



## GTAIR

## TECHNICAL DATA SHEETS





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## DIRECTORY





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## GT AIR CONDITIONING



Air treatment and air movement are fundamental principles that must be considered in every cleanroom design. Filtration naturally plays an essential part in achieving classification, however, the methodology of moving air through that media must also be considered.

Added to air movement are the principles of air treatment or conditioning, this may include heating, cooling, humidification and dehumidification. The parameters to which these must be controlled and the accepted tolerances balanced against the constraints of the budget will be the guiding influence behind the decision-making process.

The following pages outline alternative HVAC methods with clear and detailed explanation of the differences between the system types and comparisons of benefits and compromises.

Let Guardtech take your operation to the next level.



### AIR MAX

Guardtech's elite-level HVAC solution – these high-performance Air Handling Units (AHUs) provide optimum temperature and humidity conditions for a diverse range of applications.



### AIR PRO

A series of high-specification close control CRAC units that offer tight temperature and humidity conditions with a reduced plant footprint, offering significant benefits in terms of redundancy and maintenance.



### AIR PLUS

A range of high-capacity fan coil units that provide temperature control only, either directly ducted or used for distribution within a plenum.



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### AIR LITE

Guardtech's entry-level air conditioning solution – ceiling or wall-mounted power inverter heat pump systems, providing comfort cooling for non-classified laboratory spaces, the cost-effective A/C option.

### AIR FIRE

ATEX-rated air handling solutions for high-risk applications that also require classification and conditioning. For more information on your potential options, contact the Guardtech Commercial team via sales@guardtech.com.







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## **GT AIR MAX**



Guardtech's elite-level HVAC solution - these high-performance Air Handling Units (AHUs) provide optimum temperature and humidity conditions for a diverse range of applications.

Air handling units (AHUs) provide conditioned and controlled air movement throughout the cleanroom.

A typical GT Air Max Air Handling Unit will clean the incoming fresh air, temperature condition and provide a measured amount of flow of air into the building distributed via a ductwork system.

All equipment is designed to fit through the specific available access, delivered to site, positioned and fully assembled by Guardtech Group engineers.

The Guardtech installation team have experience of fitting units into a wide variety of applications with a range of different challenges and obstacles.



## AIR HANDLING UNITS EXPLAINED



Air Handling Units (AHUs) collect **Air** Intake from outside, which is then treated and distributed throughout the cleanrooms and/or indoor air that is "recycled". Depending on the

applied will have a higher or lower particle retention level - countering viruses, bacteria, odours, and other spaces in which airflow is homogenised are air pollutants.



Water droplets can be generated, which are then collected in a condensate tray thanks air purity requirements, the **Filter** to a built-in droplet separator. Coatings that considerably reduce the sound level of the installation are known as **Silencers**. The empty

called Plenums.



STATE-OF-THE-ART FAN TECHNOLOGY

**ENERGY-EFFICIENT** DESIGNS

FULLY PRE-WIRED ENERGY EFFICIENT CONTROLS

**HIGH EFFICIENCY** 

HEAT RECOVERY

AHUs





Semiconductor Pharmaceuticals

GT Air Max suits the most demanding of applications, typically where temperature & humidity need to be controlled to extremely tight tolerances. Bespoke air handling units provide a high degree of flexibility in regard to component specification, ensuring that quality and consistency of air delivery can be achieved.

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### BENEFITS & COMPROMISES

### **Benefits**

- Close control, tight tolerance temperature & humidity parameters achievable
- Centralised plant supports simplified maintenance schedule
- Connection to BMS for central control and monitoring
- Can be sited externally
- Available with a number of different utility connections, such as LTHW, chilled water, DX & steam

### Compromises

- Single point of failure
- Higher running costs
- Large plant space requirement
- Higher power

consumption













The GT Air Pro series of

Air Handling Units (AHUs

wide range of process,

manufacturing and other

GT Air Pro units combine

precise temperature and

humidity control with

The units feature EC fans

and inverter compres-

sor technology, using

remote air-cooled con-

densers for optimised

energy efficiency.

cleanroom applications.

## **GT AIR PRO**



A series of high-specification close control CRAC units that offer tight temperature and humidity conditions with a reduced plant footprint, offering significant benefits in terms of redundancy and maintenance.

### Key engineered features:

- Precise control
- is designed for use in a • Various supply air
  - arrangements
  - Corrosion-proof
  - Easy maintenance
  - EC Fan
  - Air Filter
  - Scroll compressor
- outstanding reliability. Isolated control panel
  - Forced dehumidification
  - system
  - Electrode Humidifier (optional)
  - Electric Heater (optional)
  - Self-diagnosis



## **TECHNICAL FEATURES**

				0.004	2014 12	2014.12	10111.1.2
Unit model		16V1A1	20V1A1	25V1AT	30V1A2	35V1A2	40V1A3
Supply air scheme(1)					O/U		
Cooling capacity							
Total (2)	kW	16.3	22.3	25.1	30.2	36.9	40.6
Sensible (2)	kW	15.0	20.7	23.3	27.5	34.0	38.2
Total (3)	kW	17.9	24.5	27.6	33.2	40.6	44.7
Sensible (3)	kW	16.0	22.2	24.9	29.4	36.4	40.9
Compressor							
Туре				Hermeti	c inverter scroll		
Power input (2)	kW	4.2	5.9	7.1	7.9	9.2	10.6
Current (2)	A	6.8	9.5	11.4	12.7	14.7	17
Max power input (4)	kW	6.8	11.5	11.5	13.7	15.2	11.5
Max current input (4)	A	10.9	18.4	18.4	22.0	24.5	18.5
Supply fan							
Туре				Caseless backw	ard EC centrifuga	l fan	
Qty. of fan	n.	1	1	1	1	1	2
Air volume	m³/h	5750	6500	7300	8800	9600	12600
Extra pressure (5)	Pa		Stand	lard ESP is 75Pa, a	djustment range	is 50~300Pa	
Power input	kW	1.1	1.25	1.46	1.7	2.0	2.4
Current	A	1.7	2	2.3	2.6	3.	3.7
Condenser fan (3)							
MAE Model		AMAE6	AMAE6	AMAE8	AMAE10	AMAE12	AMAE15
Ouantity	n.	1	1	1	1	1	1
Electric heater							
Type	kW	6	6	9	9	9	13.5
Heating capacity	A	9.1	9.1	13.5	13.5	13.5	20.4
Working steps	n	2	2	2	2	2	2
Humidifer		-	_	_	_	-	_
Humidiner				EL.	e etce el e		
Type				Ele	ectrode		
Capacity	kg/h	3	3	5	5	5	8
Power input	KVV	2.3	2.3	3.8	3.8	3.8	5.9
Current	а	3.4	3.4	5.7	5.7	5.7	9
Power supply							
Power supply				380\	//3Ph/50Hz		
Unit maximum operation power (6)	kW	17.0	21.7	24.7	26.9	33.6	33.4
Unit maximum operation current (6)	A	28.6	36.1	40.5	44.1	56.5	56.1
Air filter				G	64/plate		
Unit connection pipe							
Humidifier water supply	in	1/2					
Condensing water drainage	in	3/4					
Gas pipe	mm	19	22	22	22	22	2x22
Liquid pipe`	mm	12.7	12.7	12.7	16	16	2x12.7
Unit dimension and weight							
Width	mm	875	875	1480	1480	1480	1750
Depth	mm	890	890	890	890	890	890
DCDUI							
Height	mm	1960	1960	1960	1960	1960	1960

### Working Flow Schematic Diagram

Air cooled direct expansion system



Air cooled direct expansion with indirect free cooling



## **TECHNICAL DRAWINGS**

### Unit cabinet dimension drawing for upflow unit



(1) Pipe connect area: Specific position and kinds differ slightly in different unit series. Refer to the onsite uni

### Unit cabinet dimension drawing for underflow unit



① Pipe connect area: Specific position and kinds differ slightly in different unit series. Refer to the onsite unit





Medical Device

GT Air Pro suits a wide variety of applications in a diverse range of sectors. Whilst it may not boast the same capacity for catering to the needs of the largest-scale facilities as GT Air Max, as an air handling solution GT Air Pro has the capability to cover the same spectrum of demanding applications.







## BENEFITS & COMPROMISES

### **Benefits**

- Tight temperature and humidity conditions
- Reduced plant footprint
- Significant functionality advantages in terms of redundancy and maintenance
- Efficient, reliable option

### Compromises

• Not as equipped to cope with the rigours of considerably large-scale facilities as GT Air Max • Potentially longer lead times than Plus and Lite options

• More expensive price point than Plus and Lite options











405

620

Fresh air inlet box





### CMEH dry cooler





















Free Cooling + Mechanical Cooling



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Mechanical Cooling Mode

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# Mechanical Cooling Mode

1 Indoor unit 2 Outdoor unit 3 Pump group(optional) 4 Dry cooler(optional)

- 5 Compressor
- 6 Evaporator
- 7 Supply fan
- 8 Expansion valve
- 9 Sight glass 10 Filter dryer
- 11 Liquid receiver
- 12 Air cooled condenser

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- 13 Return air
- 14 Supply air



## **GT AIR PLUS**



A range of high-capacity fan coil units that provide temperature control only, either directly ducted or used for distribution within a plenum.

Max. pipe length (m)

Dimensions (WxDxH, mm)

**External Static Pressure** 

**Operation Range - Heating** 

Sound Level (Lo-Hi, dB(A))

Gas pipe size (OD, mm)

Max. pipe height (m)

Refrigerant

Weight

Current Indoor - Heating (Running)

As the most discreet space heating solution available, ducted systems - like the GT Air Plus - offer a stylish, quiet alternative that is largely hidden from view with only subtle air grilles visible.

The ducted GT Air Plus' high static airflow allows air to be directed to different areas of your cleanroom with ease. This unit is ideal for heating or cooling a large number of rooms at once and includes a Deluxe PAR wired controller with backlit LCD display and user-friendly menus.

Take control of your power consumption via the PAR Controller's inbuilt energy-saving feature whilst also setting up to eight temperature patterns per day.

## **TECHNICAL FEATURES**

TECHNICAL DATA	
Function	Cooling/Heating
Capacity - Cooling	22.0kW
Capacity - Cooling (min max.)	11.2 - 27.0kW
Power input - Cooling	6.11 kW
EER / COP	3.60 / 3.62
Туре	Single Split, Inverter
Capacity - Heating	25.0kW
Capacity - Heating (min max.)	12.5 - 29.0kW
Power input - Heating	6.89 kW
AEER / ACOP	3.27 / 3.37
Operation Range - Cooling	-5 / +46°C
Airflow (Lo-Hi, Litre/sec)	967 / 1,183 / 1,400





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1370 x 1120 x 470

60-75-100-150Pa

-20 / +21°C

40 - 43 - 46

3.6

R410A

22.2

30

108 kg



Designed for easy installation in ceiling or bulkhead spaces, ducted heat pumps are largely hidden from view, with only subtle grilles visible. Using concealed ducting to connect multiple rooms for heating or cooling, these systems are ideal for a wide range of applications.

### **PRODUCT FEATURES**

LOSSNAY FRESH **AIR VENTILATION** 

The Lossnay system recovers the energy from stale air to pre-heat or pre-cool incoming fresh air, reducing the amount of additional heating or cooling required.

### **UNOBTRUSIVE**

Ducted units are the ultimate hidden heating and cooling solution with only grilles visible.

### EASY INSTALLATION

Versatile and easy installation is possible – adjust the distance



between the air-intake and air-outlet vents to create the optimal airflow configuration.

### **IDEAL AIRFLOW**

The flexible duct design and high-pressure of our ducted systems increase variation in airflow options ensuring the system operates in a way that best suits virtually all room layouts.

### DELUXE PAR CONTROLLER

This attractive liquid crystal display (right) incorporates a large backlit screen and simple menus.

Cosmetics

GT Air Plus is a robust cleanroom air handling solution suitable for a number of different industries using controlled environments as part of their process. However, because this solution only offers temperature control, the spectrum of applications it supports is significantly decreased compared to GT Max and Pro.



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## **TECHNICAL DRAWINGS**



## BENEFITS & COMPROMISES

### **Benefits**

- Quiet alternative that is largely hidden from view with only subtle air grilles visible
- Ideal for heating or cooling a large number of rooms at once
- Includes a Deluxe PAR wired controller with backlit LCD display and user-friendly menus
- Suits virtually all room
- layouts airflow-wise
- More cost-effective than GT Air Max and Pro

### Compromises

- Temperature control-only solution
- Unsuitable for applications requiring humidity control









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## GT AIR LITE



Guardtech's entry-level air conditioning solution

- ceiling or wall-mounted power inverter heat pump systems, providing comfort cooling for non-classified laboratory spaces, the cost-effective A/C option.

GT Air Lite is a wall-mounted power inverter heat pump system that blends a host of outstanding features with a sophisticated, streamlined design.

Offering high seasonal efficiency, advanced control options and extended pipe runs, this range provides extreme flexibility and a smooth installation process.

• Improved airflow control, including adjustable louvres for uniform air distribution

• Internal pipe connection to wall-mounted unit for easy and neat installation

Compact Indoor Units.



### TECHNICAL FEATURES Table represents data from the mid-range 7kW (nominal heating) indoor mounted unit

TECHNICAL DATA	
CAPACITY - Heating (nominal)	7.0 (2.8-8.2)
CAPACITY - Cooling (nominal)	6.1 (2.7-6.7)
CAPACITY - Heating (UK)	5.95 (2.4-6.95)
CAPACITY - Cooling (UK)	5.5 (2.5-6.15)
SHF (nominal)	0.86
COP / EER (nominal)	4.04 / 3.91
SCOP / SEER (BS EN14825)	4.2 / 6.8
Erp Energy Efficiency class	A+ / A++
AIRFLOW (I/s) – Lo-Mi2-Mi1-Hi	300-333-367
PIPE SIZE mm (in) - Gas	15.88 (5/8")

PIPE SIZE MM (IN) – LIQUIO	9.52 [3/8]
SOUND PRESSURE LEVEL (dBA)	39-42-45
SOUND POWER LEVEL (dBA)	64
DIMENSIONS (mm)	1170 x 295 x 365
WEIGHT (kg)	21
ELECTRICAL SUPPLY	Fed by Outdoor Unit
FUSE RATING (BS88) - HRC (A)	6
INTERCONNECTING CABLE No. CORES	4
WIRED REMOTE CONTROLLER REFERENCE	PAR-40MAA
WIRELESS REMOTE	PAR-FL32MA
CONTROLLER REFERENCE	

0 50 (0 (0))

## **PRODUCT FEATURES**

### **IMPROVED AIRFLOW CONTROL**

REPLACE TECHNOLOGY Available in the range

Including adjustable louvres for uniform air distribution

> **FULL HEATING** CAPACITY Down to -3°C

> > 100M PIPE RUN (Size 100)

### As standard for connection to PAR-40MAA hard wired controller

**INTERNAL PIPE** CONNECTION To wall mounted unit for

easy and neat installation

## **TECHNICAL DRAWINGS**









Universities

GT Air Lite suits the least demanding of applications - most commonly laboratories or non-classified controlled environments where considerations on the movement of air and type of airflow is of far less significance.

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### **CN22 CONNECTOR**





## BENEFITS & COMPROMISES

### **Benefits**

• Improved airflow control, including adjustable louvres for uniform air distribution

• Compact solution

• Internal pipe connection to wall-mounted unit for easy and neat installation • By far the most cost-effective option in the range

### Compromises

• Temperature control-only solution

• Unsuitable for applications requiring humidity control

### Front view (top left) Upper view (bottom left) Side view (right)

Drawings based on 7kW, 8kW and 11.2kW (nominal heating options











# **QUICK-LOOK COMPARISON GUIDE** MAX PLUS PRO FEATURES

Temperature control
Humidity control
Custom-built solution
Higher power consumption
Suitable for cGMP environments
Regular maintenance advised
Precise control
Can be ducted – either directly or to plenu
Wall or ceiling-mounted
Plant room(s)/external area required
Compact solution

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