

LED lighting for express train and coaches [Kuehn](#) a [Tillig](#) TT scale that is suitable for digital DCC system or the analog power supply. (Version 2)

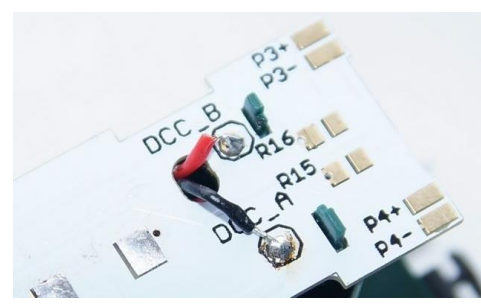
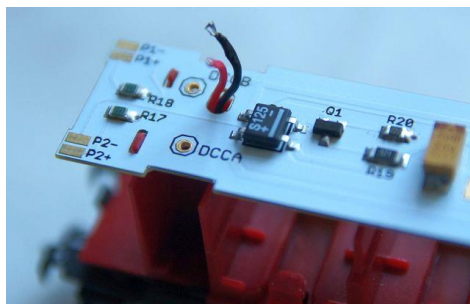
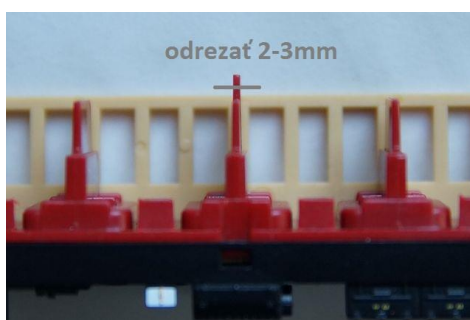
Lighting options:

- individual lighting for each wagon, toilet and corridor
- outputs for rear lamps
- adjust lighting effects
- individual and global brightness adjustment
- Set switch-on delay
- Set switch-off delay
- selects random switching on and off
- setting delay random generator
- assign a random generator to functions
- speed setting global effects

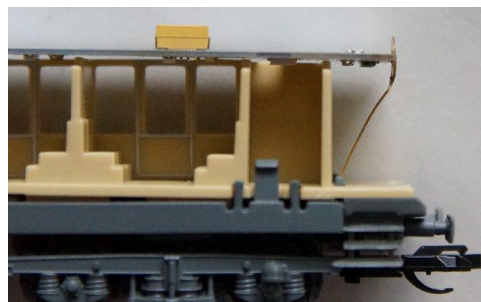
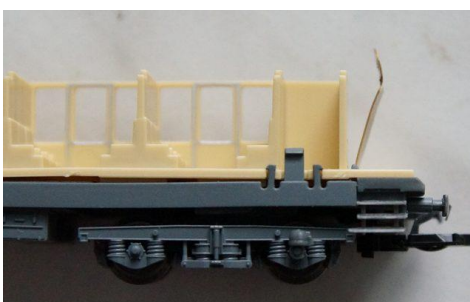


Installation and setup:

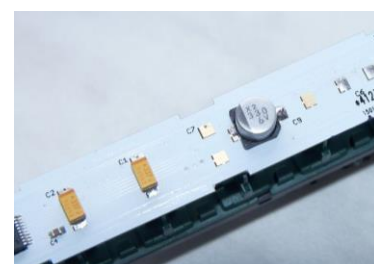
Installation is relatively simple. After disassembly wagon Kuehn need to adjust the amount of plastic bins to reduce light penetration between the coupe. Some cars already have rung reduced (probably later series). After installation of lighting in place you need soldering prepared wire inputs DCCA and DCCB on both sides. Care should be taken to the correct location lighting so that the corridor lights over the corridor.



Tillig models are prepared from successive link plates from under the seat. They can be bent so that after installation of lighting attached close to perpendicular PCB lighting. It is best to completely remove the link plates and replace them with wires. This eliminates the possibility of contact between the metal parts of the wagon. In this case, it is necessary to disassemble the wagon that it can be brought under the plastic molded part with a seat.



PCB have a space for capacitors for power supply during short power outages. These are mostly cars Tillig where the connection to the axle on one side only. Convenient the tantalum capacitor size D - EIA 7343-31 (7.3 mm × 4.3 mm × 3.1 mm) or electrolytic SMD (Ø8 x 5.4mm , Ø6.3 x 5.4mm) on 6.3V



Specifications:

| | |
|------------------------|-------------------------------------|
| Size: | 17mm x 192mm x 5mm |
| Power DCC : | 10-16V |
| Power analog : | 4-16V (plný jas pri 5,3V) |
| Energy consumption: | max 0,01A (10mA) without rear lamps |
| Operating temperature: | 5 - 50 °C |
| Type of lighting: | LED SMD |
| Light color: | 12x neutral white, 4x warm white |

After the first power up gradually light up all the LEDs (light function test) and set the device to configure 1 (TAB1). Write to CV8 (TAB9) can be adjusted six preset configurations by Table 1. These preset configurations are examples of use and do not necessarily reflect the real operation. Simplified and faster programming of the lighting module. Writing the value 246 into CV8 resets the device to factory settings. CV7 load is detected version of the software. CV7 and CV8 are read-only. Writing the default configuration (TAB 1), or global settings of brightness (TAB9) only reconfigure all CV but value CV8 (manufacturer) does not change.

TAB1 Preset configuration:

| | |
|----------------|---|
| CV8=201 | F0 - light in the corridor, after 2 sec., lighting up the whole wagon random switching toilet during driving (effect new fluorescent lamp with inverter) F4 - red rear lamp (bulb effect) |
| CV8=202 | F0 - light in the corridor, after 2 seconds light up the toilet, after 3 seconds, lighting up the whole wagon (effect new fluorescent with starter) F4 - red rear lamp (bulb effect) |
| CV8=203 | F0 - light in the corridor, random WC switching during driving, random switching coupe while standing (effect new fluorescent lamp with inverter) F4 - red rear lamp (bulb effect) |
| CV8=204 | F0 - light in the corridor, after 2 seconds light up the toilet, random switching coupe while standing (effect fluorescent with starter) F4 - red rear lamp (bulb effect) |
| CV8=205 | F0 - light in the corridor (effect fluorescent lamp with inverter) F1 - random switching coupe while standing (fluorescent effect), random switching toilet while driving (effect faulty fluorescent after time working) F2 - red rear lamp (bulb effect) |
| CV8=206 | F0 - light in the corridor1, after 3 sec. light in the corridor2 (effect fluorescent lamp with inverter) F1 - lights in the WC, random switching coupe while standing (effect fluorescent lamp with inverter) F2 - red rear lamp (bulb effect) |

Manual setting of the decoder can be a direct entry into the CV of the individual listed in the table TAB2. The most suitable method is to choose one of six pre-set configurations write to CV8. Then it is appropriate to adjust the brightness over CV8 (TAB9) or writing the value 1-31 into CV46-CV61. Fine-tune the configuration to your liking and by the type of wagon, the entry into the individual CV (address, function, brightness, lighting effects, delays and random switching). The decoder can be programmed using the POM.

The decoder can be set to short or long address (bit5 in CV29). Ideally set the same address as a locomotive (CV1 or CV17+CV18) or use consist address CV19, which can be changed in during operation (programming POM) unlike CV1, which can changed only on the programming track. Then you can be fully used by functions that depend on the movement of the train set (CV146-CV149, CV162-CV165). Turning on the lights by DCC polarity can be set in CV150 to CV153.

On all outputs can be set in 31 levels of brightness (CV46 – CV61). A value 0 and 31 is the maximum brightness value of 1 is the minimum brightness value. Writing the value 0 to 31 in CV8 brightness output is set globally for all outputs. Writing the value 100-131 to CV8 is set globally brightness all coupe 1-10 and the other outputs remain unchanged. Switch-on delay time (CV 66, CV 68) and off delay time (CV 67, CV 69) is set in seconds (0-255 seconds). Outputs that depend on the delays are set in CV154 to CV161. Outputs to be switch randomly while standing are set in CV162 and CV163. Outputs to be switch randomly while driving are set in CV164 and CV165. Speed generation of random switching on/off can be set in seven levels in CV70 and CV71 (TAB7). The ratio of random on and random off outputs can be set in CV72 and CV73 in (TAB8). CV154 and CV165 are conditioned switching relevant outputs in CV120 to CV153. Identical output settings delay on / off 1 and 2 is not appropriate. Over CV74 to CV77 it is assigned a random generator to individual functions F0 to F12 (TAB6). CV78 and CV79 are used to delay starting a random generator. Value is given in seconds. A value of 0 indicates that the feature is turned off. This makes it possible to achieve that after switching on the light, all the lights turn on and after the set time is start to randomly switched on and off.

TAB2 A description of all CV

| CV | Range | CV8 201 | CV8 202 | CV8 203 | CV8 204 | CV8 205 | CV8 206 | Description CV |
|----|----------|------------|------------|------------|------------|------------|------------|---|
| 1 | 1..99 | 3 | 3 | 3 | 3 | 3 | 3 | address decoder |
| 7 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | version SW |
| 8 | 13 | 13 | 13 | 13 | 13 | 13 | 13 | manufacturer: 13 = home decoder |
| 9 | 0-7 | 2 | 2 | 2 | 2 | 2 | 2 | speed effects |
| 13 | 0..255 | 8 | 8 | 8 | 8 | 3 | 3 | active functions F1 - F8 in analog operation |
| 14 | 0..63 | 3 | 3 | 3 | 3 | 3 | 3 | active functions F0, F9 - F12 in analog operation |
| 17 | 192..231 | 192 | 192 | 192 | 192 | 192 | 192 | long address (upper byte) |
| 18 | 0..255 | 3 | 3 | 3 | 3 | 3 | 3 | long address (lower byte) |
| 19 | 1..99 | 0 | 0 | 0 | 0 | 0 | 0 | consist address |
| 29 | | 6 | 6 | 6 | 6 | 6 | 6 | tab setup CV29 |
| 30 | 0..23 | 9 | 6 | 8 | 6 | 7 | 7 | select an effect for output 1 |
| 31 | 0..23 | 9 | 6 | 8 | 6 | 7 | 7 | select an effect for output 2 |
| 32 | 0..23 | 9 | 6 | 8 | 6 | 7 | 7 | select an effect for output 3 |
| 33 | 0..23 | 9 | 6 | 8 | 6 | 7 | 7 | select an effect for output 4 |
| 34 | 0..23 | 9 | 6 | 8 | 6 | 7 | 7 | select an effect for output 5 |
| 35 | 0..23 | 9 | 6 | 8 | 6 | 7 | 7 | select an effect for output 6 |
| 36 | 0..23 | 9 | 6 | 8 | 6 | 7 | 7 | select an effect for output 7 |
| 37 | 0..23 | 9 | 6 | 8 | 6 | 7 | 7 | select an effect for output 8 |
| 38 | 0..23 | 9 | 6 | 8 | 6 | 7 | 7 | select an effect for output 9 |
| 39 | 0..23 | 9 | 6 | 8 | 6 | 7 | 7 | select an effect for output 10 |
| 40 | 0..23 | 8 | 10 | 14 | 10 | 10 | 10 | select an effect for output 11 (WC) |
| 41 | 0..23 | 8 | 8 | 13 | 8 | 10 | 10 | select an effect for output 12 (WC) |
| 42 | 0..23 | 8 | 6 | 9 | 6 | 7 | 5 | select an effect for output 13 (corridor) |
| 43 | 0..23 | 8 | 6 | 9 | 6 | 7 | 5 | select an effect for output 14 (corridor) |
| 44 | 0..23 | 1 | 1 | 1 | 1 | 1 | 1 | select an effect for output 15 (tail lights) |
| 45 | 0..23 | 1 | 1 | 1 | 1 | 1 | 1 | select an effect for output 16 (tail lights) |
| 46 | 0..31 | 31 | 31 | 31 | 31 | 31 | 31 | the maximum brightness output1 |
| 47 | 0..31 | 31 | 31 | 31 | 31 | 31 | 31 | the maximum brightness output2 |
| 48 | 0..31 | 31 | 31 | 31 | 31 | 31 | 31 | the maximum brightness output3 |
| 49 | 0..31 | 31 | 31 | 31 | 31 | 31 | 31 | the maximum brightness output4 |
| 50 | 0..31 | 31 | 31 | 31 | 31 | 31 | 31 | the maximum brightness output5 |
| 51 | 0..31 | 31 | 31 | 31 | 31 | 31 | 31 | the maximum brightness output6 |
| 52 | 0..31 | 31 | 31 | 31 | 31 | 31 | 31 | the maximum brightness output7 |
| 53 | 0..31 | 31 | 31 | 31 | 31 | 31 | 31 | the maximum brightness output8 |
| 54 | 0..31 | 31 | 31 | 31 | 31 | 31 | 31 | the maximum brightness output9 |
| 55 | 0..31 | 31 | 31 | 31 | 31 | 31 | 31 | the maximum brightness output10 |
| 56 | 0..31 | 31 | 31 | 31 | 31 | 31 | 31 | the maximum brightness output11 (WC) |
| 57 | 0..31 | 31 | 31 | 31 | 31 | 31 | 31 | the maximum brightness output12 (WC) |
| 58 | 0..31 | 31 | 31 | 31 | 31 | 31 | 31 | the maximum brightness output13 (corridor) |
| 59 | 0..31 | 31 | 31 | 31 | 31 | 31 | 31 | the maximum brightness output14 (corridor) |
| 60 | 0..31 | 31 | 31 | 31 | 31 | 31 | 31 | the maximum brightness output15 (tail lights) |
| 61 | 0..31 | 31 | 31 | 31 | 31 | 31 | 31 | the maximum brightness output16 (tail lights) |
| 62 | 0..255 | 12 | 12 | 12 | 12 | 12 | 12 | blinking A - positive period effect 20,21 |
| 63 | 0..255 | 12 | 12 | 12 | 12 | 12 | 12 | blinking A - negative period effect 20,21 |
| 64 | 0..255 | 24 | 24 | 24 | 24 | 24 | 24 | blinking B - positive period effect 22,23 |
| 65 | 0..255 | 24 | 24 | 24 | 24 | 24 | 24 | blinking B - negative period effect 22,23 |
| 66 | 0..255 | 3 | 2 | 20 | 2 | 0 | 3 | 1 delay activation of the output by CV154 and 155 |
| 67 | 0..255 | 2 | 2 | 2 | 2 | 2 | 2 | 1 delay deactivation of the output by CV156 and 157 |
| 68 | 0..255 | 0 | 3 | 0 | 10 | 0 | 0 | 2 delay activation of the output by CV158 and 159 |
| 69 | 0..255 | 0 | 4 | 0 | 4 | 0 | 3 | 2 delay deactivation of the output by CV160 and 161 |

TAB2 continue

| CV | Range | CV8 201 | CV8 202 | CV8 203 | CV8 204 | CV8 205 | CV8 206 | Description CV |
|-----|--------|------------|------------|------------|------------|------------|------------|---|
| 70 | 0..7 | 0 | 0 | 5 | 5 | 5 | 5 | range random generator when the state |
| 71 | 0..7 | 2 | 0 | 2 | 0 | 2 | 2 | range random generator while driving |
| 72 | 0..3 | 0 | 0 | 3 | 3 | 3 | 3 | on / off ratio in random generator when the state |
| 73 | 0..3 | 0 | 0 | 0 | 0 | 0 | 0 | on / off ratio in random generator while driving |
| 74 | 0..255 | 0 | 0 | 16 | 16 | 1 | 1 | FN for random switching when the state |
| 75 | 0..255 | 0 | 0 | 0 | 0 | 0 | 0 | FN for random switching when the state |
| 76 | 0..255 | 16 | 0 | 16 | 0 | 1 | 0 | FN for random switching while driving |
| 77 | 0..255 | 0 | 0 | 0 | 0 | 0 | 0 | FN for random switching while driving |
| 78 | 0..255 | 0 | 0 | 0 | 0 | 0 | 0 | delay activation of accidental switching when the state |
| 79 | 0..255 | 0 | 0 | 0 | 0 | 0 | 0 | delay activation of accidental switching while driving |
| ... | | | | | | | | |
| 120 | 0..255 | 255 | 255 | 255 | 255 | 0 | 0 | F0 output 1-8 (TAB5) |
| 121 | 0..255 | 63 | 63 | 63 | 63 | 48 | 48 | F0 output 9-16 (TAB5) |
| 122 | 0..255 | 0 | 0 | 0 | 0 | 255 | 255 | F1 output 1-8 (TAB5) |
| 123 | 0..255 | 0 | 0 | 0 | 0 | 15 | 15 | F1 output 9-16 (TAB5) |
| 124 | 0..255 | 0 | 0 | 0 | 0 | 0 | 0 | F2 output 1-8 (TAB5) |
| 125 | 0..255 | 0 | 0 | 0 | 0 | 192 | 192 | F2 output 9-16 (TAB5) |
| 126 | 0..255 | 0 | 0 | 0 | 0 | 0 | 0 | F3 output 1-8 (TAB5) |
| 127 | 0..255 | 0 | 0 | 0 | 0 | 0 | 0 | F3 output 9-16 (TAB5) |
| 128 | 0..255 | 0 | 0 | 0 | 0 | 0 | 0 | F4 output 1-8 (TAB5) |
| 129 | 0..255 | 192 | 192 | 192 | 192 | 0 | 0 | F4 output 9-16 (TAB5) |
| 130 | 0..255 | 0 | 0 | 0 | 0 | 0 | 0 | F5 output 1-8 (TAB5) |
| 131 | 0..255 | 0 | 0 | 0 | 0 | 0 | 0 | F5 output 9-16 (TAB5) |
| 132 | 0..255 | 0 | 0 | 0 | 0 | 0 | 0 | F6 output 1-8 (TAB5) |
| 133 | 0..255 | 0 | 0 | 0 | 0 | 0 | 0 | F6 output 9-16 (TAB5) |
| ... | | | | | | | | |
| 144 | 0..255 | 0 | 0 | 0 | 0 | 0 | 0 | F12 output 1-8 (TAB5) |
| 145 | 0..255 | 0 | 0 | 0 | 0 | 0 | 0 | F12 output 9-16 (TAB5) |
| 146 | 0..255 | 255 | 255 | 255 | 255 | 255 | 255 | STOP output 1-8 (TAB5) |
| 147 | 0..255 | 255 | 255 | 255 | 255 | 255 | 255 | STOP output 9-16 (TAB5) |
| 148 | 0..255 | 255 | 255 | 255 | 255 | 255 | 255 | RUN output 1-8 (TAB5) |
| 149 | 0..255 | 255 | 255 | 255 | 255 | 255 | 255 | RUN output 9-16 (TAB5) |
| 150 | 0..255 | 255 | 255 | 255 | 255 | 255 | 255 | DCCa output 1-8 (TAB5) |
| 151 | 0..255 | 255 | 255 | 255 | 255 | 255 | 255 | DCCa output 9-16 (TAB5) |
| 152 | 0..255 | 255 | 255 | 255 | 255 | 255 | 255 | DCCb output 1-8 (TAB5) |
| 153 | 0..255 | 255 | 255 | 255 | 255 | 255 | 255 | DCCb output 9-16 (TAB5) |
| 154 | 0..255 | 255 | 0 | 255 | 0 | 0 | 0 | 1 switch-on delay output 1-8 (TAB5) |
| 155 | 0..255 | 3 | 12 | 3 | 12 | 48 | 32 | 1 switch-on delay output 9-16 (TAB5) |
| 156 | 0..255 | 0 | 0 | 0 | 0 | 0 | 0 | 1 switch-off delay output 1-8 (TAB5) |
| 157 | 0..255 | 48 | 12 | 48 | 12 | 0 | 16 | 1 switch-off delay output 9-16 (TAB5) |
| 158 | 0..255 | 0 | 255 | 0 | 255 | 0 | 0 | 2 switch-on delay output 1-8 (TAB5) |
| 159 | 0..255 | 0 | 3 | 0 | 3 | 0 | 0 | 2 switch-on delay output 9-16 (TAB5) |
| 160 | 0..255 | 0 | 0 | 0 | 0 | 0 | 0 | 2 switch-off delay output 1-8 (TAB5) |
| 161 | 0..255 | 0 | 48 | 0 | 48 | 0 | 12 | 2 switch-off delay output 9-16 (TAB5) |
| 162 | 0..255 | 0 | 0 | 255 | 255 | 255 | 255 | random inputs when the state 1-8 (TAB5) |
| 163 | 0..255 | 0 | 0 | 3 | 3 | 3 | 3 | random inputs when the state 9-16 (TAB5) |
| 164 | 0..255 | 0 | 0 | 0 | 0 | 0 | 0 | random inputs while driving 1-8 (TAB5) |
| 165 | 0..255 | 12 | 0 | 12 | 0 | 12 | 0 | random inputs while driving 9-16 (TAB5) |

TAB3

| bit | nastavenie CV29 |
|--------------|--|
| bit 1 | Number of steps 0 = 14, 1 = 28 |
| bit 2 | enabled analog 0 = off, 1 = on |
| bit 5 | 0 = address in CV1, 1 = address in CV17+18 |

Activation of analog functions (CV13 and CV14)

| bit | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|-------------|----|----|-----|-----|-----|----|-----|-----|
| CV13 | F8 | F7 | F6 | F5 | F4 | F3 | F2 | F1 |
| CV14 | | | F12 | F11 | F10 | F9 | F0r | F0f |

TAB4 Effects in CV30 and CV45 can be set for every output

| value | efect CV30 až CV45 | value | efect CV30 až CV45 |
|-------|---------------------------------------|-------|---|
| 0 | no effects | 10 | faulty fluorescent functional over time |
| 1 | bulb | 11 | faulty fluorescent |
| 2 | beacon | 12 | faulty fluorescent, end of live |
| 3 | flash | 13 | faulty fluorescent with inverter 1 |
| 4 | double flash | 14 | faulty fluorescent with inverter 2 |
| 5 | fluorescent type1 - with starter | 15 | natrium light |
| 6 | fluorescent type2 – new with starter | 20 | flashing by CV62 and CV63 |
| 7 | fluorescent type3 – with inverter | 21 | negative flashing by CV62 and CV63 |
| 8 | fluorescent type4 – new with inverter | 22 | flashing by CV64 and CV65 |
| 9 | fluorescent type5 – new with inverter | 23 | negative flashing by CV64 and CV65 |

TAB5a Assign bits to a room in the wagon for the version with 10 coupe (class 2 wagons).

| | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|--------------------|--------|--------|--------|--------|--------|--------|---------|--------|
| output 1-8 | coupe8 | coupe7 | coupe6 | coupe5 | coupe4 | coupe3 | coupe2 | coupe1 |
| output 9-16 | Poz2 | Poz1 | CH2 | CH1 | WC2 | WC1 | coupe10 | coupe9 |

TAB5b Assign bits to a room in the wagon for the version with 9 coupe (class 1 or 1/2 wagons).

| | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|--------------------|--------|--------|-----|--------|--------|--------|--------|--------|
| output 1-8 | coupe7 | coupe6 | | coupe5 | coupe4 | coupe3 | coupe2 | coupe1 |
| output 9-16 | Poz2 | Poz1 | CH2 | CH1 | WC2 | WC1 | Kupé9 | Kupé8 |

TAB5c Assign bits to a room in the wagon for the version with 11 coupe (sleeping, special wagons)

| | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|--------------------|--------|--------|--------|--------|--------|---------|---------|--------|
| output 1-8 | coupe8 | coupe7 | coupe6 | coupe5 | coupe4 | coupe3 | coupe2 | coupe1 |
| output 9-16 | Poz2 | Poz1 | CH2 | CH1 | WC1 | coupe11 | coupe10 | coupe9 |

TAB6 Assignment of bits to functions F0 – F12

| | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|------------------|-----|-----|-----|----|----|----|----|----|
| CV74 CV76 | | | | F0 | F4 | F3 | F2 | F1 |
| CV75 CV77 | F12 | F11 | F10 | F9 | F8 | F7 | F6 | F5 |

TAB7 CV70 a CV71

| | generated random time |
|-------|-----------------------|
| 0, 1 | 0-4sec |
| 2 | 2-6sec |
| 3 | 2-10sec |
| 4 | 2-20sec |
| 5 | 2-35sec |
| 6 | 2-70sec |
| 7-255 | 2-130sec |

TAB8 CV72 a CV73

| | ratio of ON / OFF |
|-------|-------------------|
| 0 | 50% / 50% |
| 1 | 75% / 25% |
| 2 | 88% / 12% |
| 3-255 | 94% / 6% |

TAB9 CV8

| | |
|---------|--------------------------|
| 1-31 | brightness of all lights |
| 101-131 | brightness coupe 1-10 |
| 201-206 | preset configurations |
| 246 | initialisation |

Príklady programovania:

Príklad 1 – rýchle nastavenie osvetlenia

Chcem používať prednastavenú konfiguráciu 4, ale nevyhovuje mi zapínanie osvetlenia pomocou F0 ale chcem použiť F3. Najprv zapíšem do CV8 hodnotu 204. Osvetlenie sa nastaví na prednastavenú konfiguráciu 4 (TAB1). Upravím si adresu v CV1 alebo v CV17+CV18. Ak na súprave bude často menený rušeň, tak je vhodnejšie použiť združenú adresu CV19, ktorá sa dá preprogramovať aj počas prevádzky. Do CV120 a CV121 zapíšem hodnotu 0. Od teraz nebude osvetlenie reagovať na F0. Do CV126 zapíšem pôvodnú hodnotu z CV120, čo je 255 a do CV127 zapíšem pôvodnú hodnotu z CV121, čo je 63. Od teraz sa bude osvetlenie zapínať pomocou F3.

Príklad 2 – zníženie jasů na chodbe

Nevyhovuje mi silné svetlo v priestoroch chodby. Jas svietiel na chodbe sa nastavuje v CV58 a 59 - pravá a ľavá časť chodby (TAB2). Maximálny jas je 31, polovičný 15 a štvrtinový 7. Zapíšem do CV58 a CV59 hodnotu 7. Od teraz budú osvetlenie chodby svietiť na štvrtinu jasů.

Príklad 3 použiteľný pre vagóny s oddielmi (kupé):

Z tabuľky 5a-5b si zvolím, ktoré výstupy sa majú rozsvietiť (číslo1=svieti, číslo0=nesvieti). Napríklad chcem, aby sa pri zatlačení F1 rozsvietilo kupé 1,2,3,6 – binárne to bude 0010 0111 po prevode napríklad vo Windows kalkulačke (treba prepnúť na programátorskú verziu) alebo na internete <https://prevodyonline.eu/sk/ciselné-sustavy.html> to je číslo 39. Hodnotu treba zapísať do CV122 (funkcia F1). Ak chcem, aby sa tieto kupé zapínali náhodne, tak hodnotu 39 treba zapísať aj do CV162 alebo do CV164. Ak chcem, aby sa náhodne zapínali len kupé 1 a 2 (binárne 0000 0011), tak do CV162 alebo CV164 treba zapísať hodnotu 3. Vtedy po zatlačení F1 sa rozsvietia kupé 3 a 6 a náhodne sa budú rozsvievať a zhasínať kupé 1 a 2. Rýchlosť náhodného generátora je možné nastaviť v CV70 a v CV71. Pomer generovania zapínacieho a vypínacieho stavu je možné nastaviť v CV72 a CV73. Typ osvetlenia je vhodné zvoliť podľa typu a epochy vagóna (TAB4).

| | | | | |
|----------|----------------|----------|-----------|------------------|
| 00100111 | bin [dvojková] | = | 39 | dec [desiatková] |
| | | previesť | pokročily | otočiť |

Príklad 4 použiteľný napríklad pre vagóny s batožinovým, služobným alebo poštovým oddielom:

Chcem, aby sa po zatlačení F3 zapli svetlá na chodbe a po 6tich sekundách svetlá v služobnom priestore, ktorý osvetľujú výstupy 1 až 4. Do CV126 zapíšem 15 (binárne 0000 1111) a do CV127 zapíšem 48 (binárne 0011 0000). Teraz po zatlačení F3 sa rozsvieti chodba a priestor v služobnom oddiele. Oneskorenie zapnutia osvetlenia v služobnom oddiele aktivujem zápisom hodnoty 15 (binárne 000 1111) do CV154 (CV158) a zápisom hodnoty 6 do CV66 (CV68) - oneskorenie 6 sekúnd. Teraz sa po zatlačení F3 zapnú svetlá na chodbe a o 6 sekúnd sa zapnú svetlá v služobnom oddiele.

Príklad 5 pokračovanie príkladu 4:

Chcem, aby sa po zatlačení F4 náhodne zapínali kupé v druhej časti vagónu. Tieto kupé osvetľujú výstupy 4 až 9. Do CV128 zapíšem hodnotu 240 (binárne 1111 0000) a do CV129 zapíšem hodnotu 3 (binárne 0000 0011). Teraz po zatlačení F3 sa rozsvietia kupé 5-10 (TAB5). Náhodné zapínanie aktivujem zápisom hodnoty 240 do CV162 a zápisom hodnoty 3 do CV163. Teraz sa počas státia budú náhodne zapínať kupé 5-10.