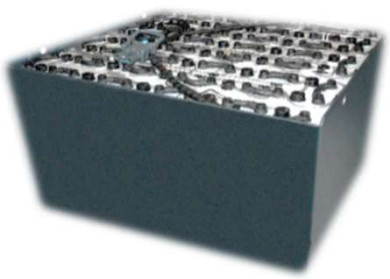
TRACTION BATTERY CHARGER

PRO SERIES

The **NEW "TP-PRO"** with the present of BMOD-T to **monitor** the **battery charging process**, we are able to **connect all the chargers through** industry standard **CANBUS network** in simple "**daisy connection**" and local server connected to internet to enable:

- Complete Remote Access
- Automatic Warning / Alarm Messages sent by email
- Automatic Report Messages (Weekly-Monthly-Yearly) sent by email



Power Today For Tomorrow

BATTERY CHARGER

TP-PRO SERIES

Main Features

- 3 pushbuttons (UP/DOWN/ENTER) for programming, plus 0 to 1 minute switch
- Password protected programming
- **Real-Time Clock**, with:
  - Programmable weekly EQ day / time
  - Programmable daily charge time (off-peak energy cost)
  - Programmable daily opportunity or full charging mode
- **Automatic compensation** of cable voltage drop
- **Audible alarm** (buzzer)
- **Intelligent management** of black-out, with randomly delay on restart (to avoid the simultaneous restart of many chargers after a black-out, that may cause the tripping of overcurrent protection)
- **Automatic detection** of large voltage unbalance (shorted cell)
- **History data logger** (300 cycles):
  - Day-Time of battery connection and disconnection
  - Capacity charged
  - Total Charging time
  - Initial and final voltage
  - Warning/Alarms
  - Partial charge or Full Charge
  - Equalization charge
  - Battery details
- **Powerline communication** to battery module.
  - Automatic battery recognition (ID, Voltage, Capacity, Type)
  - **Advanced EQ Management**
  - **Temperature compensation of gassing voltage**
  - **Automatic stop in case of over temperature**
  - **Automatic stop in case of missing water**

BMOD-T

- **Very compact, robust and easy to install**
- **Universal design** for 24-80 VDC nominal battery voltage
- Only two wires (+/-) and on special submersible sensor
- **Wireless communication** to the charger through PLT (Power-Line-Transmission over the battery cables)
- Battery identification (ID, Type, Capacity, Voltage) and Equalization Control
- **Continuous monitoring of battery temperature, water level, half battery voltage (bad cell detection).**

SDC Fleet Management

The local server PC can be connected to the internet, in order to enable:

- Complete Remote Access
- Automatic Warning / Alarm Messages sent by email

The chargers are connected through industry CANBUS network, in simple "daisy chain" connection

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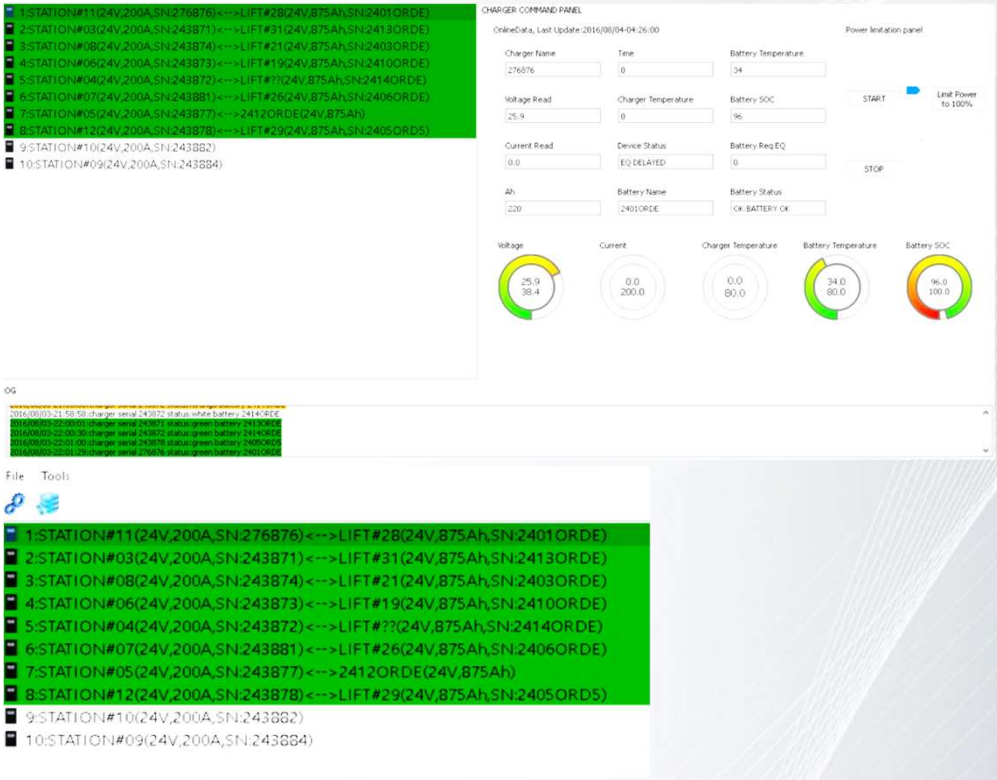
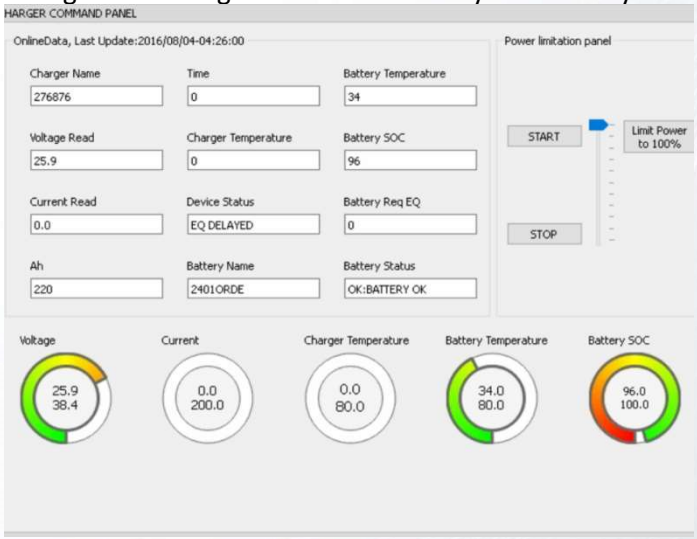
BATTERY CHARGER

TP-PRO SERIES

SDC Fleet Management



Chargers connected to the network
Charger in charging process will be highlighted (Orange: Charging Green: Fully Charged)
Charger ID – Charger Serial No – Battery ID – Battery Serial No



Upon select any charger in the network it will display the charger and battery real time status

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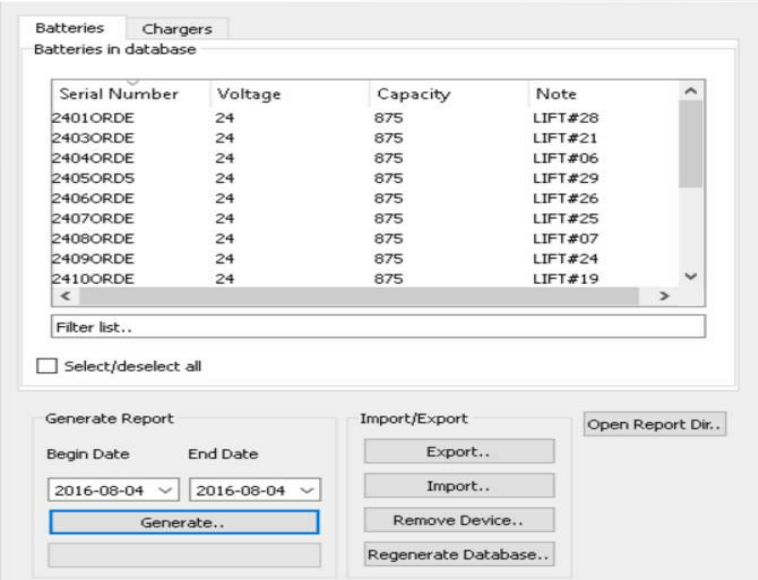
BATTERY CHARGER

TP-PRO SERIES

SDC Fleet Management – General Report



SDC Fleet Management has the capability to manually generate any batteries charging or chargers report you required during your remote access to the server.

Battery Report

STATISTIC OF THE CHARGER S/N:243878

Status	Frequency	Event type
1	16	OK:END CHARGE [PH1+PH2], MINIMUM CURRENT REACHED
5	3	OK:END CHARGE, TIMEOUT ON PH2
12	1	OK:EQ DONE BY TIMEOUT [PH4]
31	1	WARNING:DISCONNECTION ON PH1
99	15	WARNING:STOP BY ON/OFF SWITCH OR AC BLACKOUT

Alarms in detail: No Alarms occurred.

Equalizations in detail:

Event Date	ChargerSN	End Voltage (V)	Time Elapsed (HH:MM)	Status Code	Glossary
2016/07/31 10:00	243878	33.8	03:10	12	OK:EQ DONE BY TIMEOUT [PH4]

STATISTIC OF THE BATTERY S/N:2401ORDE [24V,875Ah]

ERRORS REPORT: No errors found

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BATTERY CHARGER

TP-PRO SERIES

Battery Report

Measure	Value	Description
Battery Name	2401ORDE	The battery S/N and module configuration code (last digit)
Period Start	2016/07/03-03:00	Analysis Start Date
Period End	2016/08/01-22:01	Analysis End Date
Capacity (Ah)	875	Nominal Capacity of the battery
Voltage (V)	24	Nominal Voltage of the battery
Total Time (h)	715	Total Hour of Analysed Period
Charging Time (h)	62	Total Hours of Charge
AH Charged (Ah)	5108	Total Ah Charged in the Analized Period
Ah Discharged (Ah)	4100	Total Ah Discharged in the Analized period
Expected Number of EQ	4	Number of Equalizations Scheduled in the Analized period
Number of Performed EQ	6	Total Number of performed Equalizations/Refresh
Avg Battery Temperature (C/F)	34/93	Average Battery Temperature in the Analized Period
Max Battery Temperature (C/F)	45/113	Maximum Battery Temperature in the Analized Period
Min Battery Temperature C/F)	28/82	Minimum Battery Temperature in the Analized Period
Min Battery SOC (%)	35	Minimum Battery State of Charge in the Analized Period
Nr Cycles	6	Number of complete cycles performed in the Analized Period
Nr Errors	0	Number of Errors recorded in the Analized Period
Charger Plugged	243878 243871 243872	Charger that the battery is connected to

Upon select any charger in the network it will display the charger and battery real time status

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BATTERY CHARGER

TP-ECO Three Phase 3x380 – 400 – 420 – 440 – 460VAC 50-60Hz
3x220 – 230 – 240 – 250 – 260VAC 50-60Hz

Voltage (V)	Current (Ampere)	Capacity (AH) Charge in Wa Curve	Input Power (KVA)	Cabinet A: 452 (L) x 320 (W) x 655 (H) (mm) Cabinet B: 503 (L) x 357 (W) x 775 (H) (mm) Cabinet C: 620 (L) x 1050 (W) x 550 (H) (mm)	Weight (KG)
24	80	360 – 500	2,7	A	40
24	100	500 – 600	3,4	A	46
24	120	600 - 720	4,0	A	51
24	140	700 - 840	4,7	A	54
24	160	800 – 1000	5,4	A	58
24	180	930 – 1120	6,1	A	62
24	200	1080- -1250	6,7	B	65
36	80	360 – 500	4,0	A	52
36	100	500 - 600	5,0	A	54
36	120	600 - 720	6,0	A	58
36	140	700 - 840	7,0	B	62
36	160	800 - 1000	8,0	B	65
48	60	300 – 380	3,9	A	52
48	80	360 – 500	5,3	A	53
48	100	500 – 600	6,6	A	54
48	120	600 – 720	7,9	B	65
48	140	700 – 840	9,2	B	72
48	160	800 – 1000	10,5	B	88
48	180	930 – 1120	11,8	B	92
72	50	250 – 300	4,8	A	64
72	60	300 – 380	5,8	A	64
72	80	360 – 500	7,7	B	70
72	100	500 – 600	9,7	B	96
72	120	600 – 720	11,6	B	98
80	60	300 – 380	6,9	A	76
80	80	360 – 500	8,5	B	95
80	100	500 – 600	10,6	B	98
80	120	600 – 720	12,7	B	113
80	140	700 – 840	14,8	C	124
80	160	800 – 1000	17,0	C	129
80	180	930 – 1120	19,1	C	140
80	200	1080 - 1250	21,2	C	150
96	100	500 – 600	14,0	C	118
96	120	600 - 720	16,8	C	123
96	140	700 - 840	19,6	C	140
96	160	800 - 1000	22,4	C	148
96	240	1200 – 1400	33,6	C	198
96	320	1440 - 2000	44,8	C	252

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BATTERY CHARGER

Safety Features

Wrong Battery Voltage	**Standby Mode and signal error**
Electronic Overload Protection	**Complete protection** in case of output short circuit or overload
Power-On Self Test	Each time the unit is powered, an automatic self test of the power electronics and the control boards are executed less than 10 seconds. In case of any fault, the unit will remain in the safe stand-by mode and give fault messages.
Black-Out of the AC Input	The charger features an **intelligent management** of the AC input occurs. When a blackout of the AC input occurs, all the data related to the charge cycle that was in progress are saved in the internal memory. When the AC input is restored, the charger restarts from the exact point of interruption, and it completes the charge cycle normally.
Automatic Shutdown on Battery Disconnection	If the battery is disconnected while the charge is in progress, the charger turns-off automatically within 3 seconds.
Safety Timer	An independent **safety timer turns the charger off** in case of malfunction of the main control unit.
Standard Quality Marking EMC Safety Test and Performance	 **ISO 9001:2008** **CE** **IEC EN 61000-6-2, IEC EN 61000 6-4** **IEC EN 50178, IEC EN 62040-1** **IEC EN 62040-3**

Comparison Table for TP-ECO/TP-ADV/TP-PRO

Function	TP-ECO	TP-Advance	TP-Professional
Fully Automatic Operation	•	•	•
Equalization Charge	•	•	•
LED Indication	•	•	•
LCD Screen		•	•
Storage of Charging History		•	•
BMOD		•	•
Electrolyte Level Monitoring		•	•
Temperature Monitoring		•	•
Bluetooth/USB Cable download of charging data			•
SDC Fleet Management - Auto sending of report through email - Remote access to charger			•

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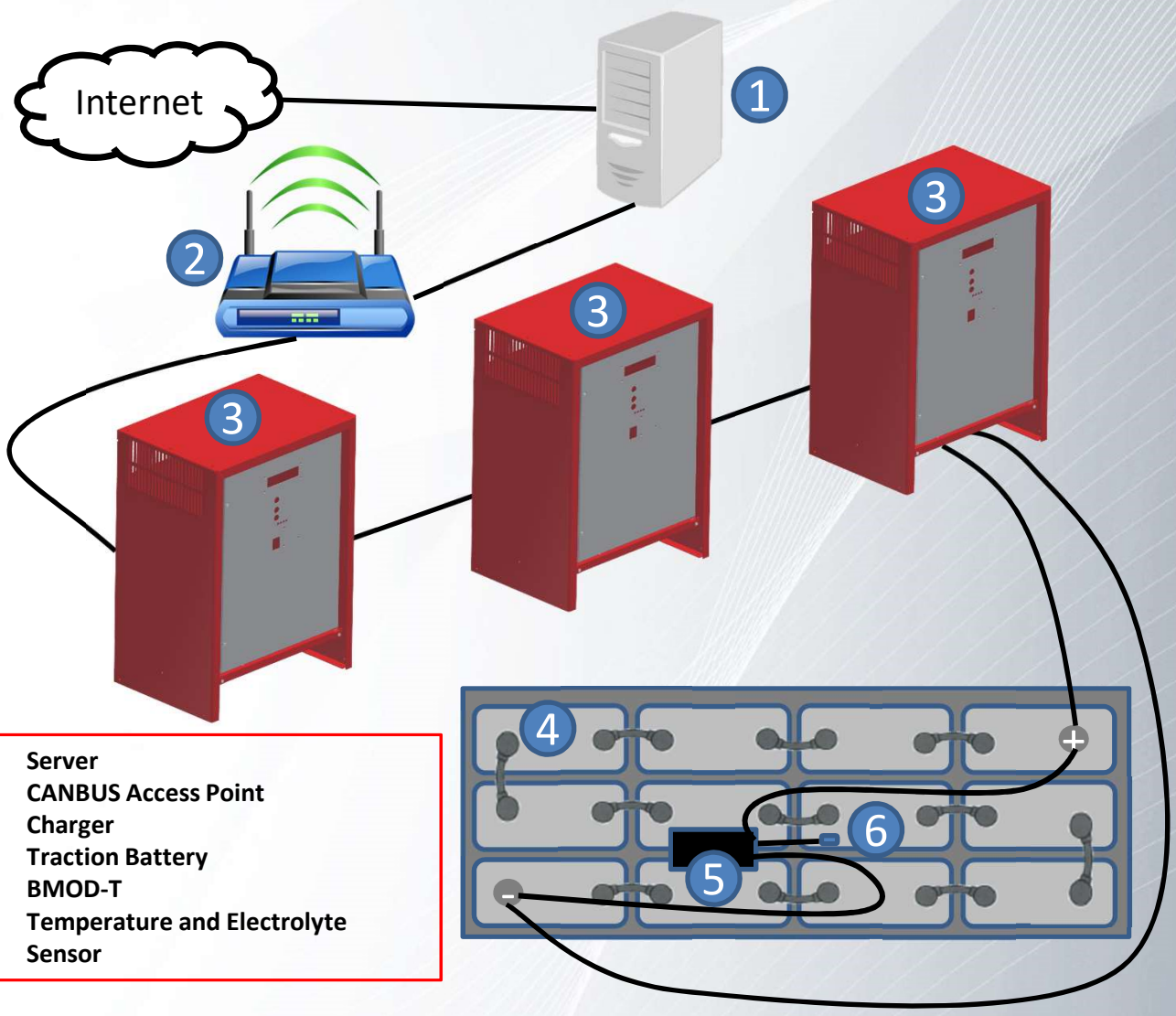
BATTERY CHARGER

BMOD-T MODEL



1. Server
2. CANBUS Access Point
3. Charger
4. Traction Battery
5. BMOD-T
6. Temperature and Electrolyte Sensor

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