AC/DC BALANCE CHARGER & DISCHARGER

HYBRID

HYBRID BALANCE CHARGER & DISCHARGER

Hybrid AC/DC Balance Charger & Discharger
INTELLIGENT LITHIUM BATTERIES MANAGEMENT SYSTEM

★AC/DC Input system
★5Amp charge current & 1Amp discharge current
★Lithium batteries Individual voltage balancer inside
★Lithium batteries Real time individual voltage monitoring
★Lithium batteries Balance, Storage, Fast charge mode

Muchmore RACING

Thank you for purchasing Much-More Hybrid AC/DC Balance Charger&Discharger
Hybrid AC/DC Balance Charger is represents new era Charger.
This New Hybrid AC/DC Balance Charger can handle NiMH, NiCd, Li-Po, Li-Fe, Li-Io batteries You can select AC/DC input voltage. Use AC plug at home and 12V DC power supply
Much-More Racing Design Team realized super compact size. Secure excellent visibility and easy to operation
Hybrid AC/DC Balance Charger will be the New standard Charger of R/C field

■FEATURES

●Super compact design
Designed for secure large pit table space, easy carry, easy to operation and excellent visibility
Aluminum outside case is function as an heatsink

●Microprocessor controlled
Main Microprocessor will detect of NiMH, NiCd batteries delta peak, controlled every safety function during the charge/discharge and find out errors.

●AC/DC Input voltage circuit
Hybrid AC/DC Charger can use not only DC power supply, but also plugged AC power at home (Voltage stabilize circuit work on AC power) Input voltage range - DC 11V～18V (for DC power supply), AC 110V～220V (for home AC socket)
<When you use AC power, Voltage stabilize circuit will provide output Max-50W, Min-5W when you charge/discharge of higher voltage batteries - Charge/discharge current possible to be limited>

●Special Blue LCD screen
16 characters X 2 lines Special Blue backlight will provide Excellent visibility

●Individual Lithium Cell balance circuit
Individual cell voltage balance circuit work for the perfect Lithium batteries charging without extra outside cell balancer

●Individual Cell voltage realtime Monitoring
Through the each Lithium batteries connector, you can check each cell's voltage when you charge/discharge
You can check each Lithium cell's charge/discharge data and check the each voltage at the sametime. So can find out poor cell

●Lithium batteries Fast charge/Storage Mode
You can charge Lithium battery for special purposes.
'Fast' charge reduces the charging time of Lithium battery and 'Storage' mode controls the final voltage of the battery to be suit for long time storage

●Cycling Charge/Discharge
Do cycles of charge ▸ discharge or discharge ▸ charge continually for battery refreshing and balancing

●5 batteries data store/ data load
For users convenience it can store maximum five data of different batteries
You can establish the data contains program setting of the battery to charge or discharge continually
These data can be called out at any time you need and the process can be executed without program setting

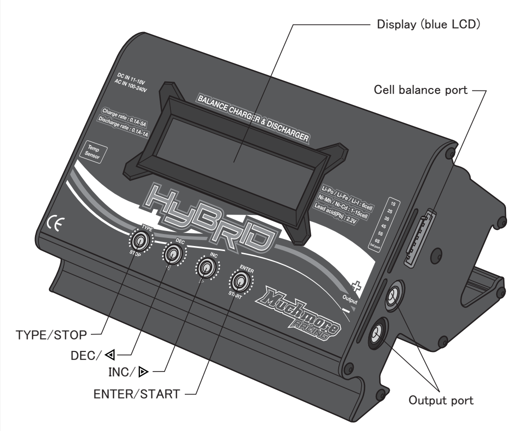
●Maximum safety
When charging NiCd or NiMH, you can set the upper limit of charge current to avoid damage or explosion from high current feeding
The temperature of the battery on charging will rise by its internal chemical reaction
If you set the limit of temperature the process will be expired forcibly when the limit has reached
To protect the car battery using as DC input power from being damaged the voltage of it always monitored
When you do short-circuits between the output charge lead, LCD screen will let you know.

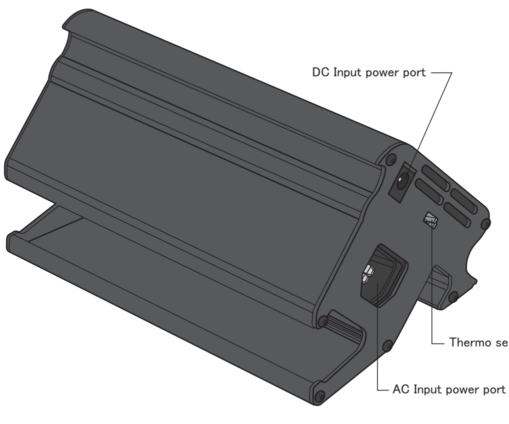
■Battery Charge/Discharge data

	NiCd	NiMH	LiPo	LiFe	LiIo	Pb
Voltage level	1.2v/cell	1.2v/cell	3.7v/cell	3.3v/cell	3.6v/cell	2.0v/cell
Max. charge voltage level	Delta peak	Delta peak	4.2v/cell	3.6v/cell	4.1v/cell	2.46v/cell
Max. discharge voltage level	0.8v/cell	0.95v/cell	3.0v+/cell	2.0v+/cell	2.5v+/cell	1.75v+/cell
Charge current:	1～2C	1～2C	under 3C	under 4C	under 1C	under 0.4C

Please follow the instructions for a maximum safety

■Exterior of Hybrid AC/DC Charger/Discharger





★SPECIFICATIONS

Operation voltage	DC 11～18 volts AC 100～240V, 50/60Hz
Charge/Discharge power	Max 50Watts
Number of cell	NiCd/MH 1～15 cells, LiIo/LiPo/LiFe 1～6 series, Pb2～20V
Charge current	0.1～5.0A
Discharge current	0.1～1.0A
Cycling number	1～5
Data storage number	Max 5
Weight	670g
Dimensions	137 x 99 x 83mm

★Set up Range

Lithium battery voltage level	LiIo:3.6V, LiPo:3.7V, LiFe:3.3V
Nicd Delta peak range	5～20mV
NiMh Delta peak range	5～20mV
Battery Cut-off Temp	20～80℃/OFF
Cycle delay time	0～60min
Set cumulate Timer	10～720 min/OFF
Set Max Capacity	10～9990mAh/OFF
Set button/Alarm	ON/OFF
Set Drop input voltage alarm	10～11V

★Equipment

- Cell Balancer Adapter L-AL Type (MCL-AL)
- Output main universal connector
- Booster charge plug
- TX, RX charge connector (Futaba & Z Type connector)
- JST charge connector
- Alligator clip charge connector
- DC input wire
- AC input plug
- Micro Thermo sensor

★Option part

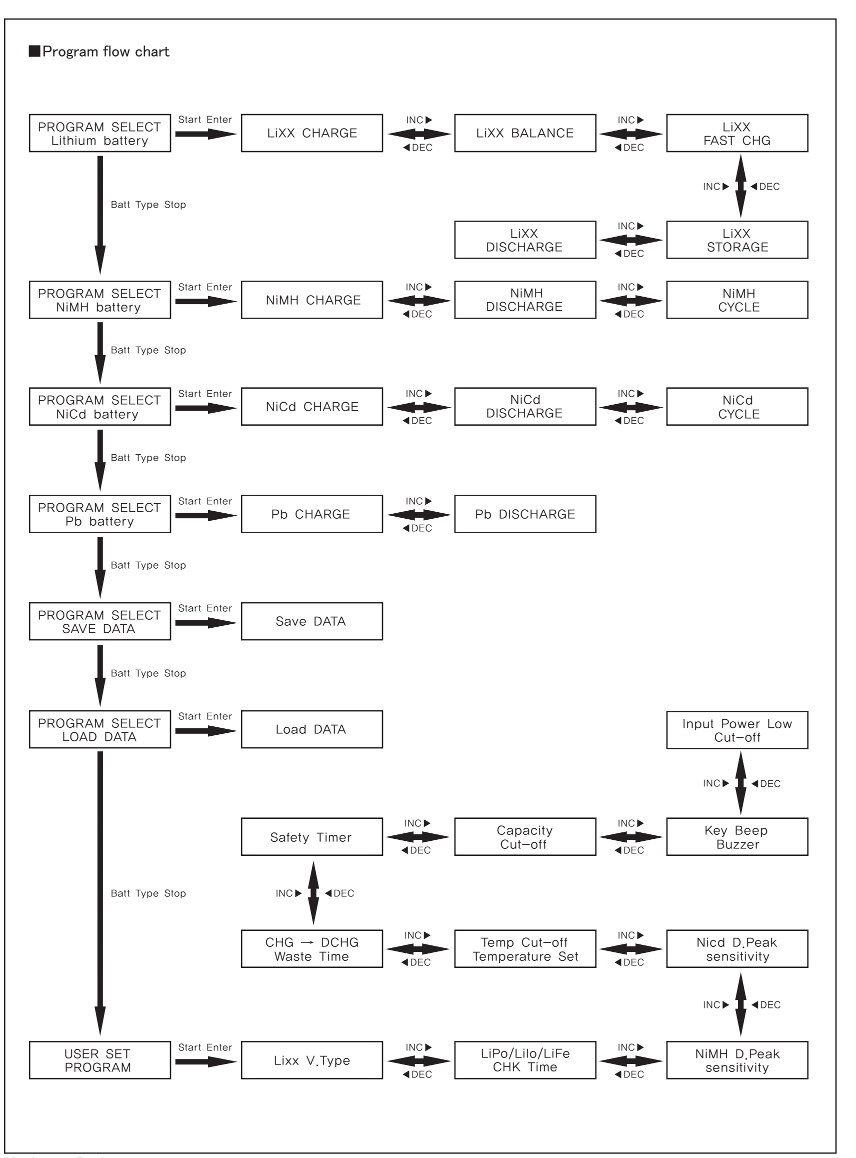
MCL-PQ	Cell Balancer Adapter L-PQ Type
MCL-2S	Cell Balancer Adapter L-2S Type
MSB-MCC	LiPo Cell Balancer 2S Multi Charging Cable JST-XH & 2P
MSB-ECC	LiPo Cell Balancer 2S Extension Charging Cable JST-XH (50cm)
MSB-MSC	Lipo Cell Balance 2S2P Separate Charging Cable JST-XH

⚠ Danger/Warning

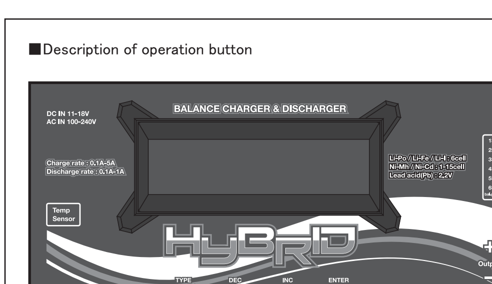
This is not a Toy. Keep out of reach of small children. This product is intended for users over 14 years of age.

During the use , Heak sink and case will heat up. Please use carefully.
If you use this product to wrong way, It can cause fire and serious damage or injury , so please use caution and courtesy at all times.

■Program flow chart



■Description of operation button



Hybrid AC/DC charger have 4 buttons

●Main Menu

- TYPE/STOP : Move to next Menu
- DEC/◀ : Move to ahead Menu
- INC/▶ : Nothing to operate
- ENTER/START : Select Menu

●Sub Menu

- TYPE/STOP : Return to Main Menu
- DEC/◀ : Move to ahead Menu, Value change (-)
- INC/▶ : Move to next Menu, value change(+)
- ENTER/START : Select Menu, value change

●When operation (charge/discharge)

- TYPE/STOP : Stop operation
- DEC/◀ : Select information/check the each cell voltage
- INC/▶ : Select information/check the each cell voltage
- ENTER/START : Selection change and decision (within 1 min)

■Users set up

1. Select Lithium battery

Li-Po V. Type 3.7V	The screen displays the nominal voltage of Lithium battery. This is very important so you have to check the battery carefully and set it up correctly If it is different from correct value the battery can explode during charge process 1) LiPo …… 3.7V 2) LiIo …… 3.6V 3) LiFe …… 3.3V

2. Lithium battery check time set up

LiPo/LiIo/LiFe CHK TIME 10min	It recognise the cell count of Lithium battery automatically at the beginning of charge or discharge process to avoid from erroneous setting by user But deeply discharged battery can be perceived incorrectly To prevent the error, you can set the time term to verify the cell count by the processor. Normally, 10 minutes are enough to perceive the cell count correctly For the battery of larger capacity, you may extend the time term But if you set the time term too long for the battery of smaller capacity, the charge or discharge process can be finished within the time term with the erroneous cell count This may cause the fatal result. If the processor recongnises the cell count incorrectly at the beginning of charge or discharge process, you may extend the time

3. NiMh battery Delta peak set up

NiMH Sensitivity D.Peak Default	This is the Delta peak voltage for automatic charge termination of NiMH battery This set up need fully understand of Delta peak detection if the Delta peak voltage is set higher, there is a danger of overcharging the battery, if it is set lower, there is a possibility of premature termination. We recommend to start lower value. You have to keep check the battery's temperature and then adjust little bit higher value ※ Default value : 7mV/Cell Set up range : 5mV～20mV/Cell

4. NiCd battery Delta peak set up

NiCd Sensitivity D.Peak Default	This is the Delta peak voltage for automatic charge termination of NiCd battery This set up need fully understand of Delta peak detection if the Delta peak voltage is set higher, there is a danger of overcharging the battery, if it is set lower, there is a possibility of premature termination. We recommend to start lower value. You have to keep check the battery's temperature and then adjust little bit higher value ※ Default value : 7mV/Cell Set up range : 5mV ～20mV/Cell

5. Termo sensor temperature set up

USB/Temp Select Temp Cut-Off 80C	You can check the battery temperature through 3-pin port at left side of the Hybrid AC/DC charger You can set the maximum temperature at which the charger should allow battery to reach during charge Once a battery reaches this temperature during charge, the process will be terminated to protect the battery ※ Set up range : 20'C～80'C ※ Hybrid AC/DC charger not support USB connection

6. Cycle delay time set up

Waste Time CHG〉DCHG 5min	When you do the cycle of NiCd or NiMh battery, you can set up delay time of each cycle The program can insert a time delay to occur after each charge and discharge process to allow the battery adequate time to cool down before being subjected to the next process ※ Set up time : 0～60min

7. Charging time limit set up

Safety timer ON 120min	When you start a charge process, the integral safety timer automatically starts running at the same time This is programmed to prevent overcharge the battery if it proves to be faulty, or if the termination circuit cannot detect the battery full The value for the safety timer should be generous enough to allow a full charge of the battery ex) When 1000mAh battery charge to 1A - expect charging time : 1 hour ▸60 min (1hour) x 1.3 (approx add 30%) = 78 min

8. Charge/Discharge capacity cut-off set up

Capacity Cut-Off ON 5000mAh	Sets the maximum charge capacity that will be supplied to the battery during charge If the delta-pack voltage is not detected nor the safety timer expired by any reason, this feature will automatically stop the process at the selected capacity value

9. Sound set up

Key Beep ON Buzzer ON	The beep sounds at every time pressing the buttons to confirm your action. The beep or melody sounded at various times during operation to alert different mode changes These audible sounds can be on or off

10. Input voltage cut-off set up

Input Power Low Cut-Off 10.0V	If the voltage drops below the value you set the operation forcibly terminated to protect the input battery. (useful for when you use Car battery as a DC power source)

■Lithium battery (LiIo/LiPo/LiFe) program

This program is only suitable for charging and discharging Lithium batteries(LiIo/LiPo/LiFe)

※ You have to select correct battery when you being selected from Users set up Menu
If you want to charge Li-Po battery, You have to select Li-Po battery in Menu
If you select incorrect battery in Menu,and keep on charging , battery explosion or over discharge broke down might happened.

The charge current and nominal voltage as for cell count set on the charge program must always be correct for the battery to be charged (shows the type of battery you select at the users setting)

●Lithium Battery Charge

The left side of the first line shows the type of battery you select at the users setting.

LiPo CHARGE 2.0A 11.1V(3S)	The value on the left side of second line sets a charge current and the value on the right side of second line sets the voltage of the battery pack After setting the current (use INC/DEC button) and voltage (use INC/DEC button) press Start/Enter key for more than 2 seconds to start the process. ※ When you select cell num to 'AUTO' , Processor will detect battery's voltage automatically ※ Do not select 'AUTO' when the battery is fully charged
R: 3SER S: 3SER CONFIRM(ENTER)	This shows the number of cells you set up and the processor detects. 'R:' shows the number of cells found by the charger and 'S' is the number of cells selected by you at the previous screen If both numbers are identical you can start charging by press Start/Enter button If not, press Batt Type/Stop button to go back to previous screen. Then carefully check the number of cells of the battery pack to charge again
Li3S 2.0A 12.59V CHG 022:43 00682	The screen shows the present situation during charge process. To stop charging press Batt Type/Stop key once

●Lithium Battery Balanced Charge

This is suitable for when you charged more than 2 cell .This is for balancing the voltages of Lithium batteries of the battery pack to be charged.

LiPo BALANCE 2.0A 11.1V(3S)	To do this, the battery pack being charged should have the individual cell connector. And connect it to the individual port at the right side of charger with a suitable connection cable that fits with your battery pack And also, you need to connect the battery output plug to the output of charger. Press ENTER/START button once , In the screen, charge current value will blink Select current value (use INC/DEC button)and press ENTER/START button. Confirm current value and Cell Num will blink Select Cell number (use INC/DEC button) and press ENTER/START button more than 2 seconds
R: 3SER S: 3SER CONFIRM(ENTER)	This shows the number of cells you set up and the processor detects. 'R:' shows the number of cells found by the charger
Li3S 2.0A 12.59V BAL 022:43 00682	The screen shows the present situation during charge process. To stop charging press Batt Type/Stop key once

●Lithium Battery Fast Charge
The charging capacity may be a bit smaller than normal charging but the process time will be reduced
The charging current is getting smaller as the process goes to the near end term of Lithium battery charging
This not adjusting of charging current , So safe

LiPo FAST CHG 2.0A 11.1V(3S)	Press ENTER/START button once , In the screen, charge current value will blink Select current value (use INC/DEC button)and press ENTER/START button. Confirm current value and Cell Num will blink Select Cell number (use INC/DEC button) and press ENTER/START button more than 2 seconds
Li3S 2.0A 12.59V FAS 022:43 00682	The screen shows the present situation during charge process. To stop charging press Batt Type/Stop key once

●Lithium Battery Storage Mode

This is for charging or discharging Lithium battery not to be used for the time being.
The program will determine to charge or discharge the battery to the certain voltage depending on the voltage of the battery at its initial stage

※ Suitable Voltage for each battery
LiIo : 3.75V , LiPo : 3.85V , LiFe : 3.3V

LiPo STORAGE 2.0A 11.1V(3S)	Press ENTER/START button once , In the screen, charge current value will blink Select current value (use INC/DEC button)and press ENTER/START button. Confirm current value and Cell Num will blink Select Cell number (use INC/DEC button) and press ENTER/START button more than 2 seconds
Li3S 2.0A 12.59V STO 022:43 00682	The screen shows the present situation during charge process. To stop charging press Batttype/Stop key once

●Lithium Battery Discharge

LiPo DISCHARGE 1.0A 11.1V(3S)	Press ENTER/START button once , In the screen, discharge current value will blink Select current value (use INC/DEC button)and press ENTER/START button. Confirm current value and Cell Num will blink Select Cell number (use INC/DEC button) and press ENTER/START button more than 2 seconds
Li3S 2.0A 12.59V DSC 022:43 00682	The screen shows the present situation during charge process. To stop discharging press Batttype/ Stop key once
BATTERY VOL ERR CELL LOW VOL	The processor found that the voltage of one of the cell in the Lithium battery pack is too low.
4.14 4.16 4.09 2.18 0.00 0.00	In this case, the 4th cell is bad. If there happens the connection-break of the cable or plug, the voltage value may show zero

■NiMH/NiCd battery program

These programs are for charging or discharging NiMH or NiCd battery commonly used for R/C mode
Each program consist of 3 sub-menu (charge,discharge,cycle)

●Charging NiCd/NiMH battery

NiXX CHARGE Man CUR LIMIT 5.0A	The screen displays the current state of charging (you can select NiMh,NiCd in the screen) Press ENTER/START button once and adjust charge current . And press ENTER/START more than 2 seconds (Charging start) ※ You can modify charge current by press ENTER/START button within 1 min after start charging

NiMH 0.4A 11.94V CHG 000:02 00002	The screen displays the current state of charging Screen shows (start upper left side) Battery type, Charge current, Battery Voltage, Operation Mode, Passing Time, Charge capacity. During the charge, you can check Delta peak value, Input voltage, Outside Thermo sensor's Temp, Thermo cut, Charging time limit, Charge capacity cut-Off by press INC/DEC button once. If you want to go back to previous screen, press ENTER/START button once or stay more than 5 seconds

●Discharging NiCd/NiMH battery

NiMH DISCHARGE 1.0A 11.5V	Set discharge current on the left and discharge voltage on the right Prevent a damage of battery ,you should set discharge volt more than NiMh(0.95 V/Cell), NiCd(0.8V/Cell). Press ENTER/START button more than 2 seconds, discharging will start
NiMH 1.0A 7.42V DSC 022:45 00890	The screen displays the current state of discharge You can alter the discharge current by pressing Enter/START key during the process Once you change the current value, store it by pressing Start /Enter button again

●Cycle NiMH/NiCd battery

You can use this function for balancing, refreshing (stored long time) and break-in(for brand new battery) the battery
In cycling operation, microprocessor will use 'Users set' up data (Delta peak, Tem cut off, Capacity cut, Time delay)

NiMH CYCLE DCHG〉CHG 3	First. Select step. CHG▶DCHG is charge first discharge later, DCHG▶CHG is discharge first charge later After that, select cycling number. If you set 3 value of cycling number, will cycling 3 times Press ENTER/START button more than 2 seconds, cycling will be started
NiMH 2.0A 7.42V D〉C 022:45 00890	The screen displays the current state of cycling Press ENTER/START button once and adjust (use INC/DEC button) charge/discharge current ※ You can modify charge/discharge current by press ENTER/START button within 1 min after start charging To stop the process, press TYPE/STOP key .
DCHG 1 1314mAh CHG 1 1430mAh	At the end of the process, you can see charged or discharged electric capacities of the battery at each cyclic process. By pressing INC or DEC button, the screen shows the result of each cycle in order

■Pb battery program

This is programmed for charging Pb battery with nominal voltage from 2 to 20V
Pb batteries must not be charged rapidly, So have to charge current will be 1/10 of the capacity (time will spend 10～16 hours)
※ Always follow the instruction is supplied by the manufacturer of battery

●Charging Pb battery

Pb CHARGE 3.0A 12.0V (6P)	Set up charge current (1/10 of battery capacity), and then set up nominal voltage Press ENTER/START button more than 2 seconds, charging will be started
Pb-6 3.0A 12.59V CHG 022:43 00682	The screen displays the current state of charging Press ENTER/START button once and adjust (use INC/DEC button) charge current ※ You can modify charge current by press ENTER/START button within 1 min after start charging

●Discharging Pb battery

Pb DISCHARGE 1.0A 12.0V (6P)	Set up discharge current ,and then set up nominal voltage Press ENTER/START button more than 2 seconds, discharging will be started
Pb-6 0.4A 12.59V DSC 022:43 00682	The screen displays the current state of discharging Press ENTER/START button once and adjust (use INC/DEC button) discharge current ※ You can modify charge current by press ENTER/START button within 1 min after start charging

■Save Battery Data program

Hybird AC/DC Charger has a data storage and load program for your convenience
This feature can store up to 5 battery data by number that represent the individual specification of batteries you are using
They can be called back for the process of charging or discharging without setting up the program again

PROGRAM SELECT SAVE DATA	Select SAVE DATA in Main Menu
SAVE [01] NiMH 9.6V 5000mAh	The parameter value setting up in this screen does not affect charge or discharge process. They only represent the specification of the battery The following screens will automatically be displayed exactly matched with the battery type you set up The example shows the battery pack of NiMH, 8 cells and 5000mAh of capacity
NiMH CHARGE Mn* CUR LIMIT 5.0A	Setting up charge current Press INC button (for move to discharge set up)
NiMH DISCHARGE 1.0A 7.6V	Setting up discharge current and final voltage. Press INC button (for move to cycle set up)
NiMH CYCLE DCHG〉CHG 3	Setting up the sequence of charge and discharge, and the cycling number.
SAVE…	Saving the data (Press ENTER/START button more then 2 seconds)

■Load Battery Data program

This program calls back the data that was stored at 'Save Data' program.

PROGRAM SELECT LOAD DATA	Select LOAD DATA in Main Menu
LOAD [01] NiMH 9.6V 5000mAh	Select the data number to be called back. The data matched with the number will be displayed at

LOAD…	Loading the data (Press ENTER/START button more then 3 seconds)

■Various information during the process

You can inquire various information on LCD screen during charging or discharging process
When you press DEC button the charger shows the establishment of user settings
And also you can monitor the voltage of individual cell by pressing INC button when the individual connection cable is linked to the Lithium battery being processed
On the NiCd/NiMh charge mode , INC and DEC button use for check the Users Set up Data, and also use Key for move to reverse screen

End Voltage 12.6V(3S)	The final voltage will be reached at the end of process (For Lithium battery)
Capacity Cut-Off ON 5000mAh	Display Capacity cut off information
Safety Timer ON 200min	Display Safety Timer information
USB/Temp Cut-Off Temp Cut-Off 80C	Display Temp cut off information
Ext. Temp 24C	Display Battery's Temperature (When you use outside Thermo Sensor)
IN POWER VOLTAGE 12.56V	Display Input DC voltage
4.14 4.16 4.09 0.00 0.00 0.00	Display individual present cell voltage

■Warning and error messages

REVERSE POLARITY	The output is connected to a battery with incorrect polarity
CONNECTION BREAK	Interruption of the connection between battery and output or voluntarily disconnecting the charge lead during the operation of charge or discharge on output.

SHORT ERR	There was a short-circuit at OUTPUT
INPUT VOL ERR	The voltage of input power drops below the set up voltage value
VOL SELECT ERR	The voltage of Lithium battery pack was selected incorrectly Verify the voltage of battery pack carefully.
BREAK DOWN	There happens the malfunction at the charger circuit by any reason The charger should be repaired at the factory
BATTERY CHECK LOW VOLTAGE	The processor detects the voltage is lower than you set at Lithium program Please check the cell count of the battery pack
BATTERY CHECK HIGH VOLTAGE	The processor detects the voltage is higher than you set at Lithium program Please check the cell count of the battery pack
BATTERY VOLTAGE CELL LOW VOL	The voltage of one of the cell in the Lithium battery pack is too low Please check the voltage of the cell one by one.
BATTERY VOLTAGE CELL HIGH VOL	The voltage of one of the cell in the Lithium battery pack is too high Please check the voltage of the cell one by one.
BATTERY VOL ERR CELL CONNECT	There are bad connection at the individual connector Please check the connector and cables carefully.
TEMP OVER ERR	The internal temperature of the unit goes too high Cool down the unit
CONTROL FAILURE	The processor can not continue to control the feeding current by any reason The unit needs to be repaired

■Maximum charge/discharge current

Hybrid AC/DC Charger has Charge/Discharge current limit by battery cell number.
Battery is more than 10V ,the actual amount of charge current delivered to the battery might automatically be limited
Also, for the battery having more than 5V ,the discharge current delivered to the battery might be limited

●Maximum charge/discharge current（DC12.5V Input）

	No. of cells	Nominal voltage	Charge current	Discharge current
NiCd/NiMH	1	1.2	5.0	1.0
	2	2.4	5.0	1.0
	3	3.6	5.0	1.0
	4	4.8	5.0	1.0
	5	6.0	5.0	0.8
	6	7.2	5.0	0.7
	7	8.4	5.0	0.6
	8	9.6	5.0	0.5
	9	10.8	4.6	0.5
	10	12.0	4.2	0.4
	11	13.2	3.8	0.4
	12	14.4	3.5	0.3
	13	15.6	3.2	0.3
	14	16.8	3.0	0.3
	15	18.0	2.8	0.3
LiPo	1S	3.7	5.0	1.0
	2S	7.4	5.0	0.7
	3S	11.1	4.5	0.5
	4S	14.8	3.4	0.3
	5S	18.5	2.7	0.3
	6S	22.2	2.3	0.2
LiIo	1S	3.6	5.0	1.0
	2S	7.2	5.0	0.7
	3S	10.8	4.6	0.5
	4S	14.4	3.5	0.3
	5S	18.0	2.8	0.3
	6S	21.6	2.3	0.2
LiFe	1S	3.3	5.0	1.0
	2S	6.6	5.0	0.8
	3S	9.9	5.0	0.5
	4S	13.2	3.8	0.4
	5S	16.5	3.0	0.3
	6S	19.8	2.5	0.3

⚠ Danger/Warning

Pay close attention to the following safety precautions as improper
Much-More Racing doesn't owes any responsibilities to the burns or fires caused by careless use.

★Please Do not disassemble or modify this product.
★If you use DC power supply as power sources please be careful of DC Voltage (DC11～18V)
★If you use household outlets as power sources please be careful of AC voltage (AC100V～240V)
★We strongly recommend Much-More Power Master Legend (MM-CTXPL*) as Power source
★Hybrid AC/DC balance Charger designed for charging NiCd, NiMH, LiPo, LiFe, LiOn, Pb batteries.
Do not use other purpose. If you try to charge other battery, It cause damage or disorder
★Please be careful of + (red) , - (black) Input and Output wires, Do not connect in reverse.
★Please stick Thermo Sensor to battery during Charge/Discharge
★Please do not leave around when charge/discharge
★Please stop charging when noise came from the battery or overheat
★When you charge the Lithium batteries, you have to use safety bag
★Please do not handle this product in wet hand
★Please secure large space around Hybrid AC/DC charger
(Do not set aside flammable material or Thermal Deformation material)
★Please do not cover anything in front of cooling air holes
★Please do not insert any bolts,washers in cooling air holes
★Please keep away from water/salt water
★Please do not use the product in places where the product will get hot such as under direct sunlight.
★Please do not drop the product and avoid strong shocks or impacts.

■Product Warranty

MUCHMORE RACING warrants their Hybrid AC/DC Charger to be free from defects in material and workmanship for a period of 120 days from the date of purchase
MUCHMORE RACING (or their associated distributors) will repair or replace without charge or refund the purchase price of any product which fails during the warranty period by reason of defect in material or workmanship found upon examination by MUCHMORE RACING to have been the cause of failure.
This warranty does not cover any failures attributable to abuse, mishandling, failure to follow operating instruction, alteration or accident, result of normal wear, misuse or improper maintenance.
This applies among other things on
Cut off/changed original input- and/or output-wires, Mechanical damage of the case, Humidity/Water inside the case, Mechanical damage of electronic components/PCB, Soldered on the PCB, Any modification of the charger done by the customer.
To make a claim under this warranty, the purchaser must return the product to MUCHMORE RACING (or the relevant Countries associated distributors) at the address shown below properly packed and with shipping charges prepaid.
All claims must be made within thirty (30) days from the product failure and, in any event, within thirty (30) days of the expiration of the 120 days warranty
All claims must be accompanied by a sales slip or other written proof of date of purchase
The maximum repair costs for any failure caused by the purchaser are 50% of retail price (original purchase price)
Since we cannot supervise the proper use of our products, we can not accept any liability for direct or indirect damage of any type arising from their use or occurring to the property of the user and/or third parties
Therefore, any use of this product shall take place at the user's own risk
The warranty claim may not exceed the value of this product in any case
By putting this product into operation you accept the above conditions and assume full responsibility for use of this product

Muchmore RACING
127-1, Poongdong, Ilsan-gu, Goyang-city,
Gyeong-gi do, 411-842, KOREA
http://www.much-more.co.kr
http://www.muchmore.co.jp