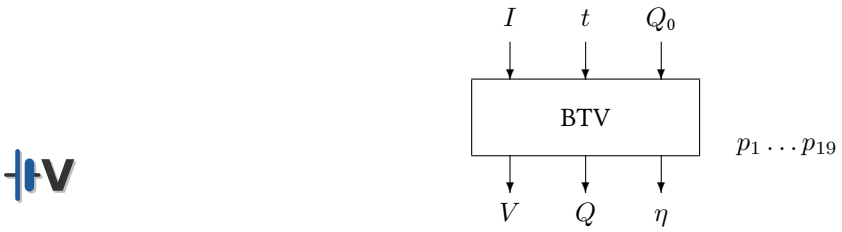
Block BTV

The BTV block calculates the output voltage of a battery, depending on current and state of charge.



Name	BTV
Function	se0019
Inputs	2 . . . 3
Outputs	3
Parameters	19
Strings	0
Group	S

Inputs

1 Current I / A
2 Time t / s (not evaluated in mode 2)
3 Capacity Q_0 / A h (used in mode 2 only)

Outputs

1 Voltage V / V
2 New capacity Q / A h
3 Charging efficiency η

Parameters

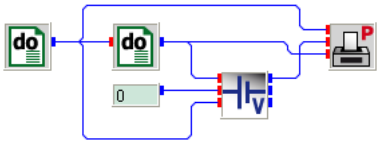
1 Mode
  0 The battery capacity depends on the battery parameters and the inputs of the block; initial value of the battery capacity is given by parameter number 5 (default).
  1 The battery capacity is given by input 3.
2 Number of cells in series N_s
3 Number of cells in parallel N_p
4 Nominal capacity Q_n A h

5	Initial value of battery capacity Q_0 / A h
6	Open circuit voltage charge V_{0c} / V
7	Electrolyte coefficient (charge) g_c / V
8	Inner resistance parameter (charge) ρ_c / Ω A h
9	Battery type coefficient (charge) M_c
10	Capacity coefficient (charge) C_c
11	Open circuit voltage (discharge) V_{0d} / V
12	Electrolyte coefficient (discharge) g_d / V
13	Inner resistance parameter (discharge) ρ_d / Ω A h
14	Battery type coefficient (discharge) M_d
15	Capacity coefficient (discharge) C_d
16	Wood parameter a_w
17	Wood parameter b_w
18	Wood parameter F_ℓ
19	Self discharge coefficient q_s / % of capacity per day

Strings

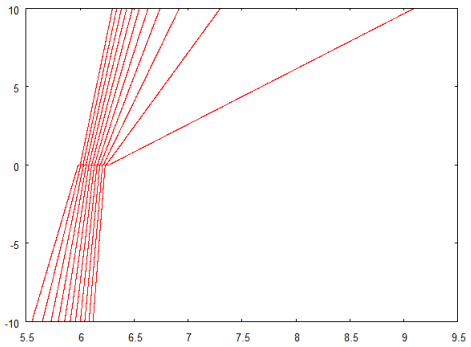
None

btv.vseit



Two nested DO blocks vary battery capacity (outer block) and current (inner block) from 0 to 100 Ah in steps of 10 Ah and -10 to 10 A in steps of 0.01 A, respectively. The time input of the BTI block is set to zero by a CONST block and is of not evaluated because the capacity mode of the BTI block is set to “Battery capacity is given by input 3”.

A parametric plot block PLOTP is used to display the voltage-current characteristic of the battery.



See also Block BTI, BCR.