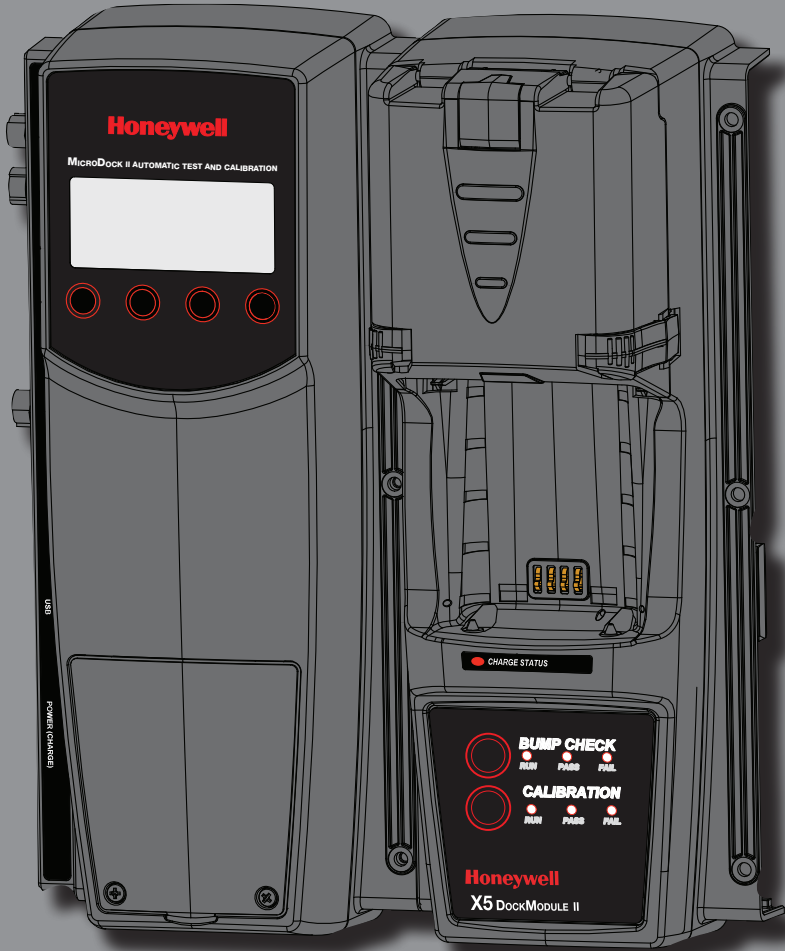


MicroDock II



Operating Manual

Honeywell

Limited Warranty & Limitation of Liability

All products are designed and manufactured to the latest internationally recognized standards by Honeywell Analytics under a Quality Management system that is certified to ISO 9001:2000.

Device	Warranty Terms
MicroDock II	24 months from date of switch on / installation
Service	Warranty Terms
A. Replacement with new product within the first 90 days of the original warranty period.	Full warranty period as specified in Warranty Terms above.
B. Repair (or replacement with new or reconditioned product at HA discretion) after the first 90 days of the original warranty period.	Pro-rata warranty realized as balance of original warranty specified in Warranty Terms above, or equivalent discounted price on a new, fully warranted instrument or component.
Components replaced under original product warranty.	Warranted against same fault for 3 months from date of repair
Repair or Replacement outside of original warranty period	

Warranty Conditions

1. The HA Limited Product Warranty only extends to the sale of new and unused products to the original buyer where purchased from a HA authorized distributor or service center.
2. Not covered are:
 - consumable items such as dry-cell batteries, filters and fuses or routine replacement parts due to the normal wear and tear of the product;
 - any product which in HA's opinion has been altered, neglected, misused or damaged by accident or abnormal conditions of operation, handling, use or severe sensor poisoning; or failure to maintain and calibrate the product as prescribed in the product documentation;
 - defects attributable to improper installation, repair by an unauthorized person or the use of unauthorized accessories/parts on the product;
3. Any claim under the HA Product Warranty must be made within the warranty period and as soon as reasonably possible after a defect is discovered.
4. If a Warranty claim is being sought it is the responsibility of the buyer to return the product to the distributor or HA authorized service center along with a full description of the fault.
5. A warranty claim will be accepted if conditions contained within this Warranty are met. When, in the opinion of HA, a warranty claim is valid, HA will repair or replace the defective product according to the terms herein.
6. Please note that if, in the opinion of HA the warranty claim is not valid, HA will, at the option of the buyer, return the unit unaltered at the buyer's expense, repair the unit at the then prevailing rates, replace the unit with an appropriate replacement item at the then prevailing price, or discard the unit.
7. In no event shall HA's liability exceed the original purchase price paid by the buyer for the product.
8. HA makes no other warranty expressed or implied except as stated above.

Contacting Honeywell Analytics

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Product Registration

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WEEE and RoHS Directives

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Table of Contents

<i>Limited Warranty & Limitation of Liability</i>	3
<i>Contacting Honeywell Analytics</i>	4
<i>Product Registration</i>	4
<i>WEEE and RoHS Directives</i>	4
<i>Safety Information - Read First</i>	9
<i>Getting Started</i>	11
<i>MicroDock II Base Station and Docking Modules</i>	11
<i>Parts of the MicroDock II and Docking Module</i>	12
<i>Display Elements</i>	13
<i>Pushbuttons</i>	13
<i>Docking Module Pushbuttons</i>	13
<i>Station Pushbuttons</i>	14
<i>Installation</i>	15
<i>Battery Installation</i>	16
<i>Inserting the XD</i>	17
<i>Inserting the X5</i>	18
<i>Adding Another Docking Module</i>	19
<i>Initializing the New Docking Module</i>	21
<i>Pump Setup</i>	22
<i>Mounting the MicroDock II</i>	23
<i>How to Use the Base Station</i>	24
<i>Confirming Inlet Setup</i>	24
<i>Activating the Station</i>	24
<i>Self-Test</i>	24
<i>Deactivating the Station</i>	25
<i>User Options Menu</i>	25
<i>Time/Date</i>	26
<i>Inlet Setup</i>	26
<i>Gas Type Screen</i>	27
<i>Multi-gas Type Screen</i>	28
<i>Gas Type</i>	28
<i>Gas Concentration Level</i>	30
<i>Gas Cylinder Lot # Field</i>	31
<i>Pump Setup</i>	31
<i>Contrast</i>	32
<i>Backlight</i>	32
<i>About</i>	33
<i>Format the MMC Card</i>	34
<i>Inlet Select</i>	35

<u>Passcode</u>	36
Entering User Options When Passcode Protected	36
<u>Language</u>	37
<u>Results History</u>	39
<u>Reconfiguring the Detector</u>	39
<u>Gas Conflicts</u>	41
Abort Option	42
<u>Conflicts</u>	43
<u>Not Found</u>	44
<u>Accessing the MMC Card During a Test</u>	45
<u>Order of Gases Applied for Bump Checks and Calibrations</u>	45
<u>Bump Check</u>	47
<u>Bump Check Results</u>	49
Bump Pass	49
Bump Fail	49
Sensor Disabled	50
<u>Calibration</u>	51
<u>Guidelines</u>	51
<u>Calibration Procedure</u>	52
X5 with CO ₂ Sensor	53
<u>Calibration Results</u>	54
Calibration Pass	54
Calibration Fail	54
Sensor Disabled	55
<u>Data Transfer</u>	55
<u>Transferring Datalogs</u>	55
<u>Base Station MMC Card</u>	56
<u>Event Logging</u>	56
<u>Inserting/Replacing a MMC Card</u>	56
<u>Accessing Test Results</u>	57
<u>PC Requirements</u>	57
<u>Charging the X5 Battery Pack</u>	57
<u>Charger/Battery Pack Guidelines</u>	57
Charging Procedure	58
<u>Maintenance</u>	58
<u>X5 Battery Pack Storage</u>	58
<u>Troubleshooting</u>	59
<u>Replacement Parts and Accessories</u>	63
<u>Specifications</u>	65
<u>Charger Specifications</u>	66

Standard MicroDock II Kit includes:

- Shipping case
- MicroDock II base station and docking modules as specified
- 110 – 240 Vac universal power adapter
- 128MB Delkin Multi-media card (MMC) inserted
- Set of four C-cell alkaline batteries
- USB connector cable
- Fresh air inlet filter
- Two to four 2 ft. (0.6 m) calibration gas hoses (depending upon order at the time of purchase)
- Two gas cylinder inlet fittings
- CD: MicroDock II User Manual and MicroDock II Quick Start Guide translations
- MicroDock II Quick Start Guide
- Fleet Manager II Deluxe CD



CAUTION

For safety reasons, this equipment must be operated and serviced by qualified personnel only. Read and understand the user manual completely before operating or servicing.

DRAFT

Introduction



WARNING

To ensure personal safety, read the Safety Information before using the MicroDock II Base Station.

The MicroDock II Automatic Test and Calibration Station (“the station”) provides automated calibration, bump testing and data transfer for the XD and X5 detectors.

A maximum of ten modules can be connected to the station.

NOTE

There is a maximum of six charging modules.

Six charging modules plus four non-charging modules can be connected to the station.

Safety Information - Read First

Use the station only as specified in this manual. International symbols used on the station and in this manual are explained in Table 1.

Read the Caution statements on the following pages before using the station.

NOTE

This instrument contains batteries. Do not mix with the solid waste stream. Spent batteries should be disposed of by a qualified recycler or hazardous materials handler.



CAUTION

MicroDock II Base Station

- » If the station is damaged or parts are missing, contact Honeywell Analytics immediately.
- » The station must be used only in an area that is free of background gas. Do not use the station in a hazardous area. Failure to adhere to this caution can lead to fire and/or explosion.
- » This equipment uses potentially harmful gas for calibrations. The station must be attached to a venting system or be used in a well-ventilated area.
- » Perform calibrations and bump checks only in a clean atmosphere that is free of background gas.
- » The maximum recommended exhaust line length is 50 ft. (15.24 m).
- » Ensure that the inlet filter is clean.
- » Ensure that all gas cylinders contain enough gas.
- » Ensure the exhaust line is not connected to a negative pressure system.
- » A demand flow regulator must be used with all gas cylinder connections.
- » Do not expose the station to electrical shock or severe continuous mechanical shock.
- » The station warranty will be void if the unit is disassembled, adjusted, or serviced by non-Honeywell Analytics personnel.
- » Do not immerse the station in liquids.

Battery Chargers

- » If the charger is damaged or parts are missing, contact Honeywell Analytics immediately.
- » Do not charge or charge the batteries in a hazardous location. Do not use the charger in a hazardous location. Failure to adhere to these precautions can lead to fire and/or explosion.
- » Read and adhere to all instructions and precautions that are provided with the charger. Failure to do so can result in fire, electric shock, or other personal injury and/or property damage.
- » Use only Honeywell Analytics approved batteries; do not use alkaline or other rechargeable batteries with this charger.
- » For indoor use only.
- » Do not immerse the charger in liquids.
- » Do not expose the charger to electrical shock or severe continuous mechanical shock.
- » Ensure the detector battery pack is locked in place before operating the detector.
- » To eliminate the risk of electrical shock, disconnect and deactivate the charger when cleaning or performing maintenance.
- » Avoid touching the charger and detector contact pins.
- » Substitution of components may impair Intrinsic Safety of the detector under charge.
- » Do not charge the battery pack with any other charger.
- » Do not attempt to disassemble, adjust, or service the charger unless instructions are provided to perform a procedure, or a part is listed as a replacement part in the user manual . Use only Honeywell Analytics replacement parts.
- » The charger warranty will be void if a customer, personnel, or third parties damage the charger during repair attempts. Any non-Honeywell Analytics service/repair attempts will void this warranty.



Symbol	Description
	Approved to both U.S. and Canadian Standards by the Canadian Standards Association
	Conforms to European Union Directives

Table 1. International Symbols

Getting Started

Confirm that the items below are included with the station. If the station is damaged or parts are missing, contact the place of purchase immediately.

- Batteries (four replaceable C-cell alkaline batteries)
- 128 MB Delkin Multi-media card (MMC) inserted
- USB cable
- Two to four calibration gas hoses (depending upon order at the time of purchase) with quick connect fittings
- Inlet filter assembly
- Power adapter
- Charger adapter (charger models only)
- CD: MicroDock II User Manual and MicroDock II Quick Start Guide translations
- MicroDock II Base Station Quick Start Guide
- Fleet Manager II Deluxe CD

NOTE

A standard MicroDock II base station is shipped with two inlets. A maximum of four calibration gas inlets can be included if specified by the user before purchasing.

To order replacement parts, refer to [Replacement Parts and Accessories](#).

For information regarding the operations and functions of the station, refer to the following figures and tables.

- Figure 1 MicroDock II Base Station and Docking Modules
- Figure 2 and Table 2 The MicroDock II (describes the station)
- Table 3 Display Elements (describes the station LCD icons)
- Table 4 Docking Module Pushbuttons
- Figure 3 and Table 5 Station Pushbuttons
- Figure 4 and Table 6 Station Connections

MicroDock II Base Station and Docking Modules

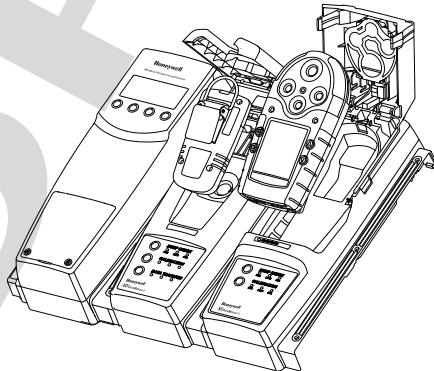


Figure 1. MicroDock II Base Station and Docking Modules

To connect additional docking modules and for procedures to correctly insert detectors into docking modules, refer to [Installation](#).

Parts of the MicroDock II and Docking Module

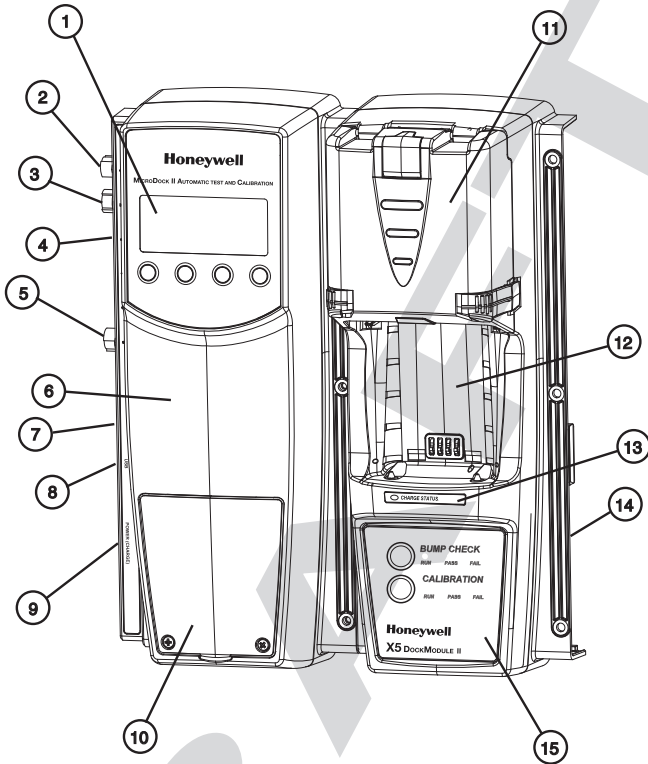


Figure 2. The MicroDock II Docking Module

Item	Description	Item	Description
1	Liquid crystal display (LCD)	9	Charger port (optional)
2	Zero air/purge inlet (inlet 1)	10	Battery cover
3	Calibration gas inlet (inlet 2)	11	Docking module lid
4	Station pushbuttons	12	Detector bay
5	Exhaust outlet	13	Charger status LED (optional)
6	Base station	14	Docking module
7	Power port	15	Docking module pushbuttons and status LEDs
8	USB port		

Table 2. The MicroDock II and Docking Module

Display Elements















Icon	Function	Icon	Function
	AC Power		Test Fail and Option Disabled
	Batteries Fully Charged		Cursor and Sensor Disabled
	Batteries Half-Charged		Scroll Up
	Batteries at Low Level		Scroll Down
	MultiMediaCard (MMC)		Selection Arrow
	MultiMediaCard (MMC) not inserted		Selected to Modify
	Test Pass and Option Enabled		Passcode Protected

Table 3. Display Elements

Pushbuttons

Docking Module Pushbuttons








Pushbutton	Description
 BUMP CHECK	To bump a detector, press  BUMP CHECK. When connecting a new docking module, press and hold  BUMP CHECK to send a confirmation signal back to the station.
 CALIBRATION	To calibrate a detector, press  CALIBRATION
 DATA TRANSFER	To transfer datalog information from a detector, press  DATA TRANSFER. For more information, refer to Data Transfer . (=XD only)

Table 4. Docking Module Pushbuttons

Station Pushbuttons

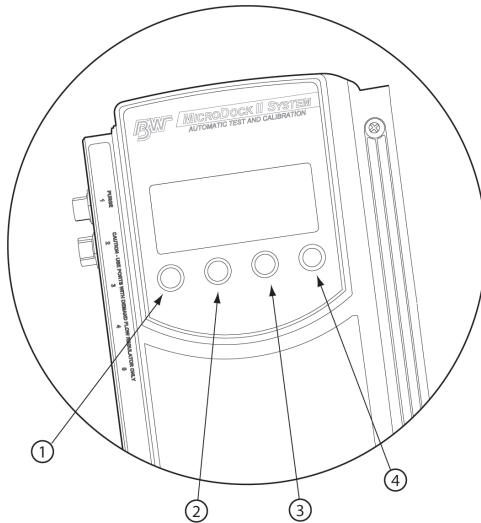


Figure 3. Station Pushbuttons

The station pushbuttons are used to activate, deactivate, scroll, select options, and perform functions.



Item	Description
1	<ul style="list-style-type: none"> • Activate the base station • Select menu to access the user options • Scroll up  to different user options or to other functions/selections within a user option • Select OK
2	<ul style="list-style-type: none"> • Select log to view the results history log • Select the sel (select option) function • Activate a modifiable field
3	<ul style="list-style-type: none"> • exit from a modifiable option, and • exit from the user options menu to access the normal operating screen.
4	<ul style="list-style-type: none"> • Deactivate the base station • Scroll down  to different user options or to other functions/selections within a user option

Table 5. Station Pushbuttons

Installation

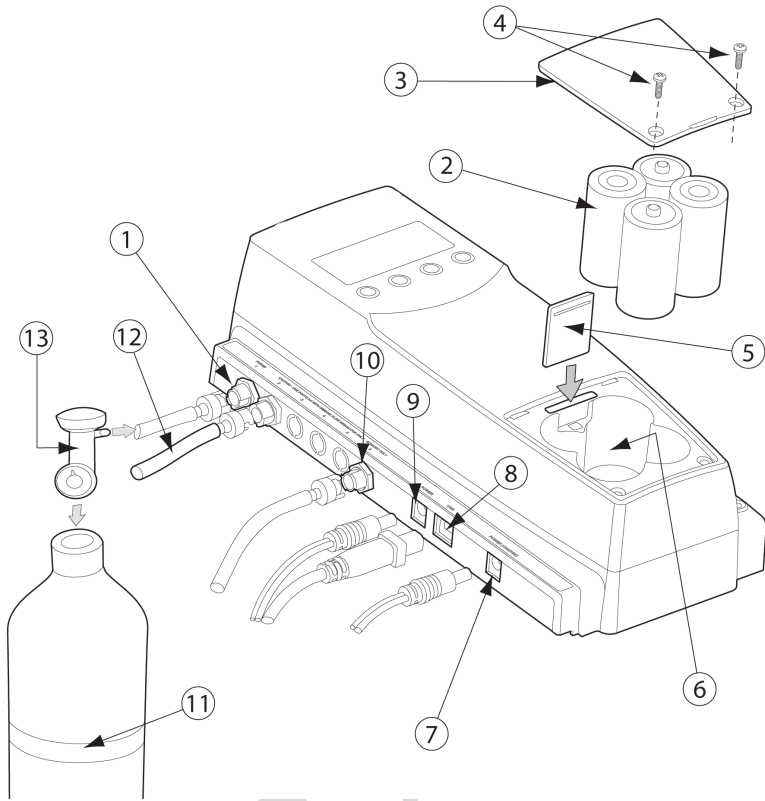


Figure 4. Station Connections

Item	Description	Item	Description
1	Inlet filter assembly (PURGE 1)	7	Charger port
2	C-cell batteries (4)	8	USB port
3	Battery cover	9	Power port
4	Philips pan head retaining screws (2)	10	Exhaust outlet
5	MultiMediaCard (MMC)	11	Gas cylinder
6	Battery compartment	12	Calibration gas hose
		13	Demand flow regulator

Table 6. Station Connections



WARNING

The atmosphere must be free of background gas. Do not use the station in a hazardous area.

All required national electrical codes (NEC) and safety standards must be followed.

NOTE

The station can operate from either an electrical power source or by using batteries. The batteries will provide automatic backup power if the main power fails.

1. Connect the power cord to the POWER port on the station and then plug the cord into an AC outlet. Or install the batteries. Refer to ***Battery Installation***.
2. Connect the charger cord to the CHARGER port on the station and then plug the cord into an AC outlet (if applicable).
3. Attach all gas connections. Inlet 1 (PURGE) is configured for ambient air and inlets 2 - 5 are configured for calibration/test gases. Refer to ***Confirming Inlet Setup***.
4. A demand flow regulator must be used with all gas cylinder connections.
5. Ensure the exhaust line is not connected to a negative pressure system.

For AC main installation, a circuit breaker must be integrated in the building installation as a disconnect device for the station.

The disconnect device must be installed in close proximity to the station and must be marked as a disconnecting method for the station.

Battery Installation



WARNING

Only change batteries in an atmosphere that is clear of hazardous gas. Failure to adhere to this warning can result in personal injury and/or property damage.

To install batteries into the station, refer to Figure 4 and complete the following:

1. Loosen only; do not remove the retaining screws from the battery cover.
2. Remove the battery cover and set it aside.
3. Insert four C-cell batteries into the battery compartment.
4. Replace the battery cover and tighten the retaining screws. Do not over tighten the screws. Refer to ***Table 11. Torque Specifications***.

Inserting the XD



CAUTION

Infrared or intense ambient light (sun or halogen) may interfere with the station/detector communication.

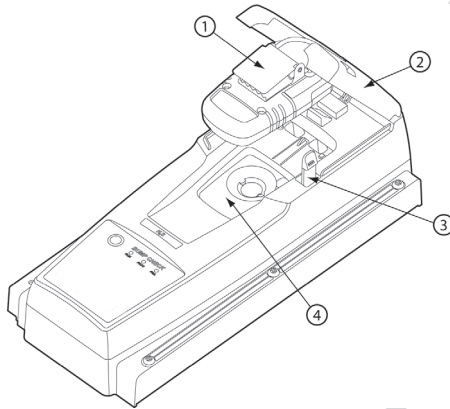


Figure 5. Inserting the XD

Item	Description
1	Alligator clip
2	Docking module lid
3	Release tabs
4	Detector bay

Table 7. Inserting the XD

1. Activate the detector and wait until it is in normal operating mode.
2. Ensure the alligator clip is closed and the ring is resting flat to prevent disruptions with the transmission.
3. Press the two release tabs on the docking module and raise the lid.
4. Lower the detector (LCD face down) into the detector bay. Push forward to ensure the top of the detector connects with the top of the bay.
5. Lower the lid and press down until the release tabs click.

When the detector has been inserted correctly, the RUN LED(s) on the docking module lights yellow and **Unit Inserted** displays.

```
Bay 3
Unit Inserted
XD
XD407-H028320
```

The station LCD displays the following docking module identification; the

- type of detector that is inserted, and
 - bay and serial number of the docking module.
6. To bypass the station identification screen, press any button on the base station.

Inserting the X5



CAUTION

Infrared or intense ambient light (sun or halogen) may interfere with the station/detector communication.

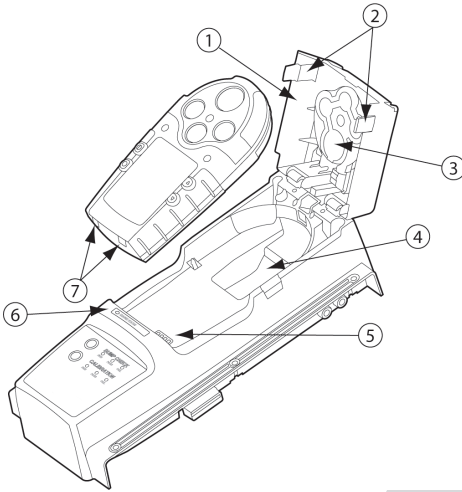


Figure 6. Inserting the X5

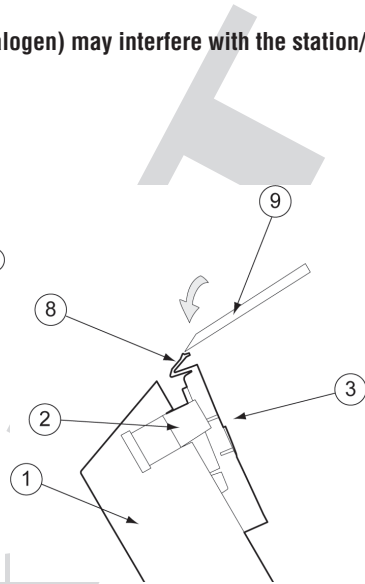


Figure 7. Removing the Diffusion Adapter

NOTE

Table 9 references Figure 6 and Figure 7.

Item	Description
1	Docking module lid
2	Release tabs
3	Diffusion adapter
4	Detector bay
5	Connector pins (charging model only)
6	Charge status indicator (charging model only)
7	Connector outlets
8	Diffusion adapter release tab
9	Tool used to push down on diffusion adapter release tab

Table 9. Inserting the X5

1. Activate the detector and wait until it is in normal operating mode.
2. Ensure the alligator clip is closed and the ring is resting flat on the detector to prevent disruptions with the transmission.
3. Press the two release tabs on the docking module and raise the lid.

Important: If the X5 detector is fitted with a pump, the diffusion adapter must be removed from the docking module lid.

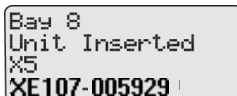
Using a small flathead screwdriver, press the release tab downwards. Pull the adapter forward slightly and then lift upwards to remove.

4. Hold the detector (LCD face up) at a 45° angle and insert the bottom into the detector bay.

Ensure that the connector outlets on the bottom of the detector lock into place over the connector pins in the docking bay, and then lower the top into place.

5. Lower the lid and press down until the release tabs click.

When the detector has been inserted correctly, the RUN LEDs on the docking module light yellow and **Unit Inserted** displays on the station.



```
Bay 8
Unit Inserted
X5
XE107-005929
```

The station LCD displays the following docking module identification; the

- type of detector that is inserted, and
- bay and serial number of the docking module.

The X5 detector LCD displays **Microdock**.

6. To bypass the station identification screen, press any button on the station.

Adding Another Docking Module

If required, refer to [How to Use the Base Station](#) before adding a docking module.

WARNING

Only one module can be connected at a time. Complete steps #1-19 for each docking module that is added.

To add another docking module, refer to Table 11 and 12, Figure 8, 9, and 10, and complete the following procedures:

Housing Assembly	Torque
Alligator clip	4-5 in lbs
Wall mounting plate	9-10 in lbs

Table 11. Torque Specifications

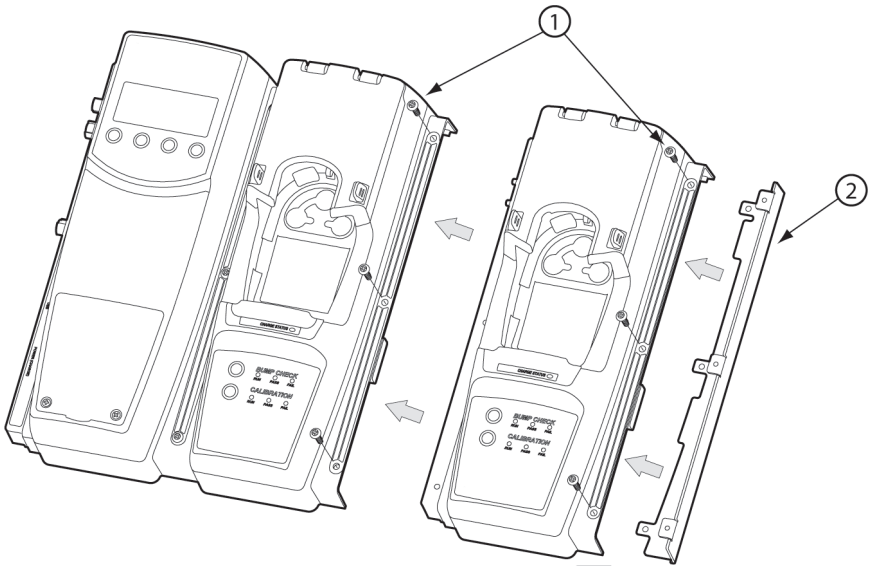


Figure 8. Adding Another Docking Module (Front View)

Item	Description
1	Phillips pan-head screw (3)
2	End plate
3	Barbed fitting ports
4	Gasket block
5	Phillips flat-head screw
6	PCB connectors
7	Bottom cover plate

Table 12. Adding Another Docking Module

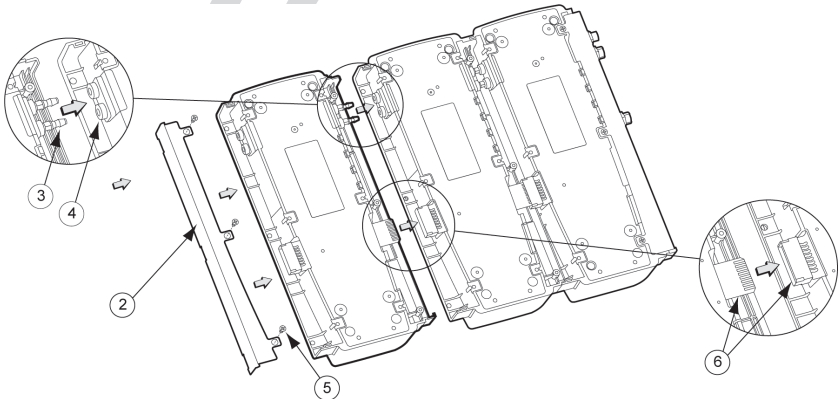


Figure 9. Adding Another Docking Module (Back View)

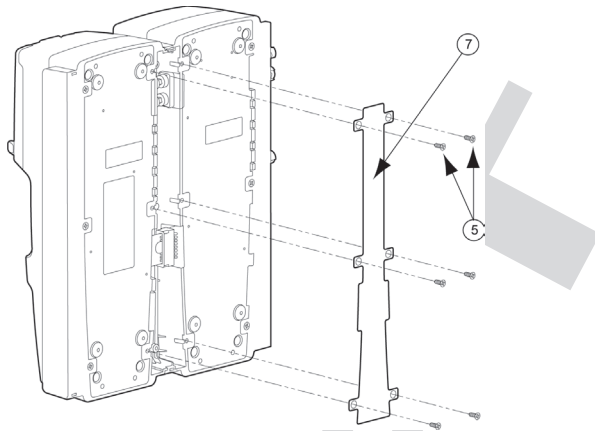


Figure 10. Attaching Back Cover Plate (Back View)

1. Deactivate the station.
2. Remove the power cord from the POWER port.
3. Remove the end plate. There are three Phillips screws on the front and three Phillips screws on the back.
4. Attach the new docking module.
5. Ensure the barbed fitting ports mate correctly with the gasket block. Ensure that the male and female PCB connectors mate correctly.

Initializing the New Docking Module

When a new docking module is connected, it must be initialized (setup to communicate with the station).

6. Activate the station.
7. Simultaneously press and hold BUMP CHECK on the new docking module while pressing (leftmost button) on the station.
8. All of the LEDs on the new docking module light. On the station, the following screen displays to confirm that the new docking module has been successfully added.

```

New Receptacle
added
Position 8
      OK
  
```

9. Press Ok to save the setting.
10. Deactivate the station.



WARNING

The station must be deactivated after each module has been added.

Pump Setup

The pump speed must be set for each new docking module that is connected.



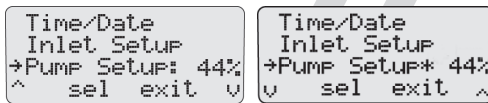
WARNING

Perform the pump setup procedures in a clean atmosphere only.

11. Reactivate the station and wait until the normal operating screen displays.
12. Connect the hose to a flow meter and to inlet 1 (PURGE) on the station.

Allow the flow meter sufficient time to stabilize (approximately 30 minutes) before using to ensure accurate flow readings.

13. From the station, access the user options menu.
14. Press \odot^{\vee} or \odot^{\wedge} to scroll to the **Pump Setup** option.
15. Press \odot **sel** to activate the pump setup field (: changes to *).



The station immediately begins pumping the ambient air.

The factory default pump speed displays beside **Pump Setup**. The station pump setup is measured as a percentage (%) and the flow meter is measured in ml/min.

NOTE

The station is shipped with the factory default pump speed set to 350 ml/min. (**40-45%**).

16. Monitor the flow meter until the unit stabilizes (5-20 minutes depending upon the type of flow meter).
17. From the station, press \odot^{\vee} or \odot^{\wedge} until the flow meter displays 350 ml/m.
18. From the station, press \odot **exit** to save the new value and deactivate the Pump Setup field (* changes to :).
19. Press \odot exit again to return to the normal operating screen.
20. Repeat steps # 1-19 for each docking module that is added. Continue to step #21 and 22 for the last module added.
21. After all of the modules have been added, attach the end plate (refer to Figure 9).
22. Fasten the bottom cover plate to the space between the two docking modules using six Phillips flat-head screws (refer to Figure 10).

NOTE

When assembling or reassembling parts of the station and docking modules, refer to the [Table 11 Torque Specifications](#).

Mounting the MicroDock II

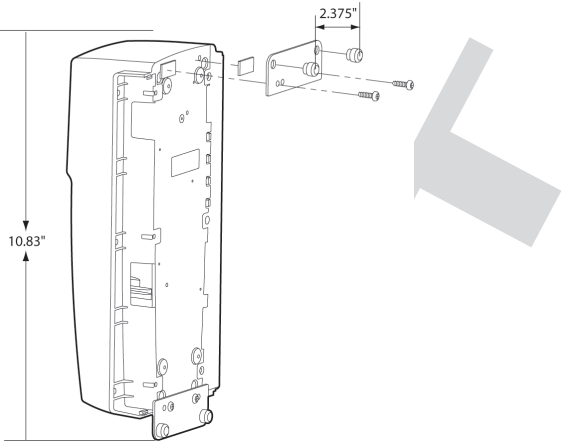


Figure 11. Attaching the Wall Mounting Plate

NOTE

When mounting two or more docking modules, each docking module requires an individual set of wall mounting plates.

Because of the variety of surfaces that the station can be mounted to, mounting screws are not provided.

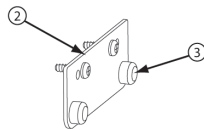
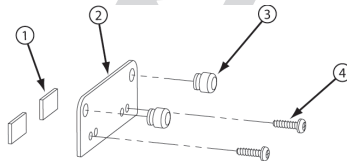


Figure 12. Parts of the Wall Mounting Plate

Item	Description
1	Wall mounting plate (2)
2	Grommet (4)
3	Phillips self-tapping screw (8)

Table 13. Mounting the MicroDock II

The MicroDock II station can be easily mounted to a secure surface. To mount the station, complete the following:

1. Determine a secure location where the station is to be mounted.
Using the screws that are provided, attach the wall mounting plates to the station/docking modules.

2. When the plates are mounted on the station, measure horizontally on the wall the width of the station; 2.38 in. (60.32 mm).
If two or more docking modules that are attached together are being mounted on the wall, measure a distance of 1.64 in. (41.7 mm) of space between each docking module.
3. Use four screws to attach the station to the secure surface.


How to Use the Base Station



WARNING

To prevent possible injury and/or property damage, only use the station in an atmosphere that is clear of hazardous gas.

Ensure that the station is attached to a venting system or used in a well ventilated area.

The station pushbuttons are not labelled. The station is operated by pressing the  pushbutton that is located directly below the option that displays on the LCD.

Confirming Inlet Setup




WARNING

Failed tests can result if the inlets are not setup correctly.

Before activating the station for the first time, ensure that the gas cylinders are connected to the inlets correctly. Refer to [Installation](#). To confirm that the inlets are setup correctly, refer to [Inlet Setup](#) in the [User Options Menu](#) section.

Activating the Station

To activate the station, complete the following:

1. Connect power to the station. Refer to [Installation](#).
2. Press and hold  (the left most button) until the initializing screen displays.

```
Initialize  
MicroDock II
```

The LCD immediately then displays the normal operating screen.

```
08/22/05 14:33  
MicroDock II  
menu los off
```

Self-Test

The station automatically performs a self-test during start-up.

Docking Module/Detector: The station checks for connected docking modules and inserted detectors.


```
Bay 8  
Unit Inserted  
X5  
SE107-005929
```



The LCD displays information about the docking modules, the model of the detector, and the detector serial number.


If a detector is inserted but not activated, the LCD displays the following message.

```
Bay 1
IR Communication
Not Working
OK
```

Press **OK** to acknowledge the error message.

Batteries: The batteries are tested during activation and continuously thereafter. If battery power is extremely low, the low battery icon  flashes.

Multi-media card (MMC): The MMC card icon  displays continuously on the normal operating screen when the MMC card is inserted. The MMC card records a variety of data.

Passcode Protection: If the station is Passcode protected, the Passcode protect icon  displays on the normal operating screen.

Deactivating the Station

The station must be in the normal operating mode to deactivate. From the normal operating screen, press and hold **OK** (the rightmost button) until Powering Down displays.

```
Bay 1
Powering Down
```

The power down screen displays briefly before the station deactivates.

User Options Menu

The user options menu provides access to ten options. The following user options are listed in the order they are displayed on the station LCD.

NOTE

Bump or calibration tests cannot be performed while the user options menu is accessed. However, if a test is initiated before or while accessing the user options menu, the test automatically begins when the user options menu is exited.

To access the user options menu, complete the following:

1. Press and hold **OK** **menu** to access the first screen.

```
→Time/Date
  Inlet Setup
  PUMP Setup: 44%
^   sel  exit  v
```

If the station is Passcode protected, refer to [Entering User Options when Passcode Protected](#).

2. Press **OK** **v** or **OK** **^** to scroll to different options. When the **→** icon displays beside the required option, press **OK** **sel** to select.
3. To exit the options menu and return to the normal operating screen, press **OK** **exit**.

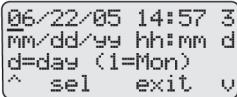
Time/Date

The **Time/Date** option is used to adjust the time (hour/minute), the date (month/day/year) and the day of the week (1-7) of the station.

To change the date, time, and/or day of the week, complete the following:

1. From the user options menu, press $\odot \vee$ or $\odot \wedge$ to scroll to the **Time/Date** option.

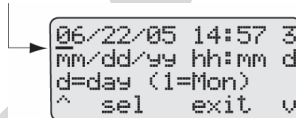
Press \odot **sel** to confirm the selection and access the time/date screen.

	mm: month
	dd: day
	yy: year
	hh: hour
	mm: minute
	d: day of the week Monday = 1, Tuesday = 2, Wednesday = 3, etc.

NOTE

The time and date values can only be changed in the order they are presented in this table. To bypass any time/date setting, press \odot **sel**. The station automatically retains the current value and proceeds to the next date/time value.

The cursor automatically displays below the first value of the month. Each value is selected, changed, and bypassed individually.



2. Press $\odot \wedge$ to toggle between 0 or 1. When the correct value displays, press \odot **sel** to confirm the change. The cursor then automatically moves to the second value of the month.

Or

Press \odot **sel** to bypass the first value. The station automatically retains the current value and proceeds to the second value of the month.

3. Repeat step #2 for the remaining time and date values.
4. Press \odot **exit** to return to the user options menu.
5. Press \odot **exit** again to return to the normal operating screen.

Inlet Setup

The **Inlet Setup** option is used to setup the specific gas cylinders for bump checks and calibrations. This option is used to

- select the gas type(s)
- enter the corresponding gas concentrations level(s), and
- enter the gas cylinder lot # of each selected gas.



WARNING

Failed tests can result if the inlets are not setup correctly.

For initial station activation, ensure the inlets are installed correctly as follows:

- Inlet 1 is the default connection for ambient air.
- Inlet 2 is the default connection for four-gas mix, unless otherwise specified at purchase.
- Inlets 3-5 are designed connections for additional gases. However, unless specified at the time of purchase, inlets 3-5 are configured for ambient air.

To confirm that the inlets are setup correctly, complete the following:

1. From the user options menu, press \odot^v or \odot^\wedge to scroll to the **Inlet Setup** option.
2. Press \odot **sel** to confirm the selection and access the inlet 1 (ambient air) screen.

```

1 → Purse
   020.9 %
-
v sel exit >

```

NOTE

Inlet 1 is designated for ambient air only and cannot be changed.

3. From the inlet 1 screen, press \odot^{\diamond} to access the inlet 2 screen.

Continue to press \odot^{\diamond} to access the inlet 3, 4, and 5 screens. The O_2 gas type displays when each of the inlet screens are accessed for the first time.

```

Inlet
GasType
2 → O2
   026.0 PPM
^ sel exit v

```

The inlet screens (2-5) have three options to modify:

- **Gas type**
- **Gas concentration level**
- **Gas cylinder lot # field** (field initially displays blank until data is entered).

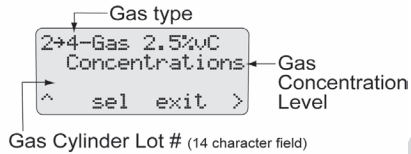
Gas Type Screen

```

Gas type
2 → CO2
   010.0 PPM
Gas Concentration Level
^ sel exit >
Gas Cylinder Lot # (14 character field)

```

Multi-gas Type Screen



- To select a gas type, proceed to Gas Type. Refer to Table 16 for available gas types.

Gas Type

There are 33 gas types to select from. Refer to the following table.

Gas Type	Gas Concentration	
NOTE		
The * icon in column three indicates that the gas concentration level can be modified on the station.		
Purge (ambient air)	%	
O ₂ (oxygen)	%	
NH ₃ (ammonia)	ppm	*
CO (carbon monoxide)	ppm	*
H ₂ (hydrogen)	ppm	*
Cl ₂ (chlorine) bump only	ppm	*
HCN (hydrogen cyanide)	ppm	*
H ₂ S (hydrogen sulfide)	ppm	*
NO (nitric oxide)	ppm	*
NO ₂ (nitrogen dioxide)	ppm	*
PH ₃ (phosphine)	ppm	*
SO ₂ (sulfur dioxide)	ppm	*
Ethanol	% LEL	*
Ethanol Equiv.	% LEL	*
Hexane	% LEL	*
Hexane Equiv.	% LEL	*
Methane	% LEL	*
Methane Equiv.	% LEL	*
Pentane	% LEL	*
Pentane Equiv.	% LEL	*
Propane	% LEL	*
Propane Equi	% LEL	*
4 – Gas 2.5%vCH ₄ (H ₂ S, CO, LEL, O ₂)	ppm and %LEL	
4 – Gas Equiv.	ppm and %LEL	

Gas Type	Gas Concentration	
Custom 4-Gas	ppm and %LEL	*
Custom 3-gas	ppm and %LEL	*
Custom 2-Gas	ppm and %LEL	*
3 – Gas SO ₂ Mi (3-gas mix)	ppm and %LEL	
Isobutylene	ppm	*
LEL	%LEL	*
CO ₂	ppm	*
CO ₂ zero / N ₂ (nitrogen)	ppm	*

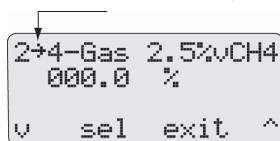
Table 16. Inlets 2-5 – Available Gas Types

NOTE

The ⇄ icon is used to scroll to different options and functions. The * icon displays when a field is selected and can be modified.

To select a gas type, complete the following:

From the required inlet screen, the ⇄ icon displays.



- If the required gas type is displayed, press v to move down to the gas concentration level. Proceed to the [Gas Concentration Level](#) section.
 - To select a different gas type, press sel. The ⇄ changes to * to indicate that the field is activated. Press v or ^ to scroll through the list of gas types.
 - When the required gas type displays, press sel. The * changes to ⇄ to confirm the new selection and to deactivate the field.
 - To enter the gas concentration level for the selected gas, proceed to the following section [Gas Concentration Level](#).
- Or
- Press exit to return to the user options screen.
 - Press exit again to return to the normal operating screen.

Gas Concentration Level

Depending upon the gas type selected, **ppm**, **LEL%**, or **%** displays beside the gas concentration level.

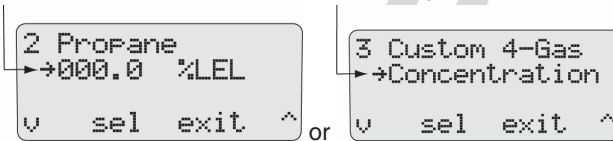
NOTE

The following gas concentrations are factory configured and cannot be changed:

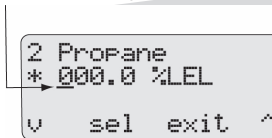
- Four-gas-mix (**4-Gas 2.5% vCH4**)
- Four-gas equivalent (**4-Gas Equiv.**)
- Three-gas SO₂ mix (**3-Gas SO2 Mi**)

The **Custom 4-Gas**, **Custom 3-Gas**, and **Custom 2-Gas** can be modified; however, only the gas concentration levels can be changed.

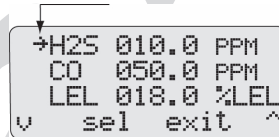
10. Press **OV** to move the **→** icon down to the gas concentration level.



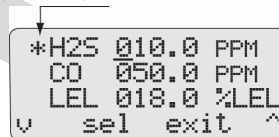
11. Press **sel**. If the gas concentration level can be modified, the **→** changes to the ***** icon and the cursor displays below the first value selected to modify.



For custom and multi-gas: All of the applicable gases display (for **4-Gas** press **OV** to scroll to the remaining gas type not currently displayed).



Press **sel** to select the required gas. The **→** icon changes to ***** and the cursor automatically displays below the first value selected to modify.



12. Press **OV** or **^** to scroll to the required value. Press **sel** to save the new value.

Or

Press **sel** to retain the current value. The cursor automatically moves to the next value.

13. Repeat step #12 for the remaining values, then press **exit**. The ***** then changes back to the **→** icon.

- To enter a lot number for the corresponding gas cylinder, proceed to **Gas Cylinder Lot # Field**.

Or

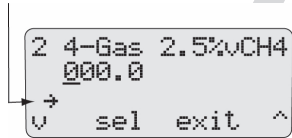
Press **exit** to return to the user options screen.

- Press **exit** again to return to the normal operating screen.

Gas Cylinder Lot # Field

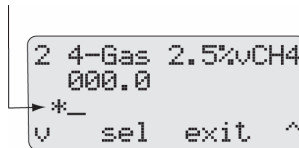
Although this field is designed to enter the lot number of the corresponding gas cylinder, it can be used to enter other data. A maximum of fourteen characters (letters and/or numbers) can be selected.

- Press **v** to move \rightarrow down to the lot number field. Initially this field is blank.



```
2 4-Gas 2.5%vCH4
000.0
v sel exit ^
```

- Press **sel**. The \rightarrow changes to * and the cursor displays for the first value.

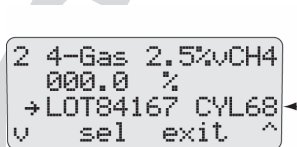


```
2 4-Gas 2.5%vCH4
000.0
* sel exit ^
```

- Press **v** or **^** to scroll to the first desired letter/number. Press **sel** to accept the value and automatically move the cursor to the next space.

- Repeat step #18 for the remaining values.

The following screen displays the corresponding lot number for the attached gas cylinder.



```
2 4-Gas 2.5%vCH4
000.0 %
v sel exit ^
```

- Press **exit**. The * changes back to the \rightarrow icon.
- To setup another inlet, repeat the procedures listed in the **Gas Type**, **Gas Concentration Level**, and the **Gas Cylinder Lot # Field** sections.
- When all of the entries are completed, press **exit** to return to the user options menu.
- Press **exit** again to return to the normal operating screen.

Pump Setup

Refer to **Pump Setup** in the **Adding Another Docking Module** section.

Contrast

The **Contrast** option is used to brighten or darken the LCD. To adjust the contrast level, complete the following:

1. From the user options menu, press $\odot \vee$ or $\odot \wedge$ to scroll to the **Contrast** option.

```
→Contrast :5
Backlight:auto
About
^ sel exit v
```

2. Press \odot **sel** to confirm the selection and activate the field (: changes to *).

```
Contrast Level ←
→Contrast *5 ←
Backlight:auto
About
^ sel exit v
```

The contrast levels range from **2** (brightest) to **10** (darkest).

NOTE

The station is shipped with the contrast level set to **5**.

3. Press $\odot \vee$ or $\odot \wedge$ to select the desired contrast level.
4. Press \odot **sel** to save the new value and deactivate the field (* changes back to :).
5. Press $\odot \vee$ or $\odot \wedge$ to scroll to another user option.
Or
6. Press \odot **exit** to return to the normal operating screen.

Backlight

This **Backlight** option is used to enable, disable, or set to auto mode for the LCD lighting. The **auto** option can be selected to automatically disable the backlight when the station is not in use.

NOTE


The station is shipped with the auto backlight option enabled. While operating from battery power only, select **auto** mode or \boxtimes (off) to conserve the batteries.

To enable/disable or select **auto** backlight, complete the following:

1. From the user options menu, press $\odot \vee$ or $\odot \wedge$ to scroll to the **Backlight** option.
2. Press \odot **sel** to select the option and activate the field (: changes to *).

```
Contrast :5
→Backlight:auto
About
^ sel exit v
```


3. Press $\odot \vee$ or $\odot \wedge$ to scroll through the options.

 Enabled

 Disabled

auto Automatic

Each selection displays beside **Backlight** and the backlight activates and deactivates, depending upon the selection.

4. Press \odot **sel** to save the selection and deactivate the field (* changes back to :).

5. Press $\odot \vee$ or $\odot \wedge$ to scroll to another user option.

Or

Press \odot **exit** to return to the normal operating screen.

About

The **About** option displays the serial number for the station and each docking module that is connected. To view the serial numbers for the station and docking module(s), complete the following:

1. Press $\odot \vee$ or $\odot \wedge$ to scroll to the **About** option.

```
Contrast :5
Backlight:auto
→About
^ sel exit v
```

2. Press \odot **sel** to access the about station screen.

```
Stn. M2BF-B03
M1 CSXF-01A
^ exit v
```

3. If more than one docking module is connected to the station, press $\odot \vee$ or $\odot \wedge$ to scroll to the additional docking module serial numbers (**M1 - M10**).

NOTE

Maximum ten docking modules can be connected to a station. There is a maximum limit of six charging modules. Six charging modules plus four non-charging modules can be connected to the station.

Format the MMC Card

This option is used to format the Multi-media card (MMC).

NOTE

If a previously formatted MMC card is used to reformat, all of the data on the card will be erased.

To format an MMC card, complete the following:

1. Activate the station if required.
2. On the station, remove the cover from the battery compartment. Refer to [Battery Installation](#).
3. Insert the MMC card into the slot above the battery compartment.

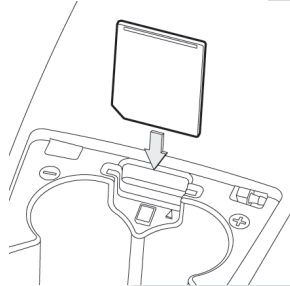


Figure 13. Insert the MMC Card into the Station

NOTE

If the MMC card has never been formatted, the station will automatically prompt to format the card (refer to step #5-6).

4. Press $\odot \vee$ or $\odot \wedge$ to scroll to the **Format MMC** option.

```
→Format MMC
  Inlet Sel:manu
  Pass Code:X
  ^ sel  exit  v
```

5. Press \odot **sel** to confirm the selection and to access the formatting confirmation screen.

```
Format MMC?
All data will be
erased.
Yes           No
```

6. Press \odot **Yes** to initiate formatting. The following screen displays.

```
Formating MMC...
```

When formatting is complete, the LCD automatically returns to the user options screen.

If **No** is selected, the LCD automatically returns to the user options screen. If there is a problem with the card, the following screen displays.

```
Error Formatting
MMC Please Try
Another Card
OK
```

Press **OK** to acknowledge and insert a new card and repeat the procedures.

7. Press **v** or **^** to scroll to another user option.

Or

Press **exit** to return to the normal operating screen.

For additional information about the MMC card, refer to [Base Station MMC Card](#).

Inlet Select

NOTE

Applicable only to custom and multi-gas types.

The **Inlet Sel** option is used to enable either the automatic (**auto**) or manual (**manu**) function for selecting an inlet.

If the **auto** option is enabled, the station automatically selects the correct gas inlet for the bump check or calibration.

If **manu** is enabled, the applicable test gas must be selected each time a bump/calibration is performed. If the **manu** option is enabled, refer to [Order of Gases Applied for Bump Checks and Calibrations](#) for important information.

To enable either the **auto** or **manu** option, complete the following:

1. From the user options menu, press **v** or **^** to scroll to the **Inlet Sel** option.
2. Press **sel** to confirm the selection and activate the field (: changes to *).

```
Format MMC
→Inlet Sel: auto
Pass Code
^ sel exit v
```


```
Format MMC
→Inlet Sel* auto
Pass Code
^ sel exit v
```

3. Press **v** or **^** to toggle between the **auto** and **manu** option.
4. When the desired option displays, press **sel** to confirm the selection and deactivate the field (* changes back to :).
5. Press **v** or **^** to scroll to another user option.

Or

Press **exit** to return to the normal operating screen.

Passcode

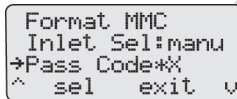
The **Passcode** option is used to prevent unauthorized access to the user options menu. When the station is Passcode protected,  displays on the normal operating screen.

NOTE

The Passcode is provided separately.

To enable/disable Passcode protection, complete the following:

1. From the user options menu, press \bigcirc^{\vee} or \bigcirc^{\wedge} to scroll to the **Passcode** option.
2. Press \bigcirc **sel** to select the option and activate the field (: changes to *).



```
Format MMC
Inlet Sel:manu
→Pass Code*%
^ sel exit v
```

The current mode displays beside the **Passcode** option.



Passcode protect enabled



Passcode protect disabled

3. Press \bigcirc^{\vee} or \bigcirc^{\wedge} to toggle between the options.
4. When the desired option displays, press \bigcirc **sel** to confirm the selection and deactivate the field (* changes back to :).
5. Press \bigcirc^{\vee} or \bigcirc^{\wedge} to scroll to another user option.

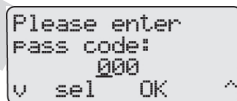
Or

Press \bigcirc **exit** to return to the normal operating screen.

Entering User Options When Passcode Protected

To access the user options menu when the station is Passcode protected, complete the following:

1. From the normal operating screen, press \bigcirc **menu** to access the user options. The enter Passcode screen displays.



```
Please enter
Pass code:
  000
v sel OK ^
```

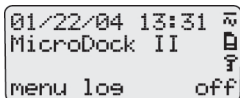
The cursor displays below the first value.

2. Press \bigcirc^{\vee} or \bigcirc^{\wedge} to scroll to the first number of the Passcode.

When the correct value displays, press \bigcirc **sel** to save the first value. The cursor automatically moves to the next value.

3. Repeat step #2 for the remaining values.
4. Press \bigcirc **OK**. If the correct Passcode is entered, the user options main screen displays.

Incorrect Passcode Entered: If an incorrect Passcode is entered, the station automatically returns to the normal operation screen.



```
01/22/04 13:31
MicroDock II
menu los      off
```

Press **OK**. The LCD returns to the normal operating screen. Repeat steps #1-4.

Language

The station provides five language options and is used to display all text on the LCD to a selected language.



```
→Lansuage:Ens
^ sel  exit  v
```

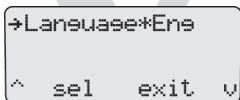
To select a different language, complete the following:

1. From the user options menu, press **v** or **^** to scroll to the **Language:** option.

NOTE

The station is shipped with the factory default set to English (**Eng**).

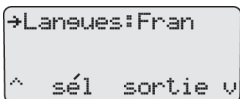
2. Press **sel** to confirm the selection and activate the field (: changes to *).



```
→Lansuage*Ens
^ sel  exit  v
```

3. Press **v** or **^** to scroll to the different language options. The available options are
 - **Eng** (English),
 - **Fran** (French),
 - **Deut** (German),
 - **Port** (Portuguese), and
 - **Espa** (Spanish).
4. When the desired language displays, press **sel** to confirm the selection and deactivate the field (* changes to :).

The LCD now displays all of the screens in the selected language.



```
→Lansues:Fran
^ sél  sortie v
```

5. Press **v** or **^** to scroll to another user option
Or

Press **sortie** (exit) to return to the normal operating screen.

DRAFT

Results History

The results history function is used to display the results of the last ten records of both bump checks and calibrations (combined total).

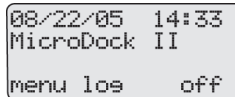
The results display from most recent to the oldest record. Test errors display as the type of error; **Unit removed**, **MMC error**, and **IR error**.

NOTE

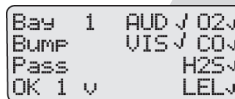
The results history log is erased when the station is deactivated.

To view the results history log, complete the following:

1. From the normal operating screen, press **log**.



The most recent history log (1) displays.



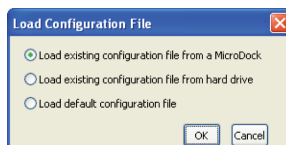
↑ First log

2. To access the next log, press **^**. Continue to press **^** to view the remaining logs.
3. Press **OK** to return to the normal operating screen.

Reconfiguring the Detector

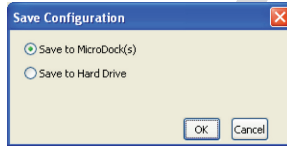
Fleet Manager II can reconfigure XD and X5 detectors with the base station. The detector can be reconfigured prior to performing a bump test or calibration. To reconfigure a detector, complete the following:

1. Activate the base station. Ensure it is in normal operation.
2. Ensure that a correctly formatted MMC card is inserted in the base station. See [Inserting/Replacing a MMC Card](#).
3. Connect the USB cable to the computer and to the USB port on the base station.
4. Activate the detector and wait until it is in normal operation.
5. Insert the detector into the detector bay.
6. From the computer, open Fleet Manager II.
7. Login to the Administration functions.
8. Under the Devices tab, click Configure Devices.
9. The Load Configuration File dialog box displays.



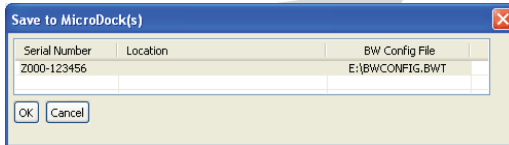
Select

- **Load existing configuration file from a MicroDock**
 - **Load existing configuration file from hard drive**
 - **Load default configuration file**
10. The Device Configuration dialog box displays.
 11. Select which device to configure by clicking its tab.
 12. Configure the device.
Ensure the Updatable checkbox is checked.
 13. Select a program option that will reprogram the detector. Each detector's configuration screen has different reprogram options. Refer to *Configuring Detectors in the Fleet Manager II User Manual*.
 14. When the configuration is complete, click **Save**. The Save Configuration dialog box displays.

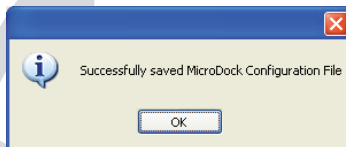


Select **Save to MicroDock(s)**

15. The Save to MicroDock(s) dialog box displays.

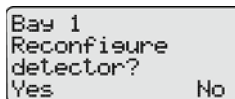


16. Select a MicroDock II to save to and click **OK**.
17. A dialog box displays the message **Successfully saved MicroDock Configuration File**. Click **OK**.



The detector configuration will be updated when the detector is inserted into the docking module, and a bump test or calibration is initiated.

18. To reconfigure the detector, press **BUMP CHECK** or **CALIBRATION**. If **Reprogram with user's consent** was selected under Program options, **Reconfigure detector?** displays on the base station LCD.



Press **Yes** to reconfigure the detector and proceed to the bump test or calibration.

Press **No** to bypass reconfiguration and proceed to the bump test or calibration.

-
19. When the base station is reconfiguring the detector, the following screen displays on the base station LCD.

```
Bay 1
Updating Docking
Module Config.
```

20. **Successful Reconfiguring:** If reconfiguration is successful, the following screen displays.

```
Bay 1
Reconfiguring
Detector...
```

Unsuccessful Reconfiguration: If reconfiguration is not successful, the following screen displays.

Press **OK**. The LCD then returns to normal operation.

Resolving IR Errors: Refer to the following solutions. If the following solutions do not resolve the IR error, refer to [Troubleshooting](#).

- Check the lighting conditions. Infrared or intense light (sunlight or halogen) can cause IR disruptions.
- Remove and reposition the detector in the docking module.
- Communication between the detector and base station may have been temporarily disrupted. Complete the procedures again.

Gas Conflicts

When performing a bump check or calibration, gas types must follow a specific order to prevent gas conflicts that can result in damaging the sensors within the detectors.

NOTE

Ensure that the gas inlets are configured correctly. Refer to [Inlet Setup](#).

The gas conflicts feature automatically displays if a gas conflict occurs when a bump check or calibration is initiated.

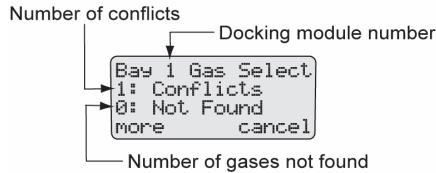
There are two types of gas conflicts:

1. **Conflicts:** More than one inlet is configured for a specific gas type.
Example: Inlet 2 is configured for SO₂ and inlet 3 is configured for the 3-gas SO₂ mix.
2. **Not Found:** The station is unable to locate the required gas type for a specific sensor on the detector.

The station displays additional information regarding the

- number of gas conflicts,
- number of gases not found,
- docking module (e.g., **Bay 1**),
- detector gas type(s),
- inlet, and
- inlet gas type(s).

If a gas conflict is detected by the station, the gas select screen automatically displays.



Refer to the following sections, [Conflicts](#) and [Not Found](#). Before proceeding to resolve gas conflicts, refer to the following section [Abort Option](#).

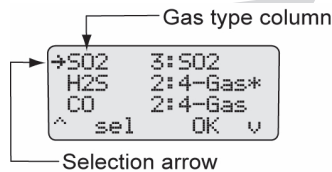
Abort Option

The **Abort** option is located in the gas type column and is used to quit the gas conflict function.

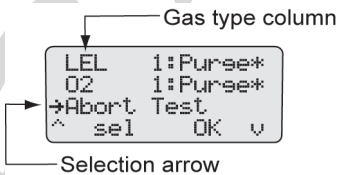
If inlets have not been setup or are setup incorrectly, select **Abort** to exit the bump check or calibration. Proceed to the user options menu and select the **Inlet Setup** option.


To abort a gas conflict, complete the following:

1. From the gas conflicts screen, press **more**. The conflicts/not found screen displays.



2. Press v or ^ to scroll to the **Abort Test** option.

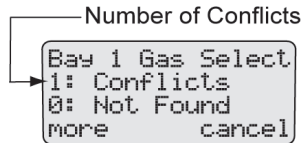


3. When the  displays beside **Abort Test**, press **sel** or press **OK**. The station automatically exits the gas conflict and returns to the normal operating screen.

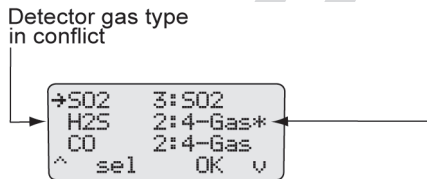
Conflicts

If a conflict occurs, it must be resolved to continue the bump check or calibration. The option is provided to manually select a gas inlet or to accept the default inlet that the station selects.

If one or more **Conflicts** display, complete the following steps or press **cancel** to quit the current bump/calibration.



1. Press **more** to access the gas type/inlet screen to view which gas is configured for more than one inlet.



* displays on the row of the gas in conflict and indicates the inlet the station has selected

The * icon displays on the far right side on the row of the gas that is setup for more than one inlet. The * also indicates the inlet that the station has selected as the optimum inlet.

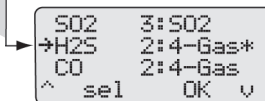
2. Press **OK** to accept the inlet that is selected and automatically resume the bump check or calibration.

NOTE

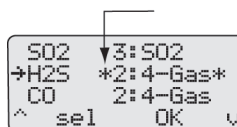
If **sel** is not selected within 30 seconds, the station automatically defaults to the inlet it has selected.

Or

3. Press **v** or **^** to move the **→** icon to the gas that is in conflict.



4. Press **sel** to activate the inlet field. The * automatically displays on the left side of the inlet.



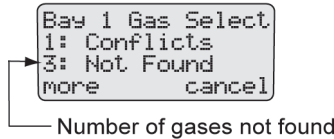
5. Press **v** or **^** to scroll to the desired inlet (1-5).

- When the required inlet value displays, press **sel** to confirm the selection and deactivate the field. The * no longer displays to the right of the inlet indicating the conflict has been resolved.

Unsuccessful Conflict Resolution: If the conflict is not resolved by selecting a different inlet, refer to the following:

- Ensure that the selected inlet is correct.
- Ensure the gas cylinder that is attached to the selected inlet is correct.
- Press **OK** to accept the station's default selection.

Not Found

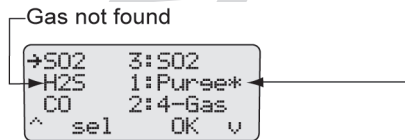


If a value of **1** or more displays before **Not Found**, complete the following:

Or

Press **cancel** to quit the current bump check/calibration.

- Press **more** to access the gas type/inlet screen to view which gas type(s) cannot be found.



* displays on the row of the gas not found and indicates the inlet the station has selected

The * icon displays on the far right side on the row of the gas that cannot be found. The station automatically defaults to the **Purge** inlet.

- Press **OK** to accept the default **Purge** inlet.

Or

Press **sel** to select a different inlet.

NOTE

For gases not found: If **sel** is not selected within 30 seconds, the station automatically defaults to the **Purge** inlet.

- If required, repeat steps #1-2 for any additional gases not found and confirm the following:
 - Ensure that the selected inlet is correct.
 - Ensure that the gas cylinder attached to the selected inlet is correct.
 - Press **OK** to accept the station's default selection.

Accessing the MMC Card During a Test

If an attempt is made to access the MMC card on the station from a PC while a bump check or calibration is being performed, the following screen displays.

```
MMC currently  
being accessed  
from PC.  
Please wait...
```

NOTE

Honeywell Analytics recommends that bump checks and calibrations be completed before attempting to access test results from the PC.

Order of Gases Applied for Bump Checks and Calibrations



WARNING

It is extremely important that gases are applied in the order that is specified in this manual.

Failure to adhere to the rules in [Table 17](#) and [Table 18](#) of this manual will result in incorrect sensor readings and possible personal injury and/or property damage.

NOTE

Manual application of gas types is available for the X5 detectors only.

To manually apply gases for bump checks and calibrations, complete the following:

1. Review [Table 17. Gas Type Application Table](#), and [Table 18. Gas Application Rules](#).
2. Determine the gases that are to be applied.
3. Using [Table 17](#), locate the first gas type (sensor) to be bump checked or calibrated on the top row.
4. Within the far left column, locate the next gas type (sensor) to be bumped or calibrated and refer to the rule number (if applicable).
5. Using [Table 18](#), locate the corresponding rule number. Ensure that the desired order to apply gases corresponds to the gas application rules.
6. Continue to reference the table and rules to ensure the gases will be applied in the correct order.
7. When the correct order is determined, proceed to the [Bump Check](#) or [Calibration](#) section.

Gases	H ₂ S	CO	Cl ₂ Bump only	NH ₃	HCN	NO ₂	COSH (H ₂ S/CO)	SO ₂	PH ₃	PID
H ₂ S		Quad gas	Cl ₂ Rule 4	NH ₃	HCN	NO ₂	quad gas one step calibration	SO ₂	PH ₃ Rule 11	H ₂ S
CO			Cl ₂ Rule 5	NH ₃	HCN	NO ₂	quad gas one step calibration	SO ₂	PH ₃ Rule 11	CO
Cl ₂ Bump only				NH ₃ Rule 9	HCN	NO ₂ Rules 8 & 10	Cl ₂ Rule 6	Cl ₂ Rule 9	PH ₃ Rule 9	Cl ₂
NH ₃					HCN Rule 9	NO ₂	NH ₃ Rule 6	NH ₃ Rule 9	PH ₃ Rules 9 & 10	NH ₃
HCN						HCN	HCN Rule 6	HCN Rules 8 & 10	PH ₃ Rules 8 & 10	HCN
NO ₂							NO ₂ Rule 6	NO ₂	NO ₂ Rule 1	NO ₂
COSH H ₂ S/CO								SO ₂ Rule 6	PH ₃ Rules 10 & 11	COSH H ₂ S/CO
SO ₂									PH ₃ Rules 9 & 10	SO ₂
PH ₃										PH ₃
PID										

Table 17. Gas Type Application Table

Rule #	Gas Type	Apply	Exception(s)
1	PH ₃	First	Two exceptions: NO ₂ and O ₃
2	HCN	First	Three exceptions: PH ₃ and ClO ₂
3	NO ₂	First	Three exceptions: HCN
4	H ₂ S	Last	One exception: PID
5	CO	Last	One exception: PID
6	COSH (H ₂ S/CO)	Last	One exception: PID
7	PID	Last	No exceptions
8	Toxic gas		Both toxic sensors are cross sensitive to each other – wait 5 minutes (minimum) between calibrations and before verifying sensors
9	2nd Toxic gas		Wait 5 minutes (minimum) after the second toxic gas is applied before verifying calibration. Verify calibration: Apply the same test gas from a different cylinder to ensure the calibration is successful.
10	Cross gas		Must perform individual calibrations to avoid incorrect calibration from cross gas
11	H ₂ S/PH ₃		H ₂ S contaminates PH ₃ – calibrate and verify PH ₃ sensor prior to applying any quad gas

Table 18. Gas Application Rules

Bump Check

A bump check is a test that is performed to confirm that the detector is responding to gas, and that the audio and visual alarms are operational.




CAUTION

Ensure the detector is not in a low battery state prior to performing a bump test.

NOTE

If the X5 is set to be reconfigured, reconfiguration must be completed prior to performing a bump check. Refer to [Reconfiguring the Detector](#).

To perform a bump check, complete the following:

1. Ensure the MMC card is inserted if datalogging is required.
If the MMC card is not inserted,  displays on the LCD when the station attempts to log results to the MMC card. If required, refer to [Inserting/Replacing a MMC Card](#).
2. Activate the detector and wait until it is in normal operating mode. Insert it into the docking module.
3. Activate the station and access the normal operating screen.

If a bump check is initiated while in the user menu: Bump checks that are queued while in the user option menu are initiated only when the user options menu is exited.

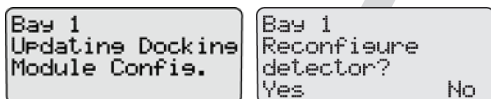
When the normal operating screen displays, the station automatically begins the bump check.

If more than one docking module is queued: If more than one docking module is queued for a bump check, the first module queued begins the bump check.

The RUN LED flashes yellow on the remaining docking modules that are queued for a bump check. When the first module is complete, the next module in the queue begins the bump check.

4. From the docking module, press BUMP CHECK. The RUN LED lights yellow.
5. Depending upon the type of detector, the option to reconfigure is provided.

If the detector can be reconfigured, the following two screens display.



To reconfigure the detector, press **Yes**. The MMC card then transfers the new configuration data to the detector. If required, refer to Reconfiguring the Detector.

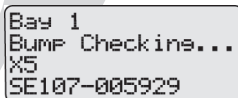
Or

Press **No** to continue with the bump check.

NOTE

If a selection is not made within 15 seconds, the station automatically defaults to the **No** selection and proceeds with the bump check.

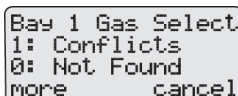
6. The station begins the bump check and displays the
 - bay number,
 - process being performed,
 - type of detector, and
 - serial number of the detector.



NOTE

The X5 beeps and flashes twice to test the sensors when the bump check begins.

7. If there is a gas conflict or a selected gas cannot be found, the gas select screen displays.



Gas conflicts must be resolved to continue the bump check. Refer to [Gas Conflicts](#).

If there are no gas conflicts, the station then applies the gas.

```
2 O2
  000.0
Applying Gas...
```

If more than one gas is being applied, the station performs a purge between each gas. Depending upon the gas type, the purge time(s) will vary.

```
Purge
Applying gas....
```

- After the bump check is complete, the station displays the results of the bump check and performs a final purge to clear any remaining gas.

```
Bay 1  AUD ✓ O2 ✓
Bump   VIS ✓ CO ✓
Pass   H2S ✓
Purge  022  LEL ✓
```

The countdown of seconds remaining displays beside **Purge**.

Bump Check Results

After the bump check is complete, the station displays the results of the test.

✓ Pass

✗ Fail

H2S – Gas type not detected (H₂S is used as an example, this applies to all gases)

– Sensor is disabled

NOTE

After a bump check is performed, the X5 deactivates in 5 minutes if no activity is detected.

Bump Pass

```
Bay 1  AUD ✓ O2 ✓
Bump   VIS ✓ CO ✓
Pass   H2S ✓
OK     LEL ✓
```

✓ indicates that the bump test has passed. The detector is now ready for use. Press **OK** to return to the normal operating screen.

Bump Fail

```
Bay 1  AUD ✓ O2 ✓
Bump   VIS ✓ CO ✓
Fail   H2S ✗
OK     LEL ✓
```

If a bump test fails, ✗ displays beside the applicable gas (e.g., H₂S ✗).

If an audible or visual test fails, ✗ displays beside the applicable test (**AUD** or **VIS**).

For information regarding solutions, refer to [Troubleshooting](#).

NOTE

If a gas type fails, calibrate the detector prior to use.

Confirm that the gas concentration exceeds the low alarm setpoint of the detector being tested (applicable to X5 only).

If an inlet is not setup correctly, the result of the bump check displays as the gas type followed by a hyphen (-).

Bay 1	AUDX	SO2-
Bump	VISX	H2SX
Pass	CO-	LEL-
OK		O2 -

This example displays **SO₂**, **CO**, **LEL**, and **O₂** as gases not detected.

If a test gas fails, verify that the

- gas cylinder is not empty,
- connections are attached correctly,
- inlets are setup correctly, and
- gas concentration exceeds the low alarm setpoint (applicable to X5 detector).

Sensor Disabled



WARNING

To prevent personal injury and/or property damage, replace the sensor immediately. Refer to the corresponding detector user manual for sensor replacement procedures.

If a sensor is disabled, results from the sensor do not display on the station LCD.

Bay 1	AUD✓	SO2✓
Bump	VIS✓	-
Pass	-	-
OK		O2 ✓

– displays where the gas type typically displays on the LCD.

NOTE

If a sensor is disabled, it is not recorded in the results log.

Calibration

Guidelines



CAUTION

If adjustments are made to the real-time clock, the calibration due date will be invalid for the XD and X5.

Recalibrate the detector immediately.

When calibrating the sensors, adhere to the following guidelines:

- Recommended gas mixture:

O ₂	clean air, 20.9% vol.
CO	(low H ₂ sensitivity): 50 to 500 ppm balance N ₂
CO	50 to 500 ppm balance N ₂
H ₂ S (high range)	10 to 100 ppm balance N ₂
H ₂ S (low methanol)	10 to 100 ppm balance N ₂
H ₂ S	10 to 100 ppm balance N ₂
PH ₃	1 to 5 ppm balance N ₂
SO ₂	10 to 50 ppm balance N ₂
NH ₃	20 to 100 ppm balance N ₂
NH ₃ (high range)	20 to 100 ppm balance N ₂
NO ₂	5 to 50 ppm balance N ₂
HCN	5 to 20 ppm balance N ₂
NO	10 to 250 ppm balance N ₂
Cl ₂	3 to 25 ppm (for bump checks only)
VOC	100 ppm isobutylene
CO ₂	5000 ppm balance air or 0-5.0 % v/v CO ₂
LEL	10 to 100% LEL or 0.5 to 5% by vol. methane balance air

- Calibrate only in a clean atmosphere that is free of background gas. Do not operate the station in a hazardous area. Failure to adhere to this guideline can result in possible personal injury and/or property damage.
- Honeywell Analytics recommends using premium grade calibration gases and cylinders that are certified to National Standards. The calibration gases must meet the accuracy of the detector.
- Do not use a gas cylinder beyond its expiration date.
- All calibration cylinders must be used with a demand flow regulator and must meet the following maximum inlet pressure specifications:
 - i. Disposable cylinders 0-1000 psig/70 bar
 - ii. Refillable cylinders 0-3000 psig/207 bar
- Refer to the detector user manual for recommended calibration frequencies.

-
- Calibrate the sensor if the ambient gas display varies during start-up.
 - Calibrate a new sensor before use. Allow the sensor to stabilize before starting calibration:
Used sensor: 60 seconds
New sensor: 5 minutes.
 - Calibrate the sensors at least once every 180 days, depending upon use and sensor exposure to poisons and contaminants. For HCN sensors, calibrate at least once every 90 days.
 - Calibrate the sensor before changing the alarm setpoints.
 - When calibrating multiple times, wait 10 minutes between calibrations to allow the sensor to stabilize.
 - If a certified calibration is required, contact Honeywell Analytics.

Calibration Procedure

Calibration is performed to adjust the sensitivity level of a sensor to ensure an accurate response to gas.





CAUTION

Ensure the detector is not in a low battery state prior to performing a calibration.

The station automatically accepts an unusually large span adjustment notification for the X5. Refer to the [*X5 Operating Manual*](#).

To perform a calibration, complete the following:

1. Ensure the MMC card is inserted if datalogging is required.
If the MMC card is not inserted,  displays on the LCD when the station attempts to log the results of the calibration. If required, refer to [*Inserting/Replacing a MMC Card*](#).
2. Activate the detector and wait until it is in normal operating mode. Insert it into the docking module.
3. Activate the station and access the normal operating screen.
4. Press  CALIBRATION on the corresponding docking module.

If calibration is initiated while in the user menu: Calibrations that are queued while in the user options menu are initiated only when the user options menu is exited.

If more than one docking module is queued: If more than one docking module is queued for calibration, the first module queued begins the calibration.

The RUN LED flashes yellow on the remaining docking modules that are queued for calibration. When the first module is complete, the next module in the queue begins calibration.

The station begins the calibration and displays the

- bay number,
- process being performed,

- type of detector, and
- serial number of the detector.

```
Bay 4
Calibration
XD
SE107-005929
```

NOTE

The X5 beeps and flashes twice to test the sensors when calibration begins.

X5 with CO₂ Sensor

NOTE

If calibrating a X5 detector, the station automatically zeroes and then calibrates the CO₂ sensor first.

The station zeroes the CO₂ sensor. The CO₂ sensor can only be zeroed using nitrogen (N₂).

Ensure N₂ has been configured to an inlet. If required, refer to [Inlet Setup](#). The station applies the gas.

```
3 CO2 Zero
000.0 PPM
Applying Gas....
```

The station then purges the N₂ before applying the CO₂ gas.

```
1 Purge
020.9 %
Applying Gas....
```

The station then applies the gas to the CO₂ sensor.

```
4 CO2
5000 PPM
Applying Gas....
```

The station then begins calibrating the remaining sensors. After calibration is complete, the station displays the results and performs a final purge to clear any remaining gas.

```
Bay 1 AUD ✓ O2 ✓
Bump VIS ✓ CO ✓
Pass H2S ✓
Purge 022 LEL ✓
```

The countdown of seconds remaining displays beside **Purge**.

NOTE

After calibration, the X5 automatically deactivates. To bypass the automatic shutdown, remove the detector within 15 seconds after the final purge begins.

Calibration Results

After the calibration is complete, the station displays the results.

✓ Pass

✗ Fail

H₂S – Gas type not detected (H₂S is used as an example, this applies to all gases)
– Sensor is disabled

Calibration Pass

```
Bay 1 AUD ✓ SO2 ✓  
CAL VIS ✓ H2S ✓  
Pass CO ✓ LEL ✓  
OK O2 ✓
```

✓ and **Pass** indicates that the calibration has passed. The detector is now ready for use. Press **OK** to return to the normal operating screen.

Calibration Fail

```
Bay 1 AUD ✓ SO2 ✓  
CAL VIS ✓ H2S ✗  
Fail CO ✓ LEL ✓  
OK O2 ✓
```

If calibration fails, ✗ displays beside the applicable gas (e.g., **H₂S** ✗).

If an inlet is not setup correctly during a calibration, the station displays the gas type followed by a hyphen (-) and the result of the test as **Fail**.

```
Bay 1 AUD ✓ SO2 ✓  
CAL VIS ✓ H2S -  
Fail CO - LEL -  
OK O2 ✓
```

This example displays **H₂S**, **CO**, and **LEL** as gases not detected.

If a test gas fails, verify that the

- gas cylinder is not empty,
- connections are attached correctly, and
- inlets are setup correctly.

If an audible or visual test fails, ✗ displays beside the applicable test (**AUD** or **VIS**). For information regarding solutions, refer to [Troubleshooting](#).

Sensor Disabled



WARNING

To prevent personal injury and/or property damage, replace the sensor immediately. Refer to the corresponding detector user manual for sensor replacement procedures.

If a sensor is disabled, results from the sensor do not display on the station LCD.

Bay	1	AUD	✓	SO2	✓
CAL		VIS	✓	-	
Pass		-		-	
OK				02	✓

– displays where the gas type typically displays on the LCD.

NOTE

If a sensor is disabled, it will not be recorded in the results log.


Data Transfer

(XD only)

Transferring Datalogs

The data transfer function is used to transfer datalogs from the detector to the station's MMC card.

Depending upon the amount of information stored in the detector, the transfer of data may require 12-14 minutes to complete. To transfer a datalogs from the detector to the docking module and then to a MMC card, complete the following:

1. Activate the detector and wait until it is in normal operating mode. Insert it into the docking module.
2. Activate the station.
3. Press  DATA TRANSFER on the docking module. The yellow RUN LED flashes rapidly and the docking module begins to transfer the datalogs to the station.

When the transfer process is complete, the docking module indicates the status of the transfer as PASS or FAIL.

Successful Transfer: If the datalog transfer is successful, the PASS LED lights green, the RUN LED flashes yellow slowly, and the detector beeps.

Unsuccessful Transfer: If the datalog transfer is unsuccessful, the FAIL LED lights red and the RUN LED flashes slowly.

If a failure occurs during the transfer of a datalog, typically some of the data transfers to the MMC card. To determine if any data has been transferred, access the MMC data using Fleet Manager II.

If required, repeat step #3 to transfer the datalog.

After a successful transfer to the station, the station transfers the datalog to the MMC. The RUN and the PASS LEDs light on the docking module and the following screen displays on the station.

Bay 1
Transferring
datalogs to MMC

When the datalog has successfully transferred from the station to the MMC card, the following screen displays.



```
Bay 1
Transferring
datalogs to MMC
Pass.
```

4. On the station, press **Pass** to return to the normal operating screen.

NOTE

A maximum of ten data logs from all modules combined can be stored on an MMC card. When the maximum storage is reached, the station replaces the oldest datalogs with the newest datalogs. Datalogs are not recorded in the Results History.

Base Station MMC Card

Event Logging

Bump checks and calibrations are recorded on a Multi-media card (MMC). The MMC card is located on the station inside the battery compartment. It is used to store test records that are then downloaded from the station to a PC.

Inserting/Replacing a MMC Card

The MMC card is inserted in the station inside the battery compartment. To insert or replace the MMC card, refer to Figure 14 and complete the following procedures:

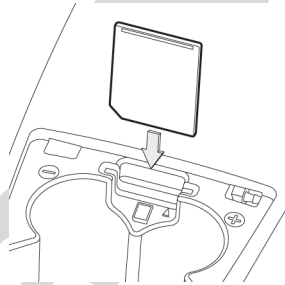


Figure 14. Replacing a MMC Card

1. Deactivate the station.
2. Loosen, the retaining screws from the battery cover.
3. Remove the battery cover and set it aside.
4. Remove the current MMC card (if applicable).
5. Insert the new MMC card into the memory card slot.
6. Replace the battery cover and tighten the retaining screws.

Data that is saved on the MMC card can be transferred to a PC.

To format an MMC card, refer to [Format the MMC Card](#) in the [User Options Menu](#) section.

The transferred data is then compiled using a computer software application called Fleet Manager II. Refer to the Fleet Manager II Deluxe CD for installation and user instructions.

Accessing Test Results

To access and view test results using the Fleet Manager II software application, refer to the Fleet Manager II Deluxe CD.

PC Requirements

- Microsoft® Windows XP
- 800 MHz processor
- 512 MB of RAM
- 100 MB of available hard-disk space
- USB port
- CD-ROM or DVD-ROM drive
- A PDF reader

Charging the X5 Battery Pack



WARNING

A maximum of six charging docking modules can be installed on a MicroDock II station. Four non-charging modules can be added to the six charging modules for the maximum total of ten docking modules per station.

To charge successfully, the temperature must be between 50°F to 95°F (10°C to 35°C). Charge the battery when the detector emits a low battery alarm.

When charging for the first time, allow the battery to obtain a full charge (approximately 3.5 hours).

Charger/Battery Pack Guidelines

- When charging is complete, the detector can remain in the detector bay without wear or damage to the battery.
- Charging the battery pack in temperatures above 86°F (30°C) greatly reduces the number of possible charges to the battery pack.
- When charging is complete, the battery pack may be hot.
- The battery pack requires approximately three charges to achieve full charge capacity.
- The MicroDock II only charges using DC power.
- Charging more than four units simultaneously increases the total charge time.
- When charging an extremely depleted battery, the battery requires a longer charging time.
- The detector cannot charge during bump checks or calibrations. If battery power is low, charge the detector for 30 minutes and then initiate the bump/calibration.



CAUTION

Do not calibrate or bump the detector immediately after charging is complete. Allow 10 minutes before initiating.

- When a fully charged battery is inserted into the detector bay, the charger LED lights red for 6 to 10 minutes before lighting green. This action will not wear or damage the battery.

Charging Procedure

Charger Status	Description
Red	Charging normally
Green	Charge complete
Off	Charge or temperature fault

Table 19. Charger Status LED

To charge a detector in a charging docking module, complete the following:

1. Connect the AC adapter of the charger to the CHARGE port on the station and then plug the cord into the AC outlet. The charging LED briefly lights red then green during the self-test. The light then powers off.
2. Deactivate the detector and insert into the charging cradle (bottom first). The charging LED then lights red.
Ensure the detector is inserted correctly onto the contact pins.
3. Allow the battery to obtain a full charge. A full charge requires 2-4 hours, depending upon how many docking modules are connected to the station.
The charging LED turns green when charging is complete.
The charging LED powers off when the detector is removed from the charger.

Maintenance



WARNING

No user-serviceable parts inside.

To maintain the station in good operating condition, perform the following basic maintenance as required.

- To ensure quality product operation, maintain a log of all maintenance that is performed.
- Clean the exterior with a soft, damp cloth. Do not use solvents, soaps, or polishes.
- Confirm that the inlet filter is free of dirt and replace it if required. To order replacement parts, refer to Replacement Parts and Accessories.
- Do not immerse the station in liquids.

X5 Battery Pack Storage

When storing for extended periods of time, ensure that the detector is fully charged and recharged every 30 days.

Troubleshooting

If a problem is encountered, refer to the solutions provided in the following table. If the problem cannot be resolved, contact Honeywell Analytics.


Problem	Possible Cause	Solution
The station does not activate.	There is no power connection.	Connect the power adapter.
	Batteries are not inserted.	Insert the batteries.
	The batteries are depleted.	Replace the batteries.
	The station is damaged or defective.	Contact Honeywell Analytics.
The detector fails a bump test.	Barbed fittings are not connected correctly with the gasket.	Confirm connection - refer to Adding Another Docking Module .
	Detector alarm setpoints are set higher than the gas concentration levels of the gas cylinder.	Connect a gas cylinder that has a higher gas concentration level than the alarm setpoints.
	Gas connections are not attached correctly or are blocked.	Confirm that all gas connections are attached correctly.
	Gas inlets are not setup correctly.	Refer to Inlet Setup and Installation.
	Gas cylinder is empty.	Use a new gas cylinder.
	Detector and/or station are damaged or defective.	Contact Honeywell Analytics.
	The oxygen sensor fails a bump check.	Oxygen alarm setpoints of the detector are set to the same concentration level as the gas cylinder.
Ambient air (inlet 1) is blocked or the inlet filter is contaminated.		Remove the blockage or replace the inlet filter.
Zero gas cylinder is empty.		Use a new zero gas cylinder.
The detector fails a calibration.	Gas cylinder is empty.	Use a new gas cylinder.
	Barbed fittings are not connected correctly to the gasket.	Confirm connection - refer to Adding Another Docking Module .
	Gas connections are not attached correctly or are blocked.	Confirm that all gas connections are attached correctly
	Detector and/or station are damaged or defective.	Contact Honeywell Analytics.
Flashing battery icon  .	Batteries are extremely depleted.	Replace the batteries.

Table 20. Troubleshooting Tips

Problem	Possible Cause	Solution
The station is activated but does not respond to button presses.	Irregular power (not continuous or reliable) electrostatic discharge.	Deactivate the station, wait 5 seconds, then reactivate.
There is no audible beep (X5).	Internal damage to battery or docking module.	Contact Honeywell Analytics.
The docking module does not recognize the detector.	Detector is deactivated.	Activate the detector.
	Detector does not have IR communication capabilities.	Refer to the label located on the back of the detector for IR capabilities.
	Firmware of the detector requires an update.	Contact Honeywell Analytics.
	Station is currently attempting to establish communication with the detector.	Wait approximately 30 seconds.
	Docking module is not initialized to the correct number.	Re-initialize the docking module - refer to <i>Adding Another Docking Module.</i>
	Detector and/or station are damaged or defective.	Contact Honeywell Analytics.
There is an audible beep but no charge (X5 docking modules).	Battery is above or below the operating temperature 50°F-95°F (10°C-35°C).	Allow the battery pack time to adjust to the specified operating temperature (approximately 60 minutes).
	Severely depleted battery.	Charge (2-4 hours) or replace old battery with new battery. If problem persists, contact Honeywell Analytics
	Damaged or defective battery pack.	Contact Honeywell Analytics.
The charger LED does not light when the detector is inserted (X5 docking modules.)	Detector is not inserted into the detector bay correctly.	Firmly insert the detector into the detector docking bay.
	The battery pack is above or below the operating temperature 50°F-95°F (10°C-35°C).	Allow the battery pack time to adjust to the specified operating temperature (approximately 60 minutes).
	The battery pack is severely depleted.	Allow the detector to charge (2-4 hours).

Table 20. Troubleshooting Tips

Problem	Possible Cause	Solution
No drive letter is created for the MicroDock II (Windows XP).	Windows XP is not correctly mapping the drive.	<p>Ensure Windows XP assigned a drive letter to the MicroDock II.</p> <p>Solution:</p> <ol style="list-style-type: none"> 1) Right-click My Computer and then click Manage. 2) Under Computer Management (Local) click Disk Management 3) In the list of drives in the right pane, right-click the new drive and then click Change Drive Letter and Path(s). 4) Click Change and in the drop-down box, select a drive letter for the new drive (cannot be assigned to a mapped network drive). 5) Click OK and then click OK again.
<div style="border: 1px solid black; padding: 5px; width: fit-content;"> Bay 1 MMC Comm. Error Test Aborted OK </div>	Problem transferring to the MMC card during a calibration or bump test.	<p>Repeat the test.</p> <p>Ensure the MMC card is inserted.</p>
<div style="border: 1px solid black; padding: 5px; width: fit-content;"> MMC Size Is Not Supported OK </div>	Size of MMC is not supported.	Use only 128MB Delkin Multi-media card (MMC)
<div style="border: 1px solid black; padding: 5px; width: fit-content;"> Error Formatting MMC Please Try Another Card OK </div>	MMC is not correctly formatted.	<p>Refer to <i>Format the MMC Card.</i></p> <p>Replace with a new MMC card.</p>
<div style="border: 1px solid black; padding: 5px; width: fit-content;"> MMC Is Full OK </div>	Log file has exceeded maximum size.	<p>Refer to <i>Format the MMC Card.</i></p> <p>Replace with a new MMC card.</p>
<div style="border: 1px solid black; padding: 5px; width: fit-content;"> Bay 1 IR Communication Not Working OK </div>	IR not working when detector is inserted into the module.	<p>Check for dirt on the sensor.</p> <p>Confirm the detector is activated.</p> <p>Charge the detector battery if too low.</p>

Table 20. Troubleshooting Tips

Problem	Possible Cause	Solution
Bay 1 Detector Not Supported OK	Non-datalogger detector is inserted in the docking module.	Insert only datalogger models.
Bay 1 Err. CO2 17 OK	Software exception.	If debug code displays on the LCD, record it and contact Honeywell Analytics.

Table 20. Troubleshooting Tips

Replacement Parts and Accessories



WARNING

To avoid personal injury or damage to the station, use only the specified replacement parts.

To order parts or accessories, contact Honeywell Analytics.

Model Number	Description
X5 Docking Module	
1715-0153	Charging (power supply included)
XD Docking Module	
1715-0152	With datalogging
MMC Communication Devices and Accessories	
1715-0170	128 MB Multi-media (MMC) card
Wall Mount Adapters	
1715-0175	For MicroDock II (kit of 2)
1715-0176	For 34 l gas cylinder (black)
1715-0177	For 58 l gas cylinder (red)
Demand Flow Regulators	
N600 1001 10	Demand flow regulator

Table 21. Replacement Parts and Accessories

DRAFT

Specifications

The MicroDock II is for indoor use only.

Instrument Dimensions	21.2 x 26.3 x 8.2 cm (8.3 x 10.4 x 3.2 in.) base station and one docking module
Weight	0.98 kg (2.15 lb)
Enclosure	Impact resistant PC/ABS (polycarbonate)
Operating Temperature	+10°C to +35°C (+50°F to +95°F)
Humidity	0 to 50%
Altitude	2000 m (6561.66 ft.)
Storage Temperature	-10°C to 60°C (14°F to 140 °F)
Power Supply	6 VDC $\overline{=}$, 1.5 A wall adapter or four C-cell batteries (be advised that the main supply voltage fluctuations are not to exceed 10% of the nominal supply)
Pollution Degree	2
Installation Category	1
Real-time Clock	Provides time and date stamp
Data Storage	Automatic (instrument and base station) 128 MB Delkin Multi-media card data storage system
External Interface	USB interface for PC
Pump	DC motor, micro-diaphragm; 6V PCB mount
Flow Rate	Maximum recommended 350 ml/min.
Calibration Gas Cylinder Inputs	2-gas inlets (standard) 4-gas + air inlets (maximum)
Automatic Tests	Functional bump check, calibration, data transfer, audible alarm, visual alarm
Configuration Recognition	Automatic (instrument and sensor)
Alarm/calibration Parameters	User-settable
Calibration Gas Connections	Built-in (base station)
Gas Connection	1/8" SMC connect sub-miniature coupling
Solenoid	Built-in (docking modules)
Led Indicators	(on each docking module) Yellow – Test Green – Pass Red – Fail
Command Keys	
Base Station	Menu navigation
Docking Module	One touch bump check initiation One touch calibration initiation One touch data transfer initiation (XD only)

Communications Method	Infrared (two-way) between docking module and detector
USB Port	For connection to a Personal computer (PC), or USB over IP HUB
Sensors	Audio Optical
LCD	4 line x 16 characters, wide viewing angle, user selectable backlighting
Warranty	2 years

Charger Specifications

Size	8.6 x 8.2 x 7.8 cm (3.4 x 3.2 x 3.1 in.)
Weight	97 g (3.4 oz)
Charger System Ingress Protection	IP20
Operating Temperature	10°C to 35°C (50°F to 95°F)
Humidity	0% to 50%
Altitude	2000 m (6561.66 ft.)
Power	6 VDC $\overline{\text{---}}$, 2.5 A
Charging LED	Color-coded LED advises: charging, charge complete, and charger fault.
Charge Time	Typically 2.5 hours
Pollution Degree	2
Installation Category	I

This device complies with the FCC Part 15 and ICES-003 Canadian EMI requirements. Operation is subject to the following two conditions:

1. This device may not cause harmful interference, and
2. This device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules and ICES-003 Canadian EMI requirements.

These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment.

This equipment generates, uses, and can radiate radio frequency energy, and if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications.

Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his/her own expense.



WARNING

This product is designed for installation in an indoor location only. All required National Electrical Codes and Safety Standards must be followed.

For AC main installation, a circuit breaker should be included in the building installation as a disconnect device for the equipment. The disconnect device should be installed in close proximity to the equipment and the device should be marked as a disconnecting means for the equipment.



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