

Shut Down and Power up Procedures: Chameleon Ultra, Vision, Vision-S, COPO and MPX

Introduction

This document defines the long term shut down procedure (>1 week) for Chameleon Ultra, Vision, Vision-S, COPO and MPX systems. The power supply, chiller, MRU and laser head are called out in figures 1, 2, 3, 4 and 5 respectively. Instructions are also found in section 4 of the Chameleon Operator's Manual.

Chameleon Ultra



Chameleon Vision

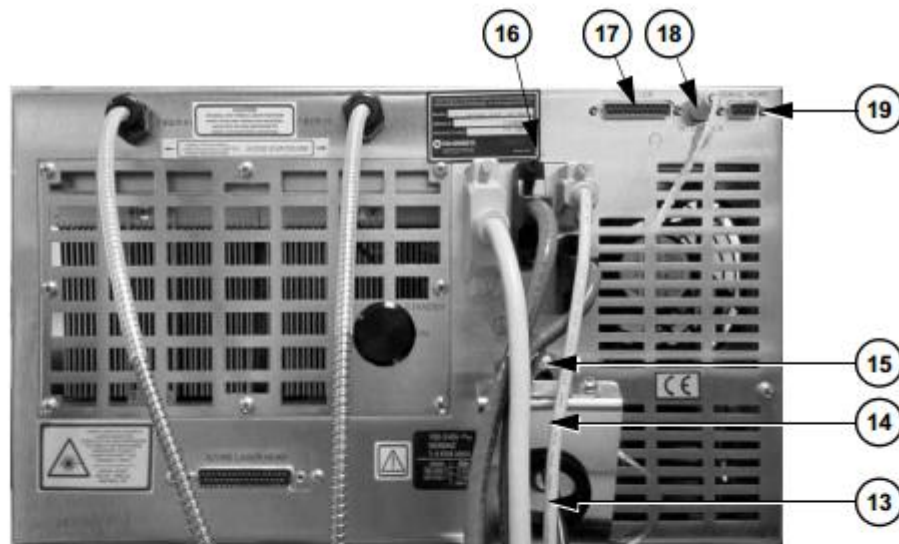
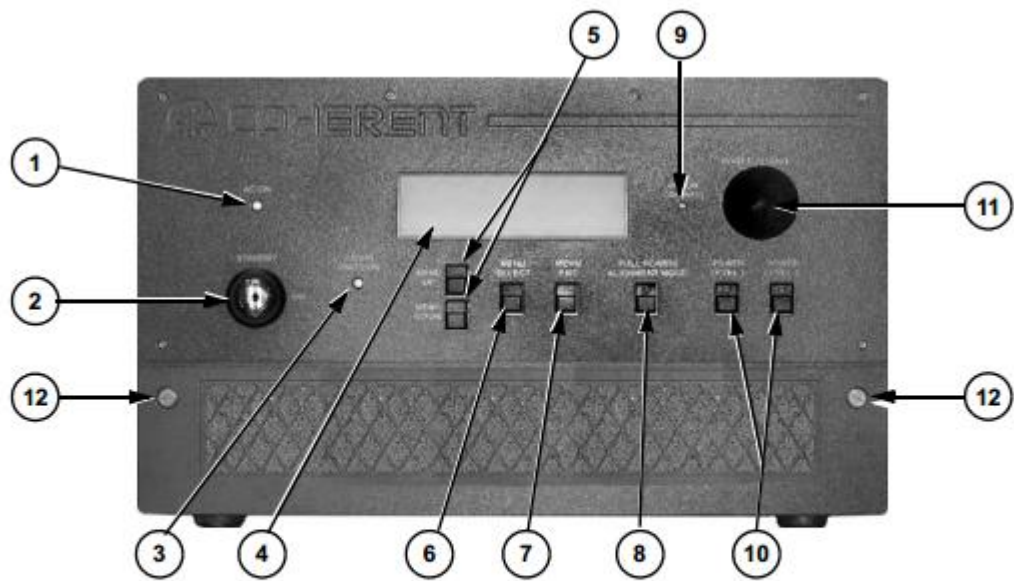


Chameleon Vision-s



Chameleon Compact OPO and MPX





- | | |
|---|---|
| <ul style="list-style-type: none"> 1. AC ON indicator 2. Keyswitch 3. LASER EMISSION indicator 4. Display 5. MENU UP/DOWN pushbuttons 6. MENU SELECT pushbutton 7. MENU EXIT pushbutton 8. SHUTTER OPEN pushbutton indicator 9. DISPLAY CONTRAST adjust 10. POWER LEVEL 1/2 pushbutton indicators | <ul style="list-style-type: none"> 11. POWER ADJUST or rotary knob 12. Air filter retaining screws (2x) 13. Fuses 14. Power cord receptacle 15. Power ON/OFF switch 16. Umbilical 17. MODEM connector, not used 18. EXTERNAL INTERLOCK connector 19. SERIAL PORT connector |
|---|---|

Figure 1 PSU

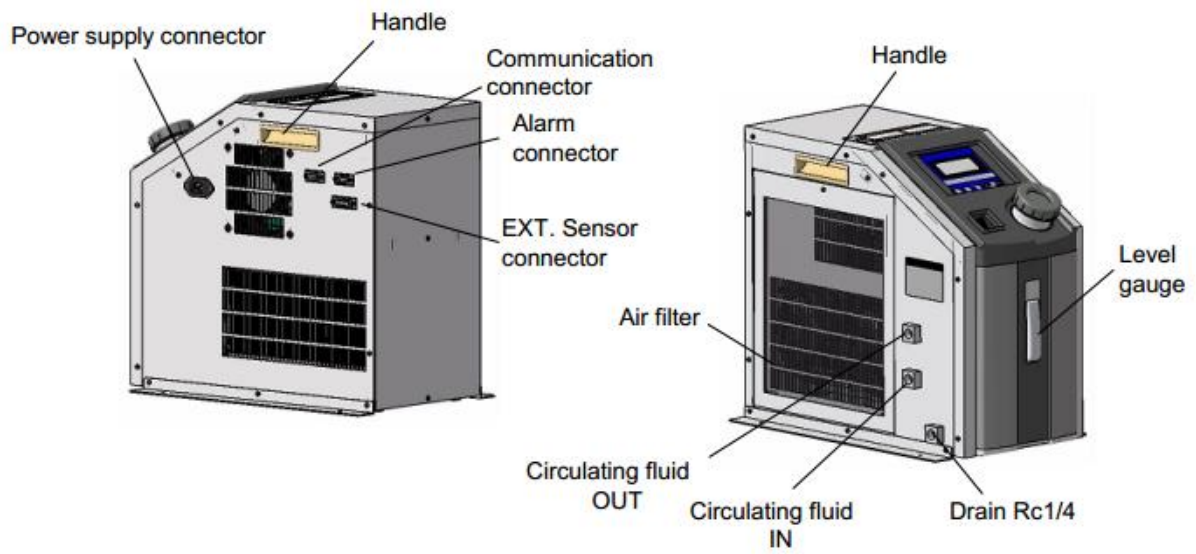


Figure 2 Chiller



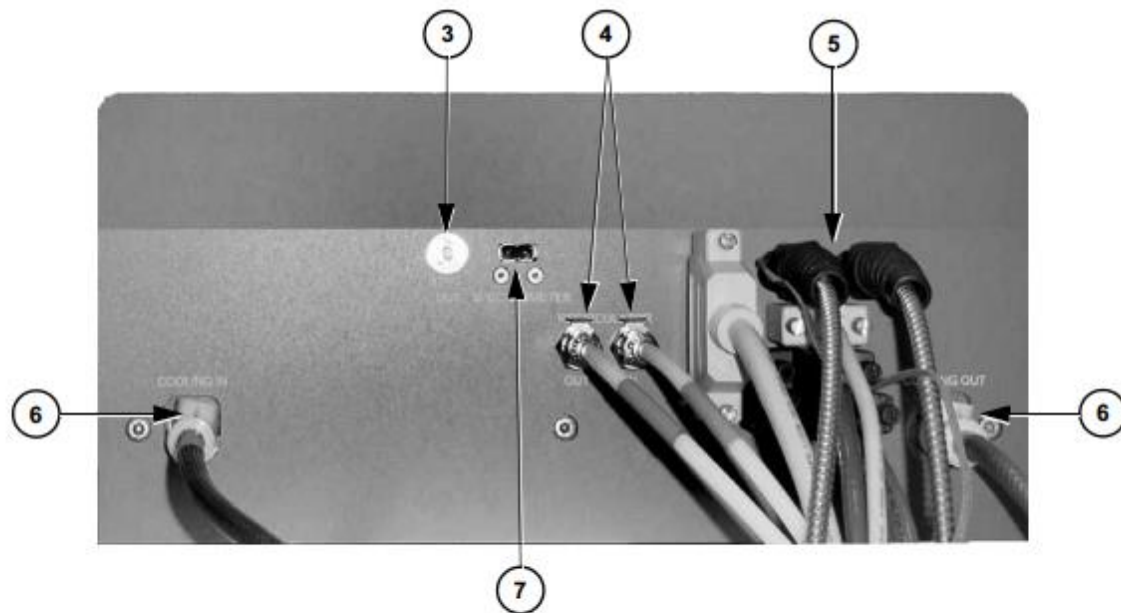
Front View



Rear View

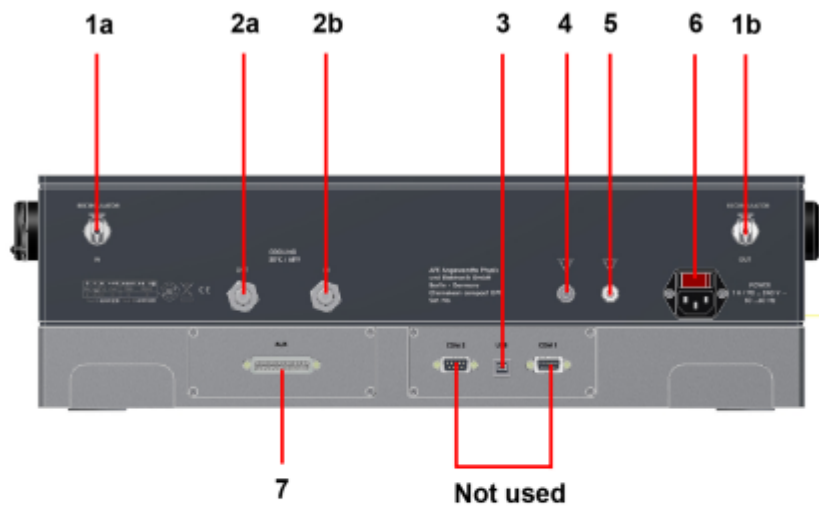
Power switch

Figure 3 MRU



- | | |
|--|--|
| 1. Emission indicator | 5. Umbilical (optical fibers) |
| 2. Exit window | 6. Cooling water inlet and outlet fittings |
| 3. Fast photo diode (sync out) BNC connector | 7. Internal spectrometer USB connector |
| 4. MRU connectors | |

Figure 4 laser head



1a / 1b	Recirculator MRU in / out
2a / 2b	Cooling water out / in
3	USB connection to Panel PC
4	Grounding clamp
5	Grounding socket
6	Power cable and switch
7	AUX - connection to optional auxiliary devices

Figure 5 Chameleon Compact OPO and MPX head

Long term Laser Shut-off Procedure

It is generally recommended that where possible, the chiller and MRU are left running, even when the laser is keyed off and switched off at the power supply. In cases where the laser will be switched off for greater than 1 week and it's not practical to leave the chiller and MRU running, the chiller must also then be drained.

The procedure is as follows:

Laser Switch off

- 1.) Key the laser off on the Power Supply as indicated as '2' on figure 1
- 2.) Use the menu select button ('6' on figure 1) to enter and navigate to 'system shutdown' option and press select.
- 3.) PSU screen will display 'system cooling down (xxx%)' wait until value reaches 100%. This will take around 45 minutes.
- 4.) When cool down reaches 100% laser can be switched off using button switch on the rear of the PSU and power cable can be disconnected from the mains ('14' and '15' on figure 1).

COPO and MPX Switch off

- 1.) On the GUI software close the signal output shutter and de-select 'pump OPO'.
- 2.) Close the Chameleon shutter if still open.
- 3.) Power down the Panel PC or Close the software GUI on the user's computer.
- 4.) Switch off COPO or MPX using button switch on the side of the head and power cable can be disconnected from the mains ('6' on figure 5).

Chiller Coolant Drain and Switch off

- 1.) Switch chiller off using on/off button switch (figure 2).
- 2.) Connect open ended hose connector to the laser head connector labelled 'Cooling Out' as '6' in figure 4 or Connector labelled 'Cooling Out' as '2a' in figure 5 for COPO and MPX.
- 3.) Place open end of hose in a large suitable beaker or flask with volume greater than 1L.



- 4.) Switch chiller on (figure 2) and let it run until all coolant liquid has emptied into the beaker or flask.
- 5.) Chiller will return a fault saying the coolant level is low.
- 6.) Switch off chiller using on/off button switch (figure 2).
- 7.) Disconnect from mains (figure 2).
- 8.) Dispose of the coolant in a safe and environmentally compliant manner.

MRU Switch off

- 1.) Switch off power using on/off button on rear of MRU box (figure 3).
- 2.) Disconnect from mains supply (figure 3).

Switch-on After Long-Term Shut-Off

Switch on Sequence

Users are referred to the latest Chameleon datasheet for environmental storage and operating requirements. These have also been stated in Figure 6 at the end of the document for convenience.

Switch on MRU

Allow the MRU to run for a minimum of two hours before proceeding.

If the air hoses were disconnected between the back of the MRU (figure 3) and laser head (figure 4), reconnect them ('Air out' and 'Air in' of MRU figure 3 to figure 4, '4' 'Recirculator In' and 8: 'Recirculator Out') or for COPO and MPX ('Air out' and 'Air in' of MRU figure 3 to figure 5, '1a' 'Recirculator In' and '1b' 'Recirculator Out').

If the hoses are connected, power on the MRU using the power switch at the back, as indicated in figure 3.

Reconnect, Fill and Switch On the Chiller

Be sure that the chiller set temperature is set to 20°C.

Gloves and overalls should be worn when working with Coolflow IGE. It might be useful to have towels where filling or connecting to catch any drips.

- 1.) Remove the draining hose if it is still attached and store.
- 2.) Re-attach water hoses:- from the chiller outlet and inlet (figure 2) to the back of the laser head inlet and outlet (figure 4, '6') or to the side of the COPO/MPX head inlet and outlet (figure 5, '2a' and '2b').
- 3.) Referring to Chiller diagram, figure 2. Remove cap and gradually pour fresh CoolFlow IGE into the Chiller's reservoir until the required level has been reached. Replace cap over the reservoir
- 4.) Switch on the chiller using power switch of figure 2. Expect that the chiller will fault out, making a repeated beeping sound indicating that the fluid level is low. This is because the reservoir will drain into the head. Switch off the chiller using power switch 'A' after the fault.
- 5.) Repeat step 3 to refill the reservoir
- 6.) Repeat Step 4. If there are further faults, keep following the refilling step while also looking for leaks.
- 7.) **The MRU and chiller should now be left running for a further 2 hours to allow full thermalisation.**

Key On

- 1.) Re-establish power to the laser, COPO or MPX using the power switch on the back of the Power Supply ('14' and '15' on figure 1: laser head) or ('6' on figure '5': COPO or MPX).

Appendix: Environmental Storage and Operating Requirements for Chameleon Family.

ENVIRONMENTAL SPECIFICATIONS	
Operating Temperature Range	15 to 28°C (59 to 82.5°F)
Non-operating Temperature Range	5 to 40°C (41 to 104°F)
Storage Temperature Range	5 to 40°C (41 to 104°F)

Figure 5 Environmental specifications table.