Intellibox Basic

The Complete Digital system

Manual

Uhlenbrock digital

Part Number 60 520

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1. The Digital Center Intellibox Basic

The Intellibox can be used with layouts using the Motorola and DCC digital formats simultaneously, on the same track, and is therefore a genuine multi-protocol Digital system. It is extremely efficient and compact and brings many functions into a single box.

1.1 Description

The entire system in one box

The Intellibox has on board all the functions which formerly had to be laboriously installed into the layout.

With Speed controller

Using two rotating controls, two locomotives can be independently controlled.

With Booster

A high performance booster which is short circuit proof, has an output current of 3 A. Its operating voltage can be limited to 18V for N-gauge.

With Keyboard

A keyboard that can switch 320 (Märklin) and/or 2000 (DCC) solenoids, with direct access to 8 items in each case. At the same time feedback on the status of the turnout or signal is indicated in the display.

With Programmer

Simple menu-driven programming of Uhlenbrock, Motorola, DCC compatible decoders.

With USB Interface

Computer interface connector allows computer control of model railway layouts.

With Updatable system software

The Intellibox system software can be updated at any time using the internal interface.

Various data formats

The Intellibox can control locomotive, function and switch decoders of most manufacturers mixed on a layout.

The following data formats can be transmitted:

Motorola data format

Uhlenbrock, Märklin direct current, Viessmann

Extended Motorola data format (Gauge I)

Uhlenbrock, Märklin alternating current Gauge I format

DCC data format

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

9999 decoder addresses and 128 drive positions
The Intellibox supports all addresses and speed steps of the various decoder makes.

Märklin Motorola
80 addresses, 14 speed steps

Uhlenbrock Motorola
255 addresses, 14 speed steps

Uhlenbrock DCC
9999 addresses, 128 speed steps

DCC compatible
99-9999 addresses, 14, 28, 128 speed steps, according to type

Informative LCD display
The large LCD display with back-lighting has a clearly arranged user interface. The clear, three column display creates a quick overview.

While running, the locomotive address, data format, speed step and driving direction of the two selected locomotives are indicated. The centre indicates the selected operating mode, e.g. in keyboard mode, turnout and signal status is displayed.

In programming mode the display shows the menu text for decoder programming.

Multilingual prompting
Operating the Intellibox is astonishingly simple with the menu driven prompting. Various languages can be selected for the control panel display.

Intelligent controller
The rotary throttle controller without end stop restores the previously saved speed step when the locomotive is reselected.

A DC-controller mode is available, i.e. clockwise rotation controls acceleration in one direction, and anti-clockwise in the other direction, and an AC-controller mode is also available, i.e. the speed is increased with clockwise rotation of the controller and reduced by anti-clockwise rotation. The driving direction is changed with a press of the control knob.

DirectDrive
Take control of the locomotive, which last passed over a certain LISSY receiver, by the push of a button on the controller without having to enter its address.

Extended special functions
Eight special functions (for some DCC decoders) and "function" for switching of light, sound, etc. are available.

Non-Volatile memory

All settings, which have been done with the Intellibox, remain non-volatile, even if the equipment is switched off for months.

Updatable system software

Using the Intellibox's internal interface the system software can be updated at any time.

Compatible with many other devices

On the back of the Intellibox Basic are sockets for transformer, track, programming track, DCC booster, Roco and LGB Lokmaus1, s88 feedback modules, Digitrax LocoNet and the USB computer interface.

Operation as Auxiliary Device

The Intellibox basic can be attached at another LocoNet center (Intellibox IR, Intellibox basic or twin center) as an auxiliary device and then taking on the functions of a control panel, a 3A booster and a LocoNet power feed. In addition, a further USB port is available.

1.2 Configuration of the Intellibox at Power-on

The Intellibox can load various configuration options at power on, if a key in the middle block of keys is held pressed.

The individual keys have different functions.

Procedure

Disconnect the Intellibox from the transformer (pull the 6 pins plug from socket 1). Press appropriate key as you return the plug to socket 1. Hold the key until the display comes on.

Testing Control Elements

If the [mode] key is held the Intellibox starts in a test mode for keys, speed knob and display.

Language selection

If one of the numeric keys is held when starting, the Intellibox starts with the appropriate language.

[1] German	[4] Italian	[7] Spanish
[2] English	[5] Dutch	[8] Portuguese
[3] French	[6] Swedish	[9] Danish

Configuration of display

If the [C]-key is held down at start-up the Intellibox will bring up a menu for setting the contrast of the LCD display.

Holding the [+]-key at start-up forces the Intellibox to reset contrast and brightness of the display to factory default.

Quick Basic Setting

Normally the configuration of the Intellibox is changed during the operation using the "Basic Settings" menu. Start the Intellibox while holding the [↵] key gives direct access to the most important menu options which can be selected and changed.

The display always indicates the active mode, with new units at factory settings. The [↓]-key can be used to scroll through the individual menu options. Pressing the [↵]-key will confirm the entries shown on the display.

The Intellibox starts with the following display:

```
    Intellibox
 Basic Settings
```

This menu disappears automatically after 2 seconds. Then the display shows system's software version number and the serial number of the Intellibox, e.g.:

```
Ver: 1.000-1.000
S/N: ----------
```

The basic configuration of the Intellibox can now be queried and changed.

Pressing the [↵]-key takes you to the first item:

Menu option "configuration"

This menu option can return the Intellibox to its factory default.

Now there are further options:

```
Configuration
= reset : no
```

1. Do not reset the configuration

• Press [↵]-key to continue to the next option menu

2. Reset the configuration

• Press [↓]-key until the display changes to "= reset.: yes "
• Press [↵]-key and hold for a system reset to its factory settings and restart in the configuration mode.

3. Reset the configuration and return to control panel operation

• Press [↓]-key until the display changes to "= reset.: yes "
• Press [↵]-key

The Intellibox will do a system reset to factory settings and restarts in the control panel operating mode.

Menu option "language"

The language that the Intellibox is to use for the display is selected here. See Chapter 4.6 for detailed information.

```
Sprache:
= Deutsch *
```

- Press [↓]-key to scroll to the desired entry
- Press [↵]-key to make the selection

Menu option "locomotive data format"

To select the locomotive data format that will be used for the majority of the locomotives. Detailed information is in chapter 4.7.

```
Loco Data fmt:
= DCC *
```

- Press [↓]-key to scroll to the desired entry
- Press [↵]-key to make the selection

Menu option "Access. Setting"

To select the desired turnout data format that will be used for the majority of the turnouts. Detailed information is in chapter 4.8.

```
Access.Setting:
= DCC *
```

- Press [↓]-key to scroll to the desired entry
- Press [↵]-key to make the selection

Menu option "Throttle control"

To select whether to use the control panel in AC or DC controller mode. Detailed information is in chapter 3.4.1.

```
Speed knobs:
= AC style knob*
```

- Press [↓]-key to scroll to the desired entry
- Press [↵]-key to make the selection

Menu option "Speed step display"

To select whether the locomotive speed is to be displayed in percent or speed steps. Detailed information is in chapter 4.5.1.

```
Loc Speed disp:
= Absolute *
```

- Press [↓]-key to scroll to the desired entry
- Press [↵]-key to make the selection

Terminate configuration

Press [↵]-key to write the new configuration to the Intellibox and do a system reset.

```
*** reset ***
```

After this all factory defaults are active.

Further options are possible in the Intellibox Basic Settings menu (chapter 4).

1.3 Quick Guide

Important! *Use this section only as quick reference guide. Please read the whole manual in detail in order to learn all functions and options of the equipment.*

Connecting Cables

You need a transformer with 16V AC output voltage and a minimum output power of 52 VA. The 16V AC voltage from the transformer and the two poles of the track are connected to the clamps of plug #1 on the backside of the Intellibox.

Caution *Carefully check that the wires from the transformer have not been swapped with those from the track, or that short-circuits did not occur among the various wires of the connector!!*

Connecting the device

If you insert the plug into socket 1 and turn the power on, the green LED above the [go] key at the top right on the front panel of the Intellibox, should light up after approx. 5 seconds to indicate the ready status of the equipment.

Presets

The Intellibox has the following options preset ex factory:

Speed step display	Direct reading
Throttle control	AC control panel
Locomotive data format	New Motorola (base data format)
Solenoid data format	Motorola (base data format)
Track Gauge	Driving Power H0

If these settings are correct for your layout, you can set the first locomotive onto the track. Otherwise you should check under "Configuration of Intellibox at Power on" or under "Basic Settings" and make the necessary changes.

A full description of all options, as well as their operation is described in chapters 3 and 4.

Calling up a Locomotive

- Press [lok#] key of the right or left control panel
- Enter the desired locomotive address using the numeric keys
- Confirm with [↵]-key

Controlling a locomotive

A clockwise rotation of the control knob increases the speed, and an anti-clockwise turn reduces the speed. To change the driving direction press the control knob while the locomotive is stationary.

Switching the Light

- The [function] key switches the light on
- The [off] key switches the light off

Switching Special function

- Press one of the special function keys [f1] [f2] [f3] [f4]

- If the [lok#/f+] and [off/+4] Key are pressed in quick succession, on some DCC decoders you can switch functions f5 to f8 with function keys [f1] to f4] (see chapter 5.2).

- If the [lok#/f+] and [f0/+8] Key are pressed in quick succession, on some DCC decoders you can switch functions f9 to f12 with function keys [f1] to f4] (see chapter 5.2).

Note *All inputs must be made by the control panel on which the locomotive with the desired address was called up.*

Change the digital format of individual locomotives

- Place the vehicle on the track
- Press [lok#/f+] key of the right or left control panel
- Enter the desired locomotive address using the numeric keys
- Confirm input with [↵]-key
- Press [lok#/f+] key of the same control panel
- Press [menu] key
- With the [↓]-key scroll to the desired data format
- Confirm input with [↵]-key

Switching turnouts

Figure 1.31
The 8 pairs of keys of the key board

The switching is done using the numeric keys. Using eight pairs of keys, eight turnouts or signals with the addresses 1 to 8 can be switched. The position of the turnouts is indicated in the middle part of the display.


```
m   12|▪▀▄▄|d3651
    0 ↑|▄▄▄▀|  0 ↑
```

The middle section of the display gives information about the current status of the keyboard, with the key pair on which the upper (red) key was pressed last (in the figure 2 and 8). The rectangular symbol appears a little further above the other key pairs, on which the lower (green) key was pressed last.

The allocation of the keyboard can be changed (see chapter 6.4).

1.4 Commands

Very Important!   *Use this section only as quick reference guide. Please read the whole manual in detail in order to learn all functions and options of the equipment.*

Switching Track power off/on,

[stop]/[go]

Emergency stop of the entire layout off/on

[stop]/[go]

Select a locomotive

[lok#/f+] + address input + [↵]

Speed change

Turn the control knob

Changing direction

Press the control knob when the locomotive is stopped

Emergency stop of the currently controlled locomotive

Press the control knob

Light switch

Light on [f0/f+8], Light off [off/f+4]

Switching Special function f1-f4

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

Switching Special functions f5-f8

[lok#/f+] + [lok#/f+4] + [f1] [f2] [f3] [f4]

Switching Special functions f9-f12

[lok#/f+] + [lok#/f+8] + [f1] [f2] [f3] [f4]

Menu for Special functions 1-9999

2 x [lok#/f+] + input with numeric keys

Select equipment mode

Press [mode] repeatedly to display the desired mode or
[mode] + [1] for keyboard mode
[mode] + [2] for Feedback-Monitor mode
[mode] + [3] for Programming mode
[mode] + [4] for LISSY mode

Changing keyboard key allocation

[mode] + [1] (screen-display "keyboard Mode")
[menu] + number 1 key + [↵] (Factory default)

Changing Feedback Mode key allocation

[mode] + [2] (screen-display "Monitor Mode")
[menu] + module address + [↵]

Setting data format of individual decoders

Call up locomotive
[lok#/f+] + address + [↵]
Adjust decoder format
[lok#/f+] + [menu] + with [↓] scroll to the desired entry
[↵] + [menu]

Change Basic settings

[menu] + [mode]
with [↓] and [→] go to the desired item
[↵] + [menu]

Reset

Press [go] and [stop] simultaneously for approx. two seconds and the Intellibox will return to power-up state.

Maximum supply voltage

Maximum allowable AC input of 18 V.

Maximum current load

3 A to the rails
0.2 A to LocoNet B output
0.5 A to LocoNet T output

All outputs have short circuit protection.

Maximum number of feedback modules

A total of 2048 feedback contacts are possible.

Maximum number of loco addresses

DCC format: 1-9999

Motorola format: 1-255

Maximum number of solenoid device decoder addresses

DCC format: 1-2040

Motorola format: 1-320

Usable Transformers

52-100VA, max. 18V AC

e.g. Uhlenbrock 70VA transformer, Part No. 20 070

Dimensions

180 x 136 x 80 mm

2. The Intellibox connectors

This chapter describes the connectors of the Intellibox and shows what must be taken into account when different devices are to be connected to the Intellibox.

2.1 Definition of the Intellibox connectors

The image below is the rear view of the Intellibox with all its connectors.
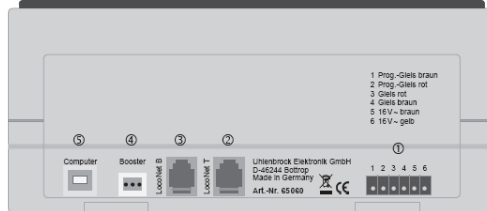
Figure 2.11
The rear of the Intellibox
Basic showing the
connections

1. 6-way header: Transformer, normal track, programming track
2. RJ12 socket: LocoNet T (Throttle)
3. RJ12 socket: LocoNet B (Booster)
4. 3-way header: DCC-Booster
5. USB-Socket: USB Computer interface

For connecting one of the individual devices see Chap. 2.

2.2 Preparation of the clamp plugs

Figure 2.21
Numbering of the
clamps in connector

Two clamp plugs are supplied with the booster to connect the transformer, the normal track and the programming track. Use a work bench or similar surface to connect the cables to the clamps.

The cables which are to be attached are manufactured from braid or wire with a cross section of at least 0.5mm², with at least 6 mm (approx.) stripped at the end. Carefully twisted and after that possibly tinned.

Figure 2.22
How to insert a wire
into the plug
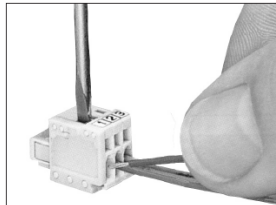
The 3-way clamping plug is opened by a light pressure of the plug the clamping device with a narrow screwdriver (2 mm) through the top opening. A cable with stripped end is inserted into the clamping plug from the front. By releasing the screwdriver the cable is fixed in position and a safe contact is made.

Figure 2.23
Numbering of the
terminals of the screw
terminal plug

The 6 pin plug for connecting the transformer, track and reversing loop is a screw terminal plug with which the cables are fixed by tightening the screws.

2.3 Connecting transformer, track and programming track

The 6-pins plug 1 is used to connect the transformer, the track and the programming track.

Figure 2.31
Connections of the
6-way connector
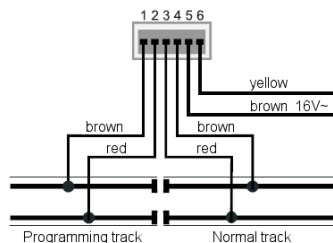
1 Programming track
2 Programming track
3 Digital voltage to the track
4 Digital ground to the track
5 Ground 16 V AC from Transformer
6 16 V AC from Transformer

Note   *Connection to the normal track should be made by as large a cross section cable as possible in several places of the layout. We recommend feed points for H0 of approx. 1 m separation.*

The transformer

In order to obtain a trouble free operation of the Intellibox use a transformer of min. 52 VA output power. The maximum output AC RMS voltage from the transformer should not exceed 18V.

The transformer must be connected to clamps 5 and 6 (brown and yellow, respectively).

Important   *Ensure that the wires from the transformer have not been swapped with those from the track, and that short-circuits did not occur among the various wires of the connector. A short-circuit between the transformer and the track could destroy the output stage of the Intellibox.*

The track

Figure 2.32
Connections to a
2-rails track

For 2-rails tracks, the track must be connected to terminals 3 and 4 of 6-way plug.
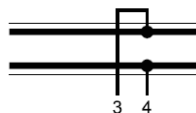
Figure 2.33
Connections to a
3-rails track

For 3-rails tracks (Märklin) the track centre rail is connected to terminal 3 (red Märklin cable) and the track ground to terminal 4 (brown Märklin cable) .
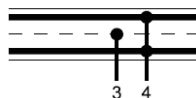
The programming track

The programming track is a special track for programming and reading out the configuration variables of loco decoders.

Very Important   *Both rails of the track must be isolated from the normal track! With Märklin tracks you isolate rails and centre rail.*

During programming the isolation gaps must not be bridged (wagon locomotive bogies).

The track is connected to terminals 1 (brown) and 2 (red) of the screw terminal plug for socket 1.

*Figure 2.34
Connections of the
Programming Track*
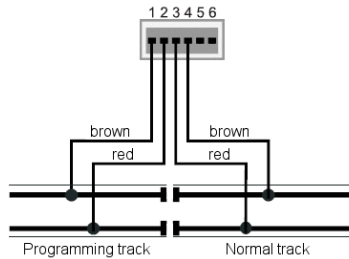
Note *The Programming track can only be used for programming and reading of decoders. It cannot be used for running trains.*

Tip *If the connections to the programming track are exchanged the Intellibox switches off with the error message "short-circuit", as soon as a vehicle drives over the isolation to the programming track.*

2.4 Connecting a DCC booster

DCC Booster can be connected to socket 4. They can output Motorola and DCC data formats.

Lenz Booster

*Figure 2.41
Front view of the
3-pin connector*

1 C = Signal +

2 D = Signal -

3 E = Short-circuit signal line

The signal lines C and D and the short signal line E must be connected to the 3 pole clamp plug as shown in the picture.

Märklin- and Arnold Digital= Booster

Märklin Digital = Boosters (6016) and Arnold Digital = Boosters (86015) can be connected to connector 2 with help of Uhlenbrock adapter 61 030.

Other DCC boosters

Usually, DCC boosters have only two wires. These wires should be connected to terminals 1 and 2 of connector 4.

Note *Because of the connection of "E" the boosters are not able to transmit a short-circuit signal to the Intellibox, but they are usually protected by their own short circuit protection.*

2.5 Connecting a LocoNet Booster

LocoNet must be connected to connector 3 (RJ12) for LocoNet B on the rear of the Intellibox.

Note *These boosters are not able to transmit a short-circuit signal to the Intellibox but they are usually protected by their own short circuit protection.*

2.6 Connecting LocoNet

All presently known LocoNet devices can be connected to the Intellibox.

The LocoNet Booster must be connected to the LocoNet connector B (Socket 3). LocoNet control panels. LocoNet throttles and other LocoNet control devices should be connected to the LocoNet connector T (Socket 2) which delivers no digital track signal.

2.7 Connecting Computer Interface

The computer interface is a USB Computer socket. This interface is found on IBM-compatible PCs or laptops.

Use Uhlenbrock USB cable Part No. 61 070 to connect the Intellibox (socket 5) with the USB interface of the computer. That is a USB cable with A and B type plugs as it is also used for connecting a computer with a USB printer.

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

3. Controls

3.1 Overview of the Controls

LCD Display

Operation indicator menu, mode

Right Controller

Left Controller

Middle key panel
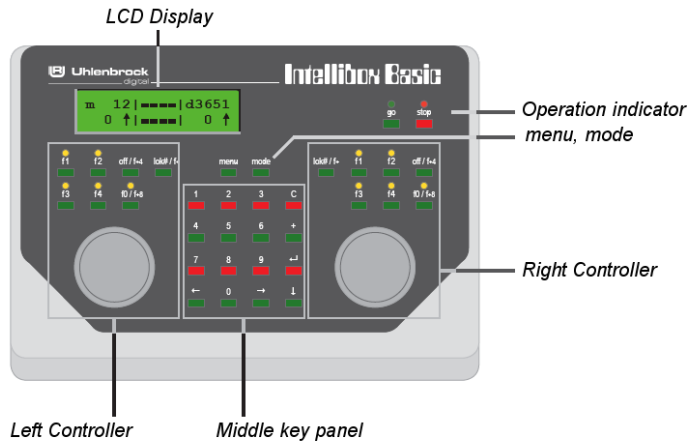
stop/go

Operational status indicator and keys for stopping and restarting of driving

menu

Context sensitive options.

mode

Selection between keyboard, feedback monitor, Loco programmer and LISSY mode.

Right Speed Control

With rotary knob, travel direction change over switch, f0 and off for switching the light function, 4 function keys and locomotive number key

Middle Key panel

with numeric keyboard and special keys for easy operation of the address input, for switching of turnouts or signals, for programming decoders and for navigation of the menu.

Left Speed Control

With rotary knob, travel direction change over switch, f0 and off for switching the light function, 4 function keys and locomotive number key

LCD Display

with information about decoder format, locomotive address, speed step and driving direction (outside) and the currently selected operating mode (center), e.g. in keyboard mode display of turnout position or signal setting.

3.2 The display

The large LCD display with backlighting shows a clearly arranged user interface. The clear, three sectioned display provides an exact overview of the present driving conditions for you at all times.

```
m   12|▪▪▪▪|d3651 ── Data Format
                  ── Locomotive Address
   0 ↑|▪▪▪▪|   0 ↑ ── Travel direction
                  ── Travel Speed
```
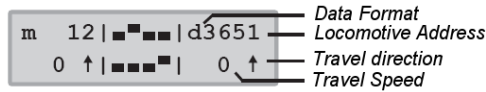
At the sides the display shows the used data format, locomotive address, vehicle speed and driving direction of the currently controlled vehicle.

```
m   12|▪▪▪▪|d3651
   0 ↑|▪▪▪▪|   0 ↑
```

The center shows information relevant to currently selected operating mode, e.g. in keyboard mode the display of the turnout position or signal state.

```
Decoder Program.
> DCC Program.
```
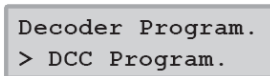
In programming mode prompting is as shown above.

The setting of contrast and brightness is done by the Basic Settings menu (chapter 4.10).

3.3 Key functions

The [stop] key

The [stop] key is used to switch off the driving power to the mainline and the track sections supplied by attached boosters. The display then shows the message "Emergency Stop".

This key is used by both control panels.

The [go] key

The [go] key is used to switch on the driving power to the mainline and the track sections supplied by attached boosters. It is used by both control panels.

Note *If the [go] and [stop] are pressed at the same time for approximately two seconds, the Intellibox is reset to its start position and the whole system reboots.*

Halt status

In the "Halt State" all locomotives are brought to a halt by an emergency stop instruction. The track is still supplied with power so that solenoids can be changed or travel direction and speed setting of Locomotives can still be done. In the "Halt state" one can change incorrectly set turnouts or signals which led to an accident on the layout.

The "Halt State" is reached as follows:

- If the Intellibox is in the "STOP" state (the red LED above the stop key is lit), the STOP key must be held pressed and simultaneously the GO key must be pressed and released again. Now the track power is switched on and all locomotives stop.

- If the Intellibox is in the "GO" state (the green LED above the GO key is lit), the GO key must be kept pressed and simultaneously the STOP key must be pressed and released again. Now the track power remains switched on and all locomotives stop.

- If the Intellibox is in the "halt condition" the green LED above the GO key flashes. In the display for the locomotives the old speed setting remains and to indicate the "halt state" the display of the travel direction alternates with the "=" to symbol.

[menu]

Enters the Setting menu or returns to the control panel operation.

[mode]

Switches between the different operating modes for keyboard, feedback monitor, Loco programmer and LISSY mode.

3.4 The Control Panel

Locomotives can be selected and controlled with the control panel. The Intellibox has two independent control panels. They are on the left and right side of the control unit.

Digital decoders with different data formats can be addressed and operated at the same time.

The control panels also operate during programming or during the changes of the presets.

3.4.1 The Speed Knobs

The speed control knob changes the locomotive speed and driving direction. With the rotating knob without end stop, the Intellibox automatically goes to the stored speed of the selected locomotive when the locomotive is changed.

The speed controller has two different operating modes:

The AC style knob

The AC Style mode works like an old-fashioned three rail AC controller.

Figure 3.41 How an AC style knob works
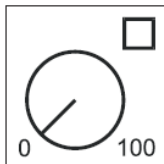
Using the AC style, the speed will always be increased while turning the knob clockwise and will be decreased while turning the knob counterclockwise. If the max. speed or the speed zero is reached, a further turn of the knob in the same direction has no effect. The max. speed or the speed zero will be maintained.

A slight push on to the speed knob will reverse the direction of the loco.

Pushing the speed knob during driving will stop the loco first (emergency stop). Then the direction will be changed.

DC style knob

The DC Style mode works like a DC speed control device for DC two rail systems.

*Figure 3.42
How an DC
style knob works*
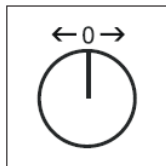
Using the DC style, turning clockwise the speed knob starting from a zero speed level will increase the speed of the loco in forward direction. Turning the speed knob counterclockwise will decrease the speed until the zero speed level is reached. A further turn of the knob will reverse the direction of the loco and will increase the speed in reverse direction. If the max. speed level is reached, further turns of the knob in the same direction will not cause any change.

A slight push on the speed knob will stop the loco immediately by emergency stop.

Preset

The unit is shipped with the AC style controller mode active. This can be changed in the Intellibox Basic Settings menu (see chapter 4.5.2).

The display of the vehicle speed can be selected between the direct reading in speed steps and percent of the maximum speed (see Basic Settings).

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

These keys are used to switch locomotive special functions, like special lighting, horn or smoke generator.

Note *Together with* [lok#/f+] *key some DCC decoders can switch functions f5 to f12 in that* [off/f+4] *and* [f0/f+8] *are used as shift keys (see chapter 5.2).*

3.4.3 The [f0 / f+8] and [off / f+4] Keys

These are used for switching the locomotive lighting on and off.

They are also used together with the [lock#/f+] key as shift keys, in order to reach functions f5 to f12 on some DCC decoders.

3.4.4 The [lok# / f+] Key

Used as the first key for inputting the desired locomotive address for the respective control panel.

If a vehicle is already selected, then by pressing the [lok#/f+] and [menu] key one after other you get to the menu for changing the data format for the particular decoder.

Together with the shift keys [off/f+4] and [f0/f+8] functions f5 to f12 can be switched on some DCC decoders (see chapter 5.2).

If the [lok#/f+] key is pressed twice in quick succession one gets to the menu for numeric input of the special function numbers 0 to 9999 (see chapter 5.2).

3.5 The Numeric Key Panel

Figure 3.51
The keys in the
Numeric key panel
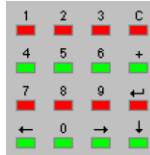
[0] - [9]

Decimal digits

[←] [→]

One menu level (or one column) to the left or to the right

[↓]

Decrements a value by one
Goes one menu entry downwards
Turns Special function off

[+]

Increments a value by one
Goes one menu entry upwards
Turns Special function off

[↵]

Confirmation key (enter)

[C]

Deletes the last entry from the keyboard

4. Basic Settings Menu

The basic settings of the Intellibox can be changed using this user friendly menu. All settings will be permanently saved in the nonvolatile memory of the Intellibox.

Press the [menu] and the [mode] buttons one after the other in order to enter the "Basic Settings" menu.

4.1 Structure and Navigation

*Figure 4.11
The Intellibox
Menu structure*
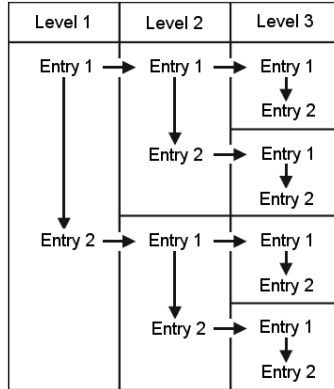
[→] A menu level or a column to the right

[←] A menu level or a column to the left

[↓] Pages through the individual entries of a menu level from above downward

[+] Pages through the individual entries of a menu level from down upward

[menu] Returns the Intellibox to control panel operating mode at any time.

Note *While the menu functions are in use, the Intellibox speed controller (rotary knob, direction of travel changing, function keys f1-f4, function and off) functions are still available.*

4.2 Help in the Display

Should a menu level include sub-levels, the first character in the second row of the display will be a ">".

```
Decoder Program.
> DCC Program.
```

Should the entry be a parameter value, which could be activated or changed, then the first character in the display will be a "=".

```
Sprache:
= Deutsch *
```

Selected modes of operation or setting parameter are marked with an asterisk (∗) at the line end.

4.3 Input

Numeric values can be entered using the numeric key pad. The input position is shown by a blinking character in the display.

The [C] button clears the last entered digit.

If you want to run "horizontally" among the different levels, use the [→] and the [←] buttons to step between the columns.

The [↵] button confirms the last input or selects a parameter.

4.4 Menu Structure

The overview of the structure of the Basic Setting Menu.
Default value is marked by a star (✱).

```
> User Interface ──────▶ > Loco Speed Display ──────▶ = Absolute *
                                                        = Percentage

                         > Speed Knobs ──────────────▶ = AC style knob *
                                                        = DC style knob


> Language ────────────▶ = Deutsch *
                          = English
                          = Francais
                          = Italiano
                          = Nederlands
                          = Svenska
                          = Espanol
                          = Portugues
                          = Dansk


> Loco Data Format ────▶ = Motorola old
                          = Motorola new
                          = DCC 14
                          = DCC 28 *
                          = DCC 128


> Access.Settings ─────▶ > General type ────────────▶ = Motorola
                                                        = DCC *

> LocoNet Prog. ───────▶ = Show and change LNCVs

> Display ─────────────▶ > Brightness ──────────────▶ = Set with [+] and [↓]
                                                        Keys

                         > Contrast ────────────────▶ = Set with [+] and [↓]
                                                        Keys

> Special Options        = Input for Special Options

> Software Version ────▶ = The device's Serial number and
                            Software version number

> Reset ───────────────▶ > Configuration ──────────▶ = yes *
                         > Loco Data Format          = no
```

4.5.1 Loco Speed display

The speed of the loco can be displayed in two different ways.

Absolute Speed (default factory setting)

The speed level will directly be displayed using the current operating level. According to the chosen data format the display will show numbers in the range 0-14, 0-28, or 0-126.

Percentage of maximum speed

The speed level will be displayed in percentage of the maximum speed independently of the current data format.

How to set loco speed display

- *Press the* [menu] *key*
- *Press the* [mode] *key*
- *Scroll with the* [↓] *key until you read "User Interface"*
- *Enter the menu with the* [→] *key*
- *Scroll with the* [↓] *key until you read "Loc speed display"*
- *Enter the menu with the* [→] *key*
- *Scroll with the* [↓] *key until you reach your desired entry*
- *Select this setting by pressing the* [↵] *key*
- *Go back to the main display with the* [menu] *key*

4.5.2 Speed knobs

Whether the Intellibox speed control behaves like a DC speed control or as an AC speed control is configurable.

Ex-factory it is set to "AC speed control" an alternating current speed control.

The AC style knob

The AC Style mode works like an old-fashioned three rail AC controller.

*Figure 4.51
How an AC
style knob works*
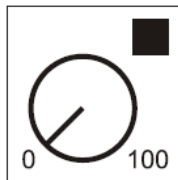
Using the AC style, the speed will always be increased while turning the knob clockwise and will be decreased while turning the knob counterclockwise. If the max. speed or the speed zero is reached, a further turn of the knob in the same direction has no effect. The max. speed or the speed zero will be maintained.

A slight push on to the speed knob will reverse the direction of the loco.

Activation of the change over switch during running firstly stops the vehicle by emergency stop and only then changes the driving direction.

DC style knob

The DC Style mode works like a DC speed control device for DC two rail systems.

*Figure 4.52
How an DC
style knob works*
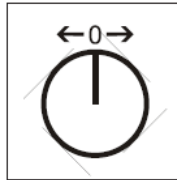
Using the DC style, turning clockwise the speed knob starting from a zero speed level will increase the speed of the loco in forward direction. Turning the speed knob counterclockwise will decrease the speed until zero is reached. A further turn of the knob will reverse the direction of the loco and will increase the speed in the reverse direction.

If the max. speed level is reached, further turns of the knob in the same direction will not cause any change.

A slight pressure on the control knob stops the locomotive by emergency stop.

How to change the style of the speed knob

- *Press the* [menu] *key*
- *Press the* [mode] *key*
- *Scroll with the* [↓] *key until you read "User Interface"*
- *Enter the menu with the* [→] *key*
- *Scroll with the* [↓] *key until you read "Speed knobs"*
- *Enter the menu with the* [→] *key*
- *Scroll with the* [↓] *key until you reach your desired entry*
- *Select this setting by pressing the* [↵] *key*
- *Go back to the main display with the* [menu] *key*

4.6 Menu "Language"

The language of the displayed text can be set to German, English, French, Italian, Dutch, Swedish, Spanish, Portuguese or Danish.

The default factory setting is "German".

How to change the language of the display

- *Press the* [menu] *key*
- *Press the* [mode] *key*
- *Scroll with the* [↓] *key until you read "Language"*
- *Enter the menu with the* [→] *key*
- *Scroll with the* [↓] *key until you reach your desired entry*
- *Select this setting by pressing the* [↵] *key*
- *Go back to the main display with the* [menu] *key*

4.7 Menu "Loco data format"

Here you can choose the default loco data format. This format will automatically be used when new decoder addresses are introduced, if no other format is explicitly defined. (see Chap. 4.5)

This menu should be used to define the data format which will be normally used.

The default factory setting is the DCC format.

Possible settings are:

DCC 14-28-128

DCC format with 14, 28 or 128 speed steps

Motorola - old

Old Motorola data format
Loco decoder without special functions
Function decoder controlled by [f1] [f2] [f3] [f4]

Motorola - new

Also called Gauge 1 Format, with locomotive special functions f1-f4.

Note *The digital format of each locomotive can be modified independently of all other locomotives. Detailed instructions are given in "Changing individual Locomotive data format" (Chap. 4.5).*

How to change the loco data format

- *Press the* [menu] *key*
- *Press the* [mode] *key*
- *Scroll with the* [↓] *key until you read "Loco data format"*
- *Enter the menu with the* [→] *key*
- *Scroll with the* [↓] *key until you reach your desired entry*
- *Select this setting by pressing the* [↵] *key*
- *Go back to the main display with the* [menu] *key*

4.8 Menu "Accessory (decoder) setting"

Attention *Solenoid device decoders from Märklin, Viessmann and Modeltreno are compatible with the Motorola format. Their addresses are defined using the DIP switches that can be found inside each unit. Each decoder is characterized by a unique address.*

All Intellibox setup menus make use of these turnout addresses and not the solenoid decoder address.

The appendix has a table which shows the relationship between the DIP switch position and the turnout addresses, as well as the allocation for that Märklin keyboard.

The data format which is automatically selected the first time a decoder is called up is set here as long as (as described in chapter 3.5.2) the particular decoder does not use another data format.

The data format which is most frequently used should be set here before the first use of the Intellibox.

The default is the DCC data format.

How to change the accessory (decoder) setting

- *Press the* [menu] *key*
- *Press the* [mode] *key*
- *Scroll with the* [↓] *key until you read "Access.Setting"*
- *Enter the menu with the* [→] *key*
- *Scroll with the* [↓] *key until you read "General type"*

- *Enter the menu with the* [→] *key*
- *Scroll with the* [↓] *key until you reach your desired entry*
- *Select this setting by pressing the* [↵] *key*
- *Go back to the main display with the* [menu] *key*

Switching decoders in Motorola Format:

Uhlenbrock, Märklin, Viessmann, Modeltreno

Switching decoders in DCC Format:

Uhlenbrock, Roco, Arnold, LGB, Lenz, Märklin=, Digitrax, etc.

4.9 Menu "LocoNet module"

In the Basic Settings menu of the Intellibox there is a menu option for the programming of Uhlenbrock into LocoNet modules, e.g. feedback modules or Switch control.

The modules are programmed via LocoNet Configurations Variables (short LNCV's). The LNCV's determine the operation and function of the modules and can have different meanings with the different modules.

Refer to the respective operating instructions of the module for a description of the individual LNCV's and the connections.

4.9.1 Programming the module address

If a model railway layout has several modules of the same type, they all need a different module address for programming, so that the centre knows which module is meant.

Each new module has a specific default address. This is documented in the modules manual.

Programming LocoNet CV's

- Connect the module to the LocoNet correctly.
- Use the Intellibox [menu] and [mode] key, to enter the Basic Settings menu
- Press [↓]-key to scroll the to menu option "LocoNet Prog.".
- Press [→]-key to go to the submenu.

```
LocoNet Prog.:
Art.-Nr.:  .....
```

- Enter the module's part number (in this case LISSY receiver 68610) and press the [↵]-key.

```
LN Prog.: 68610
Modul Adr.:.....
```

- Enter the receiver's address (e.g. 1) and press the [↵]-key.

```
LNPr 68610-00001
LNCV:....0=....1
```

On the upper line the module's part number and its valid address are displayed.

On the lower line the LocoNet CV number (here "0" for the module address) and the present valid value are shown (here 1). The cursor flashes on the lower line under the "0". The upper line of the display remains unchanged during entire programming. If the module has a control LED, this flashes if the module was addressed correctly.

4.9.2 Programming LocoNet CV's

- *Connect the module to the LocoNet correctly.*
- *Use the Intellibox* [menu] *and* [mode] *key, to enter the Basic Settings menu*
- *Press* [↓]*-key to scroll the to menu option "LocoNet Prog.".*
- *Press* [→]*-key to go to the submenu.*

```
LocoNet Prog.:
Art.-Nr.:  .....
```

- *Enter the module's part number (here 63340) and press* [↵]*-key.*

```
LN Prog.:  63340
Modul Adr.:.....
```

- *Enter the receiver's address (e.g. 1) and press the* [↵]*-key.*

```
LNPr 63340-00001
LNCV:....0=....1
```

> *On the upper line the module's part number and its valid address are displayed.*
> *On the lower line the LocoNet CV number (here "0" for the module address) and the present valid value are shown (here 1).*

- *At the cursor position enter the id number of the LocoNet CV, which you wish to program*
- *Press* [↵]*-key. The Intellibox reads the CV and displays the value to the right of the lower line.*
- *Press* [→]*-key to move the cursor right and enter the new value using the number keys*
- *Press* [↵]*-key to write the changed value*
- *Return to normal driving operation with the* [menu] *key.*

4.10 Menu "Display"

The Display menu could be used to adjust the brightness and the contrast of the LCD.

How to change brightness and contrast of the LCD

- *Press the* [menu] *key*
- *Press the* [mode] *key*
- *Scroll with the* [↓] *key until you read "Display"*
- *Enter the menu with the* [→] *key*
- *Scroll with the* [↓] *key until you reach your desired entry*

- *The adjustment can be done using the* [↓] *and the* [+] *keys*
- *Select this setting by pressing the* [↵] *key*
- *Go back to the main display with the* [menu] *key*

Note *If you leave the menu without using the* [↵] *key, the old settings will be restored.*

If the display is unreadable because of a wrong setting of the brightness and/or contrast, you could recall the default factory settings by switching the main power on while pressing down the [+] *key at the same time.*

4.11 Menu "Special Option"

The Intellibox has various special options which affect its operation and can differ between Software Versions.

Each special option can be selected and changed using an ID number. Details of individual special options can be inferred from a list for the respective software version. With later software changes a file with the appropriate explanations is on the update disk.

Method:

- *Press* [menu] *-key*
- *Press* [mode] *-key*
- *Press* [↓] *-key to scroll to the "Special Option" entry*
- *Continue with* [→] *-key*

```
Special Option:
N.   1 = ---
```

- *Enter special option ID at the first input position after "N."*
- *Press* [→] *-key to move the cursor to the right input position*
- *Enter the value for the special option*
- *Press* [↵] *-key*
  A "✶" in the display indicates that the special option is active
- *Press* [menu] *-key to return to running operation*

Note *In the change special options menu, if the* [mode] *-key is pressed while the input cursor is in the section to the right of the equals sign, the displayed numerical value is represented in hexadecimal.*

This function is used for display only. It can be cancelled by a further press of the [mode] *-key.*

4.12 Menu "Software-Version"

Under this menu option you will find the serial number of your device and the version number of the system software.

Method:

- *Press* [menu] *-key*
- *Press* [mode] *-key*
- *Press* [↓] *-key to scroll to the "Software Vers." entry*
- *Continue with* [→] *-key*

```
Ver: 1.000-1.000
S/N: ----------
```

- *The upper line shows the system software version number and the lower line shows the serial number of the Intellibox*
- *Press* [menu]-*key to return to running operation*

The [C] key can be used to delete incorrect character entries. If the complete input is cleared with [C] key so that no digit appears in the display, a further push of [C] key will set the value back to factory default.

4.13 Menu "Reset"

With this menu option the Intellibox can be returned to factory settings.

4.13.1 Configuration

All changes in the basic settings menu are deleted. All changes to the special options are restored. The selected language remains.

```
Configuration:
= Reset   : no
```

Now there are various options:

1. Don't Reset

- Press [↓]-key to proceed to next setting

2. Reset and continue in Menu

- Press [↓]-key to scroll to "= Reset.: yes"
- Press [↵]-key and hold it

The Intellibox is put back to its factory settings with a system RESET and restarts in the configuration mode.

3. Reset and return Keyboard mode

- Press [↓]-key to scroll to "= Reset.: yes"
- *Press* [↵] -*key*

The Intellibox is put back to its factory settings with a system RESET and restarts in the Keyboard mode.

Speed step indication	Direct reading
Speed knob (throttle)	AC style knob
Locomotive data format	DCC
Turnout data format	DCC
Special options	cancellation of all changes

4.13.2 Locomotive data format

The entries, which were made for individual locomotive decoders under the option "Data Format of Individual Locomotive Decoders" (chapter 5.3) are deleted. The basic data format selected for locomotive decoders is used for the relevant decoder addresses (chapter 4.7).

Method:

- *Press* [menu]*-key*
- *Press* [mode]*-key*
- *Press* [↓]*-key to scroll to the "reset" entry*
- *Continue with* [→]*-key*
- *Press* [↓]*-key to scroll to the desired entry*
- *Continue with* [→]*-key*
- *Press* [↓]*-key to scroll to the "yes" entry*
- *Press* [↵]*-key to confirm the selection*

The Reset will be executed and the Intellibox restarts.

5. Driving

Each locomotive in a digital system can be controlled by means of an "address" (a combination of digits that uniquely identifies the locomotive's decoder).

Each decoder has its own address. An address should identify one, and only one, locomotive.

5.1 Locomotive Address Selection

In order to control a locomotive with the Intellibox you must select its address.

To select a locomotive address, first press [lok#/f+] key. The display will show a blinking cursor in one of the address fields, prompting you to input a value.

There are two methods of doing it:

5.1.1 Input via the numeric keyboard

- Press the [lok#/f+]-key (in case it has not been done yet)
- Input the digits that form the whole address with the numeric keypad
- Terminate address input:
  - press the [↵] key,
  - press any other key in the control panel:
    [f1] [f2] [f3] [f4] [f0/f+8] [off/f+4] [lok#/f+]
  - turn the knob (throttle),
  - press the knob to induce a change of direction.

5.1.2 Address selection using the speed knob

- Press the [lok#/f+]-key (in case it has not been done yet)
- Turn the knob to change the address, clockwise to increase the value, counter clockwise to decrease it.
- Terminate address input:
  - press the [↵] key,
  - press any other key in the control panel:
    [f1] [f2] [f3] [f4] [f0/f+8] [off/f+4] [lok#/f+]
  - press the knob to induce a change of direction.

Tip *Use the* [C] *key to erase wrong entries, one digit at a time. If you cancel the whole address, a further press of the* [C] *key will recall the previous address.*

Note *Should you try to take control of a locomotive which is already being controlled by another knob, the Intellibox will show the message "Loco used by another controller!" After this message you can control the relevant locomotive using both manual controllers (the external or the internal ones).*

5.1.3 DirectDrive

Take control of the locomotive, which last passed over a certain LISSY receiver, by the push of a button on the controller without having to enter its address.

5.1.4 Using the address memory

The Intellibox stores the address of the last locomotive controlled by each of the control panels in its memory.

- Press [lok#/f+]
- Press [↓]

The last valid address is displayed and is ready to be used.

5.1.5 Releasing a Loco address

If a vehicle that is being controlled by the Intellibox is to be controlled by another device which does not have a method for entering the locomotive address (e.g. Uhlenbrock FRED or Digitrax BT-2), then it must be released.

Use the following procedure:

- Press [lok#/f+]
- Cancel the whole address with the [C] key
- Press [lok#/f+]

5.2 Switching Lights and Special functions

The light and special functions can be switched for locomotive and function decoders, with the function keys.

Motorola decoders have 4 special functions, DCC decoders up to 10 000.

5.2.1 Switching Light function

The [f0/+8] key switches the light function of a decoder on.

Releasing the [off/f+4] key switches the light function off.

As long as the [off/f+4] key is kept pressed, the function is active, even if the [f0/+8] key was not with switched before hand, e.g. for the operation of a telex coupling.

5.2.2 Direct switching of Special functions [f1] to [f4]

Keys [f1] [f2] [f3] [f4] can be used to directly control these special functions.

Each key press toggles the relevant decoder output, from "off" to "on", and vice-versa.

5.2.3 Direct switching of Special functions f5 to f12

In order to be able to switch the decoders special functions [f5] to [f8] the [lok#/f+] and [off/f+4] keys used as shift keys. They must be operated in quick succession.

The following key combinations apply:

- [lok#/f+] + [off/f+4] + [f1] switches special function [f5]
- [lok#/f+] + [off/f+4] + [f2] switches special function [f6]
- [lok#/f+] + [off/f+4] + [f3] switches special function [f7]
- [lok#/f+] + [off/f+4] + [f4] switches special function [f8]

- [lok#/f+] + [f0/f+8] + [f1] switches special function [f9]
- [lok#/f+] + [f0/f+8] + [f2] switches special function [f10]
- [lok#/f+] + [f0/f+8] + [f3] switches special function [f11]
- [lok#/f+] + [f0/f+8] + [f4] switches special function [f12]

If an extended special function was changed the display indicates the special function and its state (1=on, 0=off) are.

```
F....|■▪■■|d3651
     |■■■▪|  0 ↑
```

Tip *The confirmation is shown for approx. 2 seconds. During this time the extended special functions in the range f5 to f12 can be switched without having to press the* [lok#/f+] *key again.*

5.2.4 Switching Special Functions with numerical Input

All special functions to 9999 can be switched by numeric input.

For this the [lok#/f+] key is pressed 2 times in quick succession. In the display the following menu appears on the side of the control panel being used:

```
F....|■▪■■|d3651
     |■■■▪|  0 ↑
```

Now the number of the special function can be entered with the numeric keyboard. Subsequently the function can be switched on with the [+]-key and switched off again with the [↓] key.

```
F 681|■▪■■|d3651
     |■■■▪|  0 ↑
```

The lower line of the display shows the state with a "1" for switched on or "0" for switched off.

```
F 681|■▪■■|d3651
    1|■■■▪|  0 ↑
```

5.3 Changing data format of a locomotive decoder

The Intellibox is able to simultaneously control decoders with different digital data formats (protocols) on the same layout.

It is possible to transmit a different data format for each individual locomotive address. In this case it is necessary to define the protocol for each locomotive.   Section 4.7 describes how to configure the Intellibox default protocol.

5.3.1 Data formats

The following data formats (protocols) are available:

Motorola - old

Old Motorola format with 14 speed steps
Locomotive decoders without extended functions
Control of earlier function decoders with the [f1] [f2] [f3] [f4] keys

Motorola - new

New Motorola (Gauge 1) format with special functions f1 to f4.

DCC 14/28/128

DCC protocol with 14/28/128 speed steps

Special configuration

This menu entry allows one to modify some special settings for each particular decoder. This can be requested in case of a wrong behaviour of the decoder when using the default settings.

A list of these special configurations for some decoders will be available on the Internet.

In particular cases, or in case of problems, refer to the available Hotline in order to understand which special configuration should be modified.

5.3.2 Symbols used to display different data formats

The decoder's data format is displayed on the left of the locomotive address.

The following symbols are defined:

Motorola - old   = m without direction arrow
Motorola - new   = m with direction arrow
DCC, all formats   = d

5.3.3 Setting the Data format

- *Press the* [lok#] *key*
- *Enter the locomotive address*
- *Press the* [↵] *key*
- *Press the* [lok#/f+] *key*
- *Press the* [menu] key
- *The display will show the currently assigned format marked with a "✻" at the end of the line.*
- *Use the* [↓] *or* [+] *keys to scroll through the different formats.*

Attention *Please follow the next three steps only if you have selected "Spec. Config.".*

```
Loco Settings
spc.Config. 1 = 0
```

- *Use the first position of the cursor to input the code number of the desired configuration (here a "1").*
- *Use the* [→] *key to jump to the right input column.*

- *Input the value of the desired configuration (here a "0").*
- *Use the* [↓] *or* [+] *keys to scroll through the different formats.*
- *Press the* [↵] *key to accept the displayed format.*
  The selected format will be marked with an asterisk.
- *Go back to the main display with the* [menu] *key.*

5.4 Controlling function decoders

Function decoders are for controlling working models or are built into vehicles to give the locomotive decoder more functions to be switch, than are available in the locomotive decoder.

The procedure described in chapter 5.3 is also used to change the data format of function decoders.

Function decoders are operated with the function keys of the respective control panel (see chapter 5.2).

6. The Keyboard

In a digital system turnouts and signals can be controlled by decoders. Just like with locomotives, these are assigned individual addresses to identify them.

6.1 Description

The Intellibox can operate Solenoid and switching decoders in different formats, the Motorola data format and the DCC data format. Decoders of both formats can be operated next to each other.

Solenoid decoders from Märklin, Viessmann and Modeltreno for the Motorola data format, each control four turnouts.

Important *The address, which is set by the DIP-switch of these decoders, is not identical to the addresses of the turnouts attached to the decoder. All of the Intellibox settings use these turnout addresses and not the solenoid decoder address.*

A table that shows the allocation of the DIP-switches setting and the solenoid addresses, as well as the allocation to the Märklin keyboards is contained in the appendix.

As is the case for the locomotive decoders, the default data formats for solenoid and switching decoders can also be adjusted by "Basic Settings" (See chapter 4.8 for the options).

6.2 Selecting the Keyboard mode

The Keyboard mode can be reached by pressing the [mode] key a number of times or by pressing the [mode] key immediately followed by the [1] key.

The layout of the display is updated accordingly.

6.3 Keyboard control

In "Keyboard" mode, the numeric keypad is used to control electromagnetic (solenoid) devices (turnouts, signals, relays). At power up, you can control the first 8 devices without any additional configuration.

Figure 6.31
The keypads and the
numbering of key pairs

Switching is accomplished with the red (1. and 3. key row) or green (2. and 4. key row) keys. The display will show "R" or "G" when you press, respectively, a red or a green key. Additionally, the address of the controlled device is subsequently displayed.

Normally, the display will show the current status of the Keyboard:

The middle part the display gives information about the current keyboard status: For the pairs of keys from which the upper (red) key was pressed last (in the figure 2 and 8), the rectangular symbol

appears raised above, as with the pairs of keys, with which the lower (green) key was pressed last.

6.4 Selection of the Keyboard address

After a system reset, the red/green pairs numbered 1 to 8 in Figure 6.31 are assigned to devices with addresses from 1 to 8.

The key assignment can be changed by assigning a new address to first key pair of the Keyboard.

Method:

- *Press the* [mode] *key repeatedly*
  Until the display reads "Keyboard Mode".
- *Press the* [menu] *key*

```
Keyboard
Adr.:  ...1 - 8
```

- *In the display's left column in which is also the input position of this menu, indicates the turnout address, which is assigned to the first pair of keys. The second column indicates the turnout address for the eighth pair of keys.*

  The direct input of the value for the first key pair is done with the numeric keyboard. Alternatively the value can be increased and decreased with the [+] *and* [↓] *keys.*

  If the value for the first key pair is changed, the address for all 8 key pairs is also changed automatically.

  The following will be the display if the first key pair has an address of 17:

```
Keyboard
Adr.:  ..17 - 24
```

- *Press the* [↵] *key to confirm and return to driving.*

Important   *The* [→] *and* [←] *keys can select the groups of eight 1-8, 9-16, 17-24 etc. for the key field.*

For solenoid decoders addresses 1 to 320 can be used in Motorola format and the addresses 1 to 2040 for DCC decoders.

6.5 Keyboard Table mode

In Keyboard mode the address of the solenoid device controlled by the first pair of keys is specified and the following key pairs are automatically assigned the following solenoid addresses.

In keyboard table mode on the other hand any desired address can be assigned to a particular key pair.

If address 0 is entered when in Keyboard mode, Table mode is selected. The display confirms activation of the solenoid address table by showing the following:

```
Keyboard
Adr.: ...0 - Tab
```

The "special options" menu in the Basic Settings can be used to assign any turnout address to each key pair (see chapter 4.11 of the manual and the list of special options in the appendix).

7. The Feedback Monitor

If model railway layouts are to be controlled automatically (e.g. by IB-Switches or computer control), then the control system needs status signals, which communicate which track section is occupied by a train. Only then can turnouts or signals be suitably switched and affect trains.

Feedback modules monitor the track sections and convey the state "a train is here" or "no train is here" to the central processing unit.

This train feedback is passed on via the LocoNet, either to the IB-Switch 65400 to trigger train controlled switching sequences or via the interface to a computer program, which can coordinate its control problems accordingly.

Altogether a total of 2048 inputs is possible.

7.1 LocoNet Feedback

The valid address range for LocoNet Feedback modules is 1-2048, i.e. a max. of 256 Feedback modules for 2-rail (63 340) with 8 inputs each, or 128 Feedback modules for 3-rail (63 350) with 16 inputs each, can be connected with the Intellibox. The modules can be connected either to the LocoNet B or LocoNet T socket of the Intellibox.

7.2 Selecting Monitor mode

The monitor mode can be selected by multiple operation of the [mode] key or the [mode] key immediately followed by [2]. The centre part of the display will change accordingly.

7.3 The Display

In the monitor mode the middle part of the display shows 16 blocks each indicating a feedback input. After switching the Intellibox on, this is always the first block with addresses 1-16.
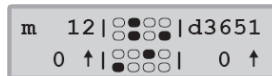
The hollow blocks mean a vacant message, the closed an occupied message.

7.4 Key Assignment

Figure 7.41
Allocation between the keys in the middle key group and the feedback addresses, if the selected module address is 1.

In the monitor mode each key in the middle key group on the Intellibox is assigned to a feedback input. If one of these 16 keys is pressed, the state of the relevant input of the attached feedback module, with '0' for vacant or '1' for occupied, is indicated in the display.

7.5 Selecting Inputs to be Monitored

When switching on the Intellibox, the first block with inputs 1-16 is always shown. To show other inputs, the display can be changed in blocks of 16 inputs. This corresponds to the module addresses of feedback modules with 16 inputs.

Pressing the [menu] key the display changes to:

```
Modul Adr.:
..1
```

Using the numeric keyboard another module address can then be entered. The valid addresses are 1 to 128.

In the appendix you will find a table from which you can determine which feedback address comes from which module.

Press the [menu] key to return to normal running.

8. Programming Mode

For problem-free programming of Uhlenbrock and DCC compatible decoders.

8.1 Programming track

Programming is carried out on a "Programming Track". This is either a normal track section which is set up for this purpose or a siding track which is available in most layouts. It is connected to the Intellibox via a change-over switch to select either track power or programming power.

The programming track is connected to pins 1 and 2 of connector 1 for the Intellibox.

Very Important *Both rails of the programming track must be electrically isolated from the rest of the layout. In the case of Märklin track, not only the centre rail must be isolated, but also the two outer rails must be disconnected from the rest of the layout.*

8.2 Selecting the programming mode

Programming mode can be selected by pressing the [mode] key several times or by pressing [mode] key quickly followed by the [3] key.

```
m   12|PROG|d3651
   0 ↑|MODE|  0 ↑
```

After pressing the [menu] key the menu assisted mode is reached.

```
Decoder Program.
> DCC Program.
```

8.3 Structure of the programming menu

For programming of decoders the following menus are available:

```
> DCC-Program.  ───►  > Register-Prog
                      > CV-Prog. bytewise
                      > CV-Prog. bitwise
                      > Paged Prog.
                      > Mainline Prog.
                      > Long Addresses
```
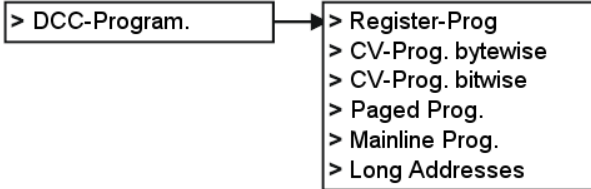
8.4 Programming DCC and Multi-protocol decoders

The programming of DCC decoders is accomplished, depending upon the make, with different programming procedures. The Intellibox supports all well-known programming procedures.

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 with CV programming.

8.4.1 Register programming

DCC decoders can be programmed under the "Register Prog." menu which accepts programming with 8 registers. This is the case particularly with older decoders but a few newer decoders also support this method of programming. The programming menu shows the following display:

```
Reg Prog:
Reg 1 = ...
```

Input the register number in the left column. The column on the right will display the register value to be transmitted to the decoder.

Use the numeric keypad to input the relevant values, or press the [+] key to increase the value by one unit, or the [↓] key to decrease it one unit. The [→] key moves the cursor to the right column. Values must be between 0 and 255.

Press the [↵] key to start programming the desired register.

If the right column is left blank, no programming will be carried out.

During the programming procedure, the Intellibox activity is shown by the word "prog" and a spinning bar in the display.

After successfully programming a register, the display's top line will show "o.k."

If the programming operation fails, you will get an error message (refer to section 8.4.7).

Pressing the [↵] key, when the cursor is in the leftmost column of the second line, will ask the Intellibox to read the value of the selected register from the decoder's memory.

During the read operation the Intellibox will display the word "Read" and a spinning bar in the top line. This operation can take up to 30 seconds.

If the read operation fails, you will get an error message (refer to section 8.4.7).

Note *A read error can be generated when you try to access a write-only register. On the other hand, sometimes, read or write errors can be caused by faulty electrical contacts between the locomotive and the tracks. In this case you should correct the problem and move the Intellibox cursor with the [←] key to the left-hand column. Press [↵] to re-read the same register.*

After successfully reading a register, the display's top line will show "o.k."

You can now change, the register's value, as described before.

Caution *Register number 1 contains the decoder address.*
If you are programming older decoders, never use values greater than maximum allowed value for that decoder. This maximum allowed value (usually 99) should be mentioned in the decoder manual.

8.4.2 CV programming (byte)

Use the "CV-Prog bytew" menu to program DCC decoders with 1024 configuration variables (CV).

This type of programming is also known as "Direct Programming". The process takes up to 5 seconds.

The programming menu will show the following display:

```
CV Prog:
CV ...1 = ...
```

Input the number of the desired CV (1-1024) in the left-hand column and its value (0-255) in the right-hand column.

Programming and reading procedure: follow what was described in section 8.4.1 about register programming. In this section, please take special notice of the highlighted paragraphs.

8.4.3 CV bitwise programming and reading

Use the "CV Prog bitw" menu to program DCC decoders with 1024 configuration variables (CV). With this programming method you can easily read or write single bits in a CV. This is really useful when each bit in a configuration variable has a special meaning, usually controlling different decoder options.

The programming menu will show the following display:

```
CV Prog:
CV ...1,Bit0 = .
```

The menu has three columns. The left is used to input the CV number (1-1024), the central one to input the desired bit number (0-7) and the right-hand column to input the bit value (0 or 1).

Caution *Bits are numbered 0 to 7. Some decoder's manuals (e.g. Lenz) use numbers from 1 to 8. Don't forget to convert these values before using this menu.*

Programming and reading procedures: follow what was described in section 8.4.1 about register programming, with the exception that the reading procedure is initiated from the central column.

Note *If the decoder cannot accept direct programming, the display will display "Error" to indicate that the decoder cannot be programmed using this method.*

Changing the desired bits can still be done in the "Bytewise CV-Programming" menu. (see Appendix).

8.4.4 Paged programming and reading

Use the "Paged Prog." menu to program DCC decoders with up to 1024 configuration variables (CV) which are programmed in paged mode.

The programming menu will show the following display:

```
Page Prog:
CV ...1 = ...
```

Input the number of the desired CV (1-1024) in the left-hand column and its value (0-255) in the right-hand column.

Programming and reading procedures: follow what was described in section 8.4.1 about register programming.

8.4.5 Mainline Programming

DCC decoders can be programmed on the mainline with the menu "Mainline-Prog.". During the running of the layout for example corrections to the inertia behaviour of individual vehicles can easily be made.

The decoders are programmed in accordance with the CV programming method. Reading of the decoders on the mainline is not possible.

Note *Decoders can be programmed on the mainline only if the vehicle is stopped. The relevant locomotive must therefore be set to speed "0".*

Initially the programming menu will show:

```
Main line Prg.
Loco Addr = ...1
```

Input the decoder's address. After confirming the address with the [↵] key, the display will change to:

```
Loco  1:
CV ..1 = ---
```

Input the number of the desired CV (1-1024) in the left-hand column and its value (0-255) in the right-hand column.

Programming follows the procedure described in section 8.4.1 for register programming.

8.4.6 Programming long addresses

This menu provides a simple method to program DCC decoders with long addresses (14 bit, > 127).

Long addresses are stored in two CVs of the decoder (CV 17 and CV 18). To enable the use of long addresses, bit 5 of CV 29 should be set to 1.

In practice, you should be able to do this type of programming using the normal CV direct programming procedure (refer to sections 8.4.2 and 8.4.3). If you choose to use the "Programming long addresses" menu instead, the Intellibox will automatically compute the correct CV values and write to or read from the necessary CV.

The "Long addresses" menu includes the two sub-menus "Read" and "Program".

Use the "Read" sub-menu to read and display long addresses. The read procedure is initiated by pressing the [↵] key.

Caution *Take note that even during a read operation bit 5 of CV 29 is set to 1. From that moment on, it will no longer be possible to control the locomotive with its CV 1 "short" address, unless you reset bit 5 of CV 29 to zero.*

Use the "Program" sub-menu for programming addresses greater than 127. The programming operation is initiated by pressing the [↵] key.

Important *The long addresses programming procedure changes the decoder's CV 17, 18 and 29. After programming a long address, the "short" address in CV 1 and the consisting address in CV 19 are no longer available. If you want to use these addresses again, you must set bit 5 of CV 29 to zero.*

After entering a long address bit 5 of CV29 back to zero if the decoder is to use the short address in CV1 again.

8.4.7 DCC programming error messages

If the programming operation of a DCC decoder fails, the top line of the display will show one of the following error messages:

- **Error** The read or write operations of a register or a CV has failed.
- **no loc** No locomotive is present in the programming track, or the locomotive has a defective electrical contact with the programming track.
- **short** Short-circuit in the programming track.
- **Danger** Electrical contact between the programming track and the main track.
- **no pag** The decoder doesn't accept paged programming.

8.5 Programming of Motorola Decoders

The programming of Motorola decoders is described in the manual of the respective decoder and carried out from the control panel.

8.6 Programming of mfx-Decoders

You can find a guide for the programming of mfx decoders on our InterNet site www.uhlenbrock.de under Service-FAQ-Märklin System**.**

9. LISSY Mode

In a digital system each locomotive has an address and can receive control commands via this address. When considering full automatic control of the trains on a digital layout, the question frequently asked is: "Where on the layout is which locomotive at a particular time". This can be solved by a system that reads addresses of running locomotives, nothing prevents automatic control of a layout.

9.1 Description

LISSY consists of a tiny transmitter, which is fastened under each participating locomotive and using infrared light sends the locomotive address downward towards the track. Sensors are placed in the track, to receive the radiated information from the passing vehicle and relay it to the LocoNet. LISSY receivers located in various places of the layout track receive the following information:

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

The LISSY mode of the Intellibox can indicate the locomotive address, train category and driving direction of a train passing the reading point (in the middle part of the display). This allows block sections and shadow stations to be supervised. You then know at any time which locomotive is on which track section.

9.2 Setting LISSY Mode

The LISSY mode can be selected by repeated operation [mode]-key or pressing the [mode] key immediately followed by the [4]-key.

The centre of the display changes to indicate the new mode.

9.3 Operating LISSY Mode

If the LISSY mode is selected, a LISSY receiver can be monitored in the middle part of the display:

```
m   12|L↑-2|d3651
    0 ↑|  234|   0 ↑
```

The above display indicates that the monitored point was passed by locomotive with address 234 with the driving direction indicated by the arrow. The train category of the locomotive is the 2 indicated at the end of the line. If a car with a LISSY transmitter passes a monitored point, this is indicated by a W in the display:

```
m   12|W↑-2|d3651
    0 ↑|  234|   0 ↑
```

If a LISSY receiver reports a vacant block section, the data in the middle part of the display is cleared.

```
m   12|..-.|d3651
   0 ↑|....|  0 ↑
```

If the LISSY receiver reports a locomotive and indicated this in the middle part of the display, then control of this locomotive can be taken over on one of the two controllers of the Intellibox. For this you press [←]-key in order to take over the locomotive on the left controller and [→]-key in order to take over the locomotive on the right controller.

9.4 Calling up a LISSY Receiver

In the LISSY mode of the Intellibox all of the 4096 possible LISSY receivers can be monitored. The address of the LISSY receivers to be supervised can be changed with [menu]-key.

Method:

- Press [mode]-key repeatedly until the display reaches "LISSY mode"
- Press [menu] key

```
LISSY-Receiver
Adr.: ...1
```

- Using the numeric keyboard another address can be registered. Addresses 1-4096 are valid.
- With [menu] key return to normal driving.

9.5 DirectDrive

Take control of the locomotive, which last passed over a certain LISSY receiver, by the push of a button on the controller without having to enter its address.

```
m   12|L↑-2|d 234
   0 ↑| 234| 10 ↑
```

10. The Computer Interface

With the computer interface is a USB Computer interface. This interface is on IBM-compatible PCS or laptops.

To connect the Intellibox (socket 5) with the USB interface of the computer use the Uhlenbrock USB cable Part No. 61 070. That is a USB cable with A and B type of plug as is also used for connecting the computer to a USB printer.

The computer interface is adjusted to a data transmission rate of 115200 Baud.

The Intellibox Basic USB-LocoNet interface can be used with the Windows operating systems 2000, XP and Vista (32 bits, without active user account control). Support for older Windows of systems like 95 or 98 is not provided.

For layout control all PC control programs which support the LocoNet protocol can be installed.

10.1 Interface Characteristics

- Galvanic isolation between PC and LocoNet
- Baud rates: 19200, 38400, 57600, 115200
- Two modes of operation:
    1. all bytes are handed over directly at LocoNet (only 19200 Baud)
    2. only valid LocoNet Messages are transferred by the PC to LocoNet; the interface steers the data traffic on LocoNet; all bytes of LocoNet are handed over directly to the PC (factory setting).

10.2 Interface Characteristics

Since the interface on the Intellibox Basic technically is the same as the LocoNet interface 63120 it is setup in the same way by LocoNet programming (see chapter 4.9).

As part number you use 63 120; the module address is 1.

LNCV	Description	Default
0	Module address	1
1	Software version	-
2	Baudrate 1 = 19200 2 = 38400 3 = 57600 4 = 115200	4
4	LocoNet Direct module 0 = off 1 = on	0

10.3 Using the Interface

Attention *Before connecting the Intellibox basic with the PC the driver for the interface must be installed. Otherwise your PC will not perform correctly.*

For the installation of the driver insert the CD into your CD-ROM drive. After a short time the program will start and guide you through the installation procedure for the software.

If the installation program on your PC does not start automatically, open the CD-ROM drive assembly in the file manager or Explorer and start "CDRUN.EXE" with a double click.

Information for installation is in the file "Driver Setup".

Connect the PC`s USB port with the Intellibox USB connection (socket 5).

With successful installation the PC has a new COM Port with the designation "Uhlenbrock USB LocoNet interface".

The interface can now be addressed by software via the COM Port.

10.4 Communication PC - LocoNet (only for experts)

Communication between PC and LocoNet must be according to the following protocol:

Send message over USB and wait until the sent message is received again, before sending a new message. If other messages are received during the waiting period process them.

LACK (Long Acknowledge Message) treatment: If a LACK can follow a message (see LocoNet documentation for the messages that can be follow by a LACK), a flag must be set by the COM Port after a send and receipt operation. If this flag is set and the next received message is a LACK message, then this must be processed because it is a reply to the sent Message. If the next message received is not a LACK the set flag is reset. This way ensures that a LACK is not assigned to a wrong Message.

Process Received Messages.

The echoed messages sent by PC do not have to be processed upon receipt, since after transmission to LocoNet they appear in the receive buffer and are processed by the receive routine.

Attention *Sending Messages without control of the return echo can lead to errors in communication between PC and LocoNet. By this method using a Baud rate of 115200 Baud will decrease the speed of communication.*

10.5 LocoNet Direct Mode

If the LocoNet direct mode is selected (LNCV 4 = 1), then each byte is sent directly to the LocoNet without any control by the interface. This mode should only be used with the Baud rate of 19200.

Note *The settings for the interface remain even if the Intellibox Basic configuration is put back to factory default.*

11. Operation as Auxiliary Device

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

11.1 Operation

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

- Control panel for controlling locomotives and switching of turnouts, as well as the monitoring of feedbacks
- 3A Booster for an isolated track section
- Current feed for further LocoNet modules without their own power supply, e.g. feedback modules and hand controllers, if the LocoNet of the center is working at full capacity.
- USB-LocoNet Interface

11.2 Setting the Operating Mode

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

Method:

- *Press the* [menu] *key*
- *Press the* [mode] *key*
- *Scroll with the* [↓] *key until you read "Special Options"*
- *Enter the menu with the* [→] *key*

```
Special Options:
N. ..1 = --0 *
```

- *With the numeric keys enter the number of the special option (here 844)*

```
Special Options:
N. 844 = --0
```

- *Press the* [→] *key to move to the right section*
- *Enter the desired value (here 1)*
- *Press* [↵]*-key to confirm the selection*

```
Special Options:
N. 844 = --1 *
```

- *Press the* [menu] *key to return to driving mode*

11.3 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 of socket 1.

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.*

A non-crossed cable 62025 is supplied with the equipment.

The LocoNet T socket, the socket for DCC boosters and the USB connection can be used as usual for the connection of LocoNet devices, DCC boosters and a computer.

Information on the LocoNet cables
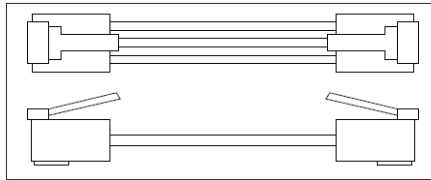
In the crossed version pin 1 is connected to pin 6, pin 2 to pin 5 etc.
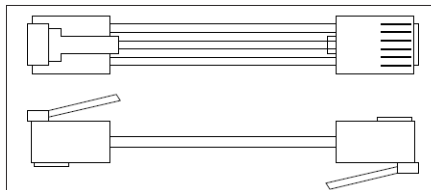
In the non-crossed version the pins are wired 1:1, thus pin 1 connected to pin 1, pin 2 to pin 2 etc.

12. Software Updates

The Intellibox system software can be updated to a newer version, by downloading the new software from the computers, through the serial interfaces.

There is no need to open up the Intellibox!

Hardware requirement

- You need to power the Intellibox with a transformer.
- You will also need a serial cable to connect the Intellibox to a Personal Computer.
- Disconnect the Intellibox from the layout LocoNet.

Software requirement

Contact your local retailer to obtain a diskette with the software update, or download it from our Internet site www.uhlenbrock.de.

Procedure

- Switch the Intellibox off for 5 seconds and then on again
- Start the program "IBBWinupdate.exe" and follow the instructions on the screen.

Checking the software version

With the 'Software Vers.' menu in the system's parameters, you can check the software version of your Intellibox.

- *Press the* [menu] *key*
- *Press the* [mode] *key*
- *Press the* [↓] *key until 'Software Vers.' is displayed*
- *Enter this menu by pressing* [→]

```
Ver: 1.000-1.000
S/N: ----------
```

The top line displays the system's software version number, while the bottom line shows the Intellibox serial number.

- *Press the* [menu] *key to return to the main screen.*

13. Error Messages

In case of an error during normal Intellibox operation, its power supply is immediately interrupted, the red LED above the [stop] key starts blinking and the display shows an error message.

```
  -- Short --
rail pwr output
```

Short circuit on the main track.

```
  -- Short --
    Booster
```

Short-circuit on a section controlled by a Booster.

The [go] key can be used turn the power back on after the cause of the short circuit has been eliminated.

Appendix

List of Special options

Special Option No. 25

In factory setting the Intellibox only sends a data format 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

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

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

Factory setting is 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. 810

Turnout address of the 1st key Pair of keyboard when starting

0 = table mode, adjustable over the special options 851 to 858 and 871 to 878

1-255 = turnout address of the 1st key pair of keyboard

Factory setting is 1.

Special Option No. 812

The address contains the feedback module which is shown in the display after switching the Intellibox on. Possible values are 1 to 128.

Factory setting is 1.

Special Option No. 815

0 = Intellibox starts in Keyboard-Mode (Factory Setting)
1 = Intellibox starts in Monitor-Mode
2 = Intellibox starts in Programming-Mode
3 = Intellibox starts in LISSY-Mode

Special Option No. 818

Pause at the zero position for DC controller in steps of (factory setting) 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. 851 to 858 and 872 to 878

In the keyboard table mode each individual pair of keys can be assigned any turnout address in the address range 1 to 2000. Special options 851 to 858 and 871 to 878 are assigned to the eight pairs of keys.

Special options 871 to 878 hold the two low order places of the decimal turnout address. Special options 851 to 858 hold the two with high order places.

Note: Input value = desired switch address minus 1!

Example: Key pair 3 is to be assigned the address 2000.

First the input value is determined, i.e. desired switch address minus 1 (= 1999).
The two places with high order (09) are put in the special option 853.
The two low order places (99) in the special option 873.

Factory setting is:

Key pair	1	2	3	4	5	6	7	8
Higher order Address	0	0	0	0	0	0	0	0
Special Option Number	851	852	853	854	855	856	857	858
Lower order Address	10	20	30	40	50	60	70	80
Special Option Number	871	872	873	874	875	876	877	878
Address	11	21	32	41	51	61	71	81

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

4 = DCC (factory setting)

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

CV Address	Bit 0	Bit 1	Bit 2	Bit 3	Bit 4	Bit 5	Bit 6	Bit 7
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
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	1	1	0	1
177	1	0	0	0	1	1	0	1
178	0	1	0	0	1	1	0	1
179	1	1	0	0	1	1	0	1

CV Address	Bit 0	Bit 1	Bit 2	Bit 3	Bit 4	Bit 5	Bit 6	Bit 7
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

CV Address	Bit 0	Bit 1	Bit 2	Bit 3	Bit 4	Bit 5	Bit 6	Bit 7
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
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

CV Address	Bit 0	Bit 1	Bit 2	Bit 3	Bit 4	Bit 5	Bit 6	Bit 7
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 [menu] key.

Module address	Input	Module address	Input	Module address	Input
1	1 - 16	44	689 – 704	87	1377 - 1392
2	17 - 32	45	705 - 720	88	1393 - 1408
3	33 - 48	46	721 - 736	89	1409 - 1424
4	49 - 64	47	737 - 752	90	1425 - 1440
5	65 - 80	48	753 - 768	91	1441 - 1456
6	81 - 95	49	769 - 784	92	1457 - 1472
7	97 - 112	50	785 - 800	93	1473 - 1488
8	113 - 128	51	801 - 816	94	1489 - 1504
9	129 - 144	52	817 - 832	95	1505 - 1520
10	145 - 160	53	833 - 848	96	1521 - 1536
11	161 - 176	54	849 - 864	97	1537 - 1552
12	177 - 192	55	865 - 880	98	1553 - 1568
13	193 - 208	56	881 - 896	99	1569 – 1584
14	209 - 224	57	897 - 912	100	1585 - 1600
15	225 - 240	58	913 – 928	101	1601 - 1616
16	241 - 256	59	929 - 944	102	1617 - 1632
17	257 - 272	60	945 - 960	103	1633 - 1648
18	273 - 288	61	961 - 976	104	1649 - 1664
19	289 - 304	62	977 - 992	105	1665 - 1680
20	305 - 320	63	993 - 1008	106	1681 - 1696
21	321 - 336	64	1009 - 1024	107	1697 - 1712
22	337 - 352	65	1025 - 1040	108	1713 - 1728
23	353 - 368	66	1041 - 1056	109	1729 – 1744
24	369 - 384	67	1057 - 1072	110	1745 – 1760
25	385 - 400	68	1073 - 1088	111	1761 – 1776
26	401 - 416	69	1089 – 1104	112	1777 – 1792
27	417 - 432	70	1105 - 1120	113	1793 – 1808
28	433 - 448	71	1121 - 1136	114	1809 - 1824
29	449 - 464	72	1137 - 1152	115	1825 - 1840
30	465 - 480	73	1153 - 1168	116	1841 - 1856
31	481 - 496	74	1169 - 1184	117	1857 - 1872
32	497 - 512	75	1185 - 1200	118	1873 - 1888
33	513 - 528	76	1201 - 1216	119	1889 - 1904
34	529 - 544	77	1217 - 1232	120	1905 - 1920
35	545 - 560	78	1233 - 1248	121	1921 - 1936
36	561 - 576	79	1249 - 1264	122	1937 - 1952
37	577 - 592	80	1265 - 1280	123	1953 - 1968
38	593 - 608	81	1281 - 1296	124	1969 - 1984
39	609 - 624	82	1297 – 1312	125	1985 - 2000
40	625 - 640	83	1313 - 1328	126	2001 - 2016
41	641 - 656	84	1329 - 1344	127	2017 - 2032
42	657 – 672	85	1345 - 1360	128	2033 - 2048
43	673 - 688	86	1361 - 1376		

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	-	-	-	-	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	-	-	-	-	5	-	-	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
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 locomotive 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 smoke, sound effects, etc), new Märklin decoders (60901, etc.) and Uhlenbrock decoders (755, 756, 760 in operating mode 1-3) operate only in the new protocol, and ignore the f1-f4 function signals of the old protocol.

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 levels 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 operating levels ->	CV#29 Bit 1 = 0
27 operating levels ->	CV#29 Bit 1 = 0
28 operating levels ->	CV#29 Bit 1 = 1
128 operating levels ->	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. 13 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	Add	Key	Function
225	red	Ends programming	233	red	Rotates to segment #9
	green	Programming / Input		green	Rotates to segment #10
226	red	Cancels programming	234	red	Rotates to segment #11
	green	Rotates 180°		green	Rotates to segment #12
227	red	Next segment clockwise	235	red	Rotates to segment #13
	green	Next segment anticlockwise		green	Rotates to segment #14
228	red	Rotation clockwise	236	red	Rotates to segment #15
	green	Rotation anticlockwise		green	Rotates to segment #16
229	red	Rotates to segment #1	237	red	Rotates to segment #17
	green	Rotates to segment #2		green	Rotates to segment #18
230	red	Rotates to segment #3	238	red	Rotates to segment #19
	green	Rotates to segment #4		green	Rotates to segment #20
231	red	Rotates to segment #5	239	red	Rotates to segment #21
	green	Rotates to segment #6		green	Rotates to segment #22
232	red	Rotates to segment #7	240	red	Rotates to segment #23
	green	Rotates to segment #8		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 [function] key and switched off with the [off] key.

If, in multi-protocol operation, the crane should not respond correctly, try changing its address.

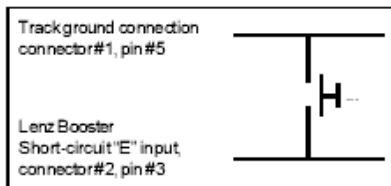## Controlling the Roco crane wagon (Digital DCC)

The address of the Roco digital crane wagon (40110 or 46800) should be configured for DCC - 14 operating levels. The crane wagon uses one locomotive address. The different functions are operated with the [function], [off] and [f1] keys and turning the corresponding knob.

The decoder address cannot be read on the programming track. Should you program a different address, you will get an error message, even if the programming procedure was successful.

Emergency stop button in the Lenz Booster output

If you connect the Intellibox ground (connector #1, pin #5) with the Lenz Booster short circuit signaling line "E", (connector #2, pin #3) 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.

Track ground connection
connector #1, pin #5

Lenz Booster
Short-circuit "E" input,
connector #2, pin #3

Troubleshooting

Problem	Cause	Solution
The Intellibox does not turn on.	The Intellibox does not have AC input power.	Check the plug on the transformer and the clamps in socket 1 of the Intellibox. Examine the connection between Intellibox and transformer and the mains supply to the transformer.
The Intellibox is in the wrong language.	The wrong language has been set under Basic Settings menu.	Switch the Intellibox off. Restart the Intellibox, while holding down one of the following keys:
		<table><tr><td>1 German</td><td>6 Svenska</td></tr><tr><td>2 English</td><td>7 Espanol</td></tr><tr><td>3 Francais</td><td>8 Portugues</td></tr><tr><td>4 Italiano</td><td>9 Dansk</td></tr><tr><td>5 Nederlands</td><td></td></tr></table>
The Intellibox can be switched on using the [go] key, the green LED lights up, but locomotives and turnouts don't operate.	The connection between track and the Intellibox output is open circuit. If the track is attached to an external auxiliary booster, then the connection can also be interrupted between the Intellibox and the booster or the connection between the track and the track output of the boosters.	Check the connections for the track on Intellibox socket 1 and the connection at the track itself. Check the cable connection to the external booster.
The red LED above [stop] key flashes again and again after only short periods of operation and track power can not be switched on with the [go] key	The Intellibox is constantly overloaded by too many running locomotives and lit up trains. It overheats and switches off.	Divide your layout into several sections, isolated from each other and feed these with additional external boosters (e.g. Uhlenbrock power 3).
The red LED (stop) constantly flashes	The track has a short circuit. The Intellibox overheated. The track connected to an external booster has a short circuit	Check the error message in the Intellibox display. Look for the item which is causing the track short circuit and wait until the Intellibox cools down again.

Problem	Cause	Solution
Individual locomotives do not run.	The locomotive decoders are not addressed with the correct data format.	Since decoders cannot give feedback to the Intellibox, the Intellibox cannot determine by simply selecting the locomotive address, which data format is required to control the decoder. Check the data format needed for each of the locomotive decoders and set it to the correct data format (chapter 5.3.3).
A solenoid decoder does not function.	The solenoid decoders use a different data format from that selected for output by the Intellibox as the general data format for solenoid decoders.	Check the data format of the "not working" solenoid decoders and adjust it in the "Basic settings" menu – accessory setting – set the correct data format for each decoder used.

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

02045-858327

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.