CL

PRESSURE & CO^2

MONITORING SYSTEM

▸ *Installation & Operating Manual*

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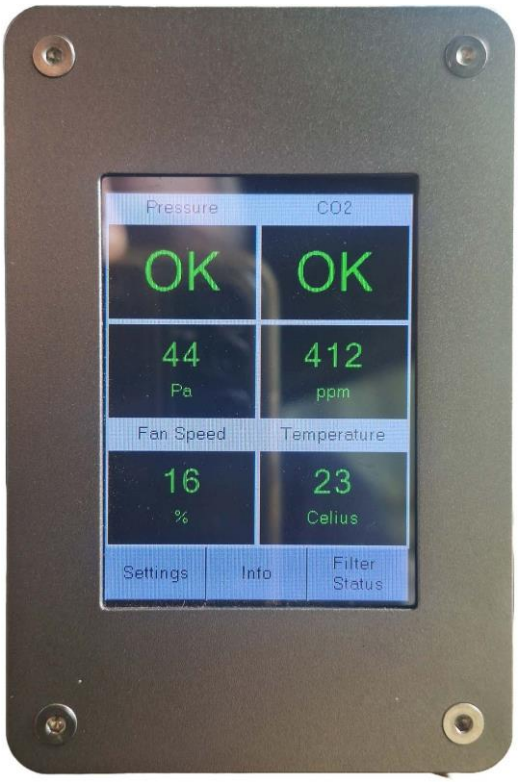
SYSTEM OVERVIEW

The Cleancab monitoring system provides continuous monitoring of cabin pressure and CO2 levels to maintain a safe operating environment. The system automatically adjusts fan speed to maintain optimal pressure and provides visual and audible alerts when conditions fall outside acceptable parameters.



KEY FEATURES:

- Real-time pressure and CO2 monitoring
- Automatic pressure adjustment
- Filter service tracking
- Fault history tracking
- Temperature and humidity monitoring
- Customisable settings via touch screen interface
- Companion app for advanced functionality

HARDWARE COMPONENTS

Monitor Unit



Info monitor top



Info monitor rear

SPECIFICATIONS:

- Dimensions: 105mm × 70mm × 30mm
- CNC machined anodised aluminium housing
- Touch screen user interface
- Integrated audible alarm
- Mounting: RAM mount using 4 × 5mm screws
- Configurable cable exit (bottom or rear)



Info monitor sensor end



Info monitor sensor side

Sensor Box

SPECIFICATIONS:

- Dimensions: 150mm × 90mm × 43mm
- CNC machined aluminium housing
- Contains pressure and CO2 sensors
- Secondary audible alarm and LED status light
- 4 mounting holes for installation
- Push-in connectors for power, blower motor, external alarm, and door/window sensors
- 5mm threaded connector for monitor data/ power
- Push-in connector for external sensor pressure tube

DISPLAY INTERFACE



Indicating pressure fail

The monitor features a touch screen interface with the following elements:

1. Cabin Pressure Indicator
   - GREEN: Pressure within acceptable range (OK)
   - RED: Pressure outside acceptable range (FAIL)

     Touch to mute alarm for 30 minutes
2. CO2 Level Indicator
   - GREEN: Below 900 PPM (OK)
   - YELLOW: 900-1000 PPM (OK, warning level)
   - ORANGE: 1000-2500 PPM (FAIL)
   - RED: Above 2500 PPM (FAIL)

     Touch to mute alarm (30 minutes for orange, 10 minutes for red)
3. CO2 Level Value - Current CO2 concentration in PPM
4. Environmental Conditions - Touch to toggle between temperature and humidity
5. Filter Status
   - GREEN: Filters within service life
   - RED: Filter service due

     Touch to view system and filter run times
6. Info Icon - Touch to view system status and calibration dates
7. Settings - Touch to adjust target cabin pressure and fan speed warning level
8. Fan Speed Indicator
   - GREEN: Normal: Current fan speed percentage
   - RED: Fan speed above warning threshold (potential issue)
9. Cabin Pressure Value - Current cabin pressure in PA

SYSTEM OPERATION

Startup Sequence

1. Upon system startup, the fan speed increases to 100% and holds for 15 seconds.
2. Fan speed automatically decreases by 15% increments every 10 seconds until the desired pressure is reached.
3. The default pressure is preset to 35 PA (adjustable in settings)

Pressure Management

The system continuously monitors cabin pressure and makes automatic adjustments to maintain the target pressure. If the pressure falls outside acceptable parameters, the system will:

1. Attempt to correct by adjusting fan speed
2. Trigger visual warning if unable to correct
3. Trigger audible alarm if condition persists for 3 minutes

CO^2 Management

When CO2 levels exceed 1200 PPM, the system automatically increases pressure to 135 PA to accelerate air exchange. Once CO2 levels drop below 1000 PPM, pressure returns to the preset level.

Adjusting Settings

To adjust system settings:

1. Touch the Settings icon on the main display
2. Adjust target pressure (range: 30-100 PA)
3. Adjust fan speed warning threshold (typically 50 points above the fan speed required to reach design pressure)

ALARM CONDITIONS & RESPONSES



Co2 Yellow warning



Co2 Orange fail



Co2 Red warning



Info page

Pressure Alarms

CONDITION	VISUAL INDICATOR	AUDIBLE ALARM	RESPONSE
Below 20 PA	🔴 (Fail)	After 3 minutes	Touch pressure icon to mute for 30 min
Above 200 PA	🔴 (Fail)	After 3 minutes	Touch pressure icon to mute for 30 min

CO^2 Alarms

CONDITION	VISUAL INDICATOR	AUDIBLE ALARM	RESPONSE
Below 900 PPM	🟢 (OK)	None	Normal operation
900-1000 PPM	🟡 (OK)	None	Monitor levels
1000-2500 PPM	🟠 (Fail)	After 3 minutes	Touch icon to mute for 30 min
ABOVE 2500 PPM	🔴 (Fail)	After 3 minutes	Touch icon to mute for 10 min

Fan Speed Warning

When fan speed indicator turns 🔴 RED:

- Check filters, doors, windows, and seals
- Refer to Troubleshooting section for guidance

MAINTENANCE

Filter Service Schedule

FILTER TYPE	SERVICE INTERVAL	INDICATOR
MAIN AIR FILTER	250 hours	Filter icon turns RED
RECIRCULATION FILTER	250 hours	Filter icon turns RED
HEPA FILTER	500 hours	Filter icon turns RED

Resetting Service Timers

After replacing filters:

1. Use the Cleancab app to record filter replacement
2. The app will automatically reset the service timers

System Calibration

Yearly system calibration is recommended for optimal performance.

Contact your installer to schedule calibration.

TROUBLESHOOTING

Fan Speed Warning (RED)

If fan speed indicator turns RED, check the following:

1. Ensure all windows and doors are fully closed
   Even small gaps can affect cabin pressure
2. Ensure **HVAC is set to fresh air if fitted, best practice is to disconnect the or remove the fresh air flap.**
3. Check filter condition
   Inspect main air filter, HEPA filter, and recirculation filter Replace if visibly dirty, even if service hours haven't been reached
4. Inspect pressuriser unit
   Check all hoses and fittings for damage or disconnection
5. Check cabin seals
   Inspect door and window seals for damage
   Look for any gaps or worn areas
6. Inspect sensor tube
   Check for blockages or kinks
   Ensure proper connection to sensor box
7. Check external wiring
   Ensure all cables entering the cabin are properly sealed
8. Verify pressuriser motor operation
   Listen for unusual noises
   Check for smooth operation

If issues persist after checking these items, contact your installer for assistance.

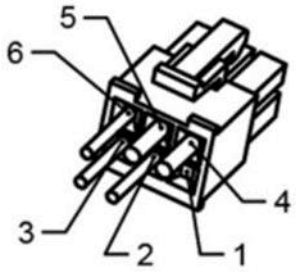
TROUBLESHOOTING

Device or Pressuriser will not turn on

- Check sensor box LED (should flash green if system is OK. If flashing red, check the monitor for warnings).

LED will not turn on

- Check earth.
- Check connector at the sensor box.
- Check power & earth at the sensor box connector.
- If all is OK, contact your installer.



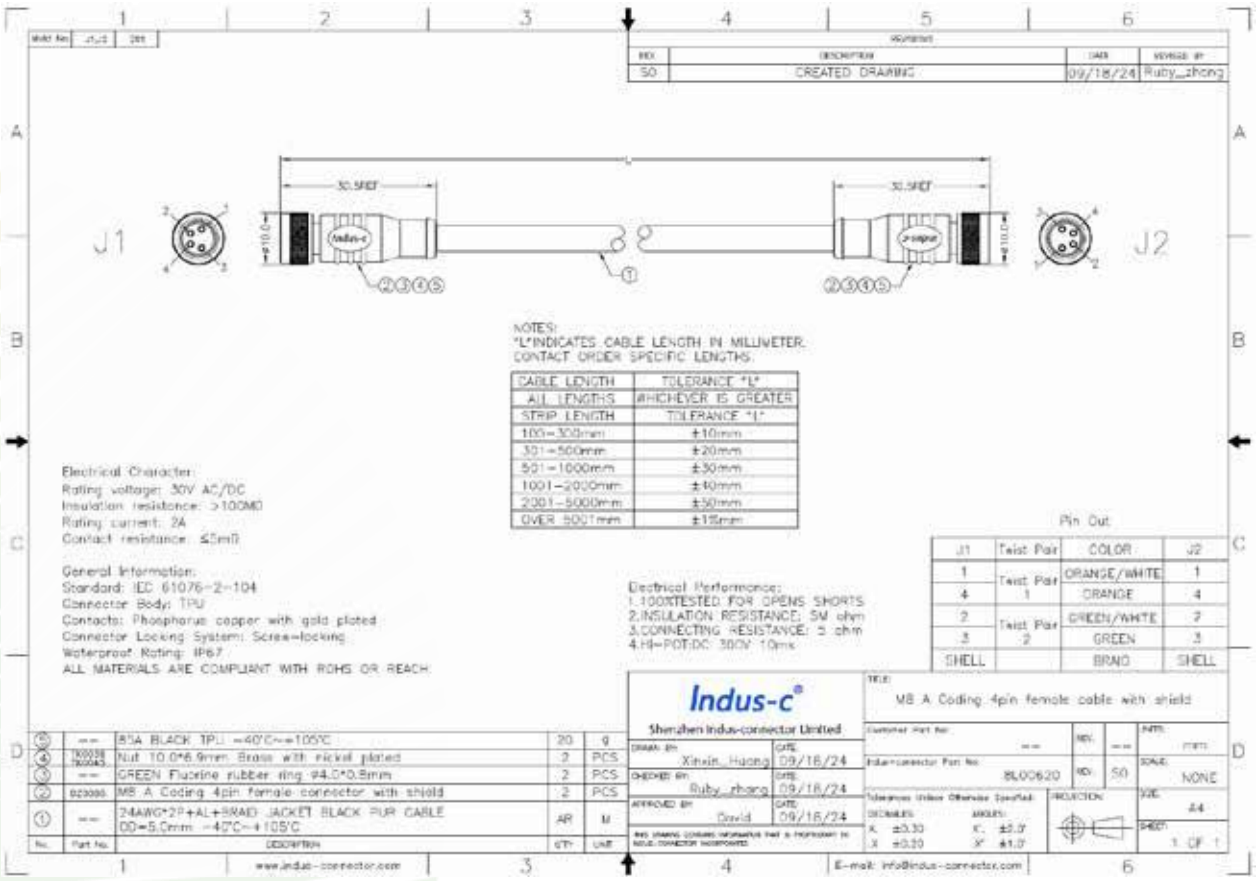
1. NOT USED
2. EARTH SENSOR BOX (BLACK)
3. POWER SENSOR BOX (RED)
4. POWER MOTOR (RED)
5. EARTH MOTOR (BLUE)
6. MOTOR SPEED CONTROL 0-10V

Sensor Box Connector

LED is On But the Monitor Does Not Turn On

- Check cable from sensor box to monitor box.
- Check the 5mm connectors are tight.
- Check the cable for damage.
- Check connectors for damage.
- Do a continuity test of the cable.
- If the cable is OK, contact your installer.

TROUBLESHOOTING



Pressuriser Fan Not Running

- Check LED light on the sensor box is flashing green if OK.
- Check power cable at the pressuriser 3 pin Deutsch plug.
  - Red power 18-28V. (Note: if the voltage is below 17V the fan will not operate.)
  - Blue earth - check for continuity.
  - Yellow 0-10V should read 9-10V with the unit powered & fan speed reading 100%.
- Check all connectors.
- Check for continuity of the 3-core wire loom to the sensor box.
- If the LED is on in the sensor box & the monitor is not on and fan is not running, check the monitor cable for a short to ground.
- Contact your installer if the problem persists.

TROUBLESHOOTING

Co2 Alarm Level Warning

CO2 Alarm Continually Sounds Orange or Red Warning

- Ensure the cabin HVAC blower is set to median speed or higher.
- Ensure the HVAC system is set to fresh air if fitted. (best practice is to remove the unit)
- Check Sensor box for obstruction (note sensor box is normally located close to the HVAC recirculation filter).
  - Cabin housekeeping is important for system operation.
  - Keep the cabin tidy from loose items, clothing, paper or other objects that could obstruct the sensor box or recirculation filter.
  - Keep cabin clean, vacuum cabin with a Hepa vacuum cleaner wear appropriate PPE equipment
- Check the recirculation filter condition. Replace as necessary.
- Check the pressuriser fan speed: is it too high or low.
  - The recommended minimum fan speed is 17% to allow adequate fresh air flow through the cabin.
  - A too well sealed cabin can cause CO2 build up.
  - If cabin fan speed is too low, the cabin may require a bleed valve. Contact your installer for more information.
- If the cabin fan speed is too high, this may indicate a blocked main or HEPA filter. See Fan Speed Warning troubleshooting for more information.
- Check CO2 sensor reading:
  - Open all windows & doors & run the machine in a clear space with no operator in the cabin.
  - Let the CO2 level stabilise (this may take up to 30 minutes).
  - The CO2 level should read between 350 PPM & 600 PPM for normal ambient levels depending on the environment.
  - If the CO2 levels are too high, recheck the environment & repeat the test.
  - If the CO2 levels remain high, the CO2 sensor may need calibrating.
  - Note: the Cleancab CO2 sensor uses an NDIR type sensor with altitude compensation & should not require recalibrating.
  - Contact your installer if the problem persists.

USING THE CLEANCAB APP

The Cleancab app provides additional functionality for monitoring and maintaining your system.

Features Available Without Login

- View system status
- Monitor system run times
- Access fault logs and export data
- View filter service history and export data
- Access commissioning information
- Update filter service records
- Run system pressure test

Features Requiring Administrator Login

- Adjust alarm settings
- Calibrate sensors
- Modify system parameters
- Clear alarm and filter service history
- Clear commissioning form

Running a System Pressure Test

1. Open the Cleancab app
2. Navigate to the commision page
3. Slide the pressure test icon to run fan at full speed
4. When finished, slide the icon back to OFF position

   * IMPORTANT: If not returned to OFF, fan will continue running at full speed

SPECIFICATIONS

Operating Parameters

PARAMETER	RANGE	TYPE
PRESSURE SENSOR	0-500 PA	NDIR
CO2 SENSOR	0-5000 PPM	-

Power Requirements

- Input voltage: 24V DC
- 12v systems requires a 12v-24v DCDC step-up module
- Power consumption: 5 amp

Environmental Conditions

- Operating temperature: [Consult installation manual]
- Operating humidity: [Consult installation manual]

For further assistance, refer to contact information provided during installation.