ACEWELL®

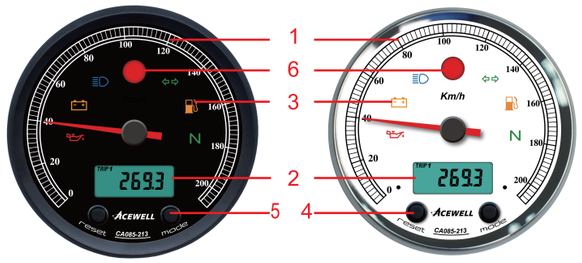
ATV/Motorcycle/Scooter/Vehicle Computer
CA-085-1XX/2XX-XX User Manual

Thanks for purchasing the ATV/Motorcycle/scooter/vehicle computer; this manual is specifically designed for CA-085-1XX/2XX-XX series. It has needle speedometer scale, each series has different models, each model has different LED indicators. You may find that the photo has a set of LED indicators different from your computer, the photo is for reference only.

Different series with different needle tachometer or speedometer scales are as bellows:

CA-085-15X: 150Km/H
CA-085-21X: 210Km/H
CA-085-26X: 260Km/H

The last suffix "–XX can be identified material of the upper bezel as bellows:
No. suffix: Plastic material.
-AB: CNC aluminum bezel with anodizing mesh black treatment.
-CP: CNC aluminum bezel with chrome plating treatment.



Temperature sensor is an optional parts for these series, temperature function can be set On or Off by user, descriptions with "" are for user who purchases additional temperature sensor reference only.

PANEL DESCRIPTIONS

1. Needle Tachometer /speedometer
2. Digital LCD display
3. 6 LED indicators
4. RESET Button
5. MODE Button
6. RPM Shift Warning Indicator

Models and Indicators

Model No	LED Indicators
CA085-XX2	
CA085-XX3	N
CA085-XX5	N
CA085-XX6	N

*XX is for 15 , 21 and 26

FEATURES

- Clastic 85mm needle speedometer or tachometer with digital LCD display.
- LCD shows digital functions of speedometer, tachometer, maximum RPM and SPD, average speed, trip meter 1/2, odometer, riding time, total riding time, total hour meter, volt meter, temperature meter, volt meter and clock.
- Integrates 6 LED warning lamps with different symbols depending on model.
- Built-in RGB LED backlight, user can adjust his/her prefer backlight color. Backlight can be switched on independently.
- Fast processor so can connect to pulse type gearbox speed sensors.
- Allows end user to adjust odometer when the odometer is less than 30km / 18.6 miles.
- Universal wheel circumference setting range: 1-3999mm.
- CA-085-1XX/2XX includes main unit, bracket, RPM sensing wire, speed sensor, fitting kits, wiring harness and sleeve of main unit.
- Excellent water resistant, anti-vibration structure and noise immunity design.

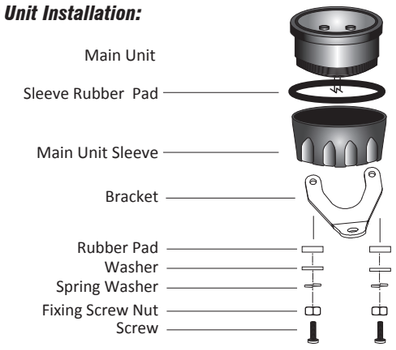
SPECIFICATIONS

Functions	Symbol	Specifications
Needle Speedometer		CA-085-15X 150Km/H CA-085-21X 210Km/H CA-085-26X 260Km/H
Speedometer	Km/h / MPH	2.4-399.9 km/h (248.5 MPH)
Trip meter 1&2	TRIP 1or 2	0.00-999.99 KM /624.99Miles
12/24 Hour Clock		AM/PM 0:00' – 11H59' / 23H59'
Digital Tachometer	rpm	100～19,900 rpm
*Temperature Meter	TEMP	0℃-180℃ / 32℉-356℉, HI or Off <0℃ display -L-, >180℃ display -H-
Average speed	AVG	2.4-399.9 km/h (248.5 MPH)
Maximum speed	MAX SPD	2.4-399.9 km/h (248.5 MPH)
Riding timer	MAX RT	0-99H59`59``
Maximum RPM	MAX RPM	100～19,900 rpm
*Max. Temperature	MAX TEMP	0℃-180℃ / 32℉-356℉
Odometer	ODO	0 - 999999 KM, 0-624999 Miles
Total Riding Time	TT	0-999999H
Hour meter	HRTT	0-999999H
Voltage Gauge	V	8-18VDC, battery voltage warning settable
Maintain reminder	Trip	0-9999km

Power Input	DC 12V
Tachometer Sensor	CDI or Ignition Coil Signal
Speed Sensor	Reed or hall Sensor for CA-085-1XX/2XX only.
*Temperature Sensor	Thermo Sensor for CA-085-3/4/5/6XX only
Speed input divider setup	1-199 Pulses
Maximum speed input frequency	7K Hz
Wheel circumference setting	1mm-3999mm
Dimensions	Ø85*56.1mm

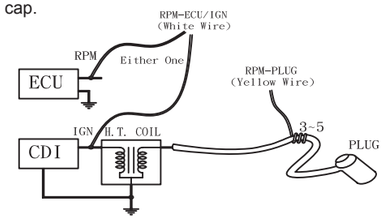
INSTALLATION & PARTS

Main Unit Installation:



RPM sensor mounting:

1. Connect either the yellow or white wire to sense the RPM signal.
2. The yellow wire can be wrapped around the spark plug lead.
   a. Signal strength from the ignition coil is dependent on coil type.
   b. Coil 2-5 turns around spark plug lead, the more turns the stronger the signal. A weak signal will not show a reading on the screen whereas a very strong signal will have a reading which is too high or very jittery. If the reading is incorrect then try putting the 1MΩresistor which is included in the box inline in the sensor wire.
3. If the signal is still unstable, please try to connect the white wire to either the ECU rev counter output or to the primary side of the coil or to the pulse wire on an active spark plug cap.

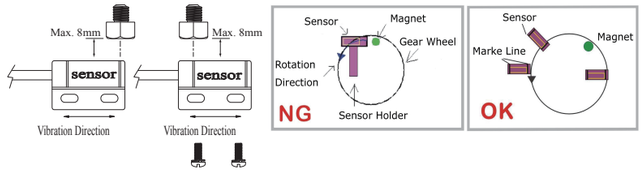


SPEED SENSOR Mounting:

ACEWELL has several speed sensors; the unit may include one of them. If the model is intended to be connected to a gearbox electronic speed output to obtain the speed reading, no speed sensor will be included.

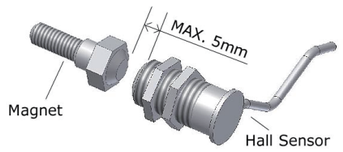
Reed Speed Sensor and Magnet:

1. This sensor is universal sensor for motorcycle, find a rotating part to install magnet (for example disk, sprocket or driveshaft) and a location to install the sensor where it can be aligned to the magnet.
2. Align the center of the magnet to either of the sensor marking lines or the side of the sensor. The magnet must not travel down the body of the sensor
3. Installing the sensor parallel to the vibration direction creates optional anti-vibration effect.
4. Make sure the gap between the magnet and the sensor is within 8mm.



Hall Effective Speed Sensor and Magnet:

1. This is universal sensor for ATV or motorcyclefront or rear wheel installation or motorcycle front wheel installation. For some fitments an accessory speed sensor holder may need to be purchased.
2. Find a rotating part to install magnet (for example disk, sprocket or driveshaft) and a location to install the sensor where it can be aligned to the magnet
3. Align the center of the magnet to center of side face of the sensor.
4. Make sure the gap between the magnet and the sensor is within 5mm.



Specific Hall sensors:

Cable drive adaptors for most bikes originally fitted with cable driven speedometers or odometers are available. When using these cables it is necessary to divide the circumference setting by the number of rotations of the cable per rotation of the wheel.

*Thermo Sensor and Sensor Tube:

1. The unit includes a water temperature sensor; you may have to purchase a suitable water pipe temperature sensor tube to install the sensor on some bikes.
2. Cut the water pipe, insert the temperature tube into the pipe and secure it by attached pipe clamps.
3. Screw the sensor into the tube.
4. If your vehicle is fitted with a thermostat that stops water flowing to the radiator when the engine is cold, you will not get a reading until the thermostat opens.
5. Custom sensors are available for carburetted bikes to replace the original sensor.

FUNCTIONS

Needle Speedometer:

1. Indicates speedometer by analogue needle.
2. Speedometer Scale shows the needle maximum speed of the model as bellows:
   CA-085-15X: 150Km/H
   CA-085-21X: 210Km/H
   CA-085-26X: 260Km/H

RPM: Digital Tachometer

1. It displays digital tachometer up to 19,990RPM and displays 19,999 rpm when tachometer is over 20,000rpm..
2. It has 2 wires to pick up RPM signal, the yellow wire is to connect to Plug, and white wire is for signal from ECU or Ignition coil.

Shift Warning RPM

1. The function enables you to set up a shift warning RPM.
2. Shift warning LED indicator flashes when RPM reaches setting value, and stops flashing after you shift gear.

MAX RPM: Maximum Tachometer

Displays highest tachometer achieved since last Reset operation.

SPD: Speedometer

1. Displays speed meter up to 399.9 Km/H or 248.5 MPH.
2. The maximum frequency from speed sensor is 7K Hz.
3. With a small wheel size and large number of pulses per wheel revolution it may not be possible to display very high speeds.

MAX SPD: Maximum Speed Meter

Displays highest speed achieved since last Reset operation.

AVG: Average Speed Meter

It calculates average speed from last RESET. The AVG is calculated from TRIP be divided by RT.

TRIP 1 or 2: Trip Meter 1 or 2

TRIP function accumulates trip distance since last RESET as long as bike/vehicle is moving.

ODO: Odometer

1. ODO accumulates total distance traveled.
2. ODO data is adjustable when it is less than 30km (18.6 Miles), after that it stored in memory and cannot be reset.

RT: Riding Timer

1. Calculates total running time since last RESET.
2. Counter automatically begins with movement.

TT: Total Riding Timer

1. Calculates total riding time from the beginning of the bike.
2. TT data is stored in memory, and cannot be reset.

HRTT: Total Hour Meter

1. Calculates total engine operation time since installation RESET.
2. Count automatically begins with engine starting.
3. HRTT data is stored in memory, and cannot be reset.

: 12/24 hour Clock

It displays 12 or 24 hour current time.

*TEMP: Temperature Meter

1. It measures and displays from 0℃-180℃ / 32℉-356℉.
2. It displays -L-℃ or -L-℉ when temperature is lower than 0℃(32℉) or disconnected temperature sensor, and displays -H- ℃ or –H-℉ when temperature is over 180℃ or 356℉..
3. The LCD backlight flash red and green in turn and temperature LED indicator (for models with temperature warning indicator only) flash when the thermo sensor detects temperature higher than the maximum preset temperature.

*MAX TEMP: Maximum Temperature

Displays highest temperature achieved since last Reset operation.

: Digital Voltage and Battery Warnings

1. It checks bike's battery and charging systems health.
2. Indicates range 8-18VDC.

+TRIP: Maintenance Reminder

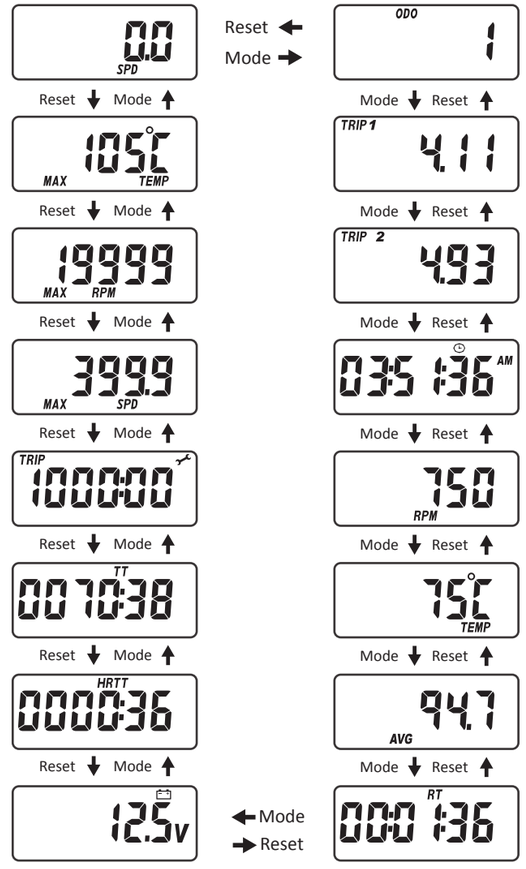
1. The maintenance reminder is set by trip meter, and an "Off" mode to switch it off.
2. The trip meter maintenance can be set up to 9999km.

BUTTON OPERATIONS

MODE Button
Press the MODE button to move partial functions in loop sequence as " → " from one function screen to another.

RESET Button

Reset button cycles through functions in reverse order



DATA RESETTING AND PROGRAMMING MODES

1. Press MODE or RESET button to reach the desired screen then press RESET button for 2 seconds to reset TRIP 2, MAX SPD, MAX RPM and MAX TEMP data from stored values to zero individually. The maintain reminder data will be reset to the preset value rather than zero.
2. The data of Trip 1, AVG & RT will all be reset at the same time when one of the
3 data functions is being reset.
3. ODO, clock, HRTT and TT data cannot be reset.

Shift Warning RPM Operation

1. Press MODE or RESET button to reach the RPM screen; pull on the throttle until the desired shift warning RPM.
2. Press RESET button to confirm and set up the shift warning RPM.
3. Warning LED will flash to remind you shift gear.
4. Press RESET button for 2 seconds at the RPM screen to re-adjust the shift warning RPM.

Backlight Color Adjust:

1. Press MODE button to get to the VOLT screen when not moving; push and hold RESET button for 2 seconds to go into backlight color setting mode.
2. It displays “LED RGB and RX-GX-BX”, the X after R, G and B indicate each color of Red, Green or Blue color to be adjustable, each color has 10 levels 0, 1, 2,.9 for setting, “0” means the color is off, “9” means the color is turned on 100%.
3. Each press of the RESET button increments the flashing digit by 1, press MODE button to confirm the flashing digit setting and jump to next digit to be set. Press MODE button for 2 seconds to finish the setting and go to normal mode Trip 1.

WHEEL CIRCUMFERENCE TABLE

1. The details below have been calculated using following formula: Tire Diameter (inches) x 25.4(mm/inches) x 3.1416 = wheel circumference (in mm).
2. Identify the tire size of your ATV/Motorcycle when you need to change different tire size and key in the corresponding number shown in the following chart.

Tire outside diameter	Circumference number (mm)	Tire outside diameter	Circumference number (mm)	Tire outside diameter	Circumference number (mm)
15 inch	1197	19 inch	1516	23 inch	1835
16 inch	1277	20 inch	1596	24 inch	1915
17 inch	1357	21 inch	1676	25 inch	1995
18 inch	1436	22 inch	1756	26 inch	2075

3. These values are approximate and will differ for different brands of tyre, we would always recommend that you measure the distance travelled per revolution of the wheel in mm and enter this into the computer.
4. The computer calculates the wheel rotating length between 2 passes of the magnet; use this table to find the settings when you are using a reed sensor or an universal hall sensor with magnet to measure your speed.
5. If you are using a cable drive speed sensor then enter the number of turns of the cable per turn of the wheel into the pulses screen.
6. You can use more magnets, enter the number of magnets fitted into the pulses screen.
7. If using a sprocket tooth counter speed sensor or internal pulse gearbox speed sensor enter the number of pulses per wheel revolution into the pulses screen.

Clock, RPM, Wheel, Divider, Unit, Maintain, Thermometer, fuel meter and ODO SET UP

1. Setup operations include 12/24hour clock, maintain reminder, shift warning RPM, numbers of engine rotation per signal, wheel circumference, speed pulses, speed sensor type, temperature unit and warning, and odometer adjustment. These must be set up step by step. The computer will be automatically revert to normal mode if no button is pressed for 75 seconds at any setting screen.
2. Press both MODE & RESET buttons to go into setting mode. In setting mode, each press of the RESET button increments the flashing digit by 1 or converts units.Press MODE button to confirm the digit setting and jump to next digit or next setting screen to be set.Press MODE button for 2 seconds at any setting screen to finish the setting and go to normal mode.
3. It displays "12 or 24H and XX:XX:XX " symbols and AM/PM when you select 12H. Operate buttons as described in item 2 to finish clock setting and jump to maintain reminder setting.
4. It displays “, TRIP and 1000” means the reminder is based on trip meter. Follow the item 2 of button operation to finish the maintenance reminder setting and jump to shift RPM warning setting.
5. It displays the default "RPM r06500", the digit “0” flashes. Follow the item 2 of button operation to finish the shift RPM warning setting and jump to engine specification setting.
6. It displays "RPM SP 1r1P", the default value is 1r1P; there are 5 options: 1r1P, 1r2P, 1r4P, 2r1P, 3r1P, “r” means the numbers of engine rotation, “P” means number of signals from engine. For example the value 2r1P means the engine rotates 2 turns to output one signal.
7. Press RESET button to move in loop sequence from one to another value of the 5 values. Press MODE button to confirm the setting and go to wheel circumference setting.
8. In "SPD cXXXX" display, "c" means "Circumference", following 4 default digits; flashing digit is digit to be set. Follow the item 2 of button operation to finish the wheel circumference setting and jump to signal divider setting.
9. It displays "SPD P-001", the pulses screen, the number of pulses into the computer per turn of the wheel. Follow item 2 of button operation to finish the setting and jump to speed sensor type setting.
10. It displays HALL or rEEd, HALL type is for Acewell's unique 2 wires hall sensors only, rEEd type is for reed sensors, gear sensors and signals from ECU. A gear sensor has 3 wires and must be powered from the bike. Follow item 2 of button operation to confirm the sensor type and jump to speed unit setting screen.
11. It displays “SPD UNIt-1 or 2”, 1 means KM/H and 2 is for MPH. Follow item 2 of button operation to finish the setting and jump to temperature unit setting.
12. *It displays "TEMP and ℃ , ℉ or HI or oFF", each press of RESET button converts ℃, ℉, HI or Off, the temperature meter will disappear when you select oFF mode; press MODE button to confirm temperature setting and jump to temperature warning setting. In “HI” mode connecting the input wire to ground can flash red and green backlight and/or temperature warning LED indicator.
13. *It displays "XXX" and the selected unit. Follow the item 2 of button operation to finish the temperature warning setting and go to odometer setting.
14. It displays “ODO & 00000X km”, the “X” is from odometer testing in factory, follow item 2 to set a desired odometer value and jump to clock setting or return to Normal Mode. This setting screen will disappear when the odometer is over 30km (18.6Miles) or your setting is over 30km.