BreatheSafe

Parts and Service Manual

LIEBHERR

R9600 EXCAVATOR

HEPA H14 Variable Speed Pressuriser | INPRESS TS Cabin Display with CO2 Sensor | HEPA Return Air Filter

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R9600 Excavator

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CONTENTS

INSTALLATION OVERVIEW

Manufacturer	Liebherr
Type	Excavator
Model	R9600
Cabin Pressure Max	
Set Auto Cabin Pressure	

HEPA H14 Variable Speed Pressuriser

INPRESS TS Cabin Display with Data Recorder

HEPA Return Air Filter

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WARNING

The pressurisation system described in this manual has the following areas which may be dangerous if not treated with great care.

Qualified staff must wear the correct personal protective equipment when cleaning and servicing this unit due to dust and fibres which may be caught by the stages of air filtration during normal unit operation.

The electrical power system is supplied by 12V DC or 24V DC, and no work should be carried out on the pressuriser system without the correct safe work procedures and electrical safety measures being taken, and all relevant circuit breakers opened to isolate the circuit.

The air filtration system may have several types of high-speed rotating equipment installed with very sharp edges. Ensure all safety guards are in place while the system is running.

Please be aware that HEPA filters cannot be cleaned and must be replaced at the end of their lifecycle or if the filter media has been damaged.

Particulate Behaviour

This is the length of time it takes for a particle to drop from a height of 1.5m in **STILL** air.

20µm	10µm	5µm	2µm	1µm	0.5µm
3.6 mins	8.3 mins	35.7 mins	2.8 hrs	12hrs	41.7hrs
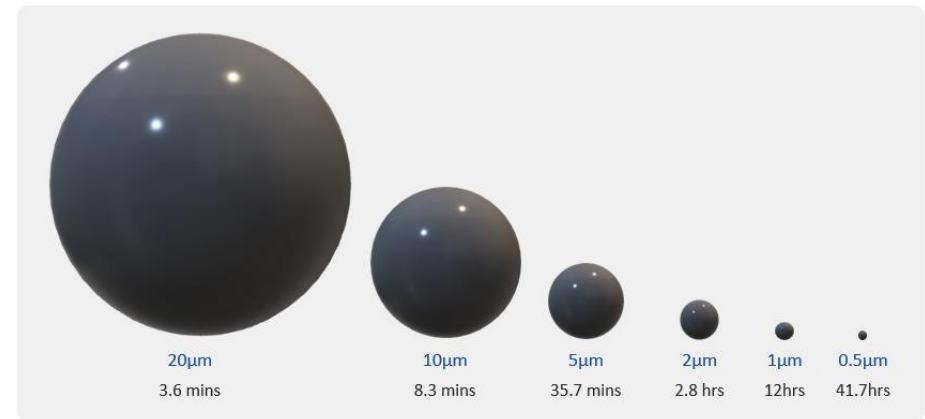
Warehouses and workshops do not have still air, so hazardous airborne particulates may remain in air for longer, increasing chance for workers to breathe in dust. Ensure PPE is worn when installing this system.

This air quality system is designed to protect operators from harmful airborne contaminants. Keep the doors and windows closed at all times.

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Maintenance Schedule

The following tables show our suggested maintenance schedule for all units. Please note that site conditions may alter this. Excludes high corrosion environments.

Data download is required to claim the 3-year warranty on Brushless Blower Motor.

Inspect every 500 Hours and replace when filter is full*

| Component / System	Action Required
Turbo Pre-cleaner	Check operation of the Turbo Pre-Cleaner.
Pressuriser Blower	Ensure blower is operational.
HEPA Primary Filter p/n: **500000**	Inspect filter capacity indicator. Replace HEPA filter when 80% or greater. Vacuum out housing before replacing the filter elements.
HEPA Return Air Filter P/N: **500021 & 500039**	Vacuum inside cabin floor before replacing filter.
Filter Frame Assembly, Mounts, Seals and Filter Housing	Check door seals, all bolts, screws, and all mounts are secure. Check the filter canister & ensure it is correctly fitted. Check latches are operational and in good order. Replace / Re-tension fixtures and fittings required.

15,000 Hours / 36 months*

Component / System	Action Required
500 Hour Inspection	All 500-hour inspection actions.
Pressuriser's Blower **200002**	Replace BRUSHLESS Pressuriser blower.

Critical Parts

Item	Part Number	Qty.	Description	Service Interval
1	500000	1	Fresh Air HEPA H14 Filter (Tested as per EN1822)	1000* Hours (>80% fan capacity)
2	500021	4	HEPA Return Air Filter	500* Hours
3	500039	2	HEPA Return Air Filter	500* Hours
4	200002	1	Brushless Blower Motor – 24V	15,000 Hours
5	200027	1	BreatheSafe Digital Display – Data Recorder (INPRESS TS)	

*Filter service hours are subject to cab sealing efficiency, site conditions and correct system use.

Suggested Schedule Servicing*
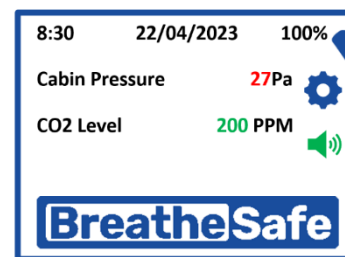
Fan Capacity Indicator

The filter is serviceable if the motor capacity is between 10% & 80%. We recommend that the filter is changed if the capacity is over 80%.

*Site dependent

| OPERATORS CHECKLIST	
PRE-START	
1.	Visually inspect the BreatheSafe system for any damage.
2.	Visually inspect the cabin for any damage to doors, windows, seals.
3.	Please remove dust & debris from shoes and clothes before entering the cabin.
4.	Ensure door(s) and windows are closed correctly.
5.	Start engine and turn HVAC on to speed 2 (medium speed).
6.	After fixed speed delay, the BreatheSafe display will show 50 Pascals or pre-set value.

The system is working correctly when the pascal value is green.
>> There is no further action required <<

NORMAL OPERATING CONDITION

Cab Air Conditioning

BreatheSafe recommends OEM air conditioning fan is set at mid speed or greater to circulate air around the breathing zone and minimise CO_2.

Acceptable operating range for BreatheSafe fan 10-80%. >80% recommend maintenance.
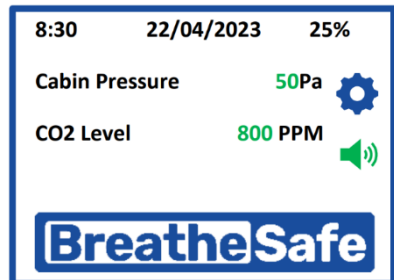
ALERTS

Fixed Fan Start Delay
- Allows the operator to carry out pre-start checks – limiting at 30% fan speed, press the red text to disable.

CO_2 Level Alert (if equipped)
- Ensure air conditioning fan is set at mid speed or greater to circulate air and minimise CO_2.

Low Pressure Alarm
- Cabin is not maintaining positive pressure – check doors and windows are closed correctly.
- Refer to maintenance department to check filters and cabin sealing. Ensure filters are serviceable.

Check Filter
- Reminder to inspect or replace filter. Service hour meter requires re-set.
- Refer to maintenance department.

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Item No.	Qty.	Description	Part No.
1	1	Pre-cleaner Hood & Rotor Assy	200004
2	4	Pre-cleaner Injector Ring	200005
3	1	TL Fan Blade (inc. in #7)	200006
4	1	TL Nose Cone / Pre-cleaner	200007
5	1	TL Motor Housing	200008
6	1	TL Filter Housing	200009
7	1	24v DC Brushless VSD Motor & TL Fan Blade	200002
8	1	O Ring Seal Kit 2 Parts	200010
9	1	Included in 8	200011
10	1	Wiring Sleeve	200012
11	1	HEPA H14 Filter	500000
12	3	M6 Nyloc Nut	300218
13	3	M6 x 55mm Hex Bolt	300982
14	4	M8 x 190 Hex Bolt	301136
15	8	M8 x 22mm O/D HD Washer	300230
16	4	M8 Nyloc Nut	300249
17	5	M4 x 75mm Pan Head Phillips Screw	300162

Specifications – High-Capacity HEPA Pressuriser	
Blower	High RPM Brushless VSD
Protection	Locked rotor, under/over voltage, under/over current & over temperature
Voltage	24VDC
Current Draw	11 A maximum. Blower programmed with slow start to stop excessive in-rush current
Air Flow	30-300 m3 /hr (50-215 CFM)
Pre-Cleaner	Integrated VLR (Very Low Restriction) mechanical pre-cleaner
Filter Element	BreatheSafe HEPA H14 Primary Filter (99.995% @ MPPS)
Connector	Mining Spec. Deutsch electrical connectors as standard
Materials	High strength composite
Serviceability	Single part filter assembly with twist-lock (TL) cap
Mounting	Heavy duty adjustable mounting brackets
Design	100% designed by BreatheSafe engineering

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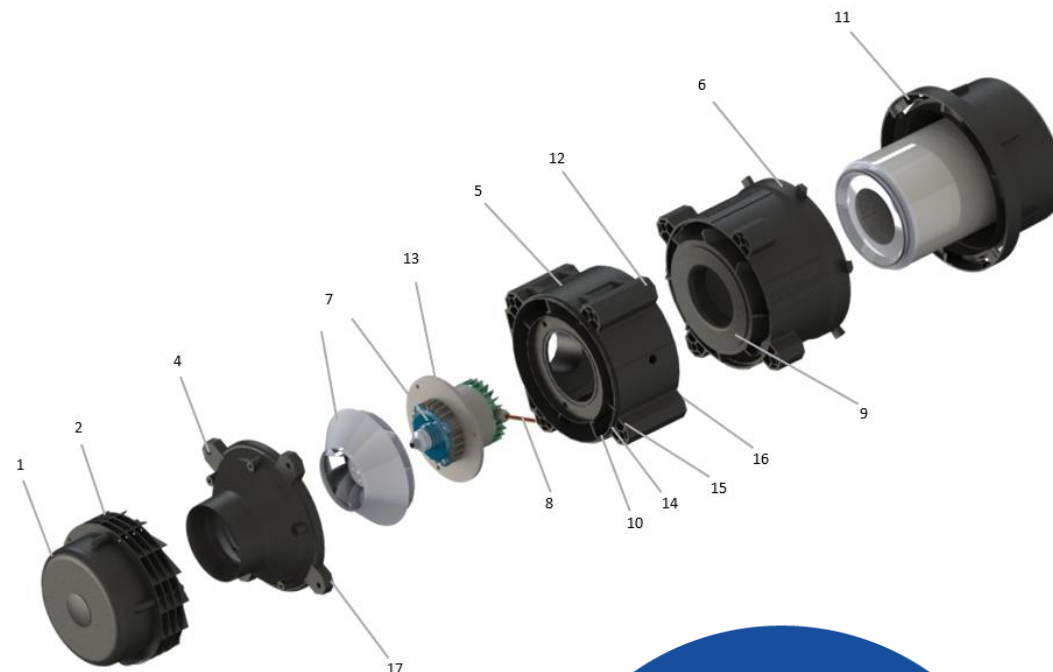
ISO 23875 Compliant.

Handle with care. Do **NOT** touch filter media.
HEPA filters cannot be cleaned.

Filter Information

HEPA H14 Glass Fibre Filter
Test Method: EN1822
Efficiency: 99.995% @ 0.3 Microns

PN: 500000

US: +1 800 359 1704 | AU: +61 7 3276 7833
sales@breathe-safe.com | breathe-safe.com

Item No.	Part No.	Rev	Description	Qty	Colour	Category
1	100298A01	3	High Pressure Unit Module	1	Black Satin 27219268	Weld Assy
2	100298P01	2	Pipework Module	1	Black Satin 27219268	Pipework
3	100298M01	2	Monitor Module	1	Charcoal Satin 27288351	Module
4	100298R01	2	Return Air Module	1	Charcoal Satin 27288351	Module

PARTS LIST GA

COMPLETE ASSEMBLY No: 700288

Kit Part Number: 700288

OEM TRAY
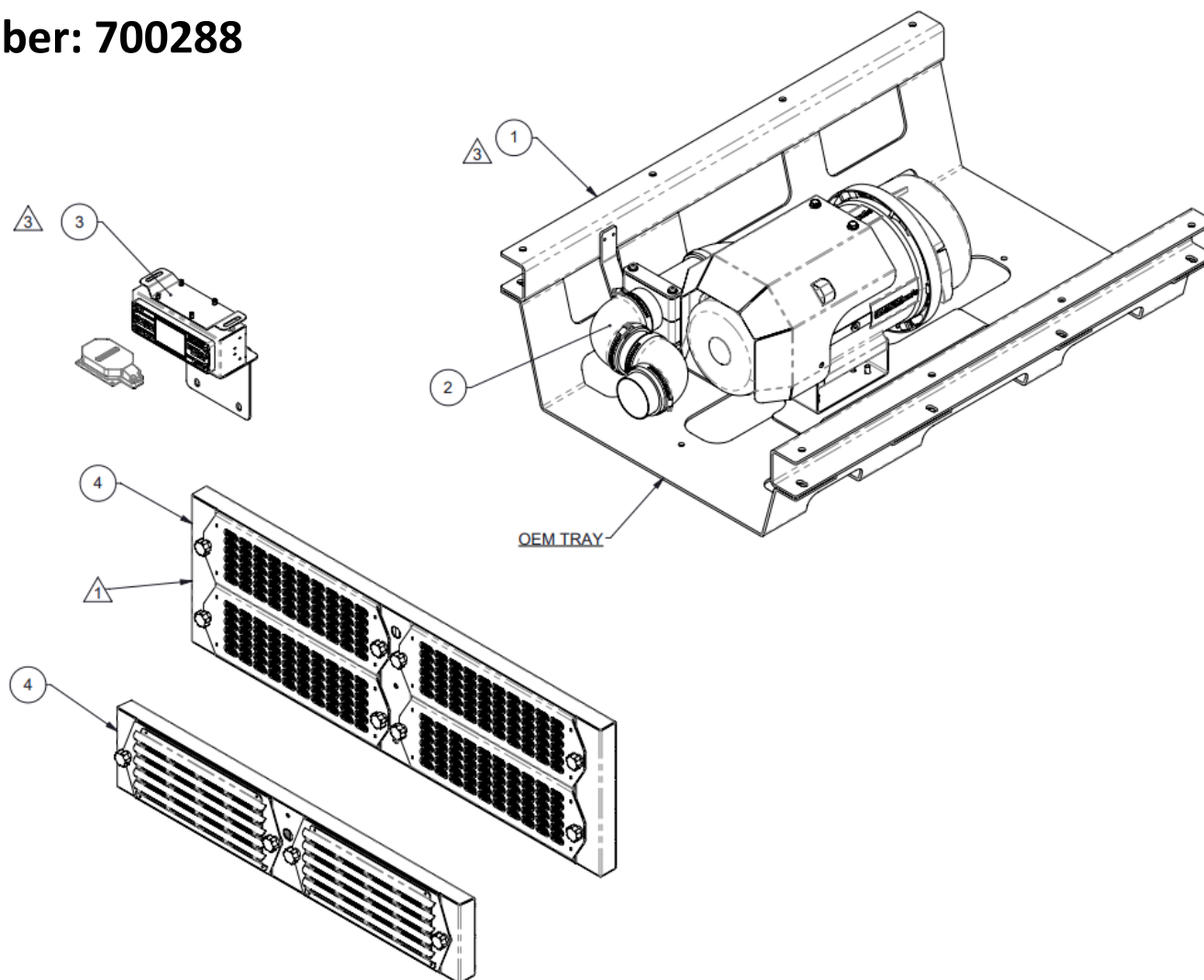
Item No.	Part No.	Rev	Description	Qty	Material	Thickness	Colour	Category
1	100298A02	1	TL Mount Assy	1	-	-	Black Satin 27219268	Weld Assy
2	100298A03	2	TL Cover Assy	1	-	-	Black Satin 27219268	Weld Assy
3	100298A04	1	Channel Mount	1	-	-	Black Satin 27219268	Weld Assy
4	100298A05	0	Channel Mount with Bracket	1	-	-	Black Satin 27219268	Weld Assy
5	300483	-	Stauff GR7 Weld Plate	1	Zinc Plated	5	(As Req'd)	Pipework
6	200000	[*]	TL4 24V DC Unit	1	-	-	-	Stock Item
7	250007	0	TL Mount Bracket 56.5mm	1	Mild Steel	3	(As Req'd)	Stock Item
8	301016	-	Bolt PHCSK M8x20L 12.9	4	Zinc Plated	-	-	Fasteners
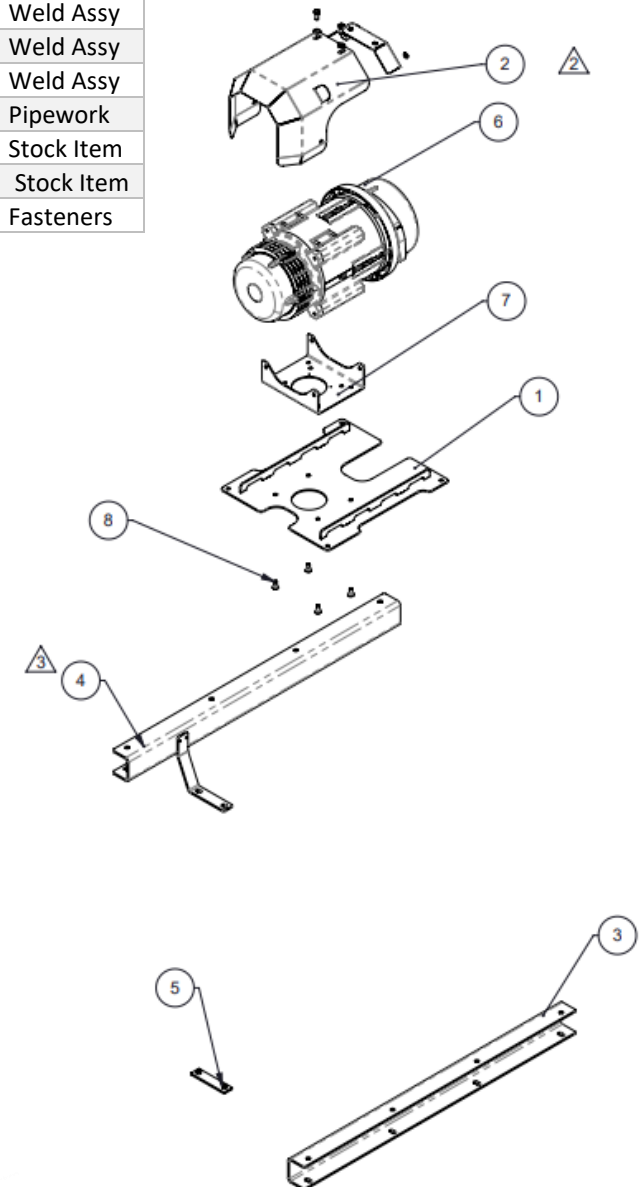
Item No.	Part No.	Rev	Description	Qty	Material	Thickness	Colour	Category
1	300388-0070	-	76.3 x 1.6 @70mm	1	Stainless Steel	1.6	(As Req'd)	Pipework
2	300388-0200	-	76.3 x 1.6 @200mm	1	Stainless Steel	1.6	(As Req'd)	Pipework
3	300001	-	65-89mm Hose Clamp	6	-	-	-	Pipework
4	776.1-PA-DP	-	Stauff – 3" Clamp Assy	1	PA Type 6	1.6	-	Pipework
5	3"-90Deg	-	3"x90* Elbow Long Drop Sil	2	Silicone	-	-	Pipework
6	200308	0	3"-90Deg Short Elbow	1	Silicone	-	-	-
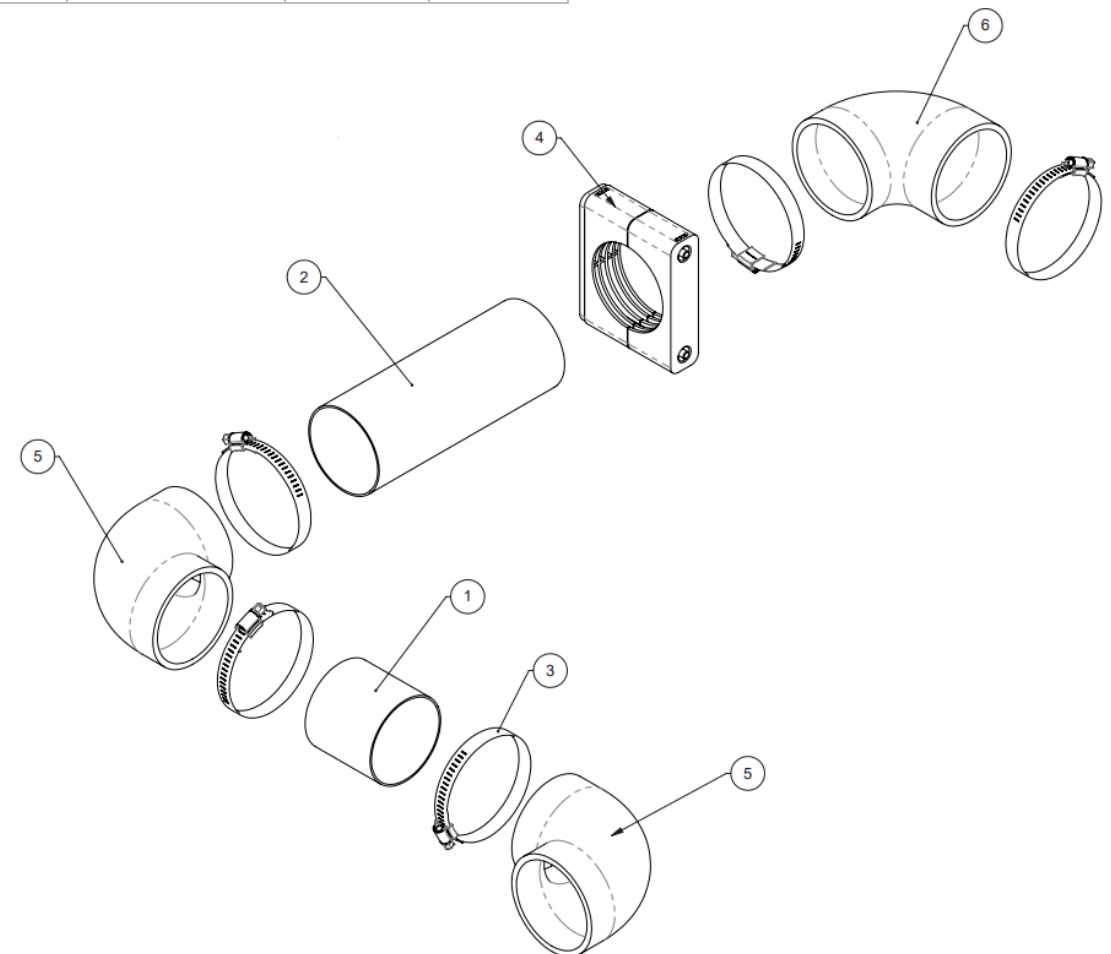
Item No.	Part No.	Rev	Description	Qty	Material	Thickness	Colour	Category
1	100298-M277	1	Monitor Bracket	1	Mild Steel	3	Charcoal Grey MX83-682	Part
2	250100	0	Monitor Box, Small	1	-	-	(Per Assy Colour)	Stock Item
3	250106	0	CO2 Bracket Universal	1	-	-	-	Stock Item
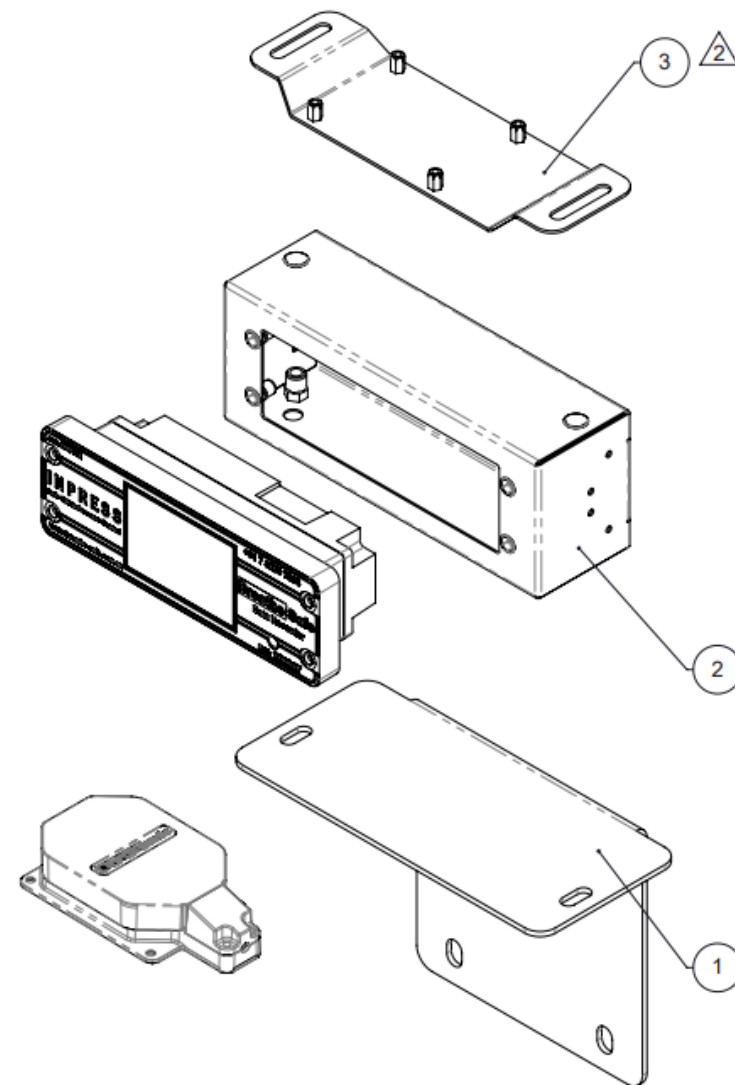
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Item No.	Part No.	Rev	Description	Qty	Material	Thickness	Colour	Category
1	100298R03	0	Filter Frame Weldment	1	-	-	Charcoal Satin 27288351	Weld Assy
2	100298R04	1	Filter Cover Weldment	4	-	-	Charcoal Satin 27288351	Weld Assy
3	300814	-	M6x20 Scallop Knob Male	8	-	-	-	Hardware
4	500021	[*]	HEPA Filter 375 x 140 x 40	4	N/A	-	-	HEPA Filter
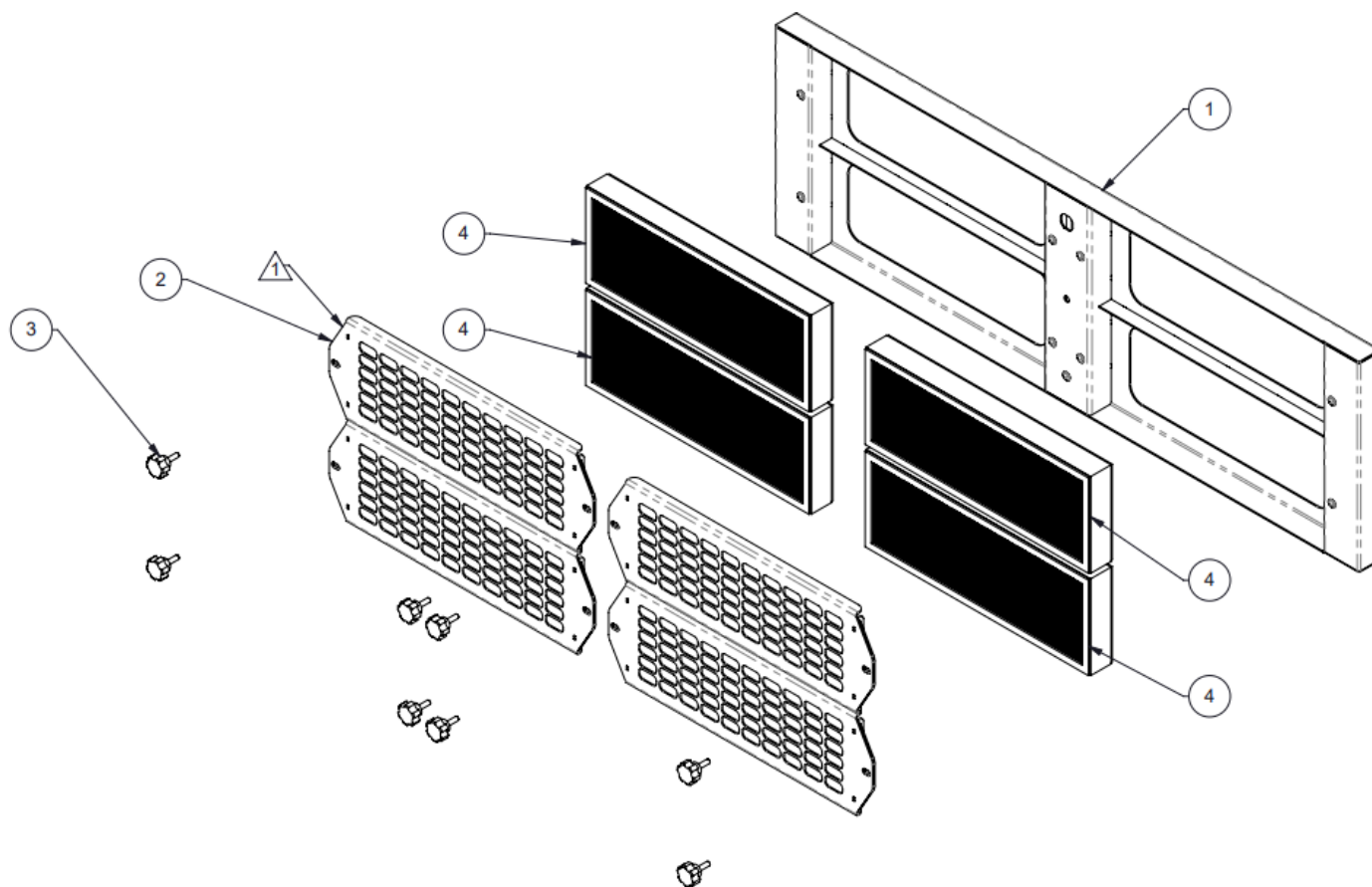
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Item No.	Part No.	Rev	Description	Qty	Material	Thickness	Colour	Category
1	100298R06	1	Filter Frame Weldment	1	-	-	Charcoal Satin 27288351	Weld Assy
2	100298R07	1	Filter Cover Weldment	2	-	-	Charcoal Satin 27288351	Weld Assy
3	300814	-	M6x20 Scallop Knob Male	4	-	-	-	Hardware
4	500039	[*]	HEPA Filter 320 x 150 x 31	2	-	-	-	HEPA Filter

BreatheSafe
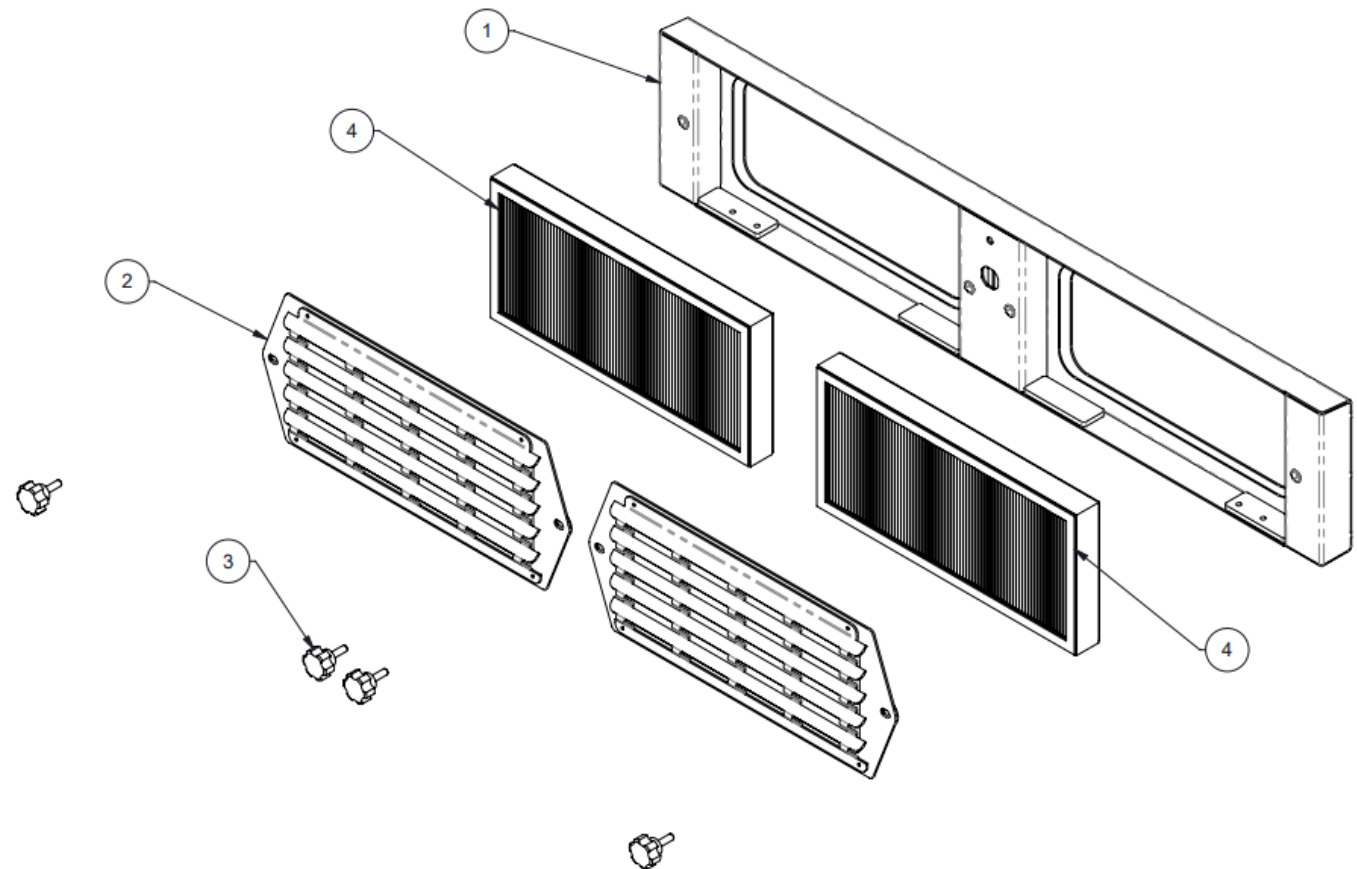
Display Key Features

- Digital cabin pressure monitoring system
- Automatic cabin pressure control
- Intelligent fan speed output
- Data logger
- Alarm for low-pressure (RS20)
- Light sensor for automatic dimming of the screen

CO2 Sensor

- CO2 Sensor Type is NDIR (Non-Dispersive Infrared)
- Sample Rate is every 2 seconds
- 12-30V DC Operating Voltage
- Automatic Altitude Compensation
- Alarm Set points are adjustable
- No setup required

184.5mm · 61.8mm · 54.6mm

65 mm · 120 mm · 27 mm

Time	Date	Actual Motor Capacity %
		Settings Button
Cabin Pressure	Actual measured cabin pressure pascals	Alarm Mute Button
CO2 Concentration*	Actual measured CO2 concentration ppm	
Temperature *	Actual measured Temperature in ℃	

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Settings button

Alarm button

Light Sensor

MAIN SCREEN

Options* when fitted

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Wiring Diagram – **InPress Controller**

Item No.	Part No.	Description	Qty
1	200027	InPress User Interface	1
2	200031	CO_2 Sensor	1
3	200000	TL4 High Pressure Air Filtration Unit	1
4	500000	HEPA H14 Fresh Air Filter	1
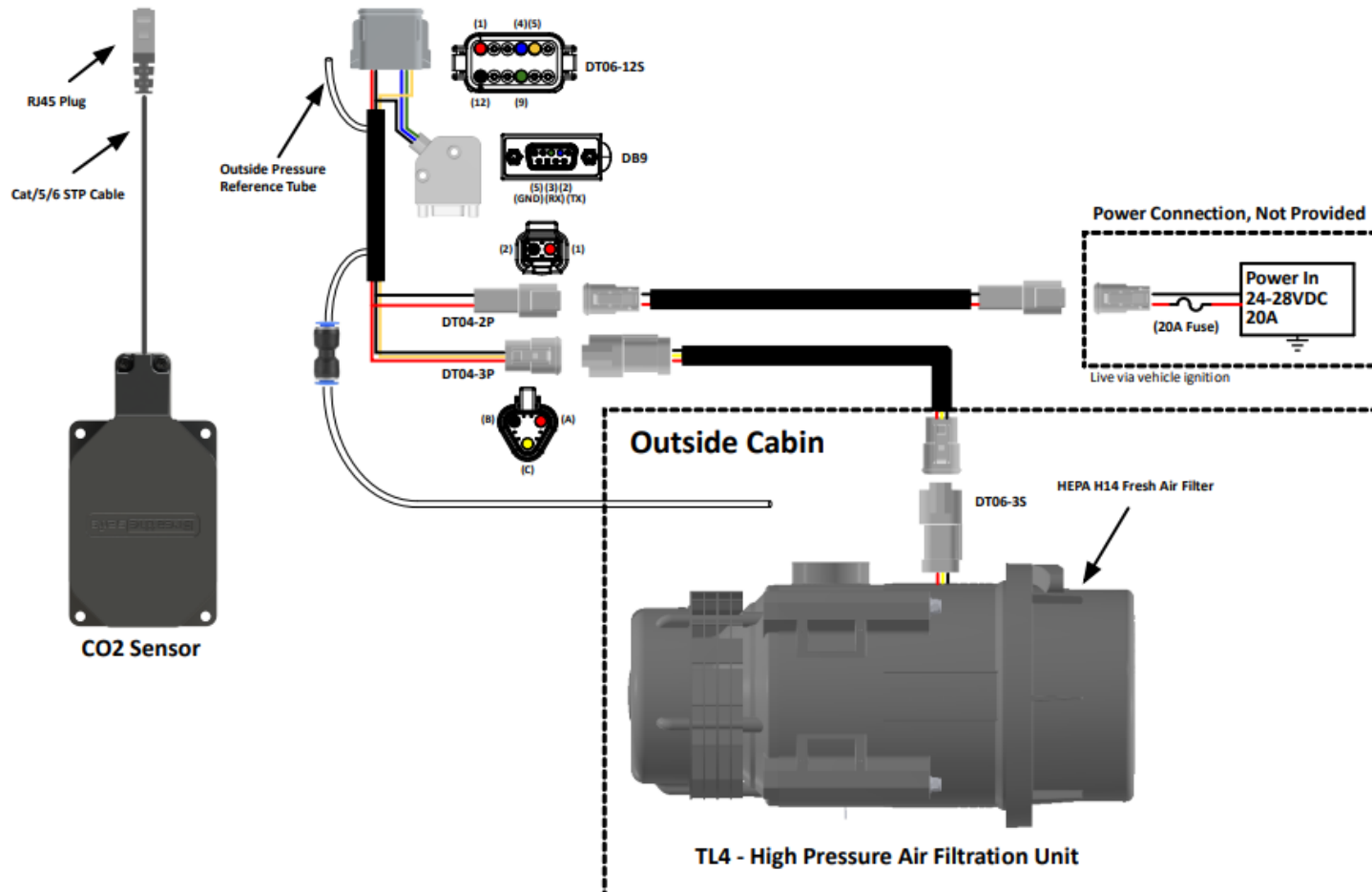
Hand-Held Differential Pressure Monitor (HHDPM) Leakage Test

Test enclosure for air leakage using the HHDPM.

Cabin Pressure: Sensor outside the cabin

The cabin pressure test can also be carried out with the service technician outside the cabin.

1. With the door open, turn on the HHDPM and observe the pressure reading. Confirm it is reading zero.
2. Connect the pressure reference tube to 'Positive' (top port) place the other end of the tube on the operator seat, away from HVAC vents and any other direct airflow.
3. Turn on the machine's HVAC and pressurisation system (if present). Ensure HVAC is set to fresh air and not recirculation.
4. Close the door, make sure the tube isn't kinked.
5. Observe the pressure reading and allow it to stabilise. The handheld differential pressure monitor & cabin pressure monitor should read within 5 Pa of each other.
6. Feel around the enclosure for any pressure leaks. Seal enclosure where leaks are present and monitor pressure changes.

Part Number: 200142

1. Positive Pressure Port
2. Ambient Pressure Port
3. Charging LED
4. Charging Port
5. Re-Zero Button
6. Power Button
7. Display

Typical Seal Locations:
- Lower pillar openings
- Upper pillar openings where necessary
- Cabin frame
- Floor plates either internal or external – foam tape etc.
- Door seals
- Window seals
- Exterior access panels
- Hydraulic hose entrance points

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Cabin Sealing Efficiency Test Procedure	
1	New replacement filter is required to perform this check. Start engine (pressuriser ON) and ensure all windows & door(s) are CLOSED correctly (no cabin pressure leaks).
5	Pressure target is **250 Pa or greater** with a new filter. Less than 250 Pa requires cabin sealing improvements.

InPress
(Touch Screen)
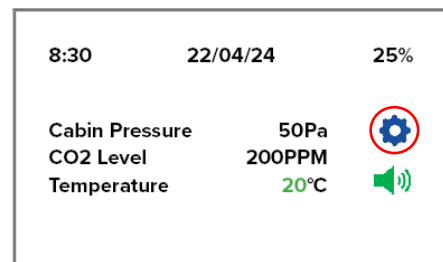
2. Press the settings cog.
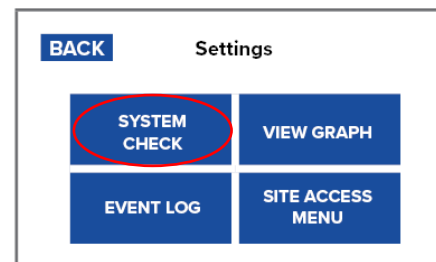
3. Press 'SYSTEM CHECK SET MAX' button.
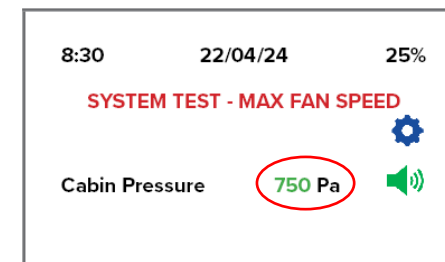
4. Record results. Repeat steps 1 & 2 to finish test.

Commissioning Procedures

Follow each step of the installation guide that was supplied with the BreatheSafe kit.

Cabin sealing is an integral part of RS20 & ISO 23875; you must ensure that cabin seals are adequate for maintaining positive pressure. In addition, the site (end- user) must have the correct procedure(s) for servicing OPERATOR enclosure seals in a proactive manner rather than reactive. Items such as door and window seals must be in good working order or new seals FITTED before the BreatheSafe system installation.

Touch-screen cabin pressure display/controller Part# 200027:

*System Check Function: enter the Settings menu option and select "System Check – Set Max." The minimum BreatheSafe requirement for cabin sealing efficiency is 250 pascals; if this result is not met, it is essential to re-examine and find pressure leaks of the enclosure and apply new sealing measures.

Submission for commissioning procedure as per the diagram below:
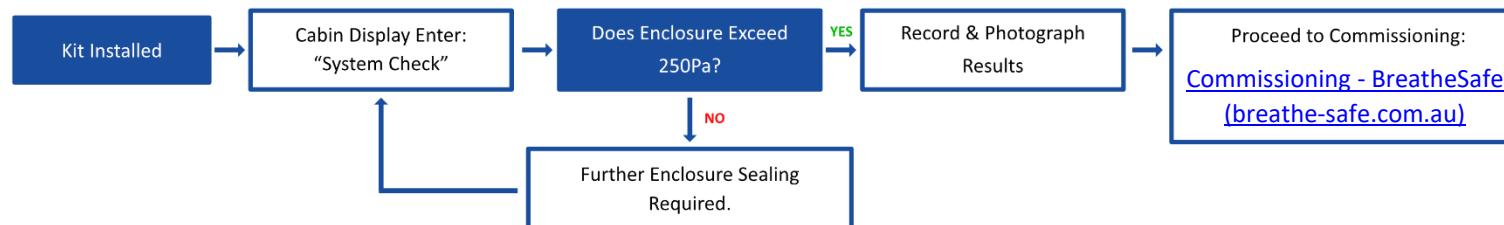
The commissioning images required are:

- **ID plate / Machine Serial Number / Asset Number or Call Sign**
- INPRESS TL Pressuriser location
- HEPA Return Air Filter Location Option: Powered Return Air Filter
- Cabin Pressure Display Location – Including the "System Check" maximum cabin pressure result with motor output capacity %

Fill in the BreatheSafe Service Tag with the following details:

- **Machine Serial Number and Installers details**
- Date installed and System Check result (max cabin pressure)
- The set cabin pressure with actual pressure and motor percentage output
- Verify the 250-pascal threshold was achieved = pass OR not achieved = fail**

Please upload machine and installation details in conjunction with the required images. A Commissioning Certificate will be sent to the email address you nominate. **Extended warranty for (RS20 & ISO 23875) BreatheSafe Systems is only applicable to operator enclosures meeting this requirement.

BREATHESAFE SYSTEM TROUBLE SHOOTING GUIDE *TOUCH CONTROL		
FAULT	**POSSIBLE CAUSE**	**SOLUTION**
*ERR error code	Poor sensor connection	Remove & refit pod connection cable
	Corrupted coding	Contact support for default reset pin
*Check filter alarm	Service hour timeout	Access *Check Runtime* menu - reset hours via 7597 code
Temperature / CO2 error	Sensor not connected	Fit sensor or disable via site access CO2 & or temperature menu
Pressuriser running at full speed/noisy	Filter blocked	Service filter
	Door or window open	Ensure doors & windows securely shut
	Cabin sealing capacity not adequate	Perform pressure test procedure & seal leak points as required
	Sense pipe blocked	Ensure clear & not bent
	Internal sensor damaged	Replace controller
		**No need to change setpoint
Filter blocking quickly	Defective cabin sealing	Perform pressure test procedure & seal leak points as required
	Pre-cleaner failed	Check operation & replace if necessary
Display blank	Poor power supply	Check mains supply fuse & correct voltage
		Check voltage & 20AMP supply/connections at pin **1** @ monitor
		Check earth continuity at controller pin **12**
	Failed controller	Replace monitor
Controller showing 0.0 pressure	Fresh air filter blocked	Check filter condition & replace if required.
Low pressure alarm	Door or window open	Ensure doors & windows securely shut
	Cabin sealing capacity not adequate	Perform pressure test procedure & rectify cab sealing
	Pressuriser not operating	Ensure correct voltage 12v or 24v to pressuriser motor pin **A**
		Check 1.6V - 10V present at motor Pin **C**
		Check 20A Supply fuse
		Check earth continuity Pin **B**
	Pressure sense tube blocked	Unplug at monitor & ensure clear flow to external of cabin
		Ensure pressure tube fitted correct port **A**
		**No need to change setpoint
Pressuriser not working	Poor power supply	Check 20A mains fuse & correct voltage
		Ensure adequate wire size & no voltage drop
		Ensure correct voltage 12v or 24v to pressuriser motor pin **A**
		Check 1.6V - 10V present at motor Pin **C**
	Poor earth	Check earth continuity @ motor pin **B**
	Motor faulty	Replace TL4M
Access Codes:	**Site Access: 7597**	**Contact Support for Factory Setup Pin**

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User Settings Instructions

ENTER SET UP MODE

Start-Up Screen > Main Screen > Settings Button > Settings Screen > Site Access Button > Insert Pin > Site Menu

To enter the Setup mode, press the SETTING button.

Then enter SITE ACCESS MENU. Type in 4-number pin and press ENTER.

Insert Pin = 7597

BACK   **Enter Pin**

1	2	3
4	5	6
7	8	9
CLEAR	0	ENTER

7597

SET UP PARAMETERS

Placing the BreatheSafe 200027 unit into Setup mode allows the adjustment of the following parameters:

- Time (hours/minutes/seconds)
- Date (day/month/year)
- Pressure alarm setpoint
- Preferred cabin pressure
- Alarm delay/ intervals of alarm
- Calibration and system settings
- Resetting of the data logging
- Service reminders interval gap
- Reset current runtime between services
- CO_2 settings and alarms

BACK   Settings

SYSTEM CHECK	VIEW GRAPH
EVENT LOG	SITE ACCESS MENU

BACK   Settings Page 1   NEXT

STARTUP OPTIONS	DOOR WINDOW SETTING	PRESSURE SETPOINT
CHECK RUNTIME	DATE / TIME	CO2 SETTING

BACK   Settings Page 2

ALARM MUTE RESET	ZERO SENSOR	TEMP SETTING
BUZZER SETTINGS	LOG SETTINGS	FACTORY SETUP

PRESSURE SETPOINT

The pressure setpoint changes the pressure that the cabin will be maintained. INPRESS TS maintains the pre-set pressure within the cabin compared to outside.

Enter Setup mode and select ADJUST SETPOINT button. Then, use the onscreen UP and DOWN buttons to change the corresponding fields.

1

8:30	22/04/23	25%
Cabin Pressure		50Pa
CO2 Level		200 PPM
Temperature		20°C

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2

BACK Settings

SYSTEM CHECK	VIEW GRAPH
EVENT LOG	SITE ACCESS MENU

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3

BACK Enter Pin

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1	2	3
4	5	6
7	8	9
CLEAR	0	ENTER

4

BACK Settings Page 1 NEXT

STARTUP OPTIONS	DOOR WINDOW SETTING	PRESSURE SETPOINT
CHECK RUNTIME	DATE / TIME	CO2 SETTING

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5

BACK Pressure Settings

PRESSURE UNITS = Pascals

Alarm Set Point	Pressure Set Point	Pressure Alarm Delay
20	50	5 mins

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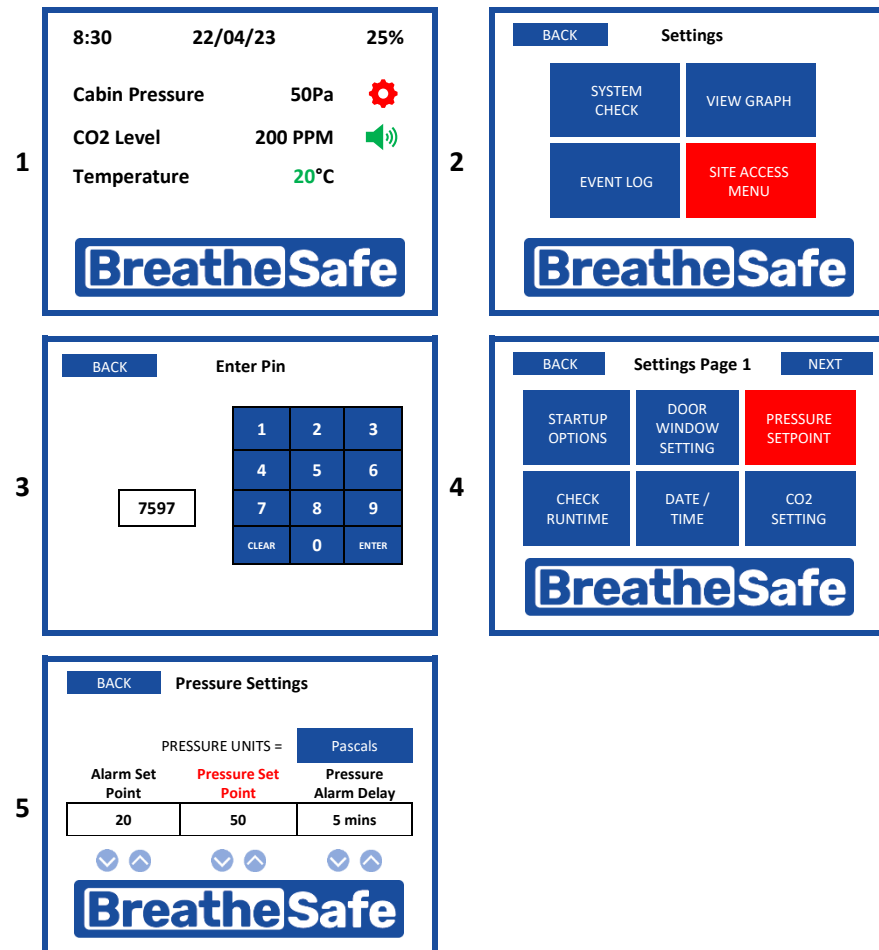
PRESSURE ALARM SETTING

The mining industry benchmark for cabin pressure is 50 pascals and low-pressure is set at 20 pascals.

After a delay the alarm will activate if cabin pressure remains below the pre-set value. Enter Setup mode and select ADJUST SETPOINT button. Then, use the onscreen UP and DOWN buttons to change the corresponding fields.

1

8:30	22/04/23	25%
Cabin Pressure		50Pa
CO2 Level		200 PPM
Temperature		20°C

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2

BACK Settings

SYSTEM CHECK	VIEW GRAPH
EVENT LOG	SITE ACCESS MENU

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3

BACK Enter Pin

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1	2	3
4	5	6
7	8	9
CLEAR	0	ENTER

4

BACK Settings Page 1 NEXT

STARTUP OPTIONS	DOOR WINDOW SETTING	PRESSURE SETPOINT
CHECK RUNTIME	DATE / TIME	CO2 SETTING

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5

BACK Pressure Settings

PRESSURE UNITS = Pascals

Alarm Set Point	Pressure Set Point	Pressure Alarm Delay
20	50	5 mins

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SERVICE INTERVAL

Use the onscreen UP and DOWN buttons to change the service interval setpoint.

To reset the current runtime to zero, press the RESET CURRENT RUNTIME button and enter the site access pin.

1

8:30	22/04/23	25%
Cabin Pressure	50Pa	⚙
CO2 Level	200 PPM	🔊
Temperature	20°C	

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2

BACK   Settings

SYSTEM CHECK	VIEW GRAPH
EVENT LOG	SITE ACCESS MENU

BreatheSafe

3

BACK   Enter Pin

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1	2	3
4	5	6
7	8	9
CLEAR	0	ENTER

4

BACK   Settings Page 1   NEXT

STARTUP OPTIONS	DOOR WINDOW SETTING	PRESSURE SETPOINT
CHECK RUNTIME	DATE / TIME	CO2 SETTING

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5

BACK   Pressure Settings

PRESSURE UNITS =   Pascals

CURRENT RUNTIME	SET SERVICE INTERVAL
700	1000

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DATE & TIME SETTINGS

Change the recorded date displayed and measured by the INPRESS TS.

1

8:30	22/04/23	25%
Cabin Pressure	50Pa	⚙
CO2 Level	200 PPM	🔊
Temperature	20°C	

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2

BACK   Settings

SYSTEM CHECK	VIEW GRAPH
EVENT LOG	SITE ACCESS MENU

BreatheSafe

3

BACK   Enter Pin

7597

1	2	3
4	5	6
7	8	9
CLEAR	0	ENTER

4

BACK   Settings Page 1   NEXT

STARTUP OPTIONS	DOOR WINDOW SETTING	PRESSURE SETPOINT
CHECK RUNTIME	DATE / TIME	CO2 SETTING

BreatheSafe

5

BACK   Date/Time Settings   NEXT

PRESSURE UNITS =   Pascals

HOUR	MIN	DAY	MON	YEAR
🔼	🔼	🔼	🔼	🔼
4 :	10	22 /	04 /	2023
🔽	🔽	🔽	🔽	🔽
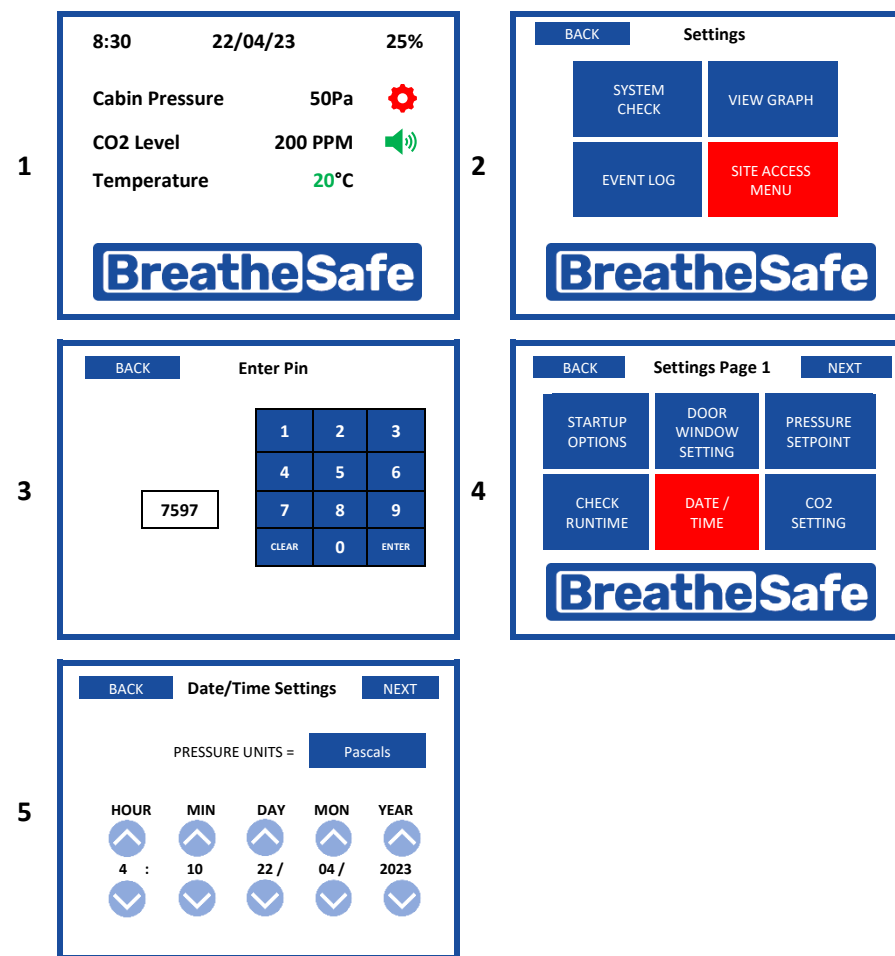
PRESSURE ALARM BUZZER SETTING

To disable the buzzer, toggle through to the ENABLED and DISABLED buttons.
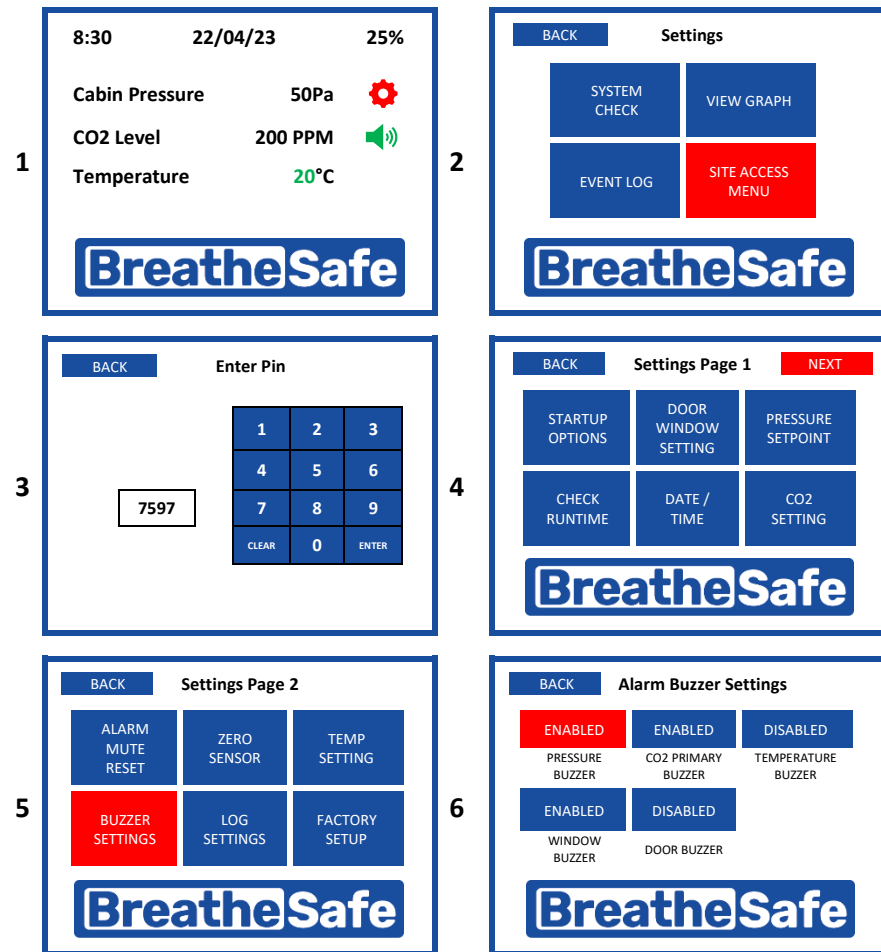
CALIBRATE ZERO SENSOR

Over long runtime, the 200027 may need recalibration. This screen allows the sensor to be recalibrated if more than 5 Pascals are out. To recalibrate, open windows and doors, turn off air conditioning, and any other device that may alter cabin pressure. Then, press the AUTO ZERO SENSOR button and leave the cabin while measuring. This process will reset the Zero Pressure.
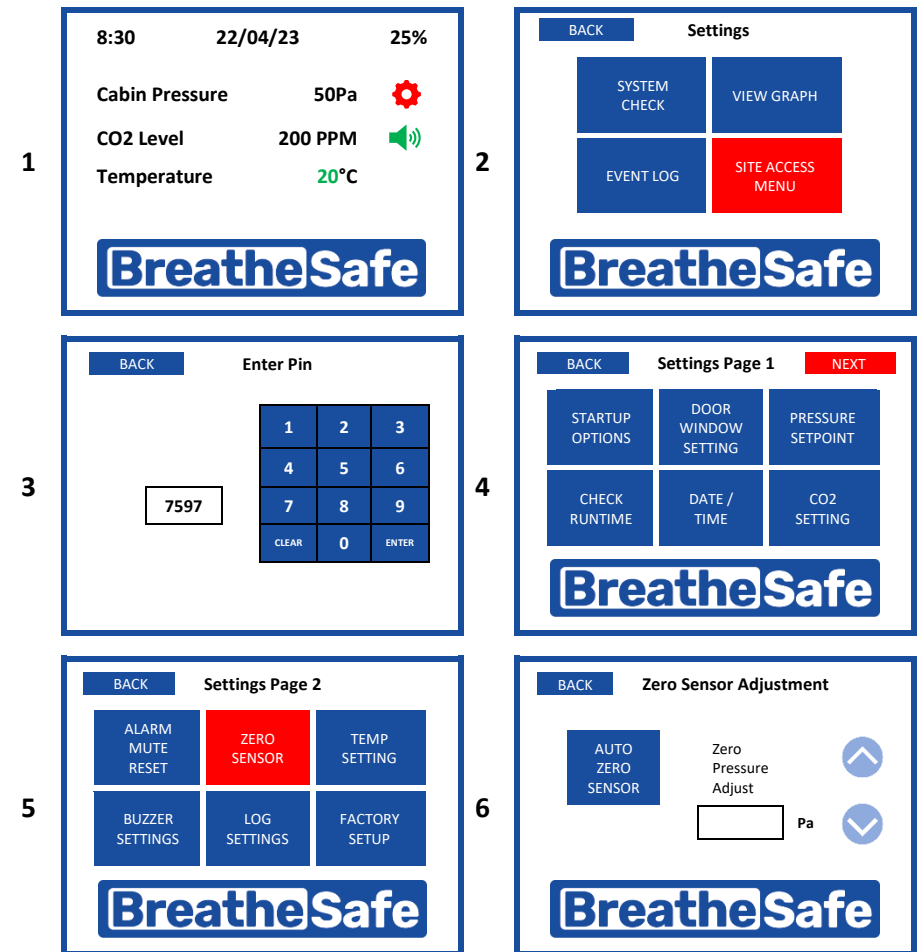
ALARM BUZZER SETTINGS

1

8:30	22/04/23	25%

Cabin Pressure — 50Pa ⚙️

CO2 Level — 200 PPM 🔊

Temperature — **20°C**

BreatheSafe

2

BACK — Settings

SYSTEM CHECK	VIEW GRAPH
EVENT LOG	SITE ACCESS MENU

BreatheSafe

3

BACK — Enter Pin

7597

1	2	3
4	5	6
7	8	9
CLEAR	0	ENTER

BreatheSafe

4

BACK — Settings Page 1 — NEXT

STARTUP OPTIONS	DOOR WINDOW SETTING	PRESSURE SETPOINT
CHECK RUNTIME	DATE / TIME	CO2 SETTING

BreatheSafe

5

BACK — Settings Page 2

ALARM MUTE RESET	ZERO SENSOR	TEMP SETTING
BUZZER SETTINGS	LOG SETTINGS	FACTORY SETUP

BreatheSafe

6

BACK — Alarm Buzzer Settings

ENABLED	ENABLED	DISABLED
PRESSURE BUZZER	CO2 PRIMARY BUZZER	TEMPERATURE BUZZER
ENABLED	DISABLED	
WINDOW BUZZER	DOOR BUZZER	

BreatheSafe

1

8:30	22/04/23	25%

Cabin Pressure — 50Pa ⚙️

CO2 Level — 200 PPM 🔊

Temperature — **20°C**

BreatheSafe

2

BACK — Settings

SYSTEM CHECK	VIEW GRAPH
EVENT LOG	SITE ACCESS MENU

BreatheSafe

3

BACK — Enter Pin

7597

1	2	3
4	5	6
7	8	9
CLEAR	0	ENTER

4

BACK — Settings Page 1 — NEXT

STARTUP OPTIONS	DOOR WINDOW SETTING	PRESSURE SETPOINT
CHECK RUNTIME	DATE / TIME	CO2 SETTING

BreatheSafe

5

BACK — Settings Page 2

ALARM MUTE RESET	ZERO SENSOR	TEMP SETTING
BUZZER SETTINGS	LOG SETTINGS	FACTORY SETUP

BreatheSafe

6

BACK — Zero Sensor Adjustment

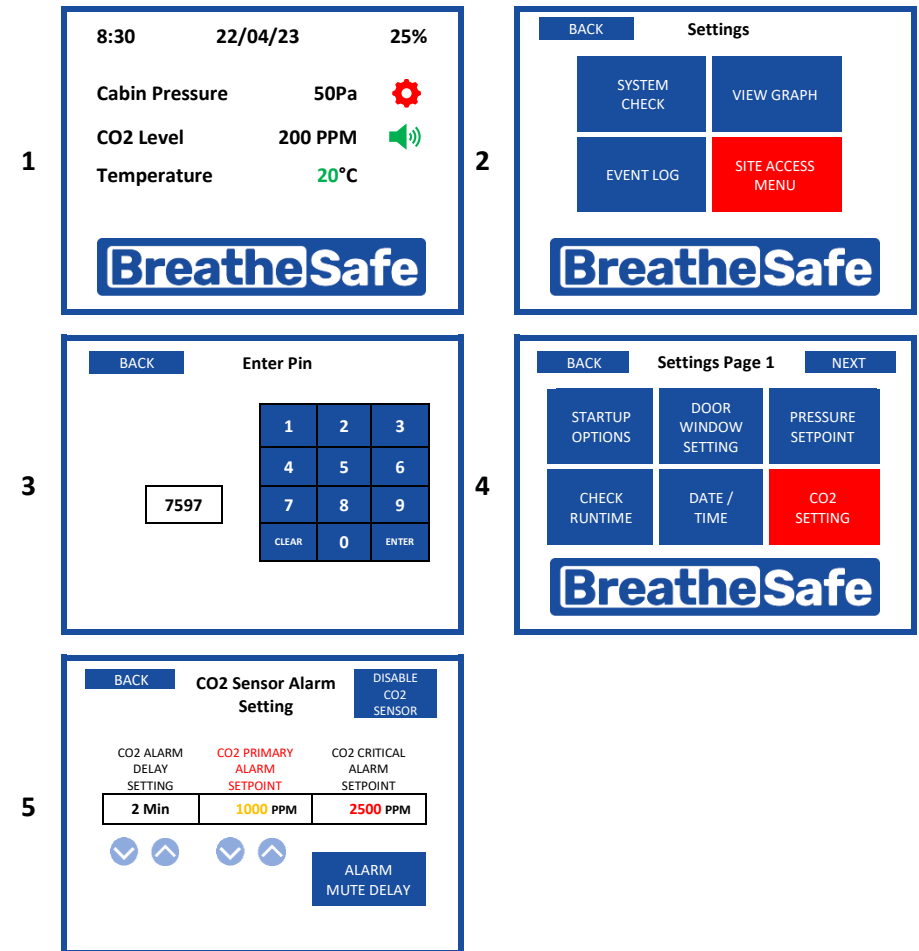| AUTO ZERO SENSOR	Zero Pressure Adjust ⌃
	⌄ Pa

BreatheSafe

CO2 MODULE ENABLE/DISABLE

Enable or disable to CO2 module used for measuring CO2 levels within the cabin.
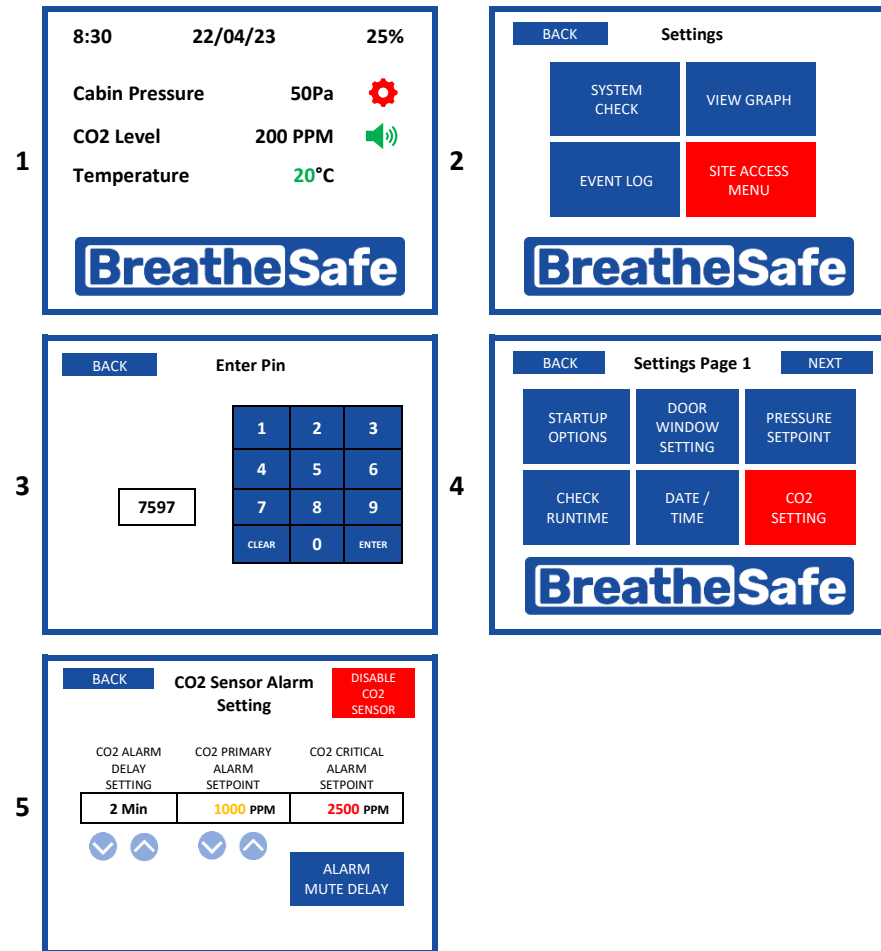
CO2 PRIMARY ALARM POINT

The first alarm will sound when CO2 levels inside the enclosure reach this point.

CO2 SETTINGS

Left column screens

1

8:30	22/04/23	25%

Cabin Pressure 50Pa ⚙
CO2 Level 200 PPM 🔊
Temperature 20°C

BreatheSafe

2

BACK | Settings

SYSTEM CHECK | VIEW GRAPH
EVENT LOG | SITE ACCESS MENU

BreatheSafe

3

BACK | Enter Pin

7597

1	2	3
4	5	6
7	8	9
CLEAR	0	ENTER

4

BACK | Settings Page 1 | NEXT

STARTUP OPTIONS | DOOR WINDOW SETTING | PRESSURE SETPOINT
CHECK RUNTIME | DATE / TIME | CO2 SETTING

BreatheSafe

5

BACK | CO2 Sensor Alarm Setting | DISABLE CO2 SENSOR

CO2 ALARM DELAY SETTING | CO2 PRIMARY ALARM SETPOINT | CO2 CRITICAL ALARM SETPOINT
2 Min | 1000 PPM | 2500 PPM
˅ ˄ | ˅ ˄ |
| | ALARM MUTE DELAY

Right column screens

1

8:30	22/04/23	25%

Cabin Pressure 50Pa ⚙
CO2 Level 200 PPM 🔊
Temperature 20°C

BreatheSafe

2

BACK | Settings

SYSTEM CHECK | VIEW GRAPH
EVENT LOG | SITE ACCESS MENU

BreatheSafe

3

BACK | Enter Pin

7597

1	2	3
4	5	6
7	8	9
CLEAR	0	ENTER

4

BACK | Settings Page 1 | NEXT

STARTUP OPTIONS | DOOR WINDOW SETTING | PRESSURE SETPOINT
CHECK RUNTIME | DATE / TIME | CO2 SETTING

BreatheSafe

5

BACK | CO2 Sensor Alarm Setting | DISABLE CO2 SENSOR

CO2 ALARM DELAY SETTING | CO2 PRIMARY ALARM SETPOINT | CO2 CRITICAL ALARM SETPOINT
2 Min | 1000 PPM | 2500 PPM
˅ ˄ | ˅ ˄ |
| | ALARM MUTE DELAY

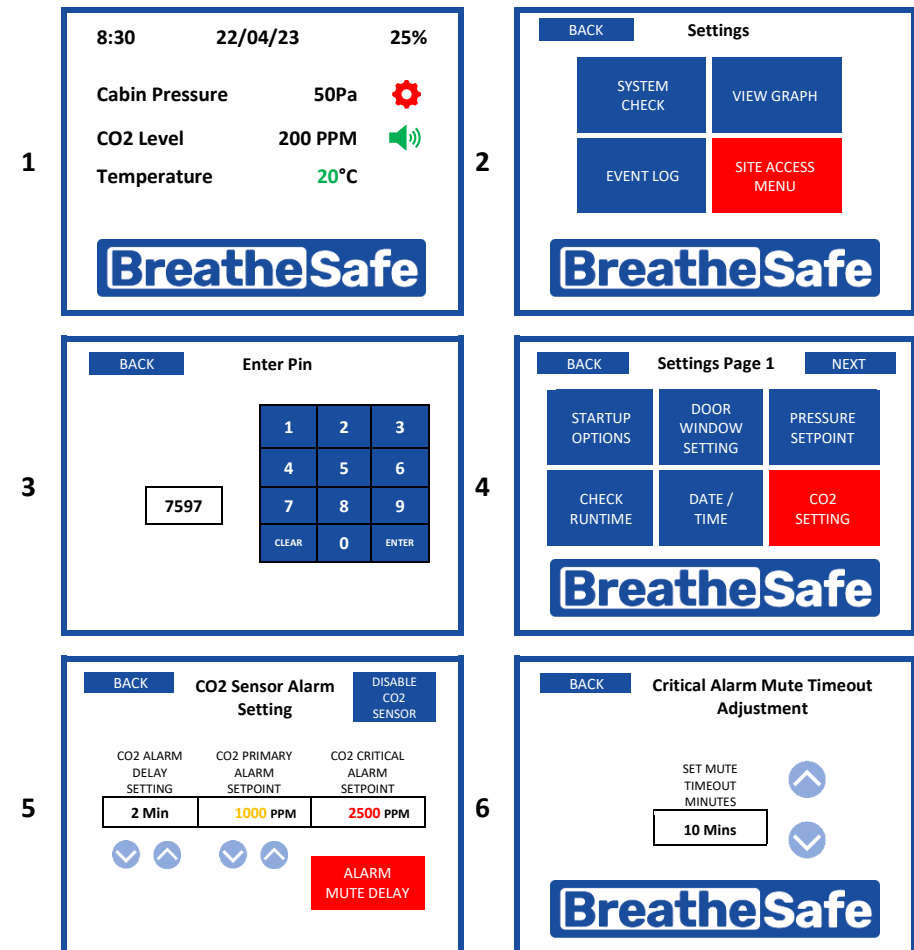**BreatheSafe**

CO2 ALARM DELAY

After CO2 (concentration in ppm) within the cabin reaches the 1000 ppm setpoint, the alarm will sound after this designated amount of time. The Alarm Delay adjusts the time between the INPRESS TS measuring CO2 concentration and sounding the alarm. Use the onscreen ADJUST buttons to change the corresponding fields. For example, press to toggle through Disabled / 1 – 10 minutes.
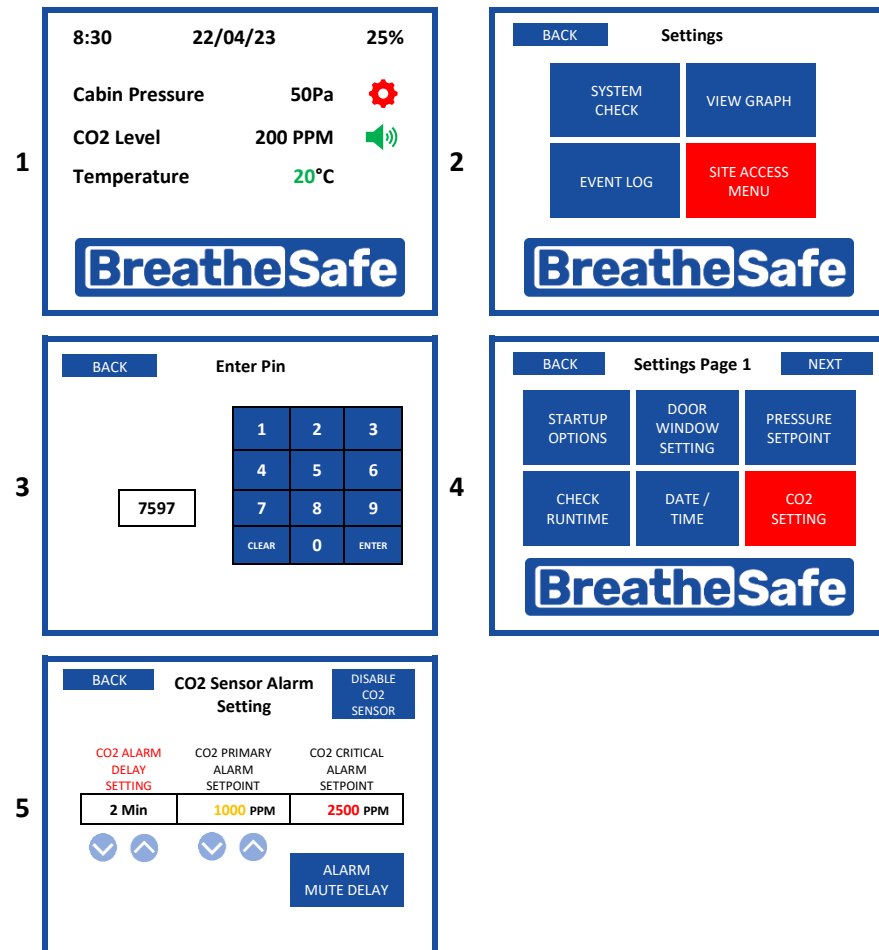
CO2 CRITICAL ALARM MUTE RESET

The critical alarm is set at 2500 PPM and cannot be changed. The mute delay, however, can be configured.

CO2 SETTINGS

1

8:30	22/04/23	25%
Cabin Pressure		50Pa ⚙
CO2 Level		200 PPM 🔊
Temperature		20°C

BreatheSafe

2

BACK — Settings

SYSTEM CHECK	VIEW GRAPH
EVENT LOG	SITE ACCESS MENU

BreatheSafe

3

BACK — Enter Pin

7597

1	2	3
4	5	6
7	8	9
CLEAR	0	ENTER

4

BACK — Settings Page 1 — NEXT

STARTUP OPTIONS	DOOR WINDOW SETTING	PRESSURE SETPOINT
CHECK RUNTIME	DATE / TIME	CO2 SETTING

BreatheSafe

5

BACK — CO2 Sensor Alarm Setting — DISABLE CO2 SENSOR

CO2 ALARM DELAY SETTING	CO2 PRIMARY ALARM SETPOINT	CO2 CRITICAL ALARM SETPOINT
2 Min	1000 PPM	2500 PPM

⌄ ⌃   ⌄ ⌃

ALARM MUTE DELAY

1

8:30	22/04/23	25%
Cabin Pressure		50Pa ⚙
CO2 Level		200 PPM 🔊
Temperature		20°C

BreatheSafe

2

BACK — Settings

SYSTEM CHECK	VIEW GRAPH
EVENT LOG	SITE ACCESS MENU

BreatheSafe

3

BACK — Enter Pin

7597

1	2	3
4	5	6
7	8	9
CLEAR	0	ENTER

4

BACK — Settings Page 1 — NEXT

STARTUP OPTIONS	DOOR WINDOW SETTING	PRESSURE SETPOINT
CHECK RUNTIME	DATE / TIME	CO2 SETTING

BreatheSafe

5

BACK — CO2 Sensor Alarm Setting — DISABLE CO2 SENSOR

CO2 ALARM DELAY SETTING	CO2 PRIMARY ALARM SETPOINT	CO2 CRITICAL ALARM SETPOINT
2 Min	1000 PPM	2500 PPM

⌄ ⌃   ⌄ ⌃

ALARM MUTE DELAY

6

BACK — Critical Alarm Mute Timeout Adjustment

SET MUTE TIMEOUT MINUTES   ⌃

10 Mins   ⌄

BreatheSafe

Data Download – Setting up RS232 Connection

1 Plug the RS232/USB adaptor into a free USB port on your computer.

2 Open up TeraTerm software.

   (*TeraTerm* is an open-source software tool and easily accessible via online search)

3 Use the following settings in TeraTerm: Serial and choose the correct port connection.

   Hint:
   Click on the COMxx Port with the "USB serial Port" connection from the drop-down menu.

   Example:
   COM 4
   This connection may be different on your computer.
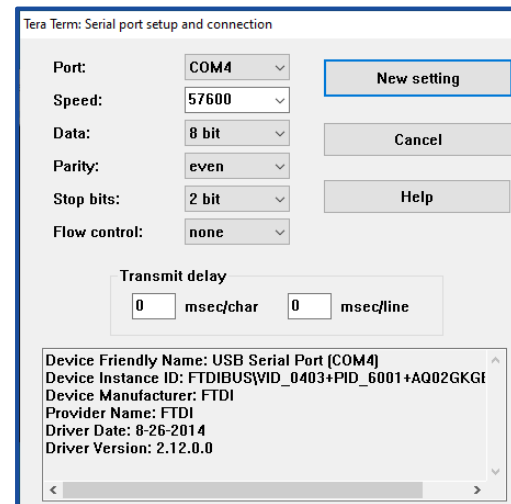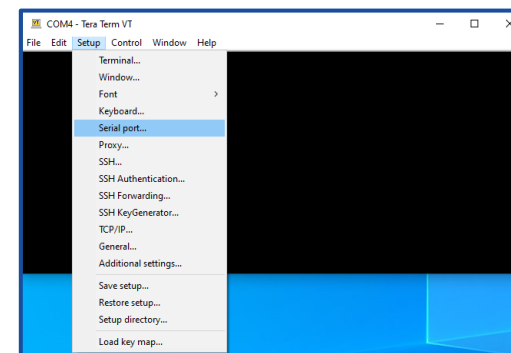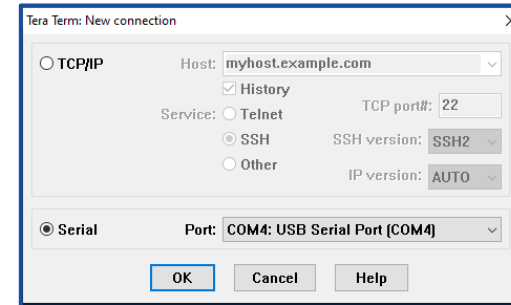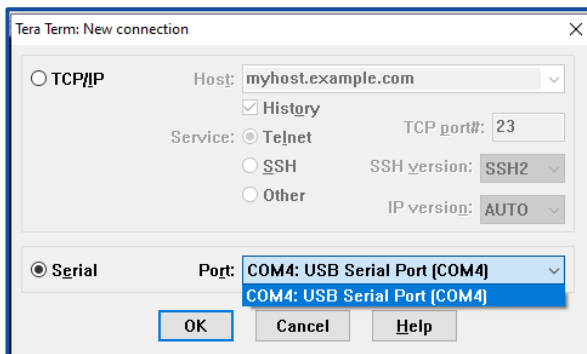
4 Click OK once the correct communication port has been identified.

5 Go to SETUP and click on Serial Port.

6 Change the COM ports to the following configuration:

   Baud

   Rate: 57600 Data: 8 bit

   Parity: EVEN

   Stop: 2 bit

   Flow Control: NONE

DATA DOWNLOAD

Data Download – Setting up RS232 Connection
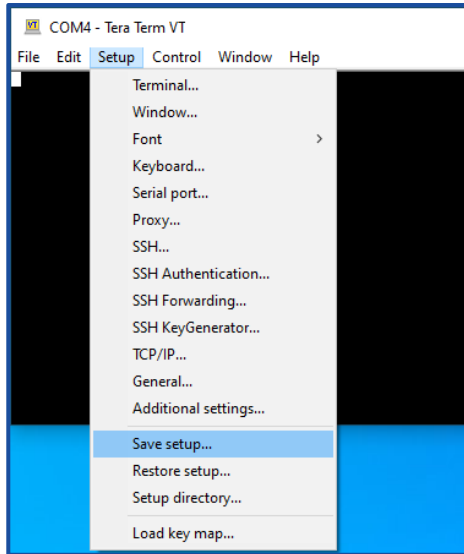
7   If required, you may choose to save the COM port settings. Go to Settings and click save the setup.

Hint: From the drop-down menu, click on the Save Setup.

Name the file and save it.
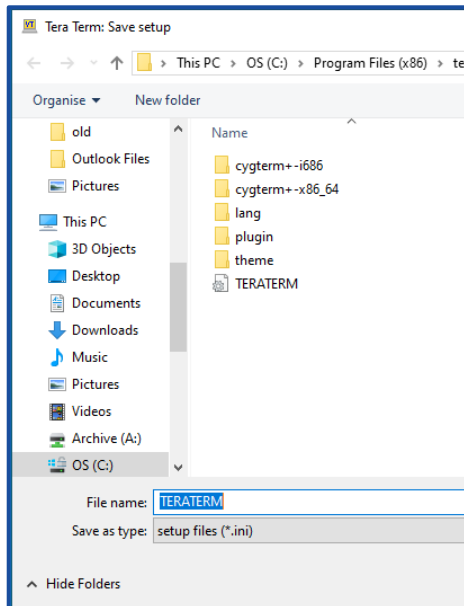
8   The next time a download is required, you may restore the setup, and the required COM PORT settings will be loaded, ready to download the data file from the 200027 unit.
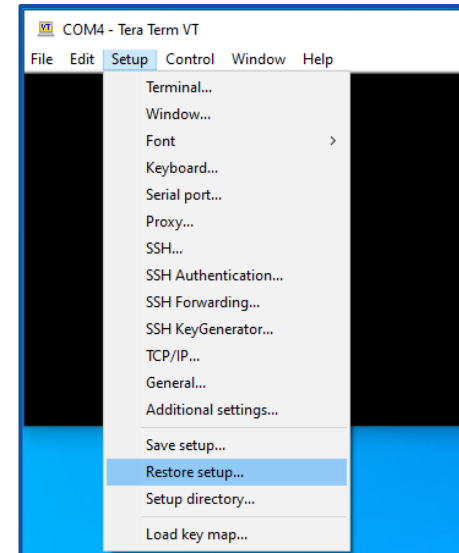
9   From the drop-down menu, click on Restore setup.
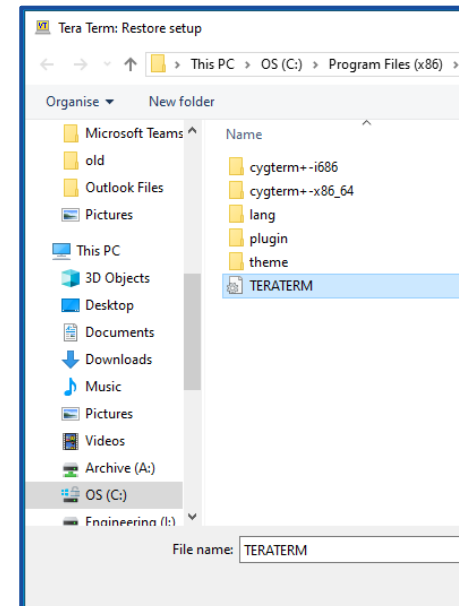
10   Choose the file name you have already saved.

25

LIEBHERR
R9600 Excavator

INPRESS Controller Set Up

Settings

BACK

SYSTEM CHECK	VIEW GRAPH
EVENT LOG	**SITE ACCESS MENU**

BreatheSafe

1. Press 'SITE ACCESS MENU'.

Enter Pin

BACK

1	2	3
4	5	6
7	8	9
CLEAR	0	ENTER
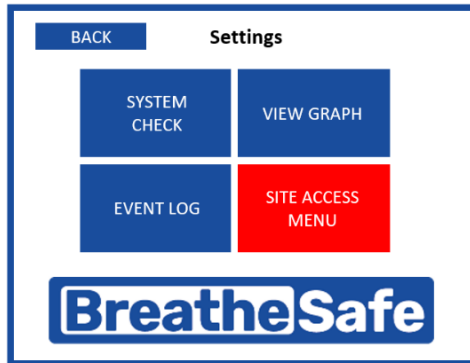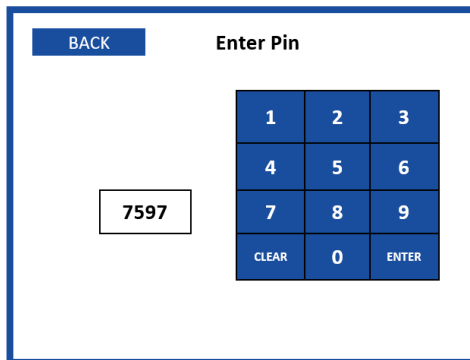
7597

2. Enter the access pin '7597'.

Settings Page 1   NEXT

BACK

STARTUP OPTIONS	DOOR WINDOW SETTING	PRESSURE SETPOINT
CHECK RUNTIME	DATE / TIME	CO2 SETTING

BreatheSafe

3. Press 'NEXT'.

Settings Page 2

BACK

ALARM MUTE RESET	ZERO SENSOR	TEMP SETTING
BUZZER SETTINGS	**LOG SETTINGS**	FACTORY SETUP

BreatheSafe

4. Press 'LOG SETTINGS'.

Log Settings

BACK

SET LOG INTERVAL MINUTES

60

DOWNLOAD LOG FILE	GET REAL TIME LOG

BreatheSafe
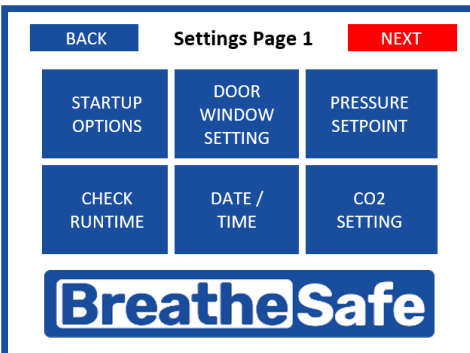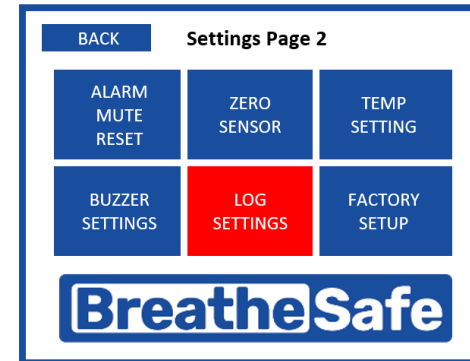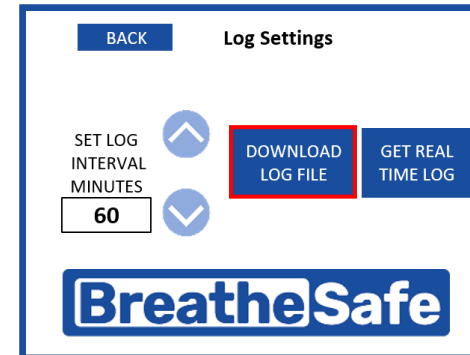
5. Press 'DOWNLOAD LOG FILE'.

DOWNLOADING LOG FILE

BreatheSafe
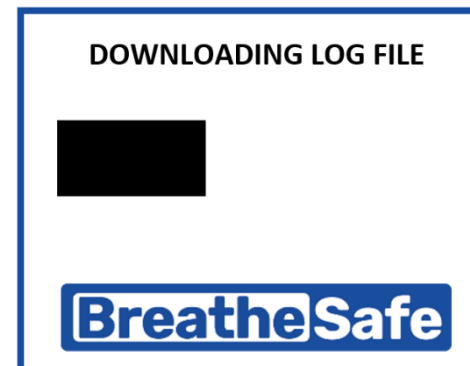
6. Data is now downloading from controller to terminal open on the computer (TeraTerm in this example).

Data Download – Copying Contents from Terminal to Spreadsheet

12   From the drop-down menu, click on the Edit menu function.

13   Press "Select All".

14   Select "Copy table".

15   Open a blank excel document and click on the page. Then, right-click to paste the copied table.

16   Fields are:
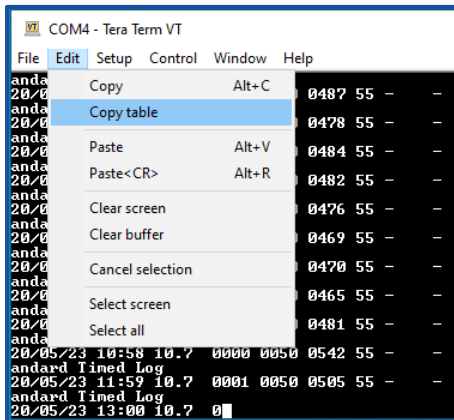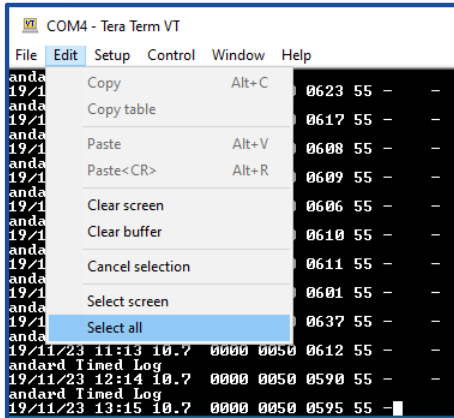
Date, time, motor (volts) output (e.g. 5.5 = 55%), cabin pressure (Pa), cabin pressure pre-set (Pa), CO2 sensor.

Excel Data Instructions – Unformatted

Open an Excel sheet and select the first cell A-1. Next, press and hold down the CTRL button on your keyboard and then press the letter V on the keyboard.

This procedure will paste the copied data onto that Excel sheet. Once that data has been pasted onto the Excel sheet, click on 'DATA' on the pull-down menu, followed by 'Text to Columns'. Next, select 'Delimited' on the newly opened window and click on Next.

Only select the 'Comma' button in the next window and then click 'Finish'. Then, the Excel fields will update such that each piece of data is placed in the correct columns.

The data is now ready for archiving.

Data Logging Formats

BU No: xxxxxx (the device number unique to each unit and used for identification – format = 000000)

Time: [09:25]

Date: [25/07/12]

Pressure: 32 (Pascals) as an example.

Alarm Type	
0	= No alarm
1	= Low-pressure alarm
2	= Window open
3	= Door open

Audit Your System Here: Audit Registry (https://atreg.breathe-safe.com.au/audits)

BreatheSafe Warranty: Warranty - BreatheSafe (www.breathe-safe.com.au/warranty/)