

Chrome

PRO 2 USER MANUAL



Sommario

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Introduction

The Chrome “PRO2” dash is a true innovation and excellence in the field of aftermarket dashboards for motorcycles. Combining a true color 800x480 TFT display and an onboard 1Ghz processor, this system guarantees total flexibility to the engineer and end user. As a result, the Chrome PRO2 has been designed with a main screen that is customizable to best suit its user needs, providing the correct slot for each indicator. The use of a color screen also makes it possible to immediately prompt possible errors such as low battery, fuel and oil levels, including a warning for fuel running low. At the same time this technology allows for intuitive menus with a large amount of information. The TFT display on the Chrome PRO2 dashes has been specifically chosen to provide improved visibility, even in direct light, and has been covered with a special glass with an anti-reflective coating that eliminates unpleasant side effects of the sun. The Chrome PRO2 has also an improved computing capacity that allows the user to select special screens and functions such as an analogue tachometer and the acquisition of an extra 128 Can Bus channels.

In order to create the perfect combination of customization of both display and alarms configuration, the Chrome PRO2 has a total of 12 fully customizable high brightness LEDs (11 of them RGB); the user can choose to use them to track RPM (the classic upper LED bar) or to report an alarm, for example a low tire temperature.

The elegant black aluminum casing and a seven-segment gear indicator with self-controlled brightness complete the aesthetic side of this new dashboard.

The Chrome PRO2 incorporates dash functions with lap timing and data acquisition, with easy to navigate menus. It stores 20 pre-loaded race circuits (that can be modified with a simple USB key import/export function, choosing amongst a library of a hundred racetracks). For each race circuit the Chrome PRO2 can store up to 500 laps, each divided into 4 different sectors. The system calculates and shows a summary for each racetrack displaying circuit map, best lap time, number of laps performed and the ideal lap time; the Chrome PRO2 stores the history of the previous sessions (also in past days) so to make it possible to compare last and previous performances and acknowledge possible improvements quickly and efficiently. The Chrome PRO2 additionally allows to view the circuit map directly on the display, hence enabling the user to change the finish line and splits position by simply moving the cursor along the circuit map.

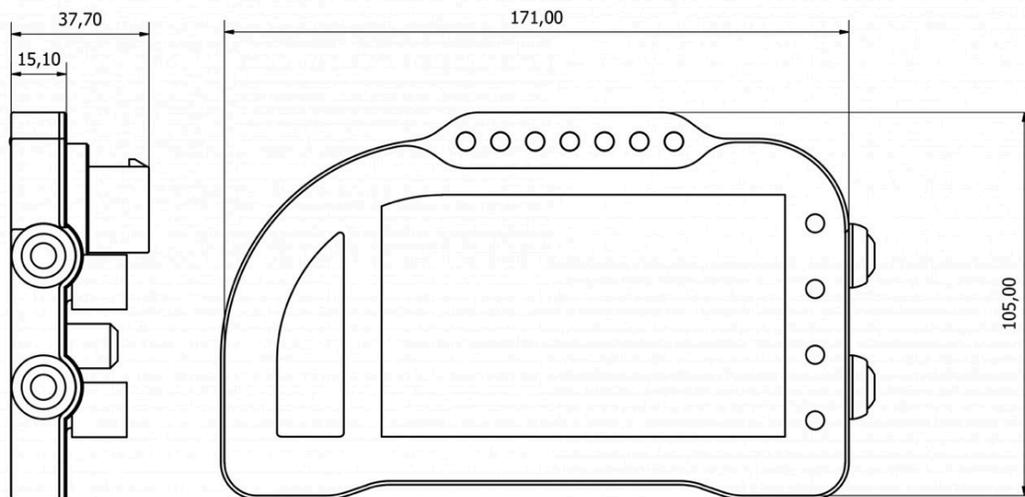
The Chrome PRO2 supports GPS position and speed via an external 10Hz sensor, in addition it implements RPM acquisition, front and/or rear wheel speed and supports 8 analogue external channels and 128 Can Bus channels, in addition to the acquisition of water temperature, oil and battery level and used gears. Chrome PRO2 data acquisition fits every need as it records up to 1GB of data, sampling up to 100Hz per channel. A user-friendly menu allows you to select the desired sessions, sorted by race circuit and date. The user can delete or transfer them to a USB stick, for PC analysis using the Danas software, thus drastically reducing download wait time.

The Chrome PRO2 has two distinct configurations, RACE1 and RACE2. Each can be adjusted and customized by the user whether to display tachometer, speed, temperature, both analog and digital channels, lap timing and best-lap and ideal-lap time etc. The users can also remove information from the display if their focus is on avoiding distractions while racing. It is also possible to create 4 fully customizable BOX pages. If Chrome PRO2 is in BOX mode, it will automatically switch to RACE mode as soon as a finish line is crossed, or speed goes over 10km/h; then it will automatically switch back to BOX mode at the end of the session.

Main Features

- 800 x 480 TFT color graphic display
- improved visibility, even in direct light
- 1GHz processor with 1GB RAM & 16GB internal memory
- Elegant aluminum case
- Fully customizable configurations with 2 RACE pages and 4 BOX pages
- Trajectory and GPS speed acquisition at 10Hz with 66 parallel channels
- Stopwatch function with 20 preset racing circuits, 500 laps per circuit
- Automatic circuit recognition, with 4 sectors
- Best-lap & ideal-lap calculation, historical and current date sessions data storage
- Simple and user-friendly interface
- 33 configurable high brightness alarms
- 8 analogs 10bit inputs (Max Freq. 100Hz)
- 128 Can Bus channels (Max Freq. 500Hz)
- 2 Independent speed Inputs
- 1 tachometer (RPM) Input
- Dedicated alarms for water temperature, fuel and oil levels
- Automatic gear in use indicator
- Fully customizable Can Bus
- Overall maximum sampling rate 65KHz
- Data Download on USB flash drive
- Customizable by Menu, Wi-Fi, USB key or cable
- Supports a switchgear or 2 buttons switch as a remote
- Dual CANBUS setup
- DDS (Danas Dynamic Setting) function
- Integrated lambda sensor controller
- Integrated access to Wi-Fi and Wi-Fi Access points
- Integrated Bluetooth BLE receiver for Polar H7 e H10 Hart Rate Sensors
- Data Download via Wi-Fi
- Video input
- 1GB internal Storage memory
- Shorts guards on sensors
- 2 operating hours
- Compact size:172mm x 106mm x 19mm
- Water resistant

Size



Before Installation

- Read the manual carefully before installing and using Chrome PRO2. A PDF copy of the latest user manual can be downloaded from the i2m.it page www.i2m.it.
- Always follow all the suggestions on installation of Chrome PRO2 provided in this user manual.

WARNING: The Chrome PRO2 unit is engineered and designed for race circuit use only, *the Chrome PRO2 is not approved for street use*. Some bikes operate their headlights and turn indicators by their OEM dashboard, these functions will not be available on the Chrome PRO2.

WARNING: The Chrome PRO2 uses state of the art GPS technology to ensure lap timing and data acquisition accuracy, therefore the GPS sensor must always receive a good signal. It is recommended to turn it on at least 2-3 minutes prior its use in order to give it time to synchronize with the GPS satellites. If you are about to race on a track pre-loaded on the library of your Chrome PRO2, it will load it automatically.

WARNING: in the years following the development, the manufacturers may have made electronic modifications that could compromise the correct functioning of some functions. Always check the correct operation of all functions before using the motorcycle.

What's Inside The Box

- Chrome PRO2 dashboard
- GPS 10 Hz receive
- Standard Wiring with GPS input, USB output, lambda plug
- Lambda sensor
- TPMS Antenna – 90 degree joint
- 2 TPMS sensors
- Concise reference guide
- I2M cloth



Installing Chrome PRO2

Chrome PRO2 is supplied with a dedicated main wiring harness allowing its connection to the supplied GPS sensor, to the motorcycle's 12V battery, to the lambda sensor and to the dedicated adaptor module for each bike model (not included).

First step is to connect the wiring to the motorcycle's battery +/- terminals directly, without removing the protection fuse.

Do not shorten nor modify the main wiring.

Plug Chrome PRO2 to the wiring with the dedicated plug.

On the wiring you can also find a USB connection (for Fat32 or ex-Fat formatted keys), the GPS plug and inputs connection for external switches.

USB keys must have a single partition, otherwise they cannot be used with Chrome PRO2. **BE CAREFUL** because some USB keys (for example SanDisk's) have a built in second partition by default, so those USB key cannot be used with Chrome PRO2 as they are.

Next step is to connect the main wiring to the plug & play adaptor dedicated to the different bike models. The new Chrome PRO2 plug & play adaptor already include Can Bus connection. Moreover, the main wiring includes also the plug for acquiring external channels.

With a the 'Sensor Connector Wiring' (optional, not included) it is possible to easy connect various other sensors plug & play. If you do not want to use the dedicated sensor wiring, sensors can be connected manually, following pin description later in this manual. Once connected, all input channels can be checked and tested by Chrome PRO2 page "Realtime Inputs View" (in "Inputs & Special Function" Menu). By long pressing the down button you can scroll the various pages in order to check battery, water and oil levels and all the additional channels. If you are not using our plug & play adaptor, and want to connect a sensor manually, please keep in mind that often bike signals require a pull-up resistor to 12V or a pull-down resistor to GND. For example, Neutral and Oil signals in most cases require a pull-up; a 2kOhm resistor is usually enough.

Chrome PRO2 must not be fixed to elements subject to vibration such as the structure or fairings and frames. Chrome PRO2 is equipped with its own anti-vibration rubber dampers (never to be removed!) and it is strongly suggested to use them also combined with Original Equipment Manufacturer dash mounts, to reduce vibration to the absolute minimum. For some bike models I2M sells customized frames that will fit Chrome PRO2 exactly on the original mounts.

DO NOT REMOVE THE RUBBER DAMPERS AND ENSURE THAT CHROME PRO2 UNIT IS NOT IN CONTACT WITH ANY PART OF THE MOTORCYCLE OTHER THAN THE RUBBER DAMPERS THEMSELVES AT ANY GIVEN TIME, NOT EVEN THE FAIRINGS AND NOT EVEN WITH A FOAM LAYER INTERPOSED.

Not following those mounting instruction and exposing Chrome PRO2 to vibrations can lead to malfunctioning, that are difficult to diagnose and identify even during repair.

Configuring Bike Model

Once done with the hardware installation, it is time to configure Bike model on your device ("Options" Menu). By choosing the bike model, all default parameters will also be loaded. On analog bikes (with no Can Bus) it will be often necessary to perform a manual gears calibration. Moreover, it is possible to customize as desired all the available alarms.

Installing GPS

GPS receiver must be set horizontally in order to receive best satellite signal and be exposed to sky as much as possible; avoid fixing it near metallic object that could shield satellite signal. Fix the receiver with 3M extra strong double-sided tape or equivalent so it is not too strictly fixed to the vibrating parts. **DO NOT USE RIGID OR METALLIC STRAPS TO FIX THE RECIVER.**

WARNING: The Chrome PRO2 high operating frequency might drastically reduce GPS receiver sensitivity, for this reason DO NOT FIX the receiver anywhere near or over the Chrome PRO2, and, if possible, avoid the steering plate too. The ideal fixing position is on the back in top position.

The receive could be also fixed inside the careening, horizontally, provided that this is not a carbon one or in a signal shielding material.

Chrome PRO2 Inputs

Chrome PRO2 has its own wiring that supply battery voltage and connects it to:

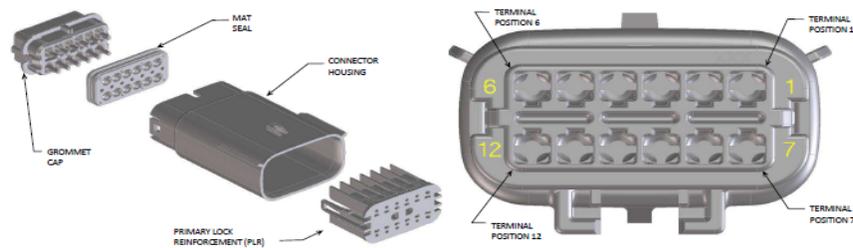
- Plug & play adaptor via Multilock a 12pin
- Lambda Sensor LSU 4.9 via dedicated wiring
- GPS receiver via JWPF connector 4 pin
- External buttons via JWPF connector 3 pin
- Data acquisition input via MX 150 connector series (COD. MOLEX 33482-1201) 12pin
- Webcam via Binder 768 connector (**99 3383 00 04**)

Plug & Play (Multilock 12pin):

1	White/Black	Olio
2	X	
3	X	
4	X	
5	Yellow/Red	Can High
6	Yellow/Black	Can Low
7	Yellow	Fuel
8	Green	Rpm
9	White	Rear Speed
10	Blu	Water Temp
11	Orange	12V under key
12	Grey	Neutral



Data acquisition connector (COD. MOLEX 33482-1201):



Cable side view:

- | | |
|----|-------------------|
| 1 | 12V out under key |
| 2 | X |
| 3 | Analog2 |
| 4 | Analog3 |
| 5 | Analog4 |
| 6 | GND |
| 7 | +5V out |
| 8 | Analog5 |
| 9 | Analog6 |
| 10 | X |
| 11 | X |
| 12 | Front Seed |

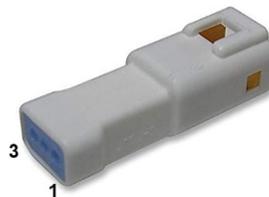
GPS Connector (JWPF 4 pin):

- | | |
|---|-----|
| 1 | +5V |
| 2 | GND |
| 3 | X |
| 4 | RX |



External Buttons Connector (JWPF 3 pin):

- | | |
|---|-------------|
| 1 | Down button |
| 2 | GND |
| 3 | Up button |



Beside the main connector there is a video connector. For video input there is a 4pin screw female connector **Binder 768 (99 3383 00 04)**. The connection is a standard USB protocol to which it is possible to connect a Logitech C270 webcam directly for recording video at 1280 x 720 resolution.

CAUTION: Not all webcams are compatible with Chrome PRO2, we strongly suggest using the Logitech C270 for recording purposes.

We sell a Binder/USB adaptor, or you can build your own:
Here you can find connector pin schema (rs-components code n°311-6013)
pin1 red
pin2 white
pin3 green
pin4 black

The Chrome PRO2 is fed with a dual power supply, one comes directly from the motorcycle's battery and another from the OEM wiring loom. **Chrome PRO2 does not draw current when turned off** from either one of the two power supplies. The direct power supply's main function is to ensure the unit always has enough power to close files correctly during shutdown. **DO NOT ALTER in any way power supply method on Chrome PRO2.**

Thanks to the "suspended mode" (check "Standby time after shutdown" in "Options" Menu), it is possible to send Chrome PRO2 to "sleep" instead of shutting it down; this mode (indicated by the right led flashing) allows a really rapid wake up to avoid any startup delay. Even if suspended, the Chrome PRO2 can still be shut down by holding the "DN" button until the LED above the gear indicator flashes, then the button can be released, and the unit will be completely off in a few seconds.

The Chrome PRO2 is designed to be versatile and can function even without connecting all inputs (i.e. GPS sensor etc.)

Chrome PRO2 has the following inputs:

- 8x analog Inputs
- 2x speed inputs
- 1x RPM input
- 1x water temperature input (with onscreen error indicator)
- 1x oil level input (with onscreen error indicator)
- 1x fuel level input (with onscreen error indicator)
- 1x battery input (with dedicated warning indicator, lit below 12.5V)
- 10x multiplexed channels at 1/10 of the sampling frequency
- 128 fully customizable Can Channels
- 5V output for additional analog sensors
- 12V output for additional digital sensors
- GPS channel
- Video input
- Lambda sensor Input
- RF Input for TPMS signals
- Wi-Fi (for Wi-Fi nets and Access Points)
- Bluetooth BLE for Polar H7 and H10 Hart Rate Sensors

WARNING:

The 5V and 12V outputs can only be used to power any additional sensor that is not directly powered by the motorcycle. DO NOT connect the 5V or 12V outputs to any power supplies or to sensors already powered by the motorcycle. This could create a short-circuit or short to the ground, thus damaging the outputs beyond repair.

8x Analog Inputs: (0-5V to 10 bit) are mainly used to monitor throttle position, brake pressure, potentiometers and tire temperature sensors etc.

1x RPM Input: This is a dedicated input for the motorcycles engine RPM readable by accessing the signal sent from the Central Unit the OEM dashboard. Be careful because the number of pulses for each round varies from motorcycle to motorcycle and therefore HAS TO BE CONFIGURED in the Chrome PRO2 proper menu. Chrome PRO2 can receive signals up to 20V. **This input is not used on bikes equipped with a Can Bus.**

2x Speed Inputs: These inputs can be connected to two distinct speed signals, for example from front and rear tire. Signals can be from inductive speed sensors or for the rear wheel can be from the original manufacturer sensor. This sensor counts pinion rounds but be careful because the number of pulses for each round can vary from motorcycle to motorcycle and therefore has to be configured in the Chrome PRO2 menu. **These inputs are not used on bikes equipped with a Can Bus.**

1 x Water Temperature Input: (0-5V) This input is used for water temperature. The Chrome PRO2 has been preconfigured for some standard sensors. 12V is the maximum voltage for this input. **This input is not used on bikes equipped with a Can Bus.**

1x Oil Level Input: (0-5V) This input is used as an alarm if the oil level is too low. The alarm level must be configured in the alarm's management menu. 12V is the maximum voltage for this input. **This input is not used on bikes equipped with a Can Bus.**

1x Fuel Level Input: (0-5V) This input is used as an alarm if the fuel level is too low. The alarm level must be configured in the alarm's management menu. 12V is the maximum voltage for this input. **This input is not used on bikes equipped with a Can Bus.**

Can Bus Channels: These channels are configured in the dedicated menu and directly read from the main Can Bus.

WARNING:

When the OEM dash is removed, as previously stated, some pull-up resistors may be removed too. These resistors play an integral part in reading sensors signals correctly (i.e. oil or fuel levels). If the I2M P&P sensor wiring is not used, it is necessary to check the signals as some pull-up resistors can be needed.

“UP” and “DN” Buttons to navigate Menus

Chrome PRO2 has two buttons on the side (those can be used in remote by plunging the proper connector)

To **scroll down** e list, use the lower “Down” button “**DN**”

To **scroll up** a list, use the upper “Up” button “**UP**”

To **enter a specific menu** item (one level down), hold some seconds “DN” button (“**LDN**” = Long Down, from now on). Use LDN also to modify a parameter.

To **exit a specific menu** (one level up), hold some seconds the “UP” button (“**LUP**” = Long Up, from now on). Use LUP also to exit parameter modification.

If pressed in the Main Screen you can use buttons to shortcut preferred functions. By default, UP will shortcut to “Lap Times View”, LUP will shortcut to “Potentiometers Zero” sensors configuration” and LDN to rapid Download.

To change this shortcuts configuration, navigate from the Main menu to sub menu “Display View / Options”

Editing Alphanumerical Values

As it will be described later, in Chrome PRO2 you can address each single input or track field by a name, or you can set specific values to some parameters, and, as previously mentioned, it is possible to change those names or numbers by updating them char by char: scroll the available characters using the “UP” and “DN” buttons, use “LDN” to jump to next character, and “LUP” to exit the selected item.

Main Screen



When the Chrome PRO2 unit is turned on, it will depict a similar main screen as shown below. The top left part of the screen will indicate **GPS connectivity**. Once the GPS is

connected a connection bar will appear in about 4“, showing GPS signal strength, if this icon bar fails to appear check the connection and ensure the sensor is properly connected. The GPS icon will appear in red color if the GPS is connected but still has a not valid satellite position. As soon as GPS signal is valid, the icon is black, and its strength is shown by a bar system.

When Chrome PRO2 is recording data a small icon “**REC**” will appear directly under the GPS icon. Similarly, a camera icon will report a video recording, and if the Wi-Fi is connected a “**Wi-Fi**” icon will appear just beneath, a red heart will appear if Polar heart rate sensor is sensed.

The main screen layout is completely configurable, both in RPM and in all the parameters shown. For example, in the upper right corner you can set speed or temperature... please refer to “Display View” Menu later in this manual.

I2M P&P Wiring kit

Connecting the P&P wiring kit is the best and easiest way to connect the Chrome PRO2 to the motorcycle. Simply connect the P&P wiring between the 12pin connector and the original dashboard connector then load the appropriate motorcycle make and model parameters and you are done. Please note that the new kits designed for Can Bus equipped bikes are not compatible with previous models, in fact new kits integrate Can Bus connectivity on the 12pin multilock.

Usually the kit board is enough, but a few bikes require additional connections depending on make and model:

- **Yamaha (R1<2015 and R6<2017):** The P&P wiring kit includes also a male/female connector to be connected in series with the original manufacturer speed sensor and a blue cable that has to be connected to the water temperature sensor. This sensor has two cables, one is connected to ground, for this reason it is advisable to use a multimeter (or similar apparatus) to verify which one is GND prior to connect the other with the blue cable.
- **Suzuki <2017/Ninja 400:** The P&P wiring kit includes also a blue cable to be connected to the water temperature sensor. This sensor has two cables, one is connected to ground, for this reason it is advisable to use a multimeter (or similar apparatus) to verify which one is GND prior to connect the other with the blue cable.

Loading Motorcycle Specific Settings

Once the hardware installation is complete, it is necessary to load software settings. Navigate from the main menu to “Options / Bike Model” and select the appropriate make and model from the list. If the motorcycle precise model is not present proceed by selecting simply the make i.e. “Yamaha” – all basic parameters will be configured anyway. If the bike has a Can Bus, always set 1-1 in pinion and crown teeth rate.

Acquired Channels

Depending on the motorcycle make and model the Chrome PRO2 is preconfigured to acquire a set of channels. Please refer to the channel list table at the end of this manual for more information.

Basic Configuration

Once the installation of the Chrome PRO2 is completed, the user can proceed with customizing the unit. The first step is to double check that Bike Specific Settings have been loaded as described in the previous paragraph. Then it is time to set inputs on data acquisition connector (if used). For a complete input configuration please refer to next paragraph; as first step, you need to set all channels name (“Inputs & Special Functions / Configure Inputs / Configure Channels manually) and set their maximum and minimum values, choosing manual or automatic mode; refer to the dedicated paragraph later in this manual)

Then it’s time to choose what to display on the main screen both in RACE and in BOX mode by accessing “Display View” Menu.

Last step is to configure all LEDs by accessing the “Alarms” Menu. The user can configure each LED (including fuel, oil, water and battery). To configure the upper LED row as “RPM LEDs” simply select “Configure RPM alarms” and Chrome PRO2 will automatically configure the 7x LED’s to illuminate through the whole RPM selected range.

It is recommended to:

- Configure the RPM range desired for LED in “Display View” Menu
- Navigate then to the “Alarms” Menu and choose “Configure RPM alarms”
- Go back to “Display View” Menu and re-set RPM range as desired to be shown on dashboard display

On the “Alarms” menu it is also possible to set engine limiter overrun alarm by activating the “Overrun Flashing” function. All LEDs will be flashing when the RPM limit of the last LED will be exceeded. So, to configure it simply modify the RPM threshold of the last LED.

Gear Indicator

To configure the gear indicator on your Chrome PRO2 (on motorbikes not equipped with a Can Bus) follow this simple procedure:

- Ensure the speed and RPM inputs have been configured (check that RPM e speed are shown correctly)
- Go to the “Video & Data Acquisition” Menu and set the following parameters: Recording=ACTIVE, Sampling Frequency=100Hz, Lower Speed=20km/h, Autostart Channel=SPD1
- Delete all previous acquired files

- Now start the motorbike, change gears from N,1,2,3,4,5,6 maintaining each for at least 20sec (ensuring that the REC icon is always active)
- At the end stop immediately the rear wheel to avoid acquiring wrong rounds/speed ratios being the clutch in use.
- Kill the bike ignition and navigate menus to “Inputs & Special Functions / Configure Inputs/ Calculate Gears”
- Once done, you can re-set data acquisition parameters as preferred

Adding a New Circuit

There are different ways for adding new circuits to the Chrome PRO2:

- 1) Update the whole library (20 racetrack) by Danas
- 2) Modify an existing circuit directly on the track field
- 3) By the Chrome PRO2 Menu “Chronometer / Circuit Library” switch a loaded track with another one available in the library

Update the whole library by Danas

To update the library, open Danas, navigate to “Online/Configure Chrome Circuits”. Select 20 racetracks from the list on the left and add them by the “+” button. Create the file by the arrow button, then move it on an empty USB key (FAT or ex-FAT). Plug in the USB key to Chrome PRO2 and import the library file by the dedicated item “Chronometer / Export & Import / Import Circuits from USB”

WARNING: The selected racetracks must be exactly 20 in total

Modify an existing circuit directly on the track field

Please follow the following steps:

- In the Chrome PRO2 menu select “Chronometer / Select Circuit” to open the circuit list, then select a FREE circuit or one that can be replaced.
- Proceed to navigate to “Chronometer/Circuit Details/Update Name” to add/change the circuit name
- manually select the finish line position by pressing a button in the desired place (choose UPDATE). Alternatively, select the “AUTO” function for an automatic configuration.
- When the “AUTO” function is selected, the system will automatically set the finish line position where the motorcycle exceeds a 150km/h thus starting the lap timer at that point. (the function is deleted by turning of the bike)
- Once the session is finished, the user can move the finish line and/or split positions on the “MAP” (all lap times will be recorded)

Library Management

Besides the list of 20 active track fields, Chrome PRO2 manages also a complete library, a list that keeps expanding of worldwide track fields. By the “Circuit Library” menu, it is possible to change each one of the 20 stored tracks. You simply need to choose the one you want to change, then switch it with one in the library (pre-loaded). The library itself can be expanded by importing it from a USB key containing the updated newer file, download the latest version directly from the download area of our website www.i2m.it.

PC connection via USB Cable

Chrome PRO2 can be connected to a PC by a dedicated USB cable. Once connected use Danas setting configuration function (the same used for configuring via **Wi-Fi**). **WARNING!! the dedicated cable is NOT a simple USB cable, but joins two crossed FTDI connectors, using a wrong cable can seriously damage both Chrome PRO2 and you PC!!**

Exit Standby Mode and Shutdown

If the standby delay has been configured, the Chrome PRO2 instead of shutting down, will turn off the display and some peripherals in order to reduce power consumption, going to sleep (the corner led will flash). This will minimize turn on delay. If left in standby, the Chrome PRO2 unit will automatically shut down after the set time. If the user would like to turn off the unit in advance, follow these steps:

- Turn off the Chrome PRO2
- Wait until the LED in the bottom right corner flashes
- Press the DN button until the red LED (the one above the gear indicator) illuminates
- Release the DN button
- After 2-3 seconds the upper white LEDs will all flash, this indicates that the Chrome PRO2 has successfully shut down

Software & Firmware Updates

Prior to updating any software and/or firmware on the Chrome PRO2 unit, verify if it is really required:

- Go to the menu “Options” and check the currently installed versions
- Compare them to the latest version available on the I2M website

If an update is required, please do as follows:

- Have at hand an empty USB flash drive (FAT, FAT32 or ex-FAT)
- If you need to update both software and firmware you need to do one at a time, always on an empty key (do this procedure twice)
- Download the required firmware or software version from the I2M download website
- Extract the ZIP files to the USB flash drive
- Connect the USB flash drive to the Chrome PRO2
- Navigate to “Options” Menu
- Choose “Upgrade Software/Firmware from USB key”
- Wait until the upgrade is over: DO NOT turn off power supply or the Chrome PRO2 could be seriously damaged

- Set the “Standby Time After Shut Down” to 0 hours (if otherwise set) in the same “Options” menu
- Shut down the Chrome PRO2 completely
- Restart Chrome PRO2, then navigate to the “Options” menu to verify if the update was successful (the firmware and software versions should reflect the update versions)

WARNING: this is a delicate procedure. A momentarily or complete power supply loss will damage your Chrome PRO2 and it will be necessary to send it to customer support for repairing

1. Chrome PRO2 Menu

From the main screen, press the DN button to open the Chrome PRO2 main menu. This menu includes the main system functions: Chronometer, Display View, Video & Data Acquisition, Counters, Inputs & Special Functions, Alarms, Wi-Fi & Bluetooth Connection and Options.

To select a sub menu item press LDN or press LUP to return to the main screen.

2. Chronometer

The Chrome PRO2 includes a GPS chronometer with a resolution of 1/100s, based on a 10Hz MTK GPS processor with 66x parallel channels. During startup, once the GPS signal is valid, the system identifies where it is located among the 20x stored circuits then proceeds in identifying coordinates for the finish line of the identified race circuit. If the coordinates don't match with any of the stored circuits, the message "Circuit Not Found" will appear on the startup screen.

WARNING: The circuit identification is only done during the startup. If the unit is turned on before reaching the race circuit, the user needs to restart, or manually set the desired circuit.

Thanks to the "Chronometer" menu it is possible to View the lap times, delete them and configure all the chronometer options. As in the other menus, press the LDN to enter the submenu, or press the LUP to return to the previous menu.

3. View Lap Times

It is possible to display the stored lap times in the "Chronometer / View Lap Times" menu by pressing the LDN button or as a shortcut directly from the main screen by the UP button. All the lap times recorded for the selected circuit are shown in this page (if no circuit is selected a blank screen appears). Lap times are automatically divided in sessions and each session lists the date and the starting time of the session itself. The displayed lap times are divided into three columns, corresponding to the three split sectors of each lap, and for each lap the best speed is reported. The all-time best lap and ideal time for the current circuit are shown in the lower part of the screen.

ATTENTION: If the position of the splits has been changed for the circuit, the split times already recorded will still be relative to the old split positions.

ATTENTION: The best and ideal lap displayed in the lower part of the screen refer to the selected circuit and not strictly correlated to those shown. In fact, as it will be detailed in the next section about deleting times, it is possible to delete lap times keeping the best and ideal lap, or, vice versa, keep all lap times but delete last and best. In both cases, there will be no direct correspondence between the all-time best lap and the best lap in the list.

4. Delete Lap Times

The “Chronometer / Delete Lap Times” menu allows to select which information has to be delete. It is possible to delete only the best time relative to the selected circuit, or the entire lap time list, the ideal time or all the lap times stored in the memory. Use LDN button to select an option, then follow the instructions on the screen to confirm the deletion.

5. Select a Circuit

The “Chronometer / Select Circuit” menu shows the list of the loaded circuit. Chrome PRO2 can store up to 20 different circuits. For each one the best lap, the number of stored laps and the higher speed are shown. Thanks to the automatic identification of the circuit, Chrome PRO2 recognizes the circuit where it is located. Using this menu, it is also possible to choose a different circuit. Press the UP and DN buttons to scroll through the circuits, LDN button to select the circuit, LUP to return to the previous menu.

6. Circuit Details

In the “Chronometer / Circuit Details” menu all information about the loaded circuit is reported. In this menu the number of stored laps, best and ideal lap times and highest speed are shown. The map, which is automatically generated by the system, is displayed on the left part of the screen. If there is no corresponding map stored in the memory, Chrome PRO2 starts to draw the map the first time the finish line is crossed, and it stops when the finish line is crossed again. At least an entire lap must be completed, otherwise the map will not be saved. It is possible to remove the auto generated maps selecting the “Remove map” function.

The configurable parameters for the circuit are shown in the lower part of the screen. The name of the circuit can be changed using the first line: this option makes possible to modify each letter of the name. Use LDN button to jump to next character, press the UP and DN buttons to scroll through the letters and LUP button to exit. The finish line and splits can be set by using the subsequent lines.

It is possible to set the finish line manually (in this case the finish line has to be crossed while moving) or, if the map is available, to set the finish line or the splits by choosing the desired position on the map. Move the cursor, through the map, using the UP and DN buttons until the desired position. The ‘Auto’ option, on the other end, automatically sets the finish line when speed reaches the 150 Km/h limit. The first split can be set only if the finish line has already been set. Similarly, the second split can be set only if the first is.

The option Not Available will remove the stored position.

WARNING: do not use space or special characters in circuit names, this could cause malfunctioning during data or video saving.

7. Daily Details

The “Chronometer / Daily details” menu summarizes the current day performance. Therefore, it is possible to analyze the number of performed laps, the highest speed, the best and ideal laps and the spread between the latter and the all-time best and ideal laps.

8. Export & Import

Thanks to this menu (“Chronometer / Export & Import”) it is possible to manage the downloading/uploading of collected data during the chronometer functions. It is possible to download the stored circuits by using a USB flash drive in order to save the new finish line in a file compatible with Danas. Similarly, it is possible to load a circuit list library by using a USB flash drive, replacing the circuits stored in Chrome PRO2. The file must be generated by selecting the proper option in the Danas software and then transferred using a USB flash drive.

Choosing “Export LapTimes to USB” function, a txt files generated, including the total and split lap times and the highest speeds, all organized in sessions. This file can be opened in any Text editor or Excel; do NOT use it with Danas (this program requires only proper data acquisition files)

9. Circuit Library

Besides the list of 20 loaded track fields, Chrome PRO2 manages also a complete library, a list that keeps expanding of worldwide track fields. By the “Chronometer / Circuit Library” menu, it is possible to change each one of the 20 stored tracks. You simply need to choose the one you want to change (Circuit to modify), then switch it with one (New Circuit) in the library. Obviously, you need to have pre-loaded a library. The library itself can be expanded by importing it from a USB key containing the updated newer file, download the latest version directly from the download area of our website www.i2m.it.

10. ChromeLaps

“Chronometer / ChromeLaps” Menu allows to connect the Chrome PRO2 directly to our website <http://chromelaps.i2m.it/en>. You can choose, by the dedicated feature, if the connection is to be enabled or not. Chrome PRO2 must be connected to a Wi-Fi or an Internet hotspot. You need to register to the website and then use the login to access. The “Public Data” feature is used to choose if you allow your data to be (or not) visible on the public website area.

11. Display View

Thanks to this menu it is possible to set the items displayed in the main screen. Chrome PRO2 has two different configurations: “BOX” and “RACE”. For both configurations it is possible to choose several parameters that the system will store in memory. If the system is in “BOX” mode, Chrome PRO2 will automatically switch to “RACE” mode, then it will

automatically switch back to BOX mode at the end of the session. The switch can be triggered by the finish line crossing (“Display View / Options / Auto page change / Finish” mode) or by speed going over 10km/h (“Vel1” mode). You can also choose “OFF”, no switch: in this case there will not be any automatic switch and you can trigger the switch manually by pressing the configured button - if any (Use this same “Display View / Options” Menu to customize UP, DN, LDN behavior when in the Main Screen). Choose the mode you want to customize in the first line and all the possible options will be displayed in the subsequent lines.

In each BOX page it is possible to choose to view up to 12 channels. In RACE pages you can choose what to view in the upper right corner: rear wheel speed or GPS speed or water temperature. Speed can be visualized in Km/h or in mph. The RPM option is used to set the full-scale range and the minimum value of the tachometer, these two values are independently configurable to adapt Chrome PRO2 to different motorcycles or simply to personalize the displayed information. The background color option allows to choose from the different background available: standard, red, green, white, carbon, analog and tech.

The function ‘Options’, as previously mentioned, allows to set buttons functions and shortcuts from the Main screen. Among the available options here you can choose to use UP, LUP or LDN to trigger page switch or other useful pages. You can also choose to show real-time video for framing purposes or for using Chrome PRO2 dashboard as a rearview mirror (see next).

In the Options you can choose decimal places for each channel.

With sub menu ‘Configure SMS receiver’ you can and activate X2 messages (WSS championship) and the Message System.

The last four rows on RACE page identify the four positions on the Chrome PRO2 main screen: by selecting one of them, the corresponding position on the screen will be highlighted, this way it is possible to choose what has to be displayed in each position. Moreover, each position can also be left empty, in order to simplify the screen. Keep in mind that water temperature (and its symbol) can be set only on the first position.

12. Video & Data Acquisition

Chrome PRO2 features a data acquisition with a sampling rate up to 100 Hz per analog channel and up to 500Hz per Can Bus channels. Using the “Video & Data acquisition” menu it is possible to enable the recording. The second line shows the occupied memory (in %). In the next line it is possible to set the sampling rate. We strongly suggest not to use rates higher than 20Hz if not strictly needed, in order to have an easier download and analysis of the acquired data.

The next two options allow to choose when the system must start the recording. Use the ‘Auto-start channel’ to choose between the rear wheel speed or the GPS speed or the RPM as the trigger channel. Speed will trigger recording when higher than ‘Lower Speed’

while RPM will trigger recording when higher than 900/min. Moreover, it is here possible to set a customized name for File Prefix (typically the Pilot name).

Be careful not to use space or special characters in names, this could cause malfunctioning during data or video saving.

Using the 'Download' function it is possible to save the data on a USB flash drive or to erase the memory (see next)

13. Download

The "Video & Data Acquisition / Download" menu shows all the files stored in the Chrome PRO2 memory. Files are arranged by date and circuit. The date, the name of the circuit (if it can be identified by Chrome PRO2) and the file size are reported in the table, so that it is possible to choose which files must be downloaded or deleted.

By pressing LDN button, it is possible to select a file that will appear next to the "selected file" message. A specific menu can be opened by pressing again LDN: through this menu it is possible to save the file in a USB flash drive or to delete it or save or delete all the files.

Downloaded files can be opened and analyzed with Danas, moreover, in the same folder a specific file will be saved to store all the settings. For further information, please refer to the Danas user manual.

Chrome PRO2 creates a different file for each single session. It is possible to choose if you want to view and download files one by one or grouped.

14. Video Acquisition & Download

In this menu ("Video & Data Acquisition / Video Acquisition & Download") you can enable video recording on Chrome PRO2. Video is recorded through the USB plug on the back (but it is possible to use also the USB plug dedicated to data download). Like data acquisition, video acquisition can be activated or deactivated, used memory and the estimated remaining recording time at current resolution is shown.

If video recording is not active you can show the real-time view of the camera on the display, by the shortcut in the main screen - if set - or by using the 'Show Video' function. This can be useful for framing purposes to correctly shoot what desired or, as previously mentioned, you can use Chrome PRO2 as a rearview mirror, in this case you can also activate 'Mirrored View'

'Download' function is to download your videos or to delete them.

A camera icon appears below the GPS icon when a recording is ongoing.

15. Wi-Fi & Bluetooth connection

Chrome PRO2 allows a Wi-Fi connection towards an existing net and can also create an Access Point. You can set up your Access Point with a name and login password, but the Access Point can be enabled only if the Wi-Fi function is on ("Wi-Fi & Bluetooth connection / Configure Wi-Fi / Connection"). In order to connect to an existing net, set net

name and password or choose among the available ones with the dedicated function 'Show available wi-fi nets. Wi-Fi will be automatically disconnected as soon as the engine is started (the Wi-Fi label below GPS icon would show the connection). It is also possible to use this Wi-Fi connection to download data by the appropriate Danas function (in the online menu) if the PC is connected to the same Wi-Fi.

This Menu manages also Chrome PRO2 Bluetooth connection ("Wi-Fi & Bluetooth connection / Configure. Bluetooth heart sensor"). Here you can activate or deactivate Bluetooth, scan for devices, and choose among the list of available devices. Polar H7 and H10 heart rate monitor are fully compatible with Chrome PRO2.

16. Counters

Chrome PRO2 features three different counters for total travelled distance, a counter for empty tank, two counters for times of engine and a counter for total laps performed. All counters can be reset. Choose a counter and press LDN button to erase its value.

17. Inputs & Special Functions

By this menu it is possible to configure all the Chrome PRO2 inputs. Use "Inputs & Special Functions / Configure inputs" to access a detailed sb-menu for each different input type. Entering the page of the "Inputs & Special Functions / Real Time inputs view", instead, it is possible to check every input value, so to check that all parameters are correctly set. Then you can switch to the next page by LDN button. In this second page you can check also absolute values for oil and fuel inputs. The latter input can be used to display the variation of fuel level signal when the content in the fuel tank varies. In this menu you can also access carburation an DDS functions.

18. Configure Inputs Manually

By the "Inputs & Special Functions / Configure inputs / Configure channels manually" Menu it is possible to configure different settings. Using this menu, it is possible to configure analog and digital inputs manually. Select 'Digital input' to scroll through RPM, SPD1 and SPD2. To set "RPM" it is enough to know the number of pulses; that represents the number of signals the sensor receives for each engine crankshaft round. Usually this number is equal to 1 (e.g. for Suzuki's) or 2 (e.g. for Yamaha's). For Ducati 1098 or 1198, this number should be set to 24 because it comes from the pick-up sensor.

The speeds channel requires the number of pulses too. Like RPMs, this number identifies the number of pulses read by the sensor for each wheel or pinion revolution, according to the sensor position. If the sensor is placed on the wheel, this number must be set equal to 1 and both crown gear teeth number and pinion teeth number must be set to 1. Otherwise, if the sensor is placed on the pinion (or inside the gearbox) it will be necessary to set the correct number of teeth of both crown gear and pinion, to obtain the correct speed. For both speeds, then, the wheel circumference must be set.

"SPD1" must be set on the rear wheel to read the correct gears.

All those settings are true only for analog motorbike. If your bike has a Can Bus DO NOT CHANGE ANY OF THIS SETTINGS.

Use the option "analog input" to select one of the 8 analog inputs. For each input it is possible to choose the name (scrolling and selecting character by character), and the minimum and maximum value. The minimum value is the one shown on the display when the input is equal to 0V. The maximum value is the one shown when the input is equal to 5V.

19. Configure Inputs Automatically

Thanks to this menu ("Inputs & Special Functions / Configure inputs / Automatic Configure analogs") it is possible to configure all the typical motorcycle sensors, in a very easy way. Use the first line to select the analog channel that has to be configured, use the second line to choose the sensor type, for example a linear potentiometer, a pressure sensor, a Throttle Position Sensor etc. Starting the calibration function, the system will guide you in the process step by step. As an example, for the TPS calibration, the system will ask to close the throttle and confirm, then to open it and confirm.

Fuel warning setting threshold

It is possible to configure oil and fuel warning lights. In both cases, the system will ask for two distinct measurements, for example considering the fuel level, in reserve and full tank. The software will then identify the threshold as the central value between these two values. In the case of fuel, it is recommended to use instead two measurements in conditions near to the reserve to set a precise value for the threshold. As an example, choose as the first measurement a condition in which your tank has a liter less the original threshold and the original warning light was still on. Then, add two liters and make the second measurement. In this way, the central value between the measurements will be exactly the correct reserve level threshold. This method is even more important on bikes that have a non-linear fuel level sensor. Alternatively, you can set the value manually; go to the real-time inputs menu and check the signal as it varies when adding fuel to the tank, then choose the desired value.

20. Configure TPMS Sensors

This menu ("Inputs & Special Functions / Configure inputs / Configure TPMS Sensors") is for configuring TPMS sensors. You need to insert the ID code for each sensor, you can find the correct ID on the sensor sticker. It is possible to pre-configure up to for front sensors and up to four rear sensors. For each sensor you can display pressure, temperature and battery charge (a charge over 95% is to be considered a full charge). Be reminded that a TPMS sensor will activate for 2 hours only after the wheel has made a full round. To install a TPMS sensor please refer to the dedicated manual downloadable from our website.

21. Configure CAN BUS Inputs

This menu ("Inputs & Special Functions / Configure inputs / Configure inputs & Can Bus") is for the hardware settings for each one of the inputs. First chose Can Bus baud rate; then for rpm, front speed, rear speed, water and oil temperature, gears and fuel you can choose if signals must be acquired as bike default by Can Bus, or by their dedicated input. Then you can configure each of the 128 Can Bus inputs. For each input you can choose to leave the default bike setting or you can set the input on a dedicated analog input or to set a specific CAN value. Choose the Channel Name and sampling Frequency. In case of Can Value, you need to set the Sentence Address from which the system will read the 2 bytes value (**IN DECIMAL MODE**) and set the multiplying factor and the 16-bit mask. Here you can also set the gain and the offset for conversion.

22 Configure parametric sensors

All Chrome PRO2 inputs are linear 0-5V inputs. In some cases, for example when using NTC sensors, it is desirable to have nonlinear inputs. In this menu ("Inputs & Special Functions / Configure inputs / Configure Parametric sensors") you can configure 4 different types of parametric sensors, to be applied to each input by manual configurations. Sensor setup is done by defining its diagram points and adjusting curve value point by point, the corresponding graph is drawn on the display.

23. Carburation analysis

By this menu ("Inputs & Special Functions / Analyze Carburetion") the carburation analysis can be enabled. Firstly, choose which channel is connected to the TPS and which to the Lambda probe. Please note: both channels must be already configured, the TPS must be set between 0 and 100 with the throttle respectively closed and open, and the Lambda probe must show the correct stoichiometric ratio or lambda value (by appropriately configuring the minimum and maximum values of the chosen channel).

It is then necessary to start analyzing. The analysis will be active as long as the equipment stays on. **At every shutdown data will be erased.** The collected data can be analyzed directly in the special screen "View Results Table" on the Chrome PRO2 or can be exported and analyzed on a PC. Analyzing directly on Chrome PRO2 will give you an idea of the carburetion but can be sullied by bike noises such as engine out of scale, changing gears ore decelerations. To have a more precise analysis we suggest using the dedicated function on DANAS.

By this menu it is possible to choose if analog5 channel is used as a regular input or as a signal for the internal lambda controller.

24. Configure DDS

Chrome PRO2 features the new DDS (Danas Dynamic System). The system could change some parameters such as maps and TC levels corner by corner along the track. The configuration file is created in Danas with the dedicated DDS menu and then must be transferred to the Chrome PRO2 (please refer to DANAS manual). Then, when this

feature is activated ("Inputs & Special Functions /Configure DDS"), Chrome PRO2 will set all the parameters depending on your position on the track. Position is calculated by the travelled distance after the finish line is crossed (it is reset by entering the menu or when activating the launch control). This feature is currently available only on ZX10R >=2016 and R1 15-19 (only in Map 'D').

25. Alarms

Using the "Alarms" menu it is possible to set the behavior of each Chrome PRO2 LED. You can choose LED brightness among three different levels: LOW, MEDIUM and HIGH. Use the "brightness test" function to check the chosen intensity. As previously mentioned, **the "Configure RPM" mode automatically sets the upper LEDs: the system will split the "RPM" set range in equal parts to light up each single LED.** The upper LEDs will be turned on when the RPMs rise, one by one, and will be completely powered on when the RPMs reach the maximum. Anyway, the threshold of each LED is still configurable. Instead, choosing the "single LED RPM" function, only one LED will be on at a time. For a low number of RPM, the left LED will be on, then increasing RPS the light will move to the next LED, and then it will move on the right step by step when the RPMs increase. Setting the "Overrun flashing" function all the LEDs set as RPM will start flashing when the higher threshold is exceeded, this function can so be used as an overrun or gear alarm.

Use the configuration lines on the lower half of the screen to set the alarms for each LED (if "RPM" mode is selected the upper LEDs cannot be selected). The 'LED alarm' line allows to choose the LED to be coupled with a specific alarm, and its position will be highlighted on the screen. The 'Channel' identifies the analog or digital channel to be coupled with that alarm LED. The 'Turn on direction' sets if the LED has to be turned on when the channel value is GREATER or LOWER than the 'Threshold' value. Using the "AUTO" function the system will guide the user on how to configure the threshold. If the chosen channel is a tire temperature sensor it is possible to set the "Tyre temperature" option in the "turn on direction" so that the threshold can be directly shown in degrees. In this case, if the temperature is **lower** than the set degree value the LED will turn on. On the 'channel' line you can view not only real LEDs but also warning lights on display for fuel, water, oil and battery so you can set your preferences in setups.

26. Options

The "Options" menu shows general information about the system. It is possible to check the installed firmware version, to choose the language, to choose the display brightness and the time zone.

In this page it is possible to check bike model. For some, for example BMW S1000RR, the model will always be visible, for others, for example R1 (<2015) ed R6 (<2017), you'll only see the make Yamaha, because all different models differ only by some minor settings that are loaded once and the customizable by the user.

As previously explained, attention must be paid to the "standby time after shutdown" option. The system requires about 15-20 seconds to complete the power-on. This time

can be reduced by sending Chrome PRO2 in standby mode instead of turning it off, this way Chrome PRO2 recovers from standby in no time. Here you can choose the delay after which Chrome PRO2 shuts down automatically when left in standby, in order to preserve the battery charge.

The “Finish detection” option allows Chrome PRO2 to sense the finish line via an external transponder signal, the appropriate interface must be connected.

QUICK GUIDE

WARNING: When on a racetrack and using Chrome PRO2, always wait until it has a strong GPS signal (3 or 4 bars at least) to ensure a perfect timing.

Using Buttons to access menus

Chrome PRO2 has two buttons on the side (those can be used in remote by plunging the proper connector)

To **scroll down** the list, use the lower “Down” button “**DN**”

To **scroll up** a list, use the upper “Up” button “**UP**”

To **enter a specific menu** item (one level down), hold some seconds “DN” button (“**LDN**” = Long Down, from now on). Use LDN also to modify a parameter.

To **exit a specific menu** (one level up), hold some seconds the “UP” button (“**LUP**” = Long Up, from now on). Use LUP also to exit parameter modification.

If pressed in the Main Screen you can use buttons to shortcut preferred functions. By default, UP will shortcut to “Lap Times View”, LUP will shortcut to “TPMS sensors configuration” and LDN is used to change pages.

Add a new Circuit

If you need to a new circuit once on the track field, follow the following steps:

- In the Chrome PRO2 menu select “Chronometer / Select Circuit” to open the circuit list, then select a FREE circuit or one that can be replaced.
- Proceed to navigate to “Chronometer/Circuit Details/Update Name” to add/change the circuit name
- manually select the finish line position by pressing a button in the desired place (choose UPDATE). Alternatively, select the “AUTO” function for an automatic configuration.
- When the “AUTO” function is selected, the system will automatically set the finish line position where the motorcycle exceeds a 150km/h thus starting the lap timer at that point. (the function is deleted by turning of the bike)
- Once the session is finished, the user can move the finish line and/or split positions on the “MAP” (all lap times will be recorded)

Update Splits

To add/move/remove splits to an existing racetrack:

- Load the desired circuit
- Check if the map is correctly assigned to the circuit (“Chronometer/Circuit Details”). If not, delete it and re-draw by travelling a full round (two finish line crossings)
- Use “Chronometer/Circuit Details/Add-Update Split” menu, choose ‘Map’, and then move each split on the map in the desired position (splits order must be kept)

Standby mode and Shut down

If the standby delay has been configured (in Options menu), the Chrome PRO2 instead of shutting down, will turn off the display and some peripherals in order to reduce power consumption, going to sleep (the corner led will flash). This will minimize turn on delay. If left in standby, the Chrome PRO2 unit will automatically shut down after the set time. If the user would like to shut down the unit in advance, follow these steps:

- Turn off the Chrome PRO2
- Wait until the LED in the bottom right corner flashes
- Press the DN button until the red LED (the one above the gear indicator) illuminates
- Release the DN button
- After 2-3 seconds the upper white LEDs will all flash, this indicates that the Chrome PRO2 has successfully shut down

Assigned Channels

Bike	No Can-Bus	Zx10R 11	ZX10R 11 Race	ZX10R 16-19	ZX636	898/1198	1199/899	V4	BMW S1000RR	BMW Hp4	BMW 15-18
Gps Speed	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok
Rpm	Ext	CAN	CAN	CAN	CAN	CAN	CAN	CAN	CAN	CAN	CAN
Rear speed	Ext	CAN	CAN	CAN	CAN	CAN	CAN	CAN	CAN	CAN	CAN
Front speed	Ext	Ext	CAN	CAN	CAN	EXT	CAN	CAN	CAN	CAN	CAN
Analog1	Ext	TPS	TPS	TPS	TPS	TPS	TPS	APS	TPS	TPS	TPS
Analog2	Ext	Ext	Ext	Ext	Ext	Ext	Ext	Ext	Ext	Fork	Ext
Analog3	Ext	Ext	Ext	Ext	Ext	Ext	Ext	Ext	Ext	Shock	Ext
Analog4	Ext	Ext	Ext	Ext	Ext	Ext	Ext	Ext	Ext	Ext	Ext
Analog5	Ext	Ext	Ext	Ext	Ext	Ext	Ext	Ext	Ext	Ext	Ext
Analog6	Ext	Ext	Ext	Ext	Ext	Ext	Ext	Ext	Ext	Ext	Ext
Analog7	Ext	Ext	Ext	APS	Ext	Ext	Ext	TPS H	DctTot	DtcSpn	Ext
Analog8	Ext	TC	TC	TC-Wheelie	TC	Ext	TC	TPS V	DctSpn	DtcTot	DctTot
EXT1	Ext	Ext	Ext	Ext	Ext	Ext	Ext	Torque S	Ext	Ext	Ext
EXT2	Ext	Ext	Ext	Ext	Ext	Ext	Ext	Torque F	Ext	Ext	Ext
EXT3	Ext	Ext	Ext	Ext	Ext	Ext	Ext	Lean Angle	Ext	Ext	Ext
EXT4	Ext	Ext	Ext	Ext	Ext	Ext	Ext	Pitch Angle	Ext	Ext	Ext
Multi1	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water
Multi2	Oil	Oil	Oil	set-01	Oil	Oil	Oil	Oil	Oil	Oil	Oil
Multi3	Battery	Battery	Battery	Battery	Battery	Battery	Battery	Battery	Battery	Battery	Battery
Multi4	---	Air Temp	Air Temp	Air Temp	Air Temp	Air Temp	Air Temp	Air Temp	Air Temp	Air Temp	Air Temp
Multi5	---	TC Level	TC Level	Power/SKTRC	---	TC level	TC Level	TC level	---	TC Level	TC Level
Multi6	---	Map	Map	KQS Sens	Map	Map	Map	Map	Map	Map	Map
Multi7	---	Gear	Gear	Gear	Gear	---	Gear	Gear	Gear	Gear	Gear
Multi8	---	---	Pit Limiter	KEBC	---	---	---	DWC Level	Lean Angle	Lean Angle	Lean Angle
Multi9	---	---	---	Lean Angle	Lean Angle	---	TPS1	DSC Level	APS	APS	APS
Multi10	---	---	---	Wheelie angle	Wheelie angle	---	TPS2	ABC/EBC	---	---	---

Bike	Rsv4	F3 675	F3 MEK	CBR SP 17-19	R1 2015-19	R6 17-18	R6 MEK	R3 17-18	GSXR 1000 17-19
Gps Speed	ok	ok	ok	ok	ok	ok	ok	ok	ok
Rpm	CAN	CAN	CAN	CAN	CAN	CAN	CAN	CAN	CAN
Rear speed	CAN	CAN	CAN	CAN	CAN	CAN	CAN	CAN	Ext
Front speed	CAN	CAN	CAN	CAN	CAN	CAN	CAN	Ext	CAN
Analog1	TPS	TPS	TPS	TPS	TPS	TPS	TPS	Ext	Ext
Analog2	Ext	Ext	Ext	Ext	Ext	Ext	Fork	Ext	Ext
Analog3	Ext	Ext	Ext	Ext	Ext	Ext	Shock	Ext	Ext
Analog4	Ext	Ext	Ext	Ext	Ext	Ext	Brake F	Ext	Ext
Analog5	Ext	Ext	Lambda	Ext	Ext	Ext	Lambda	Ext	Ext
Analog6	Ext	Ext	Ext	Ext	Ext	Ext	Brake R.	Ext	Ext
Analog7	Ext	Ext	Demand	APS	APS	APS	APS	Ext	Ext
Analog8	Ext	APS	Load cell	TC	TC	TC	OPS	Ext	Ext
EXT1	Ext	Ext	MKL1 Temp	Ext	Ext	Ext	FPS	Ext	Ext
EXT2	Ext	Ext	Ext	Ext	Ext	Ext	Load cell.	Ext	Ext
EXT3	Ext	Ext	MKL1 Temp	Ext	Ext	Ext	FPS	Ext	Ext
EXT4	Ext	Ext	Ext	Ext	Ext	Ext	Load cell.	Ext	Ext
Multi1	Water	Water	Water	Water	Water	Water	Water	Water	Water
Multi2	Oil	Oil	YTS	Oil	Oil	Oil	XTS	Oil	Oil
Multi3	Battery	Battery	Battery	Battery	Battery	Battery	Battery	Battery	Battery
Multi4	Air Temp	Air Temp	Strategy	P	Air Temp	Air Temp	Air Temp	Error	Air Temp
Multi5	TC Level	TC Level	TC Trimmer	EB	set-01	set-01	BAP	---	---
Multi6	Map	Map	DTC Present	TC	set-02	set-02	---	---	---
Multi7	Gear	Gear	Gear	Gear	Gear	Gear	Gear	Gear	Gear
Multi8	---	---	Eng. State	Lean Angle	---	---	---	---	---
Multi9	TPS1	---	WorkMode	Lean Angle	Fork set	Lean Angle	Lean Angle	Lean Angle	Lean Angle
Multi10	TPS2	---	DBW state	---	Shock set	---	WorkMode	---	---

On the 2015 Yamaha R1 the parameters set1 and set2 are obtained by: mode, pwr, tcs scs for set1 and lcs, qss, lif and ers for set2. A value of 1221 will then indicate mode = 1, pwr = 2, tcs = 2 and scs = 1. In the same way the TC channel includes the intervention of Lif, slide control and TC, 101 for example identifies the intervention of lif and tc.

On the 2016 **ZX10R**: SET01 = 10000 * oil (on-off) + 1000 * KLCM ACTIVE + 100 * KLCM MODE + 10 * KQS-UP + KQS-DOWN, Map / SKTRC = map + 10 * sktrc
 KEBC = 10 * kebc setting + kebc mode

Assigned Special Alarms

Bike	No Can-Bus	Zx10R 2001	ZX10R 2011 Race	ZX10R 2016	ZX636	898/1198	1199/899	V4	BMW S1000RR	BMW Hp4	BMW 20015
Led 0	--	Warning/TC	Warning/TC	Warning	Warning	Warning/TC	Warning	Warning	Warning	Warning	Warning
Led 8	--	--	--	--	--	--	--	ABS	ABS	ABS	ABS
Led 9	--	--	--	--	--	--	--	TC setting	TC setting	TC setting	TC setting

Bike	Rsv4 Abs	F3 675	F3 MEK	CBR SP 17-19	R1 2015	R6 17-19	R3	GSXR 2017
Led 0	Warning/TC	Warning/TC	DTC	Warning	Warning/TC	Warning/TC	Warning	Warning
Led 8	ABS	--	--	ABS	ABS	ABS	--	ABS
Led 9	TC setting	--	--	TC setting	--	--	--	TC