User Guide

My-Chron 2 Model MCT/K and MCV/K

Introduction

Congratulations on your purchase of a My-Chron 2 from AIM, the world leader in motor sport electronics. The My-Chron 2 incorporates the most advanced electronic technologies available. Full understanding of what this product offers begins with reading this user's guide.

The My-Chron 2 has extended battery life, which includes a new auto-off feature. The auto off feature will power down the My-Chron 2 after 5 minutes of no activity. The My-Chron 2 still offers a non-volatile memory like the original My-Chron, no information is lost at power down.

The My-Chron 2 is a small and powerful tool that gives the driver information useful to evaluate driving performance and the tuning of the kart. The My-Chron 2 will display RPM, 2 temperatures, wheel speed and lap time. It then records the maximum values for every lap. The My-Chron 2 has a powerful data logger built in that records RPM and wheel speed at a configurable rate, which can be replayed in real time and manually scrolled. This data can also be downloaded, via the optional infrared download cable, and analyzed with the powerful WDRACK software. It also records the time the engine has operated, and the distance traveled, which is useful for engine maintenance.

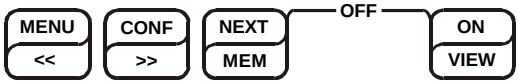
Getting Started

In order to get started using your new My-Chron 2 right away, follow these simple steps and you'll be done in less than 5 minutes.

Install the Battery

1. Remove the battery cover located on the junction box.
2. Install 1 alkaline 9V battery and replace cover.

The following instructions refer to the My-Chron keyboard buttons, a copy of those buttons is below.



Power ON, by pressing the ON button

Configure for First Time Use

1. Press the MENU button 6 times, or until you see
   full
   Setup
2. Press the CONF button
3. **Sampling** The first item to configure is the sampling frequency, this is the rate which the built in data logger records the speed and RPM information. There are two choices, x1 is 10Hz (10 times per second) and x2 is 5Hz. The recommended 10Hz will yield 17 minutes of recording, 5Hz will yield 34 minutes. If these time limits are exceeded, the My-Chron discards the oldest data keeping the most recent. You can toggle between these choices by pressing the CONF button.
4. After choosing the sampling frequency, press the MENU button to advance to the next menu item.
5. **Fahren** or **Centig** The next item to configure is the temperature unit of measurement. There are two choices Fahrenheit and Centigrade. You can toggle between these choices by pressing the CONF button.
6. After choosing the temperature unit, press MENU.
7. **Mph** or **metric** The next item to configure is the speed unit of measurement. There are two choices, MPH (miles per hour) or metric (kilometers per hour). You can toggle between these choices by pressing the CONF button.
8. After choosing the speed unit, press MENU
9. **Rpmratio** The next item to configure is the RPM ratio. This is the number of spark pulses per revolution of the motor. The choices are 1,2,3,4,5,6 and x2. Most all kart motors have 1 pulse per revolution. You can toggle between these choices by pressing the CONF button.
10. After choosing the RPM ratio, press MENU.
11. **Limrpm** The next item to configure is the maximum RPM limit. This is a very important parameter. Your new My-Chron reads the number of signals coming from the motor, but sometimes the motor sends several extra signals that may disturb the RPM computation. In order to avoid this, it is necessary to introduce the maximum RPM number for your motor. A good number is the absolute maximum RPM of the motor PLUS 10-15%. Example, if your motor can turn 15,000 RPM you would enter 1650 (dropping the last zero.) The value to be entered is divided by 10, for example 12,000 would be entered as 1200, etc. To configure the value, use the NEXT button to increase the number of the flashing digit. Toggle to the next digit by pressing the CONF button.
12. After configuring the RPM limit, press MENU.
13. **Wheel** The next item to configure is the wheel circumference. If you have chosen MPH in the units of speed configuration, this measurement needs to be measured in inches. If you have chosen metric in the units of speed configuration, this measurement needs to be measured in millimeters. To configure the value, use the NEXT button to increase the number of the flashing digit. Toggle to the next digit by pressing the CONF button.
14. After configuring the wheel size, press MENU.
15. **Npulses** The next item to configure is the number of pulses per wheel revolution. Using the recommended 1 magnet per wheel for wheel speed, the number of pulses per wheel revolution is 1. If you are using a sensor other than the standard magnetic sensor, please see the instructions that came with the sensor. To

configure the value, use the NEXT button to increase the number of the flashing digit. Toggle to the next digit by pressing the CONF button.

16. After configuring the number of pulses, press MENU.
17. **Flash_1** through **Flash_5** The next item to configure is the optional RPM warning LED's. These LED's can be individually configured to come on at a specified RPM. The most obvious use for this is an F1 style sweeping shift light. This value also is to be entered is divided by 10, for example 12,000 would be entered as 1200, etc. To configure the value, use the NEXT button to increase the number of the flashing digit. Toggle to the next digit by pressing the CONF button. Press the MENU button and repeat for each desired LED.
18. After configuring the RPM Flash, press MENU.
19. **Temp_1** and **temp_2** The last item to configure is the temperature warning LED's. These LED's, one for each temperature input, can be configured as an alarm. If the temperature reaches the alarm value you have configured, the LED will light and continue to blink until the value goes below that value. To configure these values, use the NEXT button to increase the number of the flashing digit. Toggle to the next digit by pressing the CONF button. Press the MENU button and repeat for temperature 2.
20. Press the ON/VIEW button to exit the setup and return to the ready mode. You're done with the configuration!

Main Menu

In the previous section you did the Full Setup, this section explains the other menu items and their function. You can switch from one menu item to the next by pressing the MENU button.

Tip: Pressing a button for more than one second will auto-repeat. Pressing VIEW at any time will return the My-Chron to the ready mode.

Light – If you're My-Chron is equipped with a back light, pressing the CONF button will turn on/off the light. When the motor is running, you can turn the light on by pressing the MENU button only.

TRANSMIT – If you have purchased the optional PC Loader (infrared download cable), this is how you send data to the PC. Press the MEM button, and at the prompt, press the MEM button again to confirm. More detailed instructions are available with the PC Loader.

TOTAL RUN – The My-Chron keeps a separate timer for the total time on the motor and total distance traveled, these numbers are displayed here. The total time accumulates time a RPM signal is present. The total distance is accumulated by the wheel travel. Press the MEM button to display the totals. To clear totals, press MENU, CONF or MEM, then, at the prompt press MEM to confirm.

CLEAR TESTDATA – This option is to clear the memory of all test data. This does NOT affect the Total Run. Press the MEM or CONF button and then press the MEM button at the prompt.

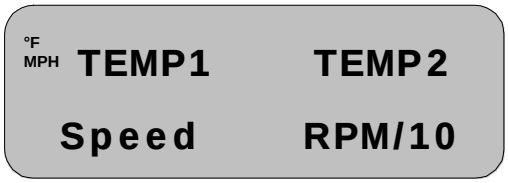
DAILY SETUP – This is a small menu of items found in the Full Setup. This is a quick way to change values that change frequently, such as wheel circumference. Navigate the menu options just as you did the Full Setup.

MODE – The My-Chron 2 can also be used as the display for DRACK, a professional data acquisition from AIM. It is necessary to change the cable on the display and choose Dash from the mode menu. More detailed instructions are available with the cable option.

Run Time Operation

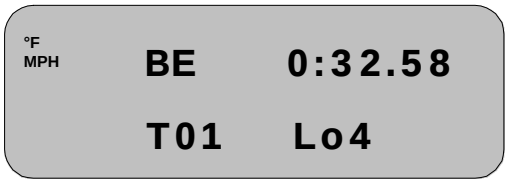
When the My-Chron is powered on, it is ready to display and acquire data. The default display will look like the following:

Fig 2



When you pass the track side beacon, you will see the following display for approximately 7 seconds:

Fig 3



Where the **BE** will appear when it is the best lap of the session up to that lap. **T**## is the test number and **L**## is the lap number. In this example, the 0:32.58 is the lap time.

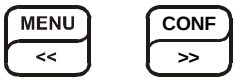
It is also possible to change between the two views at any time by pressing the VIEW button.

Data Recall and Analysis

When a test session has concluded, you are ready for data recall and analysis.

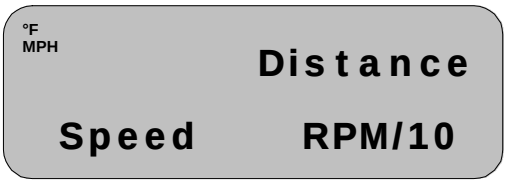
To enter the data review mode, press MEM, which also marks the test as being ended. The display will first show the best lap in the session, as in Figure 3. Again, the best lap indicated by the **be** to the left of the lap time.

Press the direction keys to move forward or backward through the lap times. Forward is indicated by >>, backward is indicated by <<.



To view the maximum channel values for the lap currently on the display, press the MEM button. You will see the maximum values for each channel; temp 1, temp 2, speed and RPM, as in Figure 2.

To view the data logger memory from the display, while viewing the maximum value screen, press the MEM button. Immediately you will see the selected lap played back in real time on the display. The values you will see are speed, RPM and distance from the beacon. If wheel speed is not present during the test, as in the MCT/K model, the playback will display RPM and time. The playback screen is pictured below.



At the end of the playback, it is possible to scroll through the recorded data for that lap manually by pressing the direction keys, forward >> and backward <<.

Installation

You new My-Chron 2 is composed of:

- **Display**, to be mounted to the steering wheel.
- **Junction Box/Data Logger**, to be mounted under the front fairing.
- **Infrared Receiver**, to be pointed to the beacon set track side.
- **RPM Pickup**, an inductive sensor, to be attached directly to the spark plug wire.
- **Temperature Sensor(s),** k-type thermocouple to monitor specific temperatures.
- **Wheel Speed Sensor/Magnet**, to be mounted to sense 1 wheel speed, typically the front wheel. *Standard on MCV model, optional on MCT model.*
- **Beacon**, or infrared transmitter, to be placed track side to mark laps.

Display, the display is designed to be mounted directly to the steering wheel. The notch on the bottom of the display is designed to slide under the top bolt of the steering wheel mount. The top of the display has a narrow piece with 2 notches on the side, which you attach to the forward spoke of the steering wheel with a tie wrap. *See photo.*

Junction Box/Data Logger, the junction box is designed to be mounted under the front fairing. We recommend mounting the box with dual lock Velcro®, not included. The junction box is where all the input channels connect. *See photo*.

Infrared Receiver, the receiver must be pointed to the side of the track where the beacon is placed. The receiver must have a clear line of sight to the beacon, it will not work through opaque materials. Race traffic will virtually NEVER cause a missed lap, the beacon has an extremely powerful signal which will reflect off anything in its path. The small lens at the end of the receiver is where the signal is received. The My-Chron 2 has an approximate 7 second blanking, where it cannot receive a second signal. We also recommend mounting the receiver with Velcro, not included, which will allow you to change for left or right side receiving. *See photo.*

RPM Pickup, the RPM wire should be routed along the chassis back to the motor area, secured to the chassis in a few points with electrical tape or tie wraps (when using tie wraps, be careful not to cut the wire by over tightening). Attach the clip at the end of the RPM wire directly to any part of the spark plug wire. *See photo on next page.*

RPM Pick-Up

Temperature Sensor(s), the My-Chron 2 will accept two temperature inputs and comes with your choice of 1 standard thermocouple to measure: exhaust gas temperature, cylinder head temperature or water temperature.

- The **exhaust gas** thermocouple, or EGT, is designed to measure the temperature of the exhaust gas. The tip of the probe is where the measurement is taken, we recommend 25-50 percent insertion into the exhaust gas flow. Mounting the probe as close to exhaust port as possible, check with your motor builder for his recommendations. The probe is made of a semi-soft material, which will allow you to bend the probe up to 90° by hand. This allows you to cleanly route the wire and helps avoid any accidental breakage from the probe sticking up. The range of this sensor is 0-1832° F. *See photos.*

- The **cylinder head** thermocouple, or CHT, is designed to measure the surface temperature of the head. This washer like thermocouple is intended to replace the washer of the spark plug. It is possible to use the spark plug washer in addition to the thermocouple, but this will increase the cc's in the combustion chamber slightly. *See photo.*

- The **water temperature** thermocouple has many installation options. You can tap the head, or if the head has an elbow for the return line, you can tap the elbow. AIM offers an optional return line fitting designed for this specifically for this purpose. This thermocouple can be also used for oil temperature. The tap size for this probe is 5.0mm x 0.8 pitch. *See photo*.

Shown with optional fitting.

Wheel Speed, there are two parts required for wheel speed sensing. The actual sensor and the magnet attached to the wheel. We recommend mounting to either front wheel. To attach the magnet, first clean the inside of the wheel to be used to ensure that it is free of oil and dirt. Remove the adhesive back from the Velcro to which the magnet is attached. Place the magnet near the outer edge of the wheel and press firmly to ensure good adhesion. The next step is to attach the wheel speed sensor to the front spindle. The small bubble at the tip of the sensor opposite the cable side is the sensing element. This sensing element needs to line up with the magnet and not be further than 2-5mm from the magnet. When routing the wheel speed cable, make sure to allow some slack for the wheel to turn. *See photo.*

Beacon, the beacon or infrared transmitter is to be placed near the edge of the track. The height of the beacon should be near the height of the receiver, a camera tripod works well, but is not included. The effective range of the beacon is 5-20 meters in the worst conditions. Because the beacon is so powerful, we recommend placing the beacon on the inside of the track, so the signal may not cross the track a second time (given ideal conditions, the beacon will work well beyond 20

meters). The beacon sends an infrared array of approximately 17° or a 3:1 field of display. This is to say that at 3 meters the size of the array is approximately 1 meter. The beacon can be powered by either 8 AA alkaline batteries internal, which provide 20-30 hours of use, or from an external 12V-power supply with the included cable. To install the internal batteries, remove the 4 screws from the cover of the beacon, there you will find an 8-battery plastic retainer. Install the 8 batteries matching the positive and negative guidelines on the plastic retainer. Using the external power supply cable will bypass the internal batteries.

IMPORTANT: The My-Chron beacon is a common frequency. Only **one** beacon is required per track, regardless of the number of karts. Additional beacons will produce split times.

Warranty

Understanding that your new My-Chron 2 will be used in competition, it comes with a full 1-year warranty. The warranty includes parts, labor and return shipping. Return shipping will be of the same service it was received, for example, if it is sent next day air, it will be returned next day air. We understand you race and need your new My-Chron, please allow a minimum 1-day to perform the repair. The warranty covers problems associated to electronic component failure and product workmanship. The warranty does not cover problems caused by physical damage, abuse or misuse.

My-Chron 2 Options

Expand the functionality and power of your new My-Chron 2 with these available options:

Exhaust Gas Temperature
Water Temperature
Infrared Tire Temperature
Blue Back Light
PC Loader Cable
Cylinder Head Temperature
Water Temperature Fitting
Gearbox Temperature
Wheel Speed Sensor
Colored Display Boxes

My-Chron 2 Contact Information

Manufacturer

Aim s.r.l.
Via Cavalcanti 8, 20063 – Cernusco s/n -MI- ITALY
Tel. +39-02-92112106
Fax. +39-02-92118024
E-mail **aimsrl@tin.it**

North American Distributor and Service Center

AIM Sportsystems
217 N. Main Street, Lake Elsinore, CA 92530

Toll Free 1.800.718.9090 (US and Canada)
Phone (909) 674.9090
Fax (909) 674.5699
E-mail **m2@aimsports.com**
Web **www.aimsports.com**

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