Informatie Bulletin MiniatuurA

DC-Car battery check

Since February 2014, the DC-Car decoders are supplied with a battery test.
How to activate and set the battery test is described in this information bulletin. It is recommended that you do this with the CV programmer and the free downloadable CV programmer software.
To do this you need an update connector in the vehicle!

At the time of writing, there are two types of decoders, the DC07 and DC08.
ATTENTION: With the type I decoders you have to connect the battery + input to the battery test input !!

Activation and adjustment can be divided into 3 steps:

1. The battery test must be activated.
2. The reference values for the battery test must be set. This depends on the type of battery and the battery voltage.
3. What should the vehicle do in the event of a battery alarm?

1. Activate battery test:

You do this with CV27 (the battery test is off by default).
CV27 has the following options:

0 = Normal functions
1 = Battery test connection disabled (see also CV21)
2 = MF3 is used as output 1 function. Lighting sensor connection becomes this turned off. Control is via the F10 key of a DCC Central
4 = Flashing lights are assigned to F3, front strobes are assigned to F4, F5 and F6 therefore no longer have a function
8 = Reed ignition connection disabled
16 = DC-CAR Plus function: The function block output "Light 1 OFF" also switches lights 2, 3 and 4 off
32 = DC-CAR Plus function: The function block output "Light 1 OFF" switches all lighting off (flashing lights, etc.)
64 = DC-CAR Plus function: The flashing light outputs of the function module are linked. The hazard lights are activated by switching on the left and right indicators.
128 = Reed contact reversed (Reed contact closed = vehicle stops, reed contact open = vehicle is moving)

Factory setting: 3
Possible values: 0-255

With option 1 you activate the battery test. It is ON by default and must be turned OFF.

2. Set reference values:

With CV28 you set the reference value for a battery alarm. Because the vehicles have different types of batteries there are in fact three tables that can be worked with:

1 x NiMH 1,2 Volt		*2 x NiMH 2,4 Volt*		*3 x NiMH or LiPo 3,6 Volt*	
Voltage	*Value*	*Volt age*	*Value*	*Voltage*	*Value*
1,5	*84 full*	*3,0*	*174 full*	*4,1*	*240 full*
1,4	*78*	*2,9*	*168*	*4,0*	*234*
1,3	*72*	*2,8*	*162*	*3,9*	*228*
1,2	*66*	*2,7*	*156*	*3,8*	*222*
1,1	*60 empty*	*2,6*	*150*	*3,7*	*216*
1,0	*54*	*2,5*	*144*	*3,6*	*210*
..		*2,4*	*138*	*3,5*	*204*
..		*2,3*	*132*	*3,4*	*198*
..		*2,2*	*126 empty*	*3,3*	*192 empty*
..		*2,1*	*120*	*3,2*	*186*
..		*2,0*	*114*	*3,1*	*180*

Factory setting: 120
Possible values: 0-255

NOTE: some LiPo batteries have a built-in protection that switches off the battery at a certain min. voltage. The value in CV28 must therefore be higher than this minimum voltage !!
For the 180mAh LiPo with protection, a value of min. 210 must be entered.

Functional test:

To check the operation of the battery test, set CV28 to 250.
This will trigger the battery alarm immediately when the vehicle is turned on if everything is properly connected.
NOTE: With the I-decoders the battery test input must be connected to the battery + input !!

It may take a few seconds before a battery alarm is given, this is because the processor checks number of times the battery voltage before the alarm is triggered.

How to set up CV28:

Then set a value that corresponds to the battery used in the vehicle.
Examples for the reference value of the battery test function (may differ in practice)

*3,6 volt LiPo**	*170-190*
3,6 volt LiPo with a 1N4001 diode in seriaes	*135-150*
*3,6 volt NiCd / NiMh (3 cells) **	*160-170*
3,6 volt NiCd / NiMh (3 cells) with a 1N4001 diode in series	*125-140*
2,4 volt NiCd / NiMh (2 cells)	*100-115*
2,4 volt NiCd / NiMh (2 cells with PowerOff-circuit)	*55-75*
1,2 volt NiCd / NiMh (1 cel)	*48-55*

Note: If the vehicle is to give an alarm later, the values can be corrected down by 10%.
Then set a value that corresponds to the battery used in the vehicle.
Examples for the reference value of the battery test function (may differ in practice)

***PAY ATTENTION! Do not use this battery combination with DC07-SI. The voltage converter is damaged.**

3. What should the vehicle do in the event of a battery alarm?

You set this with CV26 when the battery alarm is activated.

0 = Drive at full throttle (Drive position 28) with a battery alarm
1 = Stops (driving position 0) with a battery alarm
2 = Flashing brake lights to indicate a battery alarm
4 = Charge of the battery is sent as a percentage (XT module) 0 - 15 where 0 is empty and 15 is full. Otherwise the battery status will be sent as good or bad.
8 = Limitation of the driving time of the vehicle depending on the battery (see CVs 156 - 159)
16 = Watchdog, if no steering command is received within 4 minutes, the vehicle will stop automatically and the direction indicators are activated alternately. CV160 contains the time in seconds (intended for large layouts at attractions or fairs)
32 = Watchdog time in CV160 is multiplied by a factor of 4 (switch from 4 to 16 minutes)

Factory setting: 0