Product Manual

123.20.13.90

(WDC100-NX Series)

Electronic Water Management Controller

Wallgate
ROBUST. INNOVATIVE. WASHROOMS

RCM Mark
Australia

- Appliance to be kept out of reach of children.
  - Children shall not play with the appliance.
  - Cleaning and user maintenance shall not be made by children without supervision.
- This appliance can be used by persons with reduced physical, sensory or mental capabilities or lack of experience and knowledge if they have been given supervision or instruction concerning use of the appliance in a safe way and understand the hazards involved.
- If the supply cord is damaged, it must be replaced by Wallgate, its service agents or similarly qualified persons in order to avoid hazard.

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1 Disclaimer & Copyright Notice

Every effort has been made to supply information which is correct. Wallgate Limited and Galvin Engineering will not be liable for any damage or loss that arises if the person installing, operating or maintaining the unit has not read or not complied with the manual.

Wallgate or Galvin Engineering reserves the right to alter, update or improve its product specification at any time without prior notice. This manual is specific to the product that it has been supplied with at the date of supply.

Please ensure this manual is passed to the end user. The manual forms an integral part of the product and should be kept for its working life. Additional copies of this and other supporting documents are available by contacting Galvin Engineering or by visiting www.galvinengineering.com.au.

2 Conventions

Certain conventions are used in this manual to make it easier to read and understand. They are given in the sections below.

2.1 Warning

A warning with red text on a white background is used to give information about hazards that can cause injury or death. Read and understand the warnings before you install and commission the 123.20.13.90. Failure to heed these warnings can have serious consequences.

WARNING! This is a warning!

2.2 Note

A note with amber text on a white background is used to draw your attention to important and useful information.

NOTE: This is a note.

2.3 Numbered procedures

Steps in procedures are numbered, starting from 1.

1. This is step 1.
2. This is step 2 etc.

2.4 Bullet lists

- A bullet list is used to give information that is not sequential.

2.5 Tick Bullet lists

- ✓ A tick bullet list is used to imply a checklist of components or actions (not sequential).

2.6 Menu items

Menu items, submenu items and settings, where available, are given in bold.

3 Glossary

The glossary lists all words, abbreviations and technical terminology used in this manual, along with a short description of these terms.

Term	Description
Auto-run	The outputs to the water valves for basin, shower and WC can be set to automatically operate at a set time every day. The water valve will operate for the cycle set run time as per a user activation. The Auto-run feature can be used for maintaining hygiene standards similar to the Inactivity Purge function detailed below.
Building Management System **BMS**	A Building Management System is a computer based control system installed in buildings that controls & monitors the building's mechanical and electrical equipment such as ventilation, lighting, power systems, fire systems, and security systems.
WDCMS	The WDCMS Wallgate system is used for standalone networking of the WDC control units to a dedicated PC or laptop computer. You can manage the WDC units through the network. You can also adjust time cycle settings, lockout settings, remote water isolation on individual units or groups, RTC settings, etc. You can also view the unit status in real time and log data.
Data Logging	Activations of the Inactivity Purge function detailed below are logged in memory and then using additional software the logs can be downloaded from the 123.20.13.90 and imported into a spreadsheet report.
Dual Flush	This option is used when both full and half flush options must be provided, using either one or two piezo touch buttons.
Full Flush	This feature uses a 6 litre or 4.5 litre flush.
Reduced & Half Flush	The reduced flush is ⅔ of a full flush and the half flush is ½ of a full flush.
Inactivity Purge	This feature operates the basin, shower, and WC water services when they are unused for a specified number of days. This avoids water stagnation when the water services are unused for longer periods.
Latching	A latching switch is a switch that maintains its state after being activated.

Lockout	The term Lockout refers to regulating services by restricting the number of usage cycles.
Momentary	A momentary switch returns to its normal OFF position when released.
Piezo Touch button	A piezoelectric touch button converts the force applied to the face of the pushbutton into an electrical signal.
Power Rating	The power rating of a device is a guideline set by the manufacturer as a maximum power to be used with that device.
Purge Cycle	This feature is used to assist in removing air trapped in the plumbing system.
Remote Lockouts	The term Remote Lockout refers to isolating water services from a remote location.
RTC	Real Time Clock. This is a 24-hour 7-day clock used by the 123.20.13.90 for program features such as Time Slots and Inactivity Purge.
System Test	The System Test is a feature that allows you to operate switches and piezo touch buttons and make sure that these operate the necessary outputs such as lights or valve solenoids.
Time Slots	Usage of services such as basins, showers and WC pans can be controlled using preset time slots. For example, this feature can be used to prevent all the showers in a facility being operated simultaneously during peak periods, straining the capacity of the water supply. The day is divided into 4 time slots, normally set at 00:00 to 06:00, 06:00 to 12:00, 12:00 to 18:00 and 18:00 to 00.00.
Toggle type switch	A toggle switch is a class of electrical switches that are actuated by a mechanical lever, handle, or rocking mechanism.
Water Lockouts	Water Lockout means regulating water services by restricting the number of usage cycles.

4 Product summary

The 123.20.13.90 electronic control units are designed to operate up to 4x water valves for wash basins, showers, and the WC flush. The 123.20.13.90 will typically manage 1x room of sanitaryware (1x WC, 2x basin, 1x shower) although can be configured to support any mix of inputs / outputs.

The 123.20.13.90 can be configured to manage other water devices (baths, taps, etc.) All outputs are freely configurable, up to 4x water valves can be managed by a single 123.20.13.90.

The 123.20.13.90 will support the connection of additional 'modules' to expand the functionality of the device- see below:

The control unit comprises of a microprocessor that is programmed with a configurable software program that has the following operational features, note the controllers can be part of a networked system or stand-alone devices:

- User friendly Software menu system with security-controlled access.
- Independent control of multiple outlets.
- Fully configurable precise time control of water valve operation that is fully adjustable in situ by the installer / customer.
- 'Lockout' functions to prevent product misuse that is fully adjustable for the number of user operations, operations period, lockout period.
- Single or dual flush for WC control.
- Piezo touch button, infrared sensor or tactile capable inputs.
- Auxiliary inputs for remote operation of:
    - Remote lockouts.
    - WC remote flush.
    - Clear lockouts.
    - Commissioning Purge function.
- Diagnostic test configuration file to assist with fault finding.
- Fault reporting (requires additional sensors)
- LAN Networking units to remotely control Front End or BMS
- Data logging of hygiene purges and operations
- A scalable system by connecting additional 'modules' via CAN Bus, including:
    - 240v management for room power & lighting control
    - Temperature & Flow Monitoring
    - I/O expansion module (additional input & outputs- configurable)
- Bluetooth capability for remote activation of connected utilities, settings adjustments, and log retrieval

5 Installation and Commissioning

5.1 Package Contents

Before beginning the installation, make sure that you have the following items:

- ✓ 1 x 123.20.13.90 Electronic control unit
- ✓ Suitable fixings
- ✓ 1 Product manual.
- ✓ 1 Power Cable

5.2 Advice on attaching the unit

- Attach the unit to a vertical surface that is able to support the weight of the unit.
- Attach the unit in dry surroundings above pipes carrying water, away from any possible plumbing leaks.
- Attach the electronic control unit where there is easy access. Attach the unit so that the keypad and display on the unit are readily visible and accessible.

WARNING! Do not mount the unit upside down

The control box has four holes for attaching the unit to the wall using four round head screws.

5.3 Connections

- All cables must be connected to the unit using the sockets at the bottom of the unit enclosure.
- Piezo / IR input cables, solenoid valve output cables and all CAN / LAN connections are plug and play fittings with pre-made terminations. All cabling available from Wallgate at suitable cable lengths.
- The control unit requires an electrical supply of 110-230V AC (Fuse 2 Amp) 50Hz 60 Watts.
- Position all electrical fittings such that water cannot drip on the electrical fittings if a leak occurs, or a pipe bursts.

NOTE: When mounting the unit, make sure the cable sockets at the bottom of the unit point downwards.

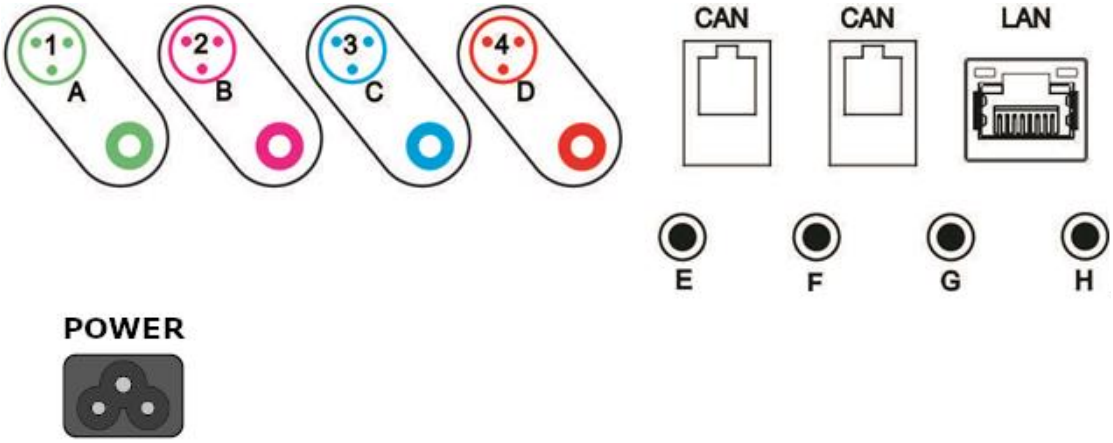


Figure 1. 123.20.13.90 Lower Pane.

Table 1. Legend for Figure 1

Item #	Description	Function
1	Output to WC Flush valve	Opens WC Flush valve
2	Output to Shower valve	Opens Shower valve
3	Output to Basin/Bath cold valve	Opens Basin/Bash cold valve
4	Output to Basin/Bath hot valve	Opens Basin/Bath hot valve
A	Input from WC Flush piezo touch button	User input (piezo button or IR sensor) for WC Flush
B	Input from Shower piezo touch button	User input (piezo button or IR sensor) for Shower
C	Input from Basin/Bath cold piezo touch button	User input (piezo button or IR sensor) for cold Basin/Bath
D	Input from Basin/Bath hot piezo touch button	User input (piezo button or IR sensor) for hot Basin/Bath
E	Auxiliary 1	Input to clear Lockouts
F	Auxiliary 2	Input to start/stop Commissioning Purge
G	Auxiliary 3	Input to set Remote L.O.
H	Auxiliary 4	Input for WC Remote Flush
CAN	CAN Link Sockets	CAN port connections to interface with external control devices e.g. WEX300
LAN	Network Link Socket	LAN connection to WDCMS Screened Ethernet Cable to be used.
POWER	Power cable connection	Electrical power supply cable 2 metre in length

There are seven types of sockets in the control unit:

- 4x 3 pin XLR output sockets (1 To 4), to connect the unit to the solenoid valves.
- 8x 3.5 mm input sockets (A to H), for Piezo touch buttons & aux inputs.
- 1x RJ45 connector to connect the control unit to the LAN
- 2x RJ11 connectors to connect CAN bust expansion modules
- 1x IEC C7 power connection
- 1x USB Type-B Mini for firmware updates and configuration upload/download
- 1x Cloverleaf socket for the mains power cable

The socket and plug assignments are fully configurable. Controllers will be pre-configured with default settings.

5.4 Connect the Electrical Supply

To make the electrical connections to the control unit:

WARNING! The electrical connections must be made by a qualified electrical engineer in accordance with the present nationally approved IEE Regulations.

1 Terminate the mains power cable, supplied with the control unit, into a suitable 2 amp fused spur. Plug the cloverleaf cable end into the power socket on the controller.

2 Connect an earth conductor to the water supply pipes on the basin and shower nozzles. The other end of the earth conductor must be connected to an approved earth facility.

NOTE: The water pipes connected to the basin taps and shower nozzles must be bonded to earth.

3 Make sure that the input leads from the basin tap, shower and WC are plugged into the correct sockets on the base of the control unit.

4 Complete electrical testing of the installation.

All the switches and the menu display are located on the front panel of the 123.20.13.90 control unit.

Refer to Figure 2 below for an illustration of the 123.20.13.90 front panel.

Figure 2. Front Panel 123.20.13.90

6 Piezo touch button and infrared sensor controls

Piezo touch buttons and infrared sensors can be connected to the control unit to operate the basins, showers, WCs, etc. the unit will support piezo, infrared sensor (active), or momentary tactile switches.

The WC flush valve is set to deliver a 6 litre full flush. The controller will support electronic cisterns and / or direct flush valves.

7 Screen Navigation

Figure 3. 123.20.13.90 Top panel

7.1 Navigation Buttons

- Back – Navigate back to previous menu level or screen (press and hold for quick functions)
- Enter – Enter new menu level (press and hold for system menu)
- Up – Scroll up in vertical menus and to the right in horizontal menus (press and hold for system status)
- Down Scroll down in vertical menus and left in horizontal menus (press and hold for configuration)

7.2 Standard View

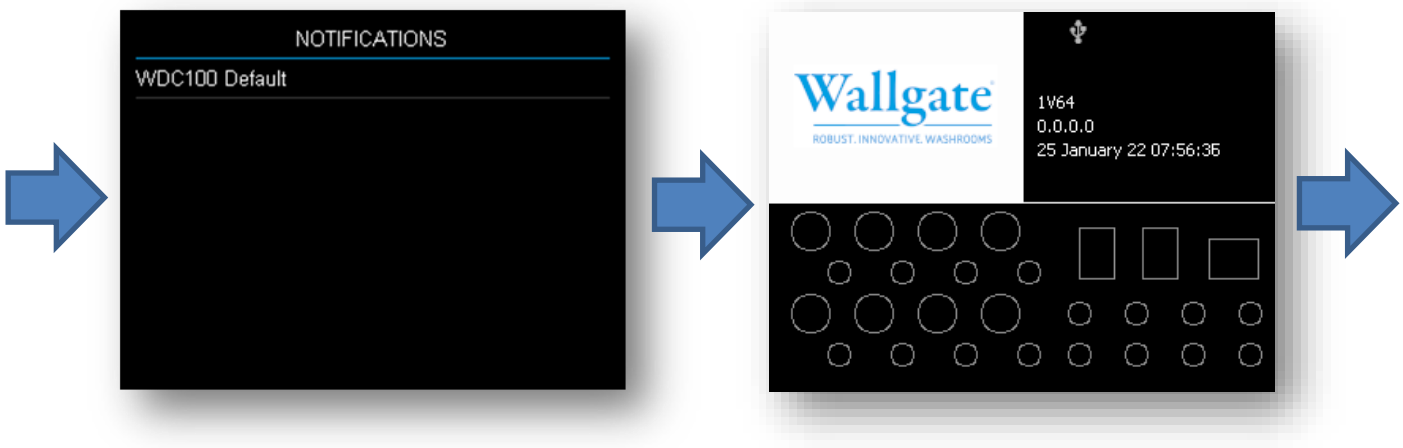


Figure 4. Standard view

The standard view can rotate between the Notifications screen and IO screen using the ⬆ and ⬇ buttons.

7.2.1 Notifications

The notifications screen will show the name of the configuration at the top, and the currently active system notifications below. The notification name is based on the hierarchy of the system in the configuration structure. Where the notification contains a value element, the value will be shown on the right. The notifications will also show as different colours to differentiate the functionality.

7.2.2 123.20.13.90 / 123.20.23.90 (WDC200-NX)

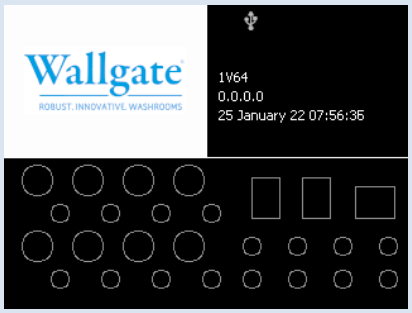
Page	Info	Description
		This indicates that the device is connected to a Bluetooth device. This will take priority over the ethernet connection
		This indicates that the device is connected to a USB device. This will take priority over the Bluetooth and ethernet connections
		This indicates the device is busy writing changes back to the configuration file. Removing the unit from power at this point will result in the loss of any unsaved settings.
	Version	The version number of the application
	IP Address	The current/last IP address of the unit
	Date/Time	The system date and time
	IOs	The WDC device Inputs, Outputs, CAN, and ethernet are depicted here. Input indicators - will fill as green while the corresponding input is active. Outputs indicators - will fill as green while the corresponding output is active CAN indicators - will turn green for 100ms on any CAN packet received Ethernet indicator – will turn orange when an ethernet connection is established and green when a connection has been established with the server

Table 2. Device screen information

After a minute of inactivity the 123.20.13.90 / 123.20.23.90 (WDC200-NX) screen will close and change to the Notifications screen.

7.3 Configuration Settings

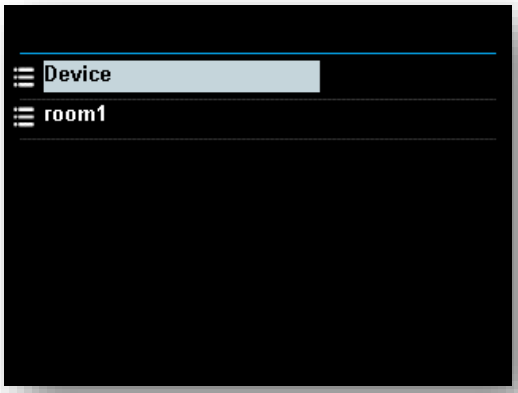


Figure 5. Configuration view

Hold the button for 3 seconds to enter the configurations menu screen. From here the device settings can be modified. Use the and buttons to highlight the desired submenu item ( ) or setting item ( ). Use to enter a submenu or edit a setting, and to go back a menu level or cancel a setting edit. The current position in the menu tree can be seen at the top of the screen. A description of the menu and settings are described in this document. For a description of the menu and settings please see chapter 9, 123.20.13.90 Configuration Settings.

After a minute of inactivity the Configuration Settings screen will close and change to the Notifications screen. If a setting editor is open when this occurs the editor will be cancelled and the setting will not saved.

7.4 Quick Functions

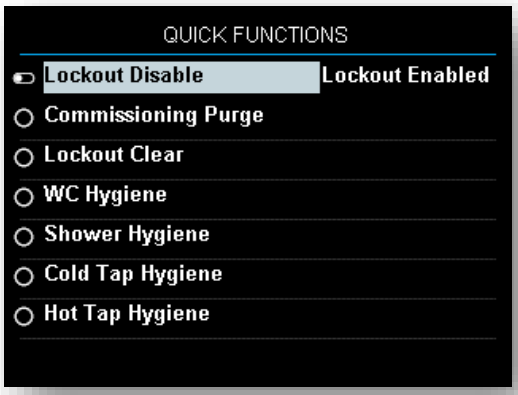


Figure 6. Quick functions view

Hold the button for 3 seconds to enter the quick functions menu screen. Quick functions can be either state functions which toggle on and off, or event functions.

After a minute of inactivity the Quick Functions screen will close and change to the Notifications screen.

7.5 Device Information

Hold the button for 3 seconds to enter the device information screen. This provides device information and run time information.

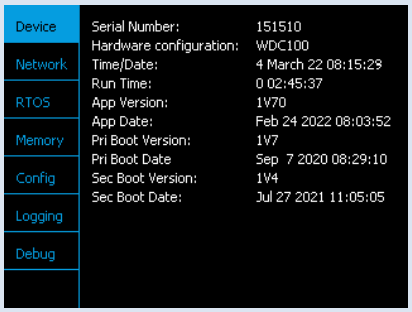
Page	Info	Description
	Serial Number	The unique manufacturing number
	Hardware Configuration	123.20.13.90 / 123.20.23.90 (WDC200-NX)
	Time/Date	Current time and date of the unit
	Run Time	The time since the last restart of the unit
	App Version	Version number of the device application firmware
	App Date	Date the application firmware was built
	Pri Boot Version	Version number of the device primary bootloader firmware
	Pri Boot Date	Date the primary bootloader firmware was built
	Sec Boot Version	Version number of the device secondary bootloader firmware
	Sec Boot Date	Date the primary secondary firmware was built

Table 3. Device information view

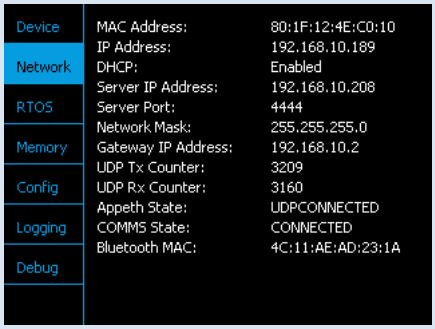
Page	Info	Description
	MAC Address	MAC address of the ethernet device
	IP Address	IP Address of the unit, whether DHCP assigned or static
	DHCP	DHCP status whether enabled or disabled
	Server IP Address	Address of the server
	Server Port	Port number of the server
	Network Mask	Network mask
	Gateway IP Address	IP Address of the network gateway
	UDP Tx Counter	Number of ethernet UDP packets transmitted to the server
	UDP Rx Counter	Number of ethernet UDP packets received from the server
	Appeth State	State of the connection to ethernet
	COMMS State	State of the connection to the server
	Bluetooth MAC	MAC address of the Bluetooth device

Table 4. Device network information view

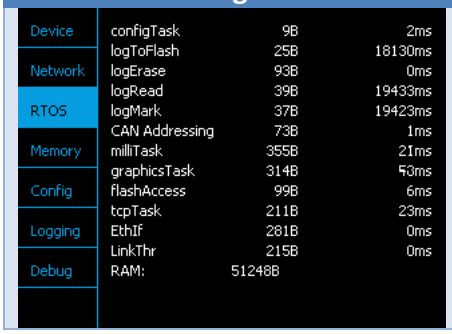
Page	Info	Description
	Tasks	List of task names with their corresponding high water mark and how often the task is running
	RAM	The remaining unallocated RAM space

Table 5. Device RTOS information view

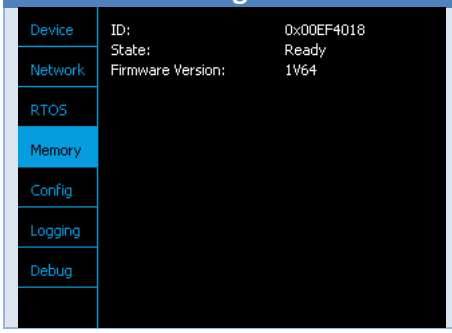
Page	Info	Description
	ID	The ID number of the internal flash IC
	State	State of the flash
	Firmware Version	Version of the WDC application firmware stored on the flash IC

Table 6. Device memory information view

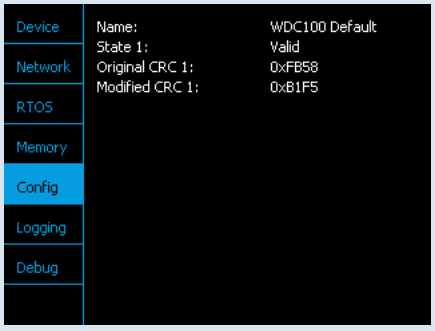
Page	Info	Description
	Name	Name of the configuration
	State 1	State of the configuration stored on flash
	Original CRC	CRC calculated on the original configuration file data saved by the editing software
	Modified CRC	CRC calculated on the configuration file data including setting changes

Table 7. Device configuration information view

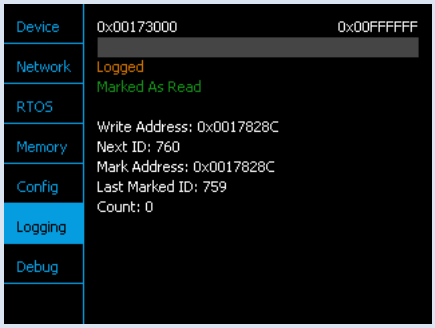
Page	Info	Description
	Bar graph	Progress of the logging system. Grey is unlogged space, Orange is logged, but hasn't been marked as read Green is logged and marked as read
	Write Address	Flash address where the next log will be written
	Next ID	ID for the next new log
	Marked Address	Flash address for the next log to mark as read
	Last Marked ID	ID of last log marked as read
	Count	Number of unmarked logs

Table 8. Device logging information view

After a minute of inactivity the Device Information screen will close and change to the Notifications screen.

7.6 System Functions

Hold the ↵ button for 3 seconds to the enter the system functions screen.

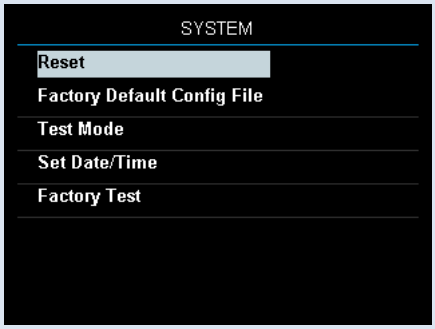
Page	Info	Description
	Reset	Reset the device as soon as the device is not busy with any critical tasks
	Factory Default Config File	Revert the device configuration settings to their default values
	Test Mode	Restart the unit in test mode. In test mode pressing the inputs will set their corresponding outputs
	Set Date/Time	Set the time and date of the system
	Factory Test	Restart the unit in factory test mode. This is for use during production.

Table 9. System functions view

After a minute of inactivity the System Functions screen will close and change to the Notifications screen.

8 WDC Configuration Systems

8.1 Device

The **Location** string value specifies the location of this device in the WDCMS network. This value cannot be edited

The WDC device can be connected to an ethernet network. Firstly, the device will need to establish a connection to the network system. If the **DHCP** setting is Enabled, the device will obtain an IP address automatically from network DHCP provider. If **DHCP** is Disabled the device will attempt to connect to the network using the **IP Address**, **Gateway IP Address**, and **Subnet Mask Address** settings.

Once the device has established a connection to the ethernet network the device will attempt to connect to the WDCMS server. The **Server IP Address** settings will need to match that of the WDCMS server to connect.

The WDC device supports Bluetooth connection. The **Bluetooth** setting can be the following values:

Off – The Bluetooth will be disabled

Factory – This is used when programming the unit during factory production.

Normal – This is for normal operation of the Bluetooth module. Using BLE the WDC device will advertise itself with the string defined in **Bluetooth Advertise Name** or if undefined with “WDC [SERIAL NUMBER]” where [SERIAL NUMBER] is the serial number of the WDC device.

8.2 Commissioning Purge

The commissioning purge will sequentially run the Cold Tap, Hot Tap, Shower, and WC. The Taps and Shower will be operated for the time specified in the **Operation Time** setting and the WC will be operated as many times as specified in the **Operation Count** setting. This can help release any air trapped in the plumbing system.

The Commissioning Purge can be started from the Quick Functions menu, or using Input F.

8.3 Time Slots

The control unit can assign periods of the day when outputs are allowed to operate. The default Schedules setting allows full operation of all outputs over a 24-hour period (assuming no lockouts are active). Each output can be assigned to a

configurable timeslot and when activated the assigned output will only become active if within the allowed ‘time slot’.

Using the **Log Activations** setting the Time Slots can be set to log when the Time Slot disables or enables the WC, Shower, or Tap operation.

8.4 Inactivity Purge

The control unit can purge an output following pre-set periods of inactivity defined by the Inactivity Period. This is a hygiene function that can be used to reduce the possibility of water stagnating in the pipe work and the associated risks, it will also reduce the possibility of waste traps drying / evaporating following periods of inactivity. This functionality can be disabled using the Inactivity Purge setting.

8.5 Auto Run

The Auto Run function will operate the WC, Shower, or Tap automatically at the times specified by the enabled schedules in the **Event Schedules** list. If the **Log Activations** setting is Enabled the Auto Run will log every time it automatically activates the WC, Shower, or Tap.

8.6 IR Walkaway

The IR Walkaway is designed to work with an infrared input sensor. When the user has been in front of the IR sensor for more than the time specified in the **WC Occupy Half Flush Time** setting, a half flush will be scheduled to run on the WC. If the user remains for more than the time specified in the **WC Occupy Full Flush Time** setting, a full flush will be scheduled to run on the W.C. When the user moves away from the IR sensor the system will wait for the **Vacate Time** to pass before activating the scheduled Half or Full flush action on the W.C.

8.7 Lockout

The Lockout function restricts the number of usages for the basin/bath, shower, WC, etc. *The Lockout feature is disabled by default.*

If the permitted number of operations exceeds the **Cycle Activations** within the **Cycle Period** for any item, the item is locked from use for the **Lockout Penalty** period of time. All parameters are fully adjustable. The lockout status is shown on the WDC display, visible on the Front-End and can be linked to BMS for remote monitoring.

To cancel the Lockout function when it has been activated due to excessive operations and allow the unit to operate normally again, carry out the following steps: (any one of these steps should be sufficient to cancel the lockout)

1. Cycle the power to the unit (lockouts are in volatile memory)
2. Clear lockouts via Quick Functions
3. Use an auxiliary input configured to 'clear lockouts'
4. Clear lockouts remotely via the WDCMS Front End
5. Clear lockouts via BMS or SBC panel

8.8 Hygiene Purge

The Hygiene Purge can be operated from the Quick Functions menu. This will run the W.C. for the number of cycles specified in the **Operation Count** setting. This will run the Shower or Taps for the time specified in the **Operation Time** setting.

8.9 W.C.

The Water Closet (W.C.) is designed to operate a valve or electronic cistern, depending on the **Output Mode** setting. When the WC is activated, it will open the valve or cistern for the time given in the **WC Full Flush Time** setting. After this the W.C. will not allow further activations until the **WC Refill Time** has passed. If the **Double Press Flush** setting is enabled this will allow the W.C. to open the valve or cistern for the **WC Reduced** time when activated. If the WC is activated a second time within 1 second and before the **WC Reduced** time has finished, the valve or cistern will remain open for the full **WC Full Flush Time**.

8.10 Shower

When activated, the Shower will open the valve for the length of time specified in the **Cycle Time** setting. Pressing the button again will not do anything to the shower cycle unless **Interruptible** is enabled in which case the shower cycle will be cancelled. As the shower nears the end of its cycle it is possible to have the valve pulse off and on again as a warning if the **Shower End Warning Pulse** is enabled. How long the water is pulsed off can be set with the **Pulse Length**, and the **Pulse Time From End** setting can be used to specify how long before the end of the shower cycle this pulse should occur. The Shower also allows for two input methods, the first being a normal input button and the other being the E-Suite. This can be set with the **System** setting.

8.11 Tap

When activated, the Tap will open the valve for the length of time specified in the **Cycle Time** setting. Pressing the button again will not do anything to the Tap cycle unless **Interruptible** is enabled in which case the tap cycle will be cancelled. As the tap nears the end of its cycle it is possible to have the valve pulse off and on again as a warning if the **Tap End Warning Pulse** is enabled. How long the water is pulsed off can be set with the **Pulse Length**, and the **Pulse Time From End** setting can be used to specify how long before the end of the tap cycle this pulse should occur. The Tap also allows for two input methods, the first being a normal input button and the other being the E-Suite. This can be set with the **System** setting.

9 123.20.13.90 Configuration Settings

The configuration settings can be modified on the Configuration Settings screen.

Menu Item	Type	Default
1. **Device**		
1.1. Location	String	
1.2. DHCP	Enable/Disable	Enabled
1.3. IP Address	IP Address	0.0.0.0
1.4. Gateway IP Address	IP Address	0.0.0.0
1.5. Subnet Mask Address	IP Address	255.255.255.0
1.6. Server IP Address	IP Address	192.168.1.100
1.7. Bluetooth	Off/Factory/Normal	Off
2. Room 1		
2.1. **W.C.**		
2.1.1. **Commissioning Purge**		
2.1.1.1. Operation Count	0 - 255	1
2.1.2. **Time Slots**		
2.1.2.1. Schedules	Schedule List	1. 00:00:00 – 06:00:00 (Enabled) 2. 06:00:00 – 12:00:00 (Enabled) 3. 12:00:00 – 18:00:00 (Enabled) 4. 18:00:00 – 00:00:00 (Enabled) 5. 00:00:00 – 00:00:00 (Disabled) 6. 00:00:00 – 00:00:00 (Disabled) 7. 00:00:00 – 00:00:00 (Disabled) 8. 00:00:00 – 00:00:00 (Disabled) 9. 00:00:00 – 00:00:00 (Disabled) 10. 00:00:00 – 00:00:00 (Disabled) 11. 00:00:00 – 00:00:00 (Disabled) 12. 00:00:00 – 00:00:00 (Disabled) 13. 00:00:00 – 00:00:00 (Disabled) 14. 00:00:00 – 00:00:00 (Disabled) 15. 00:00:00 – 00:00:00 (Disabled) 16. 00:00:00 – 00:00:00 (Disabled)
2.1.2.2. Log Activations	Enable/Disable	Enabled
2.1.3. **Inactivity Purge**		
2.1.3.1. Inactivity Period	Time (D HH:mm) 0 01:00 – 28 00:00	3 00:00
2.1.3.2. Inactivity Purge	Enable/Disable	Disabled

Menu Item	Type	Default
2.1.4. **Auto Run**		
2.1.4.1. Event Schedules	Event Schedule List	1. 00:00:00 (Disabled) 2. 00:00:00 (Disabled) 3. 00:00:00 (Disabled) 4. 00:00:00 (Disabled) 5. 00:00:00 (Disabled) 6. 00:00:00 (Disabled) 7. 00:00:00 (Disabled) 8. 00:00:00 (Disabled) 9. 00:00:00 (Disabled) 10. 00:00:00 (Disabled) 11. 00:00:00 (Disabled) 12. 00:00:00 (Disabled) 13. 00:00:00 (Disabled) 14. 00:00:00 (Disabled) 15. 00:00:00 (Disabled) 16. 00:00:00 (Disabled) 17. 00:00:00 (Disabled) 18. 00:00:00 (Disabled) 19. 00:00:00 (Disabled) 20. 00:00:00 (Disabled) 21. 00:00:00 (Disabled) 22. 00:00:00 (Disabled) 23. 00:00:00 (Disabled) 24. 00:00:00 (Disabled) 25. 00:00:00 (Disabled) 26. 00:00:00 (Disabled) 27. 00:00:00 (Disabled) 28. 00:00:00 (Disabled) 29. 00:00:00 (Disabled) 30. 00:00:00 (Disabled) 31. 00:00:00 (Disabled) 32. 00:00:00 (Disabled)
2.1.4.2. Log Activations	Enable/Disable	Enabled
2.1.5. **IR Walkaway**		
2.1.5.1. Vacate Time	Time (HH:mm: ss.ms) 00:00:00.1 – 00:00:59.0	00:00:10.0
2.1.5.2. WC Occupy Half Flush Time	Time (HH:mm: ss.ms) 00:00:00.1 – 00:59:59.0	00:00:18.0
2.1.5.3. WC Occupy Full Flush Time	Time (HH:mm: ss.ms) 00:00:00.1 – 00:59:59.0	00:00:45.0
2.1.5.4. IR Walkaway	Enable/Disable	Disabled
2.1.6. **Lockout**		
2.1.6.1. Cycle Period	Time (HH:mm: ss) 00:01:00 – 23:59:59	00:15:00
2.1.6.2. Cycle Activations	0 – 255	4
2.1.6.3. Lockout State	Enable/Disable	Enabled
2.1.6.4. Lockout Penalty	Time (HH:mm: ss) 00:01:00 – 23:59:59	00:15:00
2.1.7. **Hygiene Purge**		
2.1.7.1. Operation Count	0 – 255	3
2.1.8. WC Full Cycle Period	Time (HH:mm: ss.ms) 00:00:01.0 – 00:00:04.0	00:00:02.5
2.1.9. WC Refill Time	Time (HH:mm: ss.ms) 00:00:01.0 – 00:00:50.0	00:00:10.0
2.1.10. Double Press Flush	Enable/Disable	Disabled
2.1.11. WC Reduced	Time (HH:mm: ss.ms) 00:00:00.1 – 00:00:03.0	00:00:00.2
2.1.12. Output Mode	Normal/OLI	OLI

Menu Item	Type	Default
2.2. Shower		
2.2.1. **Lockout**		
2.2.1.1. Cycle Period	Time (HH:mm: ss) 00:01:00 – 23:59:59	01:00:00
2.2.1.2. Cycle Activations	0 – 255	4
2.2.1.3. Lockout State	Enable/Disable	Enabled
2.2.1.4. Lockout Penalty	Time (HH:mm: ss) 00:01:00 – 23:59:59	01:00:00
2.2.2. **Time Slots**		
2.2.2.1. Schedules	Schedule List	1. 00:00:00 – 06:00:00 (Enabled) 2. 06:00:00 – 12:00:00 (Enabled) 3. 12:00:00 – 18:00:00 (Enabled) 4. 18:00:00 – 00:00:00 (Enabled) 5. 00:00:00 – 00:00:00 (Disabled) 6. 00:00:00 – 00:00:00 (Disabled) 7. 00:00:00 – 00:00:00 (Disabled) 8. 00:00:00 – 00:00:00 (Disabled) 9. 00:00:00 – 00:00:00 (Disabled) 10. 00:00:00 – 00:00:00 (Disabled) 11. 00:00:00 – 00:00:00 (Disabled) 12. 00:00:00 – 00:00:00 (Disabled) 13. 00:00:00 – 00:00:00 (Disabled) 14. 00:00:00 – 00:00:00 (Disabled) 15. 00:00:00 – 00:00:00 (Disabled) 16. 00:00:00 – 00:00:00 (Disabled)
2.2.2.2. Log Activations	Enable/Disable	Enabled
2.2.3. **Auto Run**		
2.2.3.1. Event Schedules	Event Schedule List	1. 00:00:00 (Disabled) 2. 00:00:00 (Disabled) 3. 00:00:00 (Disabled) 4. 00:00:00 (Disabled) 5. 00:00:00 (Disabled) 6. 00:00:00 (Disabled) 7. 00:00:00 (Disabled) 8. 00:00:00 (Disabled) 9. 00:00:00 (Disabled) 10. 00:00:00 (Disabled) 11. 00:00:00 (Disabled) 12. 00:00:00 (Disabled) 13. 00:00:00 (Disabled) 14. 00:00:00 (Disabled) 15. 00:00:00 (Disabled) 16. 00:00:00 (Disabled) 17. 00:00:00 (Disabled) 18. 00:00:00 (Disabled) 19. 00:00:00 (Disabled) 20. 00:00:00 (Disabled) 21. 00:00:00 (Disabled) 22. 00:00:00 (Disabled) 23. 00:00:00 (Disabled) 24. 00:00:00 (Disabled) 25. 00:00:00 (Disabled) 26. 00:00:00 (Disabled) 27. 00:00:00 (Disabled) 28. 00:00:00 (Disabled) 29. 00:00:00 (Disabled) 30. 00:00:00 (Disabled) 31. 00:00:00 (Disabled) 32. 00:00:00 (Disabled)

2.2.3.2. Log Activations	Enable/Disable	Enabled
2.2.4. **Inactivity Purge**		
2.2.4.1. Inactivity Period	Time (D HH:mm) 0 01:00 – 28 00:00	3 00:00
2.2.4.2. Inactivity Purge	Enable/Disable	Disabled
2.2.5. **Commissioning Purge**		
2.2.5.1. Operation Time	Time (HH:MM: ss.ms) 00:00:00.1 – 00:10:00.0	00:03:00.0

Menu Item	Type	Default
2.2.6. **Hygiene Purge**		
2.2.6.1. Operation Time	Time (HH:MM: ss.ms) 00:00:00.1 – 00:10:00.0	00:10:00.0
2.2.7. Cycle Time	Time (HH:mm: ss.ms) 00:00:00.1 – 00:10:00.0	00:01:00.0
2.2.8. System	Normal/E-Suite	Normal
2.2.9. Shower End Warning Pulse	Enable/Disable	Disabled
2.2.10. Pulse Length	Time (HH:mm: ss.ms) 00:00:00.0 – 00:00:59.0	00:00:01.0
2.2.11. Pulse Time from End	Time (HH:mm: ss.ms) 00:00:00.0 – 00:00:59.0	00:00:50.0
2.2.12. Interruptible	Enable/Disable	Disabled
2.3. Tap		
2.3.1. **Lockout**		
2.3.1.1. Cycle Period	Time (HH:mm: ss) 00:01:00 – 23:59:59	01:00:00
2.3.1.2. Cycle Activations	0 – 255	10
2.3.1.3. Lockout State	Enable/Disable	Enabled
2.3.1.4. Lockout Penalty	Time (HH:mm: ss) 00:01:00 – 23:59:59	01:00:00
2.3.2. **Time Slots**		
2.3.2.1. Schedules	Schedule List	1. 00:00:00 – 06:00:00 (Enabled) 2. 06:00:00 – 12:00:00 (Enabled) 3. 12:00:00 – 18:00:00 (Enabled) 4. 18:00:00 – 00:00:00 (Enabled) 5. 00:00:00 – 00:00:00 (Disabled) 6. 00:00:00 – 00:00:00 (Disabled) 7. 00:00:00 – 00:00:00 (Disabled) 8. 00:00:00 – 00:00:00 (Disabled) 9. 00:00:00 – 00:00:00 (Disabled) 10. 00:00:00 – 00:00:00 (Disabled) 11. 00:00:00 – 00:00:00 (Disabled) 12. 00:00:00 – 00:00:00 (Disabled) 13. 00:00:00 – 00:00:00 (Disabled) 14. 00:00:00 – 00:00:00 (Disabled) 15. 00:00:00 – 00:00:00 (Disabled) 16. 00:00:00 – 00:00:00 (Disabled)
2.3.2.2. Log Activations	Enable/Disable	Enabled

Menu Item	Type	Default
2.3.3. **9**		
2.3.3.1. Event Schedules	Event Schedule List	1. 00:00:00 (Disabled) 2. 00:00:00 (Disabled) 3. 00:00:00 (Disabled) 4. 00:00:00 (Disabled) 5. 00:00:00 (Disabled) 6. 00:00:00 (Disabled) 7. 00:00:00 (Disabled) 8. 00:00:00 (Disabled) 9. 00:00:00 (Disabled) 10. 00:00:00 (Disabled) 11. 00:00:00 (Disabled) 12. 00:00:00 (Disabled) 13. 00:00:00 (Disabled) 14. 00:00:00 (Disabled) 15. 00:00:00 (Disabled) 16. 00:00:00 (Disabled) 17. 00:00:00 (Disabled) 18. 00:00:00 (Disabled) 19. 00:00:00 (Disabled) 20. 00:00:00 (Disabled) 21. 00:00:00 (Disabled) 22. 00:00:00 (Disabled) 23. 00:00:00 (Disabled) 24. 00:00:00 (Disabled) 25. 00:00:00 (Disabled) 26. 00:00:00 (Disabled) 27. 00:00:00 (Disabled) 28. 00:00:00 (Disabled) 29. 00:00:00 (Disabled) 30. 00:00:00 (Disabled) 31. 00:00:00 (Disabled) 32. 00:00:00 (Disabled)
2.3.3.2. Log Activations	Enable/Disable	Enabled
2.3.4. **Commissioning Purge**		
2.3.4.1. Operation Time	Time (HH:MM: ss.ms) 00:00:00.1 – 00:10:00.0	00:03:00.0
2.3.5. **Inactivity Purge**		
2.3.5.1. Inactivity Period	Time (D HH:mm) 0 01:00 – 28 00:00	3 00:00
2.3.5.2. Inactivity Purge	Enable/Disable	Disabled
2.3.6. **Hygiene Purge**		
2.3.6.1. Operation Time	Time (HH:MM: ss.ms) 00:00:00.1 – 00:10:00.0	00:10:00.0
2.3.7. Cycle Time	Time (HH:mm: ss.ms) 00:00:00.1 – 00:05:59.9	00:00:10.0
2.3.8. System	Normal/E-Suite	Normal
2.3.9. Tap End Warning Pulse	Enable/Disable	Disabled
2.3.10. Pulse Length	Time (HH:mm: ss.ms) 00:00:00.0 – 00:00:59.0	00:00:01.0
2.3.11. Pulse Time from End	Time (HH:mm: ss.ms) 00:00:00.0 – 00:00:59.0	00:00:08.0
2.3.12. Interruptible	Enable/Disable	Enabled
2.4. Tap		
2.4.1. **Lockout**		
2.4.1.1. Cycle Period	Time (HH:mm: ss) 00:01:00 – 23:59:59	01:00:00
2.4.1.2. Cycle Activations	0 – 255	10
2.4.1.3. Lockout State	Enable/Disable	Enabled
2.4.1.4. Lockout Penalty	Time (HH:mm: ss) 00:01:00 – 23:59:59	01:00:00

Menu Item	Type	Default
2.4.2. **Auto Run**		
2.4.2.1. Event Schedules	Event Schedule List	1. 00:00:00 (Disabled) 2. 00:00:00 (Disabled) 3. 00:00:00 (Disabled) 4. 00:00:00 (Disabled) 5. 00:00:00 (Disabled) 6. 00:00:00 (Disabled) 7. 00:00:00 (Disabled) 8. 00:00:00 (Disabled) 9. 00:00:00 (Disabled) 10. 00:00:00 (Disabled) 11. 00:00:00 (Disabled) 12. 00:00:00 (Disabled) 13. 00:00:00 (Disabled) 14. 00:00:00 (Disabled) 15. 00:00:00 (Disabled) 16. 00:00:00 (Disabled) 17. 00:00:00 (Disabled) 18. 00:00:00 (Disabled) 19. 00:00:00 (Disabled) 20. 00:00:00 (Disabled) 21. 00:00:00 (Disabled) 22. 00:00:00 (Disabled) 23. 00:00:00 (Disabled) 24. 00:00:00 (Disabled) 25. 00:00:00 (Disabled) 26. 00:00:00 (Disabled) 27. 00:00:00 (Disabled) 28. 00:00:00 (Disabled) 29. 00:00:00 (Disabled) 30. 00:00:00 (Disabled) 31. 00:00:00 (Disabled)
2.4.2.2. Log Activations	Enable/Disable	Enabled
2.4.3. **Commissioning Purge**		
2.4.3.1. Operation Time	Time (HH:MM: ss.ms) 00:00:00.1 – 00:10:00.0	00:03:00.0
2.4.4. **Inactivity Purge**		
2.4.4.1. Inactivity Period	Time (D HH:mm) 0 01:00 – 28 00:00	3 00:00
2.4.4.2. Inactivity Purge	Enable/Disable	Disabled
2.4.5. **Time Slots**		
2.4.5.1. Schedules	Schedule List	1. 00:00:00 – 06:00:00 (Enabled) 2. 06:00:00 – 12:00:00 (Enabled) 3. 12:00:00 – 18:00:00 (Enabled) 4. 18:00:00 – 00:00:00 (Enabled) 5. 00:00:00 – 00:00:00 (Disabled) 6. 00:00:00 – 00:00:00 (Disabled) 7. 00:00:00 – 00:00:00 (Disabled) 8. 00:00:00 – 00:00:00 (Disabled) 9. 00:00:00 – 00:00:00 (Disabled) 10. 00:00:00 – 00:00:00 (Disabled) 11. 00:00:00 – 00:00:00 (Disabled) 12. 00:00:00 – 00:00:00 (Disabled) 13. 00:00:00 – 00:00:00 (Disabled) 14. 00:00:00 – 00:00:00 (Disabled) 15. 00:00:00 – 00:00:00 (Disabled) 16. 00:00:00 – 00:00:00 (Disabled)
2.4.5.2. Log Activations	Enable/Disable	Enabled
2.4.6. **Hygiene Purge**		

2.4.6.1. Operation Time	Time (HH:MM: ss.ms) 00:00:00.1 – 00:10:00.0	00:10:00.0
2.4.7. Cycle Time	Time (HH:mm: ss.ms) 00:00:00.1 – 00:05:59.9	00:00:10.0
2.4.8. System	Normal/E-Suite	Normal
2.4.9. Tap End Warning Pulse	Enable/Disable	Disabled
2.4.10. Pulse Length	Time (HH:mm: ss.ms) 00:00:00.0 – 00:00:59.0	00:00:01.0
2.4.11. Pulse Time from End	Time (HH:mm: ss.ms) 00:00:00.0 – 00:00:59.0	00:00:08.0
2.4.12. Interruptible	Enable/Disable	Enabled

10 System Test Function

A system test can be done by selecting **Test Mode** in the **System Functions** menu. This will test the inputs (Piezo touch buttons or infrared sensors) and the outputs (water valves). This is useful for fault finding if any of the valves fail to operate. This function can also be used to confirm Piezo touch buttons and valves have been connected to the correct sockets on the control unit.

NOTE: The control unit cannot set the water temperature for pre- mixed supplies or showers. For these applications, seek advice from the plumbing system specifier. TMV3 thermostatic valves are usually used in these applications.

11 Data Logging

Data logging records the events of all functionalities including the hygiene purge operations. The data logs are stored locally on the 123.20.13.90 and can be exported to a PC or laptop. The download data is in the form of a csv file and can be viewed via WDCMS or exported to an external database.

12 Technical Specifications

Power supply	110-230V AC (Fuse 2 Amp), 50Hz Single phase, (UK, Europe, Australasia) Maximum Rating 60 Watts. (Refer to model WDCA100-NX for North America).
Enclosure IP Rating	IP44
Weight	1.7 Kg.
Dimensions	W202mm x H119mm x D83.4mm depth.

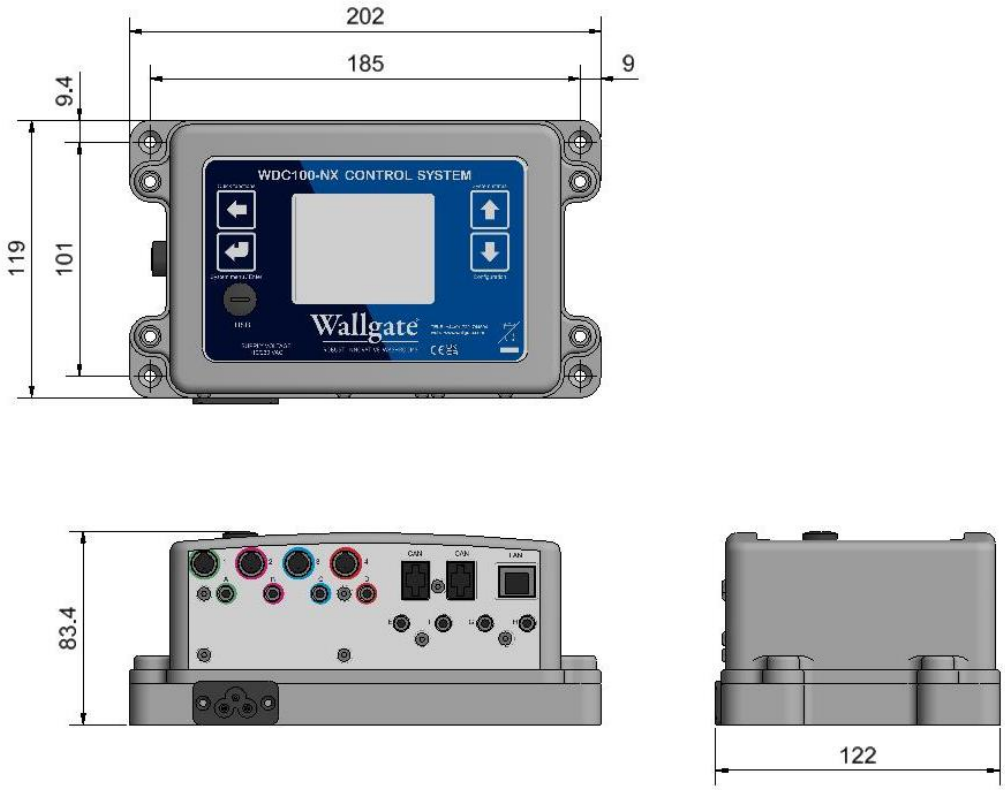


Figure 7. 123.20.13.90 Dimensions

13 Operation

Use the main isolation switch provided by the installer to switch the unit on or off. The main isolation switch is located near to the electronic control box. If unit is faulty, switch off the control unit until the fault is repaired by a qualified engineer.

WARNING! Risk of electric shock, serious injury and death. Only trained and qualified personnel should remove the cover of the electronic control box.

The basin, shower and WC are fitted with either Piezo type stainless steel touch buttons or infrared sensors.

Press the button face to operate a Piezo touch button. Once an operation cycle starts, it will continue for a fixed period and stop unless the touch button is pressed again, which will cancel the operation.

- The controller has extensive menu settings all of which are further defined in 123.20.13.90 Product / User Manual.

For the Infrared sensor, hold your hand within 50mm of the infrared sensor to operate. The operation cannot be interrupted or stopped when infrared sensors are fitted.

• The hot and cold basin valves are opened for 10 seconds (adjustable) each.

• The hot, warm, and cold shower valves are opened for 60 seconds (adjustable) each.

• The WC flush valve is opened to deliver a 6-litre flush. The cistern refill time is 30 seconds (adjustable), after which the WC is ready to flush again.

If the WC is not a cistern type flush but is flushed directly from the water mains or a central tank system, the flush time may have been set with a different cycle time to suit the system flow performance.

• A dual flush option is available, using one or two buttons depending on the configuration of the WDC-NX controller.

14 Maintenance

The electronic control unit does not have any user serviceable parts. In the event of a fault, switch off the electrical supply and contact an authorised electrician to replace the unit.

Any service or repair work must be carried out by a qualified engineer. During the warranty period, the service or repair must only be done by a qualified engineer or appointed service agent.

15 Related Documentation

- Product Manual / User Operation for 123.20.13.90
- Product Manual for WDCMS optional software for networking WDC units to a PC / BMS
- Product manual for additional expansion modules

16 Warranty

The warranty set forth herein is given expressly and is the only warranty given by the Galvin Engineering Pty Ltd. With respect to the product, Galvin Engineering Pty Ltd makes no other warranties, express or implied. Galvin Engineering Pty. Ltd. hereby specifically disclaims all other warranties, express or implied, including but not limited to the implied warranties of merchantability and fitness for a particular purpose.

Galvin Engineering Pty Ltd products are covered under our manufacturer's warranty available for download from www.galvinengineering.com.au. Galvin Engineering Pty Ltd expressly warrants that the product is free from operational defects in workmanship and materials for the warranty period as shown on the schedule in the manufacturer's warranty. During the warranty period, Galvin Engineering will replace or repair any defective products manufactured by Galvin Engineering without charge, so long as the terms of the Manufacturer's warranty are complied with.

The remedy described in the first paragraph of this warranty shall constitute the sole and exclusive remedy for breach of warranty, and Galvin Engineering Pty Ltd shall not be responsible for any incidental, special or consequential damages, including without limitation, lost profits or the cost of repairing or replacing other property which is damaged if this product does not work properly, other costs resulting from labour charges, delays, vandalism, negligence, fouling caused by foreign material, damage from adverse water conditions, chemical, electrical or any other circumstances over which Galvin Engineering has no control. This warranty shall be invalidated by any abuse, misuse, misapplication, improper installation or improper maintenance or alteration of the product.

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