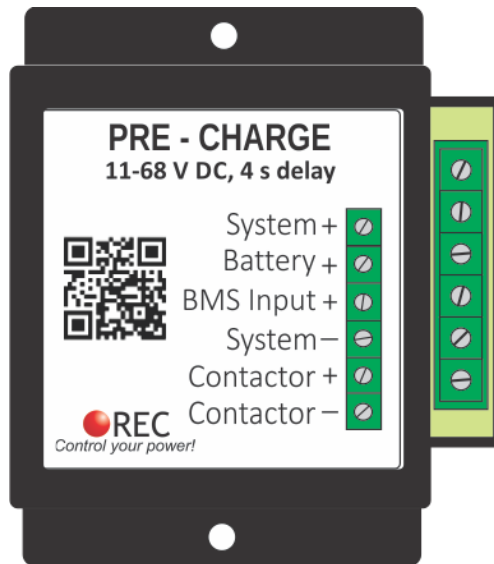


REC PRE-CHARGE UNIT



Features:

- robust and small design
- low power consumption @ 11-68 V DC
- 4 s delay
- integrated 66 Ω power resistor
- 2 A open collector contactor coil drive
- reverse polarity protection
- over-voltage protection
- one-year warranty

General Description:

High input capacitance systems such as inverters, dc-dc converters, etc. can be exposed to large inrush currents during the initial power up procedure. If appropriate measures are not employed, these currents can overly stress or even damage the system components. The pre-charge unit eliminates high inrush currents by charging the input capacitor before the main contactor switches on, prolonging lifespan of the contactor and other components dramatically.

Parameters:

Table 1: Pre-charge parameter table.

Parameter	Value	Unit
Operating voltage range	11-68	V
Pre-charge resistor	66	Ω
Contactor coil fuse (slow)	2	A
Contactor delay time	4	s
Contactor +	11-68	V
Contactor -	Open collector	n.a.
Weight	80	g
Dimensions	81.1 x 81.8 x 31.4	mm

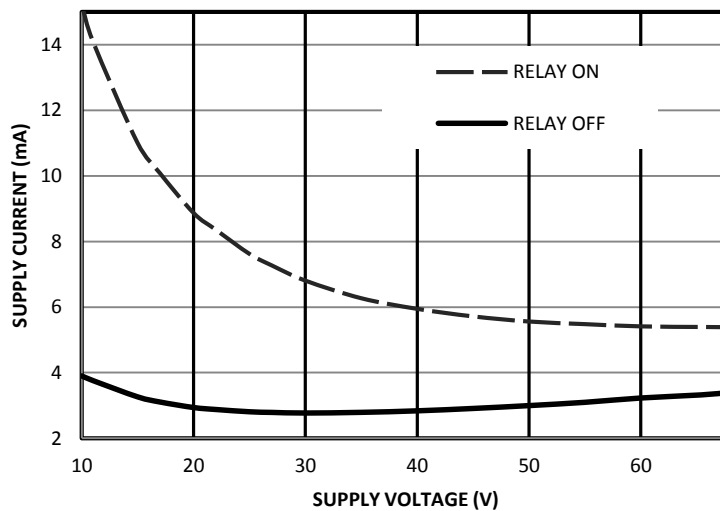


Figure 1: Supply current vs. supply voltage

Typical System Overview:

Figure 2 shows the integration of the pre-charge unit in a typical power system. Only the connections relevant to the pre-charge unit operation are shown. The connection scheme is described in table 2.

Table 2: Pre-charge pin description.

Pin	Tab	Description
1	System +	Connects to system side of the contactor
2	Battery +	Connects to battery side of the contactor
3	BMS Input +	Connects to positive battery terminal via BMS internal relay
4	System –	Connects to system ground.
5	Contactor +	Connects to positive contactor coil
6	Contactor –	Connects to negative contactor coil

The power system consists of a contactor (NO), a battery pack, a current shunt, a PRE-CHARGE unit, a REC Q BMS unit and a high input capacitance system (SYSTEM). At system start up the REC Q BMS activates the charging procedure by powering the pre-charge unit. The pre-charge unit closes the power circuit through its internal relay (RELAY ON). The inrush current flows entirely through the pre-charge 66 Ω internal resistor. After 4 seconds the transient current should be approximately zero. The pre-charge energizes the contactor coil through open collector circuit and after 1 second opens the internal relay (RELAY OFF). All of the system current now passes through the contactor. Normal system operation is achieved.

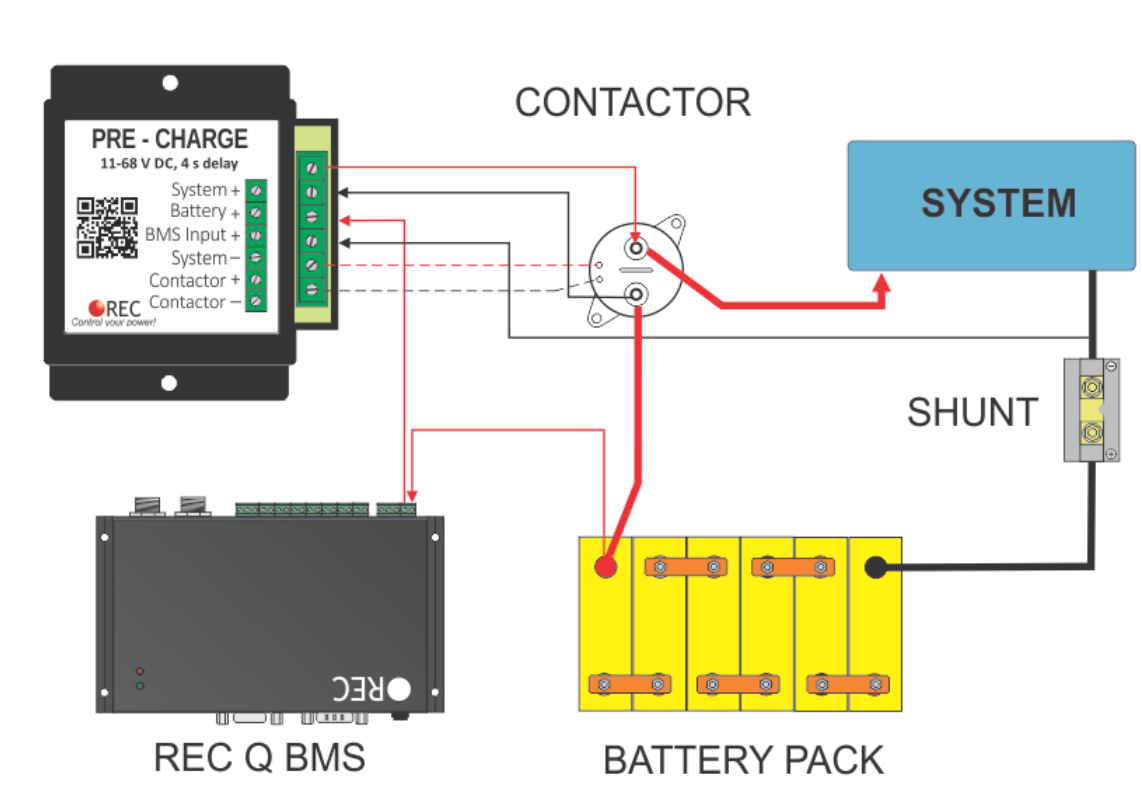


Figure 2: Pre-charge system integration.

Dimensions:

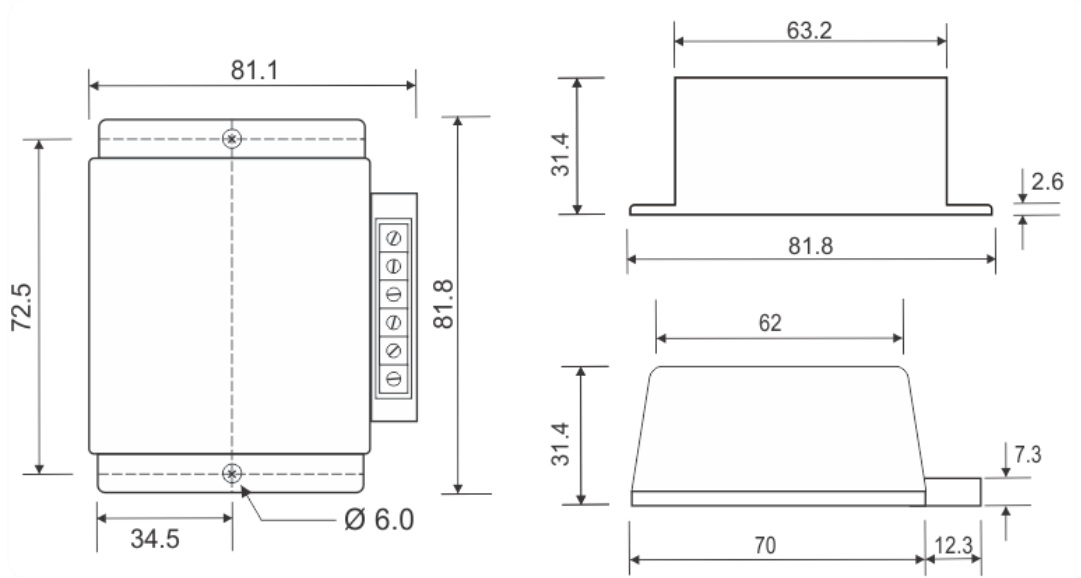


Figure 3: Pre-charge unit dimensions.