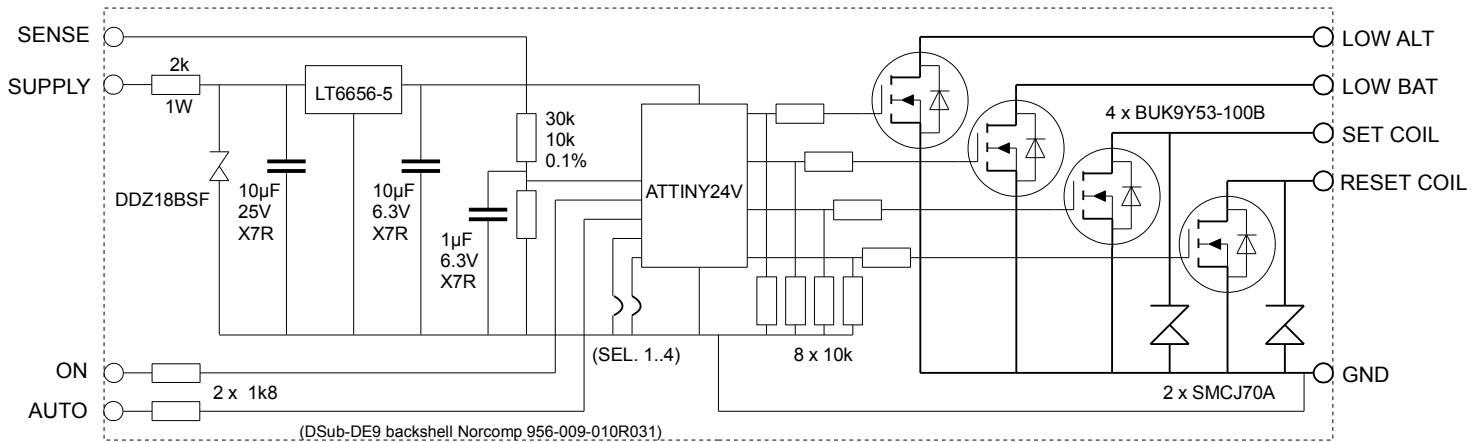


Bistable Relay Control – 4 versions

1. Off-Auto-On: aux battery connect–disconnect at 13.2 ± 0.2 V and override; low voltage warnings at 13.0 V, 11.8 V
 2. Off-On(-Reset): alternator OV latching disconnect at 16.0 V and reset/override; low voltage warnings at 13.0 V, 11.8 V
 - 3 .. 4.: as 1 .. 2. for LiFePO4 with voltages 13.8 ± 0.2 V, 13.6 V, 12.8 V and 16.0 V, 13.6 V, 12.8 V respectively
- All versions include basic Off-On function (needing only SUPPLY, ON, SET COIL, RESET COIL and GND connections).

The relay is open when the AUTO input and the ON input are both open.
 The relay is closed when the ON input is shorted to ground irrespective of the AUTO input status.
 With the ON input open the relay is closed when the AUTO input is shorted to ground and the disconnect condition is not present.

SUPPLY and the relay coils must remain powered from when the relay opens or closes until after it has opened or closed (duration < 0.1 s).
 SUPPLY and the relay coils can be permanently connected to a battery (negligible leakage of 3 μ A when ON and AUTO are open).
 SUPPLY can be powered through a (inline) fuse ≥ 100 mA from a take-off point or bus.
 SENSE must not be permanently connected to a battery; it can be connected via a (inline) fuse ≥ 5 mA to a take-off point or bus.
 LOW ALT and LOW BAT can each be connected to a bus via a warning device and a (common) fuse ≤ 2 A.
 ON and AUTO carry only 100 μ A when shorted to ground – the input switches must be the logic type with gold plated contacts.
 Multiple relays may be controlled by paralleling corresponding coils.



Requirements and properties			Normal			Limits			
		Quantity	Min	Typ	Max	Min	Max	Unit	Req
Pin	SET COIL	Coil supply volts			16	-0.5	70	V	x
	RESET COIL	Coil pulse current (50 ms)			5			A	x
	LOW ALT	Continuous current			2	-20	20	A	x
	LOW BAT	On resistance		0.05	0.13			Ω	
		Leakage @25 °C		0.4	1.2			μ A	
		Leakage @65 °C			10			μ A	
	SUPPLY	Volts	7		16	-70	70	V	x
		Current (ON and AUTO open)		1.3				μ A	
		Current (ON or AUTO shorted to ground)		1				mA	
	ON	Volts open	3.0		5	-70	70	V	x
	AUTO	Current sourced open			30			μ A	x
		Volts shorted to ground			1.0			V	x
		Current sourced shorted to ground	90		250			μ A	
	SENSE	Volts				-70	70	V	x
		Current		0.4				mA	
Off-Auto-On		Switching voltage PbSO4	13.1		13.3			V	
		Switching voltage LiFePO4	13.7		13.9			V	
		Hysteresis \pm		0.2				V	
		Sample averaging period	170		230			ms	
Off-On(-Reset)		Switching voltage	15.9		16.1			V	
		Sample averaging period (result < 18 V)	170		230			ms	
		Sample averaging period (result > 18 V)	34		46			ms	
General		Low alternator voltage PbSO4	12.9		13.1			V	
		Low battery voltage PbSO4	11.7		11.9			V	
		Low alternator voltage LiFePO4	13.5		13.7			V	
		Low battery voltage LiFePO4	12.7		12.9			V	
		Switch debounce period		15				ms	
		Pulse period	50		65			ms	
		Dead time after Reset coil pulse (on→off)	2200		2800			ms	
		Temperature	0		70	-55	125	$^{\circ}$ C	