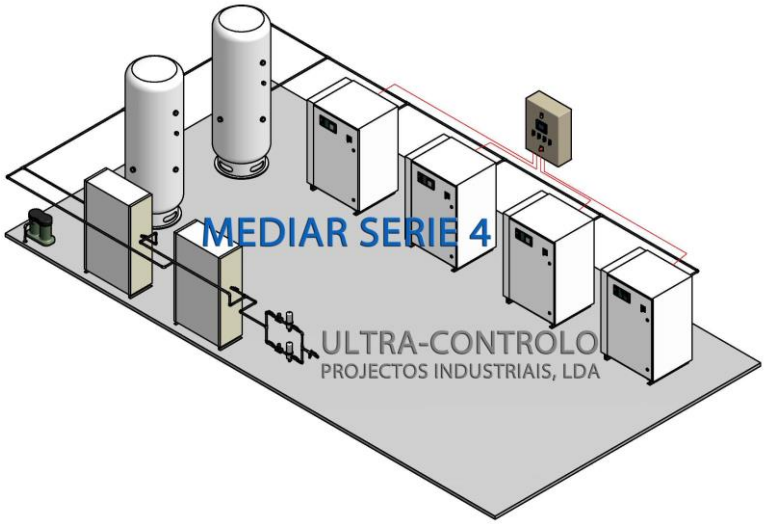
ULTRA CONTROLO INTERNATIONAL, LDA

Medical Compressed Air System - MEDIAR® Série 4
EN ISO 7396-1
208V - 440V / 50Hz – 60Hz , 13 Bar
QUADRUPLEX
SPECIFICATIONS

MEDIAR

The MEDIAR Combined Medical Air System 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 1100 kPa (11 bar) gauge for supply of the hospital surgical and medical (via separate regulators) air systems. The entire system shall be 'duplexed' such that any single functional component failure will not affect the integrity of the medical compressed air supply. The secondary supply will be made up of two compressors. Each compressor will be capable of supplying 50% of the specified volumetric flow.

Typical Quadruplex Layout



Compressors

Compressors shall be oil injected rotary screw compressors suitable for both continuous and frequent start/stop operation at a nominal outlet pressure of 1250 kPa gauge (12.5 bar).
Compressors shall be supplied with a block and fin style aftercooler with a dedicated quiet running fan to maximize cooling and efficiency. A multi-stage oil separator capable of achieving 2ppm oil carry over shall be fitted to minimize contamination and maintenance. High efficiency motors rated TEFC, IP55 class F electric shall be used and incorporate maintenance-free greased for life bearings. Motors with low efficiency ratings are not acceptable. Each screw 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

MEDIAR 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 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
Duplicated 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 sulpshure 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, in double, 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 21ºC. 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 21ºC.
Adsorption dryer with columns* of molecular shieve works on the principle of reverse pressure with cold adsorption columns connected in parallel processed, 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-46ºC /-68ºC 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 21ºC. 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 a 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 sulpshure 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

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NO2	2 ppm v/v

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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 galvanised inside and out and fitted with a 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 ±1°C in the range -20 to -80°C atmospheric dew point and 4-20mA analogue output for the controller.
Aluminium 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

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.

Condensate separator

The plant will have a network of condensate collecting that will be processed by the automatic oil/water separator for environmental protection and accomplish the control regulation about industrial waste and emission of domestic sewage.

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Basic configuration of the Medical Air Plant, MEDIAR series 4

4 Rotary screw compressor oil lubricated, including cyclonic separator
2 Air dryer and treatment unit with dew point digital controller
2 Vertical tank, galvanized, with security devices
1 Reduction set with sterilization filter
1 Electrical control panel and control including signaling for remote management
1 Automatic oil/water separator for condensate treatment

System Specifications
MEDICAL COMPRESSED AIR SYSTEM
MEDIAR
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 / 13bar

MEDIAR Standard Models	HP	KW	System Flow			
			m3/h	l/m	l/s	scfm
QUADRUPLEX						
4.50/1000D	10	7,5	102	1700	28,4	60
4.80/1000D	15	11	158	2640	44	93,2
4.110/1500D	20	15	216	3600	60	127
4.140/1500D	25	18,5	280	4680	78	165,2
4.160/1500D	30	22	314	5220	87	184,2
4.260/2000D	40	30	526	8760	146	309
4.320/2000T	50	37	638	10640	177,4	375,4
4.360/2000T	60	45	736	12260	204,4	432,6
4.500/2000T	74	55	992	16540	275,6	583,6
4.630/2000T	100	75	1262	21020	350,4	741,6

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Medical Compressed Air System - MEDIAR® Série 4
EN ISO 7396-1
400V / 50Hz, 13 Bar
QUADRUPLEX

Model	System capacity (l/min)	Electric motor power(kW)	MEDIAR				
			13 BAR Outlet				
			400V 50Hz				
			Article Number *Accord. to Air Treatment type*				
			FD *ULTRASEC*	**UM** *ULTRAMED*	**UT** *ULTRATECH*	**FD-UM** *Combined ULTRASEC + ULTRAMED*	**FD-UT** *Combined ULTRASEC + ULTRATECH*
4.50/1000D	1700	7,5	304.01.20300	304.01.10300	304.01.00300	304.01.40300	304.01.30300
4.80/1000D	2640	11	304.01.20301	304.01.10301	304.01.00301	304.01.40301	304.01.30301
4.110/1500D	3600	15	304.01.20302	304.01.10302	304.01.00302	304.01.40302	304.01.30302
4.140/1500D	4680	18,5	304.01.20303	304.01.10303	304.01.00303	304.01.40303	304.01.30303
4.160/1500D	5220	22	304.01.20304	304.01.10304	304.01.00304	304.01.40304	304.01.30304
4.260/2000D	8760	30	304.01.20305	304.01.10305	304.01.00305	304.01.40305	304.01.30305
4.320/2000T	10640	37	304.01.20306	304.01.10306	304.01.00306	304.01.40306	304.01.30306
4.360/2000T	12260	45	304.01.20307	304.01.10307	304.01.00307	304.01.40307	304.01.30307
4.500/2000T	16540	55	304.01.20308	304.01.10308	304.01.00308	304.01.40308	304.01.30308
4.630/2000T	21020	75	304.01.20309	304.01.10309	304.01.00309	304.01.40309	304.01.30309

D- with 2 tanks **T- with 3 thanks**

Smaller or bigger versions under request

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Medical Compressed Air System - MEDIAR® Série 4
EN ISO 7396-1
380V / 60Hz, 13 Bar
QUADRUPLEX

Model	System capacity (l/min)	Electric motor power(kW)	MEDIAR				
			13 BAR Outlet				
			380V 60Hz				
			Article Number *Accord. to Air Treatment type*				
			FD *ULTRASEC*	**UM** *ULTRAMED*	**UT** *ULTRATECH*	**FD-UM** *Combined ULTRASEC + ULTRAMED*	**FD-UT** *Combined ULTRASEC + ULTRATECH*
4.50/1000D	1700	7,5	304.01.20900	304.01.10900	304.01.00900	304.01.40900	304.01.30900
4.80/1000D	2640	11	304.01.20901	304.01.10901	304.01.00901	304.01.40901	304.01.30901
4.110/1500D	3600	15	304.01.20902	304.01.10902	304.01.00902	304.01.40902	304.01.30902
4.140/1500D	4680	18,5	304.01.20903	304.01.10903	304.01.00903	304.01.40903	304.01.30903
4.160/1500D	5220	22	304.01.20904	304.01.10904	304.01.00904	304.01.40904	304.01.30904
4.260/2000D	8760	30	304.01.20905	304.01.10905	304.01.00905	304.01.40905	304.01.30905
4.320/2000T	10640	37	304.01.20906	304.01.10906	304.01.00906	304.01.40906	304.01.30906
4.360/2000T	12260	45	304.01.20907	304.01.10907	304.01.00907	304.01.40907	304.01.30907
4.500/2000T	16540	55	304.01.20908	304.01.10908	304.01.00908	304.01.40908	304.01.30908
4.630/2000T	21020	75	304.01.20909	304.01.10909	304.01.00909	304.01.40909	304.01.30909

D- with 2 tanks **T- with 3 thanks**
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