tecknosys

HFAS3+

HIGH-FLOW AIR SAMPLING PUMP

USER GUIDE

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Contents

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ABOUT

The HFAS3+ pump is designed for sampling airborne hazards at flow rates of up to 15 L/min.

Ideal for asbestos clearance sampling, the HFAS3+ pump meets the requirements of HSG248 when used with a 25 mm, 0.8 µm filter at flow rates of up to 10 L/min.

The microprocessor-based automatic, direct flow control system meets AIOH back-pressure requirements for flow rates of up to 10 L/min and provides pump and battery status information to the user.

A programmable timer provides the means to define specific run-times, delayed starts and set intermittent sampling periods.

The HFAS3+ Air Sampler is proudly designed and manufactured, in New Zealand, by Tecknosys Ltd.

Please familiarise yourself with the contents of this User Guide before operating the HFAS3+ Air Sampler.

ICONS USED IN THIS GUIDE


SINGLE PRESS

PRESS & HOLD 2 SECONDS


DOUBLE PRESS


CAUTIONARY NOTE

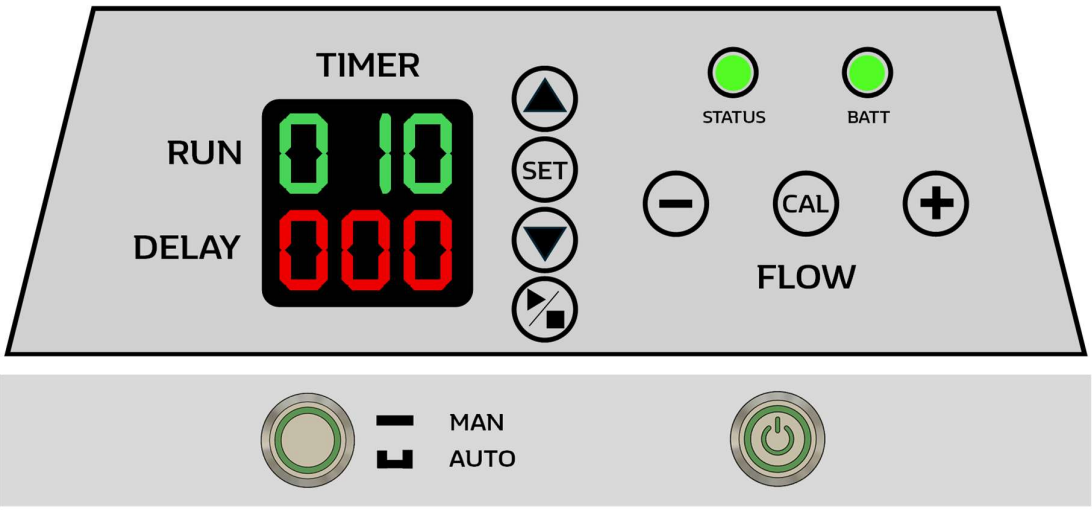
ICONS FROM ONLINEWEBFONTS.COM

MAIN COMPONENTS

- Mast & Coil Tube Assembly
- Inlet Barb (For ¼" Tubing)
- Carry Handle
- Control Panel
- Power and Mode Switches

- Exhaust Outlet
- Charger Receptacle
- Safety Fuse (3.15AT)
- Data Plate

CONTROL PANEL



Pump power

Pump mode:
Off for manual control
On for timer control (Auto)

STATUS
Pump status indicator:
Provides visual indication of pump mode and flow-fault.

BATT
Battery status indicator:
Red with ~ 1/8 capacity remaining.

CAL
Flow calibration select:
2 second press to enter / exit flow calibration mode.

Decrease flow:
Adjusts flowrate down when in calibration mode.

Increase flow:
Adjusts flowrate up when in calibration mode.

SET
Timer adjust / menu / enter.
Double press for timer adjust.
2 sec. press to programme.

Timer adjust 1.

Timer adjust 2

Timer start / pause / clear:

030
Run timer (default):
Set run-time interval when operating in auto mode.

000
Delay timer (default):
Set start delay interval when operating in auto mode.

The pump control panel consists of all functional controls for the setup and operation of the pump and is essentially divided into 2 sections – timer functions on the left, power and flow-control on the right

The flow-control section of the control panel is used to calibrate the pump flowrate and provides pump status and battery condition information:

PUMP AND BATTERY STATUS INDICATORS

1. The pump status indicator provides information on the pump mode and flowrate status:

Start-up and Calibration Modes:

a. Blinks RED, approximately twice per second, at power on (8 seconds) and calibration stabilisation (10 seconds) to indicate that the pump flow control system is actively stabilising the flow to the calibrated setpoint.
b. Blinks RED, approximately 4 times per second, when entering calibration mode – flowrate adjustment can only be performed when the pump is in this mode.

Run Mode:

c. Solid GREEN during normal operation in RUN mode.

Flow Fault:

d. Blinks RED, approximately 4 times per second, when actual flowrate varies by more than 10% from the set flowrate. If this condition persists, for more than 15 seconds, the pump will shut off and will not restart until power is cycled. The flow fault indication will remain on until the pump is reset.
In manual mode, the flow-fault indicator will remain flashing to indicate the reason for pump shutdown. In auto mode, the pump will shut down, due to a sustained flow-fault, but the indicator will shut off when the run timer ends.

Battery Status:

2. The battery status indicator will turn from GREEN to RED, to indicate a low battery condition, when battery is at ~ 1/8 capacity. Remaining run-time is dependent on flowrate and sampling media.

The timer section consists of a fully programmable RUN and DELAY timer (default modes) that can be used to set specific pump run-times and start delays.

1. The timer is enabled by switching the pump mode switch to 'AUTO'.
2. In the default setup, the RUN timer is set for the specified pump run-time, in minutes.
3. The DELAY timer is set for the specified delay before the pump starts, in minutes (000 = no delay)

Refer to the QUICK START and TIMER PROGRAMMING MENU sections, below, for more details.

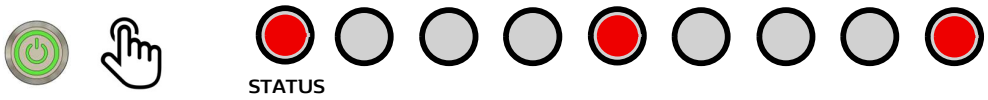
QUICK START

FLOW CALIBRATION

1. Connect sample media (e.g., asbestos cowl) to the inlet barb on the Masthead using ¼" Tygon tubing, or similar.

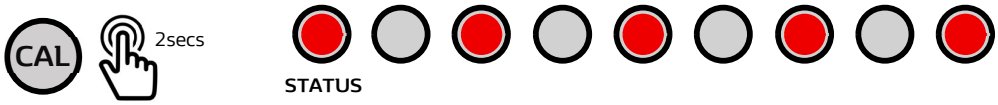
2. Using another length of ¼" tubing, connect a suitable flowmeter to the fitted sample media.

3. Switch the pump on via the power switch with the pump mode switch in manual mode (timer OFF). The status light will slow-blink red for ~ 8 seconds to indicate start-up stabilisation.

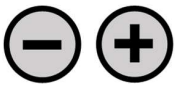


4. Allow the pump to run for a few minutes to stabilise the flow control system to ambient conditions.

5. Enter calibration mode by pressing and holding the CAL button for 2 seconds. The pump status indicator will rapid-blink red to indicate the pump is in calibration mode.



6. Adjust the flowrate, using the + and – buttons, until the desired flowrate is indicated on the flowmeter.

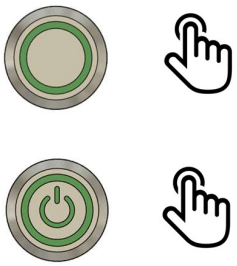


7. Press and hold the CAL button (2 seconds) until the status indicator turns off. Release the CAL button and the status indicator will slow-blink red, for ~ 10 seconds, indicating the pump is in calibration stabilisation mode. Once completed, the status indicator will turn green, and the pump flow control system will begin to regulate the flowrate to the calibrated level.

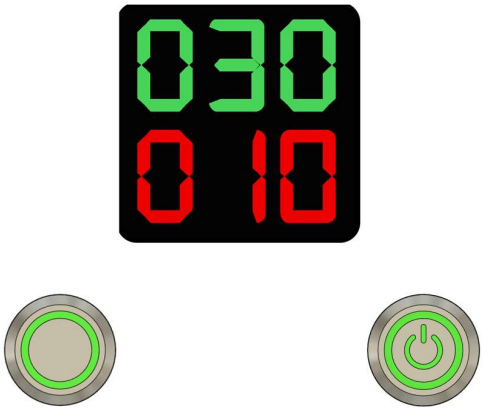
8. The pump can be used in manual mode by switching the power on and timing the sample with a stopwatch or other suitable timer.
   To use the programmable pump timer, select the mode switch to "AUTO"; refer to the following TIMER sections, of this document, for details and timer options.

SETTING AND RUNNING A TIMED SAMPLE

1. Fit a cowl to the inlet barb.
2. Put the pump into AUTO mode by depressing the MAN / AUTO button, then power the sampler on.

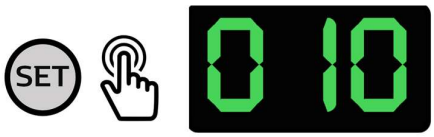


The timer display and switches will illuminate but the sampler will not run (in default setup).

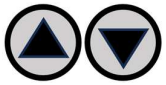


3. The T1 timer displays the programmed sample RUN-TIME, T2 displays the DELAY-TIME before run start. If these settings are correct, then a sample run can be started by pressing the START / PAUSE / STOP button:

4. To adjust the RUN or DELAY times, double-press the SET button – the RUN timer will flash:



5. Adjust the T1 RUN timer, to the desired setting, using the setting adjust buttons:

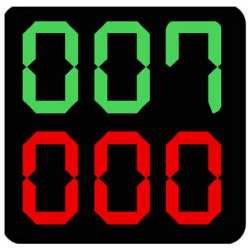


6. Press the SET button to advance to the T2 DELAY timer and adjust as necessary.

7. Press SET to exit:

8. To begin the programmed sample run, press the START / PAUSE / STOP button:

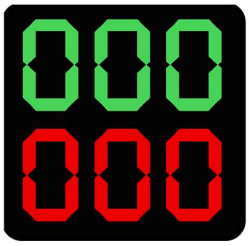
9. The T2 DELAY Timer will count down first, then the T1 RUN Timer will activate and the sampler will run for the programmed sample time. If no delay is set, the T1 timer will start immediately.



NEXT SAMPLE, PAUSE, CONTINUE OR CLEAR A SAMPLE RUN

1. At the end of a delayed sample run the sampler will stop and both timers will reset:

2. If no delay was set, the timers will display zeroes and will need to be cleared before running another sample:

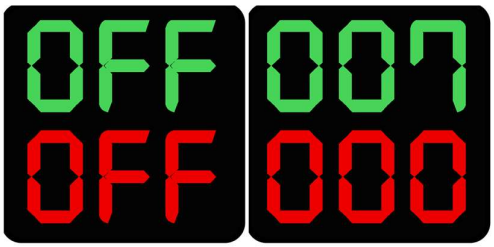


3. To clear the completed run, long press the START / PAUSE / STOP button:

4. To start a new sample, fit a new cowl and press the START / PAUSE / STOP button:

5. To pause a sample run, double press the START / PAUSE / STOP button:

6. The T1 and T2 timer displays will alternately flash between 'OFF' and the remaining time display, to indicate the sample has been paused:



7. To restart the paused sample, double click the START / PAUSE / STOP button:

8. To clear a running sample and reset the timers, long press the START / PAUSE / STOP button while the sampler is running:

9. Turn the sampler off while not in use.

TIMER PROGRAMMING MENU

Changing sampler start mode P2 setting from the default 'OFF' value is not recommended. When 'ON' the sampler will default to running when the timer has elapsed.

Run Cycling (use for intermittent sampling)

GENERAL

CLEANING AND MAINTENANCE

When required, wipe the pump with a damp cloth. Do not use solvents.
Replace the inlet Tygon tubing when required.
User maintenance is limited to the replacement of the safety fuse.
If the pump does not power on but the charger indicates a fully charged battery, the safety fuse may have blown. A fuse may blow for several reasons and can be replaced by the user. If, however, the fuse blows again, this may indicate a fault with the pump which should be returned to Tecknosys Ltd., or an authorised service facility, for repair.
The fuse is a 5x20mm 3.15A "T" type fuse and must not be replaced with any other type.

For service and repair, return the HFAS3+ to Tecknosys Ltd. or your local authorised agent.

CHARGING

Connect the supplied charger to the charger port. The charger connector is keyed – the red dot indicates the connector 12 O'clock position and engages / disengages with a simple push-pull operation.
A red light on the charger indicates charging is in progress. A green light (when connected) indicates a fully charged battery.

The HFAS3+ Air Sampling Pump contains a lithium-ion battery pack which is protected by a battery management system and safety fuse; however, it is good practice not to leave the device unattended while charging.

WARRANTY

Tecknosys warrants the HFAS Pump to be free of any defects in materials and workmanship, under normal use and service, for the warranty period of 12 months from the date of purchase.

SPECIFICATIONS	
Timer	Programmable: Timed-Run, Delayed Start. ±20ppm (~ ± 1 sec / 14hrs)
Flowrate	3 – 15 L/min, sample media dependent
Flow Control	Automatic, direct, less than ±5% of set-point, >16kPa @ 8L/min
Run-Time	~8.5 hours @ 8 L/min (25mm, 0.8µm MCE asbestos cowl)
Battery	18.5V, 5000mAh / 92.5 Wh, Li-ion
Charge Time	~5 Hours (typical) from full discharge state
Dimensions	170 x 160 x 320mm (with stowed mast)
Weight	2.7 Kgs
Operating Conditions	0 - 40°C, ≤95%RH

ACCESSORIES	
Asbestos Cassettes	Z008GA / Z008GGA
0.5 - 16 L/min Rotameter	LAB9-AI33, (±2.5% VDI/VDE)

Date	Revision	Details	Authoriser
10.06.2025	Rev.0	Initial Document	G. Theobald