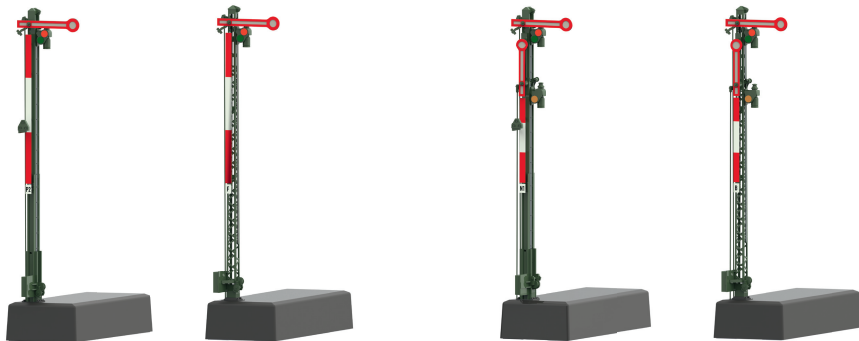


# märklin

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H0



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Home Signals  
70391/70392/70411/70412

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## Intended Use of the Product

- This signal is for installation on H0 digital model railroad layouts.
- This signal may only be used for analog operation with the 72760 control box.
- Use only in enclosed areas.

## Contents as Delivered

- 1 Signal
- 1 Cable with plug, 2-conductor, red and brown
- 1 Cable with plug, 3-conductor, red and red
- 1 Cable with plug, 3-conductor, violet, red-brown, red-green
- 2 Mounting brackets for below-baseboard installation
- 1 Mounting for C Track
- 4 Insulator sleeves (red) for C track (1 sprue)
- 2 Center conductor insulators (gray) for K Track
- 1 Center conductor connector for K Track
- 1 Set of decals for identification
- Installation instructions with a template for below-baseboard installation
- Warranty card

Additional tools required for below-baseboard installation: screwdriver, 4 each countersunk screws Ø 2.5 mm x (length dependent on the installation depth), drills Ø 16 mm and 2 mm.

## Safety Notes

- **IMPORTANT!** The product has sharp edges and points due to the way it works.
- Do wiring and installation work only when there is no voltage present. Failure to adhere to this may cause life-threatening current and injury.

- **This signal is to be operated only with the permissible voltage** (see technical data).

## Important Notes

- The operating instructions are a component part of the product and must therefore be kept in a safe place as well as for transfer of the product to third parties.
- Please see your authorized Märklin specialty dealer for repairs.
- Disposing of the product: [www.maerklin.com/en/imprint.html](http://www.maerklin.com/en/imprint.html)

## Technical Data

- Load  $\leq$  100 milliamps
- Load at the track output max. 2 amps
- Electrical strength max. 40 volts

## Functions

- Capable of multi-protocols: fx (MM), mfx\*, and DCC
- Mode of operation set by means of DIP switches
- Addresses can be set by means of DIP switches:
  - 1-256** fx (MM) (Control Unit 6021/Mobile Station 60651/652)
  - 1-320** fx (MM) (Central Station 6021x/Mobile Station 60653)
  - 1-511** (DCC)
- Programmable addresses by means of CVs +**1-2,040** DCC
- Characteristics can be changed by means of CVs
- Power supplied by means of the digital current circuit

## Signal Installation

The signal must be programmed before actually installing it.

**The following work steps may be done only when there is no voltage present:**

\* mfx not until CS2 Software Version 4.0 (2nd quarter of 2015)

Setting the address and the mode of operation with the DIP switches:

- Setting the mode of operation with DIP Switch 10  
Switch 10 off = fx (MM) / mfx  
Switch 10 on = DCC
- fx (MM)/DCC Setting the address with DIP switches (See table starting on Page 30)

**Please note:** Always do settings with the DIP switches when there is no voltage present. The signal does not recognize the current switch settings until the voltage is turned on.

## Programming with the CS 2

### fx (MM)

The CV programming must be done on the programming track. **Only one signal** may be connected to the programming track **at a time**.

The following CVs can be changed in fx (MM): CV 39, 40, 41, and 42. With CVs 41 and 42 the value must be divided by 4 in fx (MM), because only the values 0-80 are allowed, for example:  $255/4 = 64$  (rounded).

During the programming procedure, the signal light will blink. During programming with the Central Station, by contrast the signal is switched. After the end of the programming procedure, the signal is set at "Go".

The signal must be activated once before programming with the Mobile Station 2. After that, the desired CV settings can be changed and at the end the signal must be switched again.

The procedure for programming with the 6021 Control Unit can be found at [www.maerklin.de](http://www.maerklin.de) -> Tools & Downloads -> Technische Informationen.

Please see the operating instructions for the control devices in question for programming with other devices.

### DCC

CV programming must be done on the programming track. **Only one signal** may be connected to the programming track **at a time**.

The light on the signal will blink as a check during the data transmission.

Please see the operating instructions for the control devices in question for programming with other devices.

### CV for fx (MM) and DCC

With fx (MM) the address can be set only with the DIP switches. The values in parentheses are factory default settings.

CV	Meaning	Values	
1	Address 1 - 255	1-255 (1)	only DCC
9	Addresses 256 - 2040	0-7 (0)	only DCC
39 PoM*	Slow movement	0 (0)	
	Medium fast movement	1	
	Fast movement	2	
	Medium fast movement with bouncing	3	
	Fast movement with bouncing	4	
	Medium fast movement with bouncing of Arm 1	5	only with 70411 / 70412
	Medium fast movement with bouncing of Arm 2	6	only with 70411 / 70412

CV	Meaning	Values	
40 PoM*	Meaning Lighting	0 - 15 (15)	0 light off Dimming 0-15, whereby 15 = 100% brightness
41 PoM*	Center setting for Arm 1	0 - 255	Setting of the middle position for the arm on all signals
42 PoM*	Center setting for Arm 2	0 - 255	Only with 70411 / 70412 Setting of the middle position for the 2nd arm

\*PoM programming can be done on the main track as long as it is supported by the control device.

#### Setting and Calculating Addresses Greater than 255 (DCC):

Example: Address 1044 -> 1044 : 256 = 4.078125. The value before the decimal point (4) is entered in CV 9. The value after the decimal point (0.078125) is multiplied by 256  $0.078125 \times 256 = 20$ . The calculated value of 20 must be entered in CV 1.

#### Disposing



Products marked with a trash container with a line through it may not be disposed of at the end of their useful life in the normal household trash. They must be taken to a collection point for the recycling of electrical and electronic devices.

There is a symbol on the product, the operating instructions, or the packaging to this effect. The materials in these items can be used again according to this marking. By reusing old devices, materially recycling, or

recycling in some other form of old devices such as these you make an important contribution to the protection of our environment. Please ask your city, town, community, or county authorities for the location of the appropriate disposal site.

#### Warranty

The warranty card included with this product specifies the warranty conditions.

- Please contact your authorized Märklin dealer for repairs or contact:

Gebr. Märklin & Cie. GmbH

Reparaturservice

Stuttgarter Str. 55 - 57

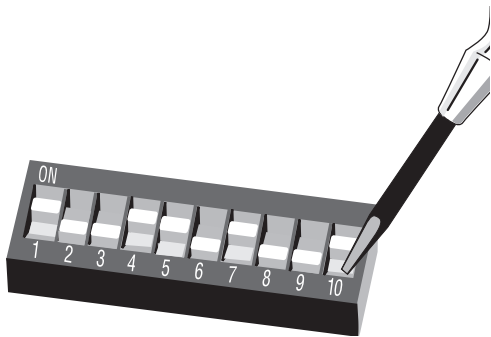
73033 Göppingen




Germany




☎: +49 7161 608 222




E-Mail: [Service@maerklin.de](mailto:Service@maerklin.de)




## Setting the mode of operation and addresses






										10 (0/1)	
1	1	1	1							fx (MM)/DCC	
2	1	2	2							fx (MM)/DCC	
3	1	3	1 2							fx (MM)/DCC	
4	1	4	3							fx (MM)/DCC	
5	1	5	1 3							fx (MM)/DCC	
6	1	6	2 3							fx (MM)/DCC	
7	1	7	1 2 3							fx (MM)/DCC	
8	1	8	4							fx (MM)/DCC	
9	1	9	1 4							fx (MM)/DCC	
10	1	10	2 4							fx (MM)/DCC	
11	1	11	1 2 4							fx (MM)/DCC	
12	1	12	3 4							fx (MM)/DCC	
13	1	13	1 3 4							fx (MM)/DCC	
14	1	14	2 3 4							fx (MM)/DCC	
15	1	15	1 2 3 4							fx (MM)/DCC	
16	1	16	5							fx (MM)/DCC	
17	2	1	1 5							fx (MM)/DCC	
18	2	2	2 5							fx (MM)/DCC	
19	2	3	1 2 5							fx (MM)/DCC	
20	2	4	3 5							fx (MM)/DCC	
21	2	5	1 3 5							fx (MM)/DCC	
22	2	6	2 3 5							fx (MM)/DCC	
23	2	7	1 2 3 5							fx (MM)/DCC	
24	2	8	4 5							fx (MM)/DCC	
25	2	9	1 4 5							fx (MM)/DCC	
26	2	10	2 4 5							fx (MM)/DCC	

				10 (0/1)				
27		2 11	1 2	4 5			fx (MM)/DCC	
28		2 12		3 4 5			fx (MM)/DCC	
29		2 13	1	3 4 5			fx (MM)/DCC	
30		2 14		2 3 4 5			fx (MM)/DCC	
31		2 15	1 2 3 4 5				fx (MM)/DCC	
32		2 16			6		fx (MM)/DCC	
33		3 1	1			6	fx (MM)/DCC	
34		3 2		2		6	fx (MM)/DCC	
35		3 3	1 2			6	fx (MM)/DCC	
36		3 4			3	6	fx (MM)/DCC	
37		3 5	1		3	6	fx (MM)/DCC	
38		3 6		2 3		6	fx (MM)/DCC	
39		3 7	1 2 3			6	fx (MM)/DCC	
40		3 8			4	6	fx (MM)/DCC	
41		3 9	1		4	6	fx (MM)/DCC	
42		3 10		2	4	6	fx (MM)/DCC	
43		3 11	1 2		4	6	fx (MM)/DCC	
44		3 12			3 4	6	fx (MM)/DCC	
45		3 13	1		3 4	6	fx (MM)/DCC	
46		3 14		2 3 4		6	fx (MM)/DCC	
47		3 15	1 2 3 4			6	fx (MM)/DCC	
48		3 16				5 6	fx (MM)/DCC	
49		4 1	1			5 6	fx (MM)/DCC	
50		4 2		2		5 6	fx (MM)/DCC	
51		4 3	1 2			5 6	fx (MM)/DCC	

				10 (0/1)				
52		4 4			3	5 6	fx (MM)/DCC	
53		4 5	1		3	5 6	fx (MM)/DCC	
54		4 6		2 3		5 6	fx (MM)/DCC	
55		4 7	1 2 3			5 6	fx (MM)/DCC	
56		4 8				4 5 6	fx (MM)/DCC	
57		4 9	1			4 5 6	fx (MM)/DCC	
58		4 10		2		4 5 6	fx (MM)/DCC	
59		4 11	1 2			4 5 6	fx (MM)/DCC	
60		4 12			3	4 5 6	fx (MM)/DCC	
61		4 13	1		3	4 5 6	fx (MM)/DCC	
62		4 14		2 3		4 5 6	fx (MM)/DCC	
63		4 15	1 2 3			4 5 6	fx (MM)/DCC	
64		4 16					7	fx (MM)/DCC
65		5 1	1				7	fx (MM)/DCC
66		5 2		2			7	fx (MM)/DCC
67		5 3	1 2				7	fx (MM)/DCC
68		5 4			3		7	fx (MM)/DCC
69		5 5	1		3		7	fx (MM)/DCC
70		5 6		2 3			7	fx (MM)/DCC
71		5 7	1 2 3				7	fx (MM)/DCC
72		5 8				4	7	fx (MM)/DCC
73		5 9	1			4	7	fx (MM)/DCC
74		5 10		2		4	7	fx (MM)/DCC
75		5 11	1 2			4	7	fx (MM)/DCC
76		5 12			3 4		7	fx (MM)/DCC




												10 (0/1)	
		1	2	3	4	5	6	7	8	9	0		
77	5 13	1		3 4				7					fx (MM)/DCC
78	5 14		2 3 4					7					fx (MM)/DCC
79	5 15	1 2 3 4						7					fx (MM)/DCC
80	5 16				5 7								fx (MM)/DCC
81	6 1 1	1			5 7								fx (MM)/DCC
82	6 2		2		5 7								fx (MM)/DCC
83	6 3	1 2			5 7								fx (MM)/DCC
84	6 4			3 5 7									fx (MM)/DCC
85	6 5	1		3 5 7									fx (MM)/DCC
86	6 6		2 3 5 7										fx (MM)/DCC
87	6 7	1 2 3 5 7											fx (MM)/DCC
88	6 8			4 5 7									fx (MM)/DCC
89	6 9	1		4 5 7									fx (MM)/DCC
90	6 10		2 4 5 7										fx (MM)/DCC
91	6 11	1 2 4 5 7											fx (MM)/DCC
92	6 12		3 4 5 7										fx (MM)/DCC
93	6 13	1 3 4 5 7											fx (MM)/DCC
94	6 14		2 3 4 5 7										fx (MM)/DCC
95	6 15	1 2 3 4 5 7											fx (MM)/DCC
96	6 16				6 7								fx (MM)/DCC
97	7 1 1	1			6 7								fx (MM)/DCC
98	7 2		2		6 7								fx (MM)/DCC
99	7 3	1 2			6 7								fx (MM)/DCC
100	7 4			3 6 7									fx (MM)/DCC
101	7 5	1 3 6 7											fx (MM)/DCC




												10 (0/1)	
		1	2	3	4	5	6	7	8	9	0		
102	7 6		2 3			6 7							fx (MM)/DCC
103	7 7	1 2 3				6 7							fx (MM)/DCC
104	7 8			4 6 7									fx (MM)/DCC
105	7 9	1		4 6 7									fx (MM)/DCC
106	7 10		2 4 6 7										fx (MM)/DCC
107	7 11	1 2 4 6 7											fx (MM)/DCC
108	7 12		3 4 6 7										fx (MM)/DCC
109	7 13	1 3 4 6 7											fx (MM)/DCC
110	7 14		2 3 4 6 7										fx (MM)/DCC
111	7 15	1 2 3 4 6 7											fx (MM)/DCC
112	7 16			5 6 7									fx (MM)/DCC
113	8 1 1			5 6 7									fx (MM)/DCC
114	8 2		2 5 6 7										fx (MM)/DCC
115	8 3	1 2 5 6 7											fx (MM)/DCC
116	8 4		3 5 6 7										fx (MM)/DCC
117	8 5	1 3 5 6 7											fx (MM)/DCC
118	8 6		2 3 5 6 7										fx (MM)/DCC
119	8 7	1 2 3 5 6 7											fx (MM)/DCC
120	8 8			4 5 6 7									fx (MM)/DCC
121	8 9	1 4 5 6 7											fx (MM)/DCC
122	8 10		2 4 5 6 7										fx (MM)/DCC
123	8 11	1 2 4 5 6 7											fx (MM)/DCC
124	8 12		3 4 5 6 7										fx (MM)/DCC
125	8 13	1 3 4 5 6 7											fx (MM)/DCC
126	8 14		2 3 4 5 6 7										fx (MM)/DCC
127	8 15	1 2 3 4 5 6 7											fx (MM)/DCC



Key	Keyboard		ON							10 (0/1)	
	0	1	1	2	3	4	5	6	7	8	fx (MM)/DCC
128	8	16								8	fx (MM)/DCC
129	9	1	1							8	fx (MM)/DCC
130	9	2		2						8	fx (MM)/DCC
131	9	3	1	2						8	fx (MM)/DCC
132	9	4			3					8	fx (MM)/DCC
133	9	5	1	3						8	fx (MM)/DCC
134	9	6		2	3					8	fx (MM)/DCC
135	9	7	1	2	3					8	fx (MM)/DCC
136	9	8				4				8	fx (MM)/DCC
137	9	9	1			4				8	fx (MM)/DCC
138	9	10		2		4				8	fx (MM)/DCC
139	9	11	1	2		4				8	fx (MM)/DCC
140	9	12			3	4				8	fx (MM)/DCC
141	9	13	1		3	4				8	fx (MM)/DCC
142	9	14		2	3	4				8	fx (MM)/DCC
143	9	15	1	2	3	4				8	fx (MM)/DCC
144	9	16					5			8	fx (MM)/DCC
145	10	1	1				5			8	fx (MM)/DCC
146	10	2		2			5			8	fx (MM)/DCC
147	10	3	1	2			5			8	fx (MM)/DCC
148	10	4			3		5			8	fx (MM)/DCC
149	10	5	1		3		5			8	fx (MM)/DCC
150	10	6		2	3		5			8	fx (MM)/DCC
151	10	7	1	2	3		5			8	fx (MM)/DCC
152	10	8				4	5			8	fx (MM)/DCC
153	10	9	1			4	5			8	fx (MM)/DCC



Key	Keyboard		ON							10 (0/1)	
	0	1	1	2	3	4	5	6	7	8	fx (MM)/DCC
154	10	10		2		4	5			8	fx (MM)/DCC
155	10	11	1	2		4	5			8	fx (MM)/DCC
156	10	12			3	4	5			8	fx (MM)/DCC
157	10	13	1		3	4	5			8	fx (MM)/DCC
158	10	14		2	3	4	5			8	fx (MM)/DCC
159	10	15	1	2	3	4	5			8	fx (MM)/DCC
160	10	16						6		8	fx (MM)/DCC
161	11	1	1					6		8	fx (MM)/DCC
162	11	2		2				6		8	fx (MM)/DCC
163	11	3	1	2				6		8	fx (MM)/DCC
164	11	4			3			6		8	fx (MM)/DCC
165	11	5	1		3			6		8	fx (MM)/DCC
166	11	6		2	3			6		8	fx (MM)/DCC
167	11	7	1	2	3			6		8	fx (MM)/DCC
168	11	8				4		6		8	fx (MM)/DCC
169	11	9	1			4		6		8	fx (MM)/DCC
170	11	10		2		4		6		8	fx (MM)/DCC
171	11	11	1	2		4		6		8	fx (MM)/DCC
172	11	12			3	4		6		8	fx (MM)/DCC
173	11	13	1		3	4		6		8	fx (MM)/DCC
174	11	14		2	3	4		6		8	fx (MM)/DCC
175	11	15	1	2	3	4		6		8	fx (MM)/DCC
176	11	16					5	6		8	fx (MM)/DCC
177	12	1	1				5	6		8	fx (MM)/DCC
178	12	2		2			5	6		8	fx (MM)/DCC
179	12	3	1	2			5	6		8	fx (MM)/DCC



										10 (0/1)
			1	2	3	4	5	6	7	
180		12 4			3	5 6	8		fx (MM)/DCC	
181		12 5	1		3	5 6	8		fx (MM)/DCC	
182		12 6		2 3		5 6	8		fx (MM)/DCC	
183		12 7	1 2 3			5 6	8		fx (MM)/DCC	
184		12 8			4 5 6	8			fx (MM)/DCC	
185		12 9	1		4 5 6	8			fx (MM)/DCC	
186		12 10		2	4 5 6	8			fx (MM)/DCC	
187		12 11	1 2		4 5 6	8			fx (MM)/DCC	
188		12 12			3 4 5 6	8			fx (MM)/DCC	
189		12 13	1		3 4 5 6	8			fx (MM)/DCC	
190		12 14		2 3 4 5 6	8				fx (MM)/DCC	
191		12 15	1 2 3 4 5 6	8					fx (MM)/DCC	
192		12 16				7 8			fx (MM)/DCC	
193		13 1	1			7 8			fx (MM)/DCC	
194		13 2		2		7 8			fx (MM)/DCC	
195		13 3	1 2			7 8			fx (MM)/DCC	
196		13 4			3	7 8			fx (MM)/DCC	
197		13 5	1 3			7 8			fx (MM)/DCC	
198		13 6		2 3		7 8			fx (MM)/DCC	
199		13 7	1 2 3			7 8			fx (MM)/DCC	
200		13 8			4	7 8			fx (MM)/DCC	
201		13 9	1		4	7 8			fx (MM)/DCC	
202		13 10		2	4	7 8			fx (MM)/DCC	
203		13 11	1 2		4	7 8			fx (MM)/DCC	
204		13 12			3 4	7 8			fx (MM)/DCC	
205		13 13	1		3 4	7 8			fx (MM)/DCC	




										10 (0/1)
			1	2	3	4	5	6	7	
206		13 14		2 3 4		7 8			fx (MM)/DCC	
207		13 15	1 2 3 4			7 8			fx (MM)/DCC	
208		13 16				5 7 8			fx (MM)/DCC	
209		14 1	1			5 7 8			fx (MM)/DCC	
210		14 2		2		5 7 8			fx (MM)/DCC	
211		14 3	1 2			5 7 8			fx (MM)/DCC	
212		14 4			3	5 7 8			fx (MM)/DCC	
213		14 5	1		3	5 7 8			fx (MM)/DCC	
214		14 6		2 3		5 7 8			fx (MM)/DCC	
215		14 7	1 2 3			5 7 8			fx (MM)/DCC	
216		14 8			4 5	7 8			fx (MM)/DCC	
217		14 9	1		4 5	7 8			fx (MM)/DCC	
218		14 10		2	4 5	7 8			fx (MM)/DCC	
219		14 11	1 2		4 5	7 8			fx (MM)/DCC	
220		14 12			3 4 5	7 8			fx (MM)/DCC	
221		14 13	1		3 4 5	7 8			fx (MM)/DCC	
222		14 14		2 3 4 5	7 8				fx (MM)/DCC	
223		14 15	1 2 3 4 5	7 8					fx (MM)/DCC	
224		14 16				6 7 8			fx (MM)/DCC	
225		15 1	1			6 7 8			fx (MM)/DCC	
226		15 2		2		6 7 8			fx (MM)/DCC	
227		15 3	1 2			6 7 8			fx (MM)/DCC	
228		15 4			3	6 7 8			fx (MM)/DCC	
229		15 5	1		3	6 7 8			fx (MM)/DCC	
230		15 6		2 3		6 7 8			fx (MM)/DCC	
231		15 7	1 2 3			6 7 8			fx (MM)/DCC	




Key	Keyboard		ON										10 (0/1)	
	1	2	1	2	3	4	5	6	7	8	9	0	1	2
232	15	8				4	6	7	8					fx (MM)/DCC
233	15	9	1			4	6	7	8					fx (MM)/DCC
234	15	10		2		4	6	7	8					fx (MM)/DCC
235	15	11	1	2		4	6	7	8					fx (MM)/DCC
236	15	12			3	4	6	7	8					fx (MM)/DCC
237	15	13	1		3	4	6	7	8					fx (MM)/DCC
238	15	14		2	3	4	6	7	8					fx (MM)/DCC
239	15	15	1	2	3	4		6	7	8				fx (MM)/DCC
240	15	16					5	6	7	8				fx (MM)/DCC
241	16	1	1				5	6	7	8				fx (MM)/DCC
242	16	2		2			5	6	7	8				fx (MM)/DCC
243	16	3	1	2			5	6	7	8				fx (MM)/DCC
244	16	4			3		5	6	7	8				fx (MM)/DCC
245	16	5	1		3		5	6	7	8				fx (MM)/DCC
246	16	6		2	3		5	6	7	8				fx (MM)/DCC
247	16	7	1	2	3		5	6	7	8				fx (MM)/DCC
248	16	8				4	5	6	7	8				fx (MM)/DCC
249	16	9	1			4	5	6	7	8				fx (MM)/DCC
250	16	10		2		4	5	6	7	8				fx (MM)/DCC
251	16	11	1	2		4	5	6	7	8				fx (MM)/DCC
252	16	12			3	4	5	6	7	8				fx (MM)/DCC
253	16	13	1		3	4	5	6	7	8				fx (MM)/DCC
254	16	14		2	3	4	5	6	7	8				fx (MM)/DCC
255	16	15	1	2	3	4	5	6	7	8				fx (MM)/DCC
256	16	16								9				fx (MM)/DCC
257	17	1	1							9				fx (MM)/DCC




Key	Keyboard		ON										10 (0/1)	
	1	2	1	2	3	4	5	6	7	8	9	0	1	2
258	17	2											9	fx (MM)/DCC
259	17	3	1	2									9	fx (MM)/DCC
260	17	4						3					9	fx (MM)/DCC
261	17	5	1							3			9	fx (MM)/DCC
262	17	6			2	3							9	fx (MM)/DCC
263	17	7	1	2	3								9	fx (MM)/DCC
264	17	8						4					9	fx (MM)/DCC
265	17	9	1					4					9	fx (MM)/DCC
266	17	10			2			4					9	fx (MM)/DCC
267	17	11	1	2				4					9	fx (MM)/DCC
268	17	12						3	4				9	fx (MM)/DCC
269	17	13	1					3	4				9	fx (MM)/DCC
270	17	14			2	3	4						9	fx (MM)/DCC
271	17	15	1	2	3	4							9	fx (MM)/DCC
272	17	16								5			9	fx (MM)/DCC
273	18	1	1							5			9	fx (MM)/DCC
274	18	2			2					5			9	fx (MM)/DCC
275	18	3	1	2						5			9	fx (MM)/DCC
276	18	4						3	5				9	fx (MM)/DCC
277	18	5	1					3	5				9	fx (MM)/DCC
278	18	6			2	3				5			9	fx (MM)/DCC
279	18	7	1	2	3					5			9	fx (MM)/DCC
280	18	8							4	5			9	fx (MM)/DCC
281	18	9	1						4	5			9	fx (MM)/DCC
282	18	10			2				4	5			9	fx (MM)/DCC
283	18	11	1	2					4	5			9	fx (MM)/DCC




													
		10 (0/1)											
284	18	12			3	4	5				9	fx (MM)/DCC	
285	18	13	1		3	4	5				9	fx (MM)/DCC	
286	18	14		2	3	4	5				9	fx (MM)/DCC	
287	18	15	1	2	3	4	5				9	fx (MM)/DCC	
288	18	16						6			9	fx (MM)/DCC	
289	19	1	1					6			9	fx (MM)/DCC	
290	19	2		2				6			9	fx (MM)/DCC	
291	19	3	1	2				6			9	fx (MM)/DCC	
292	19	4			3			6			9	fx (MM)/DCC	
293	19	5	1		3			6			9	fx (MM)/DCC	
294	19	6		2	3			6			9	fx (MM)/DCC	
295	19	7	1	2	3			6			9	fx (MM)/DCC	
296	19	8				4		6			9	fx (MM)/DCC	
297	19	9	1			4		6			9	fx (MM)/DCC	
298	19	10		2		4		6			9	fx (MM)/DCC	
299	19	11	1	2		4		6			9	fx (MM)/DCC	
300	19	12			3	4		6			9	fx (MM)/DCC	
301	19	13	1		3	4		6			9	fx (MM)/DCC	
302	19	14		2	3	4		6			9	fx (MM)/DCC	
303	19	15	1	2	3	4		6			9	fx (MM)/DCC	
304	19	16					5	6			9	fx (MM)/DCC	
305	20	1	1				5	6			9	fx (MM)/DCC	
306	20	2		2			5	6			9	fx (MM)/DCC	
307	20	3	1	2			5	6			9	fx (MM)/DCC	
308	20	4			3		5	6			9	fx (MM)/DCC	
309	20	5	1		3		5	6			9	fx (MM)/DCC	

														
		10 (0/1)												
310	20	6			2	3			5	6		9	fx (MM)/DCC	
311	20	7	1	2	3				5	6		9	fx (MM)/DCC	
312	20	8							4	5	6		9	fx (MM)/DCC
313	20	9	1						4	5	6		9	fx (MM)/DCC
314	20	10		2					4	5	6		9	fx (MM)/DCC
315	20	11	1	2					4	5	6		9	fx (MM)/DCC
316	20	12				3	4	5	6				9	fx (MM)/DCC
317	20	13	1			3	4	5	6				9	fx (MM)/DCC
318	20	14		2	3	4	5	6					9	fx (MM)/DCC
319	20	15	1	2	3	4	5	6					9	fx (MM)/DCC
320	20	16								7			9	fx (MM)/DCC
321	21	1	1							7	9			---/DCC
322	21	2		2						7	9			---/DCC
323	21	3	1	2						7	9			---/DCC
324	21	4				3				7	9			---/DCC
325	21	5	1			3				7	9			---/DCC
326	21	6		2	3					7	9			---/DCC
327	21	7	1	2	3					7	9			---/DCC
328	21	8							4		7	9		---/DCC
329	21	9	1						4		7	9		---/DCC
330	21	10		2					4		7	9		---/DCC
331	21	11	1	2					4		7	9		---/DCC
332	21	12				3	4			7	9			---/DCC
333	21	13	1			3	4			7	9			---/DCC
334	21	14		2	3	4				7	9			---/DCC
335	21	15	1	2	3	4				7	9			---/DCC

											
	10 (0/1)										
336	21	16			5	7	9	---	/DCC		
337	22	1	1		5	7	9	---	/DCC		
338	22	2		2	5	7	9	---	/DCC		
339	22	3	1	2	5	7	9	---	/DCC		
340	22	4		3	5	7	9	---	/DCC		
341	22	5	1	3	5	7	9	---	/DCC		
342	22	6		2	3	5	7	9	---	/DCC	
343	22	7	1	2	3	5	7	9	---	/DCC	
344	22	8			4	5	7	9	---	/DCC	
345	22	9	1		4	5	7	9	---	/DCC	
346	22	10		2	4	5	7	9	---	/DCC	
347	22	11	1	2	4	5	7	9	---	/DCC	
348	22	12			3	4	5	7	9	---	/DCC
349	22	13	1		3	4	5	7	9	---	/DCC
350	22	14		2	3	4	5	7	9	---	/DCC
351	22	15	1	2	3	4	5	7	9	---	/DCC
352	22	16				6	7	9	---	/DCC	
353	23	1	1			6	7	9	---	/DCC	
354	23	2		2		6	7	9	---	/DCC	
355	23	3	1	2		6	7	9	---	/DCC	
356	23	4			3		6	7	9	---	/DCC
357	23	5	1		3		6	7	9	---	/DCC
358	23	6		2	3		6	7	9	---	/DCC
359	23	7	1	2	3		6	7	9	---	/DCC
360	23	8			4		6	7	9	---	/DCC
361	23	9	1		4		6	7	9	---	/DCC



														
	10 (0/1)													
362	23	10			2		4	6	7	9	---	/DCC		
363	23	11	1	2			4	6	7	9	---	/DCC		
364	23	12				3	4	6	7	9	---	/DCC		
365	23	13	1			3	4	6	7	9	---	/DCC		
366	23	14		2	3	4		6	7	9	---	/DCC		
367	23	15	1	2	3	4		6	7	9	---	/DCC		
368	23	16						5	6	7	9	---	/DCC	
369	24	1	1					5	6	7	9	---	/DCC	
370	24	2		2				5	6	7	9	---	/DCC	
371	24	3	1	2				5	6	7	9	---	/DCC	
372	24	4				3		5	6	7	9	---	/DCC	
373	24	5	1			3		5	6	7	9	---	/DCC	
374	24	6		2	3			5	6	7	9	---	/DCC	
375	24	7	1	2	3			5	6	7	9	---	/DCC	
376	24	8						4	5	6	7	9	---	/DCC
377	24	9	1					4	5	6	7	9	---	/DCC
378	24	10		2				4	5	6	7	9	---	/DCC
379	24	11	1	2				4	5	6	7	9	---	/DCC
380	24	12				3	4	5	6	7	9	---	/DCC	
381	24	13	1			3	4	5	6	7	9	---	/DCC	
382	24	14		2	3	4	5	6	7	9	---	/DCC		
383	24	15	1	2	3	4	5	6	7	9	---	/DCC		
384	24	16								8	9	---	/DCC	
385	25	1	1							8	9	---	/DCC	
386	25	2		2						8	9	---	/DCC	
387	25	3	1	2						8	9	---	/DCC	

											
			10 (0/1)								
388	25	4			3				8	9	---/DCC
389	25	5	1		3				8	9	---/DCC
390	25	6		2	3				8	9	---/DCC
391	25	7	1	2	3				8	9	---/DCC
392	25	8				4			8	9	---/DCC
393	25	9	1			4			8	9	---/DCC
394	25	10		2		4			8	9	---/DCC
395	25	11	1	2		4			8	9	---/DCC
396	25	12			3	4			8	9	---/DCC
397	25	13	1		3	4			8	9	---/DCC
398	25	14		2	3	4			8	9	---/DCC
399	25	15	1	2	3	4			8	9	---/DCC
400	25	16					5		8	9	---/DCC
401	26	1	1				5		8	9	---/DCC
402	26	2		2			5		8	9	---/DCC
403	26	3	1	2			5		8	9	---/DCC
404	26	4			3		5		8	9	---/DCC
405	26	5	1		3		5		8	9	---/DCC
406	26	6		2	3		5		8	9	---/DCC
407	26	7	1	2	3		5		8	9	---/DCC
408	26	8				4	5		8	9	---/DCC
409	26	9	1			4	5		8	9	---/DCC
410	26	10		2		4	5		8	9	---/DCC
411	26	11	1	2		4	5		8	9	---/DCC
412	26	12			3	4	5		8	9	---/DCC
413	26	13	1		3	4	5		8	9	---/DCC

													
			10 (0/1)										
414	26	14			2	3	4	5		8	9	---/DCC	
415	26	15	1	2	3	4	5			8	9	---/DCC	
416	26	16						6		8	9	---/DCC	
417	27	1	1					6		8	9	---/DCC	
418	27	2		2				6		8	9	---/DCC	
419	27	3	1	2				6		8	9	---/DCC	
420	27	4				3		6		8	9	---/DCC	
421	27	5	1			3		6		8	9	---/DCC	
422	27	6		2	3			6		8	9	---/DCC	
423	27	7	1	2	3			6		8	9	---/DCC	
424	27	8					4	6		8	9	---/DCC	
425	27	9	1				4	6		8	9	---/DCC	
426	27	10		2			4	6		8	9	---/DCC	
427	27	11	1	2			4	6		8	9	---/DCC	
428	27	12			3	4		6		8	9	---/DCC	
429	27	13	1		3	4		6		8	9	---/DCC	
430	27	14		2	3	4		6		8	9	---/DCC	
431	27	15	1	2	3	4		6		8	9	---/DCC	
432	27	16						5	6		8	9	---/DCC
433	28	1	1					5	6		8	9	---/DCC
434	28	2		2				5	6		8	9	---/DCC
435	28	3	1	2				5	6		8	9	---/DCC
436	28	4				3		5	6		8	9	---/DCC
437	28	5	1			3		5	6		8	9	---/DCC
438	28	6		2	3			5	6		8	9	---/DCC
439	28	7	1	2	3			5	6		8	9	---/DCC

Key	Keyboard		ON										10 (0/1)	
	0	1	1	2	3	4	5	6	7	8	9	0		
440	28	8				4	5	6		8	9		---	/DCC
441	28	9	1			4	5	6		8	9		---	/DCC
442	28	10		2		4	5	6		8	9		---	/DCC
443	28	11	1	2		4	5	6		8	9		---	/DCC
444	28	12			3	4	5	6		8	9		---	/DCC
445	28	13	1		3	4	5	6		8	9		---	/DCC
446	28	14		2	3	4	5	6		8	9		---	/DCC
447	28	15	1	2	3	4	5	6		8	9		---	/DCC
448	28	16								7	8	9	---	/DCC
449	29	1	1							7	8	9	---	/DCC
450	29	2		2						7	8	9	---	/DCC
451	29	3	1	2						7	8	9	---	/DCC
452	29	4			3					7	8	9	---	/DCC
453	29	5	1		3					7	8	9	---	/DCC
454	29	6		2	3					7	8	9	---	/DCC
455	29	7	1	2	3					7	8	9	---	/DCC
456	29	8				4				7	8	9	---	/DCC
457	29	9	1			4				7	8	9	---	/DCC
458	29	10		2		4				7	8	9	---	/DCC
459	29	11	1	2		4				7	8	9	---	/DCC
460	29	12			3	4				7	8	9	---	/DCC
461	29	13	1		3	4				7	8	9	---	/DCC
462	29	14		2	3	4				7	8	9	---	/DCC
463	29	15	1	2	3	4				7	8	9	---	/DCC
464	29	16					5			7	8	9	---	/DCC
465	30	1	1				5			7	8	9	---	/DCC

Key	Keyboard		ON										10 (0/1)		
	0	1	1	2	3	4	5	6	7	8	9	0			
466	30	2		2				5		7	8	9	---	/DCC	
467	30	3	1	2				5		7	8	9	---	/DCC	
468	30	4			3			5		7	8	9	---	/DCC	
469	30	5	1		3			5		7	8	9	---	/DCC	
470	30	6		2	3			5		7	8	9	---	/DCC	
471	30	7	1	2	3			5		7	8	9	---	/DCC	
472	30	8					4	5		7	8	9	---	/DCC	
473	30	9	1				4	5		7	8	9	---	/DCC	
474	30	10		2			4	5		7	8	9	---	/DCC	
475	30	11	1	2			4	5		7	8	9	---	/DCC	
476	30	12			3	4	5			7	8	9	---	/DCC	
477	30	13	1		3	4	5			7	8	9	---	/DCC	
478	30	14		2	3	4	5			7	8	9	---	/DCC	
479	30	15	1	2	3	4	5			7	8	9	---	/DCC	
480	30	16							6	7	8	9	---	/DCC	
481	31	1	1							6	7	8	9	---	/DCC
482	31	2		2						6	7	8	9	---	/DCC
483	31	3	1	2						6	7	8	9	---	/DCC
484	31	4			3					6	7	8	9	---	/DCC
485	31	5	1		3					6	7	8	9	---	/DCC
486	31	6		2	3					6	7	8	9	---	/DCC
487	31	7	1	2	3					6	7	8	9	---	/DCC
488	31	8					4			6	7	8	9	---	/DCC
489	31	9	1				4			6	7	8	9	---	/DCC
490	31	10		2			4			6	7	8	9	---	/DCC
491	31	11	1	2			4			6	7	8	9	---	/DCC

													10 ( 0/1 )
	CV	Value	1	2	3	4	5	6	7	8	9	---	
492	31	12			3	4		6	7	8	9	--- / DCC	
493	31	13	1		3	4		6	7	8	9	--- / DCC	
494	31	14		2	3	4		6	7	8	9	--- / DCC	
495	31	15	1	2	3	4		6	7	8	9	--- / DCC	
496	31	16					5	6	7	8	9	--- / DCC	
497	32	1	1				5	6	7	8	9	--- / DCC	
498	32	2		2			5	6	7	8	9	--- / DCC	
499	32	3	1	2			5	6	7	8	9	--- / DCC	
500	32	4			3		5	6	7	8	9	--- / DCC	
501	32	5	1		3		5	6	7	8	9	--- / DCC	
502	32	6		2	3		5	6	7	8	9	--- / DCC	
503	32	7	1	2	3		5	6	7	8	9	--- / DCC	
504	32	8				4	5	6	7	8	9	--- / DCC	
505	32	9	1			4	5	6	7	8	9	--- / DCC	
506	32	10		2		4	5	6	7	8	9	--- / DCC	
507	32	11	1	2		4	5	6	7	8	9	--- / DCC	
508	32	12			3	4	5	6	7	8	9	--- / DCC	
509	32	13	1		3	4	5	6	7	8	9	--- / DCC	
510	32	14		2	3	4	5	6	7	8	9	--- / DCC	
511	32	15	1	2	3	4	5	6	7	8	9	--- / DCC	

Addresses larger than 511 can only be assigned in the DCC format and must be done by programming a CV using the programming track.

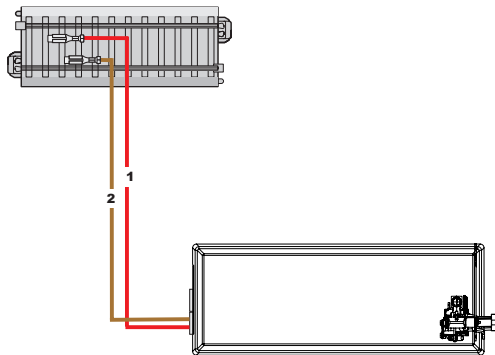


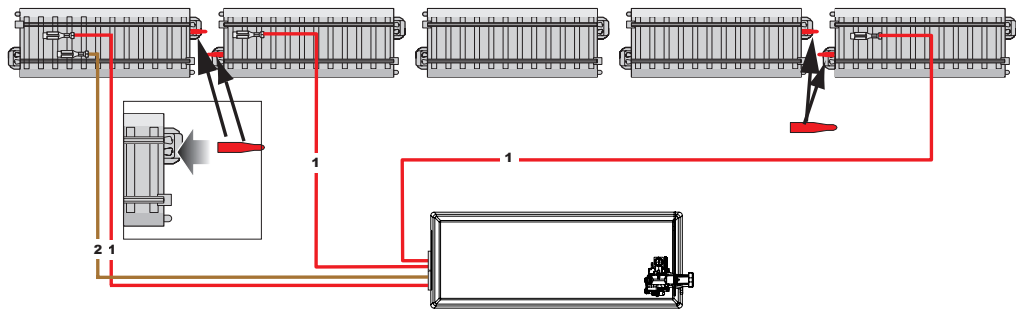
## Setup

### Wire colors

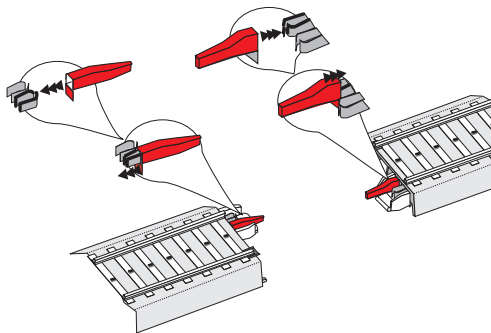
- 1** red
- 2** brown
- 3** yellow
- 4** violet
- 5** red-brown
- 6** red-green

### Connections for the Programming Track

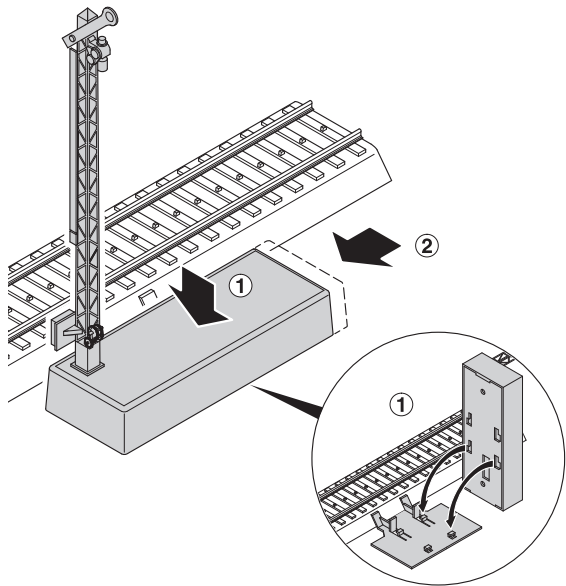
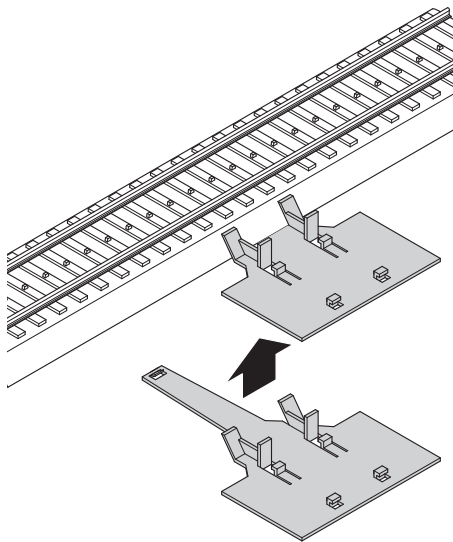




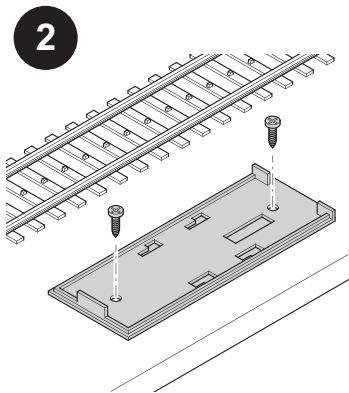
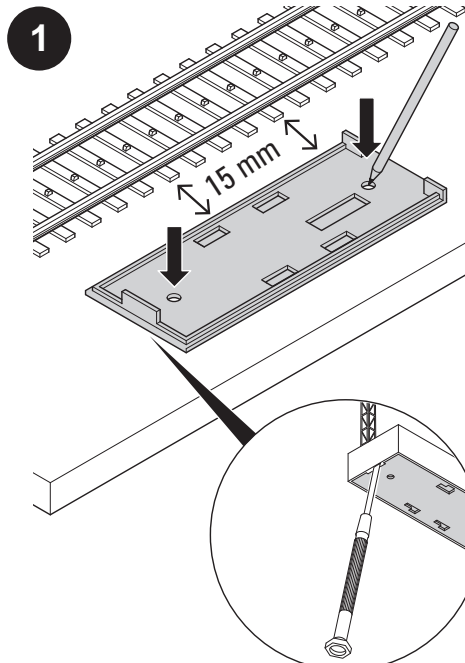
Insulating the Signal Block and Making Its Connections



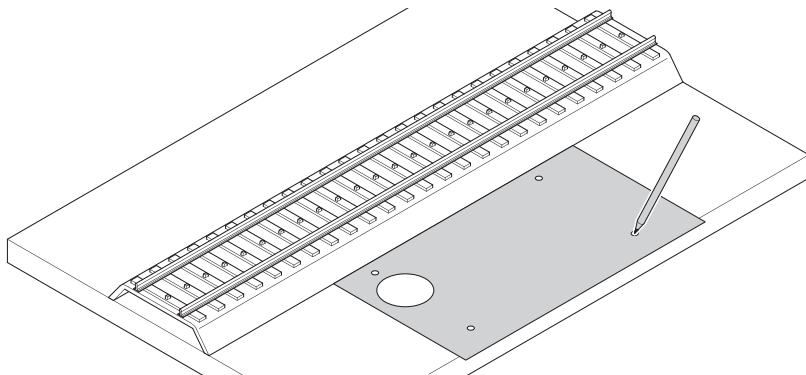
## Installation with C Track



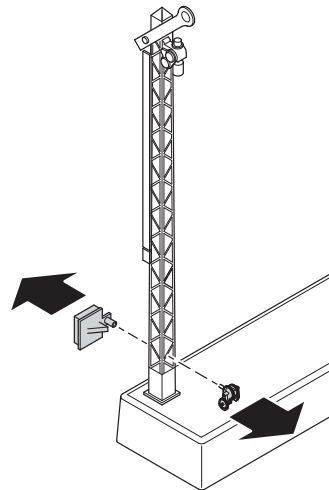
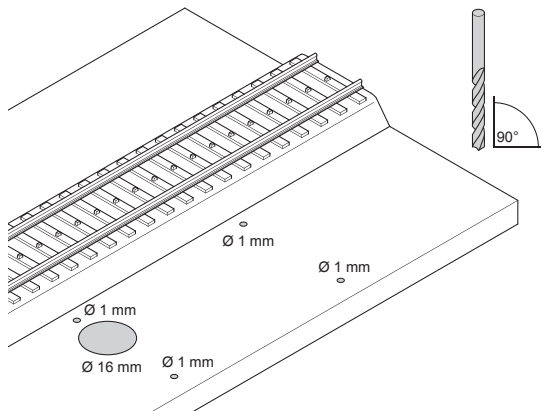
## Installation with K Track or Other Track Systems



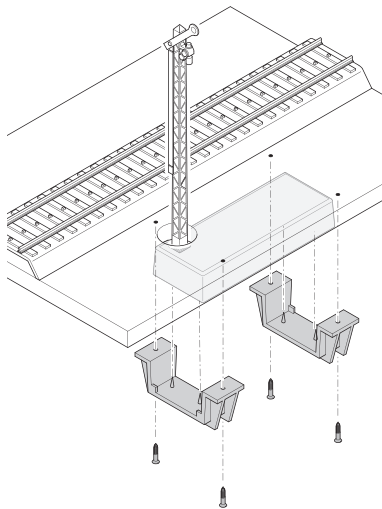
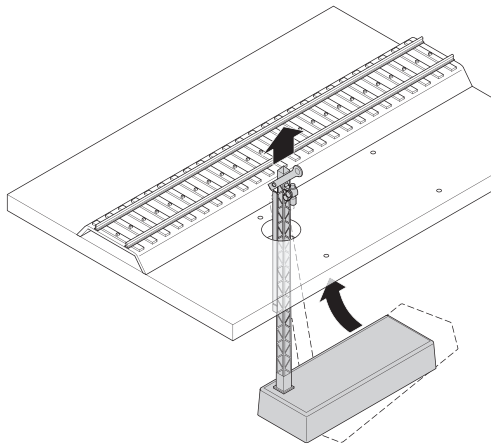
Mark with the template included with the signal.



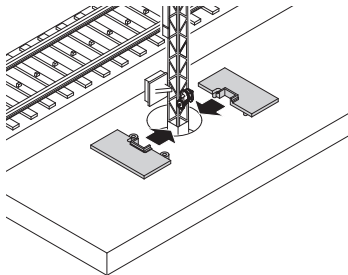
Remove detail parts.



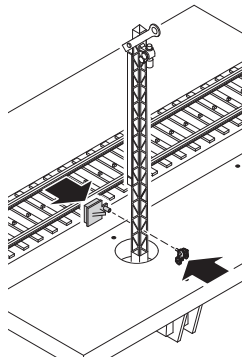
## Below-Baseboard Installation:



Install the cover.

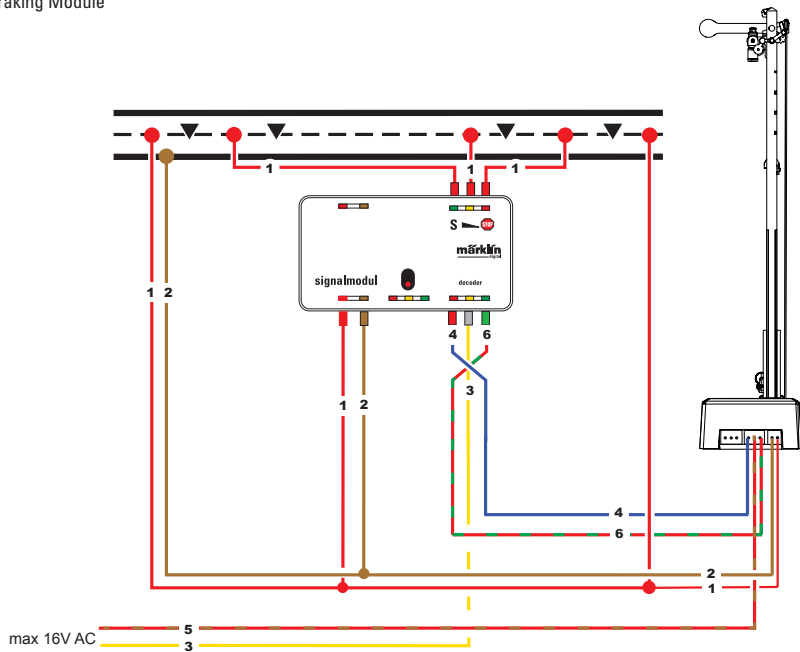


Reinstall detail parts after completing below-baseboard installation.

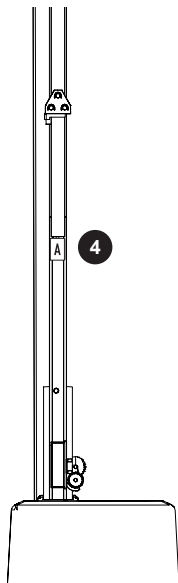
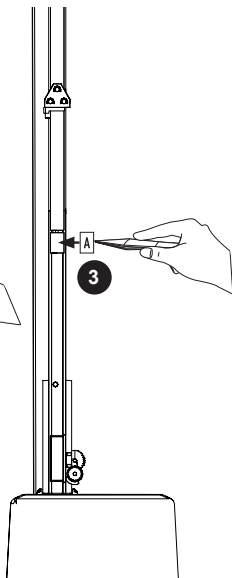
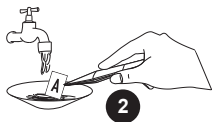
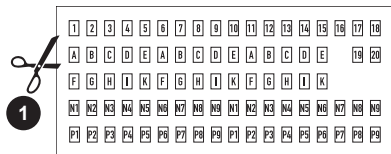




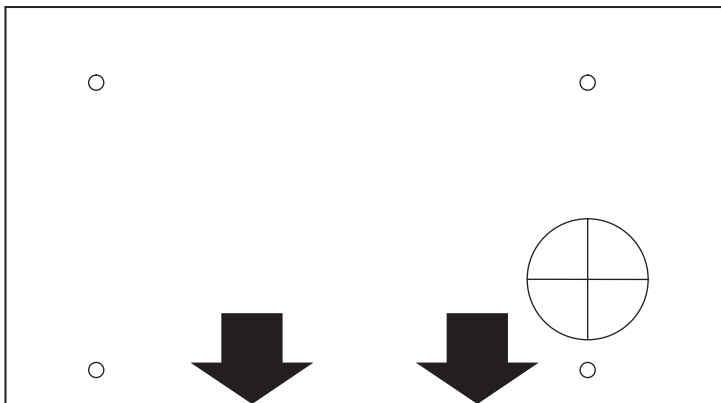
## Connections for the 60441 Braking Module



## Attach decals



## Drilling Template



Due to different legal requirements regarding electro-magnetic compatibility, this item may be used in the USA only after separate certification for FCC compliance and an adjustment if necessary.

Use in the USA without this certification is not permitted and absolves us of any liability. If you should want such certification to be done, please contact us – also due to the additional costs incurred for this.

For additional information, service, support and sales, please contact your local Märklin dealer:

Robert Frowenfeld

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