

Feedback Module 63 320

for 2-rail Track – The new dimension in digital feedback

Are Feedback Modules needed?

On a model railway feedback modules give you information about whether a track is occupied or not. That is very useful for a shade station, for example, because in most cases it is out of sight.

Feedback modules are essential if the model railway is to be automated or controlled with a computer program. The automatic or the program needs the information from feedback modules to decide whether a train is permitted to enter a certain track or which route is to be activated.

All functions in one module!

The feedback module 63320 for 2-rail track provides all functions for digital feedback in a single module: track occupation detection (for 8 track sections), feedback to the center and power monitoring.

The track occupation detector checks whether there is a power load in its track section. That can be a locomotive, a lit wagon or a wagon whose axle was bridged with resistance lacquer (Part No. 40410). If a current of at least 1mA flows in the monitored track section, the section is reported as “occupied”; if no current flows then the section is “vacant”.

The feedback queries the state of the track occupation detector unit. It reliably and quickly passes on the information about the track state to the attached devices or to computer control programs via LocoNet.

The voltage monitor prevents an incorrect vacant message from being sent even when switched off. A track is only reported as vacant when the operating voltage is present on the track. Since, when the power is switched off no current can flow, each track would otherwise report as vacant.

The Feedback module can be used in conjunction with the Intellibox or the DAISY system from Uhlenbrock, with the TwinCenter from Fleischmann or with other centers with a LocoNet connection. The feedback information is displayed directly by Intellibox and TwinCenter or passed on to a computer via the integrated interface.

In addition, the feedback information can be used to activate routes that are stored in an IB-Switch (Uhlenbrock 65800). Thus an automatic train control which is influenced by the trains can be setup.

In order to make the feedback module useful in more varied applications, the unit can switch two freely programmable solenoid addresses for every state change "vacant" or "occupied" for each track input magnet. Thus a St Andrews cross at a railroad overpass can be switched directly from the feedback module without a route call to another device.

The module is supplied with power from the LocoNet. The maximum current load in a monitored track section is to 3A.

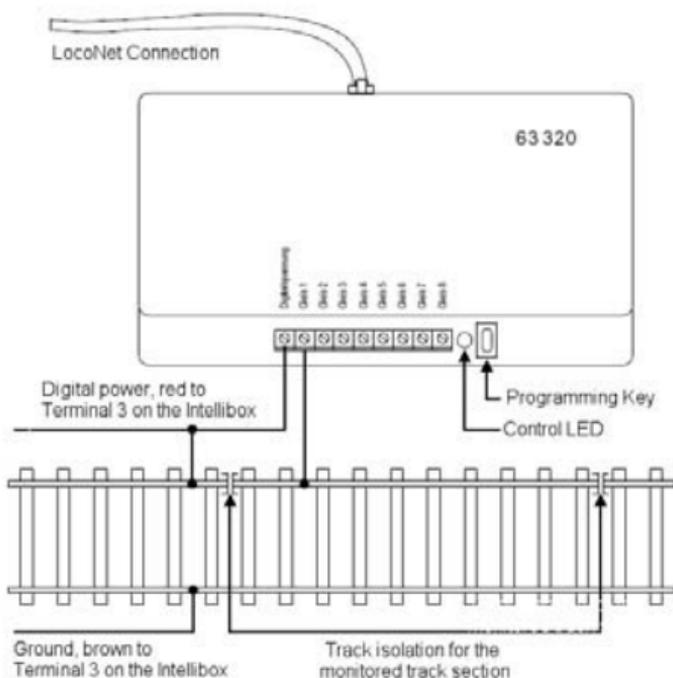
The modules are preset in the factory so that the track contacts, which are connected to inputs "contact 1" to "contact 8", have feedback addresses 1 to 16.

Programming of the module can take place while operating since the Intellibox uses its own menu for this.

Connection

Connect the feedback module, using the enclosed LocoNet cable to the Intellibox or TwinCenter or the LocoNet socket of a DAISY system LocoNet T or LocoNet B output.

Connect the digital power (red) to the terminal labeled “Digitalspannung” on the module.



Isolate the track sections which are to be monitored on one side from the remainder of the model railway layout.

In each case connect an isolated section with one of the inputs track 1 to track 8.

Important: *Insert the isolation barriers into the side of the track, which is connected with the digital power (red).*

Booster Operation

If the feedback module is used in an area of the model railway layout that is supplied by its own booster you must take care to connect the booster ground (pin 4, brown) to the ground pin (pin 4, brown) of the Intellibox (TwinCenter, DAISY/Power 2) in order to have trouble free operation.

Programming

So that the individual feedback data can be used in a digital system individual addresses must be assigned to the monitored sections.

There are two ways to achieve this:

With simple programming any address is assigned to the monitoring input for track 1. The fifteen other inputs automatically receive the subsequent addresses. Further settings cannot be made.

With the Intellibox starting with software version 1.3 the programming of the module's individual LocoNet CVs is possible. Any desired address can be assigned to each module and each monitoring input. In addition all parameters of the feedback module can be individually changed.

Simple Programming

- Press the programming key on the module. The control LED beside the key will blink.

- On the controller (Intellibox, TwinCenter, DAISY or another LocoNet center) or an accessory device (IB-Control, IB-Switch, DAISY controller) press the switch, that has the address value that is to be assigned to the monitoring input “Kontakt 1”. If for example the contacts connected to this module are to be addressed with the addresses 9-16 you switch the turnout with the address 9.
- Press the red or green key of the turnout. After the turnout is switched once, the module’s control LED turns off and the contact at input “KontaKt 1” is assigned the feedback address, which corresponds to the turnout address.
- Monitoring inputs “Kontakt 2-15” are automatically given the following 7 addresses.
- Remember that if you programmed a module to address 9 that addresses 10-16 were also assigned. This results in a maximum input value of 2041 (2048 possible addresses minus 7). For smooth operation it is necessary to avoid duplicates.

Important: *When programming with the programming key all programmed parameter settings made with Intellibox are put back to their factory setting!*

Configuring a LocoNet Module

LocoNet devices are configured by LocoNet Configuration variables (LNCVs). These LNCVs can be programmed with the help of the Intellibox (starting from software version 1.3), the IB-control (starting from version 1.55), the TwinCenter (starting from version 1.1), with Intellibox Basic or the Intellibox II.

Calling up a LocoNet Module

With Intellibox, Intellibox IR, Intellibox Basic, IB-Control and TwinCenter:

- Connect the module to the LocoNet.
- Press to the [menu]-key followed by the [mode]-key on the Intellibox (starting from software version 1.3) to take you to the Basic Settings menu.
- Scroll with the [↓]-key up to menu option "LocoNet Prog."
- Press the [↵]-key:

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

- Enter the part number of the module and press the [↵]-key.

```
LNPr 63320-00001  
LNCV: . . . . 0 = . . . . 1
```

- Give the address of the module (with a new module that is the 1) and press the [↵]-key.

```
LNPr 63320-00001  
LNCV: . . . . 0 = . . . . 1
```

The upper line shows the module part number and the valid module address. The lower line shows the LocoNet CV id number (here "0" for the module address) and the current value (here 1).

With the Intellibox II

- Connect the module to the LocoNet.
- Press the [mode]-key and select the “LocoNet programming” mode on the left side.
- In the menu which appears, enter the module part number and the module address (with a new module that is the 1).
- Press the “Prog.Mode” key. The module is put into the programming mode and the value of the LNCV0 (module address) is displayed.

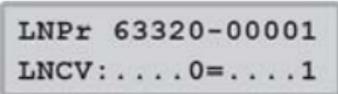
Important: Each module requires a module address for programming so the digital center knows which module is meant. The factory setting of a module is address 1. If other similar modules are connected to a center they must receive other module addresses. The allowable address range is 1 to 65534. To confirm the module is addressed correctly, it blinks a red LED, while the module is in programming mode.

Reading and Programming a LocoNet Module

Similarly to DCC Locomotive decoders, the behavior of the module is determined by different configuration variables (CV). Contrary to Locomotive decoders these are not programmed via the track, but via the LocoNet and are therefore referred to as LocoNet CVs or LNCVs.

With Intellibox, Intellibox IR, Intellibox Basic, IB-Control and TwinCenter:

After the module is called (see chapter 3.1) the Intellibox display shows:



```
LNP# 63320-00001
LNCV: . . . . 0 = . . . . 1
```

The cursor blinks under the 0.

- At the cursor position enter the Id number of the LocoNet CV you would like to program and press [↵]-key.
- The Intellibox reads the LNCV.
- The value is shown at right of the lower line of the display.
- Move the cursor to the right with [→]-key and enter desired value for this LNCV using the numeric keys.
- By pressing [↵]-key the changed value is programmed.
- Press the [←]-key back to select another LNCV.
- Press the [←]-key back to select another module.
- Or leave programming with the [menu]-key.

Tip: As usual with Intellibox, numerical values indicated by the blinking cursor can be incremented or decremented by pressing the [+] or [↓] respectively.

With the Intellibox II

- Enter the Id Number of the LNCV to be programmed via the “LNCV”.
- Press the menu key “LNCV read”. The Intellibox reads the LNCV and the value of the LNCV appears “Value”.
- Press the “Value” menu key and change the LNCV value.
- Press the “LNCV program” menu key to save the value of the LNCV in the module.
- Change other values in the manner described.
- To terminate LocoNet programming firstly press the menu key “Prog.mode off” and then the menu key “Back”.

The Universal Address 65535

With the universal address, as the name implies, all LocoNet displays can be called up. Since the universal address is not a real address, with which different LocoNet displays can be identified, it can only be used in order to call up displays, whose individual address is unknown. Therefore, only the appropriate display may be connected to the LocoNet. If the display is then called, the programmed address can be read from LNCV 0.

Reset

Using Simple Programming with the programming key all parameter setting which are made with Intellibox programming can be put back to their factory setting!

Description of individual LocoNet CVs

The module is programmed with LocoNet Configurations variables. These LNCVs are addressed with an Id number and can then be set to a certain value.

With feedback module 63320 the following LNCVs can be programmed:

LNCV 0 – The Module Address

Each module must have a module address for programming so that the center knows which module is meant.

The allowable address range is 0-2047.

LNCV 1-8 – Addresses of the Feedback inputs

Each monitoring input is assigned freely selectable feedback.

Intellibox and TwinCenter can administer feedback addresses within the address range 1-2048. That corresponds to 256 modules with 8 addresses each.

LNCV 17 – Report Address

With the help of this solenoid address, the module can be commanded to send the state of the connected tracks at any time in order to update a computer program. For example: if the turnout with the Report address is switched on the layout, the feedback module sends the state of all its monitored track sections to the LocoNet.

LNCV 20 – Module Configuration

BIT 0 = 0 Value 0 (Factory Setting)

The addresses for the individual monitoring inputs are assigned automatically. i.e. the module takes the address for input “Kontakt 1” from LocoNet CV 1 and adds for the following inputs values 1 to 7.

Track 1 = Address from LNCV 1

Track 2 = Address from LNCV 1 + 1
Track 3 = Address from LNCV 1 + 2
Track 4 = Address from LNCV 1 + 3
Track 5 = Address from LNCV 1 + 4
Track 6 = Address from LNCV 1 + 5
Track 7 = Address from LNCV 1 + 6
Track 8 = Address from LNCV 1 + 7

BIT 0 = 1 Wert 1

The module uses the addresses that were programmed in LocoNet CVs 1-8.

Track 1 = Address from LNCV 1
Track 2 = Address from LNCV 2
Track 3 = Address from LNCV 3
Track 4 = Address from LNCV 4
Track 5 = Address from LNCV 5
Track 6 = Address from LNCV 6
Track 7 = Address from LNCV 7
Track 8 = Address from LNCV 8

BIT 1 = 0 Value 0 (Factory setting)

The delay values for the “occupied” and “free” message, which were programmed into LocoNet CVs 21 and 41, apply to all inputs of the module.

BIT 1 = 1 Value 2

Individual: the delay values for “occupied” and “free” message are used for each input, as they were programmed into LocoNet CVs 21-36 and 41-56.

BIT 2 = 0 Value 0 (Factory setting)

When the power to the LocoNet module is switched on it does not send information.

BIT 2 = 1 Value 4

When the power to the LocoNet module is switched on the module sends the state of all monitoring inputs to the center.

Important: *You determine the input value for the LNCV 20 by first selecting the configuration that you would like this module to have. Then add the appropriate values and program the result into LNCV.*

The factory setting serves as an example:

- Automatic assignment of the feedback addresses according to LNCV 1 (value 0)
- Delay values for all inputs according to LNCV 21 and LNCV 41 (value 0)
- No sending of information when switching on the power (value on 0)

The sum of the values and thus the entry for LNCV 20 is 0.

LNCV 21-48 – Switch On and Off delay

The delay time determines how long a track section must be “occupied” or “vacant” before the appropriate message is sent by the module to the LocoNet. It can be programmed separately for “occupied” or “vacant” messages in a range from 0.01 seconds (10 ms) up to 2.55 seconds (2550 ms) in steps of 10ms. The valid range of values is 1-255.

Factory setting is 3 (0.03 seconds) for the “occupied” message and 30 (0.3 seconds) for the “vacant” message.

This is how you can calculate the value:

Delay in Seconds x 100 = Value for the LNCV

Value for the LNCV / 100 = Delay in Seconds

LNCV 61- 124 Solenoid Command for each track input

If a track input changes from state “vacant” to the “occupied” state, the feedback module can send two individual solenoid instructions per track input. Likewise

individual solenoid instructions can be sent, if a track input changes from the “occupied” to the “vacant” state.

The individual instructions are contained in the following LNCVs:

1. Solenoid command for State “occupied” for track 1-16: LNCV 61 to 76
2. Solenoid command for State “occupied” for track 1-16: LNCV 77 to 92
1. Solenoid command for State “vacant” for track 1-16: LNCV 93 to 108
2. Solenoid command for State “vacant” for track 1-16: LNCV 109 to 124

The values for the LNCVs 61 to 124 are calculated as follows:

Switch solenoid to “red”: LNCV Value = Solenoid address * 10

Switch solenoid to “green”: LNCV Value = Solenoid address * 10 + 1

Example 1

The solenoid 21 is to be switched to red if the track connected to input 7 becomes vacant.

LNCV 99 = 210, LNCV 115 = 0

Example 2

The solenoid 112 is to be switched to green and the solenoid 212 to red, if the track connection 4 is occupied.

LNCV 64 = 1121, LNCV 80 = 2120

Table of individual LNCVs of the Feedback Module 63 320

LocoNet-CV	Description	Value Range	Default Value
0	Module address	1-65535	1 (track 1)
1-8	Feedback address input contact 1-8	1-2048	1017
17	Report address	1-2048	varies
18	Software version	-	2
19	Startup Time in 0.5 second steps	0-255	1 (track 1)
20	Module Configuration		
	Bit 0 = 0 Automatic assignment of feedback addresses per LNCV 1	0	0
	Bit 0 = 1 Individual feedback address per LNCV 1-8	1	
	Bit 1 = 0 Delay values for all inputs per LNCV 21 and LNCV 41	0	
	Bit 1 = 1 Delay values for each individual input per LNCV 21-28 and LNCV 41-48	2	
	Bit 2 = 0 The module does not send information via the LocoNet when power is switched on	0	
	Bit 2 = 1 The module sends the state of all monitored tracks to the center when power is switched on	4	
21-28	Delay for "Occupied" report Contact Track 1-8	0-255	3 (track 1)
41-48	Delay for "Vacant" report Contact Track 1-8	0-255	30 (track 1)
61-68	1. Solenoid command for contact track 1-8 when "occupied"	0-20481	0
77-84	2. Solenoid command for contact track 1-8 when "occupied"	0-20481	0
93-100	1. Solenoid command for contact track 1-8 when "vacant"	0-20481	0
109-116	2. Solenoid command for contact track 1-8 when "vacant"	0-20481	0



02045 If you have any questions call us. Hotline times are:
8583-27 Mon - Tue - Thu - Fri, 14:00-16:00 and Wednesdays 16:00-18:00

Our products are covered by a two year warranty. If it is defective send decoder along with the receipt of purchase to the following address:

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