Manual Roulette Reader & Mystery Roulette

(Manual - Version 2.0)

On-Rim Reader

1. MIKOHN ROULETTE DESCRIPTION

The Mikohn roulette system can operate in 2 ways.

- Only roulette, which with an infrared reader detects when the ball is thrown and the number at which said ball stops on each shot.
- Like Mystery roulette, which draws between 3 to 5 numbers with each spin with prizes that pay between 50 to 1 and 100 to 1 and the possibility of obtaining the progressive prize accumulated by the system and displayed on the system screen.

How does Mikohn Roulette work?

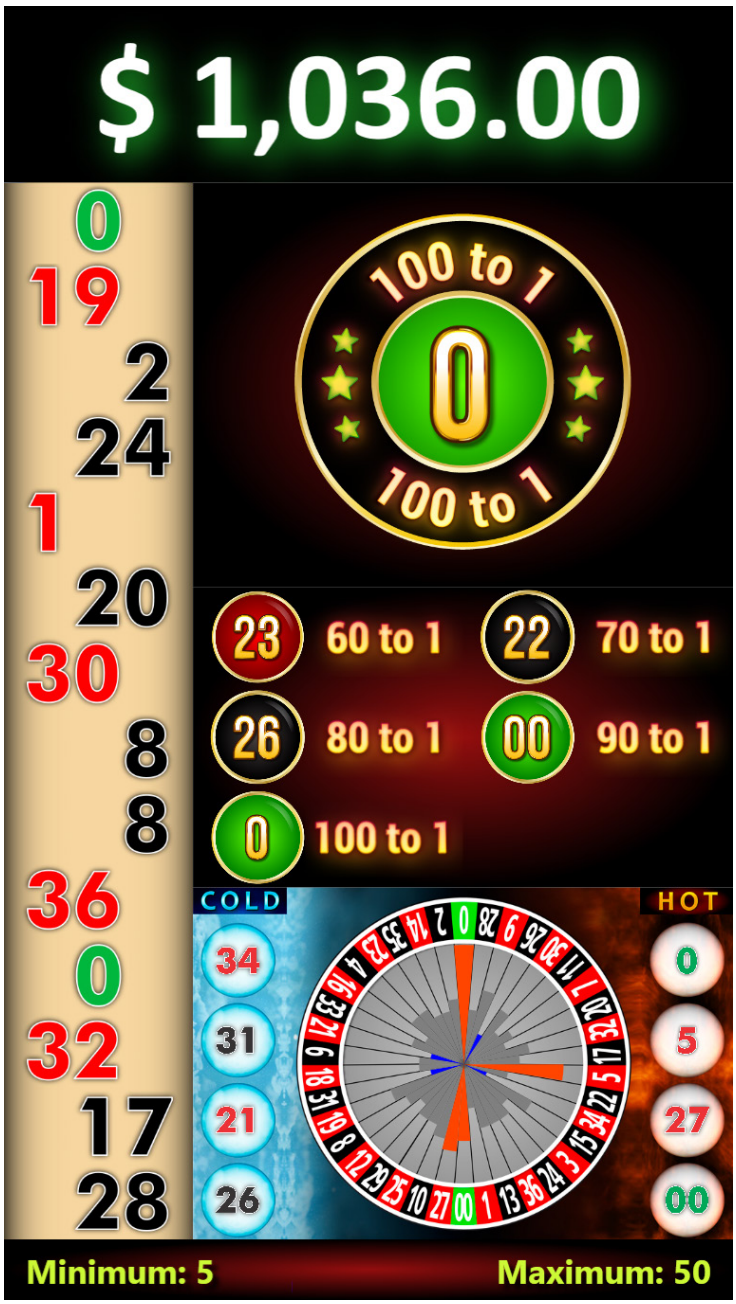
- Before starting the roulette games, the dealer must enable its operation by validating himself in the fingerprint reader connected to the system (this function is optional).
- The system displays the "PLACE YOUR BET" notice, at which time the players place their chips on the table on the numbers corresponding to the roulette wheel.
- Using an On-Rim reader located on the roulette wheel, the system detects when the dealer throws the ball that starts a play. When it detects that the ball is close to falling, the message "NO MORE BETS" is displayed, a moment that is not allowed. more bets.
- Then the screen shows the number at which the ball stopped on the roulette wheel.
- If any player bet on the number shown, they are paid according to the prize table determined by the game room.

1• Roulette Mikohn

How does Mystery Roulette work?

The Mikohn roulette allows you to activate the Mystery function, which adds to the regular roulette game the attractive possibility for the player to obtain a better prize and even win the jackpot accumulated by the Mystery system.

- With Mystery Roulette, active when the "NO MORE BETS" warning is displayed on the screen, between 3 and 5 numbers are also shown with payments between 50 to 1 and 100 to 1 to players who bet fully on the numbers shown.
- All non-full bets do not participate in the Progressive Mystery prizes and charge the same as bets on non-Mystery roulette wheels.
- Outright bets other than the Mystery number chosen by the system pay 30 to 1.
- In each play there is the possibility that instead of the 3 or 5 numbers with bigger prizes, the progressive number will be shown that will allow the players who bet on said number to win the jackpot accumulated by the Progressive Mystery.
- When the ball lands on a number that corresponds to one of those shown on the screen and there is a winner, the dealer pays his chips on the table as indicated by the system.
- When there are multiple progressive jackpot winners, the payout is divided by the amount of chips wagered and the result is multiplied by the amount of chips each player wagered to determine the payout for each player.
- If the prize corresponds to the progressive, the dealer registers the prize in the system and the progressive jackpot is reset to its initial value.



2• Mystery Roulette

2. SYSTEM REQUIREMENTS

The system is made up of an On-Rim reader and a Full HD screen, in addition to the computer that contains the software that controls the system.

Hardware Requirements

- A Celeron PC or higher, with at least 8GB of RAM, at least 60GB of storage space and active audio output for system play announcements.
- 24-inch Full HD LED display, 32-inch recommended.
- On-Rim reader connected to the PC via a USB port.

Software Requirements

- Access to a SQL database, it can be installed on the same PC as the gaming table or on another that can be accessed by a stable network connection.
- Framework v4.51.
- Windows 7 or higher (Windows 10 64bit recommended)
- Mikohn Mystery Roulette System

3• Fingerprint reader

4• On-Rim Reader

3. ROULETTE MODULES

Odometer

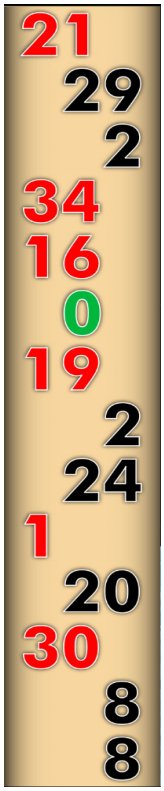
Active only when enabling the Mystery function. Shows the jackpot accumulated by the system's progressive Mystery.

5• Odometer

Throw numbers

This module shows a column with the last 14 numbers that came up when throwing the ball on the roulette wheel.

The numbers in black are shown on the right side of the strip, while the numbers in red are shown on the left side and the numbers zero and double zero are shown in the center of the strip.

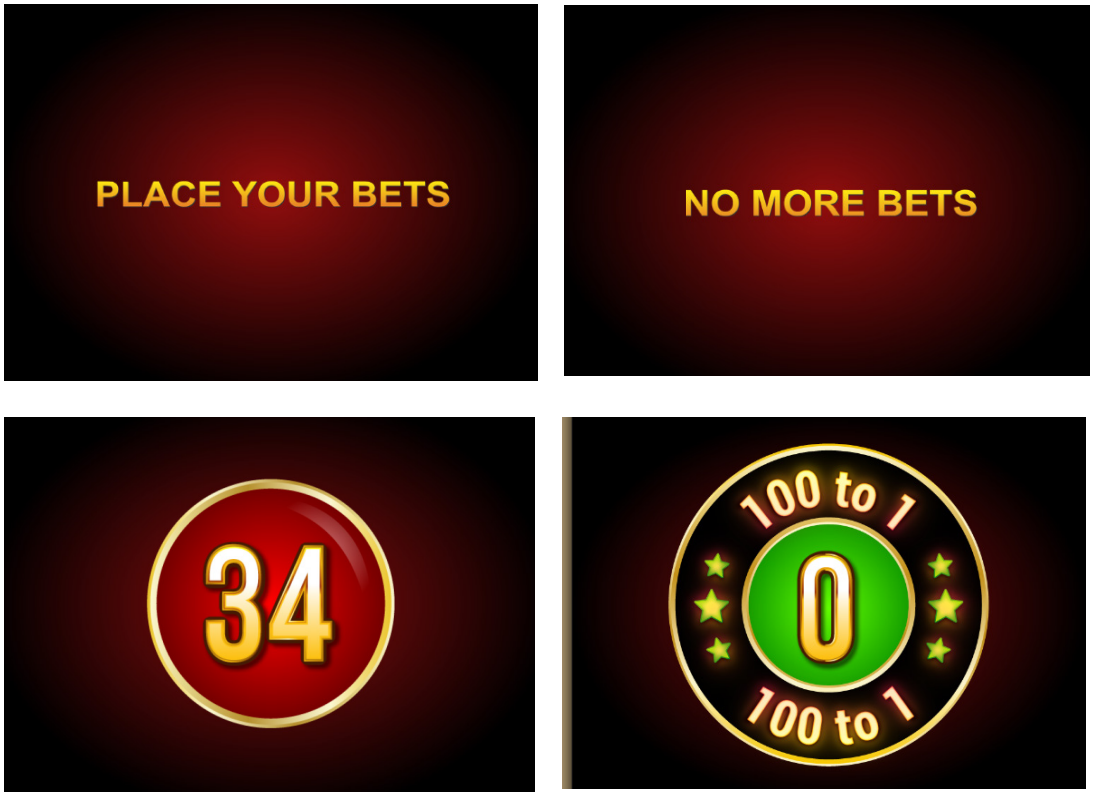


6• Throw numbers

Events viewer

This module shows the sequence of events when making a play on roulette.

1. **Place your bets**: Initial state where players can place their bets.



7• Events viewer

2. No more bets: No more bets are allowed and between 3 and 5 numbers are shown with prizes in the play or the number that allows you to win the system's progressive jackpot.

3. Number: The number on which the ball fell inside the roulette wheel is shown and if this corresponds to a Mystery prize, the prize that the player or players who bet fully on said number will be shown.

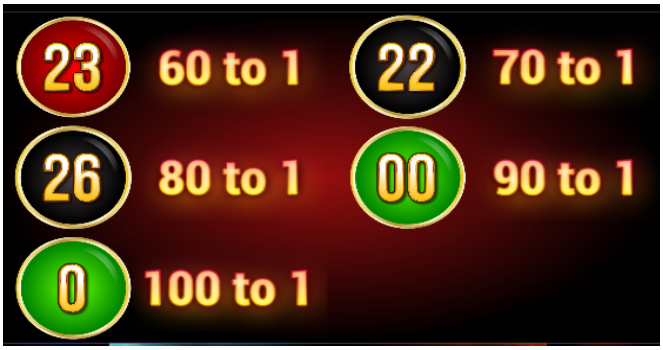
Interactive Viewer

This module located between the event viewer and statistics viewer, shows images that the room wants to advertise. Additionally, depending on whether the Mystery is active or not, it shows the following:

Roulette only: Show the casino logo and the first image to advertise, then the next image to advertise and then the next until the last of these images, then start the cycle again.

With Mystery: Similar to just roulette, but it intersperses with the sample the prizes to be paid on each throw of the ball by the dealer. Where, the system selects between 3 and 5 numbers to show and assigns them one of the following prizes:

- 50 to 1
- 60 to 1
- 70 to 1
- 80 to 1
- 90 to 1
- 100 to 1



8• Awards

Or if the system determines it, a number with the possibility of winning the progressive prize.

9• Awards

This module also displays the dealer interaction menu when you click with the mouse in this area, which allows, among other functions, to activate the roulette wheel or register the payment of the progressive prize.

11• Statistics viewer

Statistics Viewer

This module shows the last numbers in which the ball stopped on the roulette the most times (hot) and the numbers in which it stopped the fewest times (cold). In addition, an image of the roulette wheel is shown with all the numbers and bars that indicate how often they appear on the roulette wheel (blue for the 4 that appear the least, orange for the 4 that appear the most and gray for the rest of the numbers).

Minimum and maximum

This module shows the minimum and maximum amounts that each player can bet on roulette.

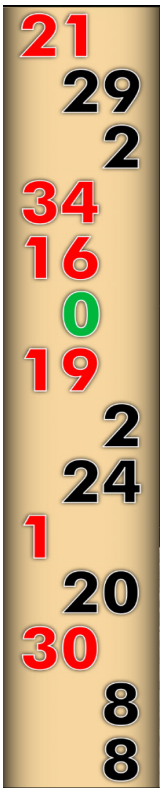
10• Minimum and maximum

4. DEALER INTERACTION

In case the system does not recognize where the ball landed, the number registered by the system is not correct, it is necessary to change the minimum and maximum values of the bets, register the progressive prize, or other actions, the table must have a mouse connected to the system computer and, as required, perform the following:

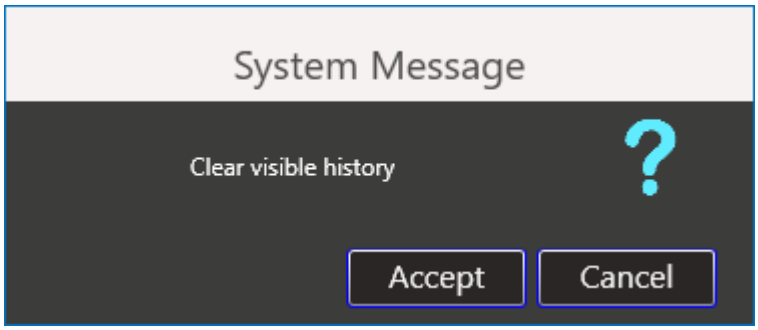
Clear number strip history

If it is required that the number strip be shown without numbers from previous plays (for example when starting roulette for the first time in the day):

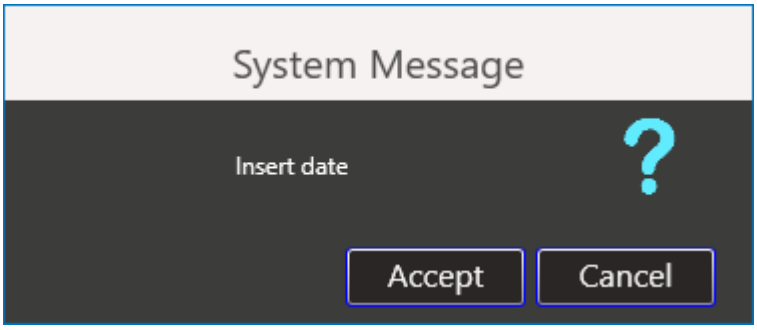


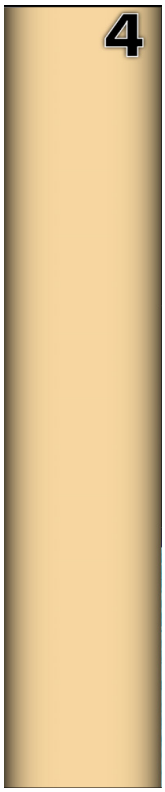
12• Throw number

- With the mouse press anywhere on the number strip, the message "Delete visible history" will be displayed



- The number strip must have at least one number to show therefore.
- After accepting the deletion of the history, a message is displayed indicating that a number will be inserted in the strip corresponding to the date of the current day and this number will be the one shown in the strip.

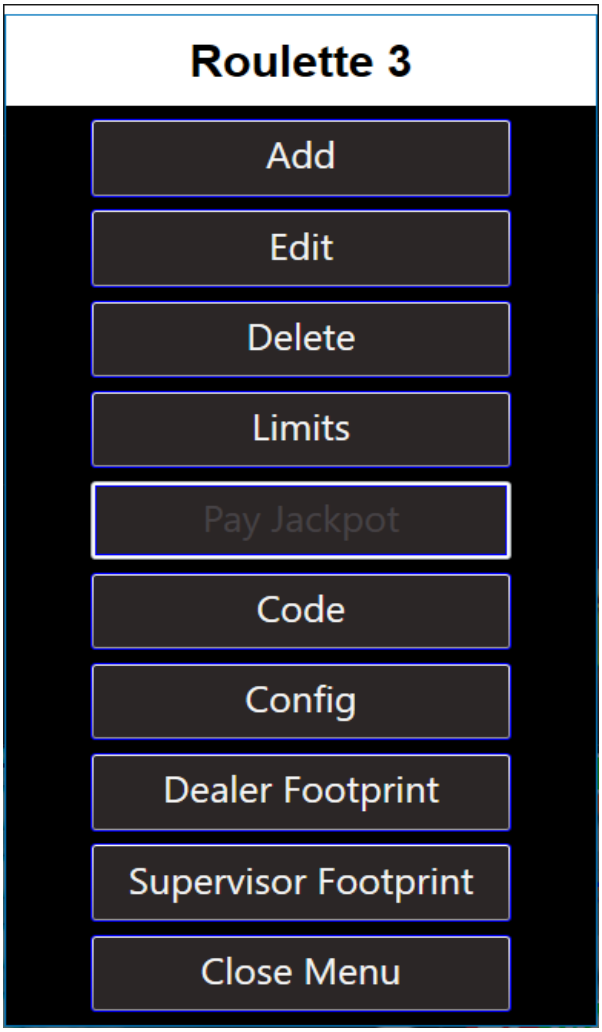




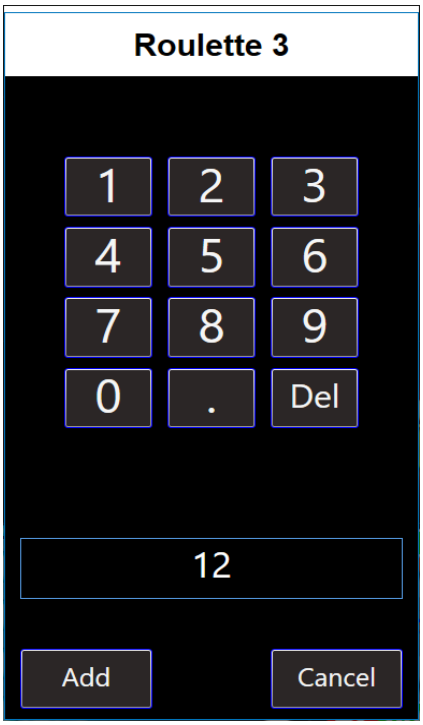
13• Throw number

Dealer menu and settings

For corrections of the number on which the ball lands on the roulette, registration of progressive payout, activating the roulette with or without Mystery, registering the fingerprints of the dealer or supervisor or other configurations; With the mouse, press anywhere on the interactive viewer and a menu of buttons and the name of the roulette wheel that is being configured will be displayed.



14• Dealer Menu



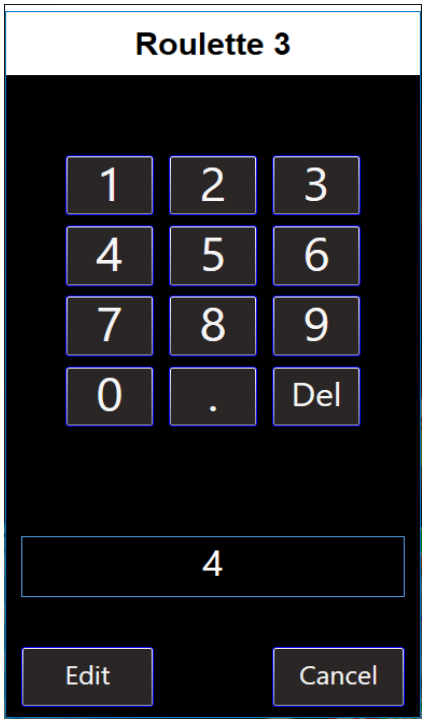
15• Dealer Menu

Add button

If you do not record where the ball landed on the roulette wheel, this button allows you to add the record of the undetected number.

Edit button

If the number where the ball landed on the roulette wheel is incorrectly recorded, this button allows you to correct the recording of said number.



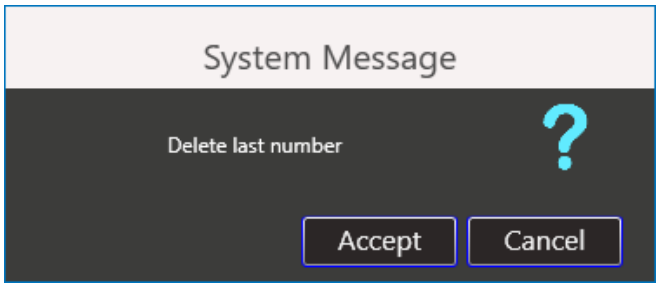
16• Dealer Menu

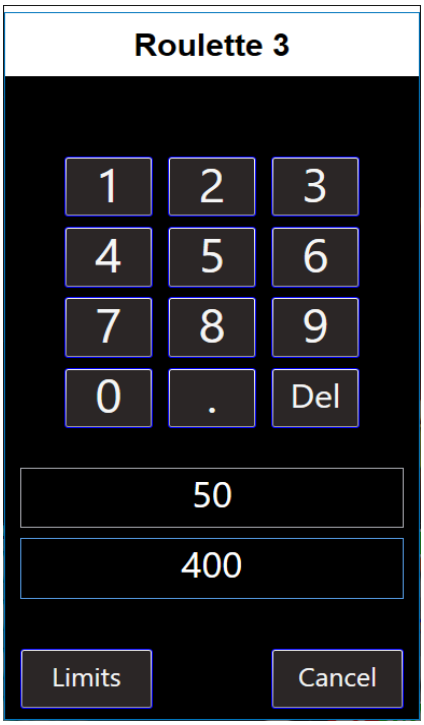
Delete button

If a number is added incorrectly, this button allows you to delete the number above the number strip in the play history.

If more numbers are deleted than there are in the play history and there are less than 14 numbers in said history, the strip will show the number zero at the end of the strip and for each number deleted.

If the number strip needs to be cleaned, select with the mouse anywhere on the strip and follow the instructions for cleaning the number strip earlier in this manual.





17• Dealer Menu

Limits button

f it is necessary to change the minimum or maximum values that can.

The first time a roulette is enabled it is necessary to make this limit configuration.

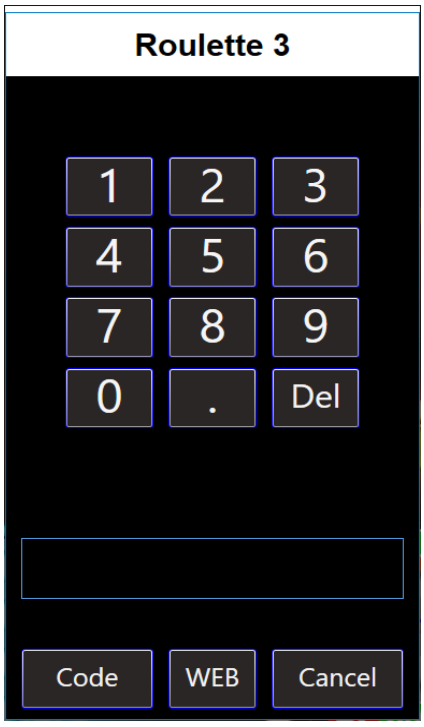
Pay Jackpot Button

Button to register the progressive prize when there is one or more winners, in addition, the jackpot shown changes to the initial value set by the game room.

Code Button

This button allows you to register the roulette to enable its functions.

Registration for the first time of roulette must be done with the PC connected to the internet

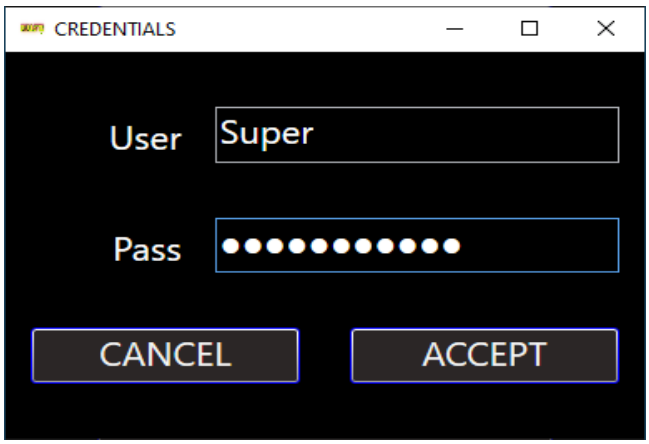


18• Dealer Menu

Configure Button

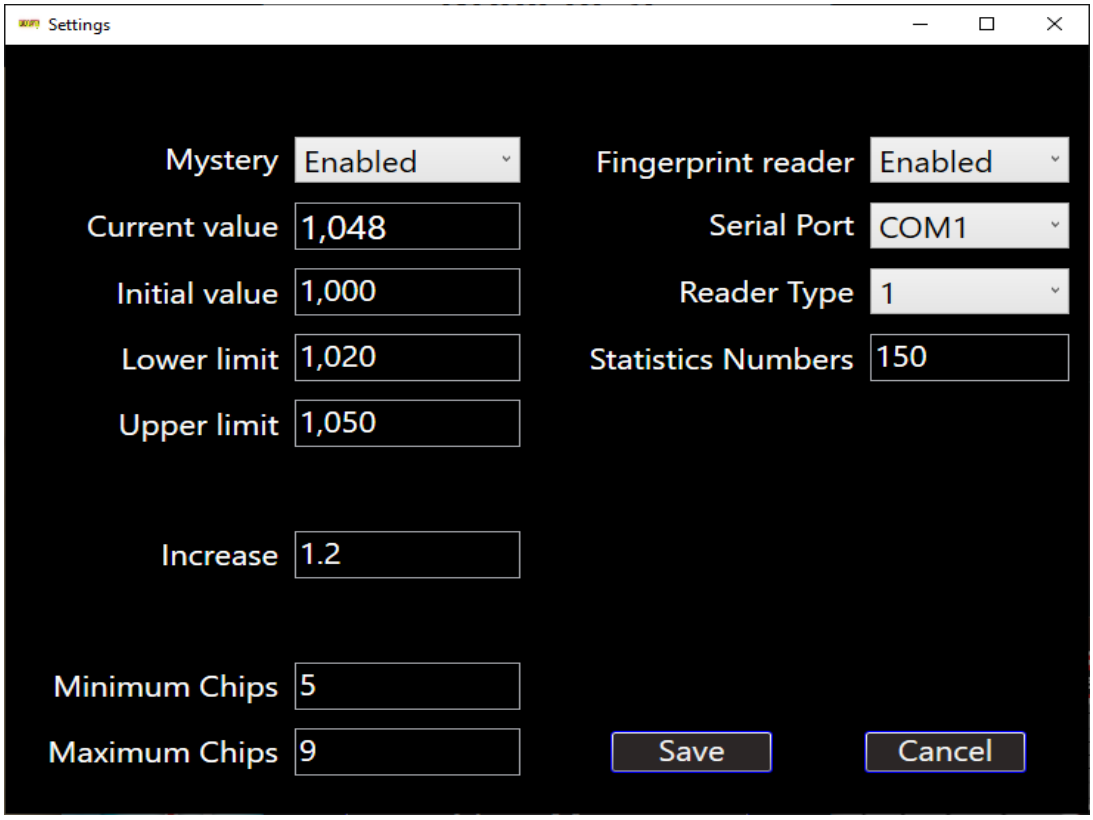
This button allows you to access the roulette configuration options.

Before entering, you must authenticate with an administrator user whose password will be provided by Mikohn.



19• Credentials - Configure

When entering the configuration options are:



20• Setting

Mystery: Allows you to select between a simple roulette or one with Mystery. You must first request a roulette with Mystery, since in addition to this option, the ability to register the roulette with Mystery in Mikohn services is enabled.

Current value: Shows the current value of the Mystery's jackpot; In addition, it allows you to modify this value to correct it if necessary.

Initial value: Allows you to configure the initial value of the Mystery pot; After the progressive prize has been paid, this will be the new value that will be displayed on the roulette screen.

Lower limit: Allows you to configure the initial value from which the progressive prize draw will begin to be displayed on the roulette screen.

Upper limit: Allows you to configure the maximum value at which the progressive prize will be displayed on the roulette screen.

Increase: Allows you to configure the increase value of the progressive jackpot for each throw of the ball in roulette.

Minimum Chips: If a number is drawn to win the progressive jackpot, but no player bet on said number, the next time the progressive draw is shown it will be carried out after exceeding the chip value indicated in this box.

Maximum Chips: If a number is drawn to win the progressive jackpot, but no player bet on said number, the next time the progressive draw is shown it will be carried out at the latest when the chip value indicated in this box is reached.

Fingerprint reader: Allows you to configure whether the fingerprint reader necessary to validate the Dealer is active or not.

Serial Port: Allows you to configure the COM serial port, through which the computer connects to the On-Rim roulette reader.

Reader Type: Feature reserved for future readers, default setting type 1.

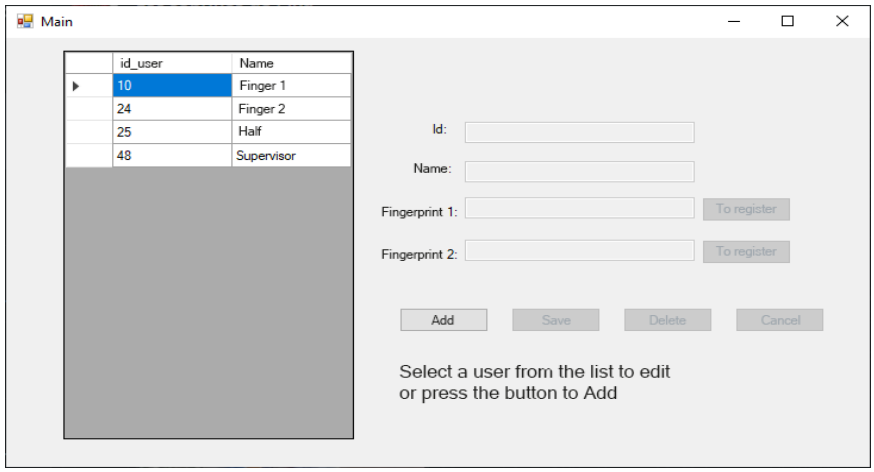
Statistics Numbers: Allows you to configure the number of numbers from the play history that will be used to display Hot numbers (more frequent) or Cold numbers (less frequent) in the Statistics Viewer.

Save button: After all the roulette configurations have been made, to save these changes, press this button.

Cancel Button: If no changes are made to the roulette configuration or you do not want to apply the changes made.

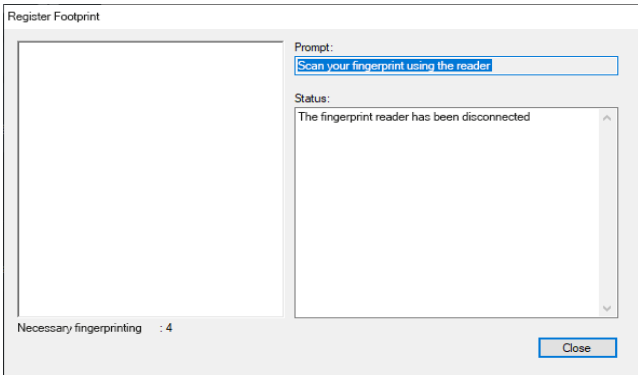
Dealer Footprint Button

This button allows you to register up to 2 fingerprints of the dealers who will be authorized in the roulette.



21• Dealer Footprint

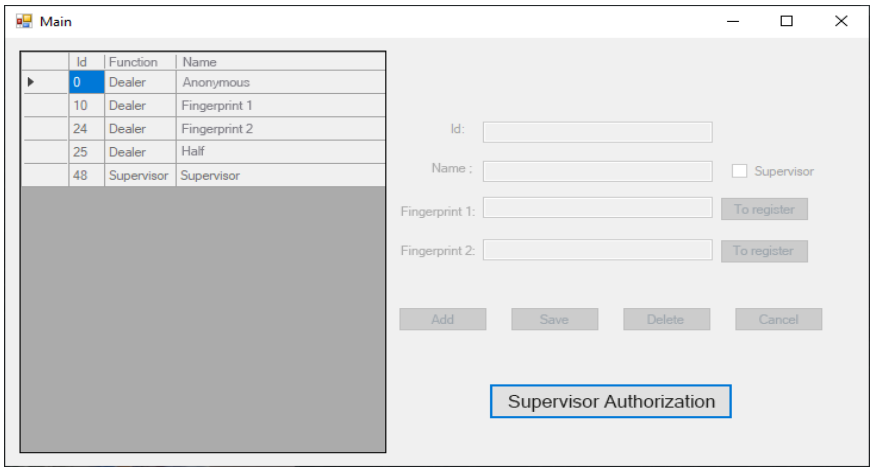
The window that loads allows you to change the fingerprint registration of the registered dealers or add new dealers.



22• Dealer Footprint

Supervisor Fingerprint Button

This button allows up to 2 fingerprints to be registered for roulette supervisors.



23• Supervisor Footprint

5. RAPIDEYE SETUP

This module allows you to configure the RapidEye On-Rim, its characteristics, installation, assembly, tests and configuration.

On-Rim Features

- Self-adjusting and plug-and-play, no setup required to work with any common roulette wheel.
- Automatically adapts to single- and double-zero wheels.
- USB power (and optional data) connection for tidy cabling.
- RS232 (optional RS485) for backwards compatibility.
- Industry standard protocol outputs.
- Integrated microphone for sophisticated cheat detection, ball drop position and wheel tilt detection.
- Firmware is easily upgradable via USB if customisation is required
- Integration with back-end reporting databases over LAN using an optional WiFi or Ethernet adapter or software on the table display.

24• On-Rim Reader

Instalación

Cable Options

The On-Rim Reader comprises an integrated read head and cable. There are two cable options available:

- **USB only**: Single USB A connector for power and data; appears as a virtual serial port to the PC.
- **USB and RS232 Serial**: The cable splits into USB A and RS232 female connectors. USB is used for power and RS232 is used for data.

You usually buy the Reader Head with the cable you need; it is possible to change the cable later.

If the On-Rim reader is used with a modern Windows or Linux based PC (for example, a desktop display) and you have administrator rights, or you can configure the software to use the virtual USB serial port instead of the COM port of motherboard then USB only cable is better.

For use with equipment other than PCs or software that is not USB compatible, the USB/RS232 combo cable is appropriate. USB plugs into any USB port on any device on the table for power, or into a USB power source (mobile phone charger). Power requirement is about 200mA so any charger is suitable.

RS232 female connector can be directly plugged into a PC serial port without additional cable; It is a 9-way D-sub connector, pin 2 (reception by PC), pin 3 (transmission from PC) and pin 5 (ground) are assigned.

To extend the USB connection, use a USB A male to USB A female extension cable.

To extend the RS232 connection, use a D-sub 9-way extension cable, which is a male to female cable, with pins connected without exchanges.

Mounting

Place the On-Rim Reader on the edge of the spinner with the cable facing out. Pull the reader against the inside edge so that the block protruding from the bottom touches the edge along its entire length.

Check that the rubber feet hold it firmly in place. If feet slip, wipe off any dust.

In some very old roulettes with very deep cavities, the ball is not visible from the edge of the cavities. An optional socket can be supplied to raise the head of the On-Rim reader to work with these wheels.

Testing and Configuration

The On-Rim Reader indicates its status via two full-color LEDs, and can be tested by observing them during gameplay and/or by checking the output using serial terminal software (eg, Hyperterminal, Putty, TeraTerm) on the PC.

To view output from the On-Rim reader head, use the terminal software to open a connection to the COM/TTY port assigned to the On-Rim reader head. If the port is a USB device, it is not important to select any serial port parameters. If the port is an RS232 device, the serial port setting must be chosen. By default these are:

- 9600 baud
- 8 data bits
- No parity
- 1 stop bit
- No flow control

If the settings are correct, you will see several messages per second in the terminal. See the "**Communications Protocols**" appendix to interpret these messages.

If corrupt messages are received or no messages are received, check the baud rate; if the baud rate has been configured to 19200. To configure the baud rate or protocol, see the appendix "**Setup Commands**".

To test the On-Rim reader, play roulette and watch the LEDs and messages on the terminal. See the next section "**LED Indicator Signals**" to see what should be seen.

Display Software Configuration

Using RS232, the visualization software should work exactly as with an RS232 readhead or roulette wheel with built-in sensors.

Using USB, the On-Rim reader will appear as a virtual serial port and the PC will assign a COM (Windows) or TTY (Linux) number to the port. Sometimes it is necessary to configure the display software to open the correct port. Alternatively, the port number assigned to the USB connection can be changed in Device Manager to be the same COM port expected by the display software (for example COM 1) and the existing RS232 motherboard COM port can be changed. can deactivate or re-numbered.

RS232 default setting is 9600 baud, 8 data bits, no parity, 1 stop bit, no flow control. See the sections on Communication Protocols and Configuration Commands to learn how to change them.

LED indicator signs

The positions of the two LEDs are described as viewed from the cable side of the On-Rim Reader. Typically, the dealer will be standing in front of the reader to avoid hitting him, so these positions may appear to be reversed.

The On-Rim reader has two optical sensors:

- **In-rim** detector, which is the three holes facing downwards from the bottom of the unit, status indicated by the **left** LED,
- **Pocket** detector, which is the "nose" of the unit facing the pockets, status indicated by the **right** LED.

Left LED Colour	Meaning	Right LED Colour	Meaning
Steady Dim Blue	Sensor is idle, healthy, ready to play. No game in progress.	Steady Dim Blue	Sensor is idle, healthy, ready to play. No game in progress.
Cyan/Purple Flash	Ball detected passing below the sensor. Purple = Clockwise. Blue = Anticlockwise.	Steady Purple	When the ball is in the rim, this indicates that the wheel type is being identified.
Steady Green	Ball is travelling in the rim faster than No More Bets	Steady Green	Wheel type is identified.
Steady Yellow	Ball is in the rim but travelling slower than No More Bets	Green Flash	Single/double flashes occur when 0 and 00 pass in front.
Steady Red	Ball has fallen from the rim into the wheel; the winning number is expected soon.	Steady Red	Game has been aborted due to dealer action or an error.
Red Flash	Sensor fault, number of flashes indicates problem	White Flash	Ball is detected in front of the sensor.

These LED indications are useful for diagnosing problems with a new installation, however some casinos want to turn them off during use to prevent them from being a distraction. There is a setting that allows the LEDs to simply indicate green to show the unit is on; see the Configuration Commands chapter. In this mode, the lights will indicate the previous state for the first 3 games after power on (to confirm successful installation) and then remain green.

Communication protocols

The protocols (languages) available out of the box (by default). These are typically 19200 baud and 9600 baud, but the On-Rim reader can be configured to use any baud rate with any protocol. Using USB, the baud rate is not relevant.

Protocol at 19200 baud

At this speed the messages are 4 times per second and some fields have different levels of precision.

Protocol at 9600 baud

Twice per second, the On-Rim Reader outputs a message in the following format (at 9600 baud by default, but this can be changed):

*X;a;bbb;cc;d;eee;f

The message ends with a carriage return and a line feed (\r\n or 0x0D, 0x0A). Fields "a" through "f" are fixed-width numeric fields, characters a-f represent decimal digits 0 through 9 or spaces (in field c only). the fields are:

Field	Contents
a	**Game State**: Single digit 1 through 6 1: Waiting for game to start 2: Ball removed from pocket but not yet launched (not supported) 3: Game started (ball is moving in the rim) 4: No more bets (ball is moving slowly in the rim) 5: Winning number detected, field cc is updated at this state 6: Table closed, determined by wheel not moving for 10 minutes.
bbb	**Game Number** - Cycles from 001 to 256 Game number increments when leaving state 5 (winning number)
cc	**Last Winning Number** Padded on the left with spaces for single-digit numbers Before any winning number is detected, this field is a double space.
d	**Error Flag** 0 = No errors Or a binary combination of: 1 = Wheel is moving slower than 10 RPM. 2 = Ball has been thrown in the same direction as the wheel. 4 = Sensor obstructed.
eee	**Wheel Speed** - RPM*10.
f	**Wheel Direction**: 0 = Clockwise, 1 = Anti-clockwise

In addition, when a winning number is found, the winning number is transmitted on a line of its own, pre-padded with spaces and delimited before and after by carriage return-line feed. This is for backwards compatibility with some display devices.

Setup commands

The On-Rim Reader is fully automatic and requires no setup for it to read winning numbers. Configuration is only for changing communication protocol and cosmetic options, and diagnosing faults.

To enter configuration commands, use a terminal application to connect to the On-Rim reader. All commands start with * (asterisk) and end with carriage return/newline, inserted by pressing Enter on the keyboard. Commands can be written to the USB or RS232 connections. To use commands on the RS232 connection, you must know the serial baud rate; to use USB you don't need to know the configuration. If you have set a baud rate you don't remember, please connect via USB to establish communication.

If you make a mistake while entering a command, don't press Enter, but press **Escape**, **Delete**, or **Backspace** to cancel the command and start again from *

Settings are forgotten when power is removed or the On-Rim Reader is rebooted, unless they are written to non-volatile memory with the *W command, so if a configuration error occurs after pressing Enter, power off power on or write the reset command *0 (number zero).

*Read Firmware Version (*V)*

Command:

*V

Reply:

*V OnRim 0.02 (21 Oct 2020)

PTo upgrade firmware, see the appendix *Firmware Upgrade*

Read Configuration (?)*

Command:

*?

Reply:

(*B) Baud=9600

(*P) Protocol=0 (*N)

(*N) MB=35rpm

(*C) Check Revs=2

(*t/T) Target Pocket Signal=750,1500

(*S) Serial=1234

The current On-Rim Reader settings are displayed, along with a reminder of the commands used to change the settings, in parentheses. See the command in this manual for a description of the setting.

Set Serial Baud Rate (*B or *b)

Syntax:

*B <baud rate 1200-500000 or 1 to change now>

Example:

*B 9600

Reply:

*B Actual baud will be 9615.4 (0.16% high). Use *W to commit to Flash. Use *B 1 to change now.

The baud rate must be between 1200 and 500000. The default is 9600. The response indicates the closest available baud rate for selection and the baud rate error. An error of less than 5% should be acceptable; any standard baud rate up to 115200 is reproducible with less than 0.5% error.

The change is not stored when powered down, unless *W is sent, and the change does not take effect immediately because that could cause communication to be lost. Sending *B 1 will force the baud rate to change immediately. Alternatively, send *W to store the change and reboot by power cycling or using *0.

Set Protocol (*P or *p)

Syntax:

*P <protocol options 0-3>

Example:

*P 0

Reply:

*P Protocol Set. Use *W to commit to Flash.

Currently only protocols 0 (9600 baud) and 1 (19200 baud) are supported. Adding 2 to this number allows detection of the wrong direction of the ball (the ball is moving in the same direction as the rotor). Default is 2: 9600 baud protocol with ball direction detection. Disable ball direction detection if it is not compatible with your ball/roulette combination.

The command takes effect immediately but is not stored when powered off unless *W is sent.

Set No More Bets RPM (*N or *n)

Syntax:

*N <no more bets RPM, 20-60>

Example:

*N 35

Reply:

*N NMB Time Set. Use *W to commit to Flash.

The no more bet point is defined as the RPM of the ball traveling to the rim of the wheel at the speed at which no more bets should be placed. Please note that no more bets is just a signal for the table screen that you can use as you wish. This setting has no effect on the reading of winning numbers.

The default is 35 RPM, which gives about 3 revolutions of the ball before it drops off most wheels. To have no more bets displayed earlier, increase the RPM and to have them displayed later, decrease the RPM. Small adjustments of around +/-5 RPM from the default 35 RPM are usually enough because the speed at which the ball slows down is very small.

The command takes effect immediately, so the effect can be tested by playing, but it is not stored when turned off unless *W is sent.

*Set Check Revolutions (*C or *c)*

Syntax:

*C <Check Revolutions 1-5>

Example:

*C 2

Reply:

*C Check Revs Set. Use *W to commit to Flash.

Sets the number of times the ball must pass the sensor in the same pocket before the winning number is announced. The range is 1-5. The default is 2, which is the standard for On-Rim readers. Unless a wheel with a very high or unusual “action” is causing problems, it is not necessary to change this setting.

The command takes effect immediately but is not stored on power off unless *W is sent.

*Set Serial Number (*S or *s)*

Syntax:

*S <Serial number 0-9999>

Example:

*S 1234

Reply:

*S Serial Number Set. Use *W to commit to Flash.

This is the serial number that is sent as part of the 19200 baud rate protocol.

*Restore Default Settings (*D or *d)*

Command:

*D

Reply:

*D Settings in RAM set to default. Use *W to commit to Flash.

Resets the active configuration (RAM copy) to defaults (9600 baud, 35 RPM with no further speed bets, 2 check revolutions, default LEDs).

Notes:

1. The baud rate on the serial port does not change immediately to avoid loss of communication. Use *B 1 if you need it to change immediately; otherwise it will change after reboot if config is saved to flash with *W.
2. This command does not affect the configuration in flash, so after a reboot the previous configuration will be restored, unless you send *W after *D to write to flash.

*Write settings to Flash Memory (*W or *w)*

Command:

*W

Reply:

*W Settings written to Flash.

Use this to store configuration changes in flash (non-volatile) memory so they survive a power off or reboot.

*On-Rim Reader Status Report (*H or *h)*

If you have any problems with the On-Rim Reader, spin the roulette wheel at a moderate speed (10-20 rpm) and type *H. A message similar to the following will be displayed.

R: CW=4 CCW=1 Sig=2035-2072 P=34.7%(<34.7%)

P: Sig=1340-2772 P=0.8%(<97.2%)

EF=2 Cnt=21,0,0,0,189,

This message is useful for the manufacturer to determine if any component of the unit is broken or if it is being used in the wrong environment or wheel. The lines refer to the signal strength and current sensor settings used by the edge and pocket sensors, and counters the number of unusual events that have been detected.

In the third line, if EF=0 (Error Flags), no problems that prevent playing games are detected.

Firmware Upgrade

Check the firmware version using the *V command. A special firmware version may be supplied to you if you request special features.

To update the firmware, disconnect USB power and remove the drive cover by screwing in the grub screws on both sides of the cover with a 1.5mm hex key.

Locate the SW1 switch on the top side of the PCB to the left of where the cable enters the unit.

While pressing and holding the SW1 switch, connect the USB cable to a PC. Continue to hold the switch for one second. If the LEDs remain off, the unit is now in firmware update mode. If the LEDs light up, please disconnect the USB from the PC and try again.

A new removable drive will appear in My Computer/This PC and a new Explorer window called CRP DISABLD may open. There may be a file on this drive called firmware.bi.

Delete the existing firmware.bin and copy the new firmware file to the drive. It doesn’t matter what the new file is called.

Wait a few seconds, and then “eject” the removable drive by right-clicking its icon in My Computer/This PC.

Disconnect the USB cable from the PC and reconnect it. The LEDs should light up normally to indicate the new firmware is running and the device will appear as a COM port.

After upgrading, connect using a terminal application to check the firmware version (with *V) and configuration settings (with *?). Settings may need to be restored manually.