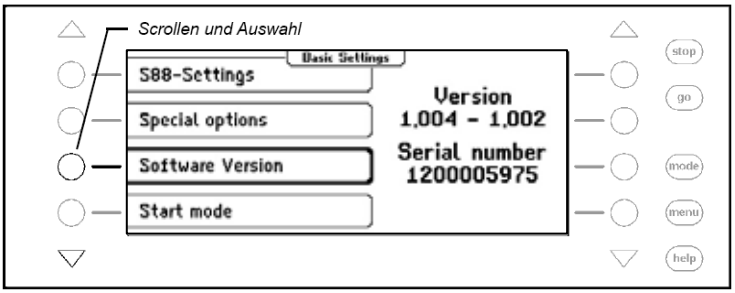
Use this Menu item to find the serial number of your device and the Version number of the System software.

Procedure:

Step 1



Step 2



4.12 “Start Mode” Menu

When the playing is finished the Intellibox II saves all the data. The Start Mode Menu can be used to configure which of the data will be restored at the next start.

no Loco data

No data from the previous play session is to be restored.

auto, Speed = 0

All data from the last operation about locomotives and Multi-traction with their direction and the state of their special functions are recovered from the last use.

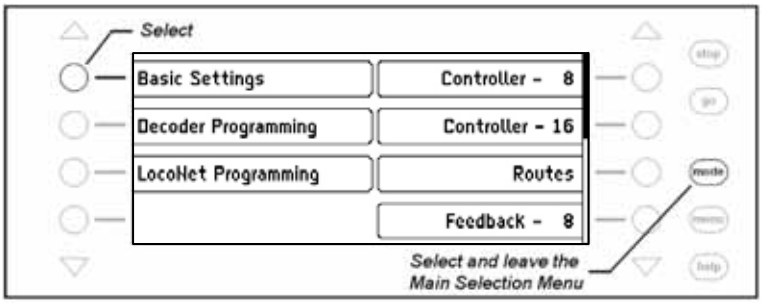
automatic

In addition to the data about direction and special functions the speed of all locomotives is restored. That way the entire operation continues on from when it was last switched off.

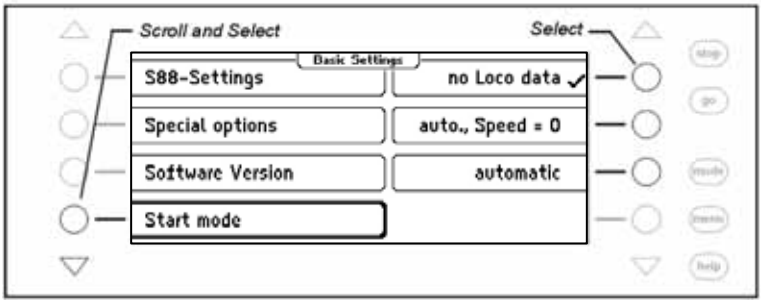
Note: *A safety question appears if all locomotives are definitely to run at their old speed.*

Procedure:

Step 1



Step 2



4.13 “Database” Menu

The Intellibox has a database in which all user settings for locomotives, turnouts, feedback units, Routes, LISSY receivers and booster are saved. The assigned names and symbols for the individual elements are saved. Two memory buffers are available for the active database and for a copy.

The “Database” Menu has the following options:

Make Copy

A copy of the active database is made into the copy buffer.

Swap with Copy

The data is swapped between the active database and the copy buffer. The data from the copy buffer are put into the active data buffer and active data buffer is placed into the copy buffer.

Delete

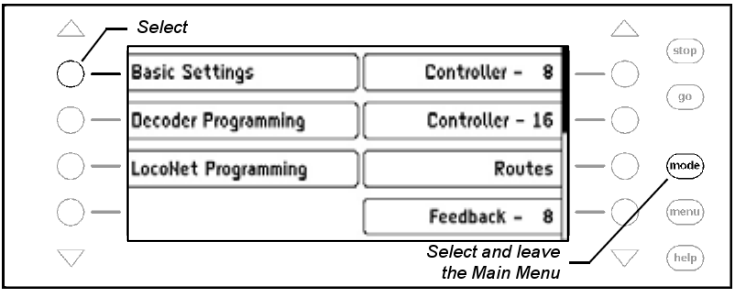
The active data buffer is flushed. Subsequently all names are replaced with the relevant addresses and basic symbols are used for functions, turnouts and feedbacks.

Demo Database

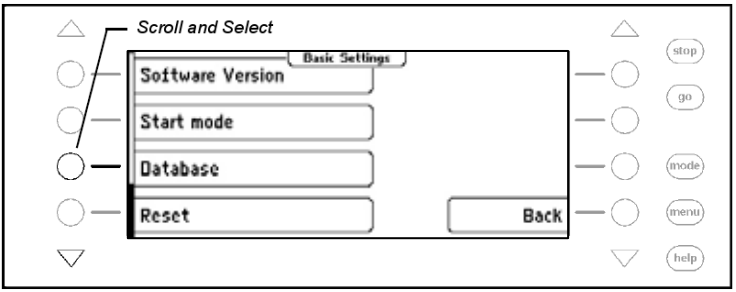
A Demo database with preset values of names and symbols is loaded.

Procedure:

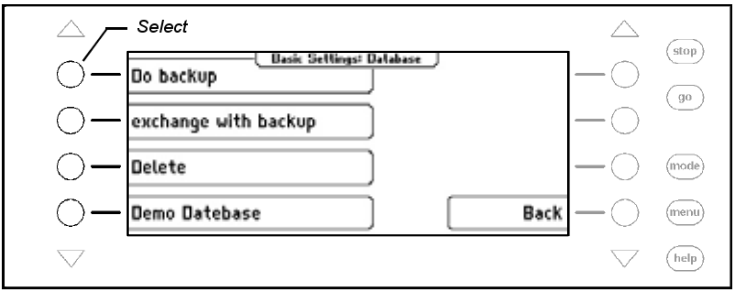
Step 1



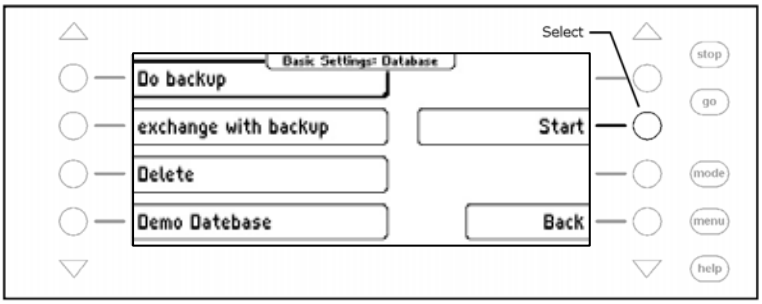
Step 2



Step 3



Step 4



4.14 “Reset” Menu

This submenu is used to reset the Intellibox II back to factory defaults.

Intellibox

The entire device does a reset and start afresh like when the operating power is turned on.

Configuration

All changes under Basic Settings are erased. All changes to special option are reversed. The selected language remains.

Locomotive Data format

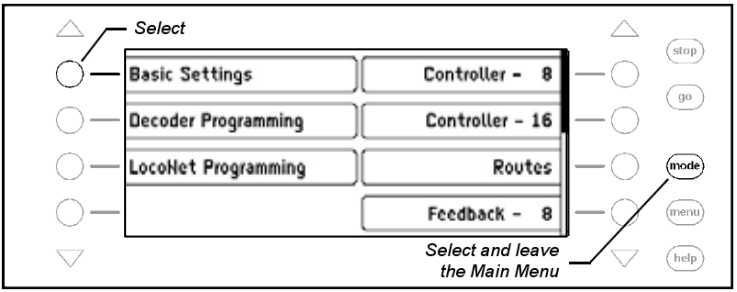
The entries made for individual locomotive decoder in “Change Loco Data” submenu (Chapter 5.6.5), are erased. The general data format for locomotive decoders (Chapter 4.3) is selected for the respective decoder addresses.

Turnout Data format

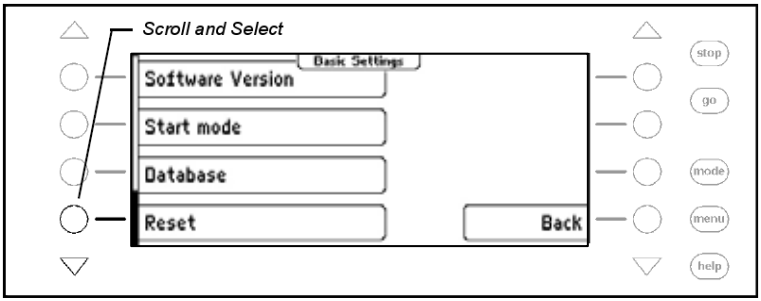
The entries for the individual turnout decoders made in submenus “Name, Symbol and Data format of solenoid settings” (Chapter 6.7) are erased. The general data format for turnout decoders is used for the respective decoder addresses.

Procedure:

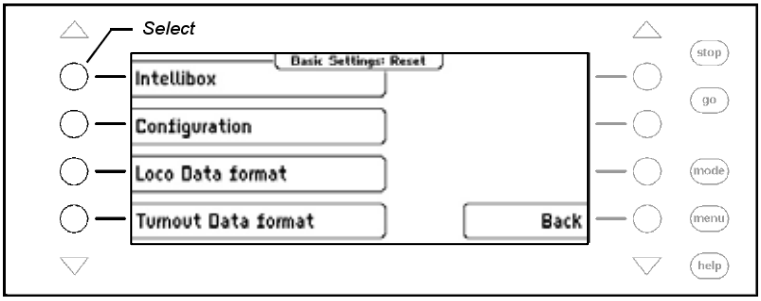
Step 1



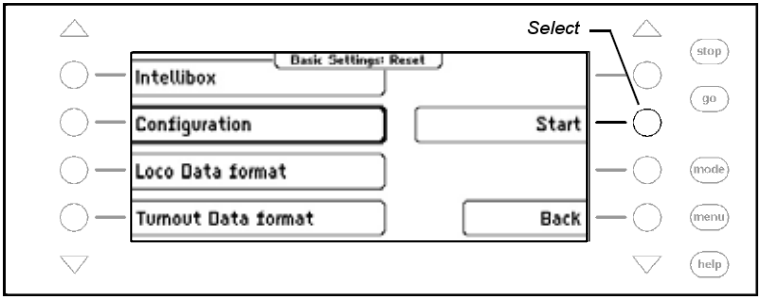
Step 2



Step 3



Step 4



5. The Control Desk

Locomotives can be called up and controlled with a control desk. The Intellibox has two built-in, independent from one-another control desks. They are located on the left and right side of the device control panel.

Digital decoders with different data formats can be controlled simultaneously.

The Control desks are also operational during programming and while changes are made to the presets.

Figure 5.11 The Front view of the Intellibox

5.1 Operating Elements

Each control panel has the following elements:

The [stop]-key

The [stop]-key turns the power off to the main line and the track sections powered by connected boosters. The “STOP – no track power” message is then shown in the display. This key is used by both control desks.

The [go]-key

The [go]-key turns the power on to the main line and the track sections are powered by connected boosters. It is used by both control desks.

Note: *If during normal running the [go]-key is pressed and held, the [stop]-key is also pressed or when the power is off (red LED beside the [stop]-key is lit) the [stop]-key is pressed and held, and the [go]-key is also pressed the Intellibox II switches to the Halt Mode. During the Halt Mode all locomotives are stopped, the track power remains on so turnouts and signals can still be switched. After pressing the [go]-key all locomotives run with their previous speed.*

The keys [f0] [f1] [f2] [f3] [f4]

These keys switch locomotive special functions such as Light, Special lighting, Horn or Smoke unit.

The [lok]-key

starts the selection of the wanted locomotive for respective control desk.

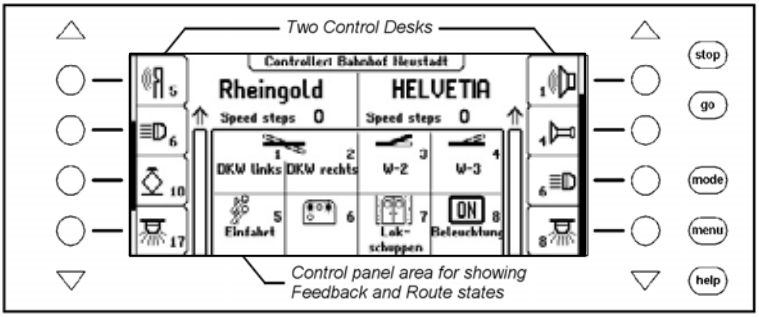
If a vehicle is already selected then pressing the [lok]-key twice will enter the Loco Menu. Here you can build a Multi-traction, assign locomotive to a hand controller or edit locomotive data.

The Throttle knob

The throttle knob is used to change the locomotive speed and direction. The rotating throttle without end stop on the Intellibox II automatically restores the saved speed when a new locomotive is selected.

The Display

The large backlit LCD display always gives you an exact overview of the running status.



The display of the used locomotive, running speed and direction of actually controlled vehicles are shown separately for each controller. The display keys at the sides are assigned with loco special functions. If the controlled locomotive has more than 4 special functions the triangular scroll keys, top and bottom can be used scroll through further functions. If it is possible to scroll up or down the corresponding scroll key is lit up.

The scrollbar diagrammatically shows at which point in the selection range the display keys are.

5.2 Locomotive Addresses und Names

In a digital control system an individual locomotive is selected by an address. This is a sequence of digit, which are installed in the individual locomotive decoder for identification.

Each decoder is set to its own address so that the locomotive can be addressed by this particular address.

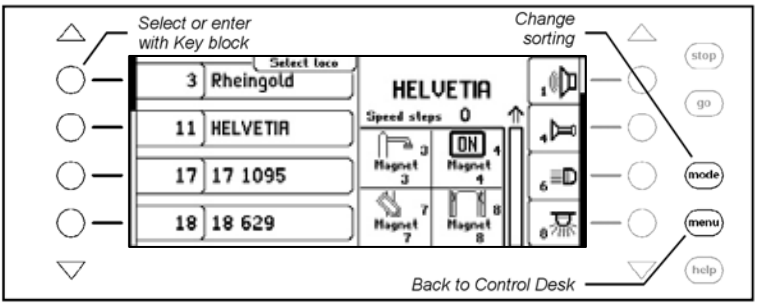
In order to simplify locomotive selection each locomotive can be assigned a name. If the assignment is done once the Intellibox II saves it permanently.

In every new locomotive selection it can be selected from a list by name.

5.2.1 Locomotive selection

If a vehicle is to be controlled with the Intellibox II it must be called under the decoder address or under the assigned name.

Locomotive selection is started by pressing the [lok]-key. The display shows a list of locomotive addresses and names. The desired locomotive is selected with the selection keys. If more then 4 locomotives are available the scrollbar appears and the triangular scroll keys can be used to scroll through the list. The [mode]-key can be used to switch between sorting by locomotive address or by name.



If the locomotive is not on the list its address can be entered numerically. After pressing the digit an input field appears to verify the digit inputs. The [C]-key can be used to delete the last digit and the [↵]-key to confirm the entry.

Note: *If the loco being called up is already being controlled by another throttle control the Intellibox II will inform you with message: "The selected loco is already under control!". The vehicle can then be controlled with both throttles.*

5.3 Throttle

The throttle is for changing the speed of the locomotive and its direction. The rotary control without endpoints automatically restores the save speed of a newly selected locomotive.

The throttle has two operating modes:

AC Throttle Mode

The AC Throttle Mode is set up to control locomotives like the AC transformers in 3-rail systems.

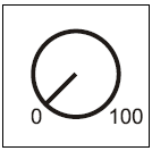


Figure 5.31 Principle of an AC throttle

In this operating mode the speed increase by turning the knob to the right and decreases by turning the knob to the left.

When either the maximum speed or the zero speed is reached further rotation in the same direction of the knob has no effect. The maximum speed or zero speed then remains.

The direction is changed by lightly pressing on the control.

If the reversing switch is activated while the vehicle is running the vehicle will firstly stop and only then switch the direction over. It depends on the decoder data format if this causes an emergency (Motorola, DCC) or stops using the setup deceleration (Selectrix).

DC Throttle Mode

The DC Throttle Mode controls the locomotives as is common in the 2-rail DC systems.

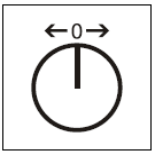


Figure 5.32 Principle of a DC throttle

In DC operating mode a right turn of the control knob, starting from speed step zero, will move the locomotive in a direction. When the control is turned back the speed is reduced until the loco stops. A further turn to the left will cause the locomotive to accelerate in the opposite direction.

If the maximum speed of the loco is reached further turns in that direction has no effect.

In this operating mode a light pressure on the control knob will cause the vehicle to stop. It depends on the decoder data format if this causes an emergency (DCC) or stops using the setup deceleration (Motorola, Selectrix).

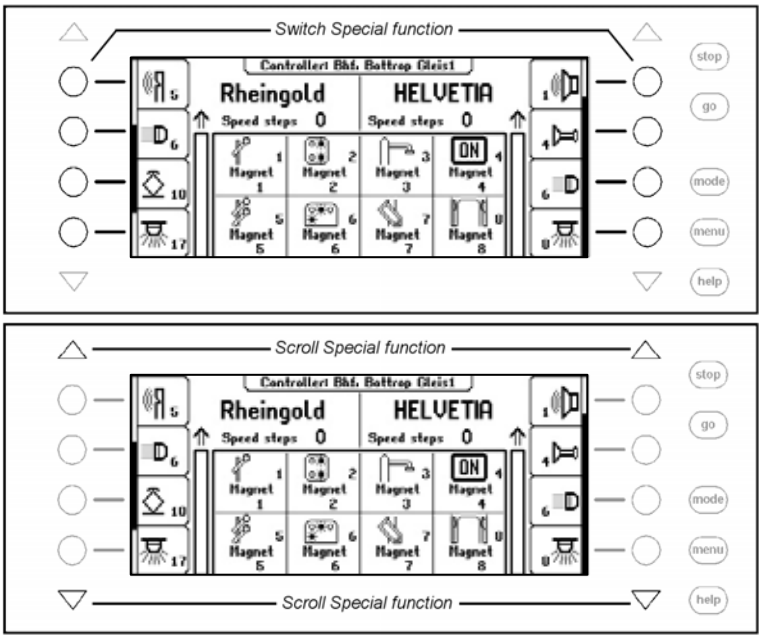
Preset

In factory default setting the AC Throttle Mode is active. This can be changed in the Intellibox Basic Settings Menu (See Chapter 4.1).

5.4 Light and Special functions

The function keys beside the throttle control knob can be used to switch the light and special functions f0 to f4 of locomotive and function decoders.

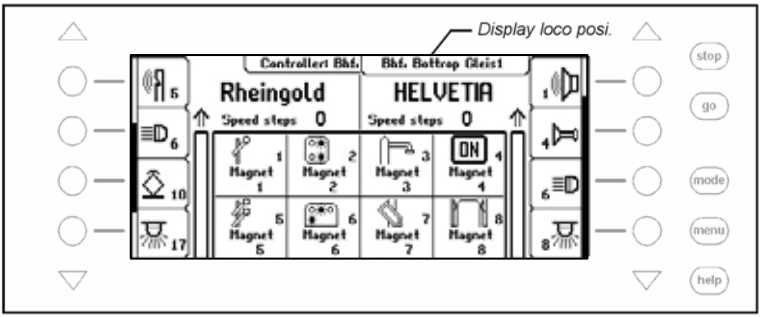
The special functions f0 to f28 (DCC) for a locomotive are shown in the display and can be switched with the selection keys. Active functions are indicated by a tick. If more than 4 functions are available, the triangular scroll keys can be used to scroll through the list.



5.5 The LokPosi Display

The LokPosi Display in conjunction with the LISSY System shows the position of a loco. The Intellibox II gets information from the LISSY System about which locomotive is at which position on the layout. This information about the location of a locomotive is saved by the Intellibox II. If a locomotive is called up its location is displayed in the LokPosi field. If the loco moves the indication is deleted because the locomotive has departed the last location. If the loco enters another track section that is controlled by a LISSY receiver the new location is displayed in the LokPosi field.

The LokPosi field either contains the number of the LISSY receiver, at which the loco is located or the name of that track section in the event that the LISSY receiver has been assigned a name. How a name can be assigned to a LISSY receiver is outlined in Chapter 9.6.



5.6 The Loco Menu

The key sequence [lok] and [menu] or 2x [lok] calls up the Loco Menu for the currently controlled locomotive. Here you can reach following functions:

- **Multi-traction**
- **Call up last locomotive**
- **Switch all functions**
- **Dispatch locomotives**
- **Edit locomotive data**
- **FRED assignment**

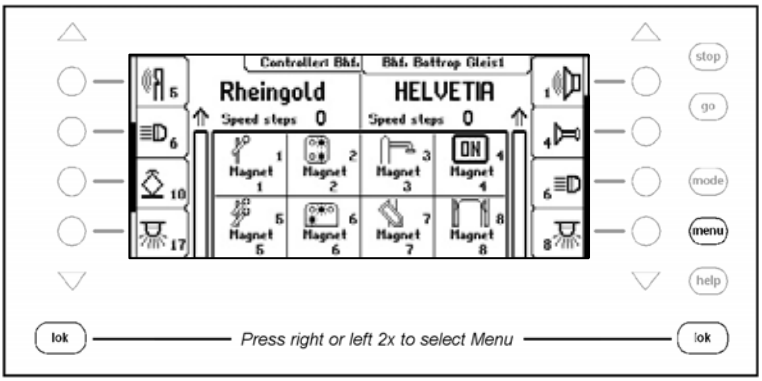
5.6.1 Multi-traction

The Intellibox II can control up to 4 locomotives together with the one controller. A locomotive can be added to a Multi-traction either by its decoder address or its name. A total of up to eight different Multi-traction are possible.

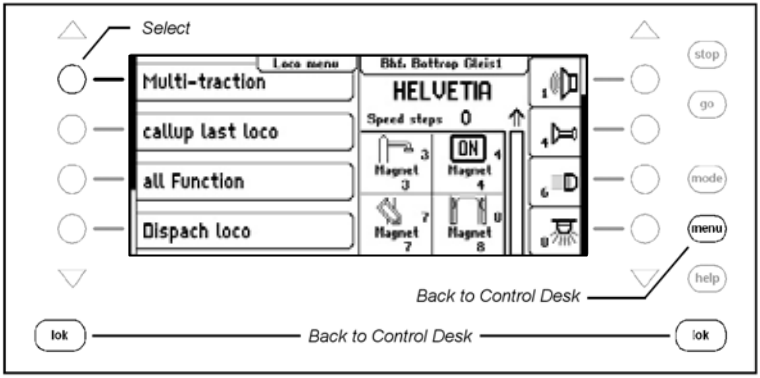
Building a Multi-traction

Note: *The combination of [lok] and [+] keys goes directly into Multi-traction Menu for adding and removing locos.*

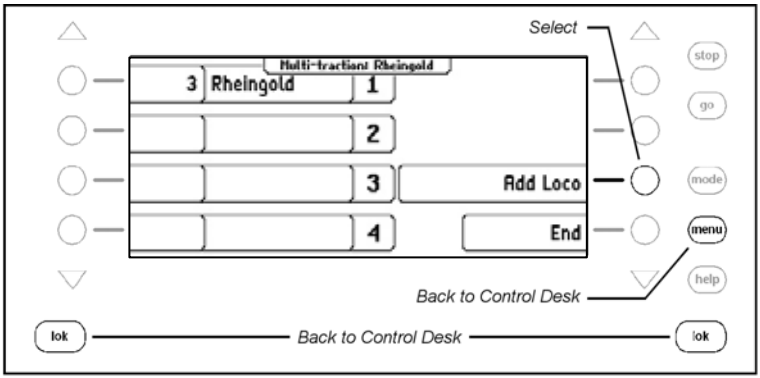
Step 1



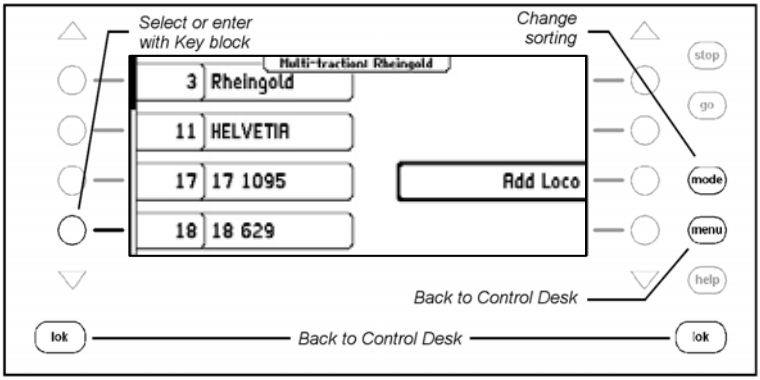
Step 2



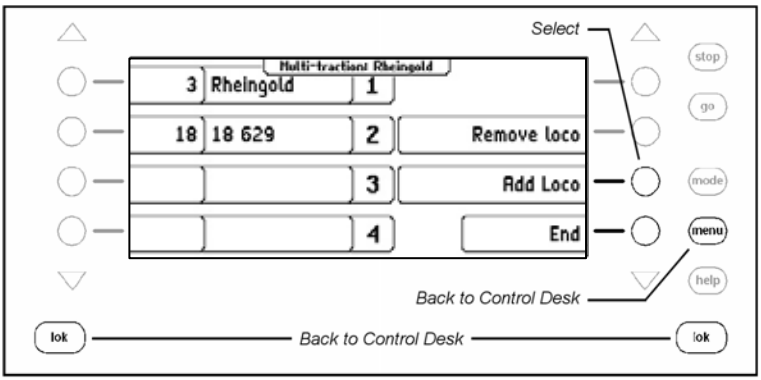
Step 3



Step 4

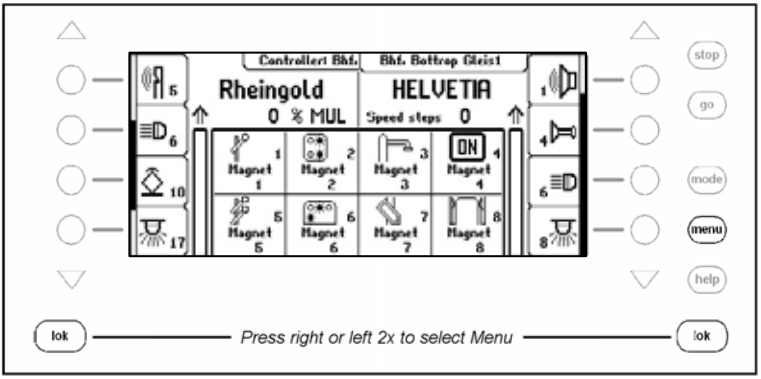


Step 5

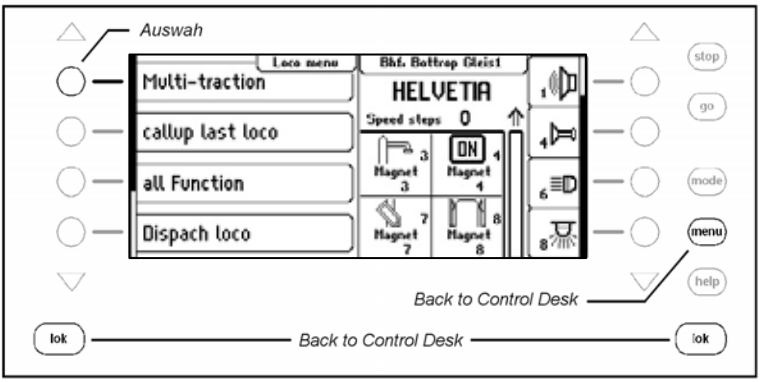


Deleting a Multi-traction

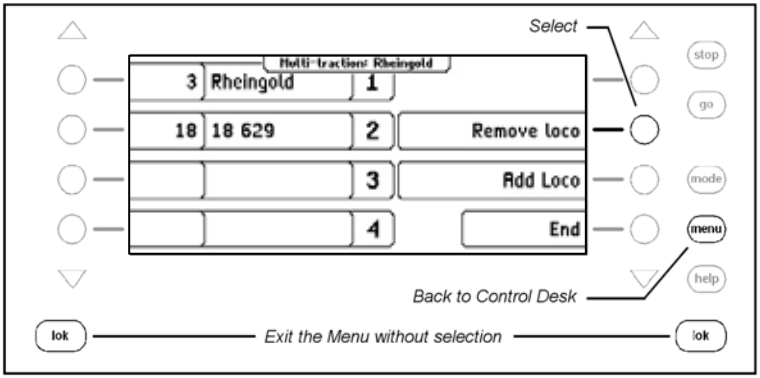
Step 1



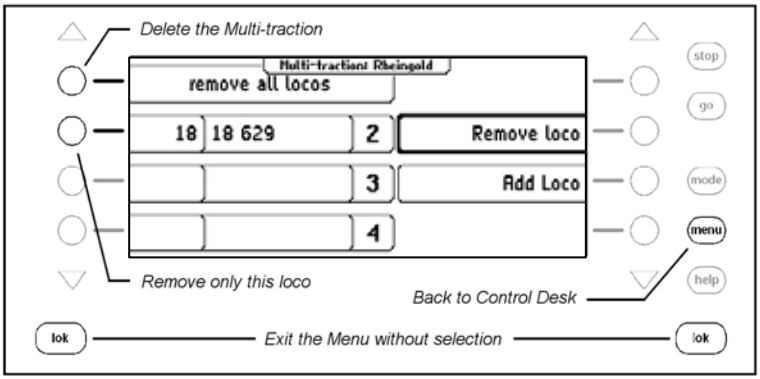
Step 2



Step 3



Step 4



Behaviour of Multi-traction Locomotives

A Multi-traction can only be called up under the address or name of the “base locomotive”.

If a traction locomotive is called under its own address Multi-traction appears in the display in place of the speed indication, but no direction indication. The direction of this locomotive can however be changed so that at the start of the Multi-traction operation all vehicles can run in the same direction.

Note: *The direction can only be change if the entire Multi-traction is stationery. The speed step must be set to “0” under the address of the base locomotive.*

The special functions of a coupled loco in a Multi-traction can be individually controlled under its own address and independent of the base locomotive.

If locomotives having decoders with different number of speed steps are coupled into a Multi-traction the group is controlled according to the locomotive with the lowest number of speed steps. If for example a decoder with 28 speed steps is coupled with a decoder with 14 speed steps, the decoder with 28 speed steps will change its speed with every notch of the throttle, but the one with 14 speed steps only with every second notch. It therefore makes sense to use the locomotive with the least number of speed steps as the base locomotive.

Important: *For trouble free operation of multiple locomotives in a Multi-traction it must be ensured that coupled locomotives have the same minimum and maximum speed.*

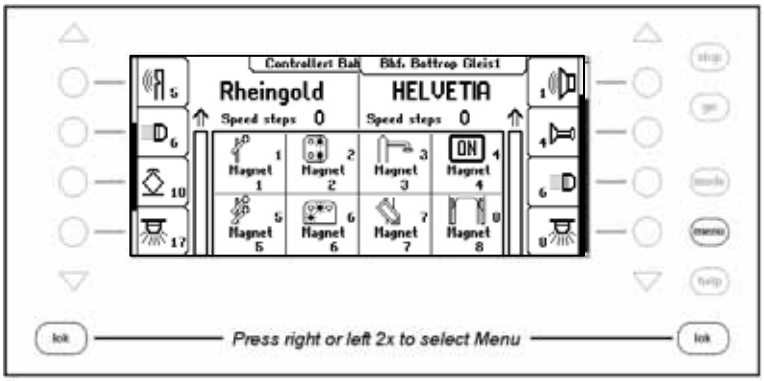
Note: *The setting of the minimum and maximum speeds must be programmed into the locomotive with the appropriate parameters. Details for this are in the particular decoder manual.*

5.6.2 Last called up Locomotive

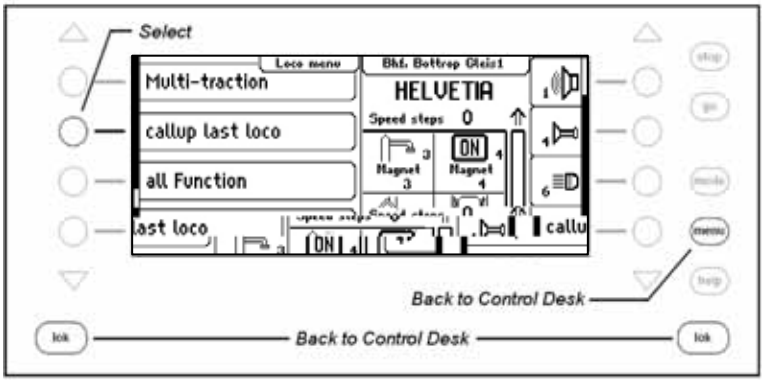
The Intellibox II notes the last 4 locomotives called up by a control desk. The 4 locomotives can be quickly recalled via the Loco Menu.

Procedure:

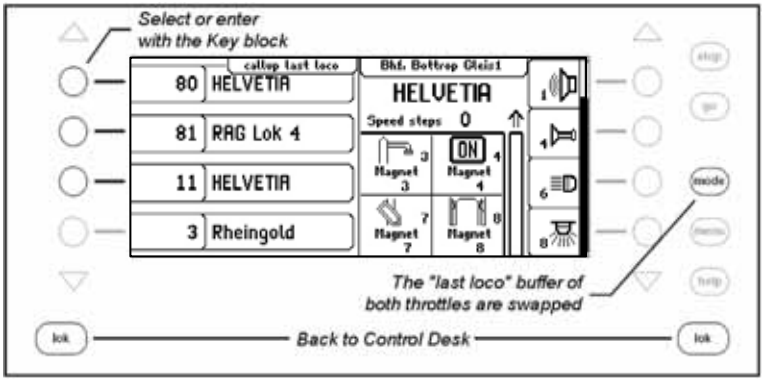
Step 1



Step 2



Step 3

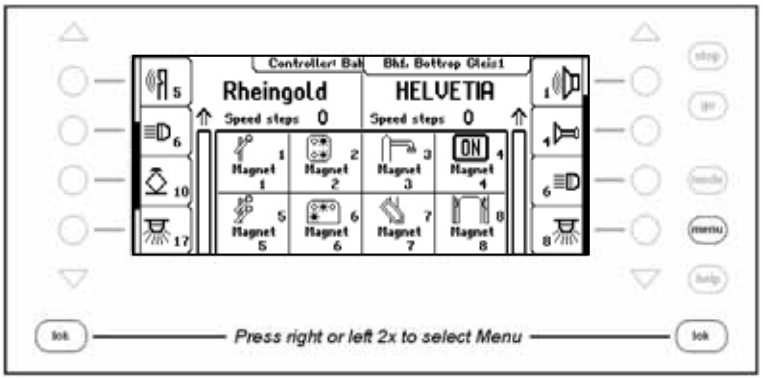


5.6.3 Controlling All Functions

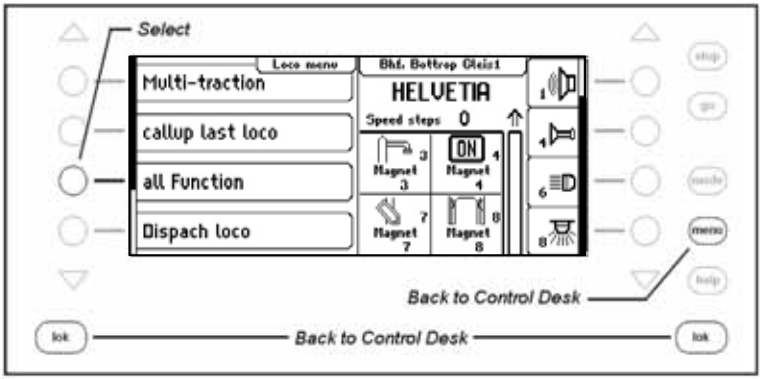
The Intellibox II can control function decoders which can be switched with a function address up to 32767. Directly accessible from the loco control panel are special function light (f0) and special functions f1 to f28. These special functions can be switched with symbols and by the keys beside the display. To switch the higher functions (>28) the Loco Menu must be used. Special functions from f0 to f32767 which are accessible via a locomotive address can be switched from the submenu “All Functions”.

Procedure:

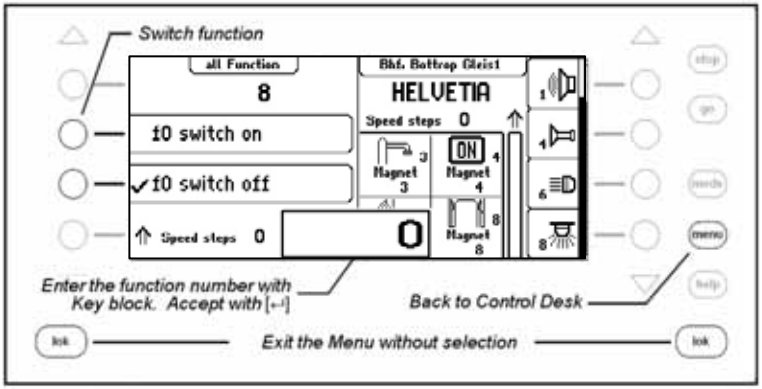
Step 1



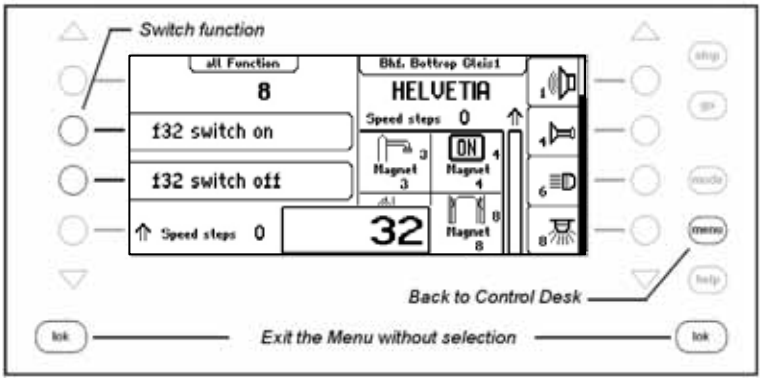
Step 2



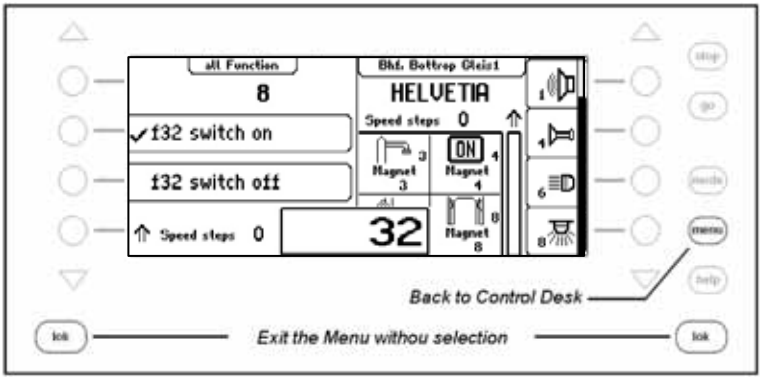
Step 3



Step 4



Step 5



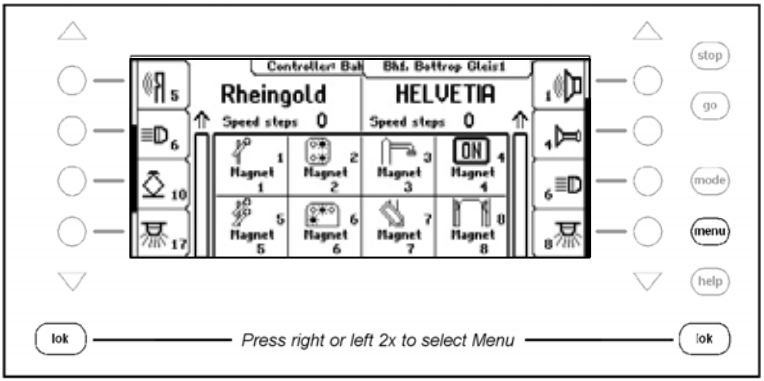
While the “All Functions” Menu is open the locomotive can be controlled by the controller as normal. The locomotive speed and direction are shown in the display.

5.6.4 Dispatching Locomotives

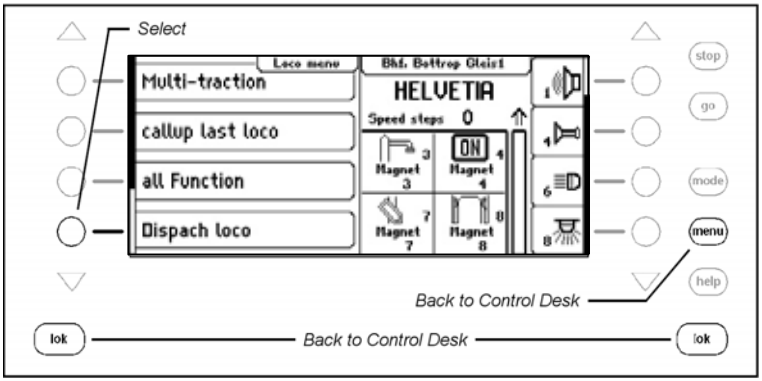
If a vehicle that is being controlled by an Intellibox II controller is to be taken over by a controller which does not have the capability of entering the locomotive address (e.g. FRED hand controller from Uhlenbrock, BT-2 hand controller from Digitrax) the locomotive address must be placed into the dispatch buffer. After that the Hand controllers without an address input can take over the address. The manual for the particular Hand controller will describe the key combination is used to take over the address from the Intellibox II, after it has been “dispatched”.

Procedure:

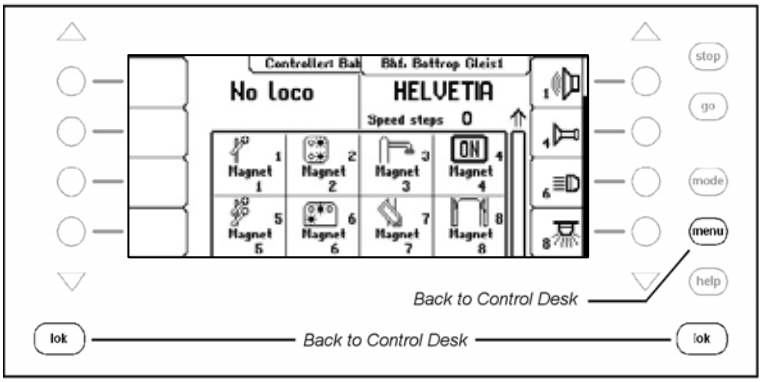
Step 1



Step 2



Step 3



The locomotive (here the “Rheingold”) is now in the dispatch buffer and can be taken by a Hand Controller.

Note: *The key sequence [lok] – [C] – [lok] likewise dispatches a locomotive (no Multi-traction locomotives).*

5.6.5 Edit a Loco dataset

Every locomotive in the Intellibox II has an associated dataset. This can have the following entries:

Change Address

Should a vehicle receive a new address with a new decoder it is simple the quickly change the address without having to discard the dataset or enter a new one.

Set Data format

Every new decoder is firstly addressed by the general data format selected in the Basic Settings (Setting see Chapter 4.3). If desired however each locomotive address can be assigned its individual data format.

Assign Symbols to Functions

The list of special functions in the display can have a maximum of 28 entries (for some DCC decoders). The standard indication “F” for function can be replaced by a symbol that represents the particular function for a better oversight. For non-assigned special functions the display can be hidden.

Assign a Name

A name can be assigned to every locomotive address. As soon as a name is assigned for a locomotive it is shown in the display in place of the address. Both the name and the address are used in the Loco selection menu for the throttle controls.

Define Maximum Speed

To display a vehicle speed in km/h at the top speed of the individual locomotive addresses must be entered in the Locomotive database.

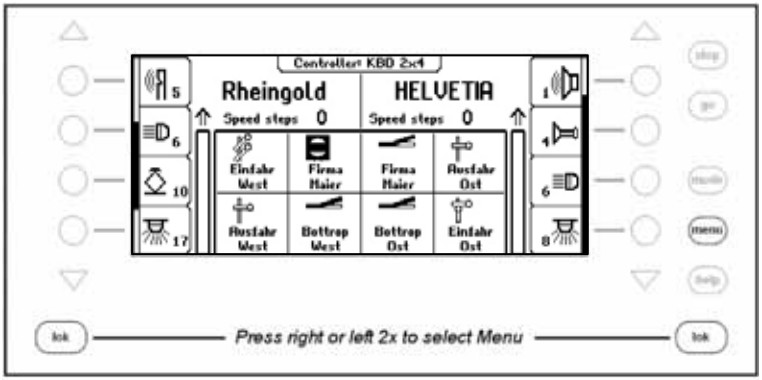
The top speed is shown when a locomotive runs at the top speed step.

The speed display of the intermediate speed steps are calculated in proportion.

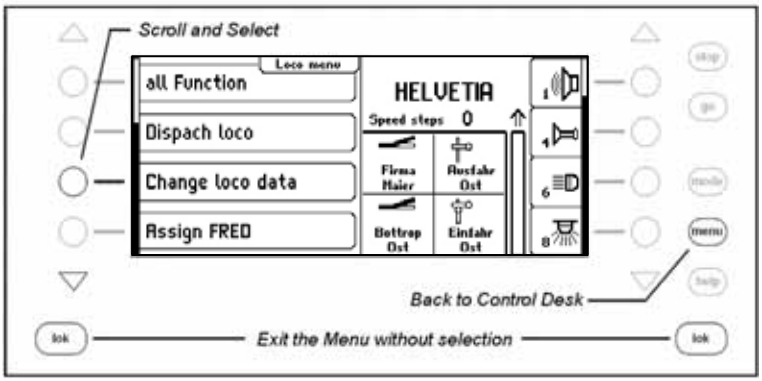
Procedure:

Enter a new Loco dataset

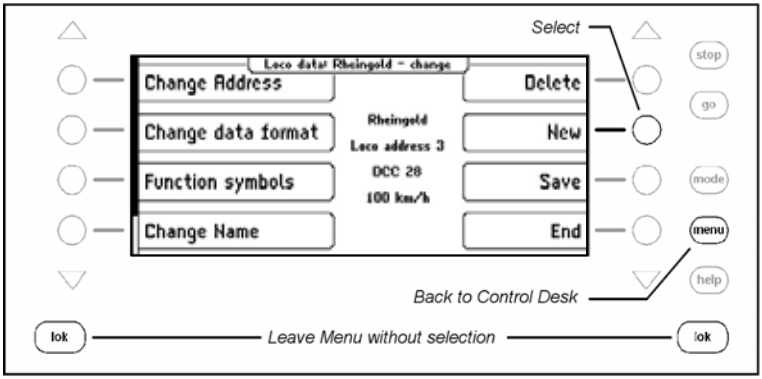
Step 1



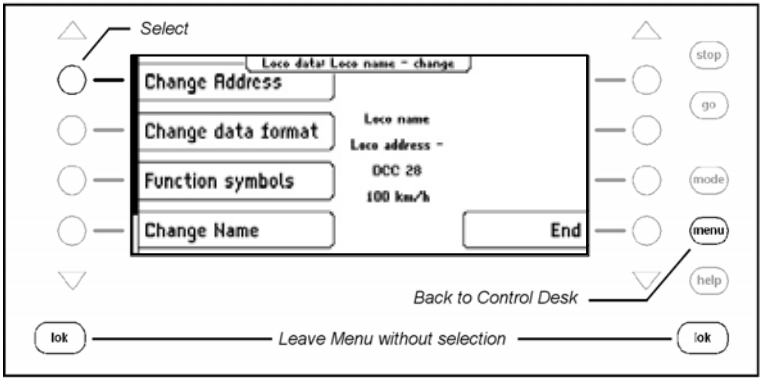
Step 2



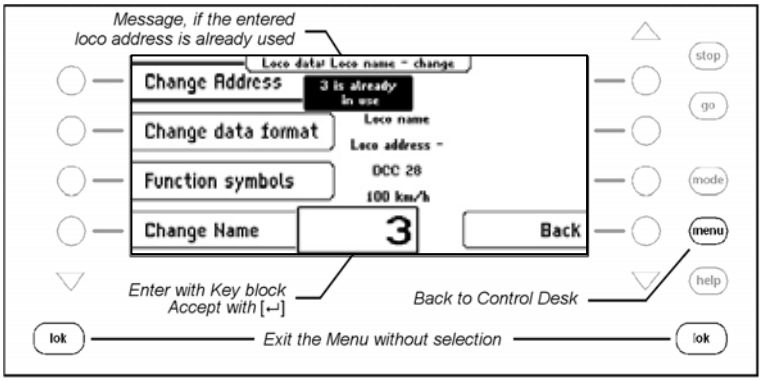
Step 3



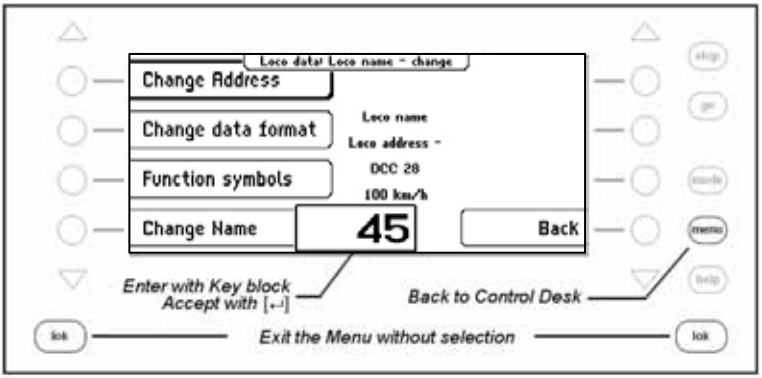
Step 4



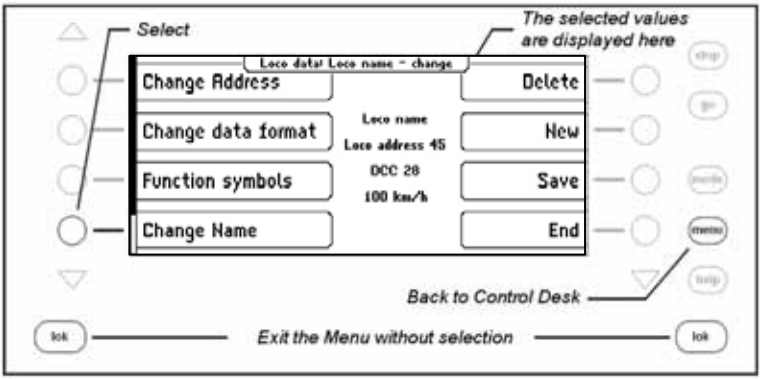
Step 5



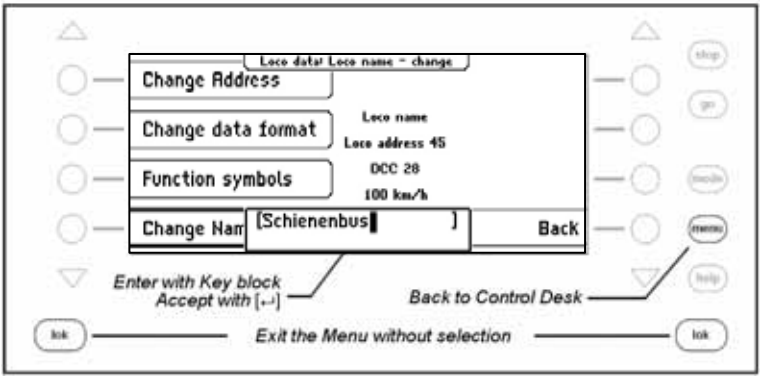
Step 6



Step 7



Step 8



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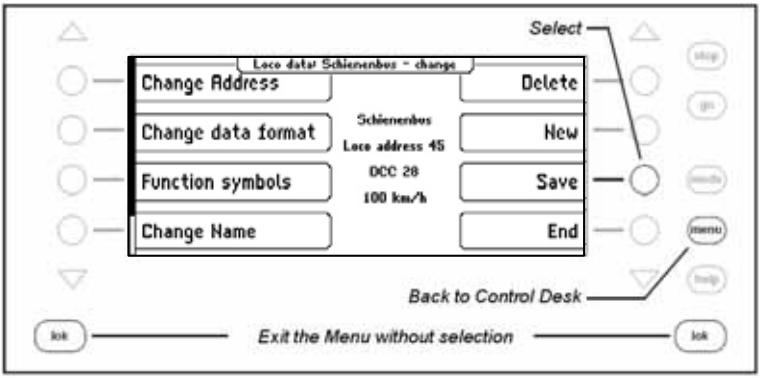
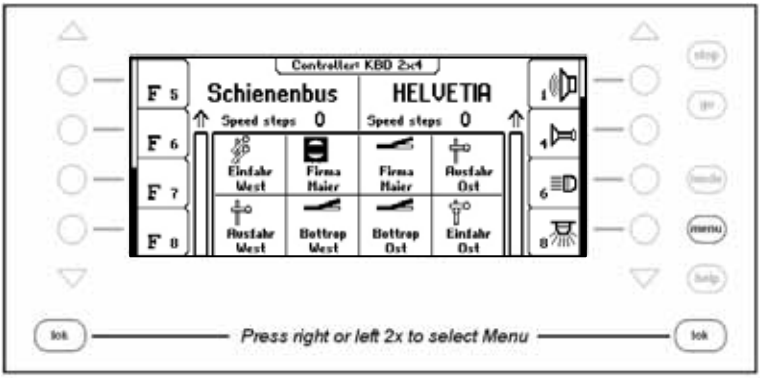
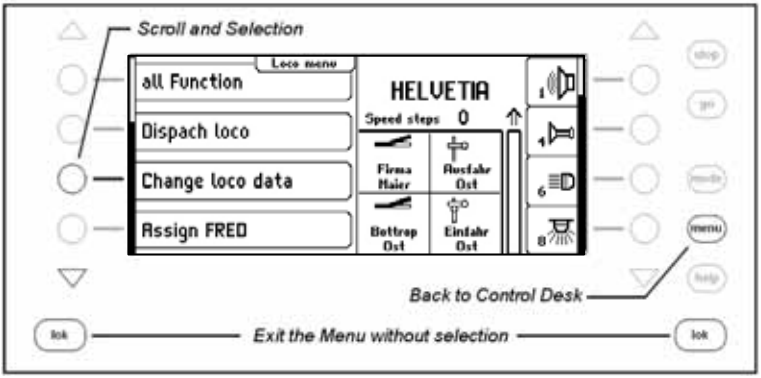


Change Loco dataset
Change Data format

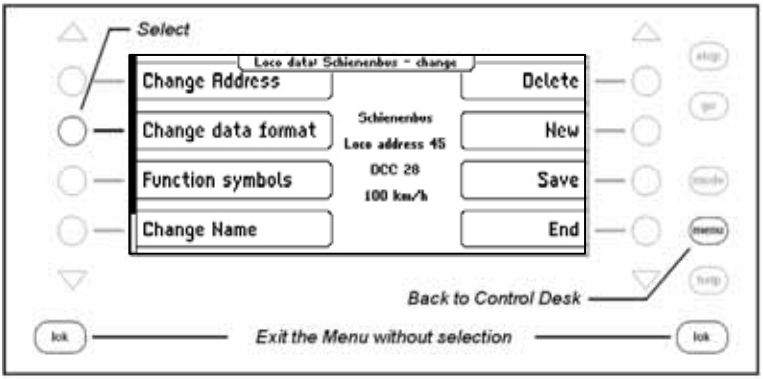
Step 1



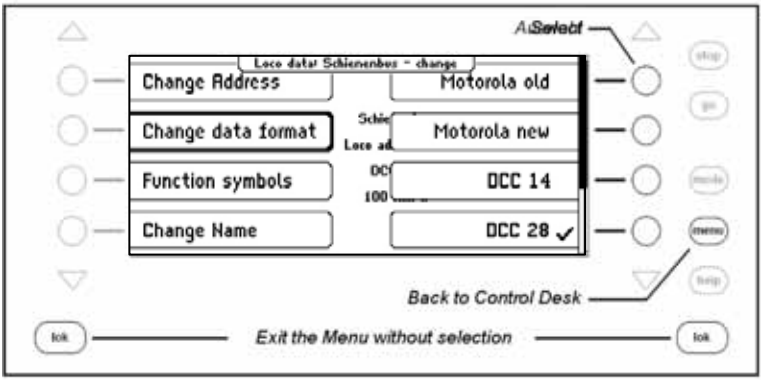
Step 2



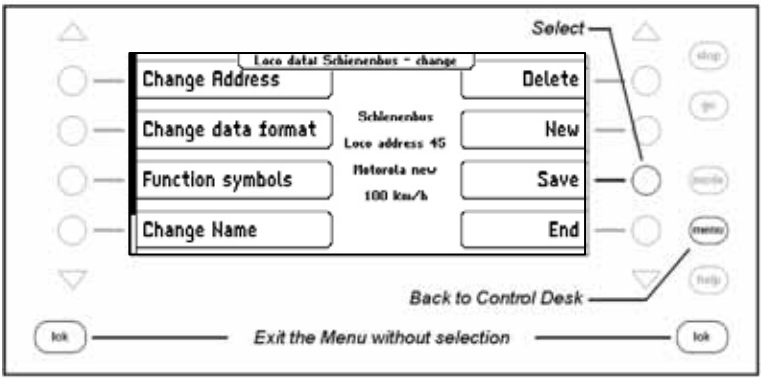
Step 3



Step 4



Step 5



Change Special function symbols

For displaying the special functions various symbols are available.

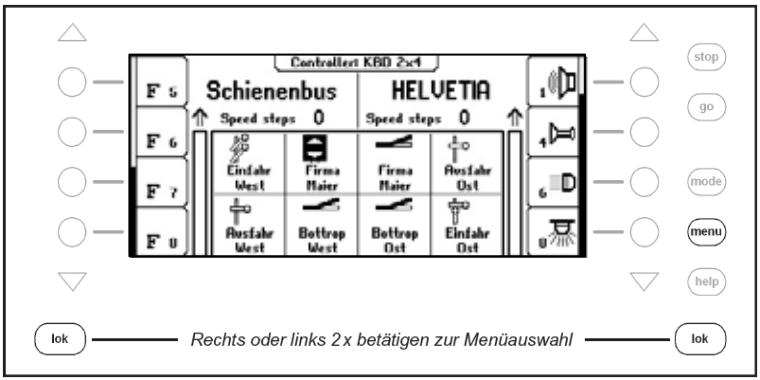
F	Preset: no Symbol
	Light
	Sound
	Bell
	Horn
	Whistle
	Smoke generator
	Power Pickup
	High beam
	Tail Light
	Interior Light

	Driver cabin lighting
	Uncoupler
	Tail Light
	Start/Brake Inertia
	Brake Squeal
	Driver cabin - Rear
	Driver cabin – Front
	Diesel motor
	Doors Opening
	Hook Down
	Hook Up

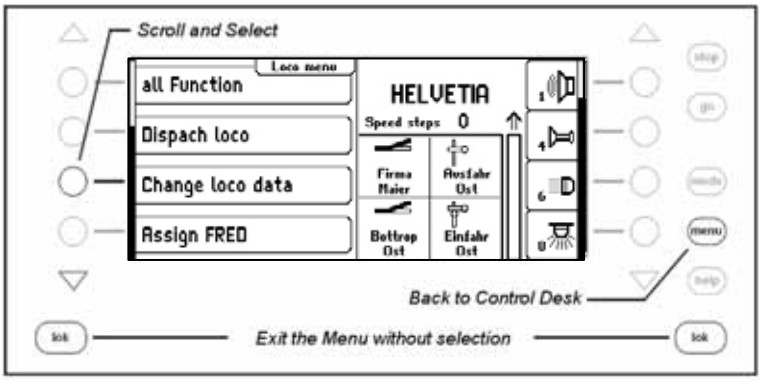
	Interior Light
	Magnet
	Move right/left
	Move up/down
	Conductor Whistle
	Shunting gear
	Telex coupling
	Turn left
	Turn right
	Mute Sound
	Light front and back

Procedure:

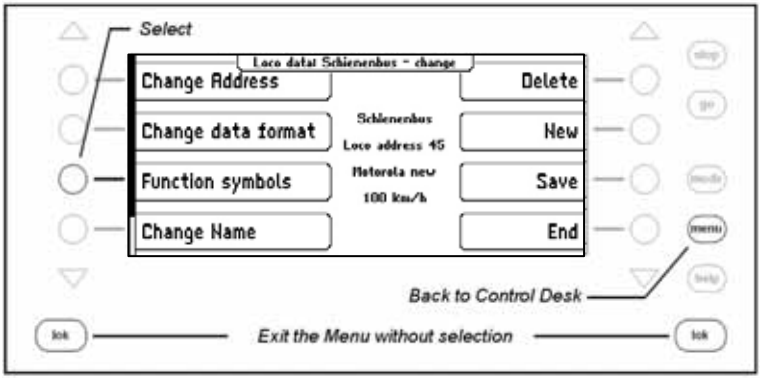
Step 1



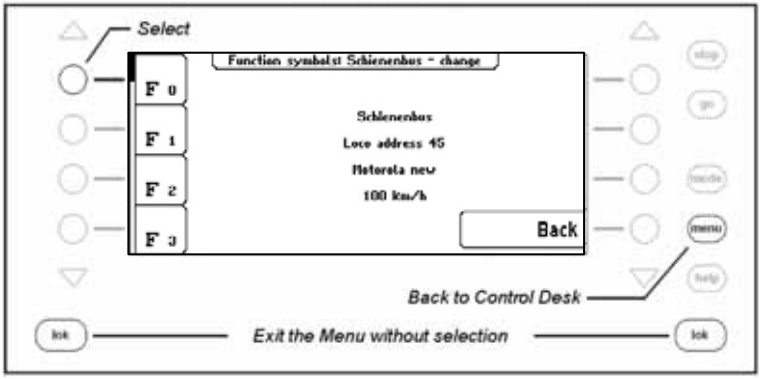
Step 2



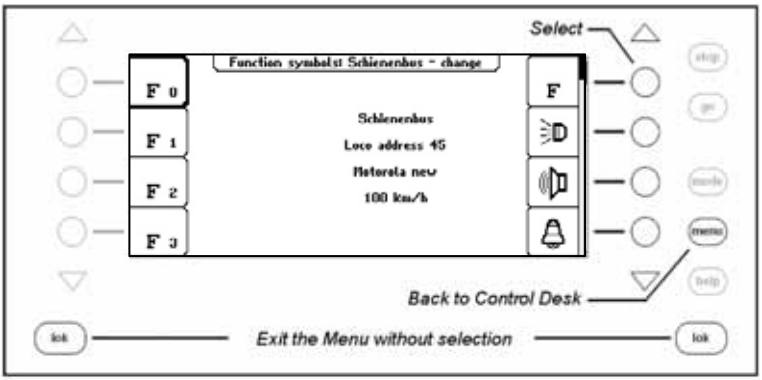
Step 3



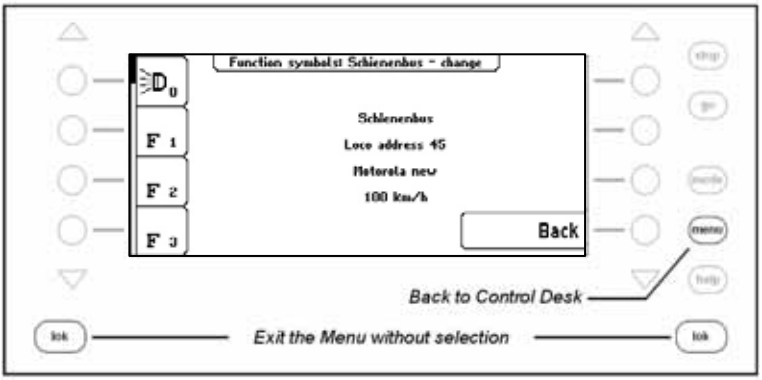
Step 4



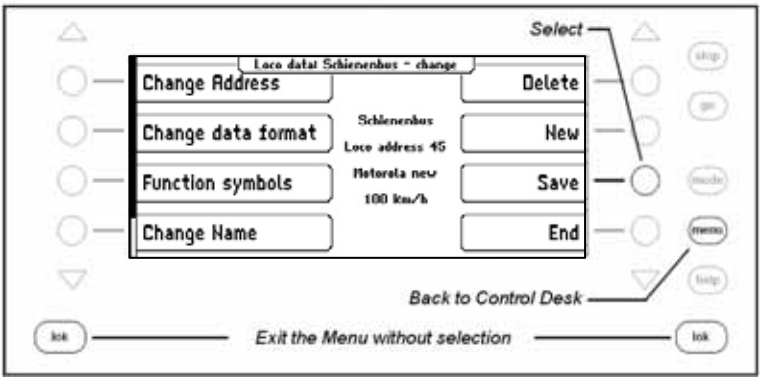
Step 5



Step 6

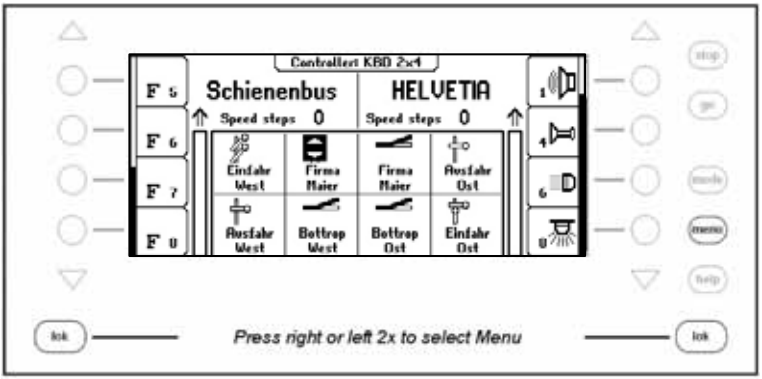


Step 7

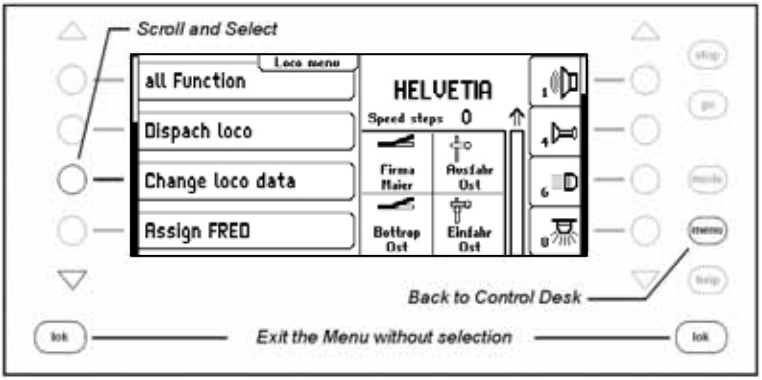


Change Top Speed

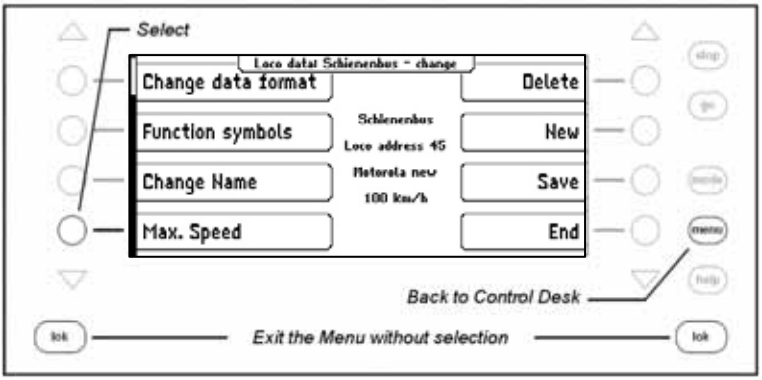
Step 1



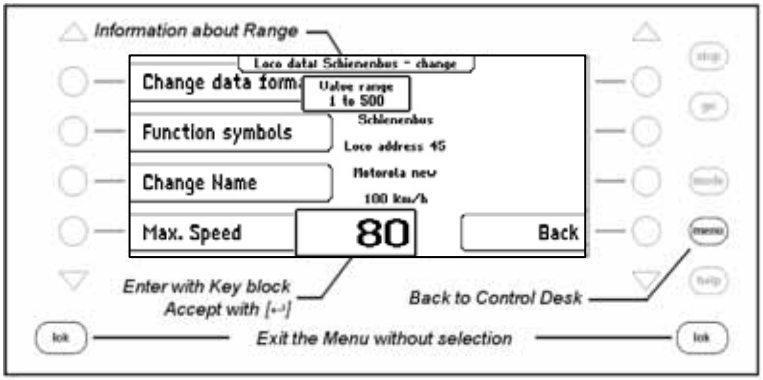
Step 2



Step 3



Step 4



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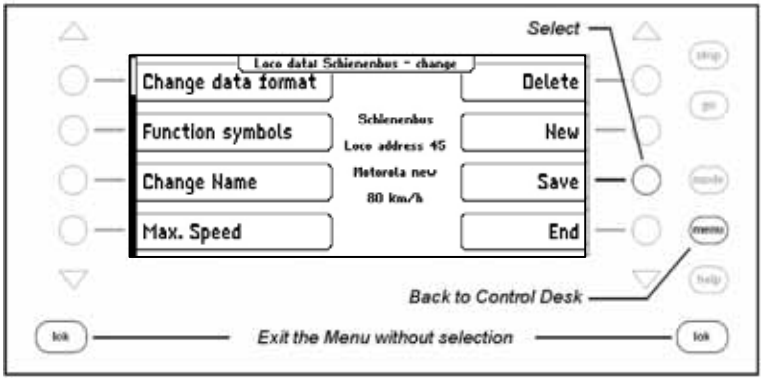


5.6.6 FRED Hand Controller

With the Intellibox II up to 16 FREDs (digital Hand controller from Uhlenbrock) in extended in Mode (Controlling of up to four locomotives) can be operated. Additional FREDs can be connected in dispatch mode (Control of one locomotive) (see Chapter 5.6.4).

In the factory setting the Hand controller is configured so that on the Intellibox it can be operated in extended mode.

The FRED Hand Controller Number

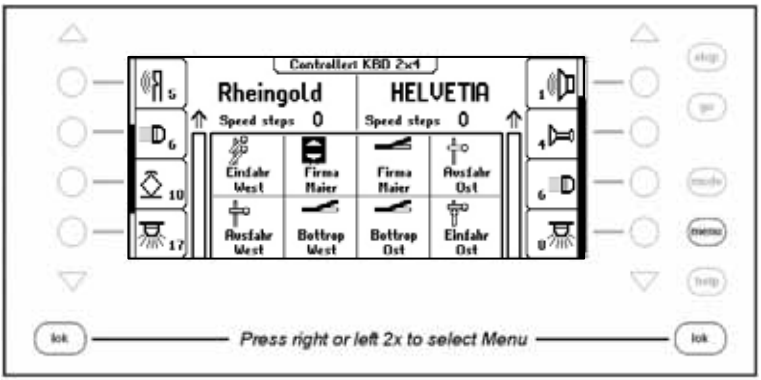
As soon as the Uhlenbrock Hand controller FRED is connected to the Intellibox LocoNet for the first time the center automatically assigns the FRED an internal Identification number (ID). Using this hand controller number the center can forward locomotive addresses to the FRED.

In the “Basic Setting – Hand Controller“ Menu (Chapter 4.5) the table with the individual entered FREDs can be seen. Individual FREDs can also be deleted from the table in this Menu.

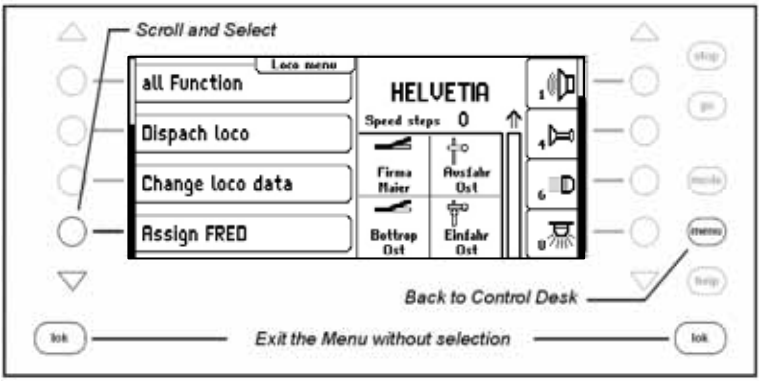
Forwarding a Locomotive address

If the FRED is used in extended mode the FREDs individual locomotive selection keys have the locomotive addresses forwarded in the following way:

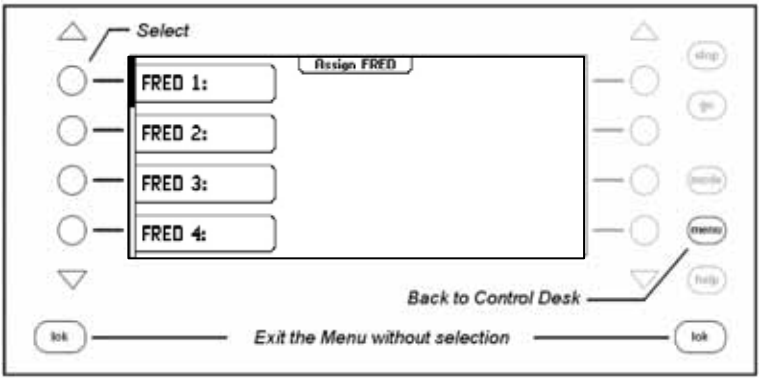
Step 1



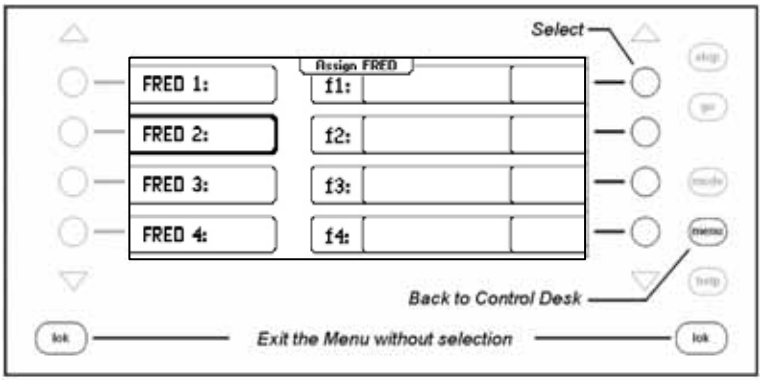
Step 2



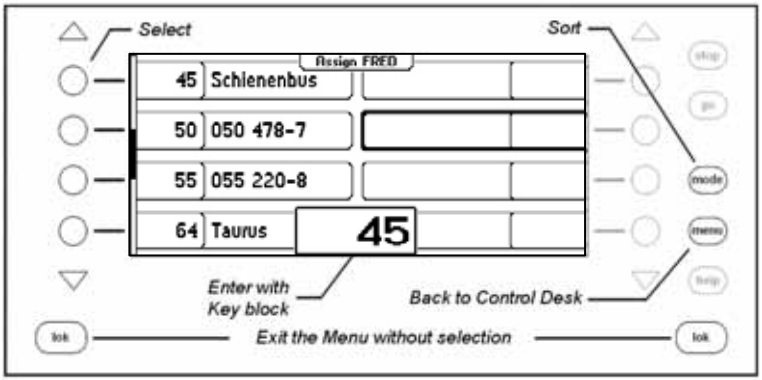
Step 3



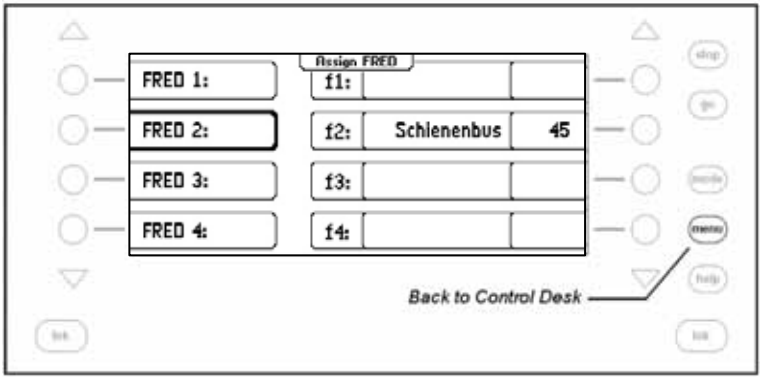
Step 4



Step 5



Step 6



6. The Switch Panel Mode

In a digital system turnouts and signals can also be controlled with an appropriate decoder. These are assigned an individual address just like a locomotive so that the system can identify them.

6.1 Description

The Intellibox II can control turnout and switch decoders with different data formats, the Motorola data format and DCC data format. Decoders of both data formats can be operated side-by-side.

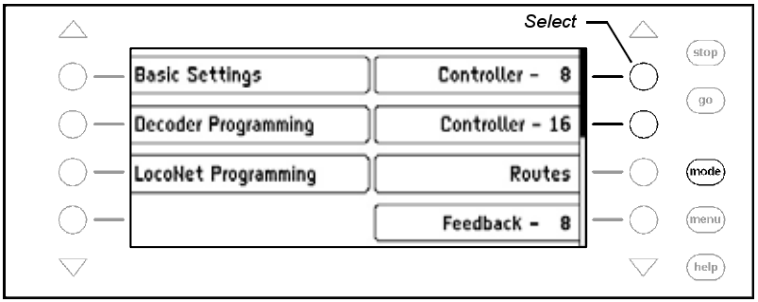
Turnout decoders from Märklin and Viessmann for Motorola data format each control four turnouts.

Important: *The address which is setup with the DIP switch on these decoders is not identical to the addresses of the turnouts connected to the decoder. All setting menus in the Intellibox II use the turnout addresses and not the turnout decoder addresses. A table showing the relationship between the Dip switch setting and turnout addresses and also the Märklin Keyboards is in the Appendix.*

As is the case for locomotive decoders turnout and switch decoder can be configured for the data format in the Intellibox II Basic Settings Menu without requiring any special changes (see Chapter 4.4.1).

6.2 Select Switch Panel Mode

The Intellibox II has two Switch Panel modes the Switch Panel-8 Mode and Switch Panel-16 Mode.



If the [mode]-key is pressed in Control Desk Mode, both modes can be selected from the selection menu with display keys.

In **Switch Panel-8 Mode,** groups of 8 solenoids can be setup according to one's wishes. Each group can be assigned a name.

Each solenoid has two keys from the key block assigned to it. The respective solenoid is switched to red with the red key and to green with the green key.

Each solenoid is represented in the middle of the display with its symbol, address and individual name. How to assign a name and symbol to a solenoid address is outlined in Chapter 6.7.

In **Switch Panel-16 Mode,** groups of 16 solenoids can be set up according to one's wishes. Each group can be assigned a name.

Each solenoid is operated by one key in the key block and each key press toggles the state of the solenoid from red to green or vice-versa.

Each solenoid is represented in the middle of the display with its symbol, address and individual name. How to assign a name and symbol to a solenoid address is outlined in Chapter 6.7.

6.3 Operating a Switch Panel

Switch Panel-8

In the "Switch Panel-8" operating mode individual switching functions of the Switch Panel can be activated with the middle key block of the Intellibox II. Without any further input 8 turnouts, signals or switching functions are reachable.

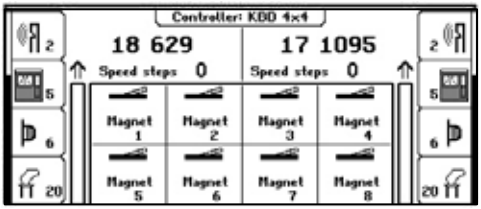


Figure 6.31
Display and key block with its numbering of key pairs in Switch Panel-8 mode

The individual switching functions are triggered by the red keys (rows 1. and 3.) or the green keys (rows 2. and 4.) of the key block.

In the middle part of the display there is information about the actual status of the switch panel. Every solenoid has a symbol which changes according to the state of the solenoid. It shows the state of a turnout or signal.

Switch Panel-16

In the "Switch Panel-16" operating mode individual switching functions of the Switch Panel can be activated with the middle key block of the Intellibox II. Without any further input 16 turnouts, signals or switching functions are reachable.

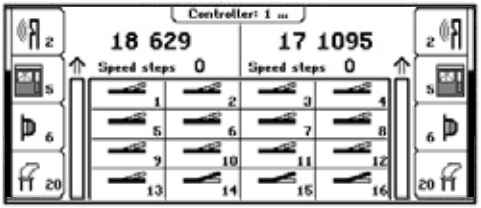


Figure 6.31
Display and key block with its numbering of key pairs in Switch Panel-8 mode

Each solenoid is operated by one key in the key block. Each key press toggles the state of the solenoid from red to green or vice-versa.

6.4 Configuring the Switching times

The switching pulse which is generated when the key is pressed normally lasts long as the key is pressed. In order to guarantee that the solenoids operates even with an extremely short key-press and that it is not damaged by a very long one the Intellibox II has a minimum and maximum switching time setting. In factory setting switching time values are a minimum of 100ms (0.1 sec.) and maximum of 5000ms (5 sec.). Both parameters can be changed in the Intellibox Basic Settings Menu. See Chapter 4.4.2 “Switch Times”.

Note: *For DCC decoders only the switching times that are not set on “Continuous Operation” are affected.*

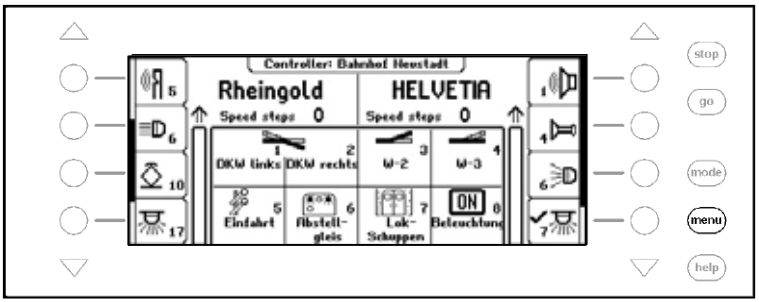
6.5 Select a Switch Panel

Regardless if the Switch Panel-8 or Switch Panel-16 mode is active a switch panel can be called up by entering an address with which it starts and has the following 7 or 15 addresses depending on whether it is in Switch Panel-8 or Switch Panel-16 mode.

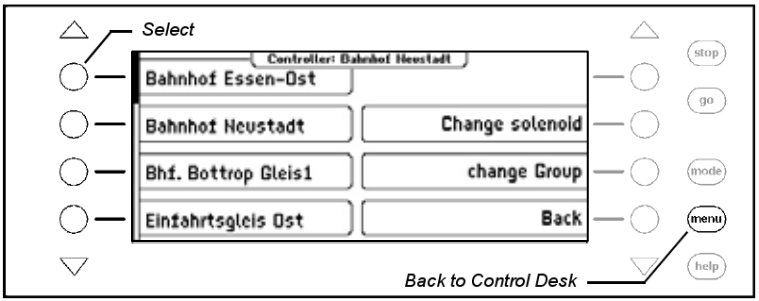
The assignment can be freely specified by the user in either mode. The Intellibox II can store up to 64 groups. Each group has its own name. Thus for example turnouts for entry route can be assigned to a group and identified with the name Entry turnouts and always simply called up by that name.

Procedure:

Step 1



Step 2



6.6 Setup and Edit a Switch Panel

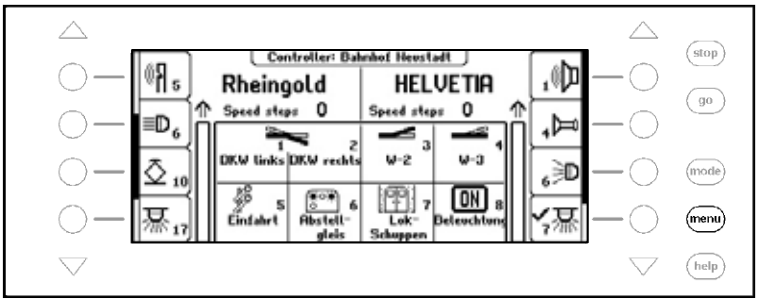
The Intellibox II can administer up to 64 different Switches. Each Switch panel can have 8 or 16 chosen solenoids, turnouts or signals, assigned to it. Each Switch Panel is given a name and can be selected with this name. Switch Panels be newly entered, edited and deleted.

Note: *If the switch panel was setup in Switch Panel-16 mode then only half will be represented in Switch Panel-8 mode.*

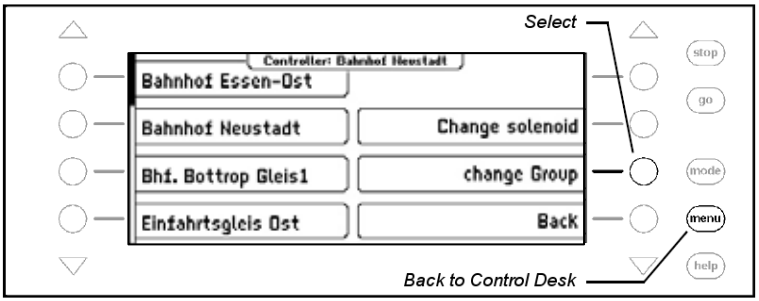
6.6.1 Setup a new Switch Panel

Procedure*:*

Step 1



Step 2



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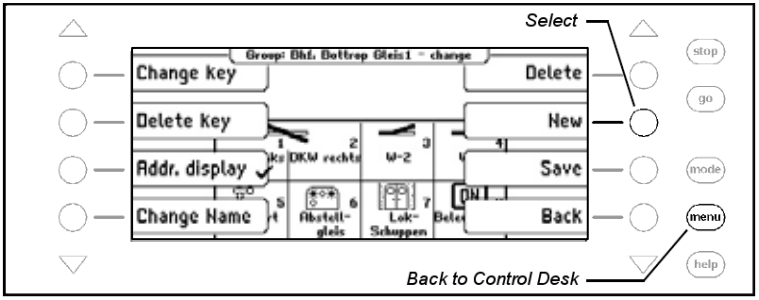
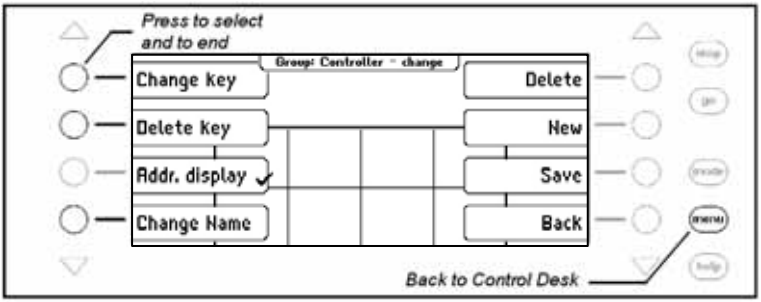
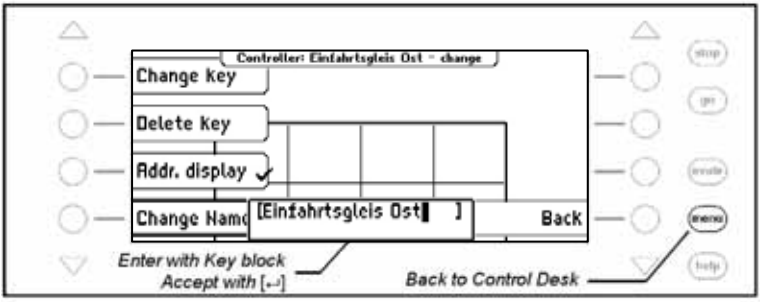


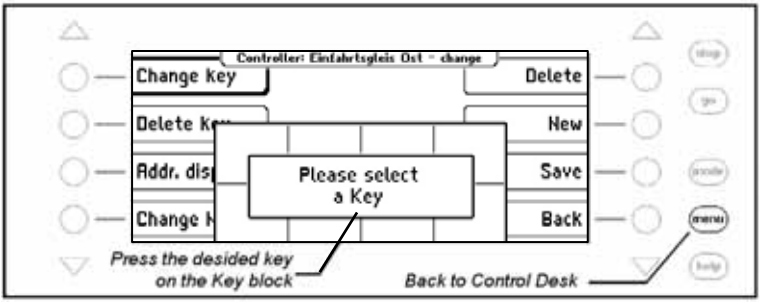
Step 4



Step 5



Step 6



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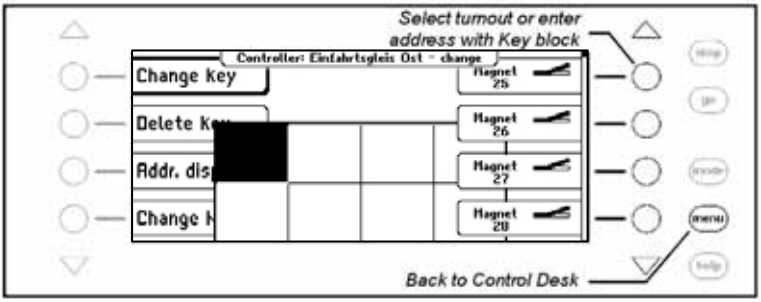
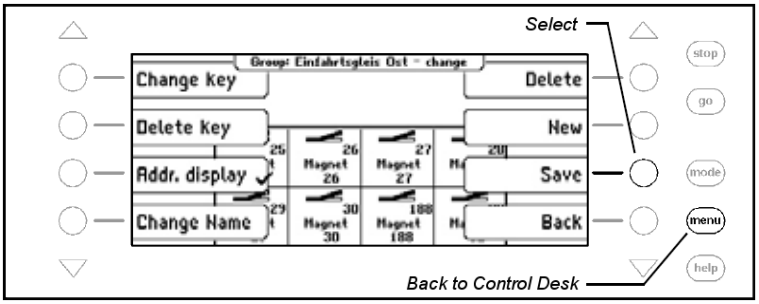
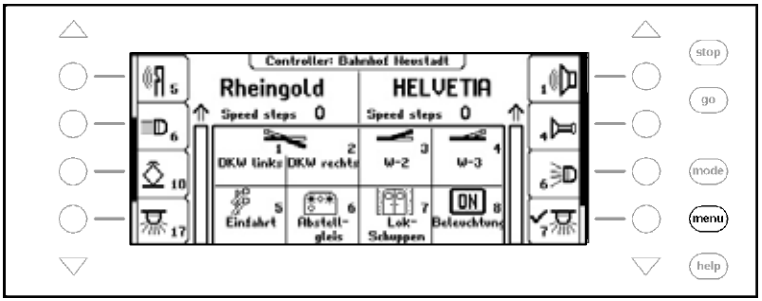


Step 8

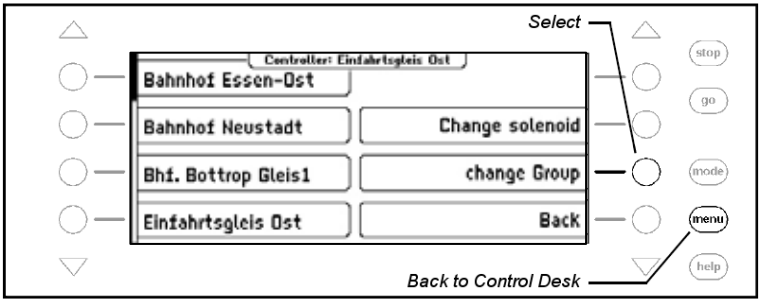


6.6.2 Edit Switch Panel

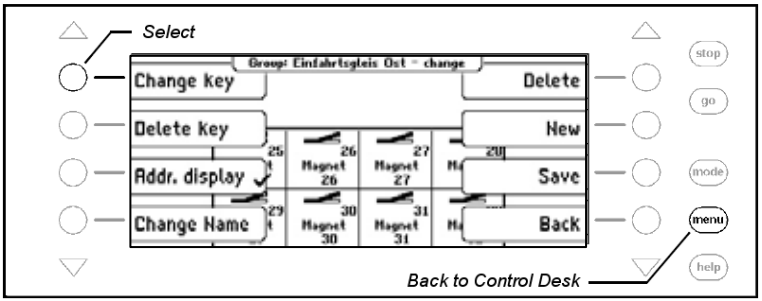
Step 1



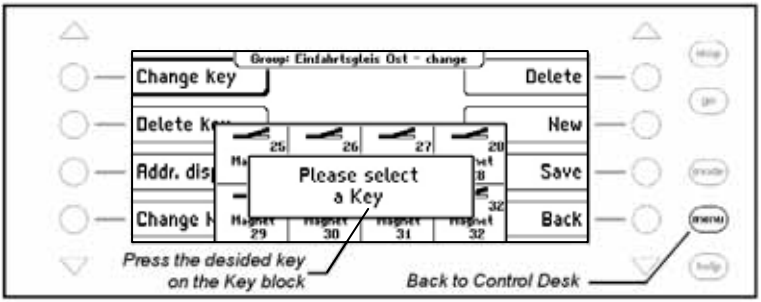
Step 2



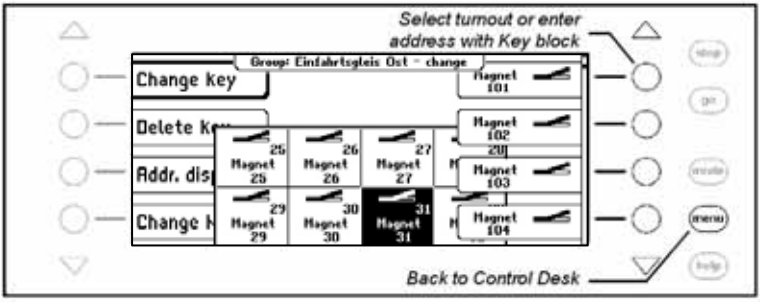
Step 3



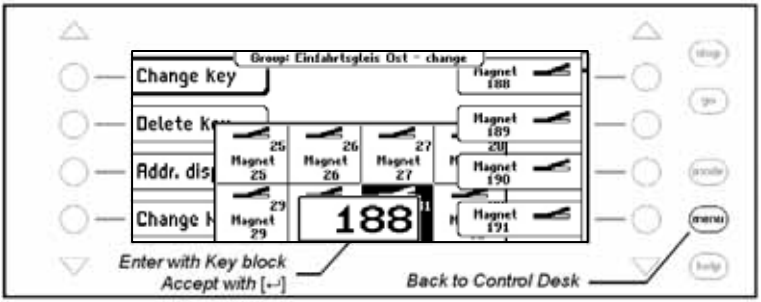
Step 4



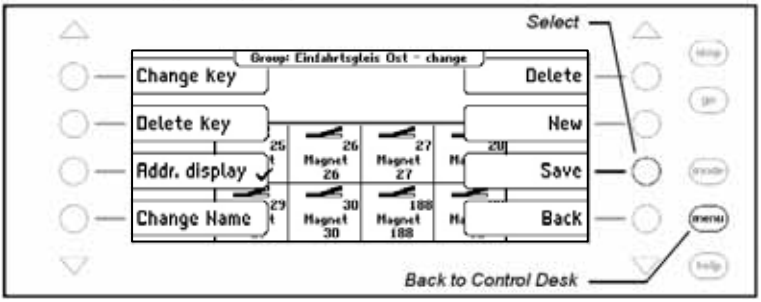
Step 5



Step 6

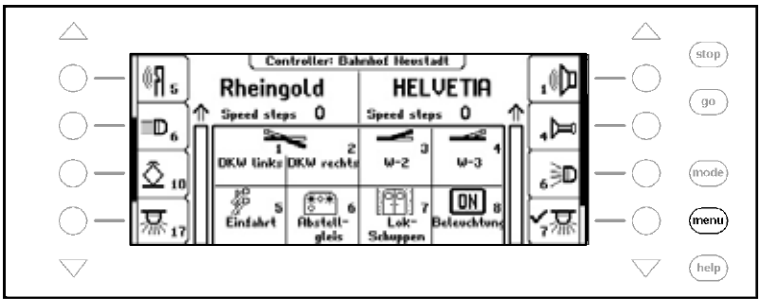


Step 7

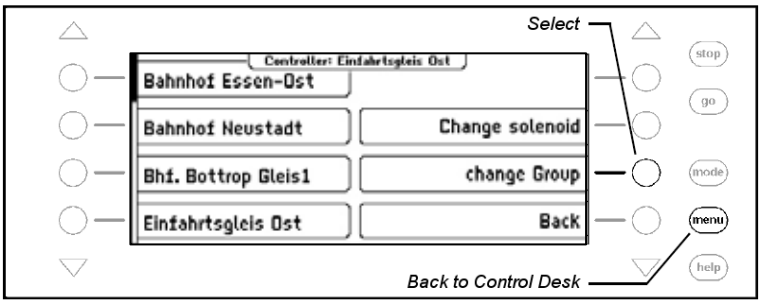


6.6.3 Delete Switch Panel

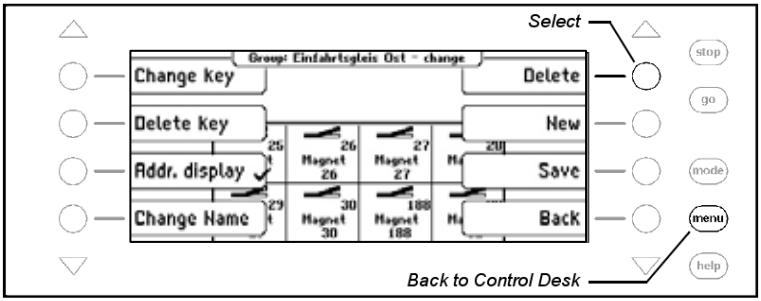
Step 1



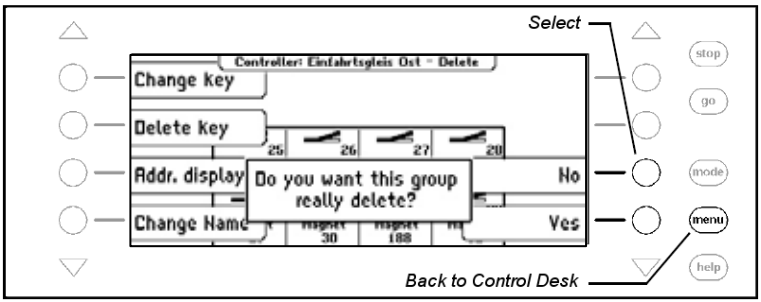
Step 2



Step 3

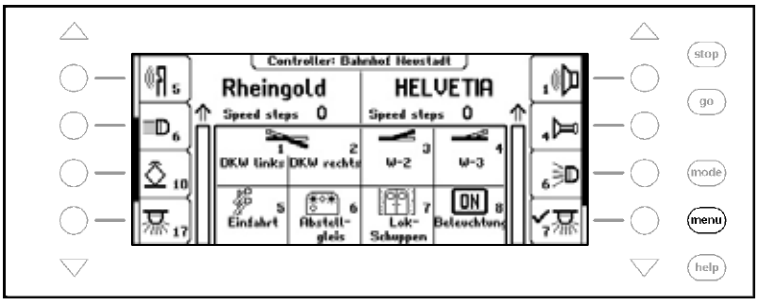


Step 4

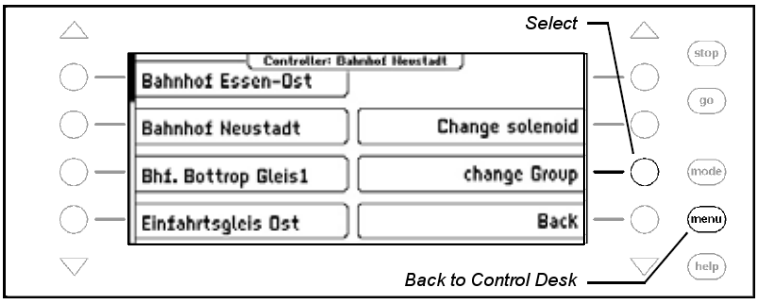


6.6.4 Switch Address Display on/off

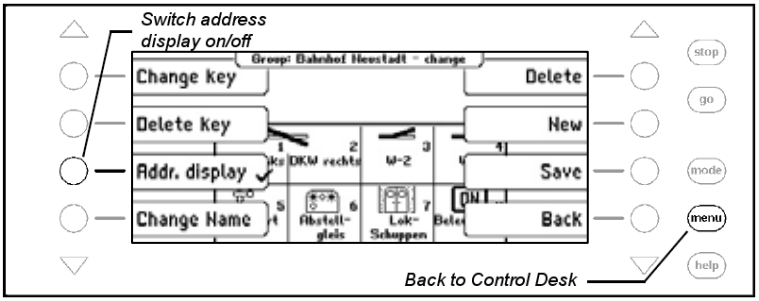
Step 1



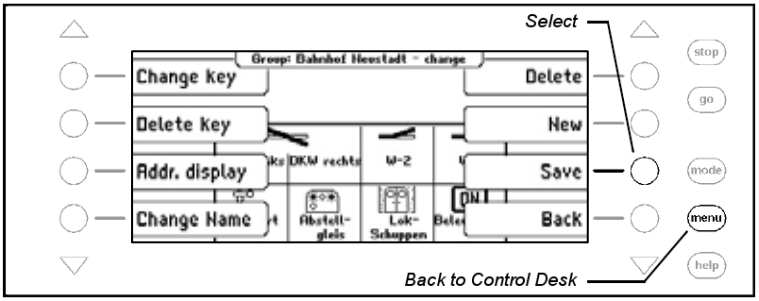
Step 2



Step 3



Step 4



6.7 Set Name, Symbol and Data format of Solenoid addresses

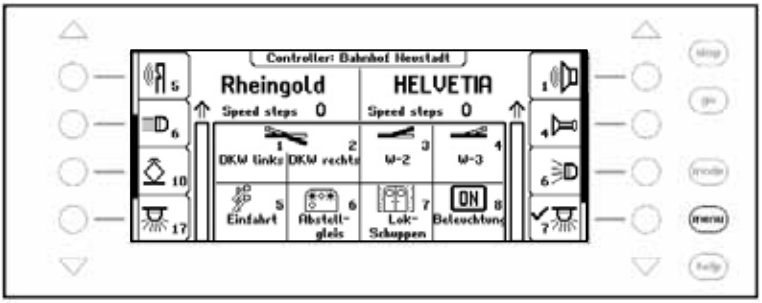
Every solenoid address can have a name, a symbol and an individual Data format assigned to it.

If no individual data format has been assigned for the address the general data format is used.

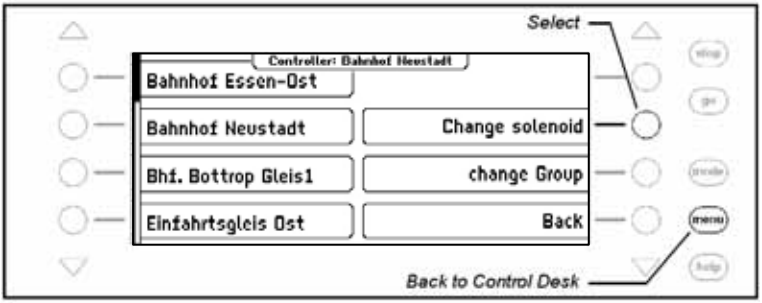
The changes can be made from the “Change Solenoid” Menu.

Procedure:

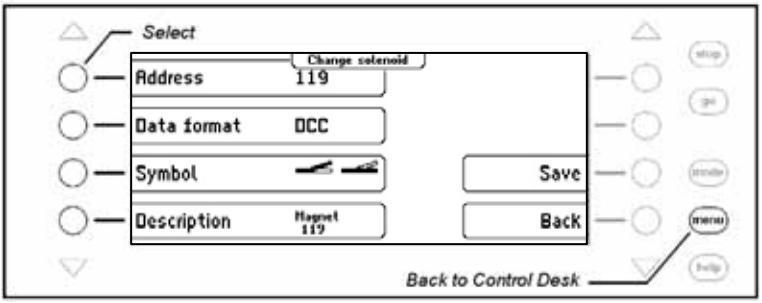
Step 1



Step 2

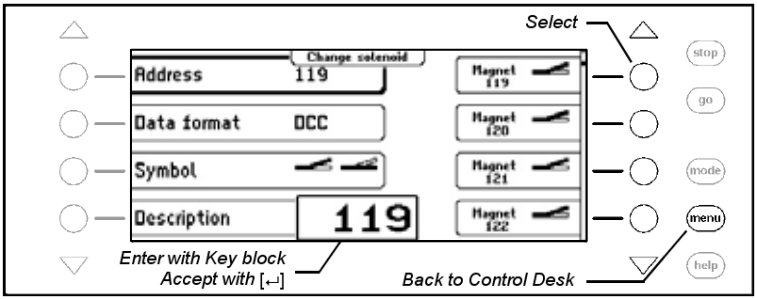


Step 3



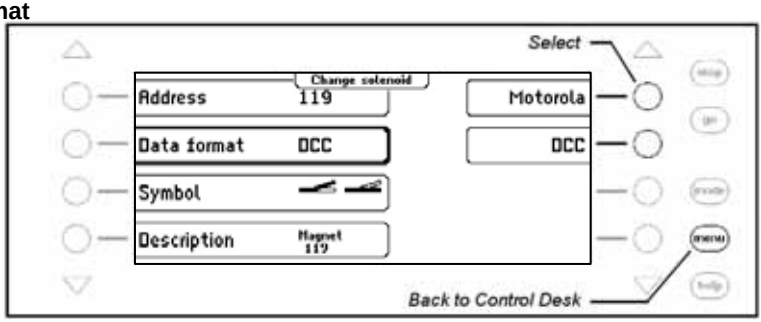
Select Solenoid Address

Step 4



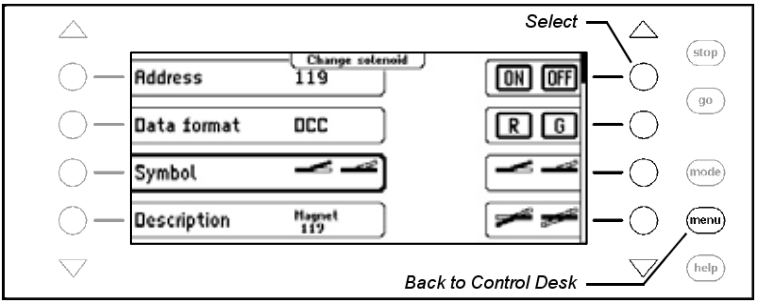
Change Data format

Step 5



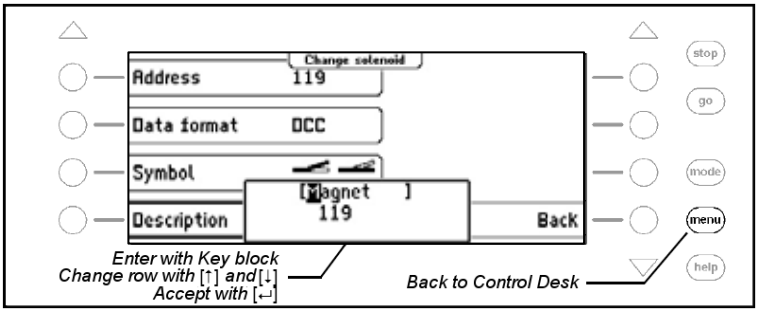
Change Symbol

Step 6



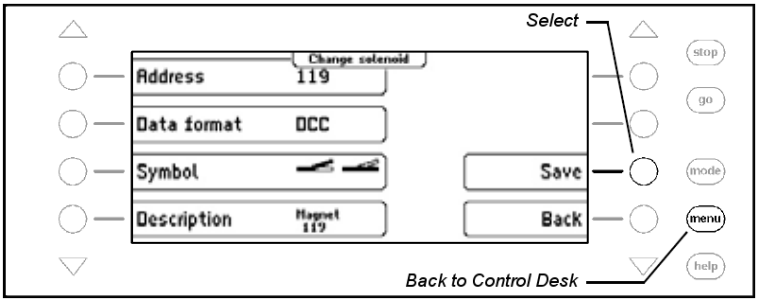
Change Name

Step 7



Save Data

Step 8



7. The Route Mode

In a digital system, turnouts and signals, which are equipped with switch or solenoid decoders, can be individually switched using appropriate input devices.

A particular route such as departing from a station's track 1, usually requires that a sequence of turnouts and signals be switched. These commands can be collected together in route and switched by a single key from the Intellibox II key block or triggered by a feedback.

7.1 Description

These can be switched with a key printing or by detailed feedback. Each route is represented by its individual name in the display.
In route mode you have the possibility without the need for additional devices, to store a sequence of turnout and signal switching commands in a route. These can be switched by pressing a key or a specific feedback message. Each route is represented in the display by its individual name.

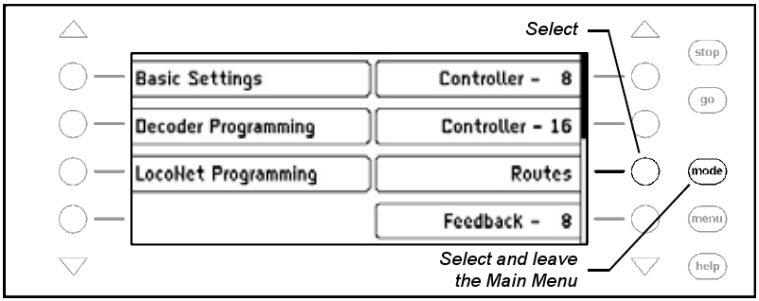
Up to 16 routes can be in a Group and can be switched by the 16 Keys in the Key block. A maximum of 64 groups can be defined.

A total of 80 routes with 24 commands each can be defined in the Intellibox. Beyond that additional routes can be called which are stored in external devices such as IB-Control II or IB-Switch.

For automatic layout control each route can be assigned a feedback message, so the route can be switched by a running train. This way block sections and shadow stations can be easily implemented.

7.2 Selecting Route Mode

When the [mode]-Key is pressed the Route Mode can be selected from the menu by a display key.

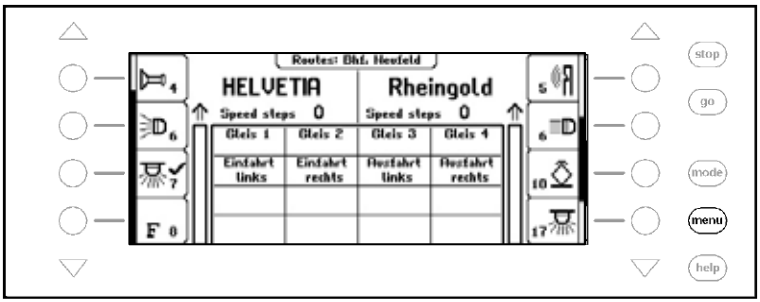


7.3 Selecting a Route Group

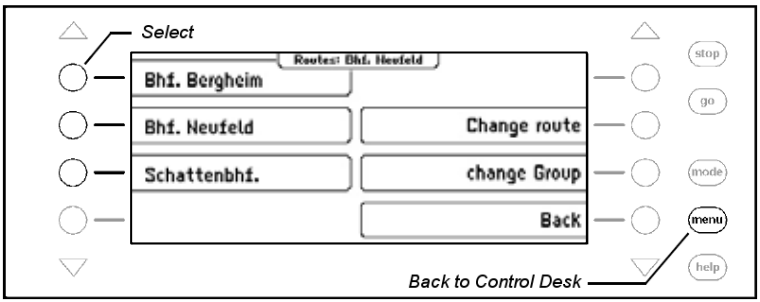
Up to 64 different groups with 16 routes can be defined. Each group is assigned a name by which the group can be selected. In the Intellibox II factory default setting five routes are defined by name.

Procedure:

Step 1



Step 2



7.4 Switching Routes

In Route mode each individual key in the Intellibox II central key block can switch a programmed route. Press the [mode]-Key to select the Route Mode. Now the 16 respective Keys in the middle key field show the routes.

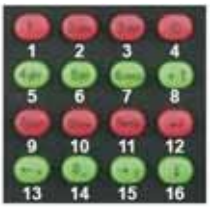


Figure 7.41 Display and Key block with the numbering of the keys in Route Mode

By pressing one of these Keys the respective route is switched.

As soon as the route is selected the displayed name is inverted (white text and black background), till all the contained switch sequence has been processed by the Intellibox II.

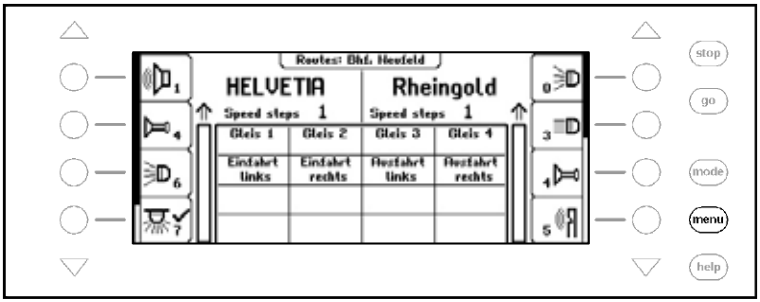
If there is no display for this Key in the selected group then no route has been assigned, or the route was not assigned with a feedback message.

7.5 Entering and Changing Route Groups

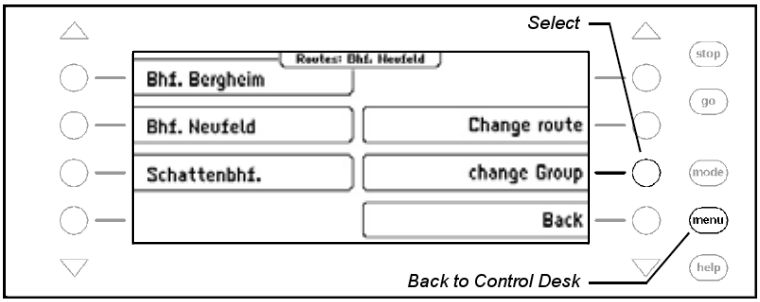
The Intellibox can administer up to 64 different route groups. Each route group can have a collection of up 16 routes. Every route group has its own name and can be selected by this name. Route group can be newly entered, changed and deleted.

7.5.1 Entering a new Route

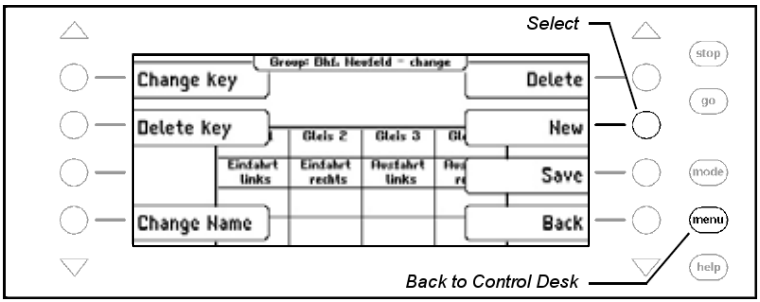
Step 1



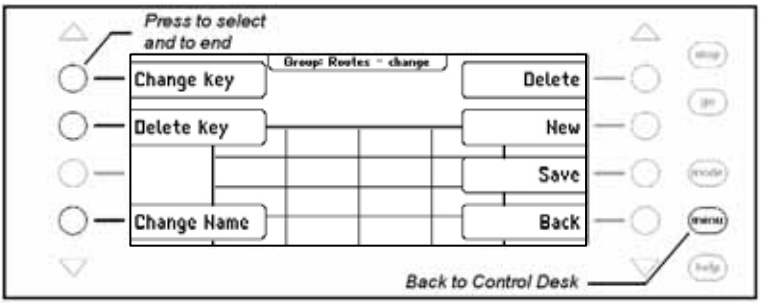
Step 2



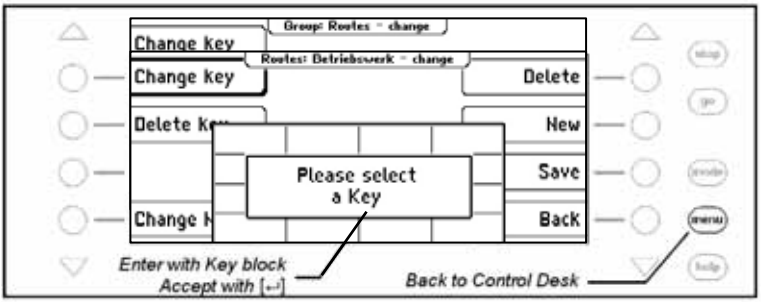
Step 3



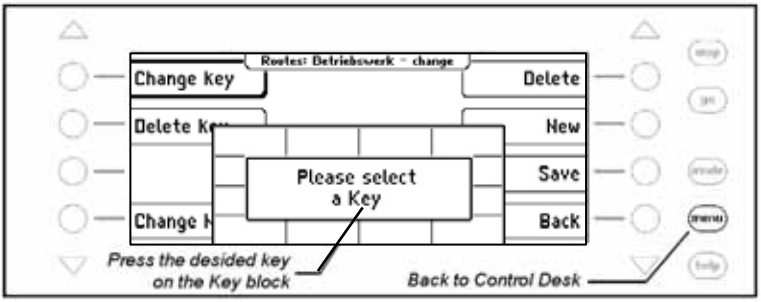
Step 4



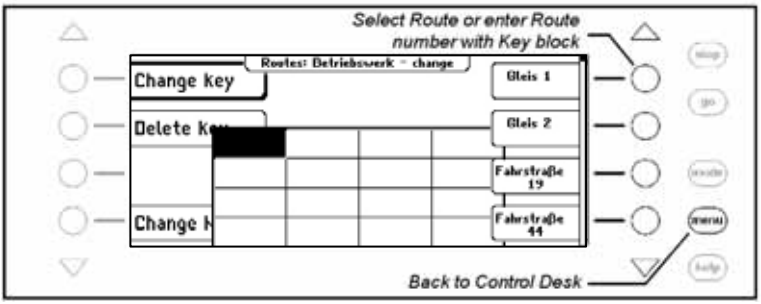
Step 5



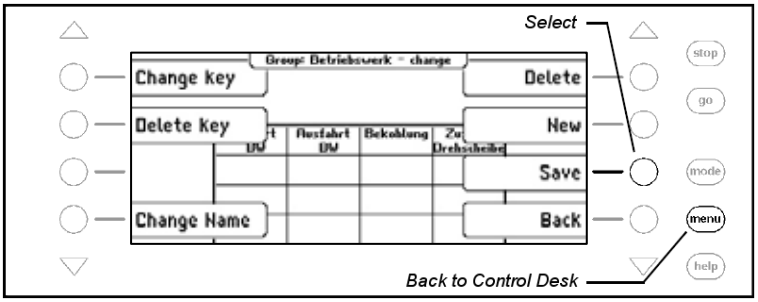
Step 6



Step 7

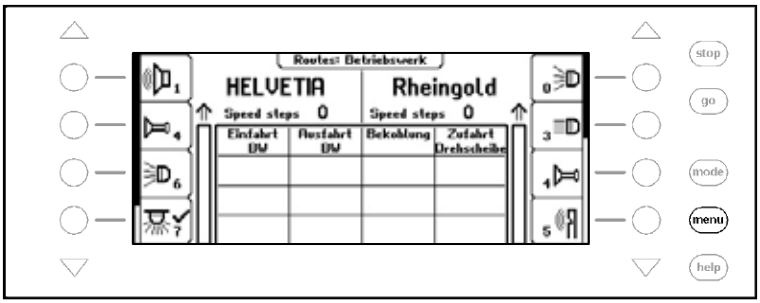


Step 8

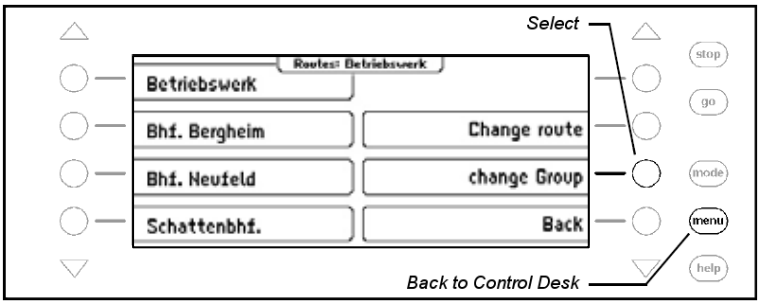


7.5.2 Change a Route Group

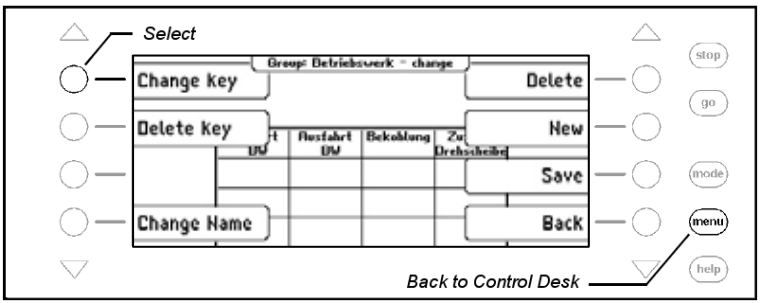
Step 1



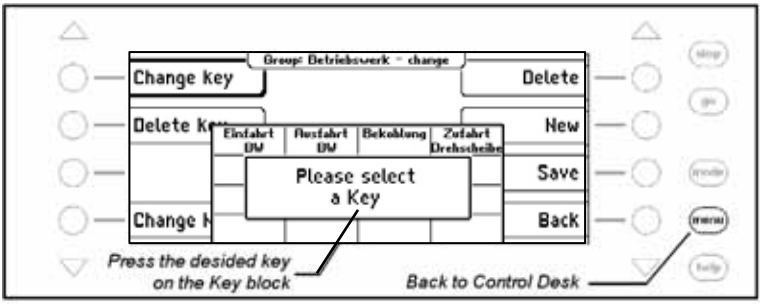
Step 2



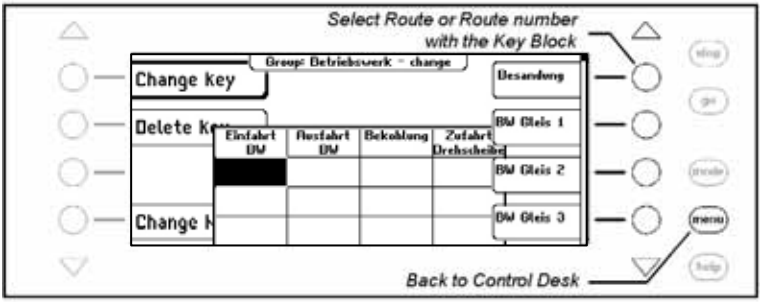
Step 3



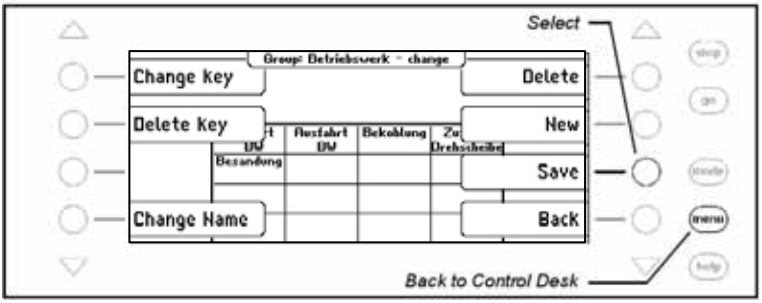
Step 4



Step 5

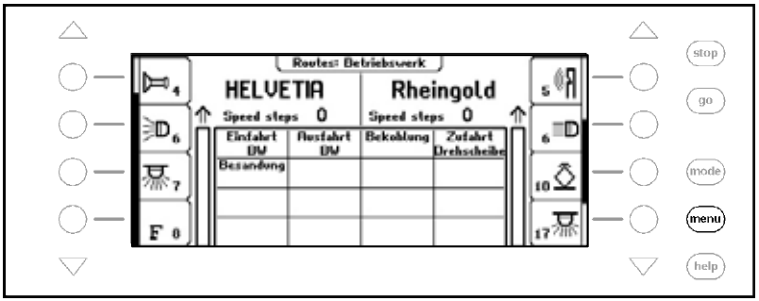


Step 6



7.5.3 Delete a Route Group

Step 1



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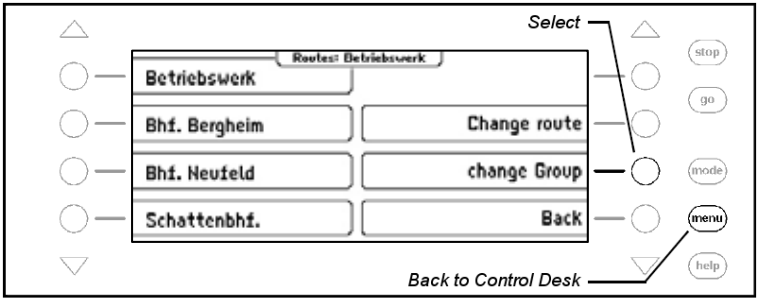
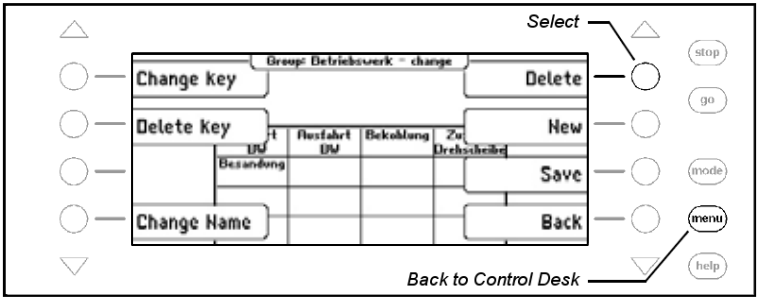
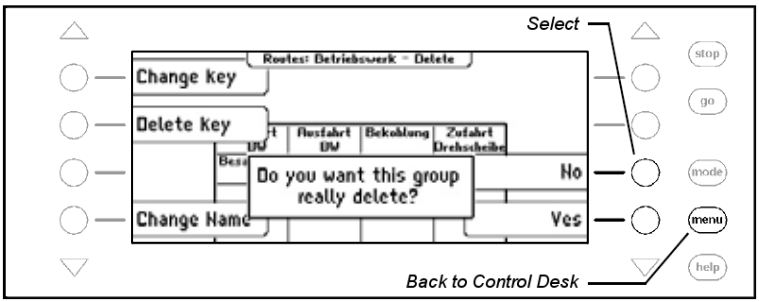


Step 3



Step 4



7.6 Programming Routes

Each route in the Intellibox II can contain up to 24 switching commands. One route can call up another route as a sub-route. If a sub-route is called it is completely processed. Then the remaining commands in the route are processed.

In place of switching commands the route can also contain a Pause so that the following commands can be delayed.

Routes can also send feedback messages so that routes stored in other devices like IB-Switch can be triggered.

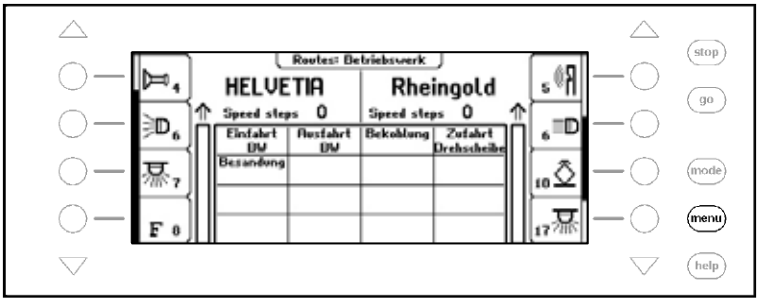
Each route can have its own name so it can be identified easier. By assigning a feedback address it can be triggered from feedback modules by running trains or manually.

Note: *So that the route can be used it must always be given a feedback address. Otherwise all the contents of the route are invalid and will not be shown in the Menus.*

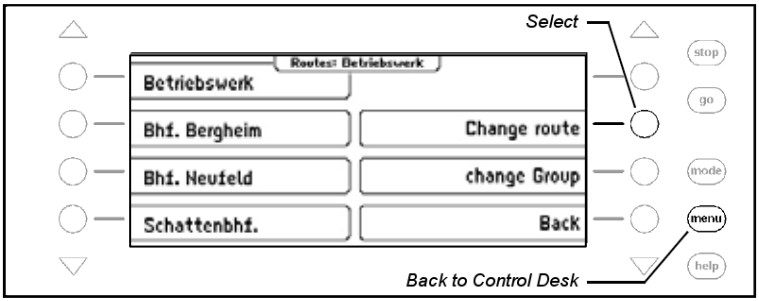
Attention: *If a route is to be activated by the Infrared Remote Control IRIS the route's feedback address must be entered in the IRIS. For this the route in the Intellibox II must be programmed with the feedback status "occupied".*

Procedure:

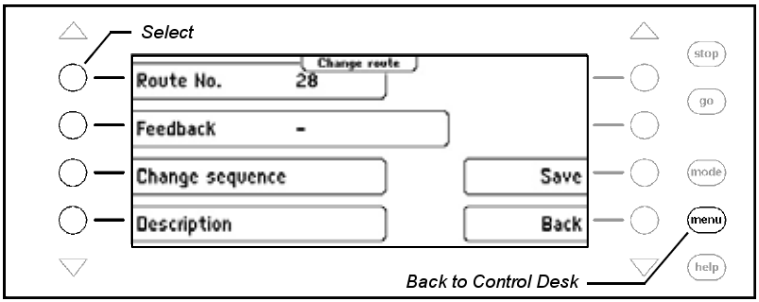
Step 1



Step 2

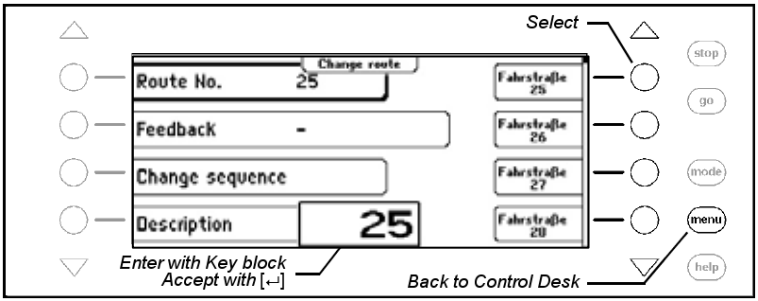


Step 3



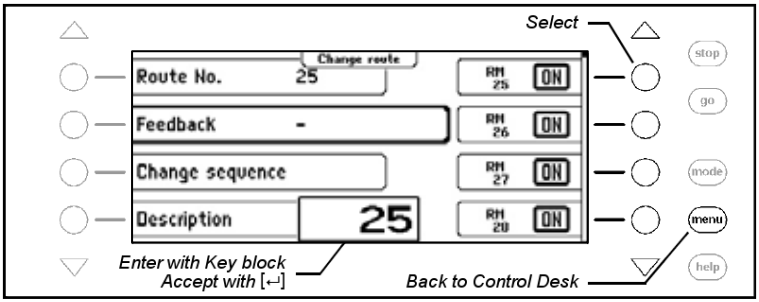
Select Route

Step 4

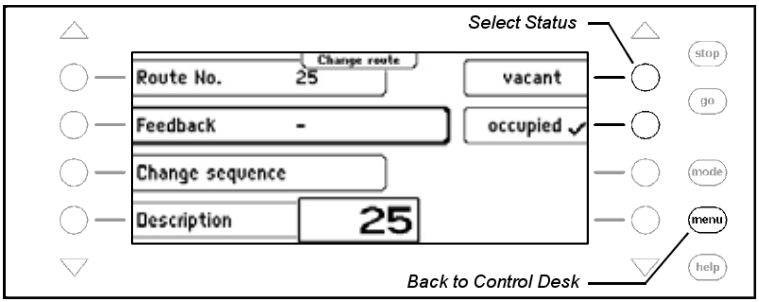


Change the Feedback message with which the route is switched

Step 5

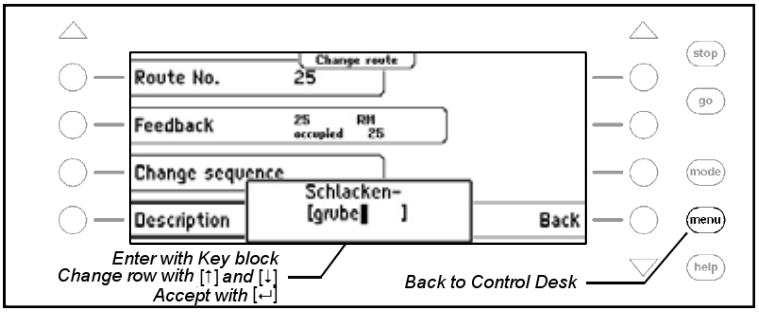


Step 6



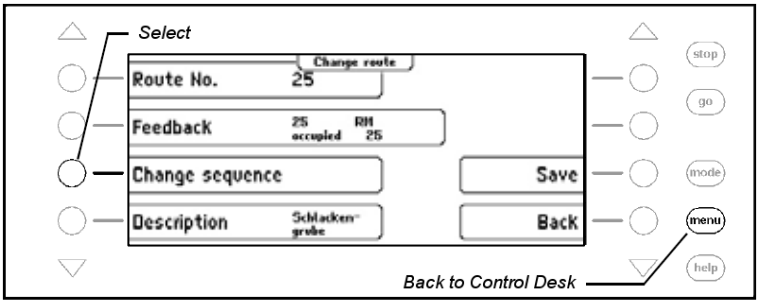
Change Description

Step 7

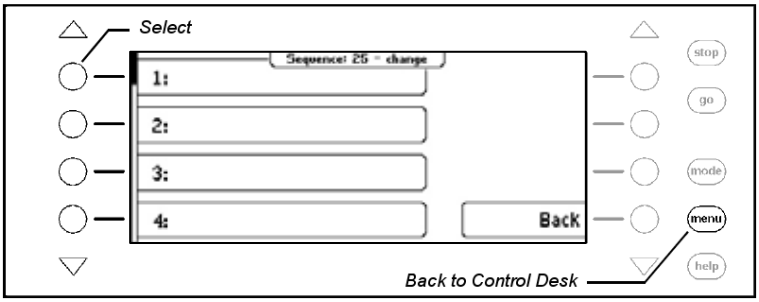


Change Switching Sequence

Step 8

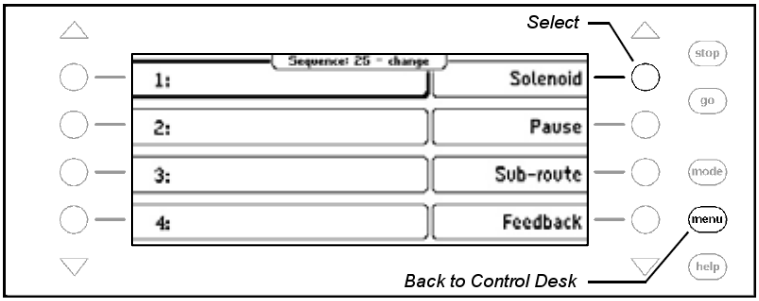


Step 9

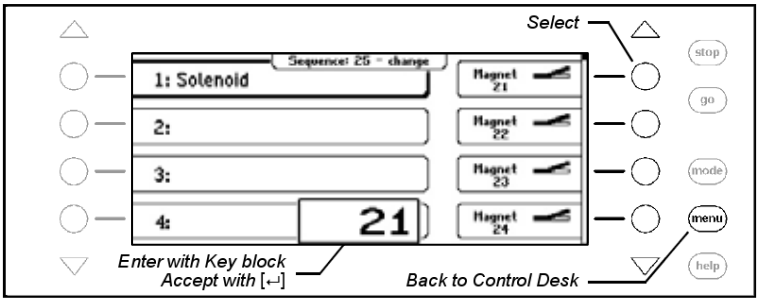


Enter Solenoid

Step 1



Step 2



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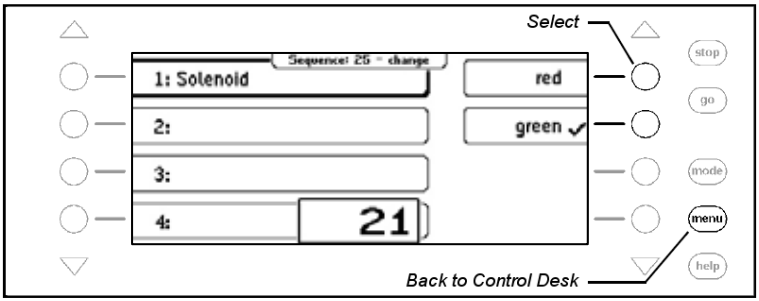
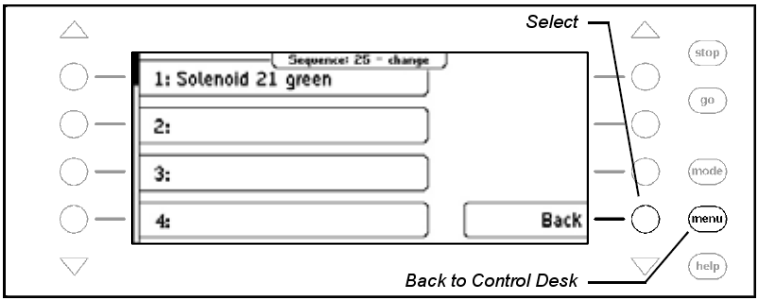
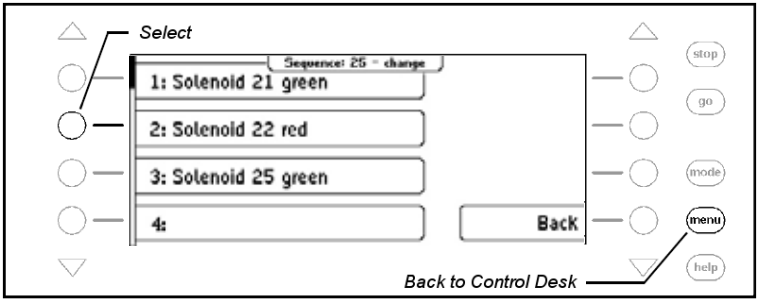


Step 4

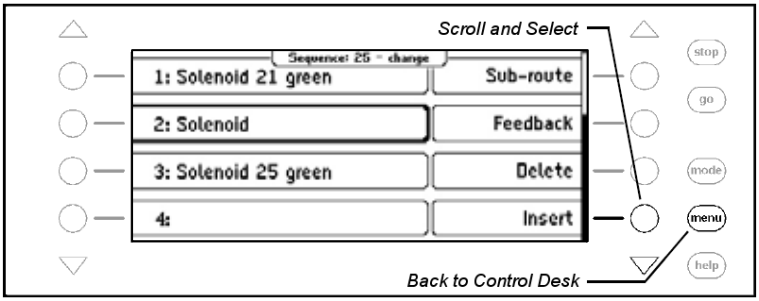


Insert Solenoid

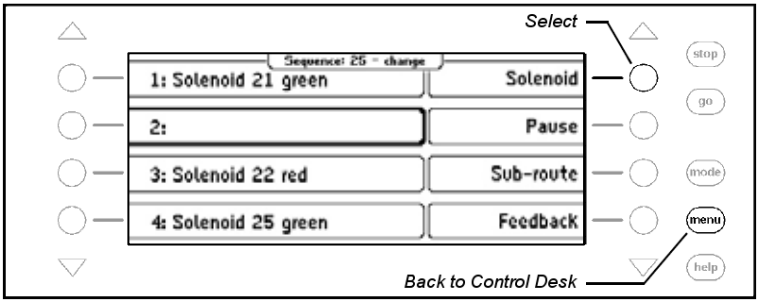
Step 1



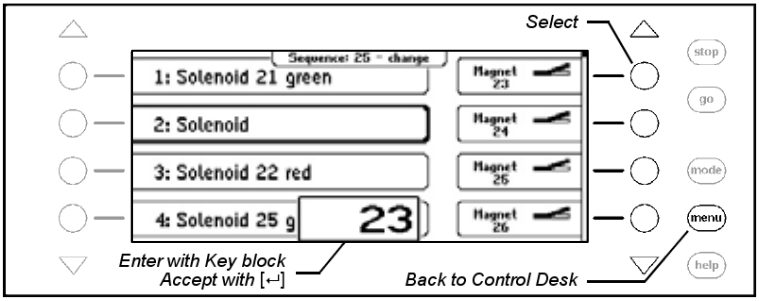
Step 2



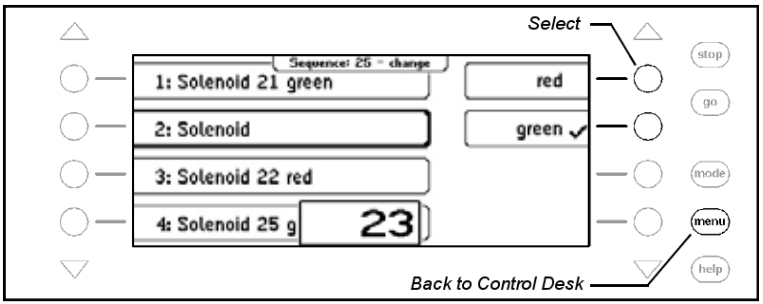
Step 3



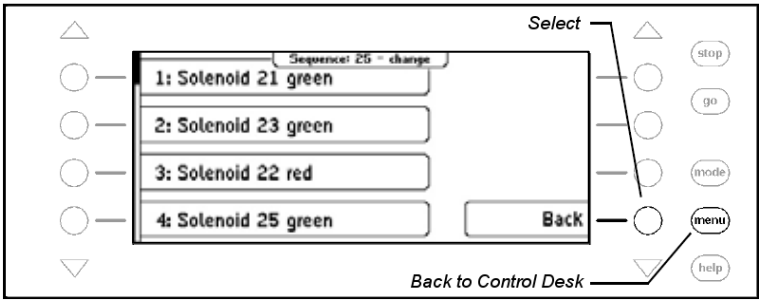
Step 4



Step 5

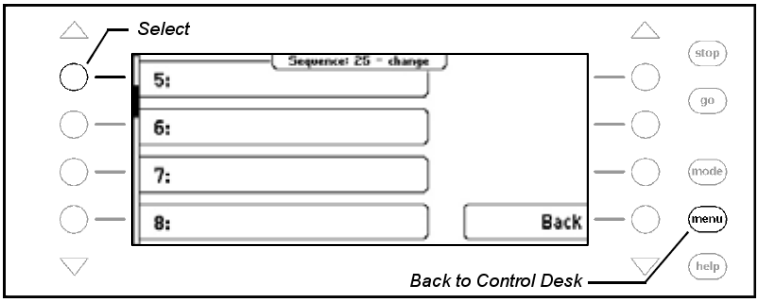


Step 6

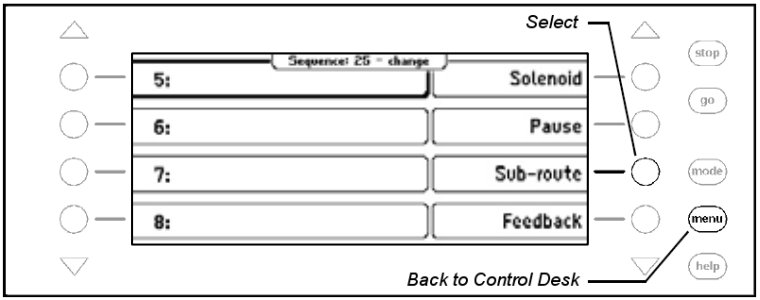


Insert Sub-Route

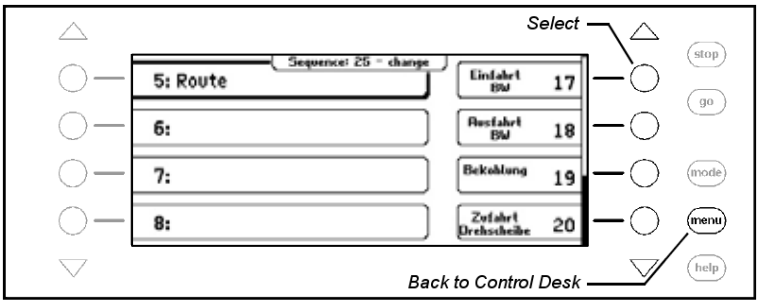
Step 1



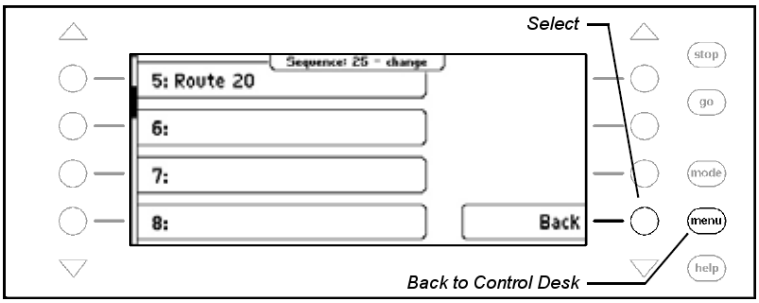
Step 2



Step 3

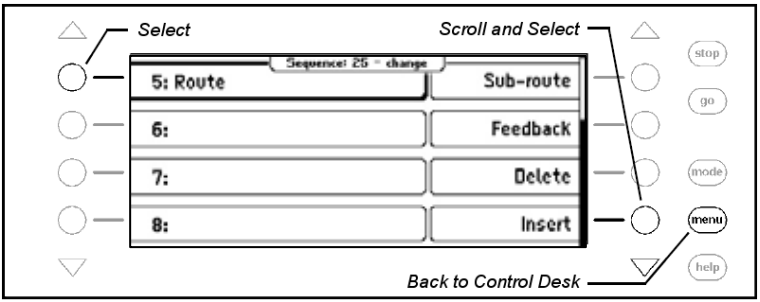


Step 4

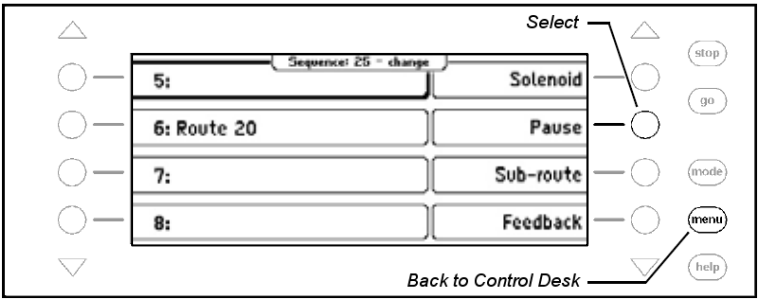


Insert Pause in Seconds

Step 1



Step 2



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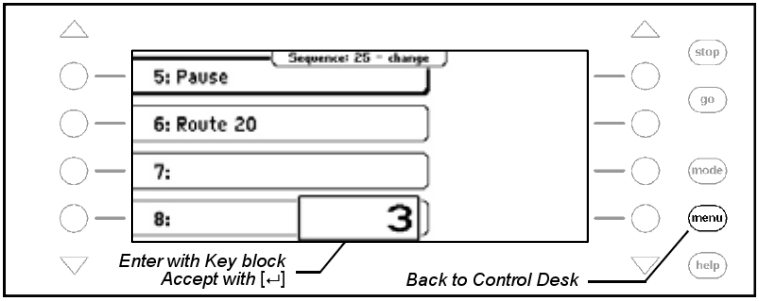
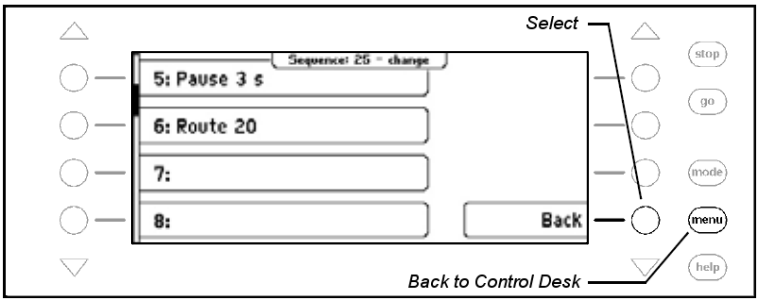
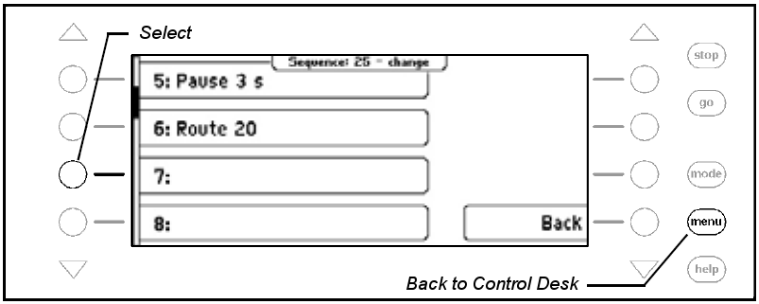


Step 4

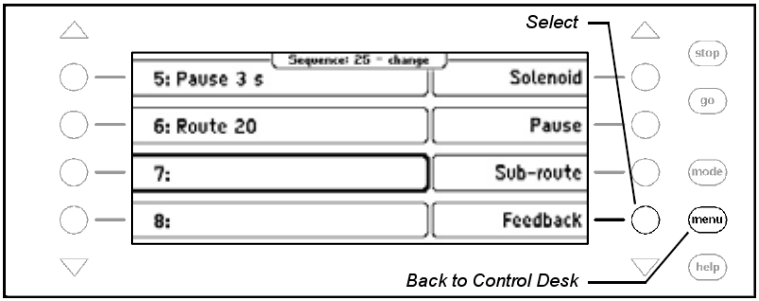


Enter Feedback

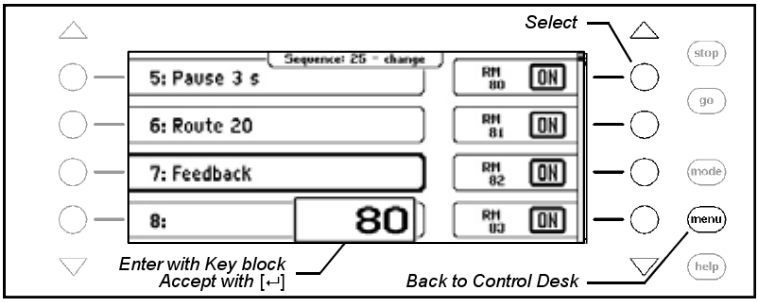
Step 1



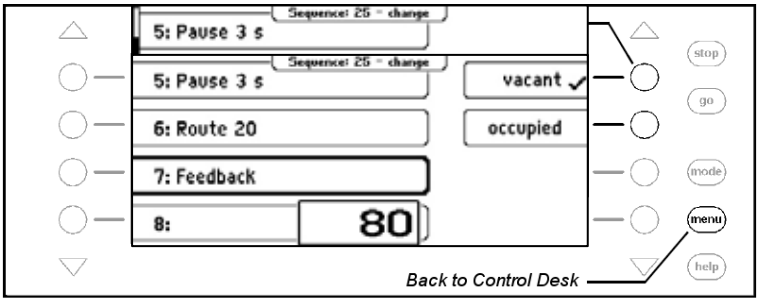
Step 2



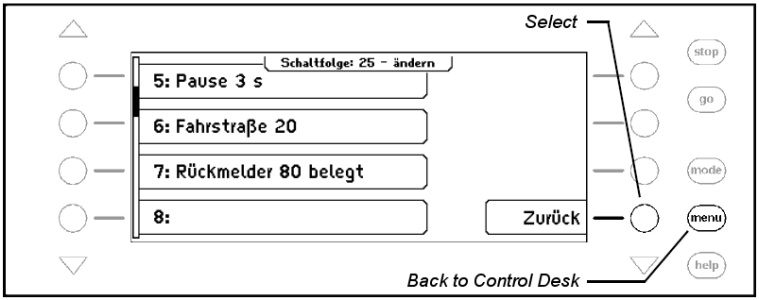
Step 3



Step 4

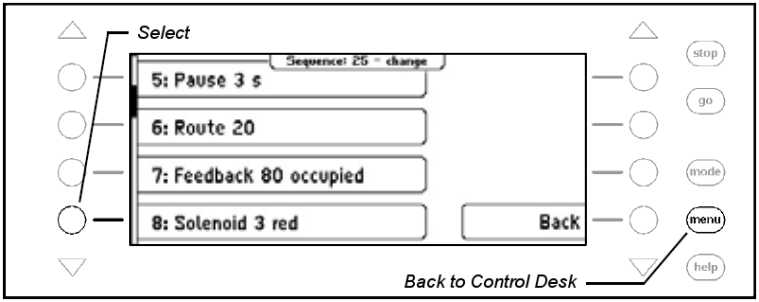


Step 5

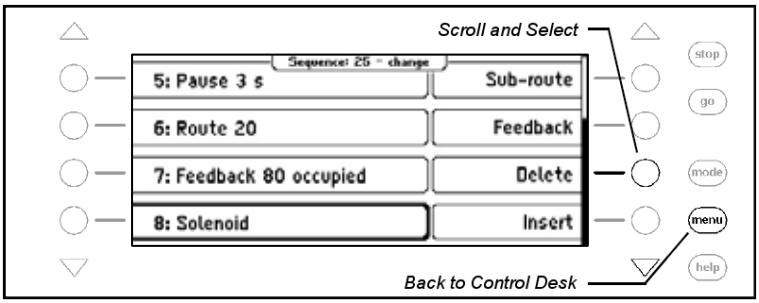


Delete a Route Entry

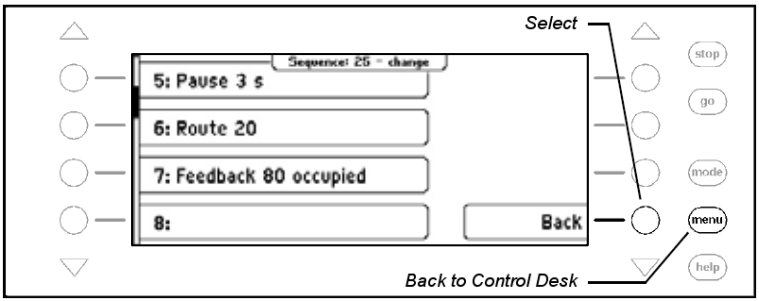
Step 1



Step 2

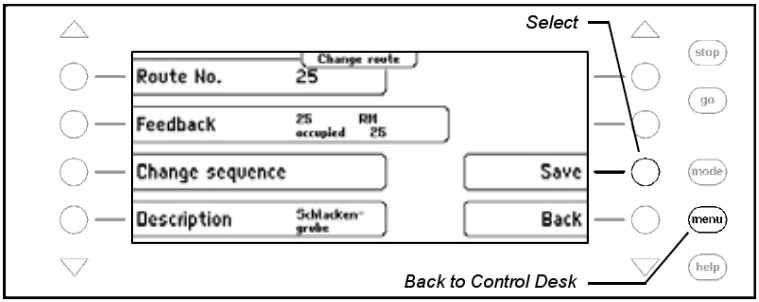


Step 3



Save Route

Step 1



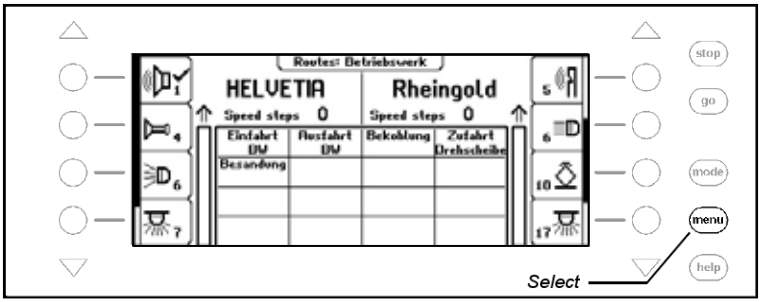
7.7 Using Routes from an External Device

With the Intellibox you can also trigger routes form an external device such as those stored in an IB-Switch or IB-Control II. For this you must assign the route with a route number higher than 80. If you assign this route with the feedback message that will trigger a route in another device then the defined route in a group can be assigned to a key on the Intellibox. With this key you will then activate a route in another device.

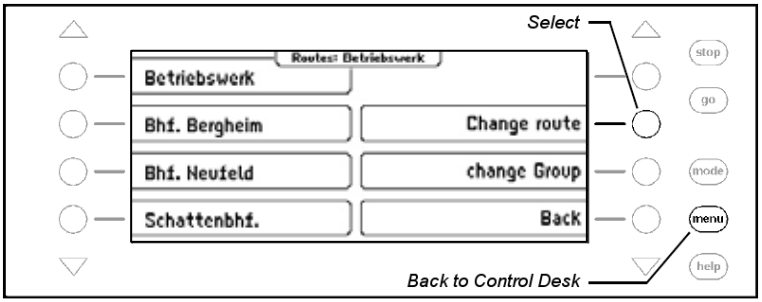
For example a route is to be used which is stored in an IB-Switch and there is triggered by feedback "250 occupied".

Procedure:

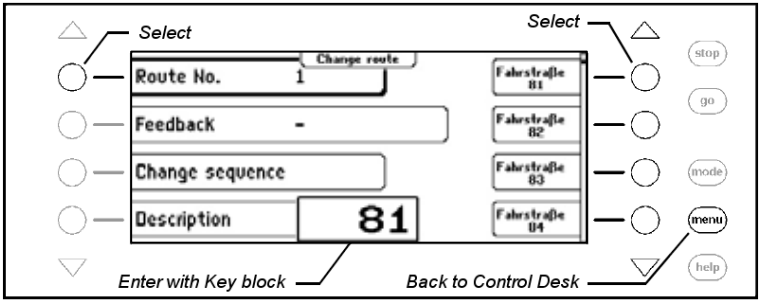
Step 1



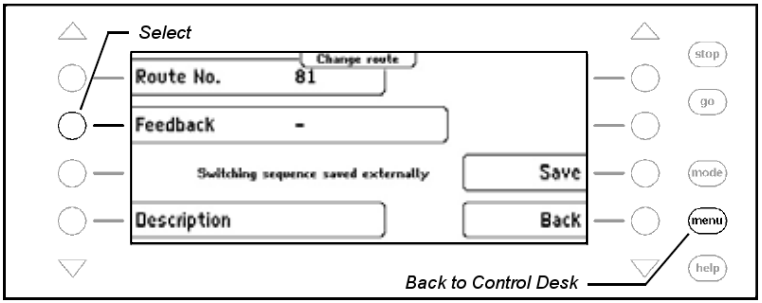
Step 2



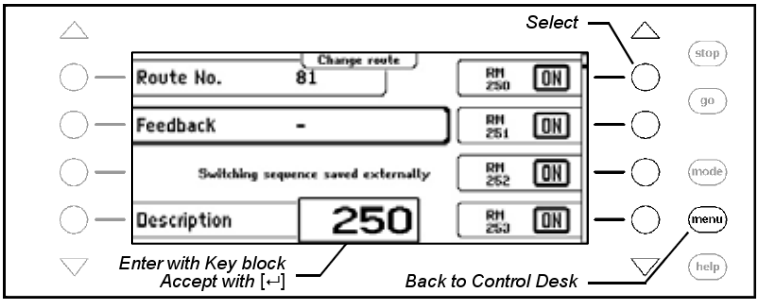
Step 3



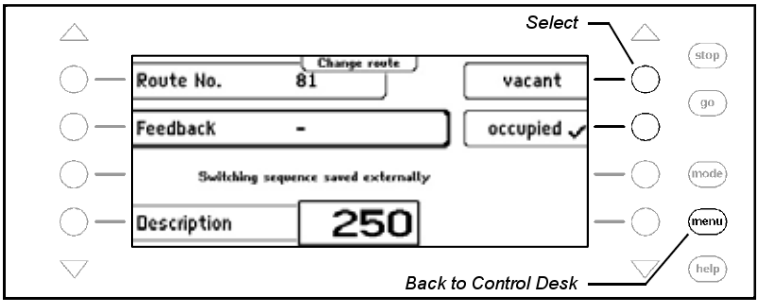
Step 4



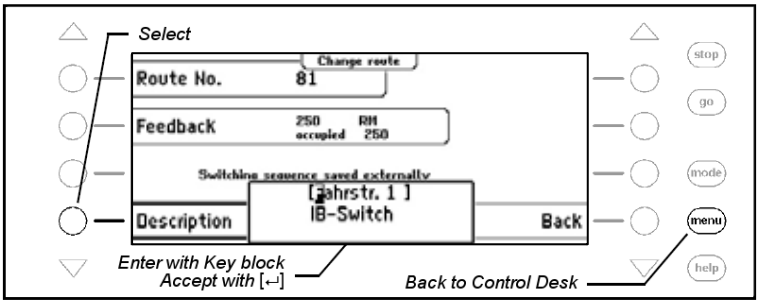
Step 5



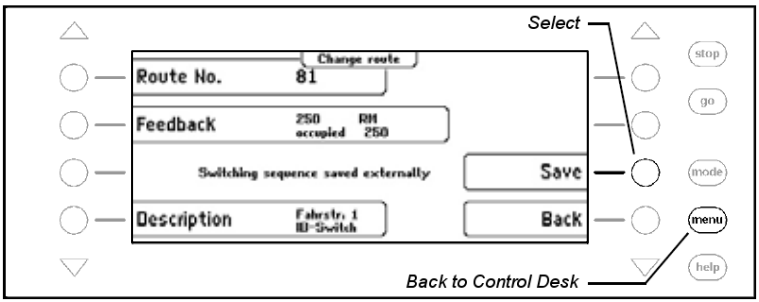
Step 6



Step 7



Step 8



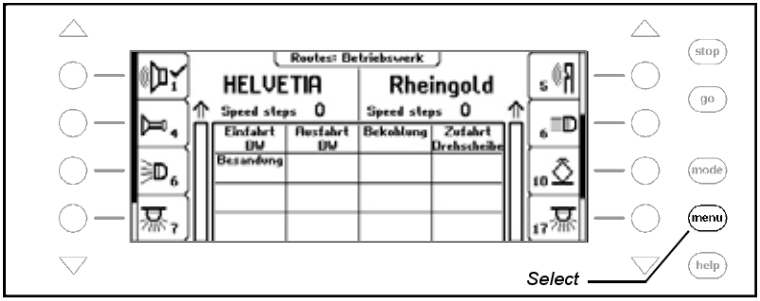
Now route 81 in a group can be assigned to a Key and in the example activates the 1. Route in the IB-Switch.

7.8 Automatically activate a Route when the Intellibox starts up

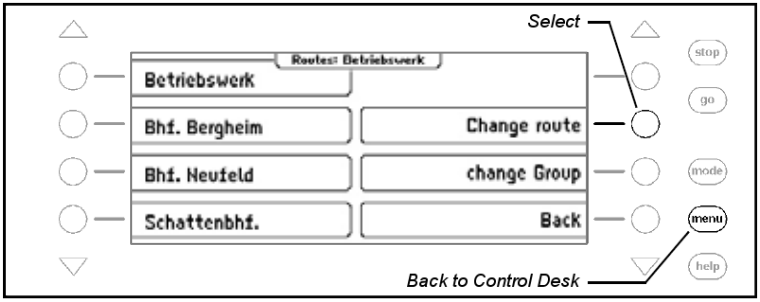
When the power is switched on the Intellibox II can automatically activate a route which then runs the switching sequence when the layout is turned on. For this one of the 80 routes can be assigned as the “autostart” route. In the following example this is to be route 50.

Procedure:

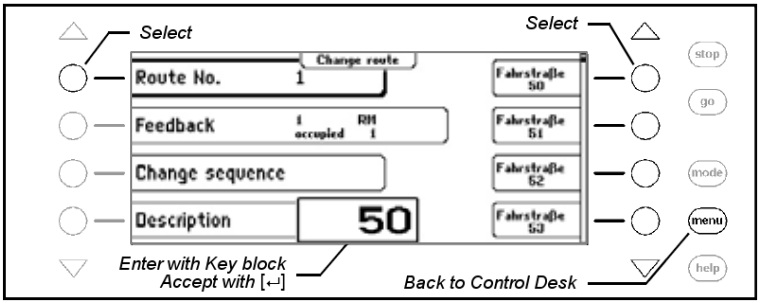
Step 1



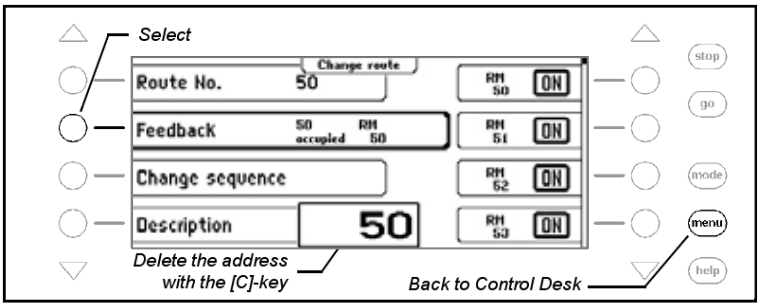
Step 2



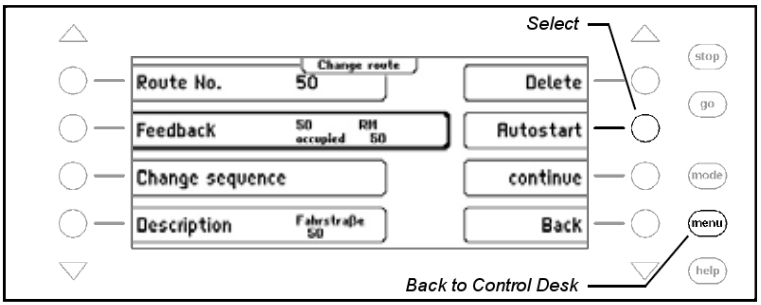
Step 3



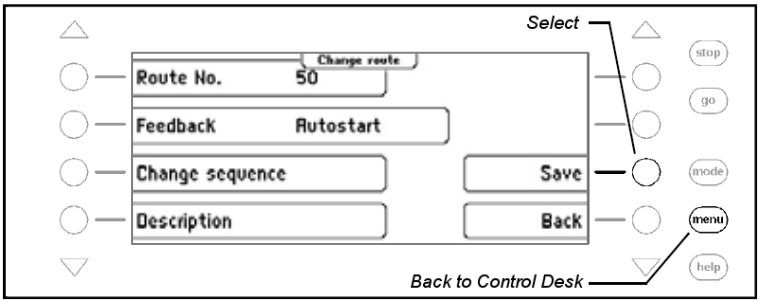
Step 4



Step 5



Step 6



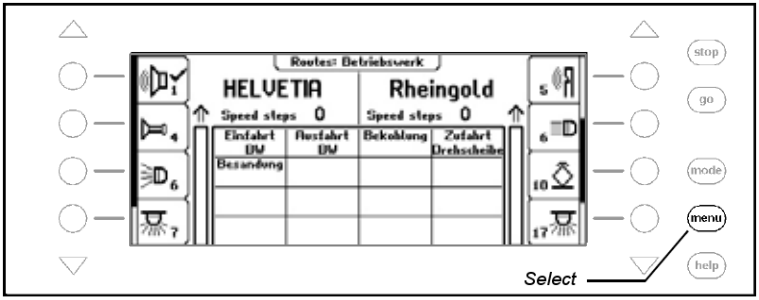
7.9 Processing two or more Routes in succession

Each route in the Intellibox contains 24 commands. If 24 commands are not enough then commands in the following route can be used.

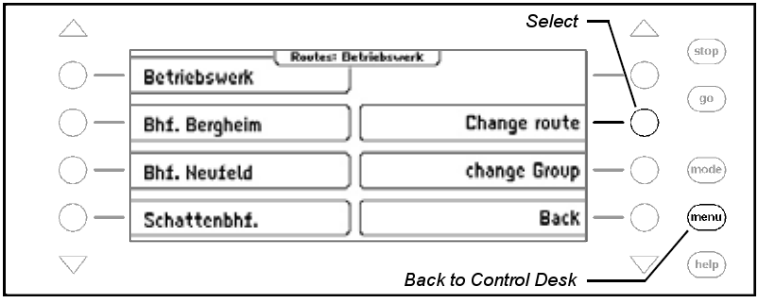
Example: More than 24 commands are required for the desired switching sequence for route 60. The inclusion of route 61 extends the command range to 48 instructions.

This is how routes 60 and 61 are processed together:

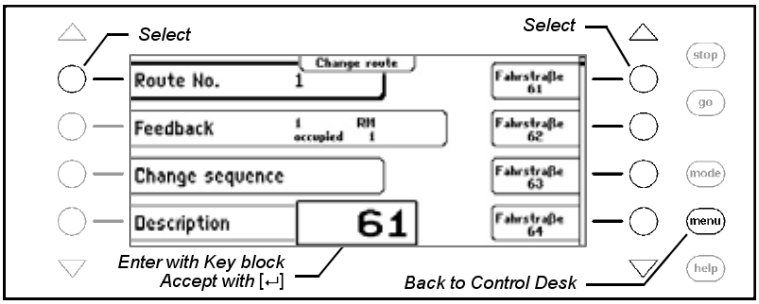
Step 1



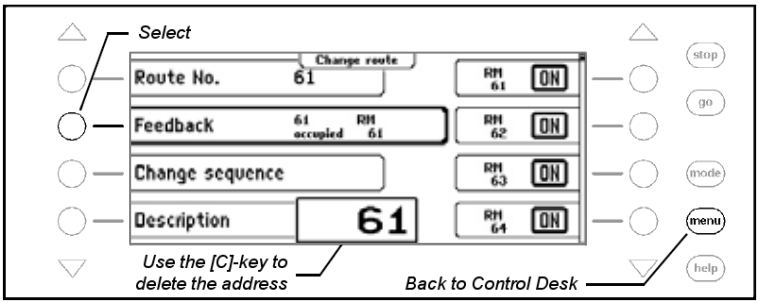
Step 2



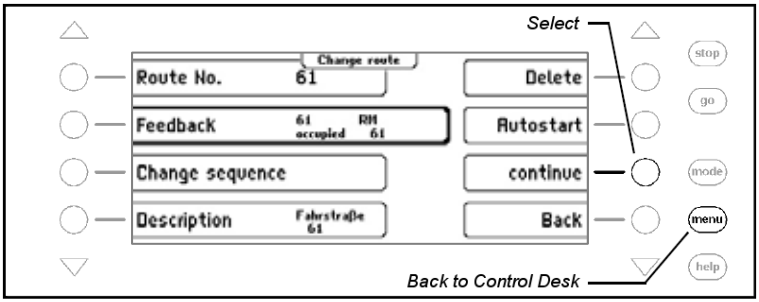
Step 3



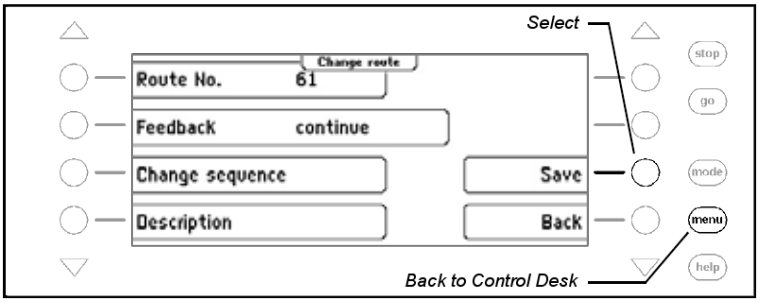
Step 4



Step 5



Step 6



If route 60 is activated now, then all instructions in route 60 are processed and immediately afterwards so are the instructions in route 61.

8. The Feedback Mode

If the model railway layout is to be controlled automatically (e.g. by IB-Switch or Computer control) the controller needs status signals that tell it which sections are occupied by a train. Only then can turnouts and signals be switch to the appropriate state.

LocoNet Feedback Modules or s88 Feedback Modules monitor the track sections and notify Track vacant or Track occupied to the central controller.

So that a train can trigger a switching sequence the track occupied message is forwarded via the LocoNet to the Intellibox II or IB-Switch 65800 or via the interface to the computer software which can then co-ordinate the correct switching sequence.

A total of 2048 feedback inputs can be used.

8.1 LocoNet Feedbacks

The valid address range for feedbacks is 1-2048, i.e. a maximum 256 feedback modules for 2-Rail with 8 inputs each or 128 feedback modules for 3-Rail with 16 inputs each can be connected to the Intellibox II. The Modules can be connected either to the LocoNet-T or LocoNet-B socket of the Intellibox II.

8.2 s88-Feedback

A maximum of 31 s88-Feedback modules each with 16 inputs can be connected to the Intellibox II s88-input.

Hint: *If s88-Feedback modules and LocoNet Feedback modules are mixed on an Intellibox II the LocoNet Feedback modules must use feedback addresses above 496, so as to reserve the 1-496 address range for the s88-Feedback modules.*

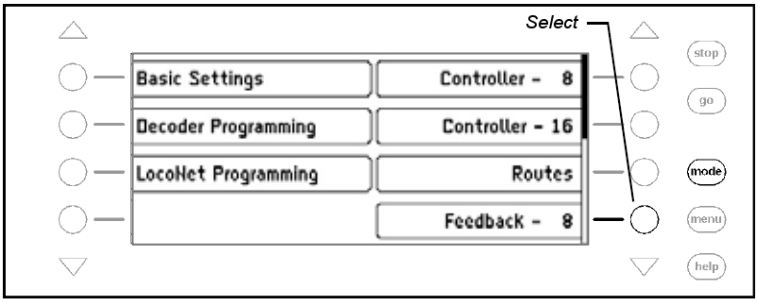
In Feedback mode the connected feedback modules are polled and their feedback is displayed. In order to complete the polling of the s88-Feedback modules in a timely fashion the Intellibox II needs to know how many s88 modules are connected to the feedback bus. The count can be entered via the Basic Settings Menu (see Chapter 4.9).

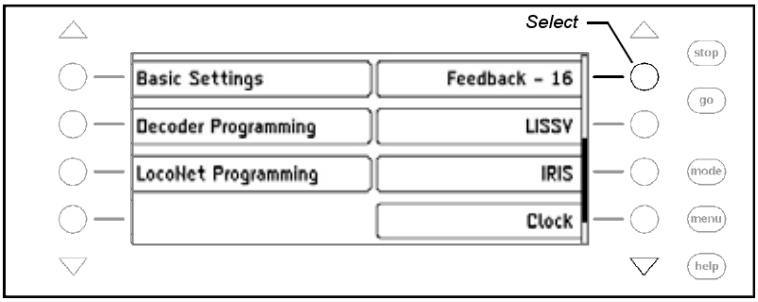
8.3 Selecting a Feedback Module

The Intellibox II gas 2 feedback modes, the Feedback-8 Mode and the Feedback-16 Mode.

When the [mode]-key is pressed the respective feedback module can be selected from the selection menu with the display keys.

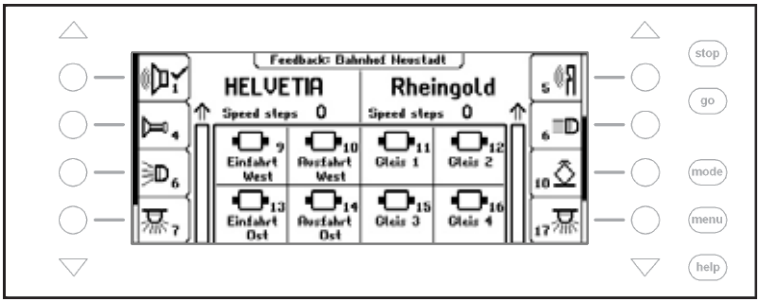
The middle of the display will change to suit the selected Mode.





8.4 The Display

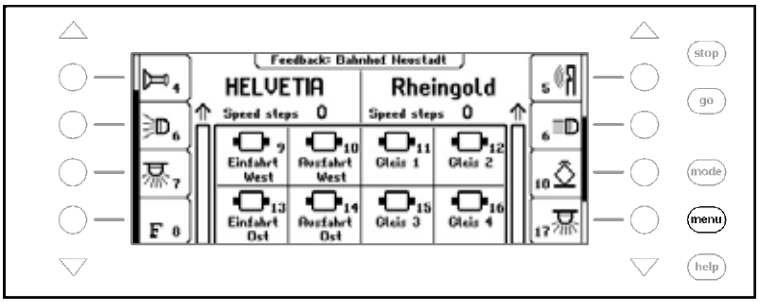
In Feedback-8 mode a group of 8 feedback inputs are shown in the middle part of the display. In Feedback -16 mode the state of 16 feedback inputs can be seen.



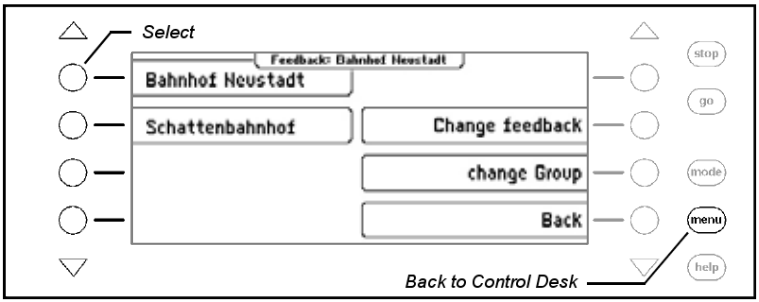
The Groups can be individually compiled and given a name. Each feedback is represented by its symbol, its address and its individual name (only in Feedback-8 Mode) in the middle part of the display.

8.5 Selecting a Feedback Group

Step 1



Step 2



Independently of whether the display was selected for 8 or 16, a group of 8 or 16 feedback can be called by an address which starts the sequence of 8 or 16 following addresses.

Each group however can also have its own assignment. 64 different feedback groups can be saved in the Intellibox II. Each group has its own name. That way you can group the feedback messages from a shadow station and assign that group the name Shadow station and is then always called up by that name.

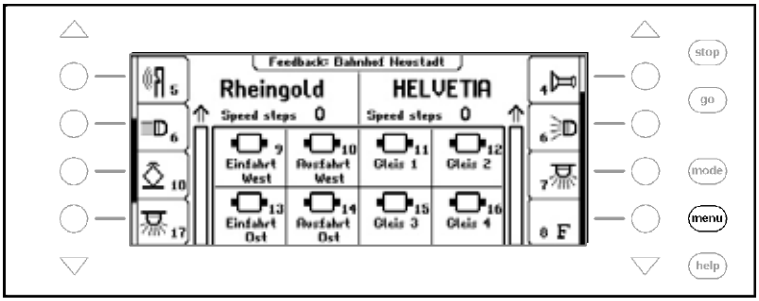
8.6 Adding and Changing Feedback Groups

The Intellibox II can administer up to 64 different feedback unit groups. Each feedback unit group can be a collection of up to 16 desired feedbacks. Each group has a name and can be called up by that name. Feedback groups can be newly entered, edited or deleted.

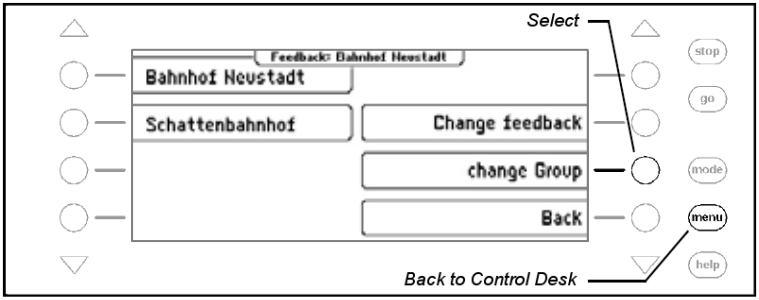
Note: *If a feedback group is setup in Feedback-16 Mode then in Feedback-8 Mode only half the group will be displayed.*

Adding a new Feedback Group

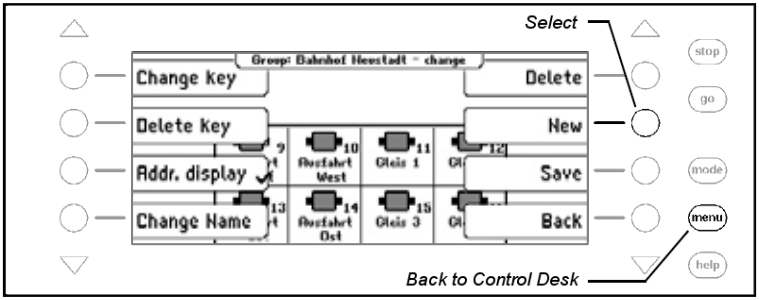
Step 1



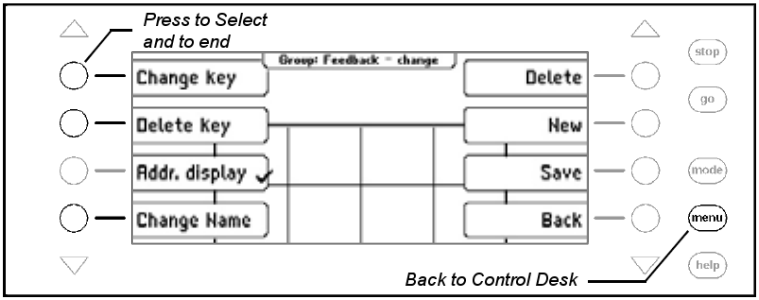
Step 2



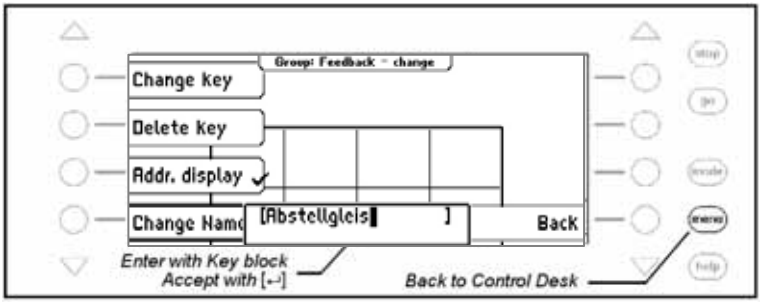
Step 3



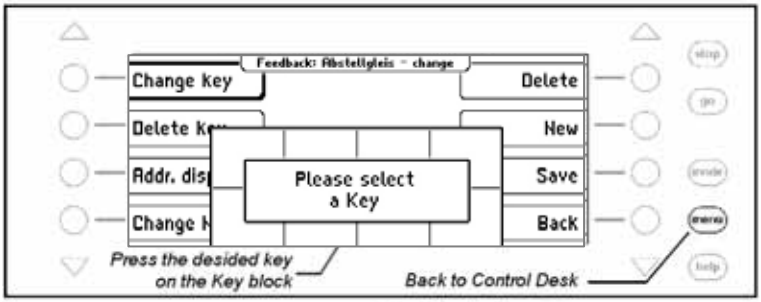
Step 4



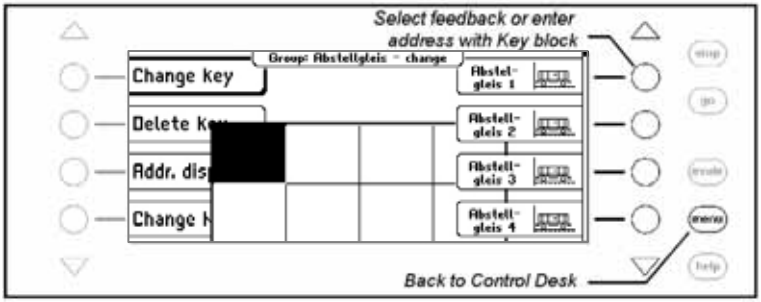
Step 5



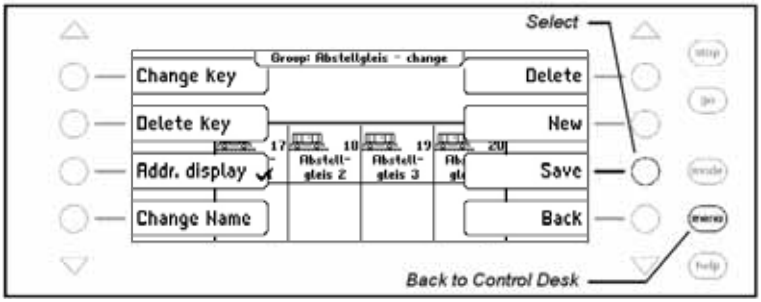
Step 6



Step 7

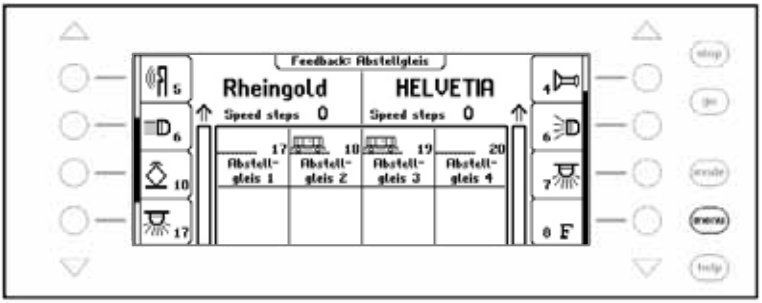


Step 8

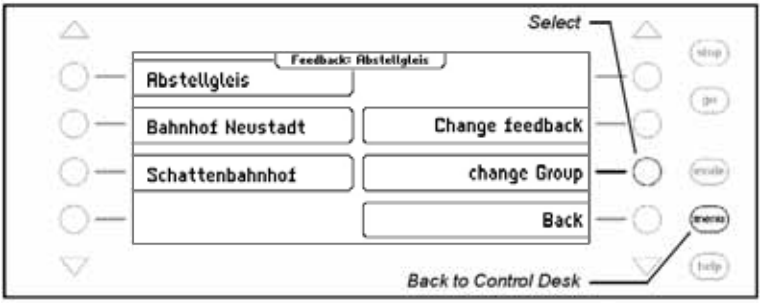


Editing a Feedback Group

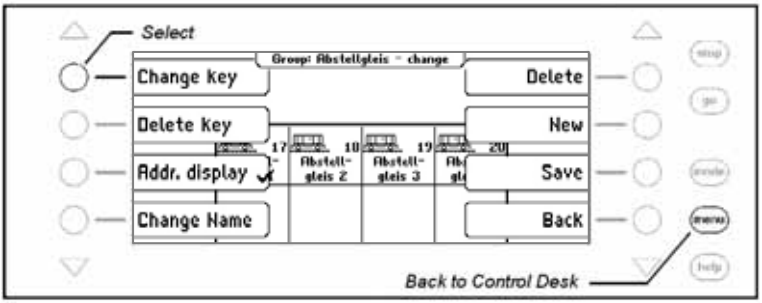
Step 1



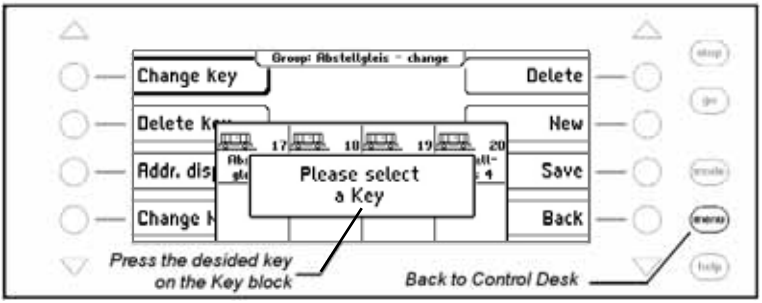
Step 2



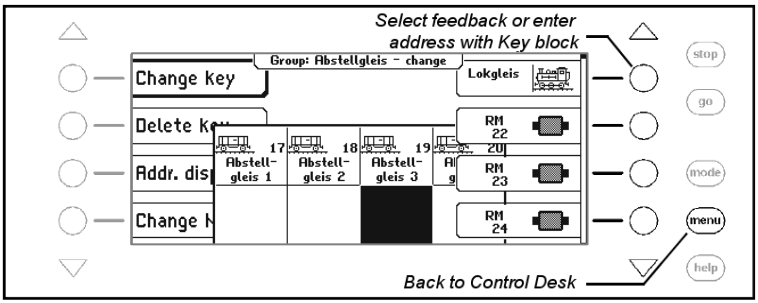
Step 3



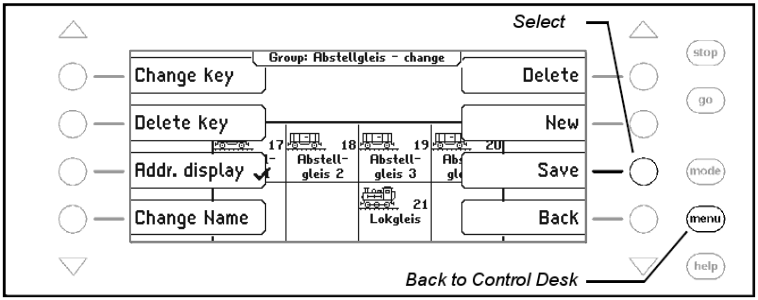
Step 4



Step 5

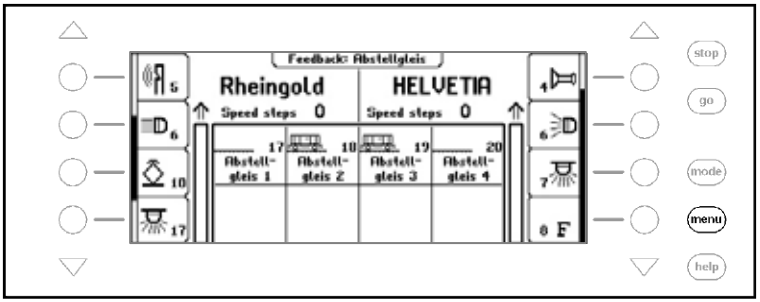


Step 6

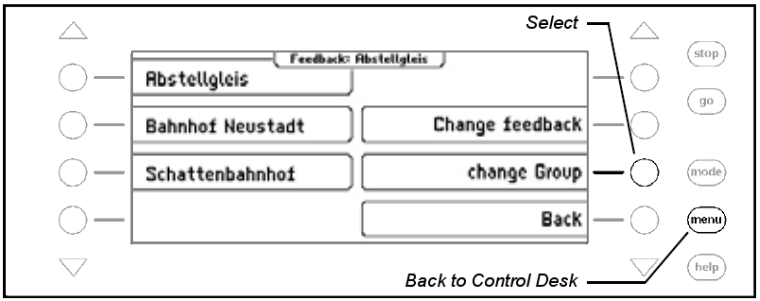


Deleting a Feedback Group

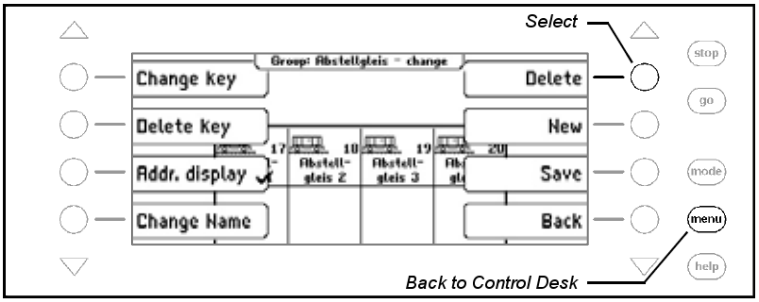
Step 1



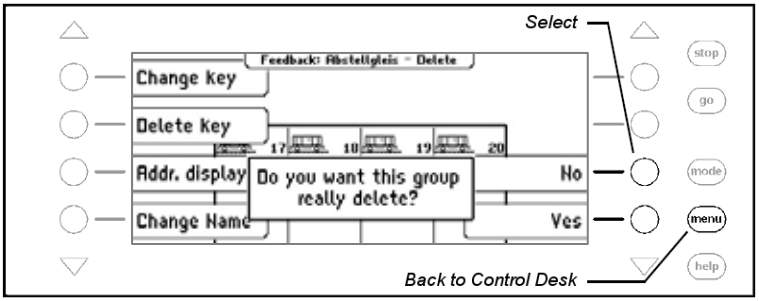
Step 2



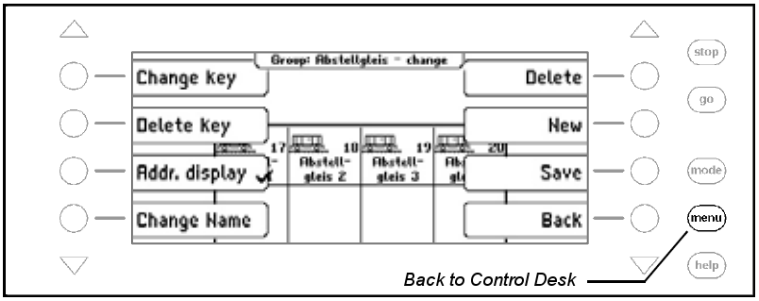
Step 3



Step 4

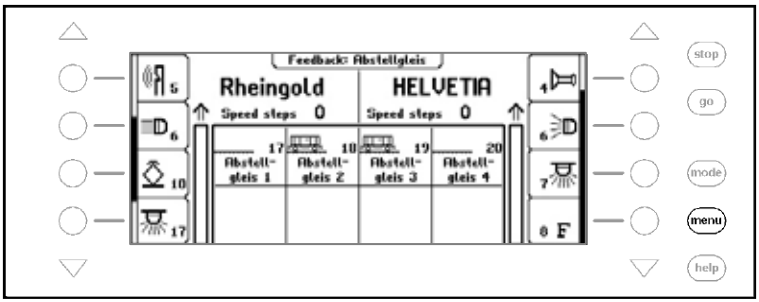


Step 5

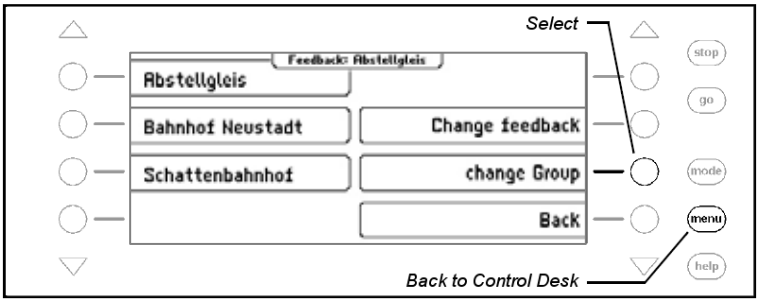


Switching the Address Display on/off

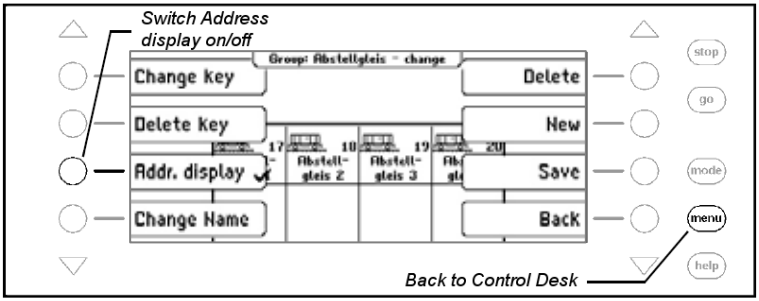
Step 1



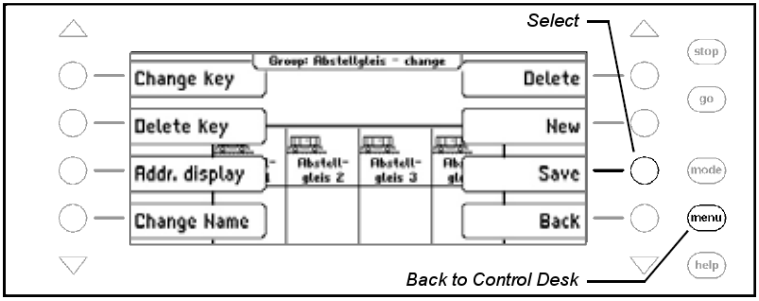
Step 2



Step 3



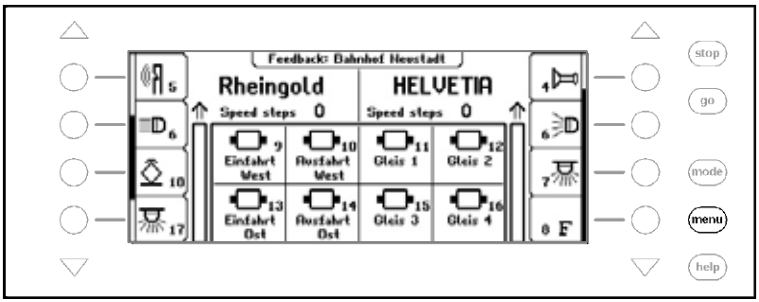
Step 4



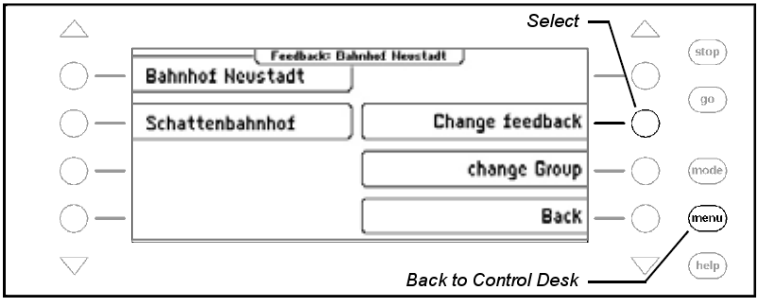
8.7 Setting the Name and Symbol of a Feedback

A name and symbol can be assigned to each feedback address. The assignment can be made from the “Change Feedback” Menu.

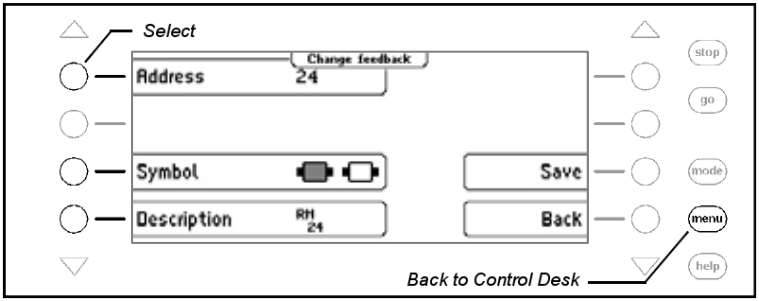
Step 1



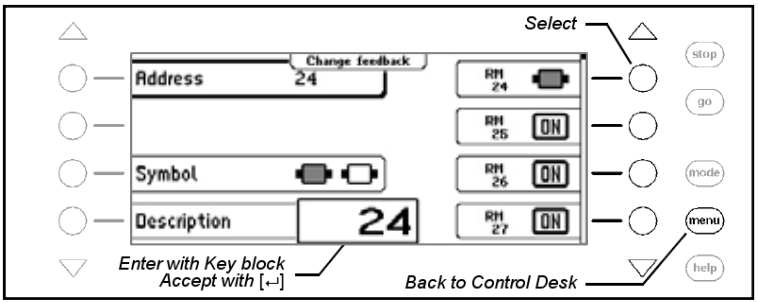
Step 2



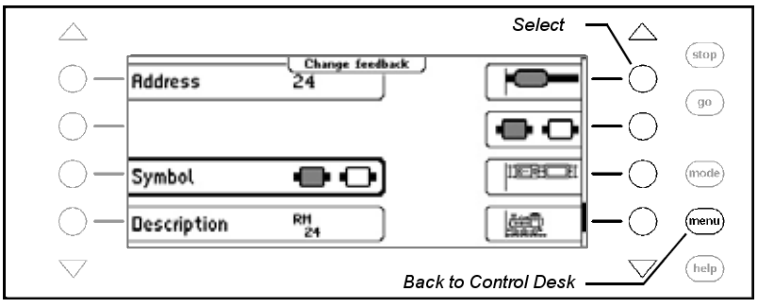
Step 3



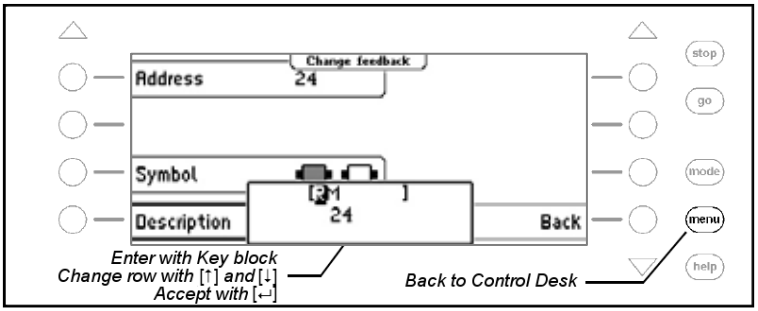
Change Feedback Address



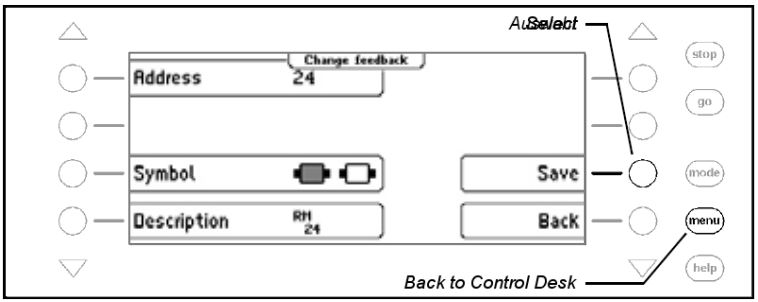
Change Symbol



Change Name



Save Data



8.8 Triggering Feedback Message

In Feedback-8 Mode the key block can be used to send feedback messages for test purposes. When a red key is pressed the track section “occupied” message is sent. Correspondingly the green key sends a track section “vacant” message.

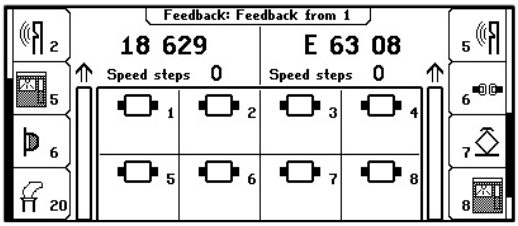


Figure 8.81
The image shows the assignment of the key pairs for the feedbacks that are shown in the display.

9. The LISSY Mode

In a digital system every locomotive has its own address and can receive control commands with this address. In order to achieve automatic control of trains on a digital layout, one question is always asked, “At which point on the layout is the locomotive at any time?”

If the this question can be answered by a detection system that reads the locomotive address, then nothing further prevents the implementation of an automatic system.

9.1 Description

LISSY consists of a tiny transmitter that is fixed under each participating locomotive and sends the locomotive address down to the track via infrared. Sensors are mounted in the track and receive the information and forward it on to the LocoNet. The LISSY receivers which are installed at various points in the track on the layout receive the following information:

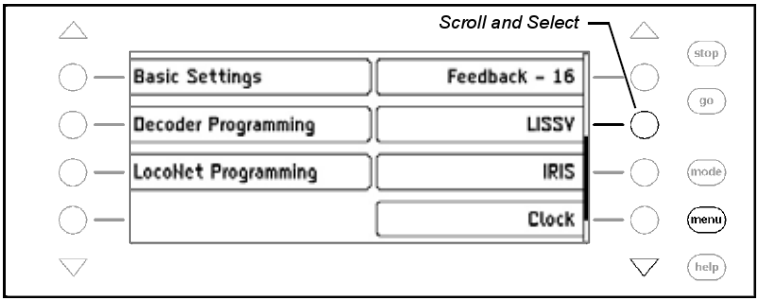
- the address of the passing locomotive
- one of four train categories of the passing locomotive
- the direction of the locomotive at the detection point
- the speed of the locomotive at the detection point

The Intellibox II LISSY Mode can display the locomotive address i.e. the locomotive name, train category and direction, or the measured speed at the detection point, in the middle area of the display. Block sections and shadow stations can be monitored with this display. That way you know which locomotive is in which track section at any time.

9.2 Selecting LISSY Mode

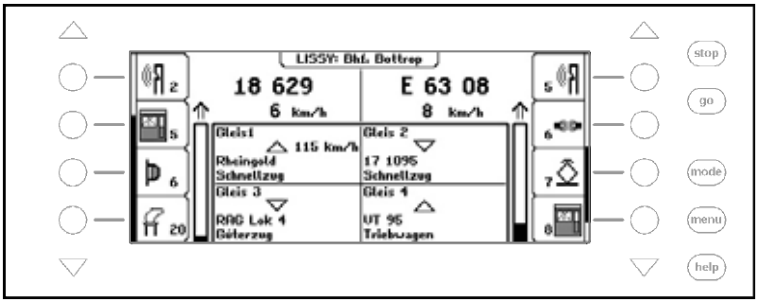
The LISSY Mode is selected by pressing the [mode]-key. The Main menu then appears and the LISSY Mode can be selected.

The display changes to represent the selected mode.



9.3 The Display in LISSY Mode

If LISSY Mode is selected the middle part of the display shows the messages from four LISSY Receivers:



In each of the four fields, in 4 rows the following is displayed:

- Name of the monitored LISSY receiver
- Address of the LISSY receiver, direction and train's measured speed
- Locomotive name or address of the detected locomotive
- Name or Number of the recognized train category

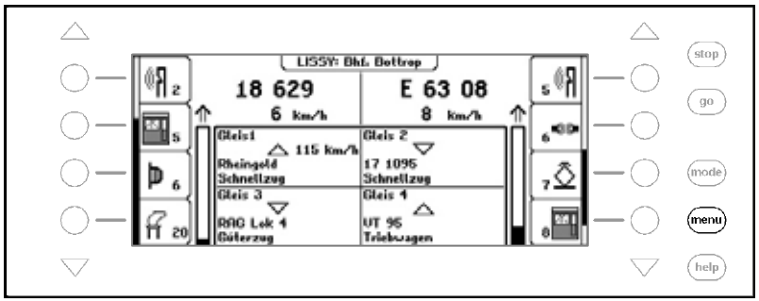
So that the LISSY receiver, the locomotive and the train category are displayed by name, a name must have been assigned to the receiver, locomotive and the train category. The assignment of a name to a LISSY receiver and the train category is outlined in Chapter 9.6, for assignment of a name to a locomotive address see Chapter 5.6.5.

9.4 Selecting the Displayed Group

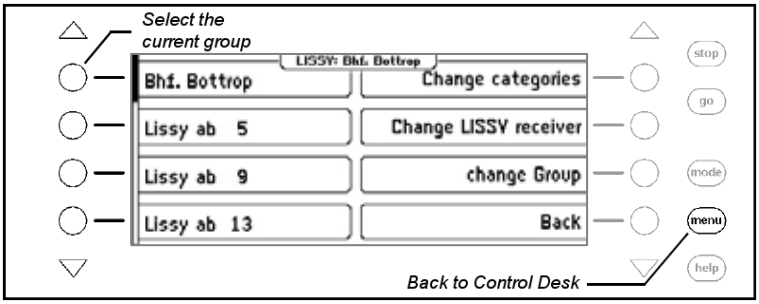
In LISSY Mode a group of 4 LISSY receivers displayed. These groups of 4 receivers can be freely defined and assigned a name. The [menu]-key is used to call up the LISSY Menu and a different group can be selected to be displayed.

Procedure:

Step 1



Step 2



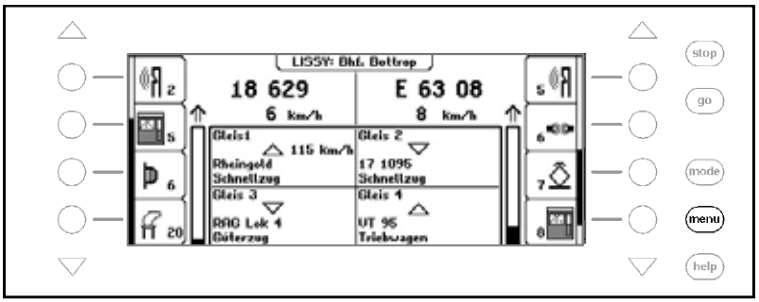
9.5 Adding a new or Changing a Group

The Intellibox II can have up to 64 different LISSY Groups. Each Group can contain any four desired LISSY Receivers. Every LISSY Group is assigned a name and that can be used to select it. LISSY Groups can be newly added, edited or deleted.

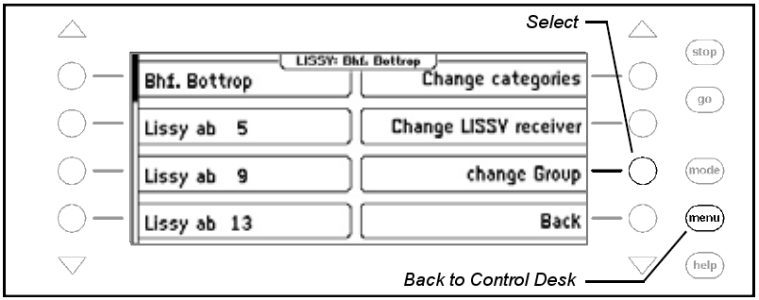
9.5.1 Adding a new Group

Procedure:

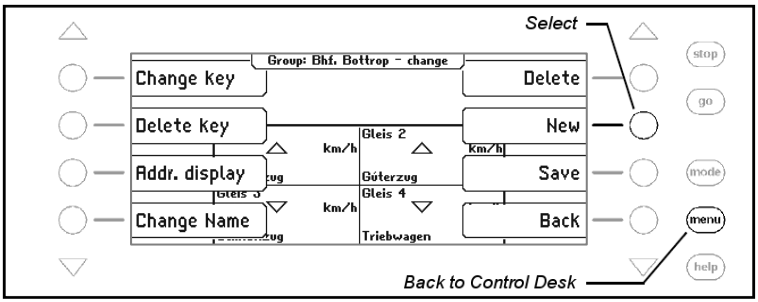
Step 1



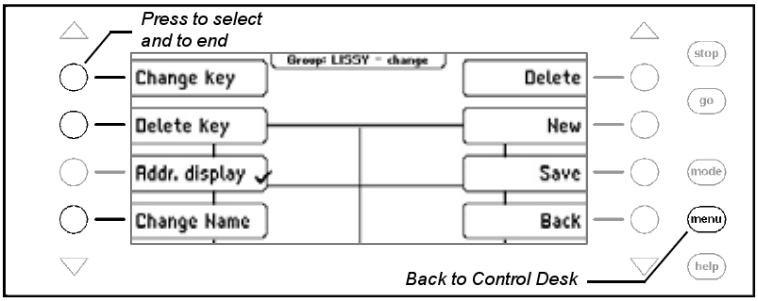
Step 2



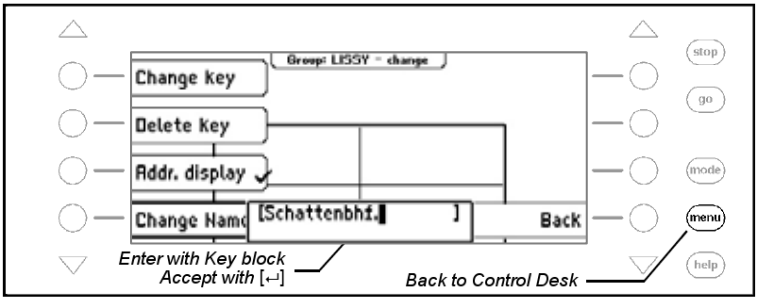
Step 3



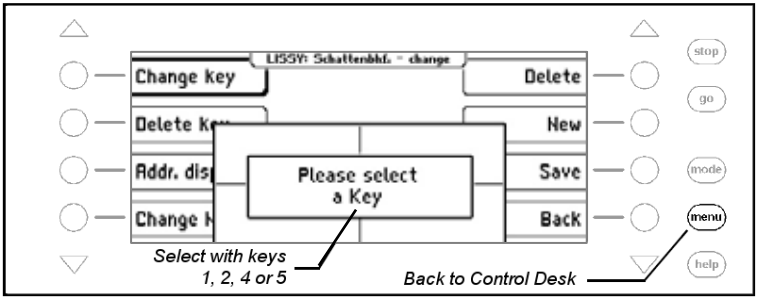
Step 4



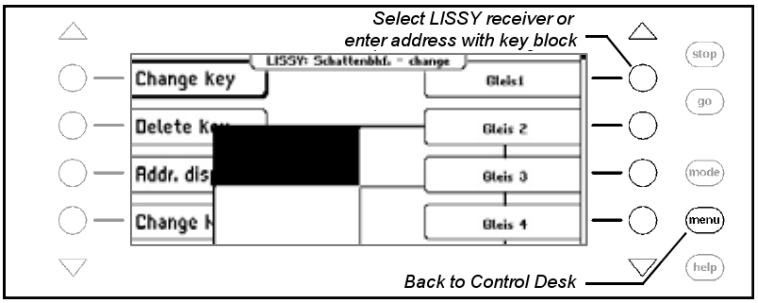
Step 5



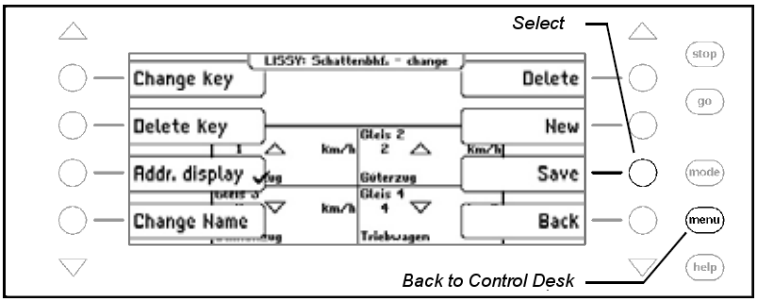
Step 6



Step 7

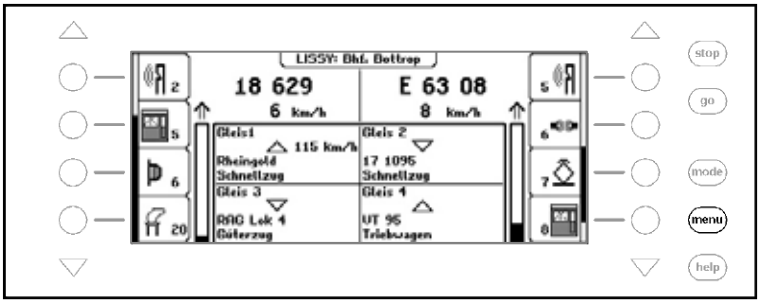


Step 8

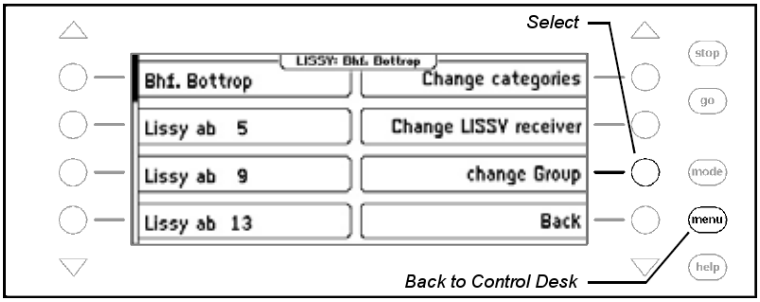


9.5.2 Changing a Group

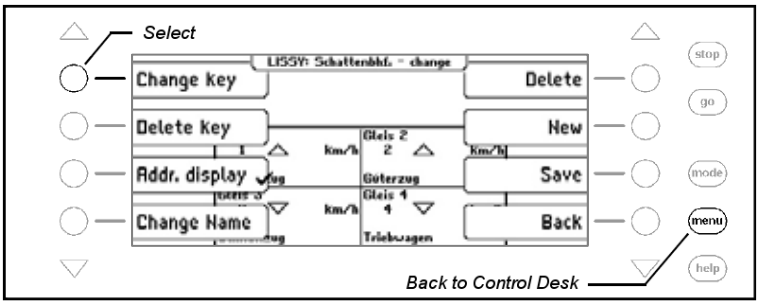
Step 1



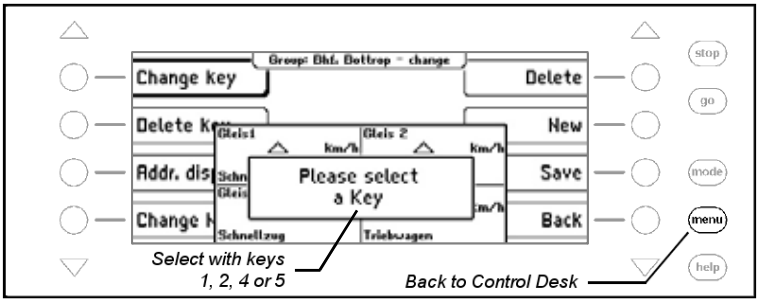
Step 2



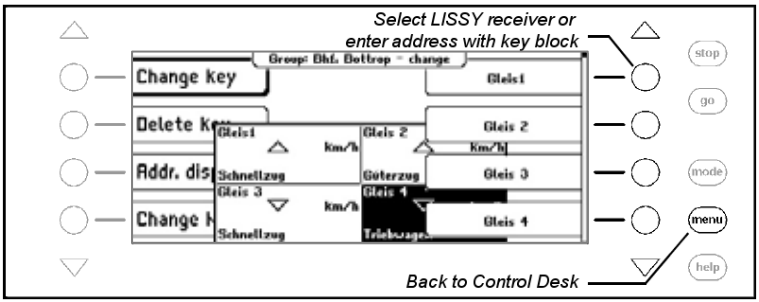
Step 3



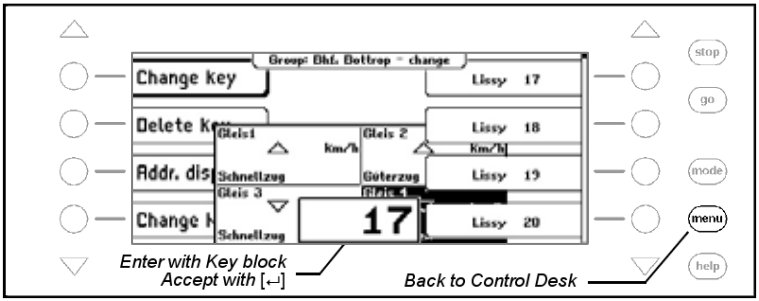
Step 4



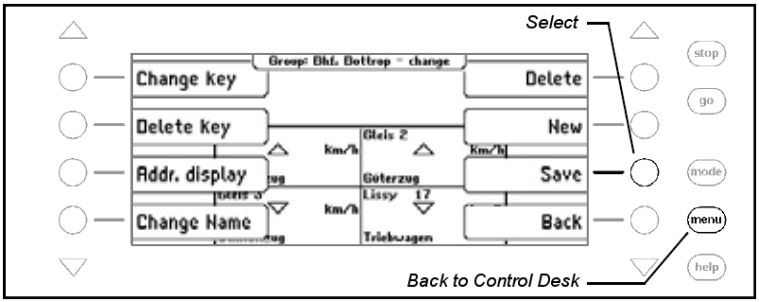
Step 5



Step 6

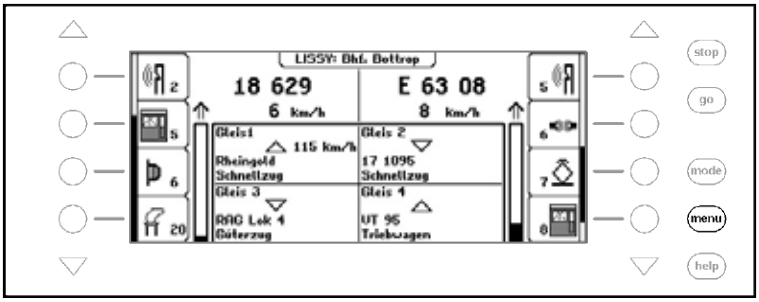


Step 7

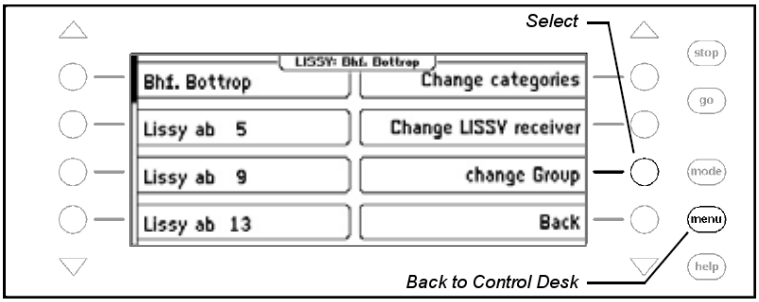


9.5.3 Deleting a Group

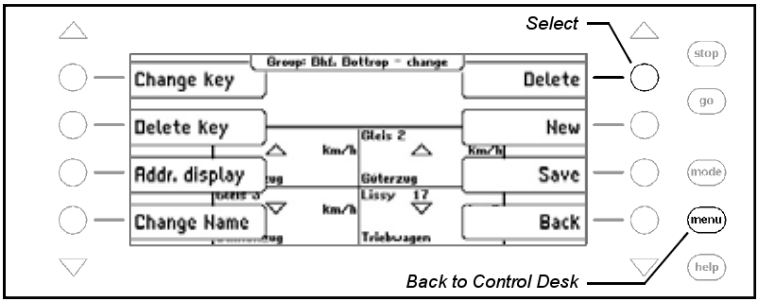
Step 1



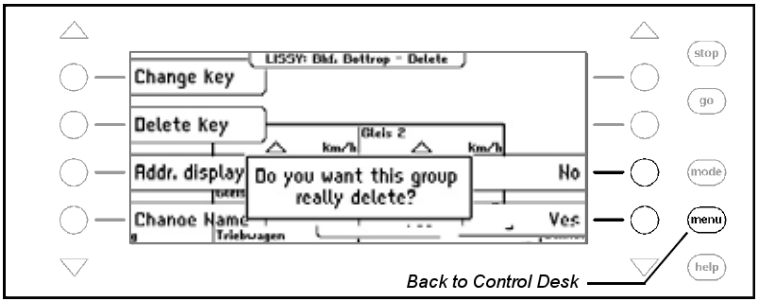
Step 2



Step 3

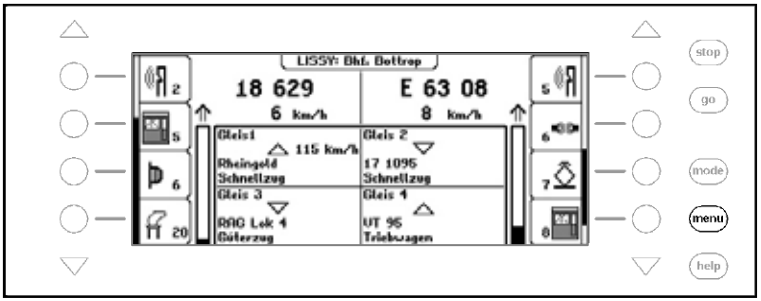


Step 4

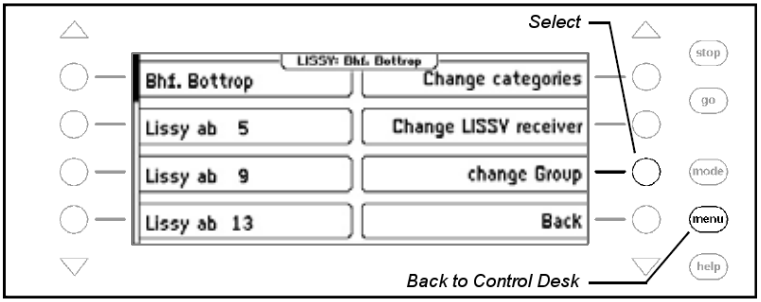


9.5.4 Switching the Address display on/off

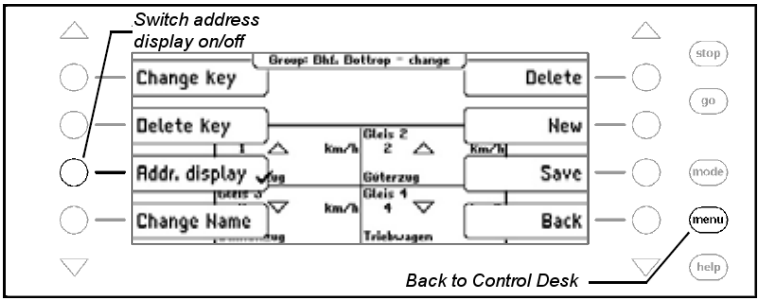
Step 1



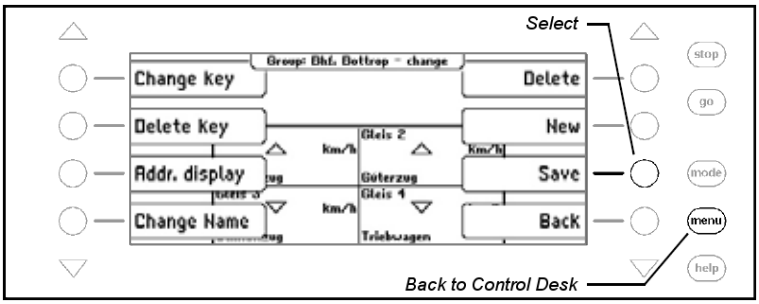
Step 2



Step 3



Step 4

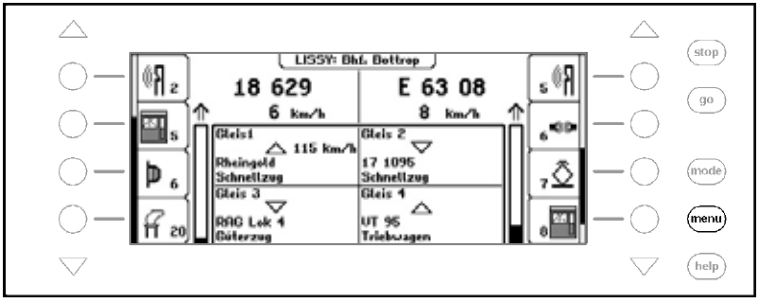


9.6 Assigning a Name to a Train Category and LISSY Receiver

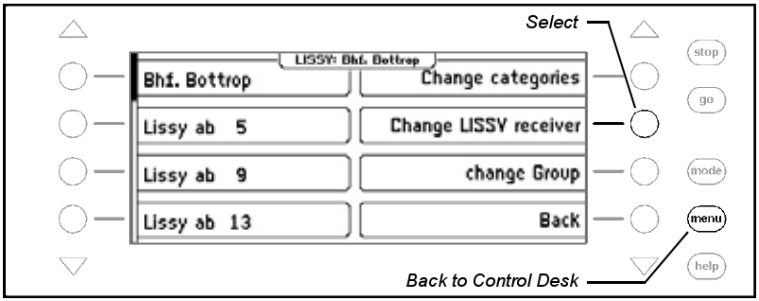
Names can be assigned to LISSY receivers and Train Categories so that all LISSY messages are readable. The assignment is done from the LISSY Menu.

Assigning a Name to a LISSY Receiver

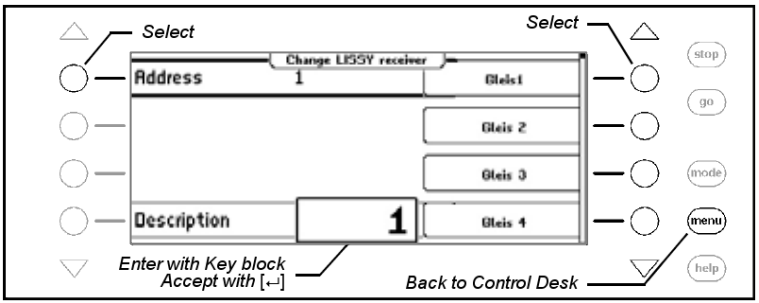
Step 1



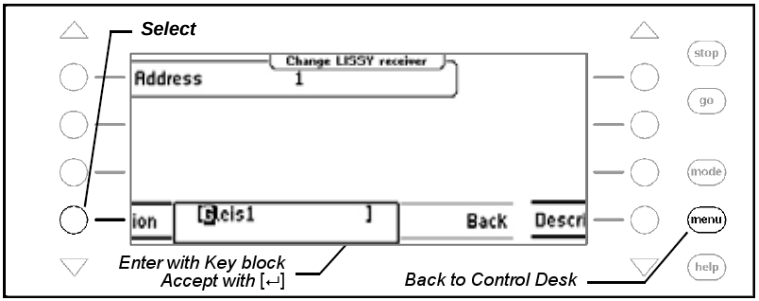
Step 2



Step 3

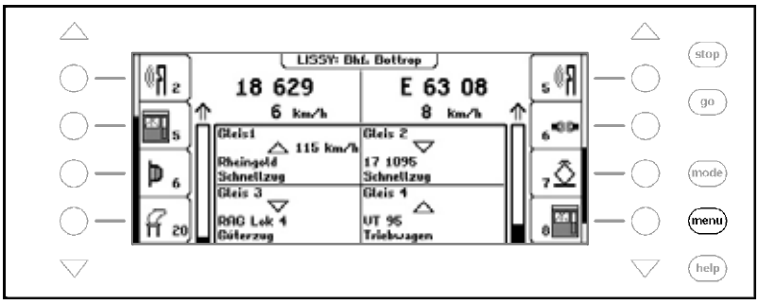


Step 4

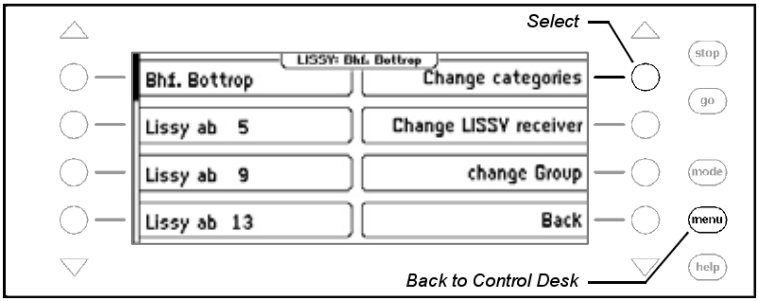


Assigning a Name to a Train Category

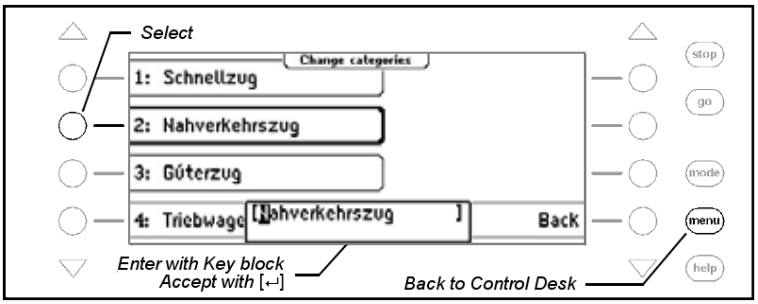
Step 1



Step 2

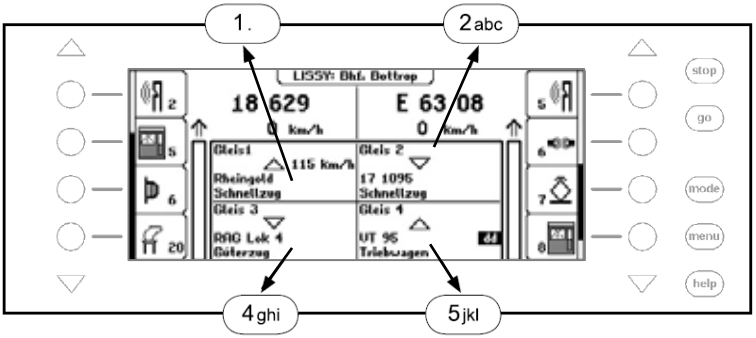


Step 3

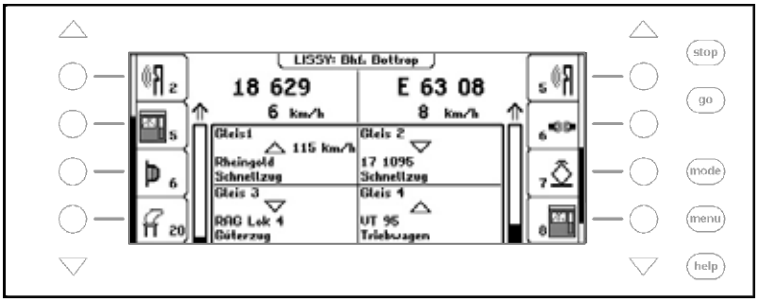


9.7 DirectDrive

Control of a locomotive passing one of the displayed LISSY receivers can easily be transferred to a throttle by a simple key press, without having to enter the locomotive address. For this the displayed LISSY receivers have been assigned to the digits 1, 2, 4 and 5 as shown below:



Select one of the displayed locomotives with one of the digit keys 1, 2, 4 or 5 and it is identified in the display with a "dd". The [←]-key can transfer it to the left controller. The [→]-key can transfer it to the right controller.



10. The Infrared Remote Control IRIS

10.1 Description of the Infrared Remote Control

10.1.1 Function Mode

The Intellibox Infrared Controller IRIS extends the Intellibox II with a wireless remote control for interiors, with a range of up to 10m.

The IRIS remote control can be used to select all locomotives on a Digital layout and control their direction, speed and special functions. IRIS can switch all solenoids and activate all routes which are stored in an Intellibox II.

IRIS is provided with 4 channels, operable with keys A, B C and D. Each channel can control its own locomotive or solenoid. If for e.g. channel A controls locomotive with address 15 and solenoids 1 to 4 then channel B can control locomotive 20 and solenoids 13 to 16. If the remote control is active, one can quickly switch from one locomotive to another. If a number of players are using different hand controls (up to 4 with an Intellibox), each can operate on a different channel without affecting the locomotives of the other players, provided they don't have the same address. You can also operate a different set of solenoids selected on each channel. The addresses selected for each channel are saved in the Intellibox and are still available after switching off and on again. By default channel A, B, C and D are assigned locomotives 1, 2, 3 and 4 respectively. By default all channels control solenoids 1 to 4.

10.1.2 Operating controls

Control LED

The LED blinks as long as a key is being pressed on a remote control.

Selection keys

- L Starts the selection of a locomotive address
- S Starts the selection of a solenoid address
- T Starts the selection of a route
  Activates routes
- S Turns track power on and off

Number keys

0 to 9 To enter locomotive, solenoid and route addresses

Locomotive control

+ Increases the locomotive speed step-by-step
- Decreases the locomotive speed step-by-step
< Reverse travels and emergency stop
> Forward travels and emergency stop

Special functions

e Special function Light On
o Special function Light Off
a to **d** Special function f1 to f4
f Switch over to functions f5 to f8
g Switch over to functions f9 to f12
R Switch solenoid round or red
G Switch solenoid straight or green

Channel Selector

A to D Channel Selector keys

10.1.3 Locomotive Control

Selection of transmission channel

Every transmission channel can control locomotive addresses without affecting the other channels.

- The transmission channel is selected with the A to D keys.

If every channel is programmed with locomotive addresses, it allows rapid changing of the locomotive by simply pressing one of the channel selector keys. If more people want to play on the layout, each player used their own remote control. Select a locomotive by entering the new address.

Entering a Locomotive address

- Press the L key
- Enter the desired locomotive address using 0 to 9 keys. The last 4 digits entered will be used as the address.

Note: The selection mode is exited by pressing the L key again.

The locomotive address won't take effect until one of the following functions is activated:

e / o – Light on or off
+ / - – Speed up or down
< / > – Travel direction changed
a - d – Function activated

Example:

- L + 1 + e
  Locomotive address 1 is selected and the light is switched on.
- L + 1 + 2 + 3 + 4 + 5 + 6 + +
  Locomotive address 3456 is selected – only the last 4 digits are used for the address. **+** increases the speed.
- L + 1 + 2 + L + e
  The channel's Locomotive address is not selected because the L was pressed again. **e** switches on the lights in the active locomotive.

Speed Control

With the + and - keys the speed of the locomotive is increased or lowered respectively. If the keys are held the speed changes step-by-step until the key is released or the maximum speed has been reached or the locomotive is stopped.

Selecting direction

With the < and > keys the travel direction is set to reverse or forward respectively. If a key is pressed when the locomotive is in motion it will first do an emergency stop and then move in the selected direction.

Emergency stop

If either of the arrow keys is pressed while the locomotive is running, first an emergency stop will be executed and then it will move off in the selected direction.

Light switching

The locomotive lights can be switched on with the e key and off with the o key.

Special functions

Keys a , b , c and d switch function f1 to f4 on and off.

Using the f "shift" key followed one of the a to d keys will switch f5 to f8. The g "shift" key does the same for f9 to f12.

If after pressing a "shift" key a key other than a function key is pressed, the shift mode will be cancelled.

The shift mode will automatically cancel if no key is pressed within 10 seconds of pressing either the f or the g key.

10.1.4 Solenoid control

Transmission channel selection

4 solenoids (e.g. turnouts) can be switched via each transmission channel without affecting the other channels by using the red/green keys.

A transmission channel is selected key A , B , C or D .

If the turnouts are set up on all 4 channels they can quickly switch up to 16 turns by changing channels.

If more people want play on the layout using individual remote controls then each player uses a different transmission channel. In this case, the turnouts must be accessed, by entering the appropriate address.

Entering a turnout address

The solenoid switches are programmed with turnout addresses by setting an address for the left key pair. The other 3 pair will automatically have the next 3 addresses.

- Press the **S** key

Key in the desired turnout address, using the numeric keys **0** to **9**. The last four digits will be used as the address.

Note: The selection mode is ended by pressing the **S** key again.

- The turnout address will only take effect after one of the following keys is pressed:

  R – Switches the solenoid with the underlying address to round or red.
  G – Switches the solenoid with the underlying address to straight or green.

Example:

- S + 1 + P

  The left red/green key pair is programmed to the base address of 1. The other 3 key pairs are automatically programmed to the following 3 addresses. The **p** key switches the solenoid with the selected address (here 1) to round or red.

- S + 5 + 6 + 1 + 2 + 3 + 4 + q

  The left red/green key pair is programmed to the base address of 1234, because only the last four digits are accepted. The other 3 key pairs are automatically programmed addresses 1235 to 1237. The **q** key switches the solenoid with the selected address (here 1236) to round or red.

- S + 1 + 2 + S + P

  No solenoid address is programmed because the selection mode is cancelled by pressing the **S**-key. The left red key **p** switches the solenoid with the previously selected address to round or red.

Switching of solenoids

Solenoids are switched by pressing the red or green keys for respective address. If the left red/green key pair was programmed for turnout address 11 then the other three pairs have been programmed to addresses 12, 13 and 14.

R – switches the solenoid to round or red
G – switches the solenoid to straight or green

10.1.5 Activating a Route

Routes in the Intellibox II are activated by feedback instructions with the “occupied” state. Valid values for route activation in Intellibox II are 1 to 2048. The remote control always sends the “occupied” state. i.e. routes that are to be activated by IRIS must be configured to be activated be an “occupied” message. This must be taken into account when programming the individual routes in the Intellibox II.

- Press the **T** -key

Enter the feedback address for the desired route with the keys **0** to **9** .

- Press the **T** -key again to activate the route

Note: *If after entering the digits another key is pressed no route is activated.*

The last four digits are evaluated.

Example:

- T + 1 + T

The route which is called by feedback address 1 “occupied” is activated.

- T + 1 + 1 + 1 + 2 + 3 + 4 + T

The route which is called by feedback address 1234 “occupied” is activated since only the last four digits are evaluated.

- T + 1 + e

No route is activated because selection was not terminated with the T -key. e switches on the light of the currently controlled locomotive.

10.1.6 Power on/off

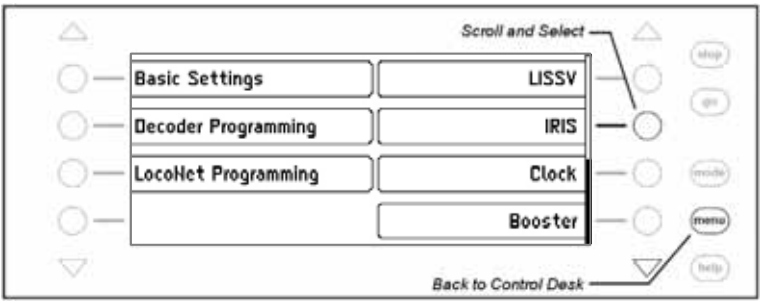
Track power to the layout can be switch on and off with the s -key.

10.2 Intellibox Display Mode IRIS

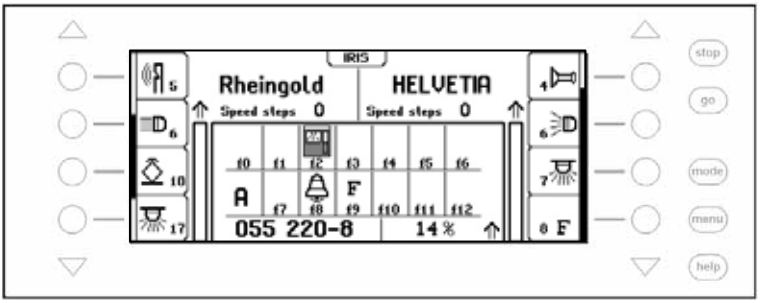
10.2.1 Selecting IRIS Mode

In Control Desk Mode the [mode]-key is pressed and the IRIS Mode can then be selected from the Main Selection Menu.

The middle of the display changes in context with the selection of the mode.

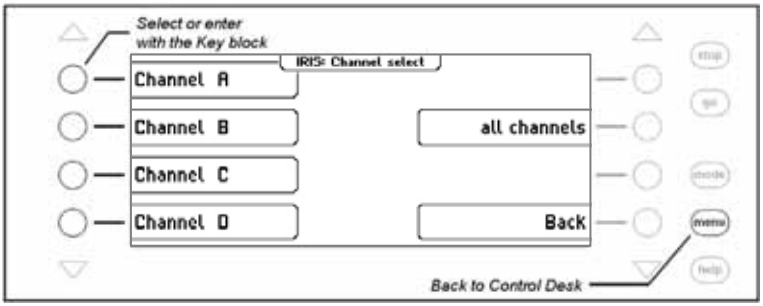


In IRIS Mode the Intellibox display shows all the activated items of the selected transmission channel, in the middle part of the display.



10.2.2 Selecting the Transmission Channel

If the [menu]-key is pressed in IRIS Mode the selection menu appears for selecting the desired transmission channel.



The 1, 2, 3, 4 and 0 keys from the numeric key block can also be used for selecting the IRIS channel to monitor. Where:

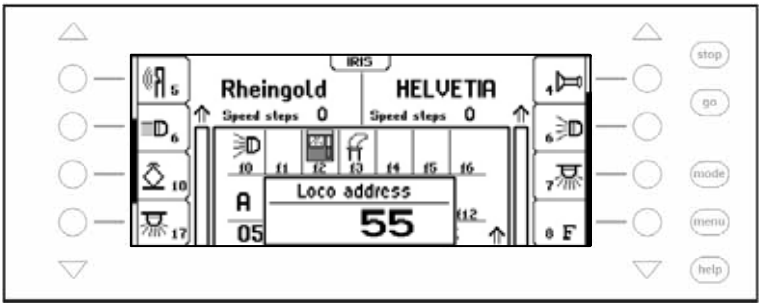
Key 1 = Channel A
Key 2 = Channel B
Key 3 = Channel C
Key 4 = Channel D
Key 0 = all channels are monitored

10.2.3 The Displays

Locomotive address

If L -key is pressed on the remote control the Intellibox shows the locomotive address of the current locomotive of the current transmission channel in the middle of the display. The data about locomotives controlled by both throttles of the Intellibox II continue to be displayed.

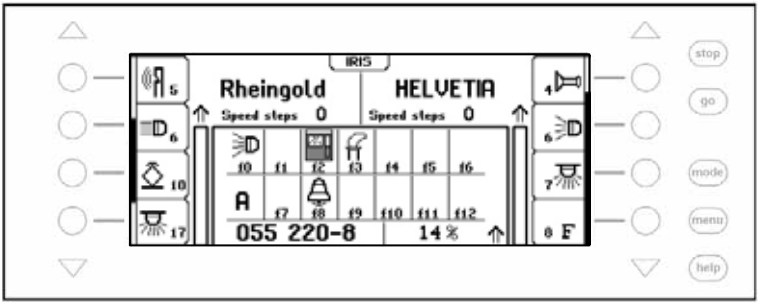
If digits are entered on the remote control in order to change the locomotive the entries can



be monitored in the display.

Speed, Direction and Special functions

If the locomotive speed or direction are changed it is shown in the Intellibox II display:

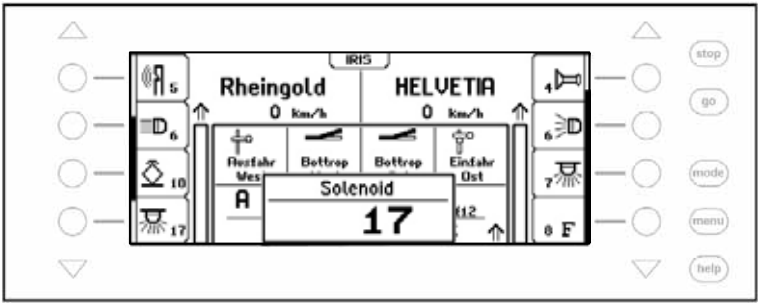


The display shows the locomotive name or if no name is available the locomotive address, and the present speed in percent of the maximum, and the actual direction and state of the special functions f0-f12, of the currently controlled locomotive.

If a special function is switched by the remote control the display shows the symbol for the special function if it is switched on and an empty field when it is switched off.

Turnout Addresses

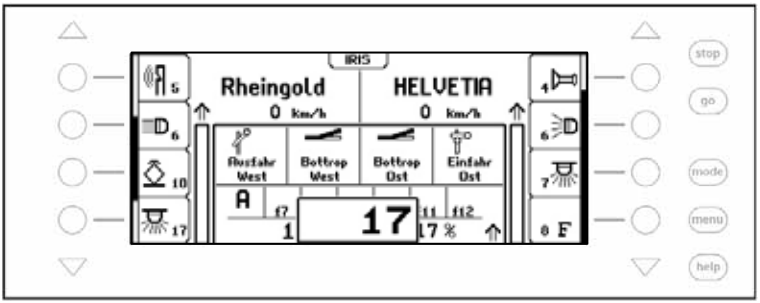
If the **S** -key is pressed on the remote control, the valid turnout address of the left most key pair is shown.



If the turnout address is changed on the remote control the corresponding entries can be seen in the display.

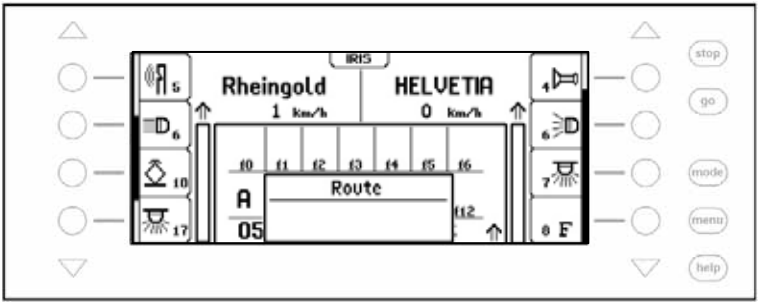
Turnout Status

If a solenoid is switched by remote control the display, for a short time the display shows the status of all four solenoids that currently are controlled by the remote control:



Route addresses

If the **T** -key is pressed on the remote control it is shown on the display:



If subsequently the digits for a route address are entered they can be monitored on the display.

If the entry is complete and the **T** -key is pressed again the route is switched and the route number disappears after a short time.

NOTE: *Routes are activated by feedback addresses and not by their route number (1-80). Routes which are to be activated from an IRIS must have their feedback address defined with the "occupied" status, since the IRIS and LocoNet IR Modules can only send feedback messages with "occupied" status to activate routes.*

11. Model Time Clock

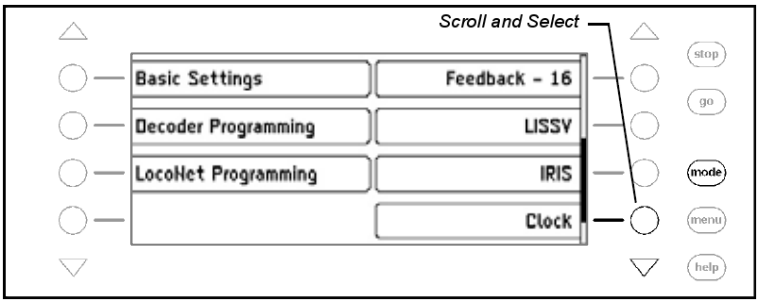
11.1 Description

The Intellibox II has a model time clock which can be displayed in the middle part of the display. It displays the time and weekday. The Model time can be accelerated relative to real time by a factor of 1 to 127.

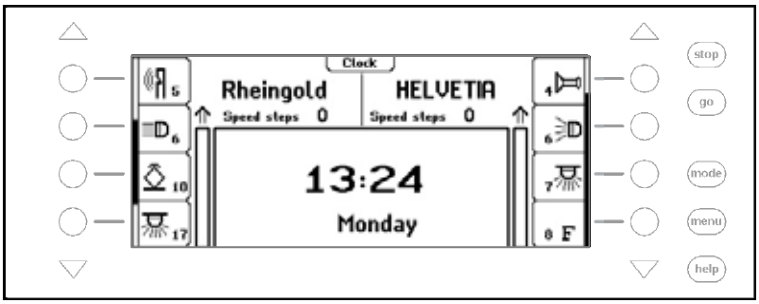
A number of clocks can be connected to the LocoNet and synchronised by a network Synch pulse. For this operating mode the Intellibox II Model clock generates a Master clock to synchronise all other clocks. This way the Intellibox II can synchronise the internal clocks in the Display 63450, IntelliLight 28000 and in the SoundDircetor 38000.

11.2 Selecting the Clock Mode

The Model Clock is selected by pressing the [mode]-key. The Main Menu from which Model Clock is selected will be shown.



The display changes to match the selected mode.



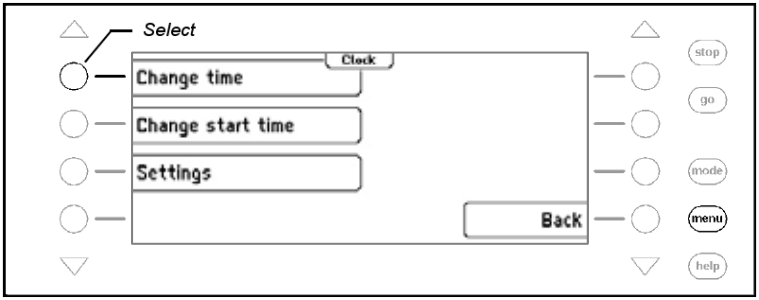
11.3 Clock Settings

To set the model clock the [menu]-key must be pressed. The Clock Menu appears in which the following settings can be carried out:

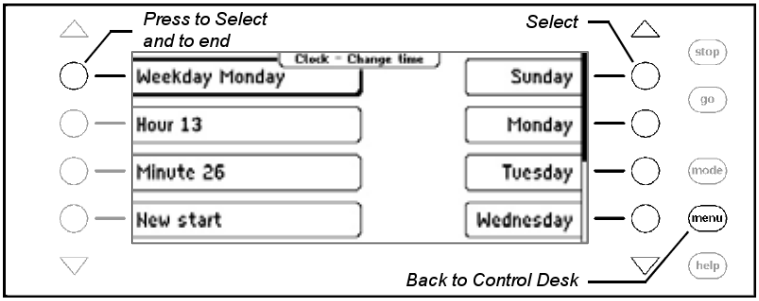
- Time and Weekday
- Time and Weekday when the Intellibox powers on
- Time acceleration and synchronisation of other clocks (Special Settings)

Procedure:

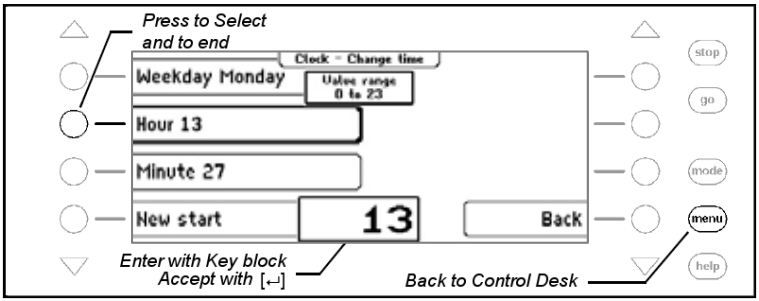
Step 1



Step 2



Step 3



11.3.1 Special Settings

The special settings of the Model Time clock are done under the “Settings” submenu.

Acceleration factor

Here an acceleration factor relative to real time can be specified for the model. A reduction of 1:1 corresponds to real time. A reduction of 1:60 means that in one second of model time one minute has passed (60 seconds). Values between 1 and 127 are possible

Synchronization

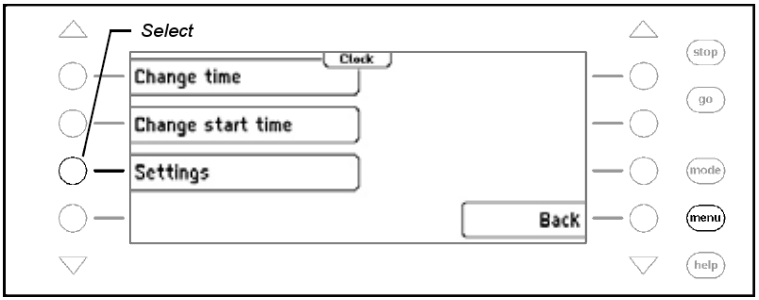
Here the Synchronisation of other model time clocks that are connected to the LocoNet can be switched on and off.

All Synch.Puls

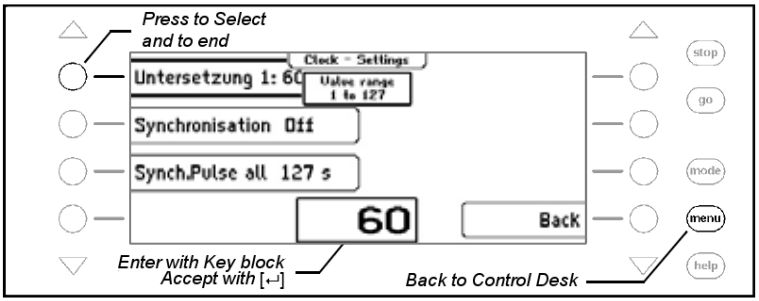
This specifies at what interval a synchronization pulse is to be sent to the model clocks attached to the Intellibox. Values are permissible between 1 and 127 seconds.

Changing Special Settings

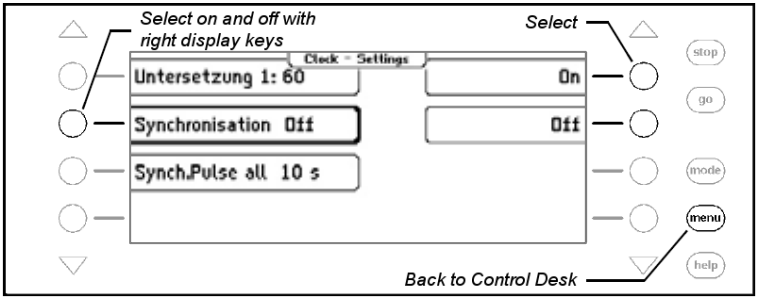
Step 1



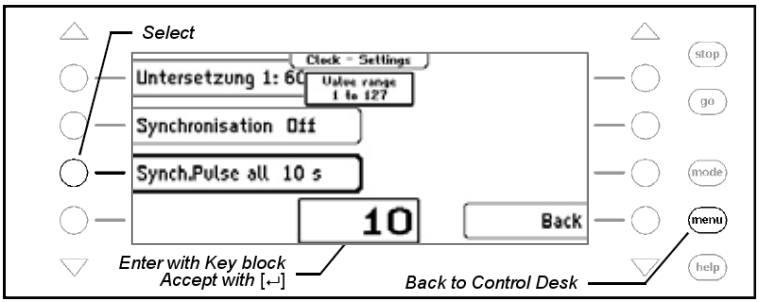
Step 2



Step 3



Step 4


Select
Clock - Settings
Untersetzung 1: 60
Value range
1 to 127
Synchronisation Off
Synch.Pulse all 10 s
10
Back
stop
go
mode
menu
help
Enter with Key block
Accept with [↵]
Back to Control Desk

12. The Programming Mode

12.1 Programming Track

Programming of decoders is done on the programming track. That is either a normal section of track which has been equipped for this purpose or a siding as is the case on many model railway layouts.

The Programming track is connected to terminals 1 and 2 of the 6-way screw terminal plug which have programming track power.

Very Important: *The track must be isolated on both sides! On 3-Rail track the centre rail* ***and*** *both rails must be isolated! During programming the isolations must not be bridged by a bogie or wagon with interior lighting.*

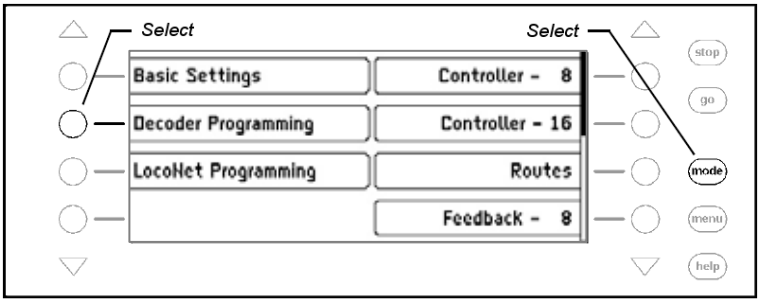
The Programming Track behaviour must be setup in the “Programming Track” submenu (Chapter 4.7) of the Intellibox II Basic Settings Menu. It is preset to “automatic”, i.e. if, on a siding, the power is automatically switched from digital power to programming power when programming mode is selected.

A track section that is setup for programming can be configured to “Only Programming Track”.

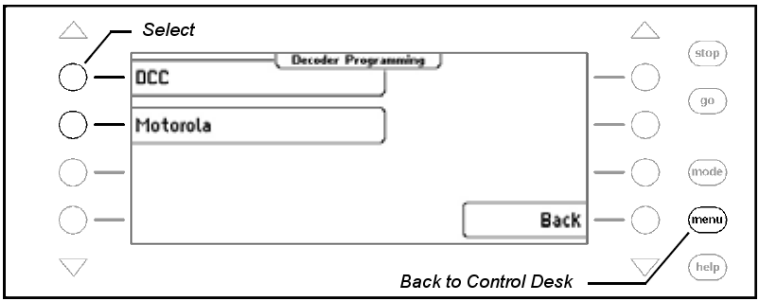
12.2 Activating Programming Mode

The Programming mode is selected by pressing the [mode]-key. The Main selection menu is then displayed and Programming mode can be selected.

Step 1



Step 2



12.3 Programming of DCC and Multi-protocol Decoders

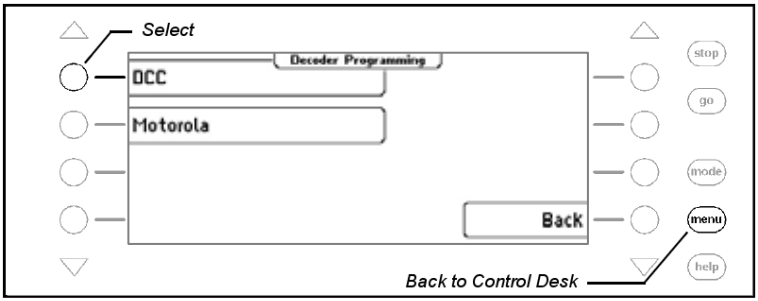
The programming of DCC decoders is accomplished with different programming methods depending on make. The Intellibox II supports all common programming methods. DCC decoders can be programmed on the normal track or programmed and read on a programming track. Uhlenbrock DCC and multi-protocol decoders are programmed using CV programming.

12.3.1 Reading and programming CV Plain text

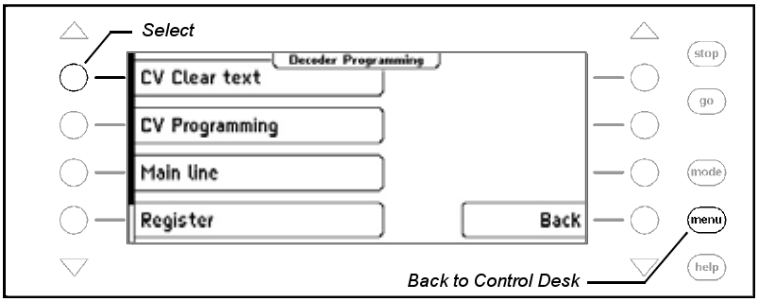
The most important CVs of DCC decoders are programmed with the “CV Plain text” menu. All of these CVs are available by their function names and do not have to be selected by number. The most important CVs of a DCC decoder can be read and programmed with this function: the address, the minimum, middle and maximum speed, the starting and brake delay, as well as the decoder configuration and the decoder manufacturer.

Activating CV-Plaintext Programming

Step 1

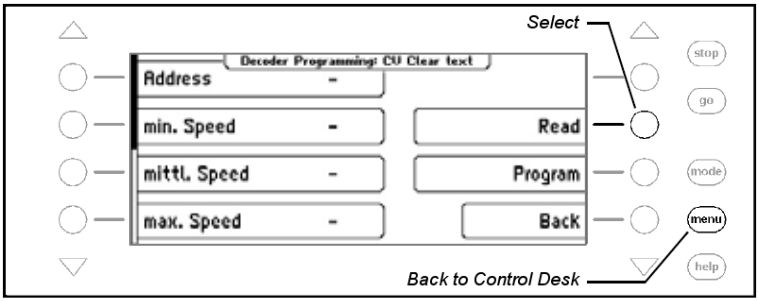


Step 2

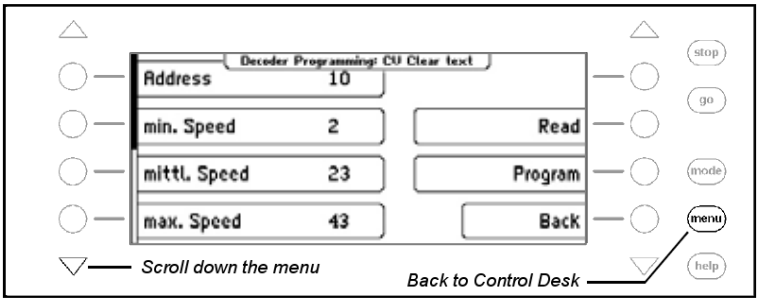


Read CVs

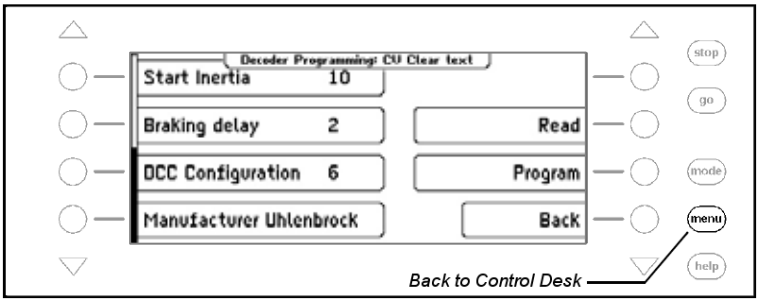
Step 1



Step 2

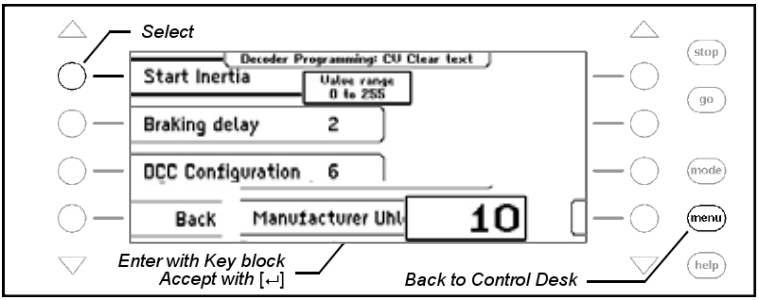


Step 3

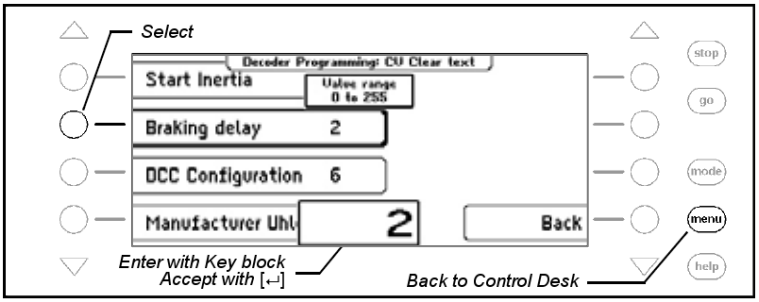


Programming CVs

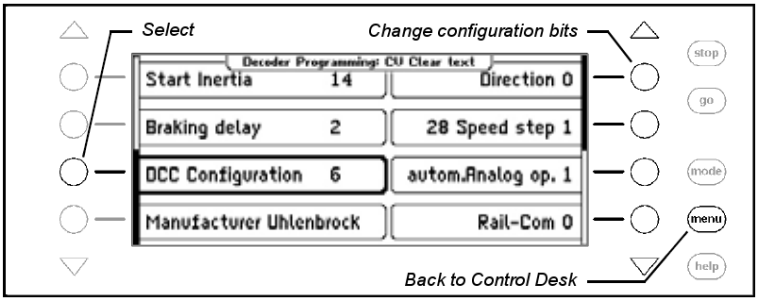
Step 1



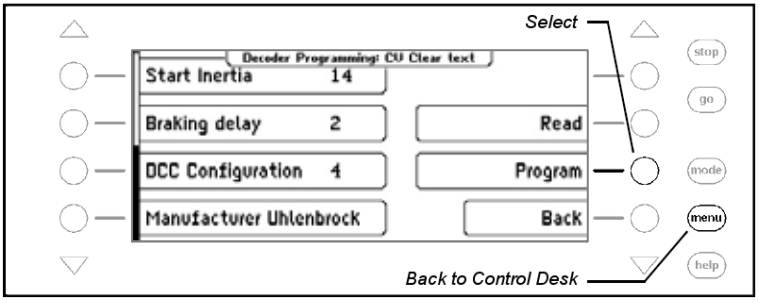
Step 2



Step 3



Step 4



Important: *When programming long addresses (>127) with this submenu the decoders CVs 17, 18 and 29 are automatically used. After this programming the short address in CV1 is no longer active.*

When programming short addresses (<128) with this submenu CV1 is automatically used. After this programming the long address in CV17 and 18 is no longer active.

12.3.2 Programming and reading individual CVs

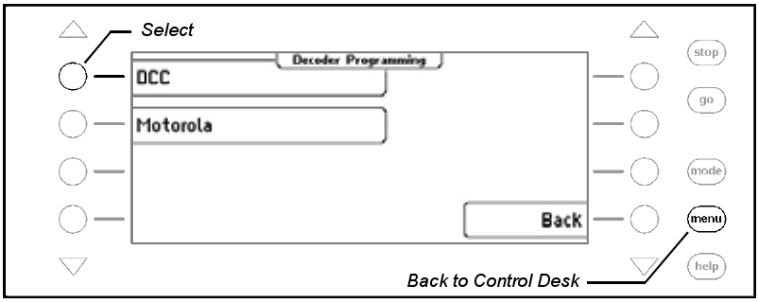
The menu “CV-programming” is used to program DCC decoders that expect programming of up to 1024 configuration variables (CV). CV programming is also known as “Direct programming“.

NOTE: *For Bit numbering the Intellibox II expects digits from 0 to 7. In some decoder manuals Bit numbers use 1 to 8. This must be translated accordingly.*

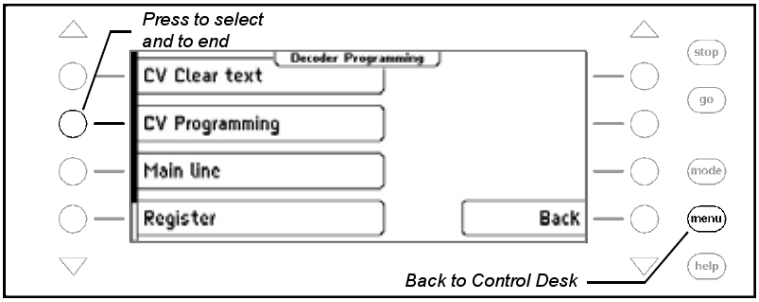
Note: *If the "Change bit" programming mode is not supported by the decoder an "Error" message appears on the display i.e., programming of individual desired bits can not be accomplished under this Menu.*

Activating CV Programming

Step 1

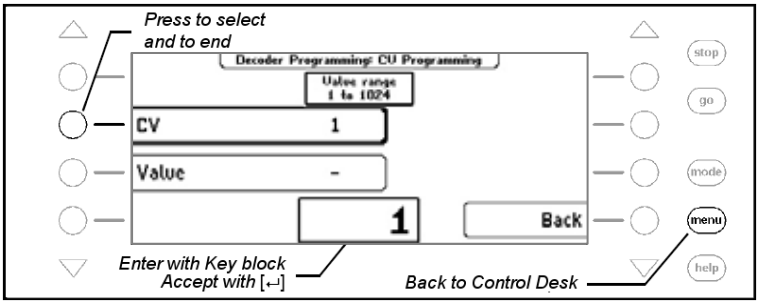


Step 2

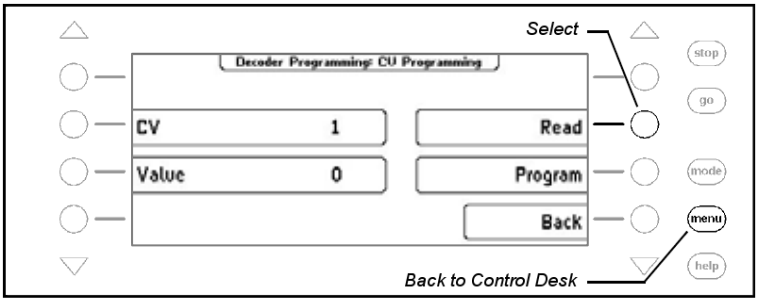


Read CV

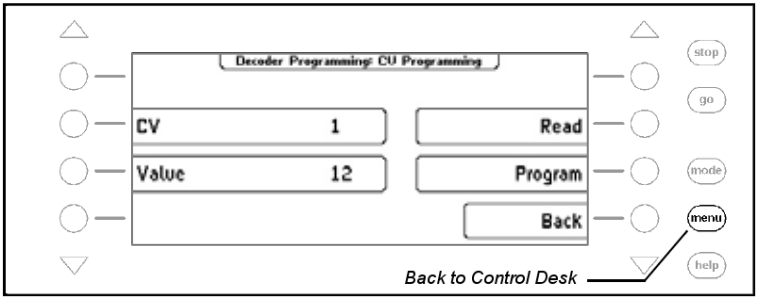
Step 1



Step 2

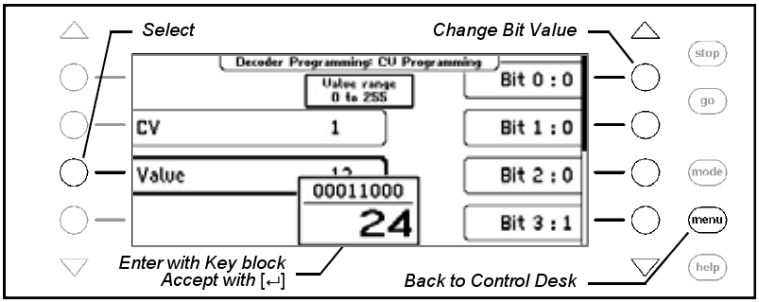


Step 3

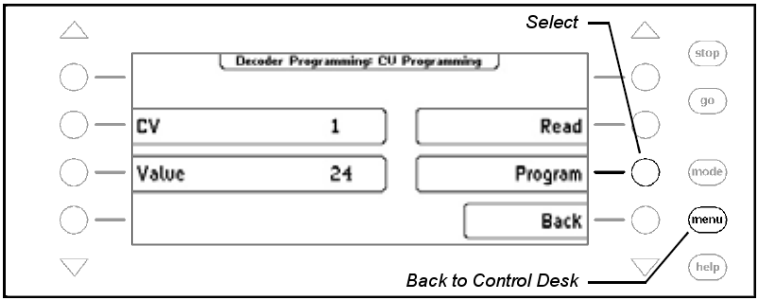


Programming CV

Step 1



Step 2



12.3.3 Mainline Programming

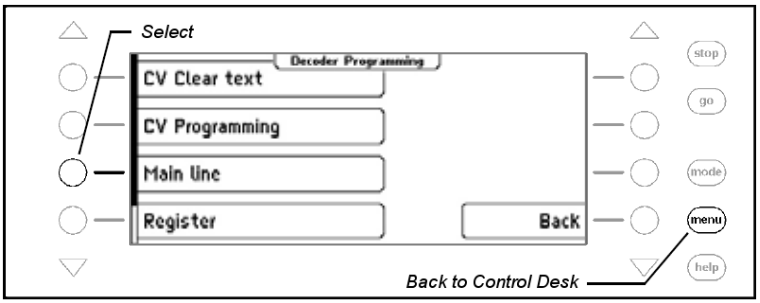
DCC decoders can be programmed on the “Mainline” with the Mainline Menu. During normal running operation for example, simple corrections can be quickly made to the vehicle’s start inertia and brake delay.

The decoders are programmed according to CV programming method. Reading of the decoder is not possible on the mainline.

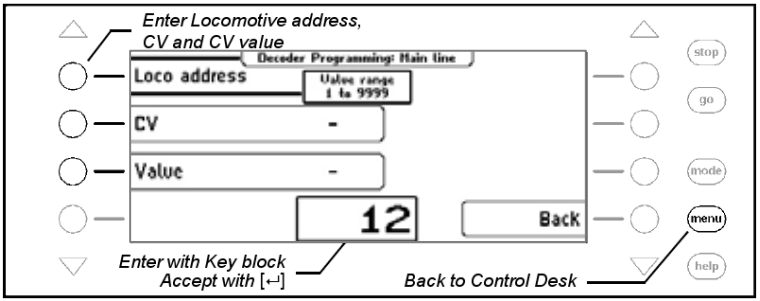
Note: *Decoders can only be programmed on the mainline while the vehicle is stationery. Speed step “0” must therefore be for the particular locomotive.*

Procedure:

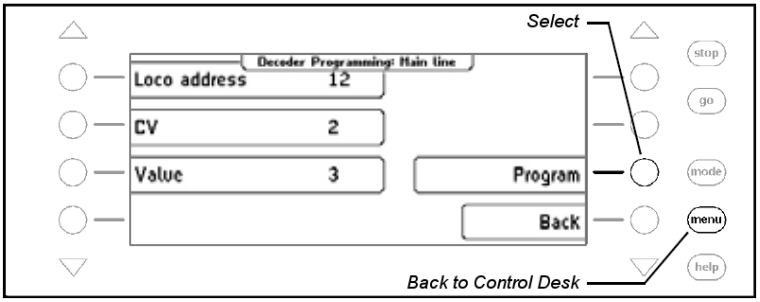
Step 1



Step 2



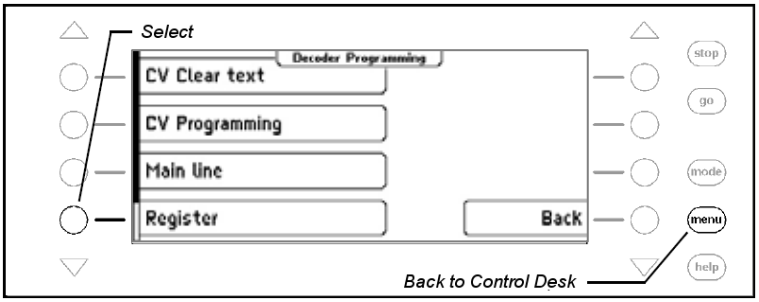
Step 3



12.3.4 Register programming and reading

Decoders which expect to be programmed via 8 registers can be programmed from the "Register" Menu. This is particularly the case with older decoders but some newer decoders also support this method of programming.

Step 1

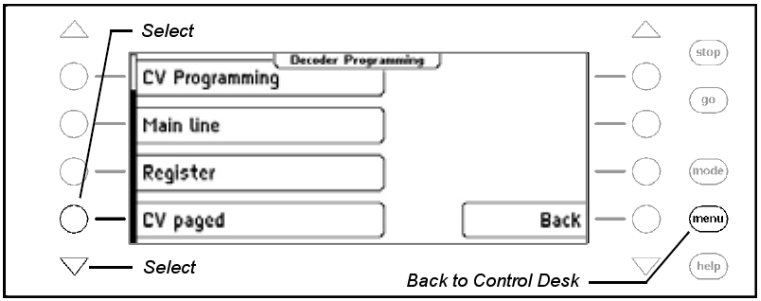


For reading and programming follow the same steps as for CV Programming.

12.3.5 Paged programming and reading

The "CV paged" Menu can be used to program DCC decoders that require up to 1024 Configuration variables (CV) are programmed by "paged" programming.

Step 1



For reading and programming follow the same steps as for CV Programming.

12.3.6 Error message during Programming of DCC Decoders

If an error occurs during programming or reading of a decoder an error message is shown in the top row of the display. The following messages are possible:

- **Error**

The relevant value could not be read during a read or programming process.

- **no loco**

There is no locomotive on the programming track or the locomotive has bad contact with the programming track.

- **in use**

The programming track is being used by another process.

- **Short circuit**

There is a Short circuit on the programming track.

- **Check connection**

The programming track has an inadmissible connection to the normal track.

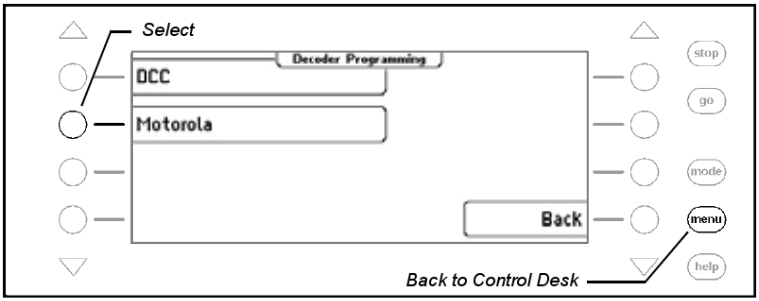
- **no paged Programming**

The locomotive decoder does not support paged mode.

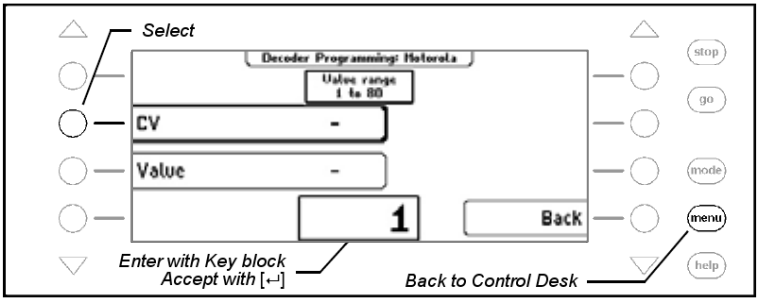
12.4 Programming of Märklin Motorola or mfx Decoders

Märklin Motorola or MFX decoders can also be programmed with the Intellibox II but individual CVs can not be read.

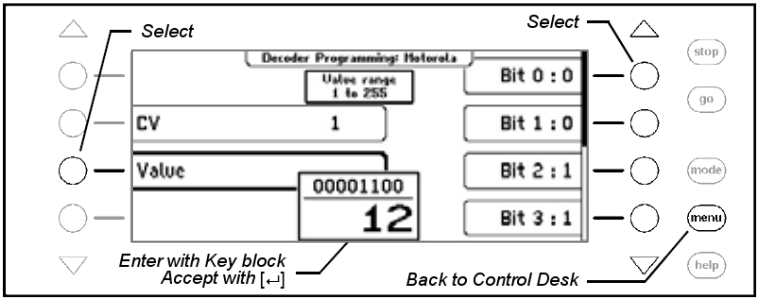
Step 1



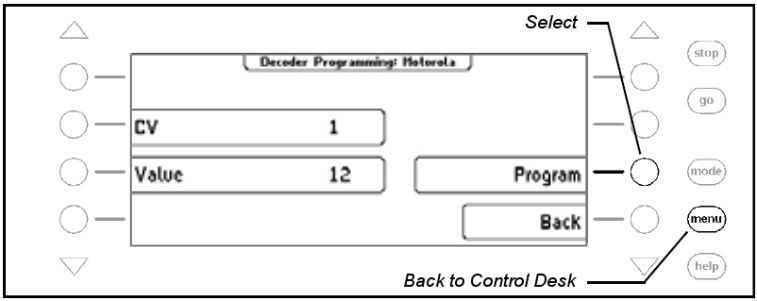
Step 2



Step 3



Step 4


Select
Decoder Programming: Motorola
CV 1
Value 12
Program
Back
stop
go
mode
menu
help
Back to Control Desk

13. LocoNet Programming

The Intellibox II Main Menu has a submenu for programming Uhlenbrock LocoNet modules such as feedback modules or Switch-Control.

The modules are programmed with LocoNet configuration variables (LNCVs for short). These LNCVs determine the settings and function of the module and can have different purposes in different modules.

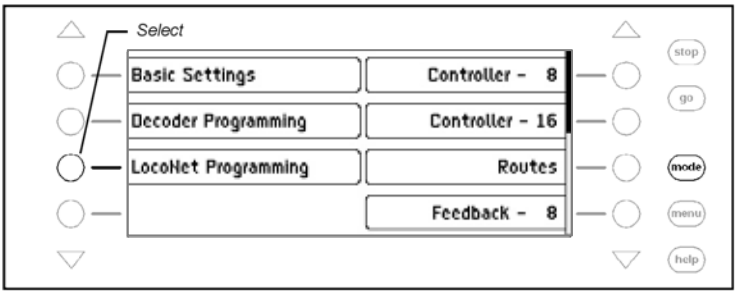
The description of the individual LNCVs and connection of the modules are outlined in the respective manuals.

If a number of the same type of module are used on a model railway layout they need a module address for programming, so that the center knows module being referred to.

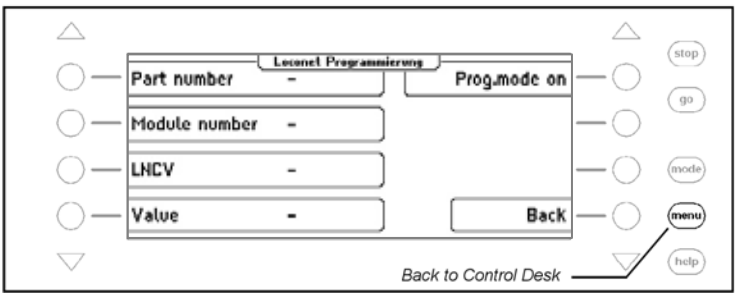
Every new module has a default address assigned to it. This can be obtained in the respective manual. The module address for every module is found in LNCV 0.

To program a LocoNet module, firstly connect it to the LocoNet. Then press the Intellibox II [mode]-key. The following appears:

Step 1

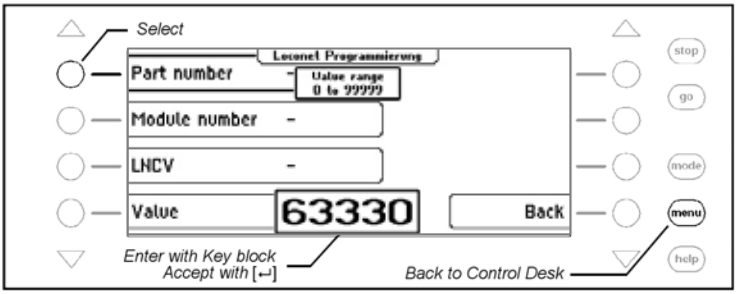


Step 2

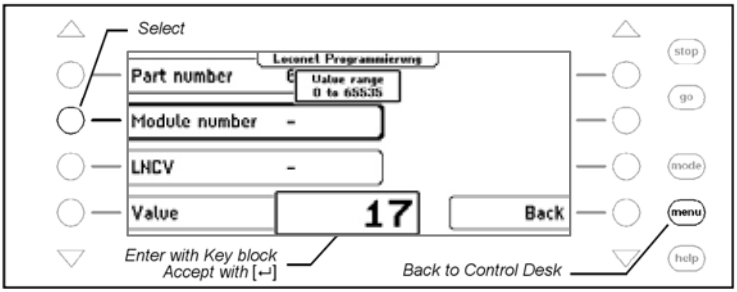


Placing a LocoNet Module into Programming mode

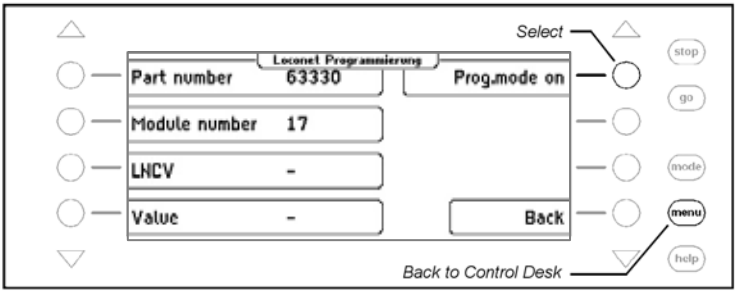
Step 3



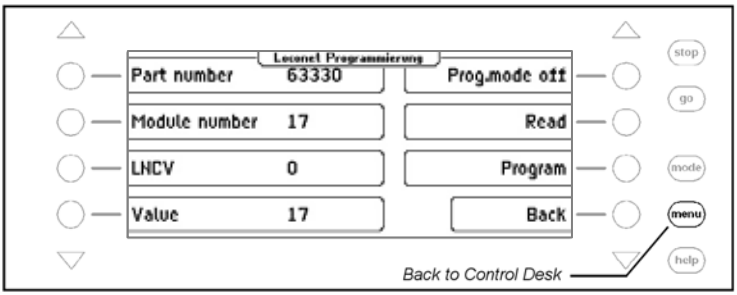
Step 4



Step 5

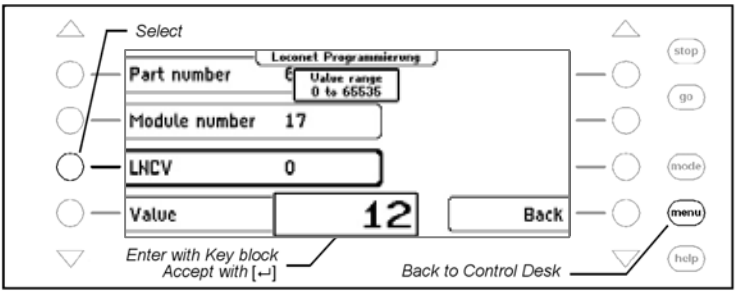


Step 6

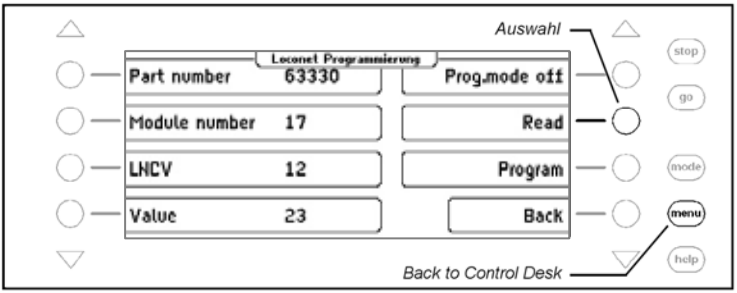


Read an LNCV

Step 1

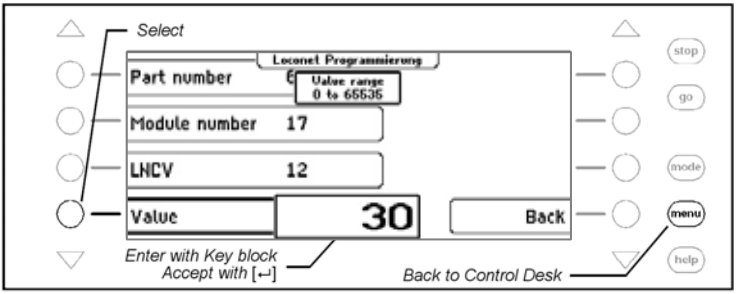


Step 2

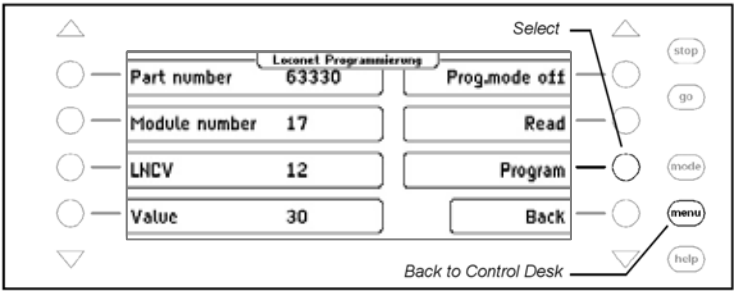


Program an LNCV

Step 1

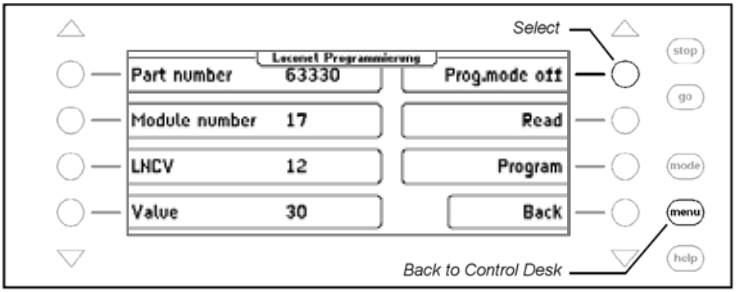


Step 2



Return the Module to Operating Mode

Step 3



14. The Interface

The compute Interface is a USB computer socket on IBM compatible PCs or Laptops.

To connect the Intellibox II with computer's USB socket use the Uhlenbrock USB interface cable Part No. 61070. The USB interface cable has a type A and B plug like a USB printer cable.

The computer interface is set to a transmission rate 115200 Baud by default.

The USB LocoNet interface in the Intellibox II can be used with Windows 2000, XP, Vista and Windows 7 operating systems. Support for Windows 95 and 98 Systems is not provided.

For layout control all PC control programs that support the LocoNet protocol can be used.

14.1 Interface Characteristics

The Interface operates with the following Baud rates: 19200, 38400, 57600, 115200.

The connection between PC and LocoNet is electrically isolated.

14.2 Interface in Betrieb nehmen

NOTE!

Before the Intellibox II is connected to the PC the driver software for the interface must be installed. Otherwise the PC system may malfunction.

To install the driver software read the Pdf file "USB-driver.pdf" on the Installation CD.

14.3 Communication PC - LocoNet (only for Experts)

Communications between the PC and LocoNet must be according to the following schema:

Send a message over the USB and wait until the message is echoed, before sending a new message. Process any other messages that are received during the waiting time.

LACK (Long Acknowledge Message) processing: if a LACK message can follow a message (see LocoNet documentation about messages for which a LACK can be a response), a flag in the ComPort must be set after the send and receive. If this flag is set and the next message is a LACK message it must be processed because it is a reply to the sent message. If the next message received is not a LACK the flag is cleared. This ensures a LACK is not processed for the wrong message.

Evaluating and Processing received Messages

By echoing transmitted messages that are initiated by the PC they don't have to be separately processed, as, after the transmission to the LocoNet they are located in the receive buffer and are handled by the receive routine.

NOTE: *Sending of messages without control of the echoed message can lead to errors in communication between PC und LocoNet. By using a Baud rate of 115200 Baud this control will not lead to a reduction in communication speed.*

15. Operation as Auxiliary Device

The Intellibox II can be attached to another LocoNet center (Intellibox IR, Intellibox Basic or Twin-Center) as an auxiliary device.

15.1 Operation

In the "Accessory Equipment" mode of operation the following functions are available:

- **Operating Panel** with all database functions
- **Booster** with 3A for an isolated section of track
- **Route Memory** for an additional 80 routes
- **LocoNet Power Feed** on LocoNet-T output for further LocoNet module without their own power supply, e.g. feedback modules, hand controllers
- **s88-feedback input**
- **DCC Booster output**
- **USB-LocoNet Interface**

15.2 Setting the Operating Mode

The Intellibox II is set to the layout as accessory equipment, when special option 844 is set to value 1.

Important: *To set the operating mode to "Accessory Equipment" the Intellibox is only allowed to be connected to its power transformer. No LocoNet connection to another Intellibox is allowed during this procedure. Only after changing the special option and restart of the Intellibox II is the interconnection permitted.*

Method:

- Press the m key
- Press the M key
- Scroll with the D key until you read “Special Options”
- Enter the menu with the R key
- With the numeric keys enter the number of the special option (here 844)
- Press the R key to move to the right section
- Enter the desired value (here 1)
- Press E-key to confirm the selection
- Press the m key to return to driving mode

15.3 Connect as Auxiliary Device

The rails of the isolated track section are connected to terminals 3 and 4 of socket 1.

The auxiliary device has its own transformer, which is attached to terminals 5 and 6.

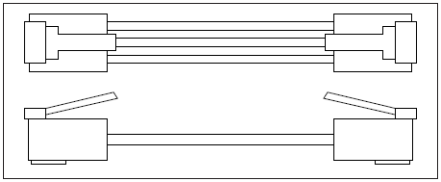
The LocoNet B socket of the accessory equipment is connected with the LocoNet B socket of the center.

For connection with the center a non-crossed LocoNet cable must be used. For this Uhlenbrock LocoNet cables 62015, 62025, 62045 and 62065 are available.

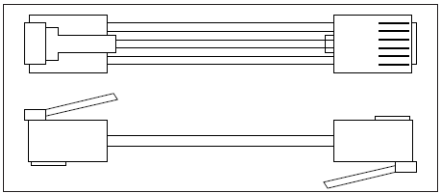
Attention: *If a crossed LocoNet cable (62010, 62020, 62040 and 62060) is used the polarity is swapped in the booster circuit and a short circuit will result when driving over the track isolation between the two track sections.*

The connections for LocoNet-T, s88-Feedback input, DCC Booster output and also the USB-Interface can be used as normal.

Information on the LocoNet cables



In the crossed version pin 1 is connected to pin 6, pin 2 to pin 5 etc.



In the non-crossed version the pins are wired 1:1, thus pin 1 connected to pin 1, pin 2 to pin 2 etc.

16. Software Update

The Intellibox II system software can be updated anytime via the in-built computer interface

Note: *The device does not have to be opened!*

NOTE!

Before the Intellibox II is connected to the PC the driver software for the interface must be installed. Otherwise the PC system may malfunction.

To install the driver software read the Pdf file “USB-driver.pdf” in the Installation CD.

Preparing the Hardware

- Supply the Intellibox II with power from a transformer.
- Connect the Intellibox II computer interface with the computer’s USB socket.
- Disconnect Intellibox II from the layout LocoNet.

Preparing the Software

The software update is available with the new software either from your dealer or you can download the files from the internet www.uhlenbrock.de

Method

- Switch the Intellibox II off for 5 seconds and back on again.
- Start the program “IB II Winupdate.exe” and follow the instruction on the screen.

Controlling the Software Version

Under “Software-Version” Menu in the Basic Settings you will find the new version number of the system software.

Procedure:

- *Press the [mode]-key*
- *Selection key “Basic Settings”*
- *Scroll to “Software Version” entry with the scroll key*
- *Selection key “Software Version”*
- *This displays the Version number of the system software and the Intellibox II serial number*
- *Pressing the [menu]-key returns back to the Control Desk*

Appendix

List of Special options

Special Option No. 25

In the factory setting the Intellibox only sends a data format only if a decoder with the appropriate format is addressed and is still in the refresh cycle. Alternatively the Intellibox can be setup so that this data format is constantly being output even if no address with this data format was called before.

For example the malfunctioning of some Motorola decoders can be prevented this way where they automatically switch into the analogue mode the instant they stop receiving the Motorola signal.

The input value is calculated by the following table. The values of the desired options are added.

Option	Value
DCC signal only if required	0
permanent DCC signal	1
Motorola signal only if required	0
permanent Motorola signal	2
Selectrix signal only if required	0
permanent Selectrix Signal	4

Example

If the Motorola signal is to be sent permanently and the DCC signal only if required the input is calculated as follows:

DCC signal only if required value = 0
Permanent Motorola signal value = 2
Selectrix signal only if required value = 0

The calculated sum (here 2) is entered as value for this special option.

Factory setting is 2.

Special Option No. 27

Time between the last command delivered to a locomotive and the time when the commands for that loco are purged from the refresh cycle

0 = no “purging”

1 -240 = Time in minutes between the last command and purging.

factory default = 2

Special Option No. 28

Defines the purging condition

0 = locomotive speed equal 0 (Factory default)

1 = locomotive speed not equal 0

Special Option No. 97

Determines the state of the Intellibox after switching it on.

0 = [stop] key is activated. The driving power is switched off.

1 = [go] key is activated. The driving power is switched on.

Factory setting is 1.

Special Option No. 818

Pause at the zero position for DC controller in steps of 10ms.
Factory setting = 50 (0.5 s)

Special Option No. 844

The Intellibox Basic can be attached to another LocoNet center (Intellibox IR, Intellibox basic or Twin-Center) as an auxiliary device.

0 = operates as center (factory setting)

1 = operates as auxiliary device

Special Option No. 907

This sets the digital signal which the Intellibox transmits, if no locomotive is in a refresh cycle, e.g. after switching on the layout before the first locomotive is called.

1 = Motorola (factory setting)
4 = DCC
5 = Motorola and DCC

Converting bits to bytes

Some DCC decoders do not accept the “bit-wise” programming mode. When programming a single bit of a configuration variable it could be necessary to convert the 8 bits of a CV to a complete byte.

CV Address	Bit 0	Bit 1	Bit 2	Bit 3	Bit 4	Bit 5	Bit 6	Bit 7
0	0	0	0	0	0	0	0	0
1	1	0	0	0	0	0	0	0
2	0	1	0	0	0	0	0	0
3	1	1	0	0	0	0	0	0
4	0	0	1	0	0	0	0	0
5	1	0	1	0	0	0	0	0
6	0	1	1	0	0	0	0	0
7	1	1	1	0	0	0	0	0
8	0	0	0	1	0	0	0	0
9	1	0	0	1	0	0	0	0
10	0	1	0	1	0	0	0	0
11	1	1	0	1	0	0	0	0
12	0	0	1	1	0	0	0	0
13	1	0	1	1	0	0	0	0
14	0	1	1	1	0	0	0	0
15	1	1	1	1	0	0	0	0
16	0	0	0	0	1	0	0	0
17	1	0	0	0	1	0	0	0
18	0	1	0	0	1	0	0	0
19	1	1	0	0	1	0	0	0
20	0	0	1	0	1	0	0	0
21	1	0	1	0	1	0	0	0
22	0	1	1	0	1	0	0	0
23	1	1	1	0	1	0	0	0
24	0	0	0	1	1	0	0	0
25	1	0	0	1	1	0	0	0
26	0	1	0	1	1	0	0	0
27	1	1	0	1	1	0	0	0
28	0	0	1	1	1	0	0	0
29	1	0	1	1	1	0	0	0
30	0	1	1	1	1	0	0	0
31	1	1	1	1	1	0	0	0
32	0	0	0	0	0	1	0	0
33	1	0	0	0	0	1	0	0
34	0	1	0	0	0	1	0	0
35	1	1	0	0	0	1	0	0
36	0	0	1	0	0	1	0	0
37	1	0	1	0	0	1	0	0
38	0	1	1	0	0	1	0	0
39	1	1	1	0	0	1	0	0
40	0	0	0	1	0	1	0	0
41	1	0	0	1	0	1	0	0
42	0	1	0	1	0	1	0	0
43	1	1	0	1	0	1	0	0
44	0	0	1	1	0	1	0	0
45	1	0	1	1	0	1	0	0
46	0	1	1	1	0	1	0	0
47	1	1	1	1	0	1	0	0
48	0	0	0	0	1	1	0	0
49	1	0	0	0	1	1	0	0
50	0	1	0	0	1	1	0	0
51	1	1	0	0	1	1	0	0
52	0	0	1	0	1	1	0	0
53	1	0	1	0	1	1	0	0
54	0	1	1	0	1	1	0	0
55	1	1	1	0	1	1	0	0
56	0	0	0	1	1	1	0	0
57	1	0	0	1	1	1	0	0
58	0	1	0	1	1	1	0	0
59	1	1	0	1	1	1	0	0
60	0	0	1	1	1	1	0	0
61	1	0	1	1	1	1	0	0
62	0	1	1	1	1	1	0	0
63	1	1	1	1	1	1	0	0
64	0	0	0	0	0	0	1	0
65	1	0	0	0	0	0	1	0
66	0	1	0	0	0	0	1	0
67	1	1	0	0	0	0	1	0
68	0	0	1	0	0	0	1	0
69	1	0	1	0	0	0	1	0
70	0	1	1	0	0	0	1	0
71	1	1	1	0	0	0	1	0
72	0	0	0	1	0	0	1	0
73	1	0	0	1	0	0	1	0
74	0	1	0	1	0	0	1	0
75	1	1	0	1	0	0	1	0
76	0	0	1	1	0	0	1	0
77	1	0	1	1	0	0	1	0
78	0	1	1	1	0	0	1	0
79	1	1	1	1	0	0	1	0
80	0	0	0	0	1	0	1	0
81	1	0	0	0	1	0	1	0
82	0	1	0	0	1	0	1	0
83	1	1	0	0	1	0	1	0
84	0	0	1	0	1	0	1	0
85	1	0	1	0	1	0	1	0
86	0	1	1	0	1	0	1	0
87	1	1	1	0	1	0	1	0
88	0	0	0	1	1	0	1	0
89	1	0	0	1	1	0	1	0
90	0	1	0	1	1	0	1	0
91	1	1	0	1	1	0	1	0
92	0	0	1	1	1	0	1	0
93	1	0	1	1	1	0	1	0
94	0	1	1	1	1	0	1	0
95	1	1	1	1	1	0	1	0
96	0	0	0	0	0	1	1	0
97	1	0	0	0	0	1	1	0
98	0	1	0	0	0	1	1	0
99	1	1	0	0	0	1	1	0
100	0	0	1	0	0	1	1	0
101	1	0	1	0	0	1	1	0
102	0	1	1	0	0	1	1	0
103	1	1	1	0	0	1	1	0
104	0	0	0	1	0	1	1	0
105	1	0	0	1	0	1	1	0
106	0	1	0	1	0	1	1	0
107	1	1	0	1	0	1	1	0
108	0	0	1	1	0	1	1	0
109	1	0	1	1	0	1	1	0
110	0	1	1	1	0	1	1	0
111	1	1	1	1	0	1	1	0
112	0	0	0	0	1	1	1	0
113	1	0	0	0	1	1	1	0
114	0	1	0	0	1	1	1	0
115	1	1	0	0	1	1	1	0
116	0	0	1	0	1	1	1	0
117	1	0	1	0	1	1	1	0
118	0	1	1	0	1	1	1	0
119	1	1	1	0	1	1	1	0

CV Address	Bit 0	Bit 1	Bit 2	Bit 3	Bit 4	Bit 5	Bit 6	Bit 7
120	0	0	0	1	1	1	1	0
121	1	0	0	1	1	1	1	0
122	0	1	0	1	1	1	1	0
123	1	1	0	1	1	1	1	0
124	0	0	1	1	1	1	1	0
125	1	0	1	1	1	1	1	0
126	0	1	1	1	1	1	1	0
127	1	1	1	1	1	1	1	0
128	0	0	0	0	0	0	0	1
129	1	0	0	0	0	0	0	1
130	0	1	0	0	0	0	0	1
131	1	1	0	0	0	0	0	1
132	0	0	1	0	0	0	0	1
133	1	0	1	0	0	0	0	1
134	0	1	1	0	0	0	0	1
135	1	1	1	0	0	0	0	1
136	0	0	0	1	0	0	0	1
137	1	0	0	1	0	0	0	1
138	0	1	0	1	0	0	0	1
139	1	1	0	1	0	0	0	1
140	0	0	1	1	0	0	0	1
141	1	0	1	1	0	0	0	1
142	0	1	1	1	0	0	0	1
143	1	1	1	1	0	0	0	1
144	0	0	0	0	1	0	0	1
145	1	0	0	0	1	0	0	1
146	0	1	0	0	1	0	0	1
147	1	1	0	0	1	0	0	1
148	0	0	1	0	1	0	0	1
149	1	0	1	0	1	0	0	1
150	0	1	1	0	1	0	0	1
151	1	1	1	0	1	0	0	1
152	0	0	0	1	1	0	0	1
153	1	0	0	1	1	0	0	1
154	0	1	0	1	1	0	0	1
155	1	1	0	1	1	0	0	1
156	0	0	1	1	1	0	0	1
157	1	0	1	1	1	0	0	1
158	0	1	1	1	1	0	0	1
159	1	1	1	1	1	0	0	1
160	0	0	0	0	0	1	0	1
161	1	0	0	0	0	1	0	1
162	0	1	0	0	0	1	0	1
162	1	1	0	0	0	1	0	1
164	0	0	1	0	0	1	0	1
165	1	0	1	0	0	1	0	1

CV Address	Bit 0	Bit 1	Bit 2	Bit 3	Bit 4	Bit 5	Bit 6	Bit 7
166	0	1	1	0	0	1	0	1
167	1	1	1	0	0	1	0	1
168	0	0	0	1	0	1	0	1
169	1	0	0	1	0	1	0	1
170	0	1	0	1	0	1	0	1
171	1	1	0	1	0	1	0	1
172	0	0	1	1	0	1	0	1
173	1	0	1	1	0	1	0	1
174	0	1	1	1	0	1	0	1
175	1	1	1	1	0	1	0	1
176	0	0	0	0	0	1	0	1
177	1	0	0	0	0	1	0	1
178	0	1	0	0	0	1	0	1
179	1	1	0	0	0	1	0	1
180	0	0	1	0	1	1	0	1
181	1	0	1	0	1	1	0	1
182	0	1	1	0	1	1	0	1
183	1	1	1	0	1	1	0	1
184	0	0	0	1	1	1	0	1
185	1	0	0	1	1	1	0	1
186	0	1	0	1	1	1	0	1
187	1	1	0	1	1	1	0	1
188	0	0	1	1	1	1	0	1
189	1	0	1	1	1	1	0	1
190	0	1	1	1	1	1	0	1
191	1	1	1	1	1	1	0	1
192	0	0	0	0	0	0	1	1
193	1	0	0	0	0	0	1	1
194	0	1	0	0	0	0	1	1
195	1	1	0	0	0	0	1	1
196	0	0	1	0	0	0	1	1
197	1	0	1	0	0	0	1	1
198	0	1	1	0	0	0	1	1
199	1	1	1	0	0	0	1	1
200	0	0	0	1	0	0	1	1
201	1	0	0	1	0	0	1	1
202	0	1	0	1	0	0	1	1
203	1	1	0	1	0	0	1	1
204	0	0	1	1	0	0	1	1
205	1	0	1	1	0	0	1	1
206	0	1	1	1	0	0	1	1
207	1	1	1	1	0	0	1	1
208	0	0	0	0	1	0	1	1
209	1	0	0	0	1	0	1	1
210	0	1	0	0	1	0	1	1
211	1	1	0	0	1	0	1	1

CV Address	Bit 0	Bit 1	Bit 2	Bit 3	Bit 4	Bit 5	Bit 6	Bit 7
212	0	0	1	0	1	0	1	1
213	1	0	1	0	1	0	1	1
214	0	1	1	0	1	0	1	1
215	1	1	1	0	1	0	1	1
216	0	0	0	1	1	0	1	1
217	1	0	0	1	1	0	1	1
218	0	1	0	1	1	0	1	1
219	1	1	0	1	1	0	1	1
220	0	0	1	1	1	0	1	1
221	1	0	1	1	1	0	1	1
222	0	1	1	1	1	0	1	1
223	1	1	1	1	1	0	1	1
224	0	0	0	0	0	1	1	1
225	1	0	0	0	0	1	1	1
226	0	1	0	0	0	1	1	1
227	1	1	0	0	0	1	1	1
228	0	0	1	0	0	1	1	1
229	1	0	1	0	0	1	1	1
230	0	1	1	0	0	1	1	1
231	1	1	1	0	0	1	1	1
232	0	0	0	1	0	1	1	1
233	1	0	0	1	0	1	1	1
234	0	1	0	1	0	1	1	1
235	1	1	0	1	0	1	1	1
236	0	0	1	1	0	1	1	1
237	1	0	1	1	0	1	1	1
238	0	1	1	1	0	1	1	1
239	1	1	1	1	0	1	1	1
240	0	0	0	0	1	1	1	1
241	1	0	0	0	1	1	1	1
242	0	1	0	0	1	1	1	1
243	1	1	0	0	1	1	1	1
244	0	0	1	0	1	1	1	1
245	1	0	1	0	1	1	1	1
246	0	1	1	0	1	1	1	1
247	1	1	1	0	1	1	1	1
248	0	0	0	1	1	1	1	1
249	1	0	0	1	1	1	1	1
250	0	1	0	1	1	1	1	1
251	1	1	0	1	1	1	1	1
252	0	0	1	1	1	1	1	1
252	1	0	1	1	1	1	1	1
254	0	1	1	1	1	1	1	1
255	1	1	1	1	1	1	1	1

Module address table for feedback channels

The Intellibox displays the individual feedback channels in blocks of 16. This corresponds to the module addresses of s88-Modules.

After switching the Intellibox on the first block, the channels 1-16 are always displayed. If other channels are to be displayed, the appropriate module address must be entered from s88-Mode after manipulation of the m-key.

Module address	Input
1	1 - 16
2	17 - 32
3	33 - 48
4	49 - 64
5	65 - 80
6	81 - 95
7	97 - 112
8	113 - 128
9	129 - 144
10	145 - 160
11	161 - 176
12	177 - 192
13	193 - 208
14	209 - 224
15	225 - 240
16	241 - 256
17	257 - 272
18	273 - 288
19	289 - 304
20	305 - 320
21	321 - 336
22	337 - 352
23	353 - 368
24	369 - 384
25	385 - 400
26	401 - 416
27	417 - 432
28	433 - 448
29	449 - 464
30	465 - 480
31	481 - 496
32	497 - 512
33	513 - 528
34	529 - 544
35	545 - 560
36	561 - 576
37	577 - 592
38	593 - 608
39	609 - 624
40	625 - 640
41	641 - 656
42	657 – 672
43	673 - 688

Module address	Input
44	689 – 704
45	705 – 720
46	721 – 736
47	737 – 752
48	753 – 768
49	769 – 784
50	785 – 800
51	801 – 816
52	817 – 832
53	833 – 848
54	849 – 864
55	865 – 880
56	881 – 896
57	897 – 912
58	913 – 928
59	929 – 944
60	945 – 960
61	961 – 976
62	977 – 992
63	993 – 1008
64	1009 – 1024
65	1025 – 1040
66	1041 – 1056
67	1057 – 1072
68	1073 – 1088
69	1089 – 1104
70	1105 – 1120
71	1121 – 1136
72	1137 – 1152
73	1153 – 1168
74	1169 – 1184
75	1185 – 1200
76	1201 – 1216
77	1217 – 1232
78	1233 – 1248
79	1249 – 1264
80	1265 – 1280
81	1281 – 1296
82	1297 – 1312
83	1313 – 1328
84	1329 – 1344
85	1345 – 1360
86	1361 – 1376

Module address	Input
87	1377 - 1392
88	1393 - 1408
89	1409 - 1424
90	1425 - 1440
91	1441 - 1456
92	1457 - 1472
93	1473 - 1488
94	1489 - 1504
95	1505 - 1520
96	1521 - 1536
97	1537 - 1552
98	1553 - 1568
99	1569 – 1584
100	1585 - 1600
101	1601 – 1616
102	1617 - 1632
103	1633 - 1648
104	1649 - 1664
105	1665 - 1680
106	1681 - 1696
107	1697 - 1712
108	1713 - 1728
109	1729 – 1744
110	1745 – 1760
111	1761 – 1776
112	1777 – 1792
113	1793 – 1808
114	1809 - 1824
115	1825 - 1840
116	1841 - 1856
117	1857 - 1872
118	1873 - 1888
119	1889 - 1904
120	1905 - 1920
121	1921 - 1936
122	1937 - 1952
123	1953 - 1968
124	1969 - 1984
125	1985 - 2000
126	2001 - 2016
127	2017 - 2032
128	2033 - 2048

Coding table for solenoid decoder

The address of decoders conforming to the Motorola format (from the companies Märklin, Viessmann and Modeltreno) is defined using 8 micro switches. Since every decoder controls 4 solenoid devices, the decoder address is different from the solenoid device address.

The following table shows the position of the 8 micro switches of these decoders. The correlation with solenoid device addresses and Märklin Keyboard is also included.

Keyboard number	Keyboard keys	Sol. dev. addr.	Decoder Micro switches ON							
1	1..4	1-4	-	2	3	-	5	-	7	-
1	5..8	5-8	-	-	3	-	5	-	7	-
1	9..12	9-12	1	-	-	4	5	-	7	-
1	13..16	13-16	-	2	-	4	5	-	7	-
2	1..4	17-20	-	-	-	4	5	-	7	-
2	5..8	21-24	1	-	-	-	5	-	7	-
2	9..12	25-28	-	2	-	-	5	-	7	-
2	13..16	29-32	-	-	-	-	5	-	7	-
3	1..4	33-36	1	-	3	-	-	6	7	-
3	5..8	37-40	-	2	3	-	-	6	7	-
3	9..12	42-44	-	-	3	-	-	6	7	-
3	13..16	45-48	1	-	-	4	-	6	7	-
4	1..4	49-52	-	2	-	4	-	6	7	-
4	5..8	53-56	-	-	-	4	-	6	7	-
4	9..12	57-60	1	-	-	-	-	6	7	-
4	13..16	61-64	-	2	-	-	-	6	7	-
5	1..4	65-68	-	-	-	-	-	6	7	-
5	5..8	69-72	1	-	3	-	-	-	7	-
5	9..12	73-75	-	2	3	-	-	-	7	-
5	13..16	77-80	-	-	3	-	-	-	7	-
6	1..4	81-84	1	-	-	4	-	-	7	-
6	5..8	85-88	-	2	-	4	-	-	7	-
6	9..12	89-92	-	-	-	4	-	-	7	-
6	13..16	93-96	1	-	-	-	-	-	7	-
7	1..4	97-100	-	2	-	-	-	-	7	-
7	5..8	101-104	-	-	-	-	-	-	7	-
7	9..12	105-108	1	-	3	-	5	-	-	8
7	13..16	109-112	-	2	3	-	5	-	-	8
8	1..4	113-116	-	-	3	-	5	-	-	8
8	5..8	117-120	1	-	-	4	5	-	-	8
8	9..12	121-124	-	2	-	4	5	-	-	8
8	13..16	125-128	-	-	-	4	5	-	-	8
9	1..4	129-132	1	-	-	-	5	-	-	8
9	5..8	133-136	-	2	-	-	5	-	-	8
9	9..12	137-140	-	-	-	-	-	-	-	8
9	13..16	141-144	1	-	3	-	-	6	-	8
10	1..4	145-148	-	2	3	-	-	6	-	8
10	5..8	149-152	-	-	3	-	-	6	-	8
10	9..12	153-156	1	-	-	4	-	6	-	8
10	13..16	157-160	-	2	-	4	-	6	-	8

Keyboard number	Keyboard keys	Sol. dev. addr.	Decoder Micro switches ON							
11	1..4	161-164	-	-	-	4	-	6	-	8
11	5..8	165-168	1	-	-	-	-	6	-	8
11	9..12	169-172	-	2	-	-	-	6	-	8
11	13..16	173-176	-	-	-	-	-	6	-	8
12	1..4	177-180	1	-	3	-	-	-	-	8
12	5..8	181-184	-	2	3	-	-	-	-	8
12	9..12	185-188	-	-	3	-	-	-	-	8
12	13..16	189-192	1	-	-	4	-	-	-	8
13	1..4	193-196	-	2	-	4	-	-	-	8
13	5..8	197-200	-	-	-	4	-	-	-	8
13	9..12	201-204	1	-	-	-	-	-	-	8
13	13..16	205-208	-	2	-	-	-	-	-	8
14	1..4	209-212	-	-	-	-	-	-	-	8
14	5..8	213-216	1	-	3	-	5	-	-	-
14	9..12	217-220	-	2	3	-	5	-	-	-
14	13..16	221-224	-	-	3	-	5	-	-	-
15	1..4	225-228	1	-	-	4	5	-	-	-
15	5..8	229-232	-	2	-	4	5	-	-	-
15	9..12	233-236	-	-	-	4	5	-	-	-
15	13..16	237-240	1	-	-	-	5	-	-	-
16	1..4	241-244	-	2	-	-	5	-	-	-
16	5..8	245-248	-	-	-	-	-	6	-	-
16	9..12	249-252	1	-	3	-	-	6	-	-
16	13..16	253-256	-	2	3	-	-	6	-	-
-	-	257-260	-	-	3	-	-	6	-	-
-	-	261-264	1	-	-	4	-	6	-	-
-	-	265-268	-	2	-	4	-	6	-	-
-	-	269-272	-	-	-	4	-	6	-	-
-	-	273-276	1	-	-	-	-	6	-	-
-	-	277-280	-	2	-	-	-	6	-	-
-	-	281-284	-	-	-	-	-	6	-	-
-	-	285-288	1	-	3	-	-	-	-	-
-	-	289-292	-	2	3	-	-	-	-	-
-	-	293-296	-	-	3	-	-	-	-	-
-	-	297-300	1	-	-	4	-	-	-	-
-	-	301-304	-	2	-	4	-	-	-	-
-	-	305-308	-	-	-	4	-	-	-	-
-	-	309-312	1	-	-	-	-	-	-	-
-	-	313-316	-	2	-	-	-	-	-	-
-	-	317-320	1	-	3	-	5	-	7	-

Tips and Tricks

Some Märklin locomotives can't be controlled

Older Märklin decoders (6080 and Delta decoders) can only be controlled with the Intellibox if the red wire from the centre pick up is connected to the rail.

Old and new Märklin function decoders

The Panorama car and the Märklin Digital remote control rotary crane (7051+7652), are controlled with the old Motorola protocol, using f1-f4 functions. They are not able to operate with the new Märklin-Motorola protocol.

New Märklin locomotives with the Märklin decoder 60901 and Uhlenbrock decoders (755, 756, 760 75100, 75400, 75420) use the new protocol for switching f1 to f4. They ignore signals that are sent in the protocol.

The Light cannot be switch on a DCC decoder

The decoder has 28 Speed steps but the Intellibox II is set to DCC with 14 Speed steps for this address.

Problems controlling the lights in DCC decoders

If the locomotive lights no longer respond to the [function] key, it's most likely that the decoder is configured for 28 operating levels while the Intellibox expect 14/27 speed steps for that locomotive address. To solve this situation, change (in the Intellibox) the configuration of the relevant decoder address to 28 operating levels.

Remember that NMRA standards impose the following specifications for CV #29:

14 and 27 speed steps → CV#29 Bit 1 = 0
28 and 128 speed steps → CV#29 Bit 1 = 1

Problems of DCC Decoders with other Data formats

Some DCC decoders have problems running cleanly if decoders using different data formats are on the rails as well. These decoders falsely interpret the Motorola data signal as analog voltage and will "stutter" when driving or suddenly drive off with full speed.

With some decoders this behavior can be eliminated by switching off the automatic recognition of the analog operation. How the decoder is configured to pure digital operation can be found in the operating instructions for the appropriate decoder.

With some newer decoder types programming to pure digital operation is done by setting bit 2 of the configuration variable CV 29 to zero. Note however that is not possible with all DCC decoders.

With simple decoders there is no possibility of eliminating this problem.

Controlling the Märklin Digital turntable

The turntable can be retrofitted with a specific decoder (7687) compatible with the Motorola protocol. The different functions respond to the solenoid devices addresses 225 to 240.

Attention! *The Märklin turntable decoder can only be put into programming mode within the first 5 seconds of switching on of the operating voltage. The Intellibox needs approx. 6 seconds to boot up. Subsequently the decoder will not accept any further instructions, if Intellibox and turntable are switched on at the same time.*

We recommend installing a switch in the yellow and red wires to the turntable decoder. The switch remains open until the Intellibox has completed its boot up. Then it is closed and the programming process can begin, as in the operating instructions of the turntable described.

Add	Key	Function
225	red	Ends programming
	green	Programming / Input
226	red	Cancels programming
	green	Rotates 180°
227	red	Next segment clockwise
	green	Next segment anticlockwise
228	red	Rotation clockwise
	green	Rotation anticlockwise
229	red	Rotates to segment #1
	green	Rotates to segment #2
230	red	Rotates to segment #3
	green	Rotates to segment #4
231	red	Rotates to segment #5
	green	Rotates to segment #6
232	red	Rotates to segment #7
	green	Rotates to segment #8

Add	Key	Function
233	red	Rotates to segment #9
	green	Rotates to segment #10
234	red	Rotates to segment #11
	green	Rotates to segment #12
235	red	Rotates to segment #13
	green	Rotates to segment #14
236	red	Rotates to segment #15
	green	Rotates to segment #16
237	red	Rotates to segment #17
	green	Rotates to segment #18
238	red	Rotates to segment #19
	green	Rotates to segment #20
239	red	Rotates to segment #21
	green	Rotates to segment #22
240	red	Rotates to segment #23
	green	Rotates to segment #24

The addresses of the functions of the Märklin digital turntable

Controlling the Märklin Digital rotary crane

The address of the digital rotary crane must be configured for the old Motorola protocol. The crane's functions, like turning the cab and raising/lowering the boom, are controlled with the [f1] and [f2] keys and the speed knob. The working lights and the magnet are switched on with the f key and switched off with the [f0] key.

Note: *If, in multi-protocol operation, the crane does not respond correctly, try changing its address.*

Controlling the Roco crane wagon (Digital DC)

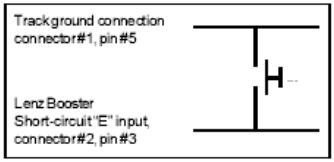
The address of the Roco digital crane wagon (40110 or 46800) should be configured for DCC 14 speed steps. The crane wagon uses one locomotive address.

The different functions are operated with the [f0] and [f1] keys and turning the corresponding throttle knob.

Note: *When programming the decoder an error can be reported in spite of correct programming. The decoder cannot be read track.*

Emergency stop button in the Lenz Booster output

If you connect the Intellibox ground (screw terminal connector pin 4) and the DCC booster's short circuit signaling line "E", (DCC booster connector pin right) with a momentary switch, the Intellibox will shut off power to the track and to all connected Boosters.



You can have a number of "emergency stop" buttons, connected in parallel, spread along your layout.

HOTLINE

When you are at a loss on how to continue
We are here for you.

Mondays to Fridays 14:00-16:00
Wednesdays 16:00-18:00

02045-8583-27

Before you call us,
Make sure you have the following at hand:
Serial number of your Intellibox,
version number of the system software of your Intellibox
and this manual.

You can obtain our catalog from your specialist dealer
or from us for 3.50 euro plus postage of 5.00 euro in stamps.
All our products have a warranty of two years.
We reserve the right to change data in this booklet at anytime

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1st Edition June 2010

Starting from Software version 1.0

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Part Number 60 510