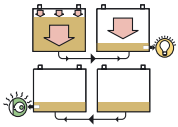


Why you need to isolate your batteries

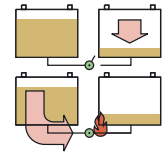
Many vehicles as well as boats have multiple batteries, e.g. one to start the engine and others to power accessories. In order to understand the effects of multi-battery drain an how our battery isolators prevent it, one has to think of electricity as water. Electrical current is equal to the flow of water, and voltage is equal to the pressure. An alternator delivers current (water) into the batteries (storage tanks) and the current then flows through wires (pipes) to the accessories.



In our example, batteries have to be regarded as storage tanks. If a fully charges battery is connected parallel with a discharged or empty one, voltage pressure in the full battery will force its current into the empty battery until the current stored in both batteries reaches a common level. Independent of how many batteries are installed in a vehicle, accessories connected to one will draw capacity from the other batteries in the circuit. That is exactly the problem of multi-battery drain.

Solenoids

One way of solving the multi-battery drain is using a solenoid, i.e. a switch that disconnects batteries from another. There will not be any battery drain as long as the batteries are disconnected, but as soon as they are reconnected, the drained battery will empty the starting battery - perhaps too low! Furthermore, the sudden enforced transfer of energy from one battery to another is likely to damage batteries or at least shorten their life. In the worst case, fire could evolve.



LEAB solenoids are electronically controlled high-performance relays and were especially developed for the application with multiple battery on-board systems. Separation and reconnection of the batteries depends on the voltage of the starting battery, i.e. consumer batteries will be reconnected only after the starting battery was recharged to a certain level. Our relays can be refitted into CAN-Bus-controlled vehicles without a problem, because there no signal transmission necessary from the on-board electronic system.

LEAB EDR electronic distribution relay

The LEAB EDR is an electronic voltage controlled high capacity relay which is connected between two battery banks and uses the voltage either from one or both batteries as reference for switching. It allows multiple batteries to be charged from one charging source. In a vehicle with an on-board battery charger connected to the aux. battery this bat-

tery will usually be charged primarily. Especially with longer standing time it makes sense to charge the starter battery as well, in order to guarantee a 100% start ability. With the LEAB EDR one can switch the starter battery and the aux. battery parallel during charging and still keep the safety advantage of separate circuits.

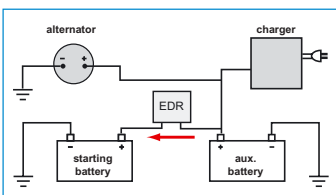
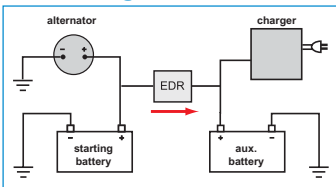


EDR 1275, 2450

Uni-directional relays

Model	EDR 1275	EDR 2450	SP 1314	SP 1314-200	SP 1318	SP 1318-200
Part no.	13.011.71200	13.011.71250	13.040.11314	13.040.21314	13.040.11318	13.040.21318
Input VDC	12	24	12	12	24	24
Operating voltage VDC	9 - 16	18 - 32	9 - 16	9 - 16	15.5 - 32	15.5 - 32
Turn off voltage VDC	12.8	25.6	12.8	12.8	25.7	25.7
Connection voltage VDC	13.5	27.0	13.2	13.2	26.8	28.8
Continuous current A	75	50	100	200	100	200
Peak max. 10 s / 1 s A	- / 250	- / 150	- / 300	- / 600	- / 300	- / 600
Current consumption stand-by / on - mA/A	1 / 0.28	1 / 0.23	3 / 0.7	10 / 1.5	1.5 / 0.5	5 / 0.75
Function	n. o. (normally open)					
Special function	-	-	emerg. start contr. output	emerg. start contr. output	emerg. start contr. output	emerg. start contr. output
Flange	side	side	bottom	side	bottom	side
Dimensions lxwxh mm	44(75)x32x50	44(75)x32x50	66x66x80	105x86x98	66x66x80	105x86x98
Weight g	115	115	265	840	265	840
Terminals	M5	M5	5 / 16 - 24	5 / 16 - 24	5 / 16 - 24	5 / 16 - 24

Block diagrams EDR



Bi-directional relays

Model	SP 1315*	SP 1315-200	SP 1319	SP 1319-200
Part no.	13.040.11315	13.040.21315	13.040.11319	13.040.21319
Input VDC	12	12	24	24
Operating voltage VDC	9 - 16	9 - 16	15.5 - 32	15.5 - 32
Turn off voltage VDC	12.8	12.8	25.7	25.7
Connection voltage VDC	13.2	13.2	26.8	26.8
Continuous current A	100	200	100	200
Peak max. 10 s / 1 s A	- / 300	- / 600	- / 300	- / 600
Current consumption stand-by / on - mA/A	3 / 0.7	10 / 1.5	1.5 / 0.5	5 / 0.75
Function	n. o. (normally open)			
Special function	emergency start, control output			
Flange	bottom	side	bottom	side
Dimensions lxwxh mm	66x66x80	105x86x98	66x66x80	105x86x98
Weight g	265	840	265	840
Terminals	5 / 16 - 24	5 / 16 - 24	5 / 16 - 24	5 / 16 - 24

*recommended by DaimlerChrysler for type VF211 (E-class station wagon)