Sygnal Ambient Intelligence

Connect Operations Manual

Revision 07.11
This Technical Manual describes the service and troubleshooting of Sygnal Digital Inverter Ducted split air conditioners.

Sourcing
Proudly designed and manufactured in Australia by Sygnal, an independent Australian-owned company.

Contents

1. Sygnal Connect Operation

Your Sygnal Connect control system coordinates the operation of the Sygnal indoor and outdoor units and zone dampers to provide the finest indoor climate control solution currently available.

The system features variable refrigeration and airflow (VRAF) and multi-zone variable air volume (VAV) capacity modulation to ensure the appropriate amount of heating or cooling capacity is distributed to each area.

Individual temperature sensors located in the touchpad for each VAV zone detect subtle temperature variations and the system responds by increasing or decreasing the amount of air to each area to maintain the required comfort level.

While this is occurring the VRAF capacity matching system monitors the requirements of the space as a whole and increases or decreases the conditioning output from the compressor and the speed of the indoor fan to suite.

Timer programs allow you to schedule the start and stop time for the entire system and individual zone on and off times to suit your needs.

To turn on your system simply press ⏻ at any touchpad. In the default auto mode the system will begin heating or cooling as required. When all areas are off the conditioning system shuts down.

Please read on for more information about controlling your indoor environment.

2. Connect LCD Touchpad Functions

The LCD touchpad allows you to adjust various aspects of your indoor climate. By default access to all control functions are available from all LCD touchpads. Press any button on the touchpad to wake it (the LCD backlight will come on).
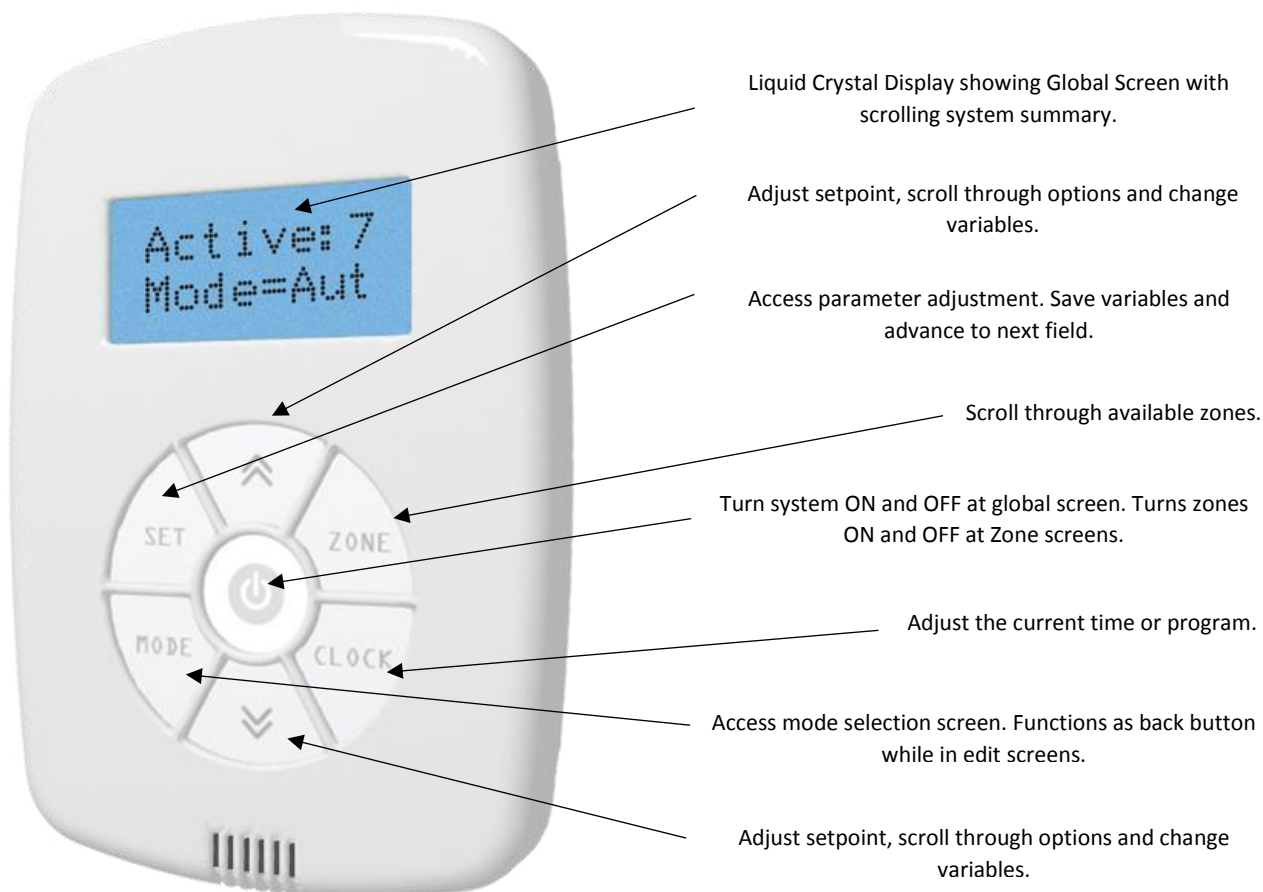
Access to some control functions may be limited via hardware settings during installation. In the following pages, functions which may be limited in this manner will be indicated with a * in the heading.

If access to a function has been limited the LCD touchpad will respond with a beep only. (For more information refer to Sygnal Connect Installation Manual).

Access to the following functions is available by default from any LCD touchpad.

- Turn all zones on or off at once.
- Select the system operating mode (Heat, Cool, Auto, Vent).
- View any zone status.
- Turning any zone on/off.
- Setting any zone target (temp set or flow set).
- Select the individual zone mode (temperature or velocity target).
- Naming a zone.
- Setting the system clock and timer programs.
- Setting individual zone timer programs.

2.1 Touchpad Layout

Liquid Crystal Display showing Global Screen with scrolling system summary.

Adjust setpoint, scroll through options and change variables.

Access parameter adjustment. Save variables and advance to next field.

Scroll through available zones.

Turn system ON and OFF at global screen. Turns zones ON and OFF at Zone screens.

Adjust the current time or program.

Access mode selection screen. Functions as back button while in edit screens.

Adjust setpoint, scroll through options and change variables.

2.2 Turning all zones ON or OFF *

      1. Press ⟁ ZONE or ⋀ or ⋁ until the global screen is displayed.

      2. Press ⊙ to turn all zones on or off as required.

General system information scrolls across the bottom line of the LCD when the system is on.

E.g. Fan=80% Cooling =60% Mode=Auto

2.3 Selecting the Conditioning Mode *

The mode of operation for the main air conditioning plant can be selected from global screen of the LCD touchpads. The global screen can be identified by general system information scrolling across the bottom line of the LCD.

E.g. Fan=80% Cooling =60% Mode=Auto
Auto – selects heat or cool as required
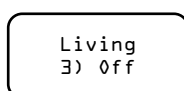Heat – Heating only
Cool – Cooling only
Vent – Fan only – no heating or cooling

      1. Press MODE to access the mode selection screen.

      2. Use ⋀ or ⋁ to alter the mode.

      3. Press SET and save and exit.

2.4 Selecting the Zone Mode *

The mode of operation for individual zones can be selected from each zone screen of the LCD touchpads. The zone screen can be identified by the actual zone name being displayed.

E.g.
```
Living
3) Off
```

Temp Set – selects damper modulates to maintain target temperature
MotorSet – provides manual damper positioning in 5% steps regardless of room temperature.

      1. Press MODE to access the mode selection screen.

      2. Use ⋀ or ⋁ to alter the mode.

      3. Press SET to save and exit.

2.5 Viewing a zones status *

      1. Press ZONE or ⋀ or ⋁ to cycle from the global screen through each of the individual zone status screens.

```
Living
3) Off
```
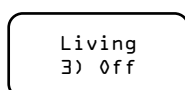
      2. The current status of the selected zone is displayed on the second line of the LCD readout. If the zone is on the zone status scrolls across the bottom of the display.

      E.g.   Setpoint=22.5°C, Temp=23°C

2.6 Turning a zone ON or OFF

      1. Press `ZONE` or ⌃ or ⌄ to select a zone.

      2. Press ⏻ to turn the zone on or off as required.

2.7 Setting a zone temperature / Position (setpoint)

Zone damper behaviour is determined by whether a zone sensor is connected to the zone sensor output at the zone control modules. If a sensor is detected the zone is configured for temperature control. If no sensor is detected and the enable zone dipswitch is turned on the zone is configured for damper positioning control.

      1. Press `ZONE` or ⌃ or ⌄ to select the target zone.

      2. Press `SET` to adjust the target temperature / position.

```
 Set=22.5°C          Set=85%
 Tmp=23.0°C          Pos=25%
```

      3. Use ⌃ or ⌄ to adjust the set point to the desired level.

      4. Press `SET` to save and exit

2.8 Setting a return air temperature

      (Only use when all zones are in `Flowset` Mode)

When all zone mode settings = `FlowSet` a return air setpoint is used

      1. Press ⌃ or ⌄ to select the global screen.

      2. Press `SET` to adjust the return air target temperature.

      3. Use ⌃ or ⌄ to adjust the setpoint to the desired level.

      4. Press `SET` to save and exit.

2.9 Naming a Zone

Zone names must be eight characters in length. A blank character must be used to fill spaces where no letters are required.

      1. Press `ZONE` or ⌃ or ⌄ to select the zone to be named.

      2. Press and hold `SET` for approximately 10 seconds to access the zone name edit function.

```
 Z1 Name:
 (Custom)
```

      3. Use ⌃ and ⌄ to view all of the preset zone names (e.g. Lounge, Games etc. or Custom).

      4. Press `SET` on your choice. See tip below.

```
 Z1 Name:
  Games
```

      5. Use ⌃ or ⌄ to change the first character of the zone name if required.

6. Press and hold ∧ or ∨ to scroll quickly through the available characters.

7. Press SET to move to the next character. Press MODE to return to the previous character to correct mistake.

8. Repeat for all eight character spaces.

9. Pressing SET to accept the final character will save the zone name and the controller will return to the standard display.

TIP: To accept one of the pre-set zone names, press SET repeatedly to accept each character including any blanks until the controller reverts to the standard display.

2.10 Setting the System Clock *

1. Press ∧ or ∨ to select the global screen.

2. Press CLOCK to display the current time and date.

```
10:12pm Tu
Off
```

3. Hold SET for 10 seconds.

4. Use ∧ or ∨ to highlight Change Time and press SET.

5. Use ∧ or ∨ to alter the highlighted hours value then press SET.

6. Repeat for the minutes and day values.

7. Pressing SET after the day value will return you to the time clock summary screen.

8. Press CLOCK to exit and return to the zone summary screen.

2.11 Setting the System Timer Program *

1. Press ∧ or ∨ to select the global screen.

2. Press CLOCK to display the clock.

3. Hold SET for 10 seconds.

3. Use ∧ or ∨ to highlight ALL Zones program? Then press SET.

4. Use ∧ or ∨ to highlight desired program A or B then press SET.

5. The top line will scroll Program ALL Zones.

```
ram Days
sMTWTFs
```
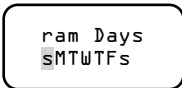
6. On the bottom line the days of the week are displayed. A CAPITAL letter indicates that the system on/off times will apply on that day. Press ∧ to activate or ∨ to deactivate each day, then press SET to move to the next day.

7. Press SET after the final day value to enter the start time. If no days have been activated the configuration routine will exit at this point. If there are valid days the top line will scroll: Program start: ALL Zones.

```
Start: A
08:40 am
```
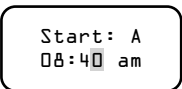
8. Use ⌃ or ⌄ to alter the start time to the correct value (in 10 minute intervals).

9. Press `SET` to proceed to the stop time. The top line will scroll: `Program stop: ALL zones`

```
Stop: AL
05:30 pm
```

10. Use ⌃ or ⌄ to alter the stop time then press `SET` to complete setting the global timer program and return to normal operation.

2.12 Setting Individual Zone Timer Programs

1. Press `ZONE` or ⌃ or ⌄ to select the required zone.

2. Press `CLOCK` to display the current program days for that zone.

3. Press ⌃ or ⌄ to select `Program A` or `Program B` then press `SET`.

4. The top line will scroll `Program Days:Zone x.`

```
Ram Days
sMTWTFs
```

5. A CAPITAL letter indicates that the zone on/off times will apply to that zone on that day. Press ⌃ to activate, or ⌄ to deactivate each day, then press `SET` to move to the next day. Repeat for each day.

6. Press `SET` after the final day value to enter the start time. If no days have been activated the configuration routine will exit at this point. If there are valid days the top line will scroll `Program start: Zone x.`

7. Use ⌃ or ⌄ to alter the start time to the correct value (in 10 minute intervals).

8. Press `SET` to save the start time and proceed to the stop time. The top line will scroll `Program stop: Zone x`

9. Use ⌃ or ⌄ to alter the stop time. The top line will scroll `Program stop: Zone x.`

10. Repeat for each zone as required.

2.13 Holiday, Away, Disable Time Clock Programs

1. Select the Global screen.

2. Press `CLOCK` to display the current time.

```
10:12pm Tu
Off
```

3. Press ⏻ to access `TC Enable` menu.

4. Use ⌃ or ⌄ to select `Yes?` Or `No?` and press `SET`.

5. `TC Off` will scroll with the system information when `No?` is selected.

3. Room Controller operation

Room controllers provide On/Off control for individual zones. When no temperature target is required for a zone a room controller is not required.

Zone On/Off Button

Heating indicator LED

On/Off Indicator LED

Cooling Indicator LED
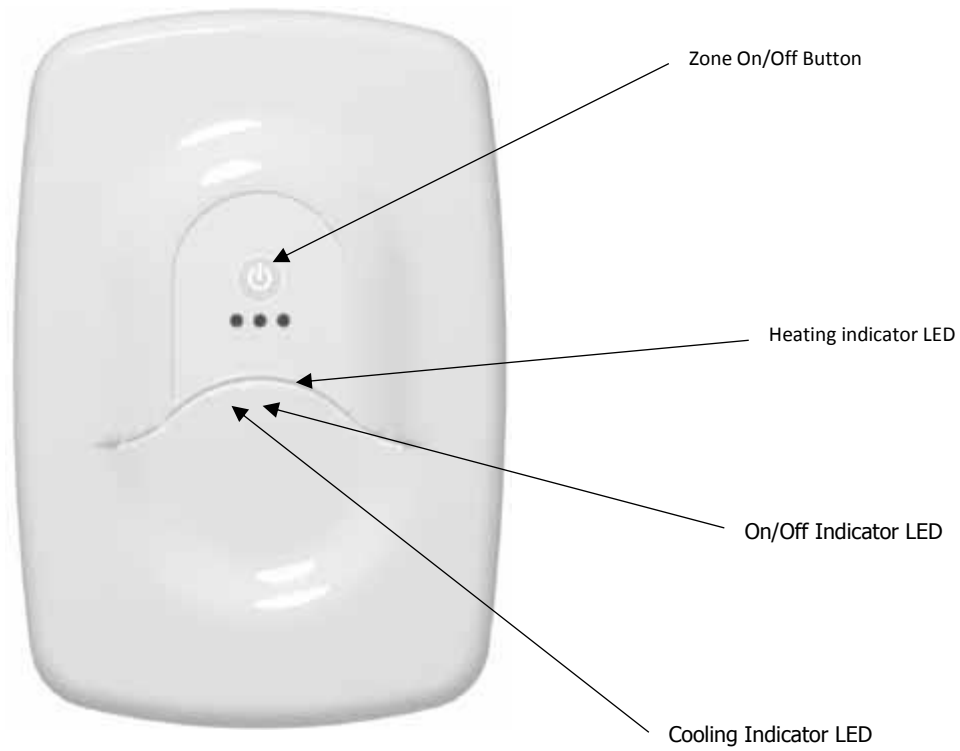
4. Manufacturers Recommendations

The following information is a guide to efficient use of your new Sygnal system. Following these tips will contribute to the long life of the unit and could save you money.

4.1 Essential Operating Guidelines

The Filters must be in place to run the unit. Never operate the unit without the filters.

4.2 Tips for saving energy

- For optimum unit efficiency, cost benefit and comfort levels we recommend setting the temperature between 20°C and 24°C for both heating and cooling.
- By covering windows with blinds or curtains you increase the cooling (heating) efficiency.
- Dirty air filters cause inefficient operation and reduce unit efficiency. Clean monthly by either vacuum or hand wash in mild detergent.
- Turn the system off at the circuit breaker (located near the outdoor unit) prior to going on holidays to ensure timer programs don't cause unnecessary operation.

4.3 Power Failures

Your new Sygnal system has a memory function that automatically stores settings in the event of a power failure. After power is restored the unit will automatically re-start with the same settings active before the power failure and in accordance with any timer setting. This feature covers all operating settings.

5. Maintenance

Regular maintenance will ensure your Sygnal system operates at maximum efficiency.

The air conditioning plant and control system contains no user serviceable parts. Installation, service and maintenance of these components should be carried out by a suitably qualified technician.

The control circuits for the indoor and outdoor units carry voltages > 240 VAC which can cause serious injury or death.

5.1 Return Air filter cleaning

Cleaning the filter in the return air grille is recommended every month. Filters may be cleaned by either vacuum or hand wash in mild detergent. Never operate the air conditioner without the filter. Ensure the filter is in good condition, if not contact your installer for a replacement filter (a charge will apply)

5.2 Outdoor Unit

Do not place any object in front of the condenser. Keep free of grass, leaves and any other form of debris. This will allow for proper air flow and ensure unit efficiency.

5.3 Vents & Return Air Grill

Regular cleaning of the return air grill and air vents is recommended. This will prevent build-up of dust and dirt.

5.4 Controller

Clean the wall control with a dry cloth. Do not use a spray detergent or water.

6. Troubleshooting

Problem	Possible Solution
Air Conditioner has restarted but does not operate for 4 minutes	The normal operating behaviour to protect the compressor. Wait until the air conditioner begins operating.
Operation stops for up to 12 minutes during heating and a different noise/sound comes from the unit.	The unit has entered defrost mode to melt the frost which has accumulated on the outdoor unit. This will take no longer than about 12 minutes so wait for the unit to resume normal operation. (Frost accumulates on the outdoor unit when the outdoor temperature is low and the humidity is high. Water comes out from the outdoor unit).
The air conditioner does not operate.	Has the mode been set correctly? Is at least one zone ON. Has the setpoint for ON zones been set low enough for cooling or high enough for heating? Has the circuit breaker been tripped?
The air conditioner does not cool/heat effectively.	Has the mode been set correctly? Are all the windows and doors closed? Are the filters dirty? Are the intake or outlet vents of the outdoor unit obstructed? The outside temperature maybe below or above design conditions. Turning OFF any zones not required may help.
Abnormal noise is heard during operation (except during the defrosting operation). Water leaks from the indoor unit. Switches or buttons do not operate properly. Fault code is displayed on the controller.	Contact your installer. Your model and serial number is recorded on the inside of the last page of this booklet.

6.1 Digital Inverter System Diagnostics / Fault detection.

Sygnal systems are able to detect a number of problems and display a fault message to aid in troubleshooting.
If any fault messages are displayed contact your installer/service person.

Fault D1 – 3 Phase error Digital Outdoor
Line1 = `Fault D1:`
Line 2 scrolls one of the following:
`3 Phase, L2 & L3 lost`
`3 Phase, L2 lost`
`3 Phase, L3 lost`
`3 Phase, rotate L2 & L3`

Fault D2 – Coil Sensor Error (sensor nominated)
Line 1 = `Fault D2:`
Line 2 scrolls the following:
`Outdoor coil sensor open circuit`
`Outdoor coil sensor short circuit`
`Indoor coil sensor open circuit`
`Indoor coil sensor short circuit`

Fault D3 – High pressure or Low pressure Fault
Line 2 scrolls one of the following:
`HP compressor safety`
`LP compressor safety`
`HP/LP compressor safety`

Fault D4 – Interconnect Indoor>Outdoor
Line 1 = `Fault 4:`
Line 2 scrolls one of the following:
`AHU and Condenser Interconnect`

Fault D5 – Contact Manufacturer
Line 1 = `Fault 5:`
Line 2 scrolls `Contact Manufacturer`

Fault D6 – Contact Manufacturer
Line 1 = `Fault 6:`
Line 2 scrolls `Contact Manufacturer`

Fault D7 – Zoning to Indoor Board Communications Lost
Line 1 = `Fault D7:`
Line 2 scrolls `AHU and Zoning interconnect`

Fault D8 – Contact Manufacturer
Line 1 = `Contact Manufacturer`

6.2 Dual Inverter System Diagnostics / Fault detection.

Sygnal systems are able to detect a number of problems and display a fault message to aid in troubleshooting.
If any fault messages are displayed contact your installer/service person.

Fault I1 – Indoor and Outdoor unit not compatible
Line1 = `Fault I1:`
Line 2 scrolls one of the following:
`AHU and Condenser not compatible`

Fault I2 – Coil Sensor Error (sensor nominated)
Line 1 = `Fault I2:`
Line 2 scrolls the following:
`Outdoor coil sensor open circuit`
`Outdoor coil sensor short circuit`
`Indoor coil sensor open circuit`
`Indoor coil sensor short circuit`

Fault I3 – Contact Manufacturer
Line 2 scrolls one of the following:
`Contact Manufacturer`

Fault I4 – Interconnect Indoor>Outdoor
Line 1 = `Fault 4:`
Line 2 scrolls one of the following:
`AHU and Condenser Interconnect`

Fault I5 – Contact Manufacturer
Line 1 = `Fault 5:`
Line 2 scrolls `Contact Manufacturer`

Fault I6 – Contact Manufacturer
Line 1 = `Fault 6:`
Line 2 scrolls `Contact Manufacturer`

Fault I7 – Zoning to Indoor Board Communications Lost
Line 1 = `Fault I7:`
Line 2 scrolls `AHU and Zoning interconnect`

Fault I8 – Contact Manufacturer
Line 1 = `Contact Manufacturer`

7. Warranty terms and conditions

All goods which are the company's own are guaranteed against faulty workmanship, materials or design for a period of 12 months from the date of despatch, after which all liability on the part of the Company ceases, save:

a) Goods which are branded Sygnal, registered with Sygnal prior to the expiration of the standard 12 month warranty period, form part of the air conditioning unit and are used in a human comfort application. These goods are guaranteed against faulty workmanship, materials or design for a period of 60 months from the date of system commissioning or 72 months from the date of despatch which ever expires first.

The Guarantee does not apply in the following cases:

b) Defect arising from materials supplied by the Purchaser or from a design requested by the Purchaser.

c) Replacements or repairs resulting from normal wear of units and machinery, corrosive atmosphere, damage or injury caused by lack of care, insufficient inspection or maintenance, or improper use of the goods.

d) Failure attributable to fortuitous circumstances or "force majeure"

The guarantee consists of repairing, modifying or replacing the parts or units recognised as defective within the shortest time at the Company's premises at the Company's expense save parts that are branded Sygnal and form part of the air conditioner, these parts will be repaired at the installation location providing the location is within 100km from the Company's premises or the premises of an appointed Agent or Dealer. The guarantee is inclusive of parts and labour. Subject to the above, the Company's liability and that of its resellers is wholly limited to the original cost of the product sold. Any unauthorised repairs or alterations to the equipment shall invalidate this warranty. In case of goods not of the manufacture of the company or its principals, the Company undertakes that it will, if requested in writing by the Purchaser to obtain from the manufacturer the benefit of any guarantee or warranty which the manufacturer may have expressly given as top the quality or fitness for any purpose of the goods, except as may otherwise be provided for by law. The fulfilment of this undertaking shall constitute the Company's sole liability in respect of any faulty goods of the manufacture of the Company or its principals. Neither the reseller nor the Company shall be liable for any injury, damages, expenses, or loss of pro t, direct or consequential, arising out of the use or installation of products supplied by the Company all of which are supplied at the sole risk of the user. This warranty is in addition to any statutory warranty which a Purchaser cannot waive but all other warranties are waived by the Purchaser.

Sygnal Ambient Intelligence

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8. Warranty key points in large print.

Sygnal HVAC systems used in human comfort applications are covered by a parts and labour on-site warranty as explained in detail later in this document. Sygnal is committed to making sure that our clients get years of trouble free operation from what we believe to be the world's best residential concealed ducted air conditioning system. Like all warranty policies the Sygnal HVAC warranty provides peace of mind for clients and details the rights and responsibilities of Sygnal and the client.

HVAC systems like all machines require regular maintenance. If regular maintenance is not completed the system operation is compromised and although Sygnal systems have many safety systems built into their operation system longevity will be compromised. In most residential environments a single service per year completed in accordance with the programmed maintenance schedule is sufficient to ensure that system performance is not compromised and warranty terms and conditions are met.

Sygnal tracks all activity relating to your system and all other systems no matter where they are installed. This allows us to make sure that all performance information is passed directly back to our Engineering Team so that Future Sygnal systems can continue to set a new standard in product reliability. Tracking all system activity also helps our Service Team identify any environmental factors, unusual activity or a repeat faults. To achieve the required level of tracking to provide peace of mind for our clients we require that all systems are registered on the Sygnal website within the first twelve months of operation. Immediately on completion of the online registration form a unique identifier will be sent to the nominated email address, your system warranty will be extended from twelve months to six years from date of manufacture or five years from date of installation (whichever expires first).

 1. Register your system: https://www.sygnal.com.au/register-your-system

2. Keep your system well maintained (If a fault occurs due to lack of maintenance or would have been rectified sooner if noted during programmed maintenance your claim may be declined or reduced).

3. Be mindful of possible travel charges (is there an appointed service agent within 100km from your home?).

4. Be mindful of broader system components that are not unmanufactured by Sygnal and may have different warranty terms and conditions (This may include iPads, motorised dampers, three phase soft start modules, ductwork, diffusers and grilles).

5. Be mindful that in the rare event that a failure occurs the replacement component is covered by twelve months or the remaining term of the system wide warranty whichever is the longest. System Registration

System Registration

Registration No. …………………………………………………. Date Issued. ……………………………………………………….