victron energy
BLUE POWER

Manual EN

Impulse charger

DIP switches and software

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1. Introduction

Impulse is a program by which you can:

- Read several data from the Impulse charger
- On-line monitor the charge progress

In order to read out these data or observe the charge process you need to have a PC/Laptop with Impulse program installed and the special interface set supplied with the installation disc.

At first, the little cover at the bottom has to be unscrewed (by use of a Torx-10screw –driver) (see fig.1). (Afterwards the cover has to be mounted again.)

Fig. 1

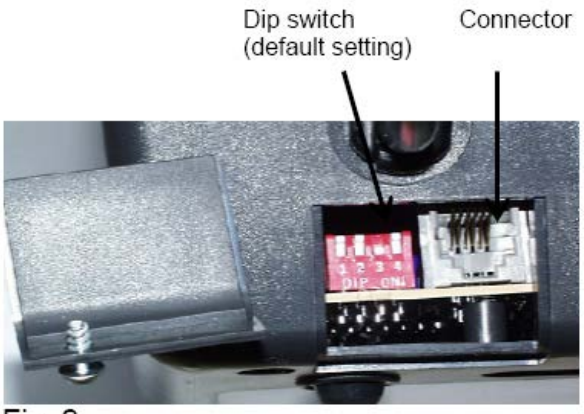


Fig. 2

You can connect the charger to your computer with the “USBTO TTL SERIAL CABLE 1.8m” 4.86.90.03010
Your USB Cable has an electronic interface circuitry inside and therefore the corresponding device driver needs to be installed first. You will find the instructions on your Impulse install CD in the directory ‘>>USB interface cable driver\Installation steps.doc’. Please follow those steps and connect your cable to a USB socket of your computer. (see fig. 3) The other end of the cable has to be plugged in the connector near the DIP switch (see fig. 2). Next the charger has to be switched on and the Impulse software has to be started in order to read the data from the charger.

2. Data read out

Connection overview

Fig 3

Data summery

In the impulse, the following data are stored and can be read out:

- Software version
- Number of incomplete and complete charge cycles and number of deep discharges.
- Hours during charge and stand-by
- Number of charged Ah
- Curve selected by DIP-switch
- Battery data (which can be reset, when the battery is replaced):
    - Number of incomplete, complete and total charge cycles
    - Totally charged capacity (so average charged cycle capacity can be computed by dividing by total charge cycles)
    - Number of deep discharges
    - Last cycle charged capacity and cycle time
- Error history: The last 10 failures: failure code, charge state, charge duration, current, voltage, temperature (can be reset)
- Power-ups, stand-by hours, charge hours

In order to read out these data, you need the following:

- PC or laptop
- Interface USB to TTL cable (Victron Energy order number 4.86.90.03010)
- Impulse software (Victron Energy order number ?????)

The diagram (fig. 4) shows the data flow and the buttons for reading, saving and printing the data.

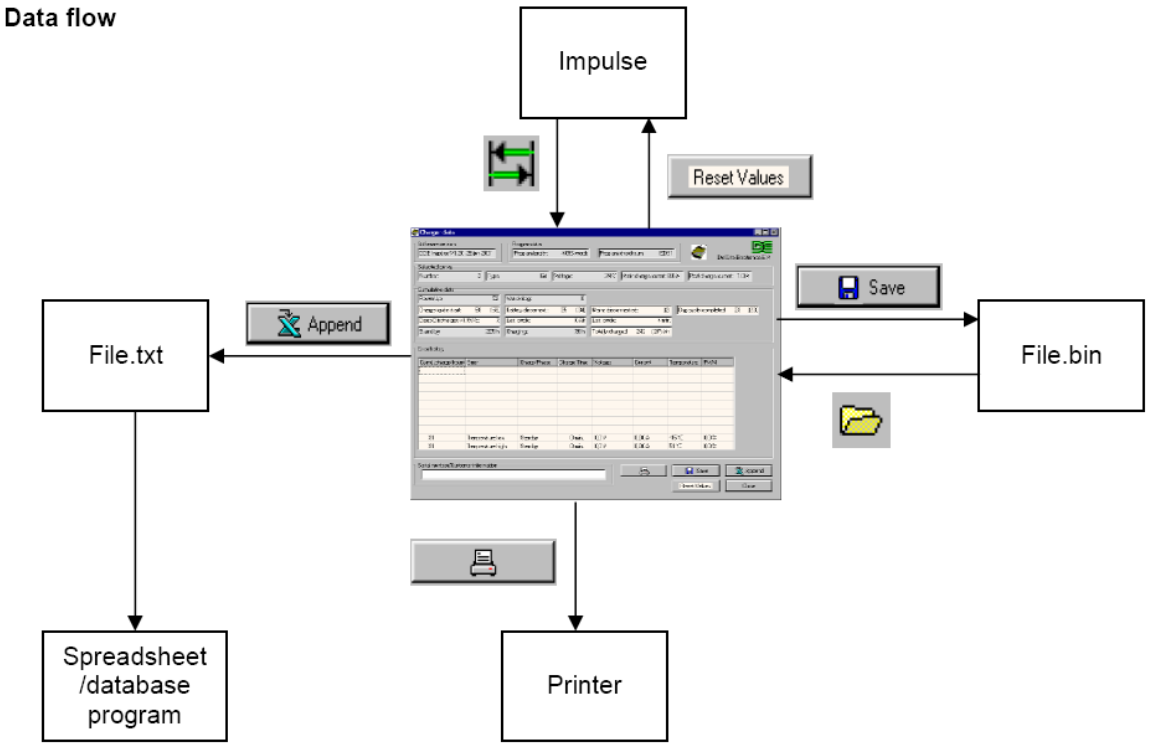


Fig. 4

Error history

In case of an error, the Impulse stores the error in the error history and both LED's blink a number of times followed by one second rest. This number indicates the failure that has occurred. (See table 1)

Number of times the LED's blink followed by a short rest	Error description in error history	Error discription
1	Current offset high	Current offset error. Usually this error is once present (due to factory testing), with "Cumulative charge hours" at 0. Otherwise the charger can be defect.
2	Control loop	Control loop error. The charger can be defect.
3	Control loop I low	Control loop error: current almost 0 A Probably charger defect.
4	Temperature low	Temperature below -15°C or charger defect.
5	Temperature high	Internal temperature above 50°C.
6	Main charge too long	Main charge longer than 15 hours. Probably battery (cell) defect.
7	Output overcurrent	Output overcurrent or short circuit.
8	No curve	No valid battery type selected by DIP-switch

Table 1

Charge history

The most significant result of the forty preceding charge events are logged by the charger. (see fig. 5) A long table contains the duration of charge, charged Ah, last battery voltage and last cell voltage on the right of the *Charger data* window.

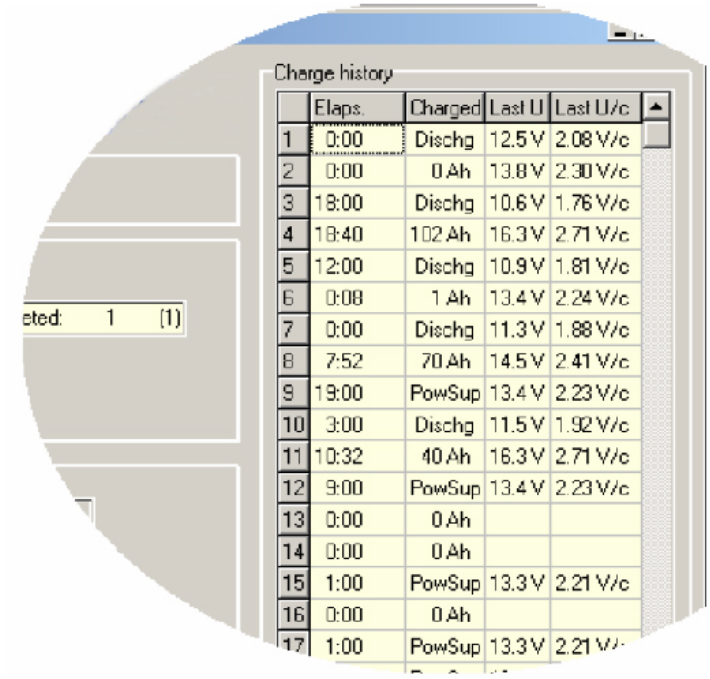


Fig. 5

Charging curve select [Only for Impulse S6 and S8, V2.1 or higher]

If the charger supports this function a combobox will appear within the *selected curve* frame of the *Charger data* window. However, it becomes enabled only when the user type is set to Advanced user (*Settings* window, *User interface behavior* frame).
Rolling it down, the user can choose from the available charging options, supported by the charger. (Note: the meaning and sequence of parameters accord with those of the neighboring fields to the left.)

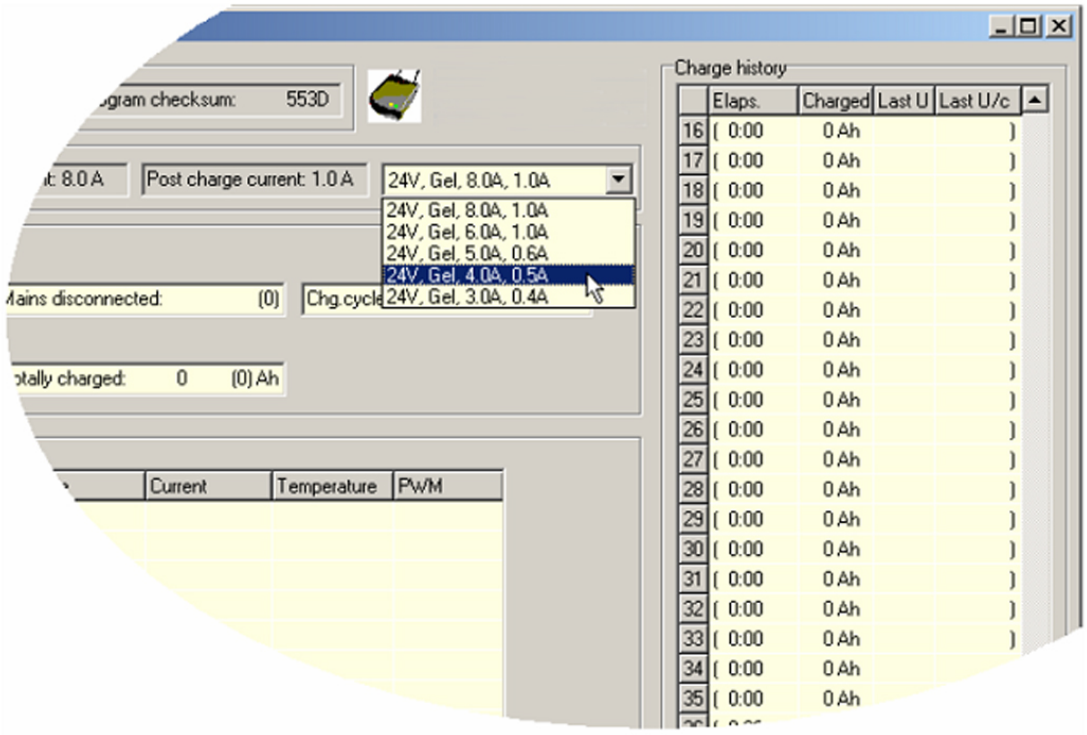


Fig. 6

After selection a conformation box (see fig. 6) will appear to test the intensions of the user, and by OKing the new parameters will be sent to the charger.
In some seconds the field next to the combobox will indicate the new parameters, showing that the operation was successful.
AVOID ACCIDENTS: Never forget to indicate the present setting on the housing of the device, all user must be aware what the charger is set to!

3. Online monitor charge process

Connection overview

Fig. 7

Online monitor data summery

In the Impulse (firmware version V1.10 and up), the following data are measured and can be monitored (with 0.5 seconds update time):

- Voltage (also cell voltage) (accuracy 0.01V/cell)
- Current (accuracy 7% or better)
- Internal temperature
- PWM control
- Charge phase
- Error
- Charged capacity (1 minute update time)
- Charge progress time

The diagram below (fig. 8) shows the data flow and the buttons for reading and saving the data.

Data flow:

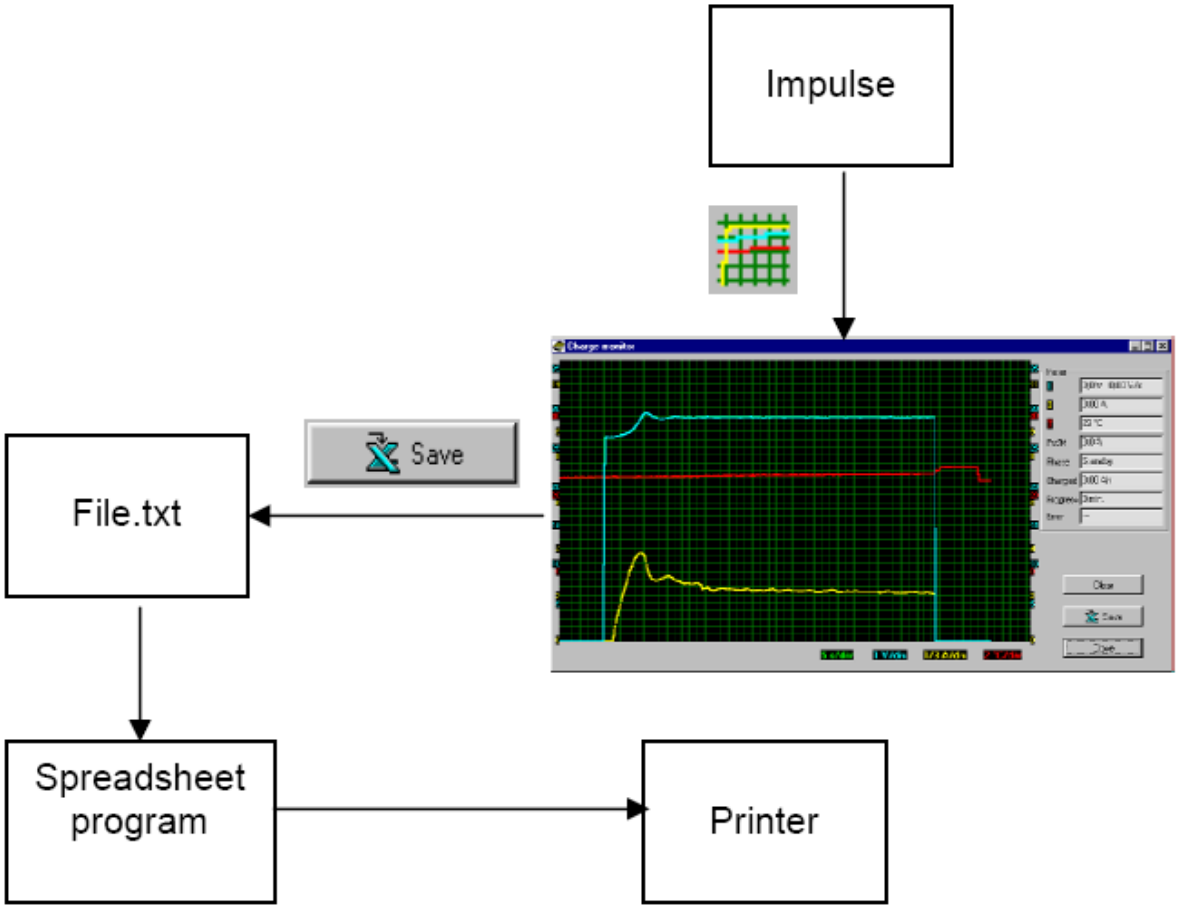
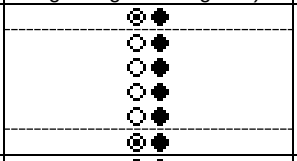
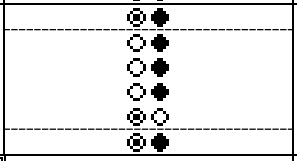
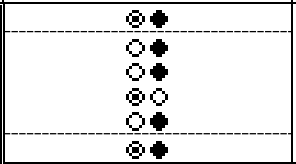
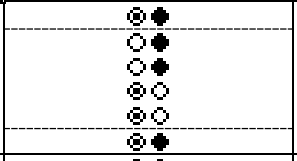
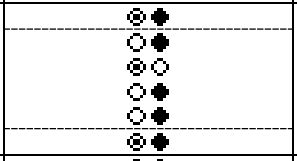
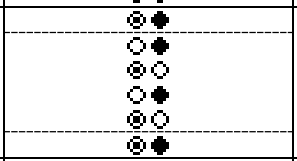
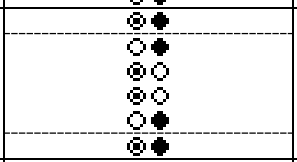
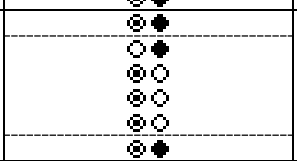


Fig. 8

Charge characteristic adjustment *[Only for the Impulse S12 and S16]*

The adjusted charge characteristic can be determined by the LED flash code sequence (see table: “DIP Switch settings”) as showed when the charger is put on. If this adjustment has to be changed, the little cover at the bottom has to be unscrewed (by use of a Torx-10 screw-driver) (see fig. 1 on page 1). The adjustment can be changed by the DIP switch setting (see fig.2 on page 1). After that the cover has to be mounted again.

DIP Switch settings:

Nummer / Nombre / Number	DIP switch / Mauseklavier/ Commutateur DIP (▮=Up ▯=Down)	LED combinatie bij aan-zetten / LED Kombination Reihefolge bei einschalten /Succession de LED combinaison à mise en fonction / LED flash code sequence at startup (○=uit/aus/s’éteint/off ◉= geel/gelb/jaune/yellow ●=groen/grün/vert/green)	Unom	Batt. type	Batt. Cap. For S12	I1 S12	I2 S12	Batt. Cap. For S16	I1 S16	I2 S16
0			24 V	Gel	30-60Ah	6A		40-80Ah	8A	
1			24 V	Gel	60-90Ah	12A		80-120Ah	16A	
2 Default Setting / Configuration de défaut			**24 V**	**Gel**	**90Ah**	**12A**		**120Ah**	**16A**	
3			24 V	Nat/ Naß/ Humide/ Wet	50-75Ah	12A	1.4 A	70-100Ah	16A	1.8A
4			24 V	Nat/ Naß/ Humide/ Wet	75-100Ah	12A	1.8 A	100-140Ah	16A	2.5A
5			24 V	Nat/ Naß/ Humide/ Wet	100-140Ah	12A	2.6 A	140-180Ah	16A	3.5A
6			24 V	Nat/ Naß/ Humide/ Wet	140-170Ah	12A	3.4 A	180-230Ah	16A	4.5A
7			24 V	Nat/ Naß/ Humide/ Wet	130-200Ah	12A	4.3 A	230-270Ah	16A	5.8A

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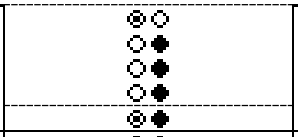
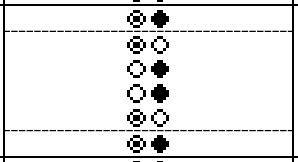
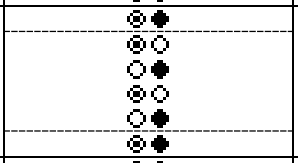
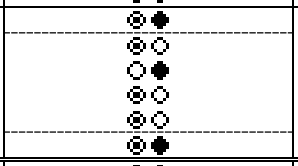
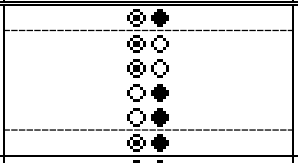
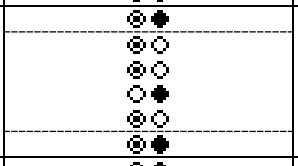
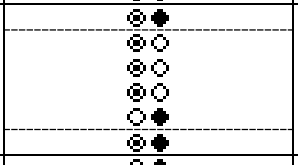
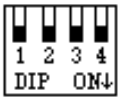
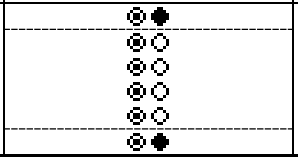
8			24 V	Yellow Top	90Ah	12A	1.5 A	120Ah	16A	2.0A
9			12.. 24 V	Yellow Top conditio ning	90Ah	4A	3.0 A	120Ah	8A	4.0A
10			24 V	M-combi (Impulse9 5: 6)	60-90Ah	12A	1.0 A	80-120Ah	16A	1.4A
11			24 V	Droog/ Trocken/ Sèche/ Dry	90Ah	12A		120Ah	16A	
12			12 V	Gel	75-180Ah	12A		100-240Ah	16A	
13			12 V	Nat/ Naß/ Humide/ Wet	75-110Ah	12A	1.8 A	100-150Ah	16A	2.5A
14			12 V	Nat/ Naß/ Humide/ Wet	>120Ah	12A	3.0 A	>160Ah	16A	4.0A
15			12 V	Yellow Top	90Ah	12A	1.5 A	120Ah	16A	2.0A

AVOID ACCIDENTS: Never forget to indicate the present setting on the housing of the device, all user must be aware what the charger is set to!

Victron Energy Blue Power

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