Input the gear ratio of the gearbox to use.
- RPM: indicate calculated by motor pole number and gear ratio.

3 Indication of maximum RPM

<table>
<thead>
<tr>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>1200</td>
<td>1500</td>
</tr>
</tbody>
</table>

The maximum RPM during the last flight is indicated.
- RPM: indicate calculated by motor pole number and gear ratio. Default is last value when the ESC leaves the factory. It changes when the motor is run.

4 Indication of average RPM

<table>
<thead>
<tr>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>1200</td>
<td>1500</td>
</tr>
</tbody>
</table>

The average RPM during the last flight is indicated.
- RPM: indicate calculated by motor pole number and gear ratio. Default is last value when the ESC leaves the factory. It changes when the motor is run.

5 Down load the set data to the ESC

This is to write (transfer) the set values to the ESC. Press INC(+) to start writing.

**RECOMMENDED MOTOR/ESC BY MODEL CLASS**

<table>
<thead>
<tr>
<th>Class</th>
<th>Motor</th>
<th>Recommended ESC</th>
</tr>
</thead>
<tbody>
<tr>
<td>10-30</td>
<td>OMA-3805-1200</td>
<td>OCA-150</td>
</tr>
<tr>
<td>30-70</td>
<td>OMA-3825-750</td>
<td>OCA-170HV</td>
</tr>
<tr>
<td>70-90</td>
<td>OMA-5010-810</td>
<td>OCA-170HV</td>
</tr>
</tbody>
</table>

**SPECIFICATIONS**

<table>
<thead>
<tr>
<th>OCA-170HV</th>
<th>OCA-1100HV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Function</td>
<td>Forward/Stop/Reverse</td>
</tr>
<tr>
<td>Load current (Peak)</td>
<td>12A</td>
</tr>
<tr>
<td>Battery Voltage Range</td>
<td>14.8V</td>
</tr>
<tr>
<td>Battery Voltage</td>
<td>11.1V</td>
</tr>
<tr>
<td>Size</td>
<td>75mm</td>
</tr>
<tr>
<td>Weight</td>
<td>25g</td>
</tr>
<tr>
<td>Cool-down</td>
<td>14-18 min</td>
</tr>
<tr>
<td>Protection</td>
<td>Short protection, over voltage protection, over current protection</td>
</tr>
<tr>
<td>Power Efficiency</td>
<td>30%</td>
</tr>
</tbody>
</table>

Warning:
- Cool Power FET: Latest generation power FET
- Opto: Galvanic separation of the motor interference and receiver
- ESC Programmer OPC-1: By connecting to OCA-1100HV/OMA-170HV, detailed setting can be done easily.
- Stack protection: Stops involuntary starting of the motor.
- Low voltage cut-off: Stops the motor before the voltage reaches the level where control is lost and potential over-discharge damage to the cells occurs.
- No signal cut-off: Switches the ESC OFF when signal from the transmitter is not received.
- Overheat protection: When the temperature rises excessively due to overheat, restrict output to protect the ESC.
- Anti-spark Function: Reduce sparks which occur when connecting power battery.
- Battery cell number auto recognition: Function to recognize automatically cell number of the battery to connect.

Please pay attention to the advices with the following headings.

**DANGER**
These cover the possibilities which might involve death and serious injury.

**WARNING**
These cover the many other possibilities, generally less obvious source of danger, but which, under certain circumstances, may also cause damage or injury.

**NOTES**
These cover the many other possibilities, generally less obvious source of danger, but which, under certain circumstances, may also cause damage or injury.

**IMPORTANT**
It is of vital importance, before attempting to operate your OCA-170HV and OCA-1100HV to read through this instruction manual.

**NOTES ON INSTALLATION**

- **WARNING**
  - Never use the OCA-1100HV and OCA-170HV beyond the specifications listing.
  - Do not make the ESC or ESC wire damaged or be burnt intend.
  - Never short any part of the ESC, batteries, motor, receiver, and connectors.
  - Short circuit may cause fire and ESC wire damaged or be burnt intensity.
  - Be sure to install the ESC so that the shorting connection of the input and output may not touch conductor parts.

- **How to Install the Receiver**
  - Be sure to install the receiver on the place where high current flows such as ESC, motor wires, battery wires, power battery.
  - Multi-turn of the receiver due to noise cause to cause loss model control which is very dangerous.

- **NOTES**
  - Do not use with ESC or ESC wire damaged or be burnt.
  - Be sure to install the ESC temporarily before connecting the power battery.

**HOLD THE THROTTLE AT STOP POSITION**
- Switch off the receiver and transmitter power.
- If the receiver power is turned on, the receiver may cause smoke and burst or cause fire, which is very dangerous.
- Be sure to connect the ESC and all the movements of model components before attempting flight.

**NOTES**
- Do not touch the motor or ESC right after flight.
- Touching than may cause burn.

**HOW TO CONNECT THE OCA-1100HV/OCA-170HV**

**PREPARATION**
Solder the corresponding battery connector to the battery connection wires of the ESC. Also, use a heat-shrink tube to isolate the connection.

Connections of the OCA-1100HV are shown below. In case of the OCA-170HV, make connections in the same way.

**LED (side)**
- **Black**
  - Connect to the battery, making sure polarity is correct.
- **Red**
  - Connect to the OCA-170HV when the settings are made with the OCA-170HV.
SETTING OF THROTTLE POSITIONS

Set the high point and the shallow point as follows. (In case of model type ARF)

Preparation:
An explanation below, connet the ESC, receiver (receiver battery is required) and motor. Do not connect power battery at this time.

1. Set the three angles of the throttle channel to the transmitter 10%. In case of Futaba, set the reverse function of the throttle channel to the receiver.

2. Connect the power battery. After about 10 seconds, a beep is emitted when short beep is set.

3. Within 3 seconds after step 2, fully pull down the throttle stick.

4. After a short beep, a double beep is transmitted.

5. Disconnect the power battery.

- When the LED on the ESC flashes, reverse the throttle channel using the same reverse function on the transmitter. Disconnect the power battery and repeat the procedure from the beginning.

- If any of model type CAR or BOAT and reverse function ON, step 2 should be repeated with the following.

Set the throttle stick neutral (a short beep) — reverse short beep (a double beep) — disconnect power battery set to high point, neutral point and reverse point.

SETTING OF PARAMETERS

Five parameters can be set without using the programmer in the following manner.

- **Parameter No.**
- **Parameter type**
- **Standard setting**
- **High setting**
- **Low setting**

**NOTES**

- **VARIABLE**
- **SELECT**
- **Transportation**

**SELECTION OF BATTERY TYPE (Parameter No. 1)**

- **LiPo:** Ncid
- **NiCd or NiMh:** Battery pack

**ON/OFF OF AIR BRAKE (Parameter No. 3)**

- To use air brake function, set ON.
- Set each parameter following the SETTING OF PARAMETERS explained before.
- Detailed setting of parameter can be set using the optional extra ESC Programmer OCP-1.

**NORMAL OPERATION**

**WARNINGs**

- Be sure to set the parameters according to the throttle positions and conditions before using the OCA-1100HV and OCA-1700HV.
- Normal operation is ready, check the direction of motor rotation. If the rotation is reverse, correct it by re-setting the parameter or changing connection of the motor.

- Incorrect setting may cause sudden rotation of the motor or out of model control which is very dangerous.

**How to change parameter.**

After selecting the parameter No. as explained above, change the parameter with the following procedure.

- **Procedure**
- **Stick**
- **LDD**

**Hold the throttle stick at the slowest position.**

- 1. After 3 seconds, a beep is emitted.
- 2. Then, LED and LCD show the current setting.

**To change the current setting.**

- Move the throttle stick quickly slow—high—slow.
- 1. LCD indication and beep change to confirm setting changes.

**To return to parameter No. selected.**

- When a double beep is emitted, return to parameter selected.

**Disconnect the power battery.**

- Setting is saved.


current setting

**SELECTION OF BATTERY TYPE (Parameter No. 1)**

- **LiPo:** Ncid
- **NiCd or NiMh:** Battery pack

**ON/OFF OF AIR BRAKE (Parameter No. 3)**

- To use air brake function, set ON.
- Set each parameter following the SETTING OF PARAMETERS explained before.
- Detailed setting of parameter can be set using the optional extra ESC Programmer OCP-1.

After completing the initial setting, disconnect the power battery.
## Setting of Throttle Positions

**Set the high point and the slowest point as follows: (In case of model type AR)**

**Preparation:**
- An electric brake cannot be used for ESC receivers. (When receiver reverse button is required and motor, Do not connect power battery at this time.)
- Turn off ESC (Connect the ESC receiver (reverse button is required) and motor. Do not connect power battery at this time.)

**Setting of the throttle channel:**
Set the throttle channel to the transmitter (100%).

**Preparation:**
- Set the three angles of the throttle channel to the transmitter (100%), in case of throttle, set the reverse function of the throttle channel to the reverse (0%)

### How to change parameter

After selecting the parameter No. as explained above, change the parameter with the following procedure.

1. **Procedure**
   - Power the transmitter on and hold the throttle stick at full high position.
   - Connect the power battery. 10 seconds after a short beep, a double beep is emitted.
   - Connect the power battery. Within 3 seconds after the step 1, fully pull down the throttle stick. After a short beep, a double beep is transmitted.
   - Disconnect the power battery.

2. **Lcd display**
   - Hold the throttle stick at the slowest position.
   - After 1 seconds, a beep is emitted. Then, LED and LCD show the current setting.
   - Disconnect the power battery. Setting is saved.

3. **Change the current setting**
   - Move the throttle stick quickly slow-high.
   - Move the throttle stick quickly high-slow.
   - Disconnect the power battery. Setting is saved.

4. **Move to return parameter No. selection**
   - Move the throttle stick to the fastest position and a double beep is emitted to confirm returned to parameter selection.

5. **Disconnect the power battery**
   - Setting is saved.

### Initial Setting

The following example explains how to set initial settings to use air brake.

### Setting of Throttle Positions

Store full high and slowest positions of the throttle stick in the ESC. Follow the SETTING OF THROTTLE POSITIONS procedure explained below.

### Setting of Parameters

Five parameters can be set without using the programmer in the following manner.

#### How to select parameter type (number)

Select the parameter type (number) with the following procedure.

**Preparation:**
- As explained above, connect the ESC receiver (reverse button is required) and motor. Do not connect power battery at this time.

1. **Procedure**
   - Switch the receiver on and hold the throttle stick at full high position.
   - Connect the power battery. 10 seconds after a short beep, a double beep is emitted.
   - Then, very short beep continues. (This confirms the parameter No. 3 is selected).

2. **Move the throttle stick quickly high-slow-high**
   - Move the throttle stick quickly high-slow-high.
   - Disconnect the power battery.

3. **WARNINGS**
   - Be sure to set the parameters according to the throttle positions and conditions before using the OCA-1100HV and OCA-170HV.
   - When normal operation is ready, check the direction of motor rotation. If the rotation is reverse, correct it by re-setting of the parameter or changing connection of the motor.

   **Wrong setting may cause sudden rotation of the motor or out of control which is very dangerous.**

**In normal operation,** connect the power battery with the throttle stick at the slowest position. After hearing a set of very short and short beep, you can operate the ESC. At this time, LED lights up.

If the power battery is connected with the throttle stick not at the slowest position. LCD flashes. In this case, move the throttle stick to the slowest position and set a set of very short and short beep is emitted to confirm ready to operate.

If the power battery is connected with the throttle stick at high and entered into the setting mode, disconnect the power battery and repeat from the beginning.

### Connection of the programmer

Connect the OCP-1, power battery and motor to OCA-1100HV or OCA-170HV as explained above.

### Operation of editing buttons

Select setting parameter with outer arrow buttons ( or ).

Use inner INC(+) and DEC(-) buttons to select setting or change setting.

### Change of model type

You can change model type by pressing both arrow buttons at the same time.

### Setting Items

Items can be programmed with the OCP-1. It is listed below.

#### Setting Items (Model type AIR)

1. **Selection of battery type**
   - Air brake ON/OFF

2. **Selection of cut-off voltage**
   - Setting of motor pole number

3. **Selection of cut-off type**
   - Setting of model type AR

4. **Selection of motor rotating direction**
   - Inclination of maximum RPM

5. **Selection of brake direction**
   - Reduction of average RPM

6. **Setting of acceleration**
   - Down load the set data to the ESC

7. **Setting of start power**
   - Access to the stored data in the programmer

8. **Setting of air brake type**
   - Setting the set data in the programmer (a setting of parameter)

#### How to set

When the OCP-1 and power battery are connected to the ESC, current settings of the ESC are automatically stored in the OCP-1.

- Select the item to change with the arrow buttons ( or ) and change the setting with INC(+) and DEC(-) buttons.

**Important:**
- When the parameter setting of the ESC with the OCP-1 is completed, write data into the ESC with “ rewriting the set data to the ESC” function. Data cannot be written to the ESC with only parameter settings.

- **Selection of battery type**
  - Setting range: LiPo, NicD Default: LiPo

Select power battery type to use with INC(+) and DEC(-) buttons.

- When the battery type is changed, “CUT-OFF VOLTAGE” and “CUT-OFF TYPE” parameters are changed.
**O.S. ENGINES**

**BRUSHLESS MOTOR ESC FOR AIRPLANES**

**OCA-1100HV**

**OCA-170HV**

**INSTRUCTION MANUAL**

**Concerning the recommended motor/ESC according to the model size, refer to the listing shown later part of the manual.**

The OCA-170HV and OCA-1100HV are ECS installed with the latest FET for brushless motors. By combining with separately available O.S. brushless motors, both ESC and motor develop their maximum performance.

**Notes on installation**

**WARNINGS**

- Never use the OCA-170HV and OCA-1100HV beyond the specifications listed in the instructions.
- Do not use the OCA-170HV and OCA-1100HV in temperatures below -0°C. This may cause the ESC to become damaged or become heat-damaged.
- Never use the OCA-170HV and OCA-1100HV in temperatures above 40°C. This may cause the ESC to become damaged or become heat-damaged.
- Do not operate the ESC at the places where there is plenty of dust or are in heavy winds.
- Do not wrap the ESC with aluminum foil, etc.
- Do not wrap the ESC with heat-shrink tube or tape, etc. This may cause the ESC to become damaged or become heat-damaged.
- Do not use the ESC if the ESC becomes damaged or become heat-damaged.
- Do not install the ESC to the place where the ESC becomes damaged or become heat-damaged. This may cause the ESC to become damaged or become heat-damaged.

**Tips on operation**

**WARNINGS**

- Before operating OCA-170HV and OCA-1100HV. Misuse or abuse of LiPo batteries is very dangerous. Be sure to follow the instruction manual supplied with the batteries.
- Some commercially available motors will not match the advance adjustment of the OCA-170HV and OCA-1100HV. It is suggested to use them combining with the O.S. motors listed.
- Be sure to connect the installers which connect the batteries, securely soldering to the battery connecting wires of the ESC. Never match the ESC with the connectors temporarily connected.
- Do not touch the ESC or the electric wires of the ESC. Be sure to lock the ESC tight after flight.
- Do not match the ESC nor the motor after flight. Be sure to match the ESC with the motor during the check of the ESC.
- Do not open the ESC case. Be sure to open when is necessary.
- Do not match the ESC nor the motor after flight. Be sure to match the ESC with the motor during the check of the ESC.

**HOW TO CONNECT THE OCA-1100HV/OCA-170HV**

**Preparation:**

Solder the corresponding battery connector to the battery connection wires of the ESC. Also, use a heat-shrink tube to isolate the connection. Be sure to connect the ESC to the ESC's connectors (female) to the motor connection wires of the ESC. Also, use a heat-shrink tube to isolate the connection.

Connections of the OCA-1100HV are shown below. In case of the OCA-170HV, make connections in the same way.

**Connect to the battery, making sure polarity is correct.**

**Connect to the OCA-1100HV when the settings are made with the OCA-1100HV.**

**Connect to the OCA-1100HV when the settings are made with the OCA-1100HV.**

**Connect to the OCA-170HV when the settings are made with the OCA-170HV.**

**Connect to the OCA-170HV when the settings are made with the OCA-170HV.**

**LED (side)**

- **Black**
- **Red**

**Connect to the throttle/brain box.**

Solder the corresponding connectors (male) and use a heat-shrink tube to isolate the connection.