



Power Electronic System Solutions



PESS BRC-06

Industrial Rectifier
Battery Reconditioner 125V 100A
(Doctor Battery)

Industrial Rectifier – Battery Regenerator 125V100A

This Project
Supported by Turkish Government
TUBITAK (TEYDEP)



BUSINESS PROFILE WELCOME

ABOUT OUR BUSINESS

As PESS company, our primary goal is to become a world-renowned power electronics R&D company. We are proud to serve with our team who are experts in their fields, can use theoretical and practical knowledge together, and have experience in all areas of power electronics.

Working in cooperation with universities, being a model for university-industry cooperation, and adapting literature knowledge to the field of application form the basis of our understanding.

OUR VISION

By establishing partnerships with the world's leading companies, we offer our customers first-class prices and 100% reliability. We aim to introduce our industrial power electronics products to the whole world with our wide partner customer network (South Asia, South America, Russia, UAE, etc.).

For our customers who prefer to be manufacturers, we offer the control circuits of all power electronic products to our customers as plug-and-play with on-site production innovation. In this way, we reduce the increasing freight costs and customs import tax costs to a reasonable level for our customers.

We serve our customers with our products in the fields of renewable energy, electricity generation and distribution, automotive, mining and heavy industry.



WHY SHOULD YOU CHOOSE US?

We are the only company that works together in both theory and practice. We combine academic life with industrial life. We are the best model of university-industry cooperation.

⚡ Our products, produced by our expert team of expert engineers, comply with ISO standards.

⚡ Our products are extremely efficient in terms of power consumption and energy use.

⚡ We provide installation and maintenance manuals in case of high voltage failure and electronic failure

⚡ During the testing procedure, our products go through various tests to make sure everything is smooth, safe and ready.

⚡ We can install, maintain and repair green systems. We will find the spare part as soon as possible and make the system working again.

⚡ Our products have extremely easy and simple installation processes with a user manual.

⚡ Possibility to use a reliable intelligent computer interface to monitor and control the functions of your products

⚡ For our customers who prefer to be manufacturers, we offer the control circuits of all our power electronic products to our customers as plug-and-play with on-site production innovation.



Industrial Rectifier Battery Reconditioner 125V 100A (Doctor Battery)

PESS BRC-06

Industrial Rectifier - Battery Regenerator 125V 100A

In recent years, with the developments brought about by global industrialization and the increase in global consumption, there has been an important series in battery usage. Batteries are used in many areas such as the automotive industry, industrial power supplies, and telecom power supplies. Today, 90 million units are produced in the world alone in the automotive sector. Batteries that break down every two or three years are not recycled and thrown into lakes and soil, polluting the environment and causing a large amount of solid waste to be generated due to their renewal.

PESS BRC-06 renews your batteries and allows you to use them again. In this way, you both contribute to the recycling of batteries and protect the environment by preventing batteries from being regenerated. Thanks to its high efficient refresh rate and low energy consumption, it provides much more profit than purchasing batteries.

MAIN FEATURES

- ⚡ Designed for over 10 years of continuous operation with proper maintenance
- ⚡ Galvanically isolated input transformers, safe isolation from input to output
- ⚡ Highly efficient sulfation removal thanks to controllable pulses
- ⚡ Transferring the discharge energy through the coil and returning it to the network
- ⚡ Default wireless load sharing algorithm, default modbus via rs485 communication, default measurement calibration software from HMI on PC and default battery room temperature compensation algorithm.



APPLICATIONS

- ⚡ Ni - Cd
- ⚡ SLA
- ⚡ VLRA
- ⚡ AGM type batteries.

TECHNICAL SPECIFICATIONS

ENTRANCE	
Alternating voltage	220 240 380 400 440 480 (+-%15) (Ph-Ph)
Frequency	50 or 60 Hz +-%5
Neutral configuration DPF (cos Θ)	With or without neutral > 0.9 (at full load)
Power factor (PF)	> 0.95 (at full load)
EXIT	
Rated DC voltage	24V 48V 110V 220V 360V
Output DC voltage range	16-35V 32-70V 72-158V 144-310V 240-480V
Output voltage stability (in variable mode) -Single system +-%	
Parallel system	+-%2
Voltage surge	<% rms (without battery)
Current limitation	5% to 100%
BATTERY	
Type	Lead acid Nickel cadmium
Autonomy	A few minutes to hours
Battery current limitation	
- Lead Acid battery	0,1C
- Ni-Cd battery	0,2C
Battery room temperature compensation	12V akü başına 0,04V /1C derece, 25C° üstünde ve altında
GENERAL DATA	
Dimension	Depends on the Project
ip protection	IP20 (IEC60529)
cabinet color	RAL7035 or custom
Cooling	FAN Cooled
Productivity	80-95% (depends on rating) %
Noise (1m away from unit)	60-70% (depends on rating)
Operating temperature	0-40 degrees C
Storage temperature	-20 to 70 degrees C
Relative humidity	<95 non-condensing
Working height	1000m max. without depreciation

COMPATIBLE STANDARDS

STANDARDS	
IEC60146-1-1	Semiconductor converters, basics
EN50091-1	Security
EN50091-2	EMC
IEC60529:1989 +AMD1:1999	Degrees of protection (IP code)
SUITABILITY	
Factory Report Tests	Sending a signed test report with the product
Customer Acceptance Test Guarantee	Online test I factory test 2 years

BRC FAMILY AND RATINGS

OUTPUT VOLTAGES (Vdc) and CURRENTS (A)					
	24 Vdc	48 Vdc	110 Vdc	220 Vdc	360 Vdc
10A	10A	10A	30A	30A	
20A	20A	20A	50A	50A	
30A	30A	30A	60A	60A	
50A	50A	50A	80A	80A	
60A	60A	60A	100A	100A	
100A	100A	100A	120A	120A	
120A	120A	120A	150A	150A	
150A	150A	150A	200A		
200A	200A	200A			

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OPTIONAL FEATURES

RECTIFIER

Blocking diode for capacitor protection
+/- 20% wide input range

BATTERY

Battery room temperature sensor
Battery monitoring system (PESS BMS)
Emergency disconnect contactor (EVD)
Battery Cabinet

MECHANICAL

External Protection up to IP42
Custom cabinet color
Custom cabinet sizes
Lifting eyes
Custom nameplate etc.

COMMUNICATION

Front panel analog meters
Converters 4-20ma output Modbus TCP/
IP for SCADA
SNMP versions
DNP3 class2
IEC61850 protocol
For layout description
Indoor Gesture Panel
(metal or aluminum)



TOUCH LCD SCREEN (Touchscreen Lcd Display)



LCD Screen Menu Usage

- ⚡ When Doctor Battery is off, the front panel looks like figure 1.
- ⚡ The desired charging and discharging scenario can then be set using the program setting menu shown in Figure 2.
- ⚡ Setting parameters must be adjusted according to the battery type used.
- ⚡ You can see how the signals work by using the signal explanation button in the program settings menu.
- ⚡ After the program settings are made, Doctor Battery is ready for use.

Touch Screen Features

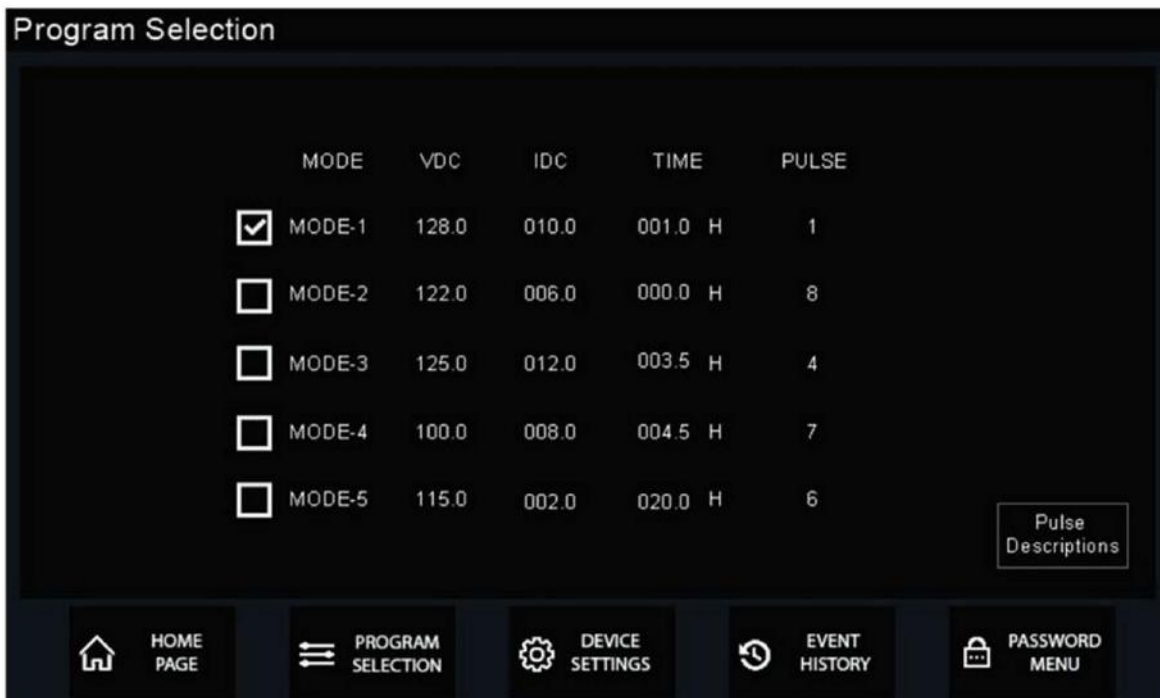
- ⚡ The picture in Figure-3 shows Doctor Battery's settings menu.
- ⚡ Using this menu, RS-485 ID, alarm sound, backlight, date and time settings can be made.
- ⚡ It is important that the date and time are correct for the event history and bms system.
- ⚡ Additionally, the serial number and version of Doctor Battery are also included in the settings menu.
- ⚡ Figure-4 shows the Event History menu.
- ⚡ Past events can be viewed on the device using the event history menu.

TOUCH LCD SCREEN

(Touchscreen Lcd Display)



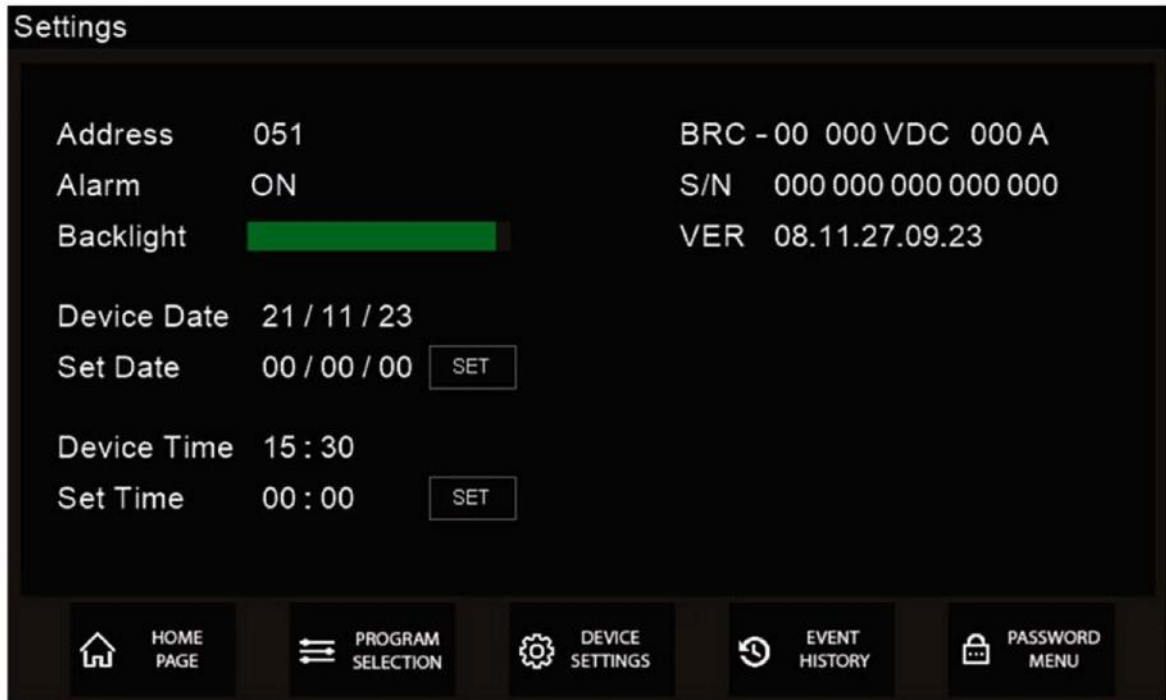
Interface Screenshot (Figure-1)



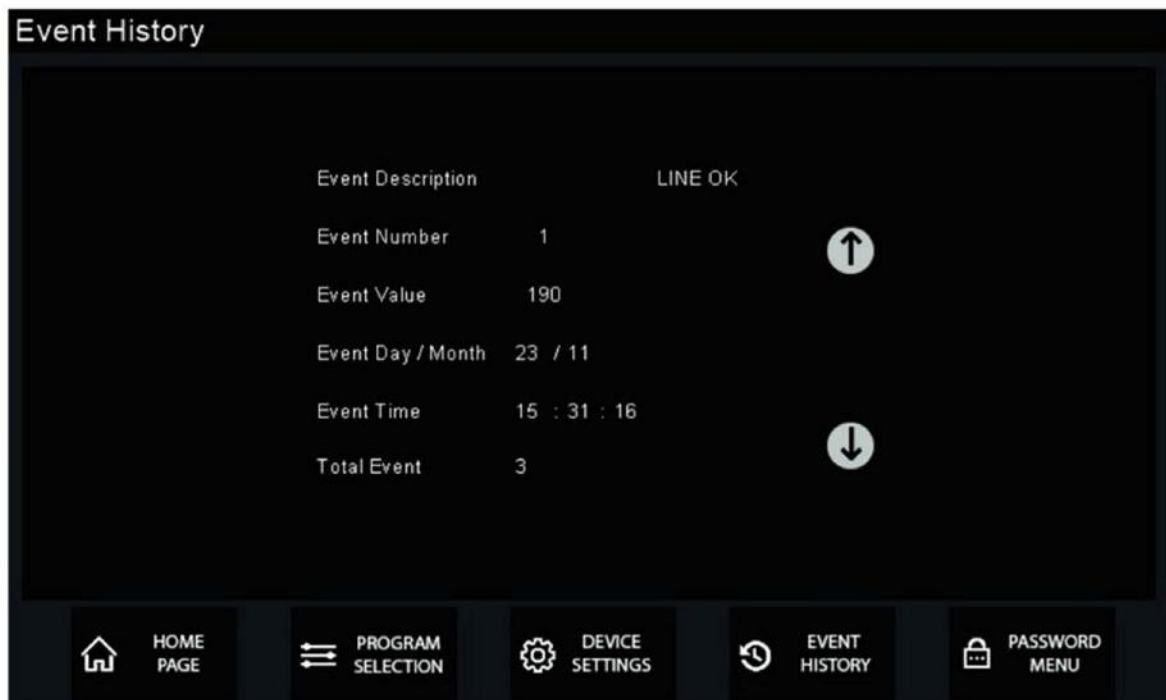
Interface Screenshot (Figure-2)

TOUCH LCD SCREEN

(Touchscreen Lcd Display)



Interface Screenshot (Figure-3)



Interface Screenshot (Figure-4)

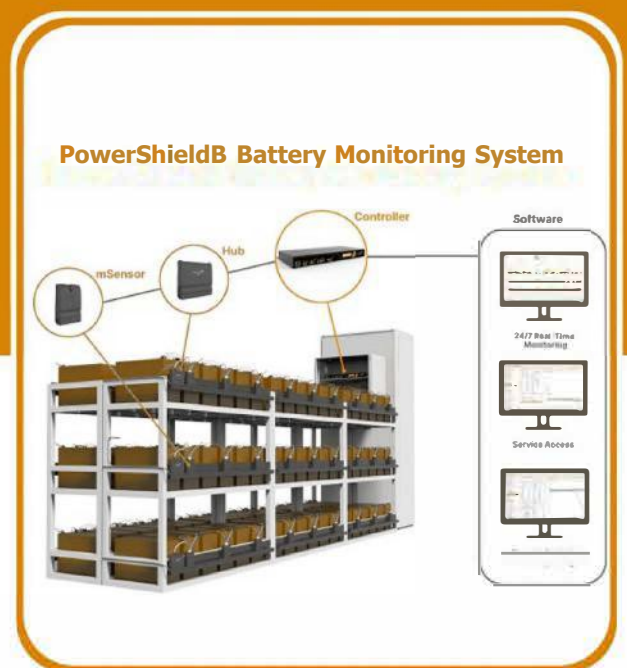
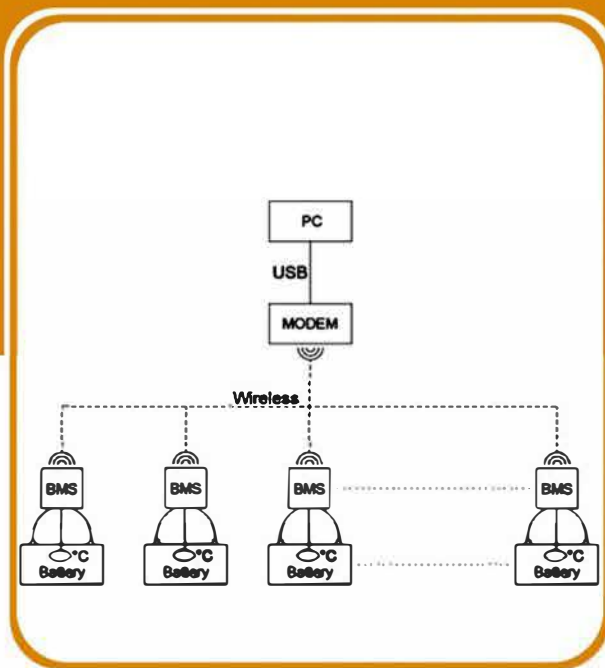
BATTERY MANAGEMENT SYSTEM

In Doctor.Battery's BMS (battery monitoring system) system;

It consists of BMS module, temperature sensor, modem and power adapter.

- ⚡ The number of BMS modules varies depending on how many batteries the Pess BRC-06 is designed for.
- ⚡ It is possible to use different sensors as temperature sensors, provided that they are resistive.
- ⚡ The external power adapter is used only when the USB port is insufficient to power the modem.





Technical Specifications

Component	BMS Module
Working Status	
Operating temperature	0-50 O((32-122 Of)
Storage Temperature	-10·70 O((14·158 Of)
Relative Humidity	5% • 90% RH
Atmospheric pressure	80 • 110 kPa
Input Voltage Range	7-20 VDC
Max. Power consumption	250 mW Uykuda
	500 mW İletimde
Communication	
Wireless	2,4 GHz Wi-Fi
Battery Voltage Monitoring	
voltage range	7-20 VDC
Resolution	5mV
Precision	%0,05
Features	
Maximum Number of BMS Modules	32
Nominal Single Battery Voltage	12 VDC
Max. String Voltage	12 - 450 VDC
Temperature Monitoring	
temperature range	-10 - 105°C
Resolution	0,1°C
Precision	±2°C
Protection	
Reverse Polarity Protection	
Short circuit protection	

Component	Modem Module
Working Status	
Operating temperature	0-50°C (32-122°F)
Storage Temperature	-10-70°C (14-158°F)
Relative Humidity	%5 • %90 relative humidity
Atmospheric pressure	80 • 110kPa
Max. input voltage	5 VDC
Max. Power consumption	5VDC @0,1A 500 mW
Communication	
USB Serial Communication (micro-B USB cable) Physics.wl specifications	
Dimensions (WxHxD)	55x23x95 mm
Casing	Plastic
Color	transparent

Working Status	BMS Software
Minimum System Requirements	
Operating system (OS)	Windows 7
Free disk space	100 MB
Communication Port	USB 2.0
Third party	.NET 4.5 framework
Physical Properties	
Dimensions (WxHxD)	55x23x95 mm
Casing	PlastiC
Color	transparent

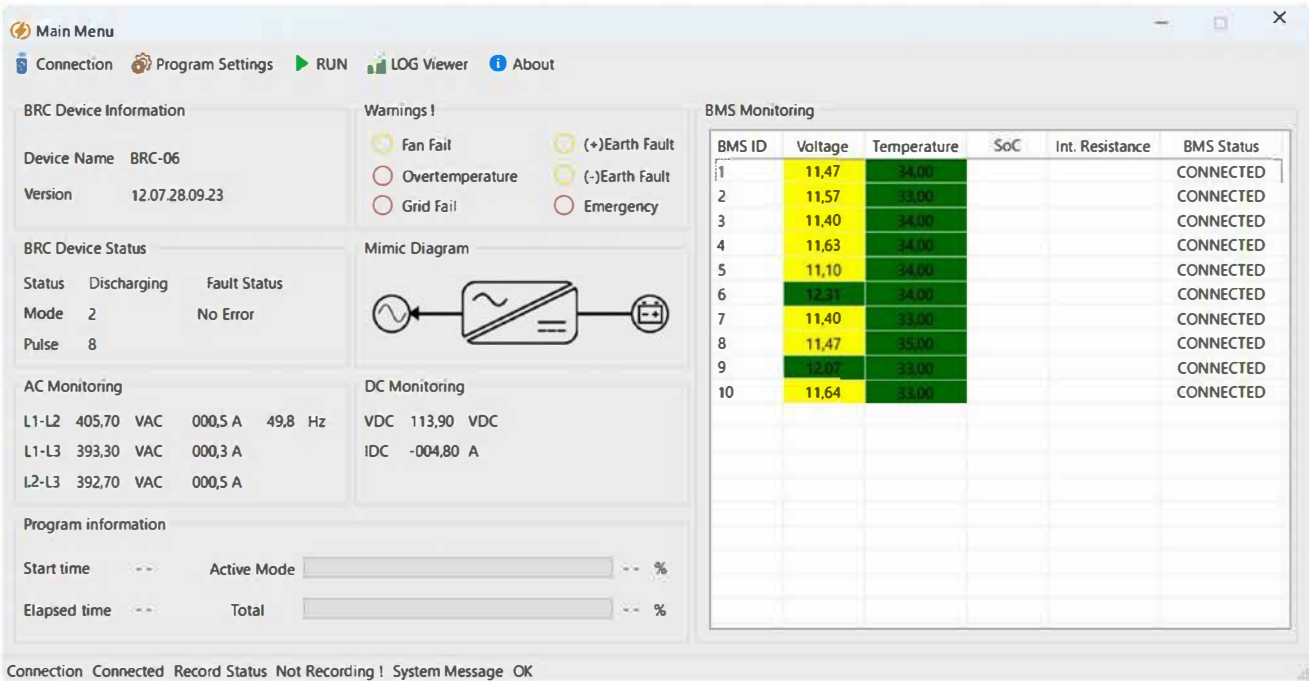


USER INTERFACE SOFTWARE

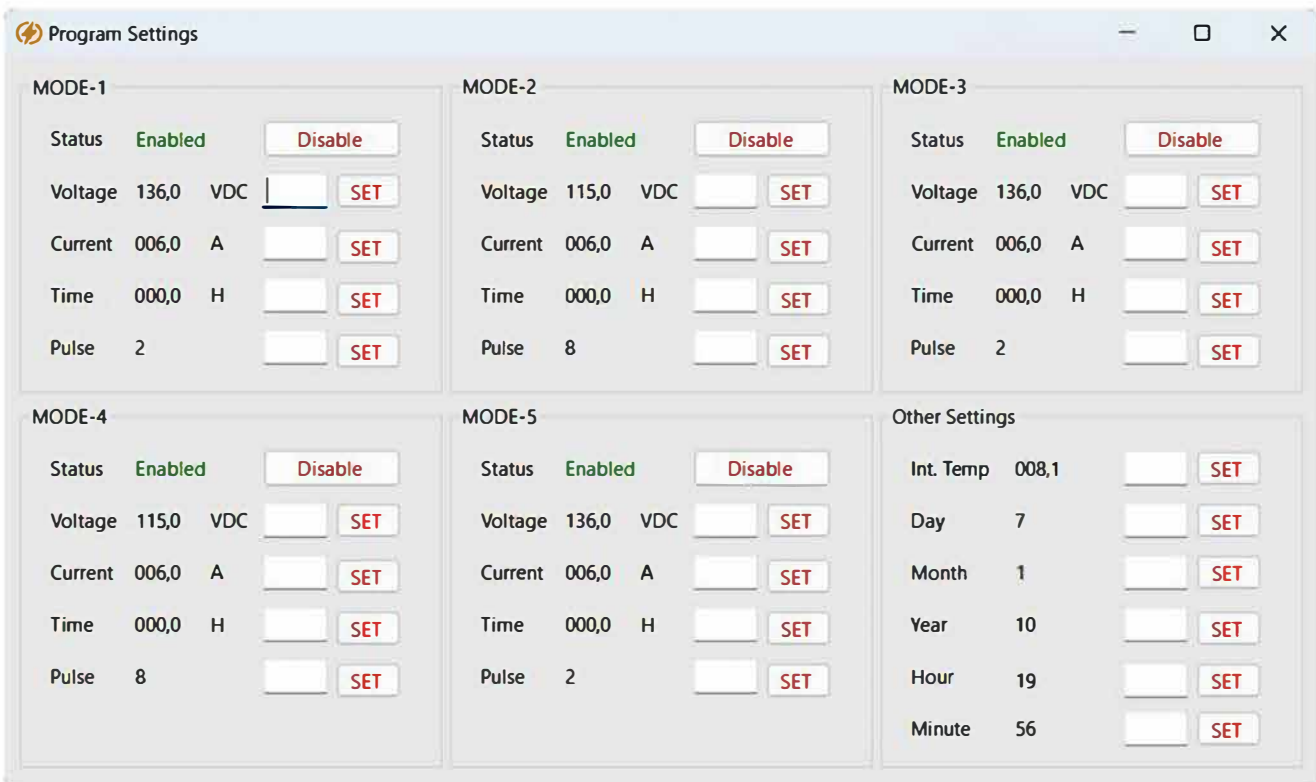
HMI SOFTWARE

(Human Machine I nterface)

- ⚡ Doctor Battery's HMI software is seen in Figure-6.
- ⚡ Figure-7 shows the HMI menu where Doctor Battery settings are made.
- ⚡ HMI software shows live status of Doctor Battery and BMS modules
- ⚡ In addition, as long as Doctor Battery is running, it saves all the information it receives to the computer on which it is installed to display it graphically later.
- ⚡ Thanks to the advanced graphic viewer of the HMI software, the status of the batteries can be easily understood.
- ⚡ Additionally, the recorded information can be transferred to Excel if desired.



HMI Software Image (Figure-6)



HMI Software Image (Figure-7)

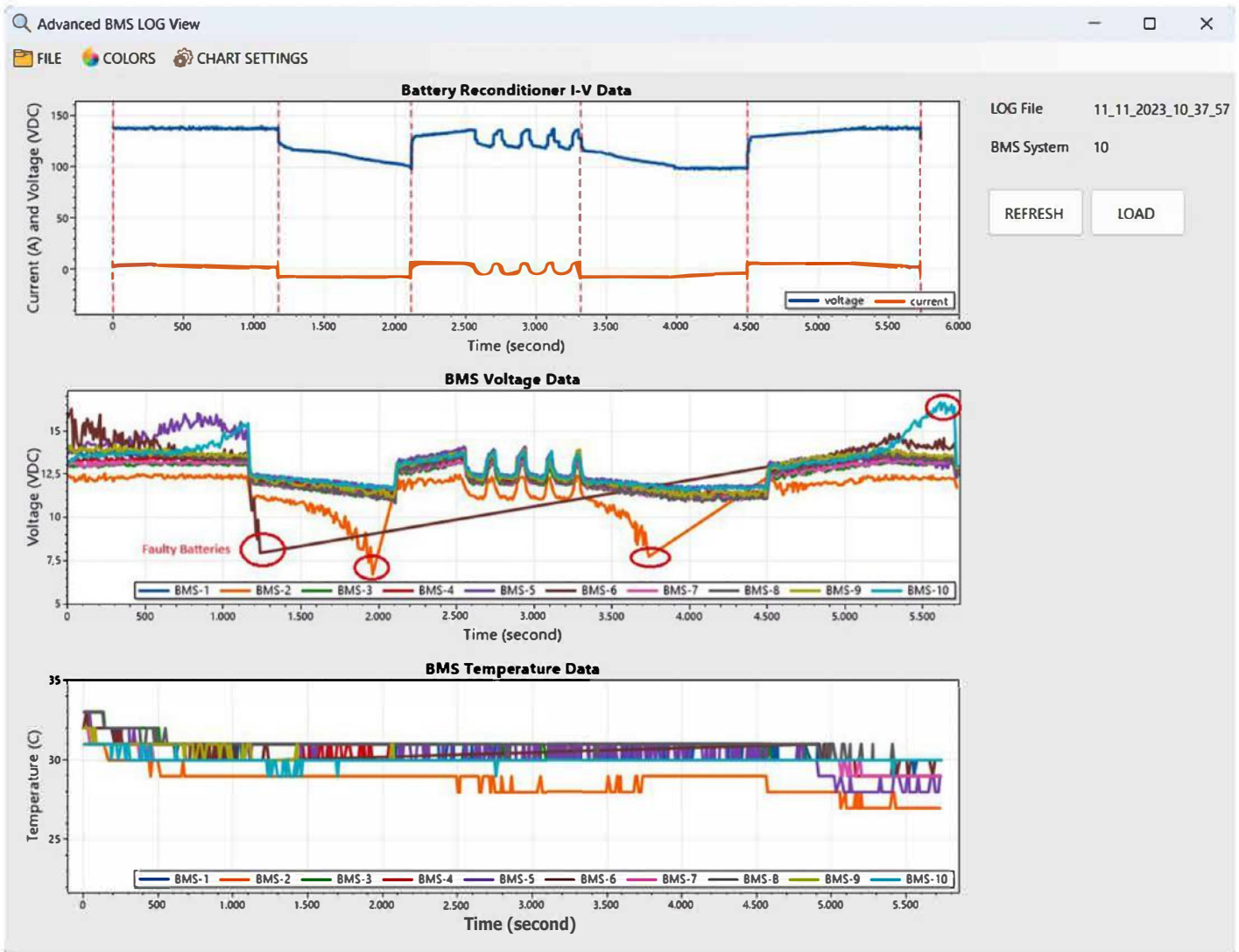


USER INTERFACE SOFTWARE

HMI SOFTWARE

(Human Machine Interface)

Figure-8 shows the sample graphic of the HMI software.



HMI Software Image (Figure-8)

Figure-9 shows an example Excel table of the HMI software.

Record No	Date And Time	Rec Status	Rec Mode	Rec Pulse	Rec VDC	Rec IDC	Rec Temp	BMS ID	BMS VDC	BMS Temp	BMS Status
1	27.09.2023 11:55:18	Disconnected	0	0	0	0	0	7	12.13	29	CONNECTED
2	27.09.2023 11:55:19	Disconnected	0	0	0	0	0	8	12.15	31	CONNECTED
3	27.09.2023 11:55:20	OFF	1	7	107.4	-0.8	20.1	9	12.31	29	CONNECTED
4	27.09.2023 11:55:21	OFF	1	7	107.4	-0.8	20.1	9	12.31	29	CONNECTED
5	27.09.2023 11:55:22	OFF	1	7	107.4	-0.8	20.1	1	12.11	30	CONNECTED
6	27.09.2023 11:55:23	OFF	1	7	107.4	-0.8	20.1	2	11.24	29	CONNECTED
7	27.09.2023 11:55:24	OFF	1	7	107.4	-0.8	20.1	3	12.02	31	CONNECTED
8	27.09.2023 11:55:25	OFF	1	7	107.4	-0.8	20.1	4	12.25	30	CONNECTED
9	27.09.2023 11:55:26	OFF	1	7	107.4	-0.8	20.1	5	11.76	30	CONNECTED
10	27.09.2023 11:55:27	OFF	1	7	107.4	-0.8	20.1	6	12.08	30	CONNECTED
11	27.09.2023 11:55:28	OFF	1	7	107.4	-0.8	20.1	7	12.12	29	CONNECTED
12	27.09.2023 11:55:29	OFF	1	7	107.4	-0.8	20.1	8	11.69	31	CONNECTED
13	27.09.2023 11:55:30	Discharge	1	7	102.6	-6.7	20.1	9	11.92	29	CONNECTED
14	27.09.2023 11:55:31	Discharge	1	7	102.6	-6.7	20.1	9	11.92	29	CONNECTED
15	27.09.2023 11:55:32	Discharge	1	7	102.6	-6.7	20.1	1	11.58	30	CONNECTED
16	27.09.2023 11:55:33	Discharge	1	7	102.6	-6.7	20.1	2	10.97	29	CONNECTED
17	27.09.2023 11:55:34	Discharge	1	7	102.6	-6.7	20.1	3	11.52	31	CONNECTED
18	27.09.2023 11:55:35	Discharge	1	7	102.6	-6.7	20.1	4	11.89	30	CONNECTED
19	27.09.2023 11:55:36	Discharge	1	7	102.6	-6.7	20.1	5	10.1	30	CONNECTED
20	27.09.2023 11:55:37	Discharge	1	7	102.6	-6.7	20.1	6	11.43	30	CONNECTED
21	27.09.2023 11:55:38	Discharge	1	7	102.6	-6.7	20.1	7	11.81	29	CONNECTED
22	27.09.2023 11:55:39	Discharge	1	7	102.6	-6.7	20.1	8	11.56	31	CONNECTED
23	27.09.2023 11:55:40	Discharge	1	7	102.6	-6.7	20.1	9	11.85	29	CONNECTED
24	27.09.2023 11:55:41	Discharge	1	7	101.8	-6.1	20	9	11.85	29	CONNECTED
25	27.09.2023 11:55:42	Discharge	1	7	101.8	-6.1	20	1	11.77	30	CONNECTED
26	27.09.2023 11:55:43	Discharge	1	7	101.8	-6.1	20	2	10.76	29	CONNECTED
27	27.09.2023 11:55:44	Discharge	1	7	101.8	-6.1	20	3	11.58	31	CONNECTED
28	27.09.2023 11:55:45	Discharge	1	7	101.8	-6.1	20	4	11.92	30	CONNECTED
29	27.09.2023 11:55:46	Discharge	1	7	101.8	-6.1	20	5	9.34	30	CONNECTED
30	27.09.2023 11:55:47	Discharge	1	7	101.8	-6.1	20	6	10.78	30	CONNECTED

HMI Software Image (Figure-9)

INNOVATIVE EXPERT OUR TEAM

For our customers who prefer to be producers, we provide all power electronics products' control circuits as plug-and-play to our customers with on-site production innovation. In this way, we reduce the increasing freight costs and customs import tax costs for our customers to a reasonable level.

Our maintenance and support services can help you to keep your industrial power systems running smoothly, efficiently with a maximized productivity.



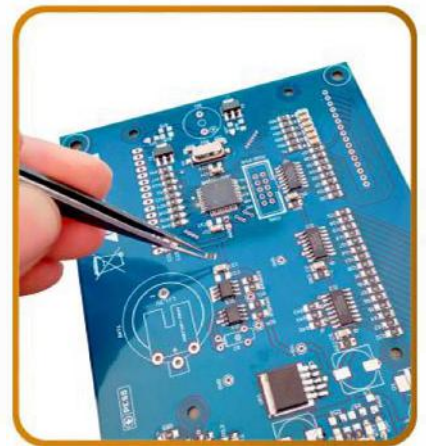
DESIGN

PESS designs the most effective, high-quality, economical and long-lasting solutions to meet customer needs.



PRODUCTION

We can offer efficient custom solutions for the renewable energy industry. Grid-connected or off-grid customer-specific inverters.



R&D

Our research and development team is dedicated to developing new technologies that increase the efficiency and reliability of our products.

Our consulting services can help you increase the efficiency and reliability of your industrial power systems.

***"EASY, QUALIFIED AND
POWERFUL SOLUTIONS
OF THE FUTURE"***

AFTER SELLING



TECHNICAL SUPPORT

We provide solutions to your problems with our timely and fast technical service approach, based on 100% customer satisfaction.

We evaluate your feedback, suggestions and recommendations in our production, R&D and technical service units and offer you better quality service. PESS provides 24/7 technical service with its experienced service staff.



PESS TECHNICAL SERVICES

Reactive power compensation products maintenance/repair and remote communication and penalty monitoring

Solar panel, solar inverter maintenance/repair and remote communication monitoring

Solar field control and detection of faulty panels with the help of thermal drone

Maintenance/repair and commissioning of battery chargers, uninterruptible power supplies, voltage regulators

Battery supply, maintenance/repair and commissioning

Maintenance/repair/follow-up contracts, periodic maintenance and repair and follow-up via remote communication

Repair of power circuit electronic boards for products used in the industrial, military or medical sectors



PERIODIC MAINTENANCE

For products with power electronic technology; It is important to replace materials that wear out over time and have a limited life (such as batteries, fans, capacitors, contactors) before they cause malfunctions.

Malfunctions that may occur for this reason; It may cause loss of time, effort, production and money and may cause irreparable consequences for critically important products.

In order to avoid these situations, precautions must be taken before malfunctions occur through periodic monitoring and maintenance/repair contracts.

We recommend our customers perform preventative maintenance twice a year. We offer our customers various maintenance contract options according to customer demand, product type, environment and working conditions.

We share periodic reports of maintained systems with our customers.



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COMMUNICATION

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