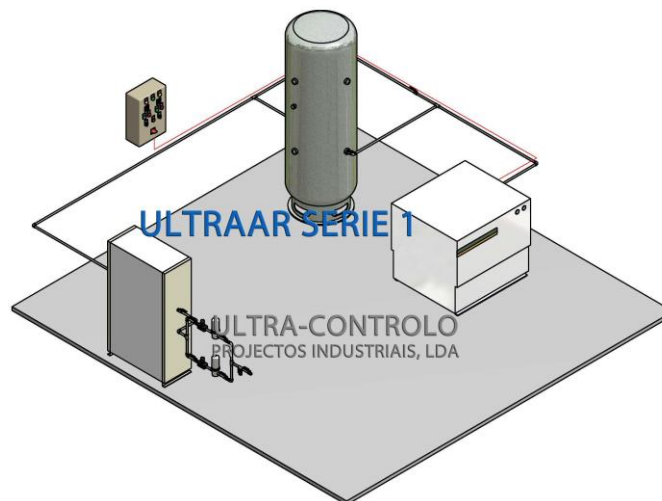


Medical Air System Totally Oil Free ULTRAAR® Series 1
EN ISO 7396-1 / HTM 0201
220V - 400V / 50Hz – 60Hz 12bar
SIMPLEX
SPECIFICATION

ULTRAAR®

The ULTRAAR® Combined Medical Air System Totally Oil Free shall conform to ISO 7396-1 and ACSS 03/2006 Health Technical Memorandum. Medical quality to the European Pharmacopoeia monograph shall be delivered at a pressure of 700kPa (7 bar) gauge for supply of the hospital surgical and medical air systems. The secondary supply system will be made up by stored compressed in high-pressure bottles. The compressor will be capable of supplying 100% of the specified volumetric flow.

Typical Simplex Layout



Compressors

Compressors shall be oil-less double stage piston compressors suitable for both continuous and frequent start/stop operation at a nominal outlet pressure of 1000kPa gauge (10 bar).

Compressors shall be supplied with a block and fin style after-cooler with a dedicated quiet running fan to maximize cooling and efficiency. A pre-filter of 5 microns shall be integrated in the inlet port of the compressor, capable to carry the dust before entering into the compressor. Compressor shall have an air suction connection enable to collect fresh air from outside of compressor room. No idle running is acceptable in order to save energy. High efficiency motors rated TEFC, IP55 class F electric shall be used and incorporate maintenance-free greased for life bearings. Each piston compressor shall be supplied with an intelligent user interface to digitally display service and warning indications, working pressure, operating temperatures, number of motor starts, on-load running hours and total running hours. Compressors are to be individually hard-piped to the receiver manifold as standard.

Air Treatment Unit

ULTRAAR must be equipped with one of the following units of air treatment:
 (Choose the unit which better fits in your case)

FD

Comprehensive system of drying compressed air ULTRASEC as refrigeration dryer, capacitive trap without air loss for reducing operating costs with dew point indicator (LCD), dry contact alarm for



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economical and safe operation construction metal cabinet for optimum protection against mechanical damage and dust. The air/air heat exchanger with low pressure drop through the new technology in Aluminum, no corrosion and efficient heat transfer achieved with the heat exchanger design cross flow air/air valve and hot gas bypass and stainless steel designed to prevent freezing and to provide a constant dew point.

An effective 1 micron filter to separate drops of oil and solid particles (> 1 micron), effective sub-micro filter UFSM with a high retention capacity for 99.9999% threshold UFM micron filter upstream, high 0.01 micron filtration. Residual oil content of up to 0.01 mg/m³ at 7 bar and 20°C and validated according to ISO 8573, activated carbon filter UCA adsorption of hydrocarbon vapors and oil with an initial residual aerosol oil > 0003 mg/m³ input.

UM

Air processing chains, ULTRAMED, that fully meets the parameters of the European Pharmacopoeia monograph. Each processing air unit is equipped with:

A pre-filter stage for the removal of oil and water aerosols as well as solid particles down to 0.01 μ a high-performance activated charcoal filter for adsorption of oil vapors and odors with a residual oil content of 0.01 mg/m³

A heatless desiccant dryer, that reduces the available water vapor in the air down to a pressure dew point of – 40°C and simultaneously maintains levels of carbon dioxide (CO₂), nitrogen monoxide (NO), nitrogen dioxide (NO₂) and sulphure dioxide (SO₂) below the legally allowed limits

A hopcalite filter at the outlet of the dryer that converts CO by oxidation into CO₂ and abort's CO₂ chemically. A dust filter in the last stage.

UT

Air treatment units type ULTRATECH with a certificate of conformity of the air quality product fully meets the parameters of the monograph of the European Pharmacopoeia. Each processing air system is equipped with:

A high efficient oil mist micro filter FM of 1 micron to separate drops of oil and solid particles (> 1 micron), the residual oil aerosol is 0.01 mg/m³ á 21°C. A sub micro filter SMF 0.01 microns to remove particles (> 0.01 microns) and oil aerosols and water, residual oil aerosol is 0.01 mg/m³ at 21°C.

Adsorption dryer with columns* of molecular shieve works on the principle of reverse pressure with cold adsorption columns connected in parallel process, while the air passes in one hand and dried and degassed, the other side is being regenerated. The dew point provided by the dryer is -46°C /-68°C at the maximum allowable pressure of 16 bar. Each dryer is equipped with an electronic control of relative humidity ULTRAGEST, to save energy.

The ULTRATECH units has a column of activated carbon to remove odors, oil vapors and hydrocarbons. The residual oil aerosol content is less than 0.003 mg/m³ at 21°C. A catalyst consisting of a column* transforms the carbon monoxide (CO) to carbon dioxide (CO₂). The ULTRATECH units can also eliminate much of the CO₂ molecules. The filters are equipped with filter media, without binders, with high contention particles with a very low pressure loss which ensures considerable energy savings.

The filters are equipped with zero loss drains, without loss of air and have test buttons to control the proper operation of the purge units. The monitoring and control system ULTRAGEST makes a drastic reduction in energy consumption using a digital controller linked to a very steady dew point sensor. ULTRATECH is designed with a range of products capable of providing a long-term equipment, 100% operational, without the need for early and frequent maintenance.

The filter and dryer module shall incorporate high efficiency water separators, oil filters, and heatless regenerative desiccant dryer, dust/activated carbon filters, hopcolite filters and sterile filters with autoclavable element. Contaminants in the delivered air downstream of the sterile filters shall be maintained at levels below those shown in the following table:



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Contaminant	Threshold
H2O	67 ppm v/v
Dry particulates	Free from visible particulates in a 75 litre sample
Oil (droplet or mist)	Exempt
CO	5 ppm v/v
CO2	500 ppm v/v
SO2	1 ppm v/v
NO	2 ppm v/v
NO2	2 ppm v/v

The dryer control system shall incorporate an dew point controller for energy savings that shuts off purge air when achieved the dew point required.

FD-UM

Comprehensive system of drying compressed air ULTRASEC as refrigeration dryer, capacitive trap without air loss for reducing operating costs with dew point indicator (LCD), dry contact alarm for economical and safe operation construction metal cabinet for optimum protection against mechanical damage and dust. The air/air heat exchanger with low pressure drop through the new technology in Aluminum, no corrosion and efficient heat transfer achieved with the heat exchanger design cross flow air/air valve and hot gas bypass and stainless steel designed to prevent freezing and to provide a constant dew point.

Air processing chains, ULTRAMED, that fully meets the parameters of the European Pharmacopoeia monograph. Each processing air unit is equipped with:

A pre-filter stage for the removal of oil and water aerosols as well as solid particles down to 0.01 μ a high-performance activated charcoal filter for adsorption of oil vapors and odors with a residual oil content of 0.01 mg/m³

A heatless desiccant dryer, that reduces the available water vapor in the air down to a pressure dew point of - 40°C and simultaneously maintains levels of carbon dioxide (CO₂), nitrogen monoxide (NO), nitrogen dioxide (NO₂) and sulphure dioxide (SO₂) below the legally allowed limits

A hopcalite filter at the outlet of the dryer that converts CO by oxidation into CO₂ and abort's CO₂ chemically. A dust filter in the last stage.

FD-UT

Comprehensive system of drying compressed air ULTRASEC as refrigeration dryer, capacitive trap without air loss for reducing operating costs with dew point indicator (LCD), dry contact alarm for economical and safe operation construction metal cabinet for optimum protection against mechanical damage and dust. The air/air heat exchanger with low pressure drop through the new technology in Aluminum, no corrosion and efficient heat transfer achieved with the heat exchanger design cross flow air/air valve and hot gas bypass and stainless steel designed to prevent freezing and to provide a constant dew point.

Air treatment units type ULTRATECH with a certificate of conformity of the air quality product fully meets the parameters of the monograph of the European Pharmacopoeia. Each processing air system is equipped with:

A high efficient oil mist micro filter FM of 1 micron to separate drops of oil and solid particles (> 1 micron), the residual oil aerosol is 0.01 mg/m³ á 21°C. A sub micro filter SMF 0.01 microns to remove particles (> 0.01 microns) and oil aerosols and water, residual oil aerosol is 0.01 mg/m³ at 21°C.

Adsorption dryer with columns* of molecular shieve works on the principle of reverse pressure with cold adsorption columns connected in parallel process, while the air passes in one hand and dried and degassed, the other side is being regenerated. The dew point provided by the dryer is -46°C /-68°C at the maximum allowable pressure of 16 bar. Each dryer is equipped with an electronic control of relative humidity ULTRAGEST, to save energy.

The ULTRATECH units has a column of activated carbon to remove odors, oil vapors and hydrocarbons. The residual oil aerosol content is less than 0.003 mg/m³ at 21°C. A catalyst consisting of a column* transforms the carbon monoxide (CO) to carbon dioxide (CO₂). The ULTRATECH units can also



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eliminate much of the CO₂ molecules. The filters are equipped with filter media, without binders, with high content particles with a very low pressure loss which ensures considerable energy savings.

The filters are equipped with zero loss drains, without loss of air and have test buttons to control the proper operation of the purge units. The monitoring and control system ULTRAGEST makes a drastic reduction in energy consumption using a digital controller linked to a very steady dew point sensor. ULTRATECH is designed with a range of products capable of providing a long-term equipment, 100% operational, without the need for early and frequent maintenance.

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Contaminant	Threshold
H ₂ O	67 ppm v/v
Dry particulates	Free from visible particulates in a 75 litre sample
Oil (droplet or mist)	Exempt
CO	5 ppm v/v
CO ₂	500 ppm v/v
SO ₂	1 ppm v/v
NO	2 ppm v/v
NO ₂	2 ppm v/v

The dryer control system shall incorporate a dew point controller for energy savings that shuts off purge air when achieved the dew point required.

Control System

The central control panel shall operate at extra low voltage and include BMS connections for plant fault, plant emergency, reserve fault and pressure fault. A mechanical back-up facility shall ensure continued operation in the event of malfunction. The control system shall normally employ automatic rotation of lead compressor to maximize compressor life and ensure even wear.

Receiver Assembly

Air receivers shall comply with EN 286-1, supplied with relevant test certificates. Each air receiver shall be hot dip galvanized inside and out and fitted with an electronic time controlled drain valve. Float type drain valves are not acceptable. The receiver assembly shall be fitted with a pressure safety valve and certified pressure gauge. The receiver shall have additional connections available for emergency back-up systems.

Dew Point Monitoring

The dryer shall incorporate a ceramic dew point hygrometer with an accuracy of $\pm 1^\circ\text{C}$ in the range -20 to -80°C atmospheric dew point and 4-20mA analogue output for the controller.

Aluminum oxide or palladium wire sensors are not acceptable. An alarm condition shall trigger on the dryer control panel if the dew point exceeds a -46°C atmospheric set point. The plant control unit shall incorporate a multifunction LCD displaying, with alarm signalization of a fault condition in the dryer. Volt free contacts shall be included to enable the dew point alarm signal to be connected to a central medical gas alarm system and/or building management system (BMS). To enable periodic calibration of the dew point sensor element, the hygrometer shall be remotely connected downstream of the dryer via a micro-bore tube. It is not acceptable to install the sensor directly into the medical air supply pipeline.

Reduction Set with Sterilization Filter

The plant should be equipped with a set of pressure reduction, with manometer, and includes air sterilization filter with filter element sterilizable in steam autoclaving. The set should be equipped with sectioning and depressurization valves.

Basic configuration of the Medical Air Plant, ULTRAAR series 1

- 1 compressor dry piston, 100% oil-free, two-stage compression
- 1 Unit of treatment and air drying



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- 1 Controller digital dew
- 1 vertical tank, galvanized, with its accessories of security
- 1 Reduction set with filter sterilization
- 1 Electrical control panel and control including signaling for remote management

System Specifications
MEDICAL COMPRESSED AIR SYSTEM - OIL FREE - ULTRAAR
Construction according to ISO 7396-1 for models with 3 or more compressors
Simplex and duplex systems are prepared to ISO 7396-1
380V - 400V / 50Hz – 60Hz

ULTRAAR Model	HP	KW	System Flow			
			m3/h	l/m	l/s	scfm
SIMPLEX						
1.24/500	5,5	4	24	400	6,7	14,2
1.48/800	10	7,5	48	800	13,3	28,2
1.50/800	15	11	50	833	13,9	29,4
1.70/1000	15	11	64	1067	17,8	37,6
1.80/1000	20	15	80	1333	22,2	47,1
1.100/1000	25	18,5	100	1667	27,8	58,8
1.130/1500	30	22	130	2167	36,1	76,4
1.160/1500	40	30	160	2667	44,4	94



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Medical Air System Totally Oil Free ULTRAAR® series 1
EN ISO 7396-1 / HTM 0201
400V / 50Hz 12bar
SIMPLEX

Model	System capacity (l/min)	Electric motor power(kW)	ULTRAAR				
			400V 50Hz				
			Article Number				
			Accord. to Air Treatment type				
			FD <i>ULTRASEC</i>	UM <i>ULTRAMED</i>	UT <i>ULTRATECH</i>	FD-UM <i>Combined ULTRASEC + ULTRAMED</i>	FD-UT <i>Combined ULTRASEC + ULTRATECH</i>
1.24/500	400	4	301.01.20000	301.01.10000	301.01.00000	301.01.40000	301.01.30000
1.48/800	800	7,5	301.01.20001	301.01.10001	301.01.00001	301.01.40001	301.01.30001
1.50/800	833	11	301.01.20002	301.01.10002	301.01.00002	301.01.40002	301.01.30002
1.70/1000	1067	11	301.01.20003	301.01.10003	301.01.00003	301.01.40003	301.01.30003
1.80/1000	1333	15	301.01.20004	301.01.10004	301.01.00004	301.01.40004	301.01.30004
1.100/1000	1667	18,5	301.01.20005	301.01.10005	301.01.00005	301.01.40005	301.01.30005
1.130/1500	2167	22	301.01.20006	301.01.10006	301.01.00006	301.01.40006	301.01.30006
1.160/1500	2667	30	301.01.20007	301.01.10007	301.01.00007	301.01.40007	301.01.30007

D- with 2 tanks T- with 3 tanks
 Smaller or bigger versions under request



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Medical Air System Totally Oil Free ULTRAAR® series 1
EN ISO 7396-1 / HTM 0201
380V / 60Hz 12bar
SIMPLEX

Model	System capacity (l/min)	Electric motor power(kw)	ULTRAAR				
			380V 60Hz				
			Article Number				
			Accord. to Air Treatment type				
			FD <i>ULTRASEC</i>	UM <i>ULTRAMED</i>	UT <i>ULTRATECH</i>	FD-UM <i>Combined ULTRASEC + ULTRAMED</i>	FD-UT <i>Combined ULTRASEC + ULTRATECH</i>
1.24/500	400	4	301.01.20600	301.01.10600	301.01.00600	301.01.40600	301.01.30600
1.48/800	800	7,5	301.01.20601	301.01.10601	301.01.00601	301.01.40601	301.01.30601
1.50/800	833	11	301.01.20602	301.01.10602	301.01.00602	301.01.40602	301.01.30602
1.70/1000	1067	11	301.01.20603	301.01.10603	301.01.00603	301.01.40603	301.01.30603
1.80/1000	1333	15	301.01.20604	301.01.10604	301.01.00604	301.01.40604	301.01.30604
1.100/1000	1667	18,5	301.01.20605	301.01.10605	301.01.00605	301.01.40605	301.01.30605
1.130/1500	2167	22	301.01.20606	301.01.10606	301.01.00606	301.01.40606	301.01.30606
1.160/1500	2667	30	301.01.20607	301.01.10607	301.01.00607	301.01.40607	301.01.30607

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