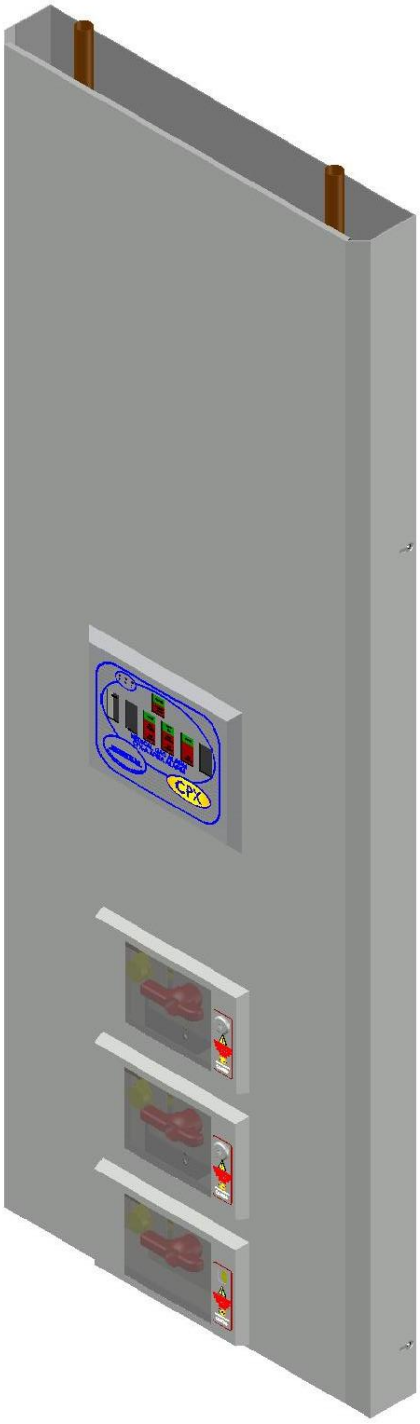
PRECISION UK Ltd

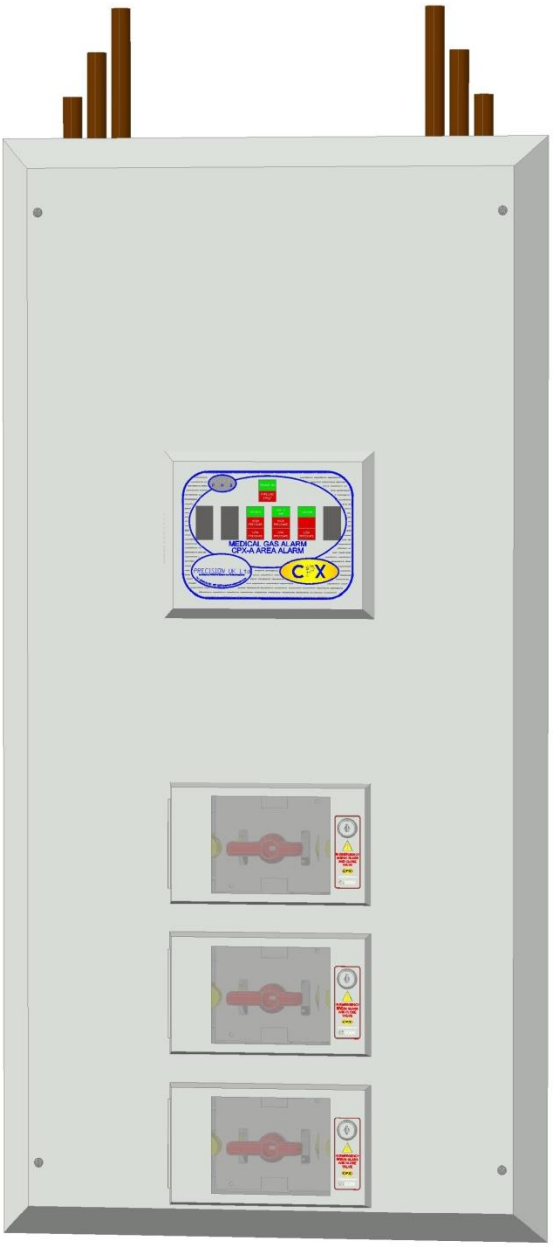
Specialists in HTM02-01 Medical Gas Pipeline Equipment

Technical Specification

Surface Area Valve Service Unit Module



Semi Flush Area Valve Service Unit Module



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Product Description

The CPX AVSU Module is used in conjunction with area valve service units (AVSU). The AVSU Module incorporates a CPX-A local area alarm system to meet the requirements of NHS Technical Memorandum HTM 02-01, HTM 2022 and Model Engineering C11.

Area Valve Service units shall be CE marked to the Medical Device Directive 93/43/EC as a class IIb medical devices. A copy of the certificate authorizing the manufacturer to apply CE marking under the aforementioned directive and a Certificate of Origin must be provided for review. Area Valve Service units shall be manufactured under an ISO 13485:2003 quality management system. A copy of the certificate of registration shall be provided for review.

Definition of Use

The area valve service unit is intended to be used as a means of local isolation on medical gas pipelines for use during normal installation and maintenance or in the event of an emergency.
In the event of an emergency the glass in the front of the area valve service unit can be broken to allow access to the valve.
The area valve service unit offer leak free connections as soon as they are installed to corresponding medical gas pipelines and are safe and easy to use.
The area valve service unit is designed to be mounted directly into a medical gas pipeline system via copper tail pipes supplied and located within wall or ceiling voids or anywhere that general access is restricted.

The copper pipe stubs are intended to be of sufficient length to enable brazing directly to the medical gas pipeline system utilising flux less brazing to WKO (82) 1.
The area valve service unit shall incorporate a ball valve with NIST connectors either side, mounted in a lockable box with emergency access, blanking facility as a secondary means of isolation with the intention to provide a physical barrier to the gas supply in order to eliminate any risk of contamination during the initial installation or the medical gas pipeline system or any upgrade/maintenance work. Pressure switches can be fitted inside the enclosure to enable local monitoring from a local area alarm or a hospital central alarm system or BMS if required.

The chassis and cover shall be manufactured from 16 SWG steel, double primer coated and epoxy powder coated for protection. The value box should have a universal back plate and box for first fix mounting to secure the installed valve. A color coded service identity label will be fitted behind the valve handle and visible through the window. The door shall be 16 SWG steel, double primer coated and epoxy powder coated and will be common for all

services. The door lock shall be 90degree clockwise turn stainless steel assembly with minimum 20,000 combination lock types. The door should incorporate an emergency access window manufactured from Safe Glass, Float glass windows are not acceptable and include the option to have a clear polymer pull out window.

Each AVSU shall have a label manufactured from a printed vinyl substrate with a 2 piece protective polypropylene laminate. The label will bear the relevant gas name or symbol and be colour coded as a minimum and mounted on the 1st fix section of the AVSU ensuring anti-confusion. The label shall visible through the AVSU window and tamper/damage proof.
An Anti-tamper device with monitoring to a Building Management System (BMS) shall be available on each AVSU.

The area valve service units shall be configured for one to five gases services depending on the hospital area served, with the option of an inbuilt medical gas area alarm panel.
NIST connections with integral Non Return Valves will be at either side of the AVSU ball valve. AVSU ball valves shall be manufactured from die-cast nickel plated brass alloy with male threaded 2 piece valve, chrome plated brass ball, ptfe seals and flat face connections to allow removal of the valve without the requirement to distort the pipeline. AVSU ball valves shall be operated by a RED die cast handle quarter turn and benefit from low torque operation and shall be easily replaced if required for maintenance. AVSU ball valves shall incorporate blow out proof stems.

Brass Thru spades shall be provided either side of the valve and each valve shall be provided with a Brass blanking spade for deployment during installation or modification of the system without interruption of the main supply. Plastic Thru plates are not acceptable due to the risk of cracking under pressure causing leaks and incompatibility with oxygen.
The NIST connectors to facilitate easy purge for testing and emergency supply form part of each stub pipe shall incorporate a check valve with metal seat thus avoiding the possibility of degradation over time. Each NIST shall include a NON Return valve with a 100% seal.
AVSU stub pipes shall protrude outside of the box by minimum 400mm each side to avoid scorching when brazing to pipeline and allow for 6 gases to be vertical brazed into the pipeline and to reduce soldered joints.

Area Alarm incorporated in the AVSU module

To comply and fully meets with the latest standard HTM2022 and C11,It should be duly CE marked with CE no. and Copy of CE certificate from notified body must be submitted.
Certificate of Origin must be given.
Designed to monitor piped gas pressure (high and low pressure on up to six services) Via Pressure Switches in Theatres, Intensive Care Units, Recoveries, Private Rooms, and Wards etc.
Local Area Alarms should provide indication of the condition of gas (Normal, High or Low

Pressure) at the point of use, by monitoring the internal pressure of the pipeline. The Method of Monitoring -Individual pressure switches for high pressure Low Pressure and Low Vacuum and each switch should be fitted with an end of line monitoring resistance matched to the alarm panel, enabling the alarm panel to detect any faults on the system wiring or signal transmission.
Alarm Panel incorporates 18 conditions and display up to six services each with normal & two fault conditions. Battery Back Up shall be provided within the system to enable the alarm panel to function normally in the event of mains power failure. The internal battery must be used to keep alarm panels operational in the event of mains power failure.

The area alarm panel is designed to monitor high and low pressure (low only for vacuum) up to 6 gases, using pressure switches mounted in the pipeline downstream from the final area valve service unit (AVSU). Each panel has a green normal, red high pressure and low pressure lamps. The panel also has a green power on lamp and a red system fault lamp, together with a mutable audible alarm. In addition, the panel has small status indicators to show how the panel is connected, and the status of the connection.
Several CPX-A alarms can be connected to the same end of line components using just 3 cores. The CPX-A can transmit either a common alarm or all alarm conditions, using MEDCON data protocol, for display on the CPX-P Plant alarm system. Data can also be received from the CPX-P system.

Operation

When a pressure switch opens due to high or low pressure, the appropriate lamp will flash and the audible alarm will sound. Operating the mute push button will silence the audible alarm. If the alarm conditions remain the audible alarm will re-trigger after 15 minutes, requiring re-muting.

Installation Guidelines

<u>Assembly-AVSU Module SURFACE MOUNTING</u>

- Remove the 2nd fix form the completed assembly, by unscrewing the 4 screws on the side.
- Unplug the power cable and pressure sensor leads.
- Offer up the 1st fix to the required position on the wall, taking note of the floor to ceiling height as specified on the original specification sheet.
- Utilising the mounting holes on the 1st fix Backplate secure to the wall using suitable fixings.
- Connect to the mains power on a 13amp fused spur. *only suitably trained personnel should undertake this procedure.

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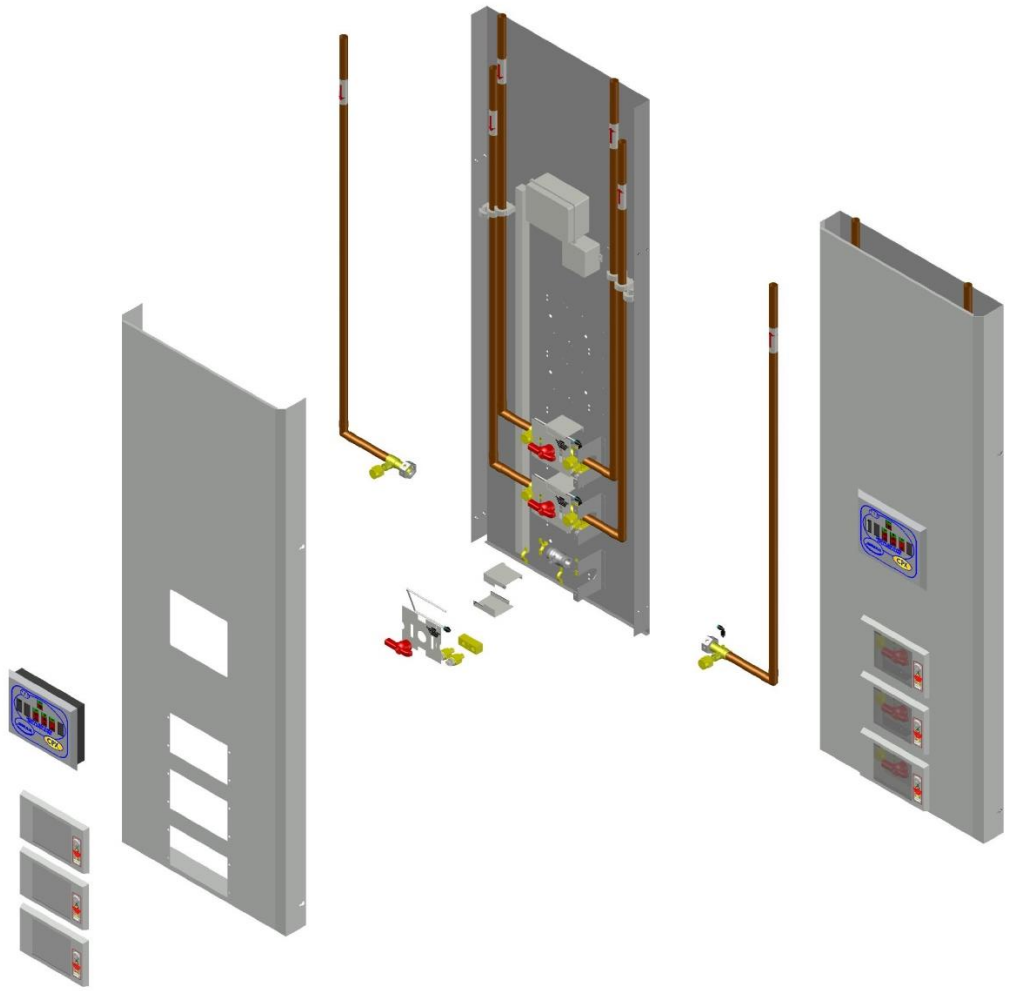
- Ensure the fitted pressure sensors are downstream of the pipeline system.
- Braze the copper stubs to the fixed pipeline system; take care not to burn the enclosure by taking appropriate means.
- Pressure test as per the contract conditions eg.HTM2022 guidelines.
- Connect the power and pressure sensor leads from the 2nd fix to the 1st fix.
- Insert supplied M5 Domed head screws into one side of the 1st fix plate ensuring to leave enough thread for the 2nd fix cover to slide on the slot provided.
- Offer up the 2nd fix locating the 2 screws into the relevant mounting holes on the 2nd fix.
- Using large holes in cover locate the screws and slide cover over the screw head.
- Slide the cover flush with the wall and tighten M5 Dome head screws.
- For opposite side slide the cover back to the wall and repeat 4.



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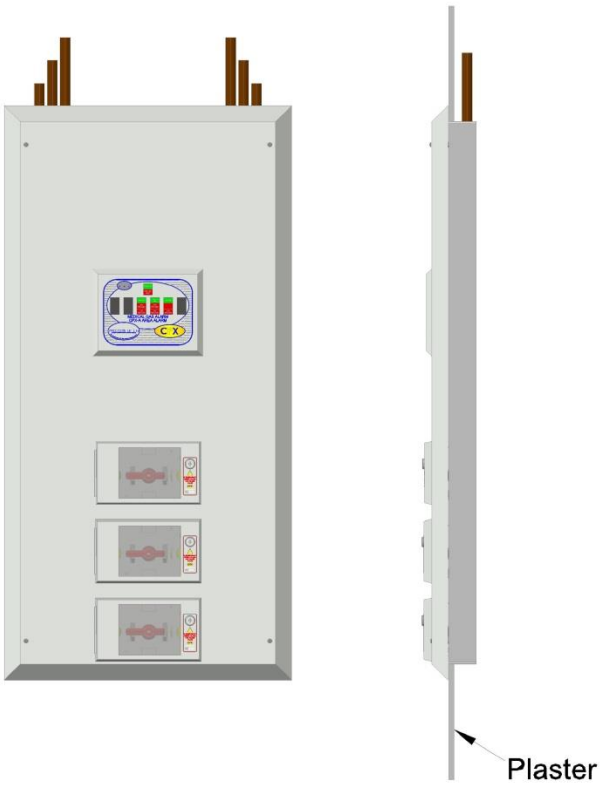
Assembly-AVSU Module SEMI FLUSH MOUNTING

- Remove the 2nd fix form the completed assembly, by unscrewing the 4 screws from the front of the fascia panel.
- Unplug the power cable and pressure sensor leads.
- Offer up the 1st fix to the required position on the wall, taking note of the floor to ceiling height as specified on the original specification sheet.
- Utilising the mounting holes on the 1st fix Backplate secure to the wall using suitable fixings.
- Connect to the mains power on a 13amp fused spur. *only suitably trained personnel should undertake this procedure.
- Ensure the fitted pressure sensors are downstream of the pipeline system.
- Braze the copper stubs to the fixed pipeline system; take care not to burn the enclosure by taking appropriate means.
- Pressure test as per the contract conditions eg.HTM2022 guidelines.
- Connect the power and pressure sensor leads from the 2nd fix to the 1st fix.
- Offer up the 2nd fix and locate
- Insert supplied 4 x M5 Domed head screws thru the fascia into the threaded bush on the 1st fix plate and tighten.



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Quality

Area valve service Units are manufactured in the UK under BS EN 13485 Medical Devices: Quality Management Systems. All tube is manufactured under strict quality control procedures to ISO 9001:2008.

Product Cleanliness

The area valve service unit is cleaned and degreased for oxygen service and free from all particulate matter and toxic residues and has a maximum carbon level of 0.2mg/dm^2.
Each assembly is individually end capped and polythene wrapped to maintain cleanliness.

Pipeline Jointing

The AVSU copper stub pipe is manufactured to BS13348 for connection to the pipeline system and joints shall be made on site using copper, phosphorus and silver brazing alloy CuP282 to BS EN 17672:2010. Brazing should be carried out using oxygen free nitrogen as an inert gas shield to prevent the formation of oxides on the inside of the pipe. Copper pipes shall be cut square with the pipe axis using a sharp wheel cutter wherever possible, and be cleaned to get rid of any cuttings or burrs.

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