Uhlenbrock Elektronik

Feedback module for 2-rail layouts 63 340

DIGITAL 2

The new dimension of digital feedback

Why use a feedback module?

Feedback modules provide information about "block occupancy": whether a piece of track (a block) is occupied by a train or whether it is free. In some cases, e.g. in case of a shadow station, this is valuable information since the blocks are not "visible".

However, the full value of feedback is appreciated as soon as automatic layout operation with or without PC support is desired: the feedback information is used to tell which routes can be activated (are free) and which ones are still "blocked".

Description

Each 63 340 feedback module for 2-rail layouts includes block occupancy detectors (for 8 blocks), power monitoring and a LocoNet interface in a single module.

The module checks whether there is some current consumption in any of its 8 blocks. This can be caused by a loco (a decoder equipped loco draws some current even if the loco is stopped with all functions off), by a lighted wagon or by a wagon whose axles have been “bridged” with resistive paint (Art.-No. 40 410). If there is current consumption of at least 1 mA, then that block shall be reported as being "occupied". If there is no current consumption, then that block shall be reported as being "free".

The feedback module verifies the status of each input and sends the corresponding information reliably and fast to all devices connected to LocoNet.

The power monitoring feature prevents erroneous "free" status reporting of blocks in case the power to the layout has been turned off. Since the power is off, no current can be drawn – this would lead to reporting all blocks as "free", were it not for the power monitoring feature of these feedback modules.

The feedback information can also be used to automatically operate a layout with the aid of IB-Switch devices (Uhlenbrock Art.-No. 65 800).

The module is powered through LocoNet. It must also be connected to the Booster (or the Command Station power output) which is to feed the occupancy blocks monitored by the feedback module. The maximum current per block is 3 A.

By default configuration, the eight occupancy blocks are reported as feedback addresses 1 through 8.

The configuration of these modules can take place during normal layout operation. The Intellibox (starting from software version 1.3) features a new submenu of the "Basic Settings" menu that allows comfortable module configuration.

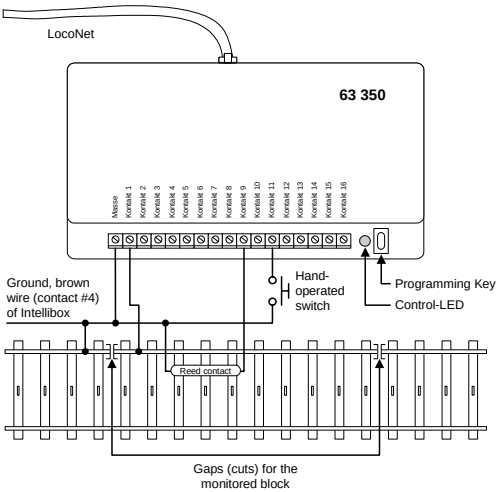
Connection

Using the provided LocoNet cable, connect the module to a LocoNet connector – e.g., the LocoNet-T or LocoNet-B connector of the Intellibox or TwinCenter or the LocoNet connector of the Daisy System.

Connect the "Digitalspannung" (digital voltage) contact to the red wire coming from a Booster or Command Station.

Isolate both ends of one rail of each block you wish to monitor through the feedback module.

Connect each isolated rail to one of the module contacts "Gleis 1" (Track 1) through "Gleis 8" (Track 8).



Important: please make the cuts (gaps) on that side of the rail to which the “red” digital voltage would normally go.

Booster operation

If the module is fed from a Booster, instead of directly from the Command Station, then it is very important, in order to get reliable operation, that the "brown" (Ground) of the Booster be connected to the "brown" of the Command Station (e.g. the Intellibox).

Programming

In order to monitor the various blocks present on a layout, these blocks need to be numbered – so as to be identifiable. There are two ways to do that:

The simple setup procedure allows to choose the address of the 1st block (Gleis 1). All subsequent blocks shall automatically receive the subsequent 7 addresses.

The expanded setup procedure takes advantage of the "LocoNet Prog" menu available starting from version 1.3 of the Intellibox software. This menu allows setting all parameters (called LocoNet-CV's) of the feedback module. Each block of each module can receive its own address. And, it is possible to change every configuration parameter of each feedback module.

Simple setup procedure

- Press the Programming Key on the module. The control LED starts blinking.
- Using any suitable device (such as Intellibox, IB-Switch, etc.), issue a switch command (closed or thrown, "red" or "green") to the turnout with the same address as the address you wish to assign to the 1st input of the module. The LED on the module shall stop blinking.
- Subsequent blocks (2nd through 8th) are automatically assigned to the subsequent 7 addresses.

Please note that if you configure the 1st block for, e.g., address 9, also addresses 10 through 16 shall be automatically assigned (to the remaining blocks).

This results in a maximum address range of 1 through 2041 (i.e., 2048 minus 7). For reliable operation it is best not to have duplicate address assignments. Therefore, please do not "overlap" block addresses across two different modules.

Important

By using the "simple setup procedure", all configuration parameters eventually modified through the Intellibox "LocoNet Prog" menu are reset to their default values!

Expanded setup procedure through the Intellibox programming menu

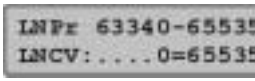
This kind of setup procedure is only available starting from Intellibox software version 1.3. Each block of each module can receive its own address. And, it is possible to change every configuration parameter of each feedback module.

First time recall of a LocoNet module for setting the module address

Since more than one feedback module is present on a layout, there must be a way to identify (number) each module, so that the Command Station may tell them apart. This number is what is called a "Module address". Please note that a Module Address must not be related to the addresses of its blocks. You are free to number your modules as you wish, independently of how you numbered the blocks of each module. Think of a Module Address as a "label" identifying each module among a specific module type. It may of course be convenient to number the modules according to the order of the addresses of their blocks – thus labeling as, e.g. "Module 1" (Module address = 1) the module featuring the blocks with the lowest addresses (e.g. blocks 1 through 8), etc. The default Module Address of each module is 65535.

This is how to proceed when you connect a module for the 1st time and you wish to configure it using the Intellibox "LocoNet Prog" menu:

- Connect the module to LocoNet.
- On the Intellibox, press the [menu] and then the [mode] key. This gets you to the "Basic Settings" menu.
- Using the [↓] key, scroll down through this menu until you'll get to the "LocoNet Prog" item.
- Press the programming key on the feedback module. The control LED must now start blinking.
- Now press the [→] key in order to enter the "LocoNet Prog" submenu of the Intellibox. This prompts the Intellibox to read out the modules article number (e.g. 63340) and Module Address from any module on which the programming key had been pressed. The display shall show:



dsplay75

Press the [→] key to go to the right edit field (the value of the LNCV) and type the Module Address you wish to assign to this module (e.g. 1).

dsplay77

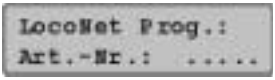
- Press the [↵]-key in order to program that value into the module.

You can now use this Module Address in order to read or change the configuration of this module.

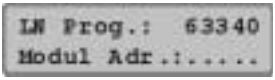
LocoNet-CV programming

- Connect the module to LocoNet.
- On the Intellibox, press the [menu]- and then the [mode]-key. This gets you to the "Basic Settings" menu.
- Using the [↓]-key, scroll down through this menu until you'll get to the "LocoNet Prog" item.
- Now press the [→]-key in order to enter the "LocoNet Prog" submenu of the Intellibox.

  The Intellibox display shall show:

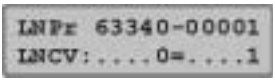


- Input the Art.-No. of the module you wish to read or configure (e.g. 63340) and press the [↵]-key.



- Input the Module Address of the module (e.g. 1) and press the [↵]-key.

  The display shall show "?" if no such module can be found. Conversely if there is such a module, the display shall show:



  The top row shows the Art.-No. and the module address. The bottom row shows the currently selected LocoNet-CV (e.g. LocoNet CV #0, which holds the module address) and its value (e.g. 1).
- Input the LocoNet-CV number in the left input field, then press the [↵]-key.
- The Intellibox reads the value of that LocoNet-CV and shows it in the right edit field to the right of the "=" symbol.
- Move the cursor to the right by pressing the [→]-key and input the new value you wish to assign to this LocoNet-CV.
- Press the [↵]-key in order to program that value into the module.

Reset

By using the "simple setup procedure", all configuration parameters eventually modified through the Intellibox "LocoNet Prog" menu are reset to their default values.

Description of the available LocoNet-CV's

The module can be configured (programmed) by changing the values of some parameters. These parameters are known as "LocoNet Configuration Variables" (LocoNet-CV's or LNCV's). Each LNCV has a number. This number is to be used in order to identify the LNCV you wish to review or edit.

A feedback module 63 340 features these LNCV's:

LNCV #0 - The Module Address

Each module must be configured so as to have a unique Module Address so that the Command Station may unambiguously identify and read/program it.

The allowed value range is 0 through 2047.

LNCV #1-8 - The feedback addresses

Each occupancy block can be assigned to any feedback address. The Intellibox as well as the TwinCenter support up to 2048 feedback addresses. This corresponds to 256 modules with 8 addresses (blocks) each.

LNCV #17 - The report address

The feedback module only reports status changes of the occupancy blocks it is monitoring. In order to have the module report the current complete status of all of its blocks, you can send a "dummy" command to a turnout address. That address (that is that number) has to be programmed into this LNCV.

LNCV #20 – Module configuration

Bit # 0 = 0 - Value 0 (default value)

The address of the 2nd through 8th block is automatically assigned by the module starting from the address of the 1st block.

Block # 1 = address from LNCV 1
Block # 2 = address from LNCV 1 + 1
Block # 3 = address from LNCV 1 + 2
Block # 4 = address from LNCV 1 + 3
Block # 5 = address from LNCV 1 + 4
Block # 6 = address from LNCV 1 + 5
Block # 7 = address from LNCV 1 + 6
Block # 8 = address from LNCV 1 + 7

Bit # 0 = 1 - Value1

The addresses of the eight blocks are determined by the values of LNCV #1 through #8.

Block # 1 = address from LNCV 1
Block # 2 = address from LNCV 2
Block # 3 = address from LNCV 3
Block # 4 = address from LNCV 4
Block # 5 = address from LNCV 5
Block # 6 = address from LNCV 6
Block # 7 = address from LNCV 7
Block # 8 = address from LNCV 8

Bit #1 = 0 - Value 0 (default value)

The LNCV #21 and #41 delays for "occupied" and "free" reporting hold for all blocks.

Bit #1 = 1 - Value 2

Each block has its own delay for "occupied" and for "free" reporting, as specified by LNCV's #21-28 and LNCVs #41-48.

Bit #2 = 0 - Value 0 (default value)

No status information is automatically reported by the module when LocoNet power is turned on.

Bit #2 = 0 - Value 4

Full status report is automatically sent upon turning on power to LocoNet.

Important: the value of LNCV #20 is to be determined

Important: the value of LNCV #20 is to be determined by adding the values (as stated nearby the "Bit #X = Y" labels) of the desired configuration and then programming that value into LNCV #20.

For example:

- Automatic numbering (address assignment) for blocks #2 through #8 (value 0).
- Delays as per LNCV #21 and #41 (value 0).
- No automatic status reporting upon LocoNet power up (value 0).

The sum of these “values” is 0. This is the number to program into LNCV #20.

LNCV #21-48 - "On" and "Off" time delays

Each time delay tells how much to wait, since a change of state (occupied/on to free/off or vice-versa) before actually reporting that status change on LocoNet.

Each delay is specified in 10 ms (milliseconds) units.

The allowed value range is 1 through 255.

LNCV’s #21-28 tell, for each block (check also LNCV #20, Bit #1) the delay for the "free" to "occupied" status change.

LNCV’s #41-48 tell, for each block (check also LNCV #20, Bit #1) the delay for the "occupied" to "free" status change.

Having a delay is often useful so as to avoid reporting erroneous status changes, or avoid reporting spurious status changes due to poor electrical contact between wheels and rails.

The default values for these LNCV’s specify a "free" to "occupied" delay of 30 ms and an "occupied" to "free" delay of 300 ms.

This is how to compute the desired value:

Delay in seconds x 100 = LNCV value
Value of the LNCV/100 = delay in seconds

Table of the LNCV’s available on 63 340 LocoNet feedback modules

LocoNet-CV	Description	Value range	Default value
0	Module address	1 through 65535	65535
1-8	Feedback addresses for blocks 1 through 8	1 through 2048	1 (for block #1)
17	Report address	1 through 2048	1017
20	Module configuration: Bit #0 = 0 Automatic address assignment Bit #0 = 1 Individual block address assignment Bit #1 = 0 All delays from LNCV #21 and #41 Bit #1 = 1 Individual block delays Bit #2 = 0 No status reporting upon LocoNet power-up Bit #2 = 1 Automatic status repair upon LocoNet power-up	 0 1 0 2 0 4	0
21-28	"On" time delay for block 1 through 8	0 through 255	3 (for block #1)
41-48	"Off" time delay for block 1 through 8	0 through 255	30 (for block #1)

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