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Automatic Changeover Units

for Medical Gas Pipeline System

Changeover to
OXY | **GEN 24 x 7**



Features

- ◆ Relay Logic-controlled auto change-over
- ◆ Constant uninterrupted supply
- ◆ High flow output - 2100 lpm @ 4.2 bar
- ◆ Stable discharge pressure & flow
- ◆ Embedded Visual & audible signal
- ◆ Pressure unit display options - bar, psi & kg/cm²
- ◆ High pressure (1st stage) reduction by "Piston Regulators" for durability.

Conforms to: IS / ISO 7396 - 1 : 2016 + A1 : 2017
IS / ISO 10524 - 2 : 2018, IS / ISO 10524 - 4 : 2008
HTM 02-01 Part A : 2006

Certifications: ISO 13485:2016 – Medical devices – Quality Management Systems
ISO 9001:2015 - Quality Management Systems



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S-Kumar Engineering Works

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S-Kumar 24x7E (2 & 3 source system)



Gas Services	Oxygen	N ₂ O	AIR	4	AIR	7	N ₂	CO ₂	Mixed Gas
Flow LPM@4.2 bar	1350	1350	1350	1350	1350	1350	1350	1350	

- Pressure Stabilizer for stable discharge pressure & flow.
- Relay Logic controlled change-over is accomplished automatically.
- Digital pressure indication for accurate reading.
- Embedded Visual & Audible signal.
- Automatically resets itself for next cycle when depleted bank is replenished.
- Designed to suit all medical gases for gas specific usage and optimized residual gas
- Status indicators and Pressure unit options for psi, bar & kg/cm².
- Manual changeover buttons for servicing either side of the system.

S-Kumar 24x7N (2 & 3 source system)



Gas Services	Oxygen	N ₂ O	AIR	4	AIR	7	N ₂	CO ₂	Mixed Gas
Flow LPM@4.2 bar	2100	2100	2100	2100	2100	2100	2100	2100	

- Pressure Stabilizer for stable discharge pressure & flow.
- Pneumatic change-over is accomplished automatically
- Digital pressure indication for accurate reading.
- Embedded Visual & Audible signal.
- Automatically resets itself for next cycle when depleted bank is replenished.
- Designed to suit all medical gases for gas specific usage and optimized residual gas
- Status indicators and Pressure unit options for psi, bar & kg/cm².

S-Kumar SA (2 source system)



Gas Services	Oxygen	N ₂ O	AIR	4	AIR	7	N ₂	CO ₂	Mixed Gas
Flow LPM@4.2 bar	450	450	450	450	450	450	450	450	

- Pneumatic change-over is accomplished automatically.
- Analogue pressure gauge for accurate reading.
- Designed to suit all medical gases for gas specific usage.
- Remote Status indicators with Alarm (Optional)
- Stable discharge pressure.



Changeover Unit with Modular Manifold

Technical Data:

Conforms to	IS / ISO 7396 - 1 : 2016 + A1 : 2017 IS / ISO 10524 - 2 : 2018 IS / ISO 10524 - 4 : 2008 HTM 02-01 Part A : 2006
Inlet Connection	1" BSP, 3/4" BSP*
Outlet Connection	1/2" BSP, 3/4" BSP**

Manifold Header Connection	1/2" BSP
Modular Manifold Connection	5/8" BSP
Relief Valve Setting (Line Safety)	5.17 bar (75 psi)
Relief Valve Setting (High Pressure Regulator)	15.5 bar (225 psi)



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Zonal Valve Box

Area Valve Service Unit (AVSU)



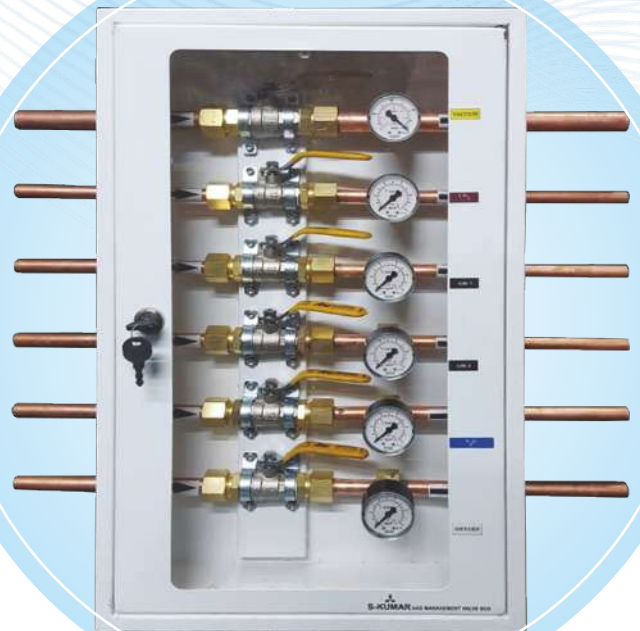
1 Gas Valve Box
(side entry)



2 Gas Valve Box
(side entry)



3 Gas Valve Box
(side entry)



6 Gas Valve Box
(side entry)

Features

- ◆ Fully isolate area in emergency, maintenance, extension etc.
- ◆ Valves housed in secured metallic box.
- ◆ Full bore ball valves are medical compatible and comply with Pressure.
- ◆ Equipment Directive 97/23/EC.
- ◆ Flared tube ends for easy insertion of connecting tube.
- ◆ Stub ends covered for dust protection.
- ◆ Acrylic window for clear visibility of in-line pressure reading.
- ◆ Window breakable in case of emergency.

Conforms to: BS EN 331 : 2015
IS / ISO 7396 - 1 : 2016 + A1 : 2017

Certifications: ISO 13485:2016 – Medical devices – Quality Management Systems
ISO 9001:2015 - Quality Management Systems





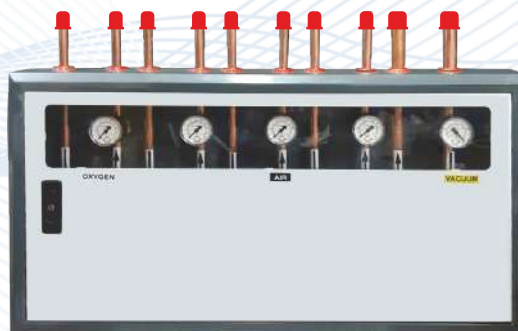
2 Gas Valve Box (Top entry)



3 Gas Valve Box (Top entry)



4 Gas Valve Box (Top entry)



5 Gas Valve Box (Top entry)

Technical Specifications

Conforms to	BS EN 331 : 2015, IS / ISO 7396 : 2016 + A1 : 2017					
Flow rate @ 4.2 bar (max.)	1500 LPM					
Maximum Pressure	30 bar					
OD of Stub end	15 mm (22 mm for Vacuum)					
Length of Stub end	75 mm each side					
Tighten proof	50 bar					
Closing / Opening of Valve	90° (1/4th turn)					
Working Temperature	-20 °C to 60 °C [-4 °F to 140 °F]					
Gases	O ₂ , NO ₂ , AIR 4, AIR 7, CO ₂ , Mixed Gases & Vacuum					
Regulatory Status	Complies with Medical Devices Directive 93/42/EEC					
Overall dimensions (L x H x W) (in mm)	1 Gas	2 Gas	3 Gas	4 Gas	5 Gas	6 Gas
	370×180×110	370×260×110	370×360×110	370×460×110	370×560×110	370×660×110

Ordering Information

Valve box with Top / Side entry for 1 Gas - Oxygen	ZVB-1G (Top/Side entry)
Valve box with Top / Side entry for 2 Gases - Oxygen / Vacuum	ZVB-2G (Top/Side entry)
Valve box with Top / Side entry for 3 Gases - Oxygen / AIR 4 / Vacuum	ZVB-3G (Top/Side entry)
Valve box with Top / Side entry for 4 Gases - Oxygen / N ₂ O / AIR 4 / Vacuum	ZVB-4G (Top/Side entry)
Valve box with Top / Side entry for 5 Gases - Oxygen / N ₂ O / AIR 4 / AIR 7 / Vacuum	ZVB-5G (Top/Side entry)
Valve box with Top / Side entry for 6 Gases - Oxygen / N ₂ O / AIR 4 / AIR 7 / CO ₂ / Vacuum	ZVB-6G (Top/Side entry)



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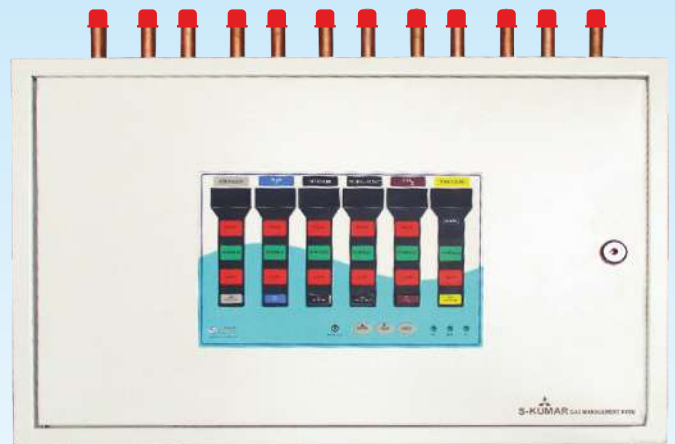
FLOW CHECK[®]

Pipe Line Alarm with Area Isolation



2- Gas + Vacuum Module

- Digital Display
- Heavy Duty Sensors
- Audible & Colored Visual Caution



5- Gas + Vacuum Module

Features

- ◆ Designed to serve 1,2,3,4 & 5 gas module.
- ◆ Suitable for all medical Gases & Vacuum.
- ◆ Powder coated aesthetically designed enclosure.
- ◆ Vertical Extension Pipes for connection to network.
- ◆ PED : 2014/68/EU certified full port Ball Valve (PN 30).
- ◆ Microprocessor based module.
- ◆ Adjustment & parameter setting by push button.
- ◆ Operational parameters can be set in-situ.
- ◆ Digital pressure unit in psi / bar or kg/cm²
- ◆ Audio mute option.

Conforms to: IS / ISO 7396 - 1 : 2016, HTM 02-01 Part A, IS / ISO IEC 60601 – 1 : 2015 + A1 : 2020
ISO 18082 : 2014 + A1 : 2017

Certifications: ISO 13485:2016 – Medical devices – Quality Management Systems
ISO 9001:2015 - Quality Management Systems

Conforms to BS EN ISO 7396-1:2016, HTM 02-01 Part A & BS EN 60601-1-8:2007 & ISO18082: 2014 + A1 : 2017

	Class II b - MDR 2017 / 745
Body	Fire retardant dust-proof CRCA 18 SWG steel enclosure
Finish	Powder coating - Enclosure RAL 9010 (As per customer requirement)
Mounting type	Horizontal - Surface mountable
Enclosure dimensions	1 Gas module - 250 x 300 x 110: 2&3 Gas module - 500 x 420 x 110 and 4&5 Gas module - 600 x 400 x 110 (L x H x W in mm)
Gas services	2, 3, 4, 5 Gas including Vacuum & I Gas excluding vacuum.
Gas & Vacuum connetions	Pre-piped "K" type medical grade Copper extension pipe 75mm long on the top (Riser) for connecting network gas services.
Extension pipe size	15mm Ø for Gases & 22 mm Ø for Vacuum with laser engraved direction signage.
Off-line connetion	Gas specific NIST connections with NRV provided for external medical gas supply.
Flow through NIST	Emergency / maintenance in let flow rate 500 LPM at 4 bar.
Shut-off Valve	Full port ball valves (PN 30) with quarter turn (90°) through butterfly knob.
Power connection	External 12 V DC adapter for audio visual display
Warning system	Microprocessor based warning module adjustable in-situ to set operational parameters and digital pressure unit in psi, bar or kg/cm ²
Display & Audio signal	Digital & illuminated LED display for "Normal", "High" & "Low" with High / Low alarm set points for each gas (Low only for Vacuum) service.
	Flashing LED display coupled with audio warning in case of preset deviation with the provision to "Mute" audio signal for 15 minutes max.
	Minimum size of 20 x 15 mm bright LED signals for clear visibility from distance.
Sensors	Accurate, calibrated & temperature compensated PCB mount pressure Sensors Sensing pressure span: 60m bar to 10 bar 1 psi to 150 psi Digital Output Temperature span: 0°C to 50°C (32°F to 122°F) for gases (-) 20°C to 85°C {(-) 4 F to 185 F} for Vacuum. Accuracy: 0.25% of FSS BFLS
Information & Control	The information of alarm, current status & test conditions through "Push Button"
Valve access	Re-useable lock assembly after breaking locked door to gain access.
Earthing	Functional earth
Protection	Class II & IP 54
Certifications	Class I - MDD 93/42/EEC Medical Device Quality Management Certificate: ISO 13485:2016 Quality Management System Certificate: ISO 9001 : 2015

Ordering Code:

Device Name	Device Mode	Device Description	Device Code
Valve control with Alarm	Wall Mount	Single Gas	AVSU - 1G
		2 Gas including Vacuum	AVSU - 2G
		3 Gas including Vacuum	AVSU - 3G
		4 Gas including Vacuum	AVSU - 4G
		5 Gas including Vacuum	AVSU - 5G



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MED-HORN[®]

Alarm for Medical Gas Pipeline System



1- Gas Alarm



3- Gas Alarm

- Digital Display
- Heavy Duty Sensors
- Audible & Colored Visual Caution

Features

- ◆ Microprocessor based module
- ◆ Digital seven segment LED display for accurate reading and illuminated display of "Low", "Normal" & "High"
- ◆ Digital pressure unit in psi / bar or kg/cm².
- ◆ User friendly configuration of Operational parameters at site.
- ◆ Adjustment & parameter setting by Push button.
- ◆ Audio mute option (15min. by default).
- ◆ Powder coated aesthetically designed enclosure.
- ◆ Designed to serve 1,2, 3, 4, 5 & 6 gas module.



6- Gas Alarm

Conforms to: IS / ISO 7396-1 : 2016 + A1 : 2017, HTM 02-01 Part A
IS / ISO IEC 60601-1 : 2015 + A1 : 2020

Certifications: ISO 13485:2016 – Medical devices – Quality Management Systems
ISO 9001:2015 - Quality Management Systems



Analogue Alarm System:

It is an Analogue alarm which sense the set pressure deviations through pressure switch.



1- Gas Alarm



2- Gas Alarm

Technical Information :

Medical Gases & Medical Services	Nominal Pressure Bs ENISO 7396 - 1:2016	Triggering of Alarm*	
		Low	High
Oxygen, Nitrous Oxide, Medical Air, Carbon-Di-oxide	58 psi (4bar)	not < 58 psi (4bar)	not > 72 psi (5bar)
Air / Nitrogen for Surgical Tool	116 psi (8bar)	not < 107 psi (7bar)	not > 145 psi (10bar)
Vacuum	300 mm Hg (5.8 psig)	260 mm Hg (5 psig)	-

* Factory settings : Range can be altered in consultation with the healthcare personnel,

Ordering information:

MEDICAL GASES & VACUUM SERVICES	ANALOGUE	DIGITAL
1 Gas - OXYGEN	On Request	MA-1G
2 Gas - OXYGEN & VACUUM	On Request	MA-2G
3 Gas - OXYGEN, NITROUS OXIDE / MEDICAL AIR & VACUUM.	On Request	MA-3G
4 Gas - OXYGEN, NITROUS OXIDE, MEDICAL AIR & VACUUM.	On Request	MA-4G
5 Gas - OXYGEN, NITROUS OXIDE, MEDICAL AIR, AR7 & VACUUM.	On Request	MA-5G
6 Gas - OXYGEN, NITROUS OXIDE, MEDICAL AIR, AR7, CO ₂ & VACUUM.	On Request	MA-6G
NOTE - Power adaptor 230V AC / 12V DC supplied with the Alarm.		



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