

The LR100 is used to send information from the layout back to the DIGITAL plus command station (LZ100), such as block occupancy or activation of a contact.

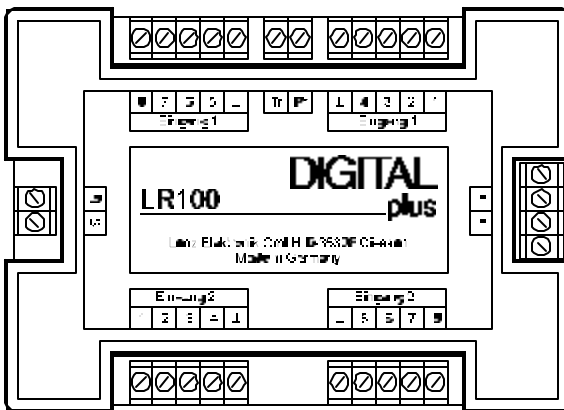
Information

LR100 Feedback Encoder

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LR100 General Information

The LR100 is used to transmit layout status information to the DIGITAL plus LZ100 Command Station. Layout feedback information collected from the LR100s can be accessed by any unit linked to the XBUS. For example, the Hand Held LH100, the Tower Cab LW100 or by software through the Computer Interface LI100 can each access the layout feedback information stored in the LZ100.

The LZ100 command station collects this information by polling all connected Feedback Encoders (LR100s) in series. This process lasts approximately 30 msec. Only the LR100 encoders with a change in status transmit information back to the command station. A transmission from an LR100 needs app. 2 msec, which adds to the polling time. The length of the total cycle is therefore dependent on the number of status changes.

Installing the LR100

The LR100 can be powered by either the Digital track voltage or an AC power supply (12 - 16 V). In the first case, the » terminals on the LR100 are connected to the terminals **J** and **K** on the LV100. The terminals **R** and **S** are the connectors for the feedback bus. Please connect these terminals to the same terminals on the LZ100. Several LR100 can be wired in parallel, as shown in Figure 1.

Any potential free switch can be connected to the LR100. Figure 2 demonstrates connecting an LB100 and a reed switch to the LR100. For clarity, only the wires between the primary detectors and the LR100 are shown. All other connections are not shown, but are important for the proper function of the LR100. Please consult the manual of the occupancy detector LB100 for a complete description of its set up.

Warning:

Do not use track contacts that connect the track voltage to the LR100 ! You will destroy the LR100 !

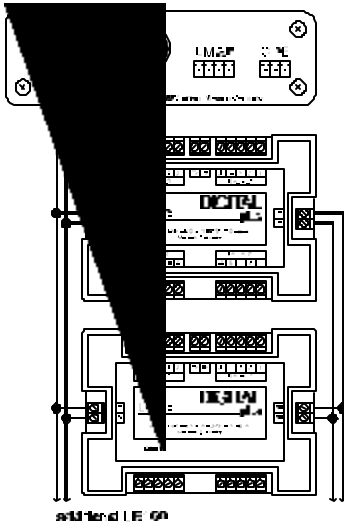


Figure 1 : Connecting the LR100 different to the Feedback Bus of the LZ100 LR100.

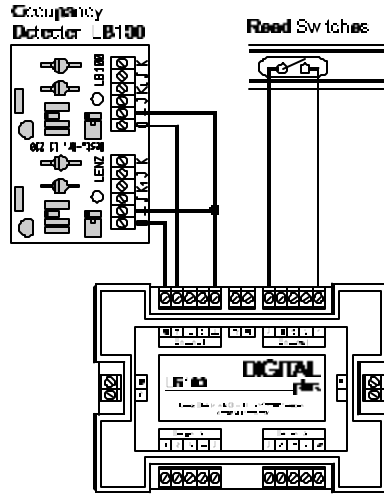


Figure 2: Connecting feedback devices to the LR100.

Programming the LR100

The address of the LR100 has to be programmed before it can be used on the layout either using a jumper or using the programming output of the command station LZ100. The LR100 has 16 status lines, which are assigned to addresses in groups of 8. Each LR100 has 2 addresses. The first one is for the 8 status signals on input 1, the second for the status lines on input 2.

Only the address for the input 1 needs to be programmed, the second input group is automatically set by the LR100 to the next address.

Example:

The LR100 is programmed to the address 18. The 8 status lines for input 1 reply to the address 18, the status lines for input 2 have the address 19.

Each address can only be used once! Otherwise, two units will reply to a poll by the command station. If you program the first LR100 to the address 1, it will also use the address 2. Therefore, the next LR100 has to be programmed to the address 3.

Recommended Address Selection:

Accessory Decoders (LS100, LS110) and Feedback Encoders use the same address space in the Command Station. Beginning with version 2.0 of the Command Station, the addresses between 64 and 127 are exclusively for Feedback Encoder. We recommend that the first LR100 have the number 64 and each subsequent LR100 have its address incremented by 2.

For a Command Station version 1.5, the highest address for Feedback Encoder is 63. In this case, it is advisable to start at address 63 and go downwards.

A table is included at the end of this pamphlet which shows the connection between turnout addresses and feedback addresses.

Programming using a jumper

For this method, you will need a command station, a power station and a Hand Held LH100. At this point, we assume that these units are correctly set up and connected.

1. Power down your DIGITAL plus system (LZ100 and LV100s) and remove all power to the LR100.
 2. Using a jumper, connect the terminal **Pr** on the LR100 to the terminal labeled **^**.
 3. Connect the terminals labeled **»** with the terminals **J** and **K** on the LV100. (see figure 1)
 4. Reconnect the power to your DIGITAL plus system.
 5. On the Hand Held LH100 select the modus "switch turnout". (key sequence F, 5) Enter the address for input 1 of the LR100. Confirm the address by pressing 'Enter'. Now, please press the '+' or '-' key on the Hand Held.
 6. This sends a 'throw turnout' signal through the track output of the LV100. This command contains the address, which the LR100 recognizes and assigns to the input 1. At the same time, the next higher address is assigned to input 2.
 7. Power down the LR100 by removing the connections to the **»** terminals and disconnect the jumper. This completes the programming sequence.
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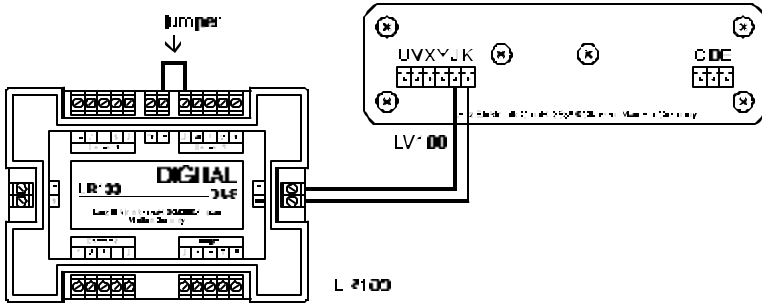


Figure 3: Programming the LR100 using a jumper

Programming using the Programming Output of the Command Station LZ100

For this method, you will need the command station, a power station and a Hand Held LH100. At this point, we are assuming that these units are correctly set up and connected.

Please connect one of the » terminals with the terminal **P** and the other with the terminal **Q** of the LZ100.

As described in the Information for the Hand Held LH100, select the programming modus. (Key sequence F-8-ENTER-ENTER)

Using Register Mode, select memory location 1 to be accessed, since the LR100 saves the address at this location. On the LH100, enter the address for input 1 of the LR100. Start the programming sequence by pressing 'Enter'.

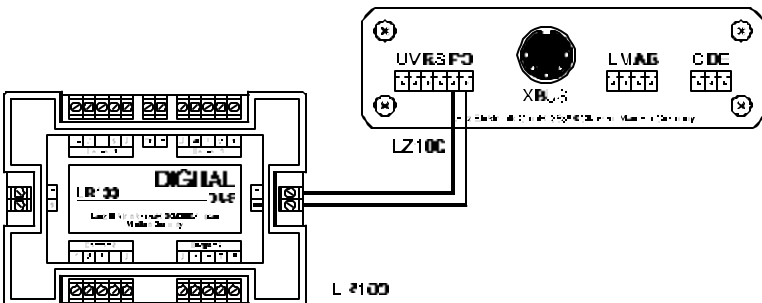


Figure 4: Programming the LR100 using the Programming Output of the Command Station.

The address of an LR100 cannot be read. If, after the address has been set, the search sequence is started by pressing enter, the error message "ERR02" will appear. This error message can be cleared by pressing the key 'C'.

Function of the LR100

As mentioned in the introductory chapter, the function of the LR100 is to send status information from the layout back to the DIGITAL plus LZ100 Command Station.

In detail, the process works as follows: If a connection between one of the status lines and one of the ^ terminals is made or severed, the LZ100 is informed about it on the next polling.

Such a connection can be made in several ways, the use of a Reed switch and an occupancy detector was shown in Figure 2. Any other on/off switch can be used in a similar fashion.

Reading the occupancy detector with the LH100

Following, we will explain how the readout on the LH100 changes, if the status of one of the lines on the input of the LR100 is changed. The following procedure assumes a Hand Held with software revision 1.5 or higher. Please check your Hand Held for the correct software version.

(key sequence F, 9, 9).

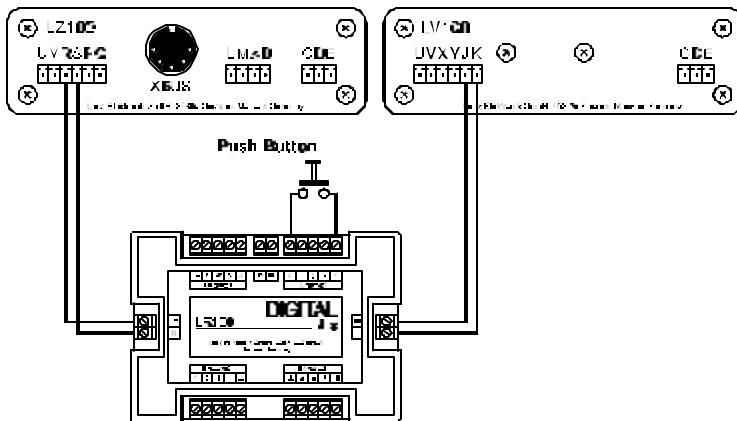
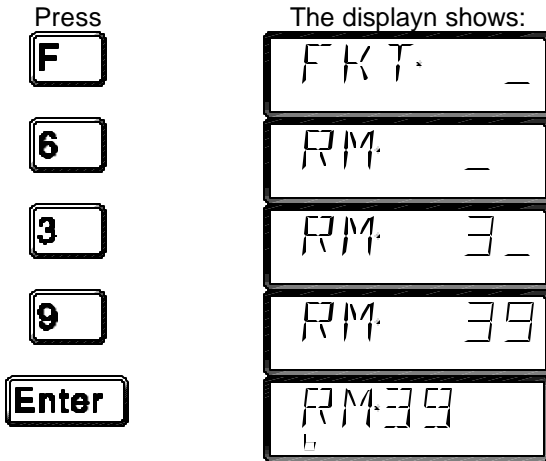


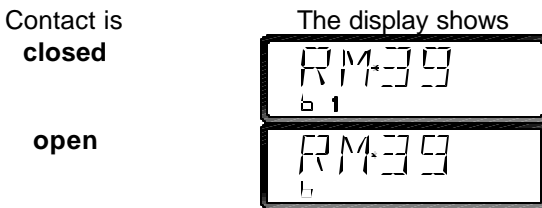
Figure 5: Wiring the LR100 for the Example

For this example, the circuit shown in Figure 5 is used. If you want to try the following steps yourself, set up the circuit as shown.

In this example, the input 1 of the LR100 is programmed to the address 39. Please follow with these steps on your LH100:



Since the push button in Figure 5 is shown in the open position, none of the status lines shows on the display. By closing and opening this push button, the display changes as follows:



As you can see, the function "Read Feedback" (Rückmeldungen Auslesen) on the LH100 is well suited to test the correct set up of the LR100.

Table 1: Feedback addresses / turnout address

F-Feedback address; FP-Feedback position; T-turnout address

F	FP	T	F	FP	T
1	1 to 8	1 to 4	33	257 to 264	129 to 132
2	9 to 16	5 to 8	34	265 to 272	133 to 136
3	17 to 24	9 to 12	35	273 to 280	137 to 140
4	25 to 32	13 to 16	36	281 to 288	141 to 144
5	33 to 40	17 to 20	37	289 to 296	145 to 148
6	41 to 48	21 to 24	38	297 to 304	149 to 152
7	49 to 56	25 to 28	39	305 to 312	153 to 156
8	57 to 64	29 to 32	40	313 to 320	157 to 160
9	65 to 72	33 to 36	41	321 to 328	161 to 164
10	73 to 80	37 to 40	42	329 to 336	165 to 168
11	81 to 88	41 to 44	43	337 to 344	169 to 172
12	89 to 96	45 to 48	44	345 to 352	173 to 176
13	97 to 104	49 to 52	45	353 to 360	177 to 180
14	105 to 112	53 to 56	46	361 to 368	181 to 184
15	113 to 120	57 to 60	47	369 to 376	185 to 188
16	121 to 128	61 to 64	48	377 to 384	189 to 192
17	129 to 136	65 to 68	49	385 to 392	193 to 196
18	137 to 144	69 to 72	50	393 to 400	197 to 200
19	145 to 152	73 to 76	51	401 to 408	201 to 204
20	153 to 160	77 to 80	52	409 to 416	205 to 208
21	161 to 168	81 to 84	53	417 to 424	209 to 212
22	169 to 176	85 to 88	54	425 to 432	213 to 216
23	177 to 184	89 to 92	55	433 to 440	217 to 220
24	185 to 192	93 to 96	56	441 to 448	221 to 224
25	193 to 200	97 to 100	57	449 to 456	225 to 228
26	201 to 208	101 to 104	58	457 to 464	229 to 232
27	209 to 216	105 to 108	59	465 to 472	233 to 236
28	217 to 224	109 to 112	60	473 to 480	237 to 240
29	225 to 232	113 to 116	61	481 to 488	241 to 244
30	233 to 240	117 to 120	62	489 to 496	245 to 248
31	241 to 248	121 to 124	63	497 to 504	249 to 252
32	249 to 256	125 to 128	64	505 to 512	253 to 256

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