Installation manual

Stabilizer station SQ

Medicop®
EQUIPMENT SPECIALIST

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1 General safety instructions

It is very important to strictly follow all the instructions and procedures in the documentation provided with the medical device. The manufacturer can only guarantee safe and reliable use of the medical device if the user, installer or service technician complies with these instructions. The medical device must be installed, repaired and maintained by qualified and certified personnel. The user must have undergone training on the medical device before use. In case of any doubts or inconvenience regarding installation, use and maintenance of the device, you are advised to contact the manufacturer's local representative. **The manufacturer disclaims all responsibility for the improper installation, use and maintenance of the device, including but not limited to:**

- using the device in a way it was not intended to be used
- omitting or disregarding the prescribed maintenance and service intervals
- using and/or installing components that are not original device manufacturer parts
- disregarding the installation and/or user manual
- disregarding any basic safety and precautionary measures listed in the documentation provided
- changing the device and/or interfering with the device, including service and maintenance actions not approved by the manufacturer

The following table shows the most important symbols that the user needs to take into consideration during installation, maintenance and use of the medical device.

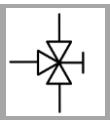
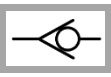
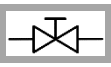
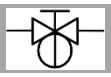
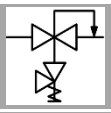
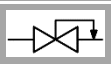
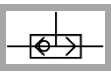
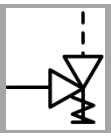
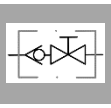
SYMBOL	SYMBOL MEANING
	***WARNING**: No modification of this equipment is allowed.* *There is a potential risk of injury or equipment damage if instructions are not followed. Failure to follow these instructions may result in failure of the medical device or personal injury.*
	*Equipment is not MRI compatible.* *It's not allowed to install and use it in environment where MRI equipment is used.*
	***WARNING!** 230 V — danger of electric shock and injury. To avoid the risk of electric shock, this equipment must only be connected to a supply mains with protective earth. Supply mains must be interrupted by shutting down the overcurrent protection device (fuse), prior to performing works on any components of electrical system.*
	***WARNING:** Electrostatic sensitive devices — observe handling precautions.* *Use of this equipment adjacent to or stacked with other equipment should be avoided because it could result in improper operation. If such use is necessary, this equipment and the other equipment should be observed to verify that they are operating properly* *Use of accessories, transducers and cables other than those specified or provided by the manufacturer of this equipment could result in increased electromagnetic emissions or decreased electromagnetic immunity of this equipment and result in improper operation.* *Portable RF communications equipment (including peripherals such as antenna cables and external antennas) should be used no closer than 30 cm (12 inches) to any part of the [ME equipment or ME system], including cables specified by the manufacturer. Otherwise, degradation of the performance of this equipment could result.* ***NOTE:** The EMISSIONS characteristics of this equipment make it suitable for use in industrial areas and hospitals (CISPR 11 class A). If it is used in a residential environment (for which CISPR 11 class B is normally required) this equipment might not offer adequate protection to radio-frequency communication services. The user might need to take mitigation measures, such as relocating or re-originating the equipment.*
	*May cause or intensify fire. Oxidiser.*
	*No smoking.*
	*The use of any form of lubricant or grease during installation and service is strictly prohibited. Only use approved lubricants — oxygen fat may be used if it is adapted to an oxygen environment (e.g. GLEITMO 595/599).*
	*Contains gas under pressure. May explode when heated.*
	*Product should not be disposed of with household waste.*
CE 0123	*Product is marked with CE according to Directive 93/42/EEC on Medical Devices (MDD), Annex II excluding (4)*

2 Product types and symbols

This document refers to all types listed in the following table. The manufacturer reserves the right to supplement this document with possible additions by using annexes. This may be necessary in, but not limited to, the following cases:

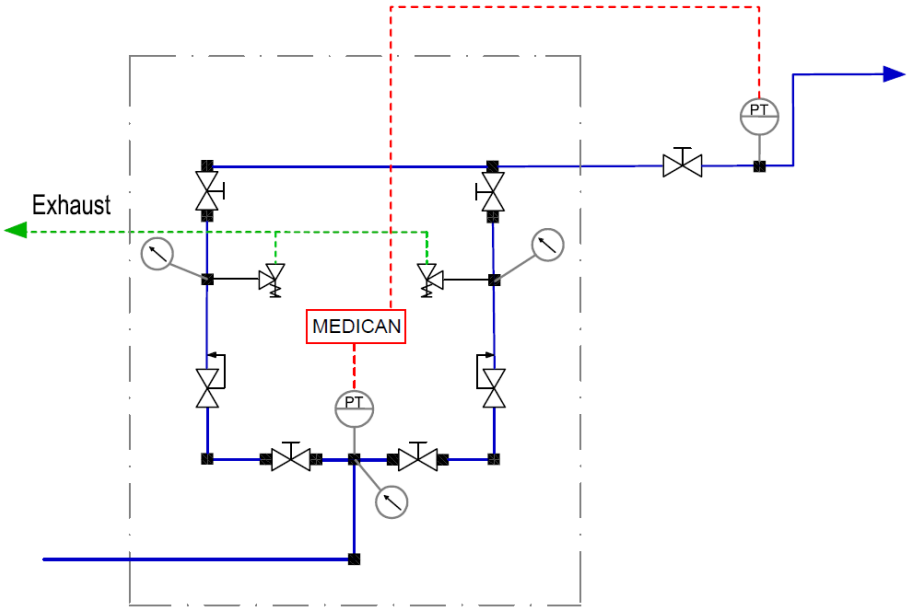
- Individual product derivatives which do not affect intended use (i.e. upon customer request)
- To comply with local and/or national regulations

LIST OF ALL TYPES
SQ 35, SQ 100, SQ 170, SQ 200, SQ 30P, SQ 50P, SQ 120P

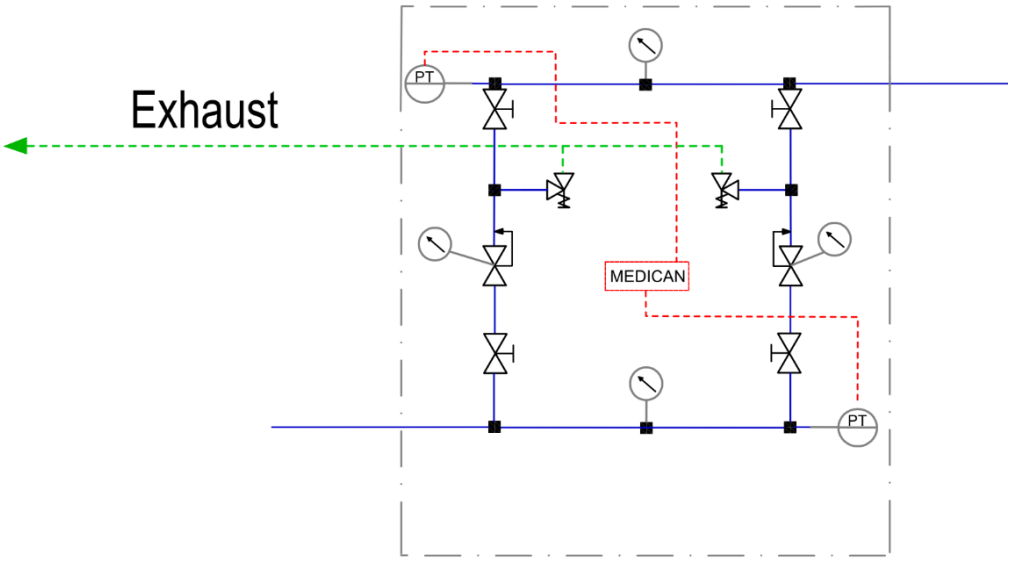
SYMBOL	SYMBOL MEANING	SYMBOL	SYMBOL MEANING
	*Cylinder valve*		*Three-way valve*
	*NON-RETURN valve, flow from left to right*		*Pressure gauge*
	*Shut-off valve*		*Contact pressure gauge*
	*HP shut-off valve with sinter filter*		*Pressure transmitter*
	*HP regulator with relief valve*		*Pressure switch low alarm*
	*LP regulator*		*Pressure switch high alarm*
	*Automatic changeover valve*		*MEDICAN alarm module*
	*Low-pressure relief valve*		*GASMON 3 alarm module*
	*Shut-off valve with NON-RETURN valve, flow from left to right*		

3 Schematic overview (P&ID) of Medical gas installation

3.1 SQ station

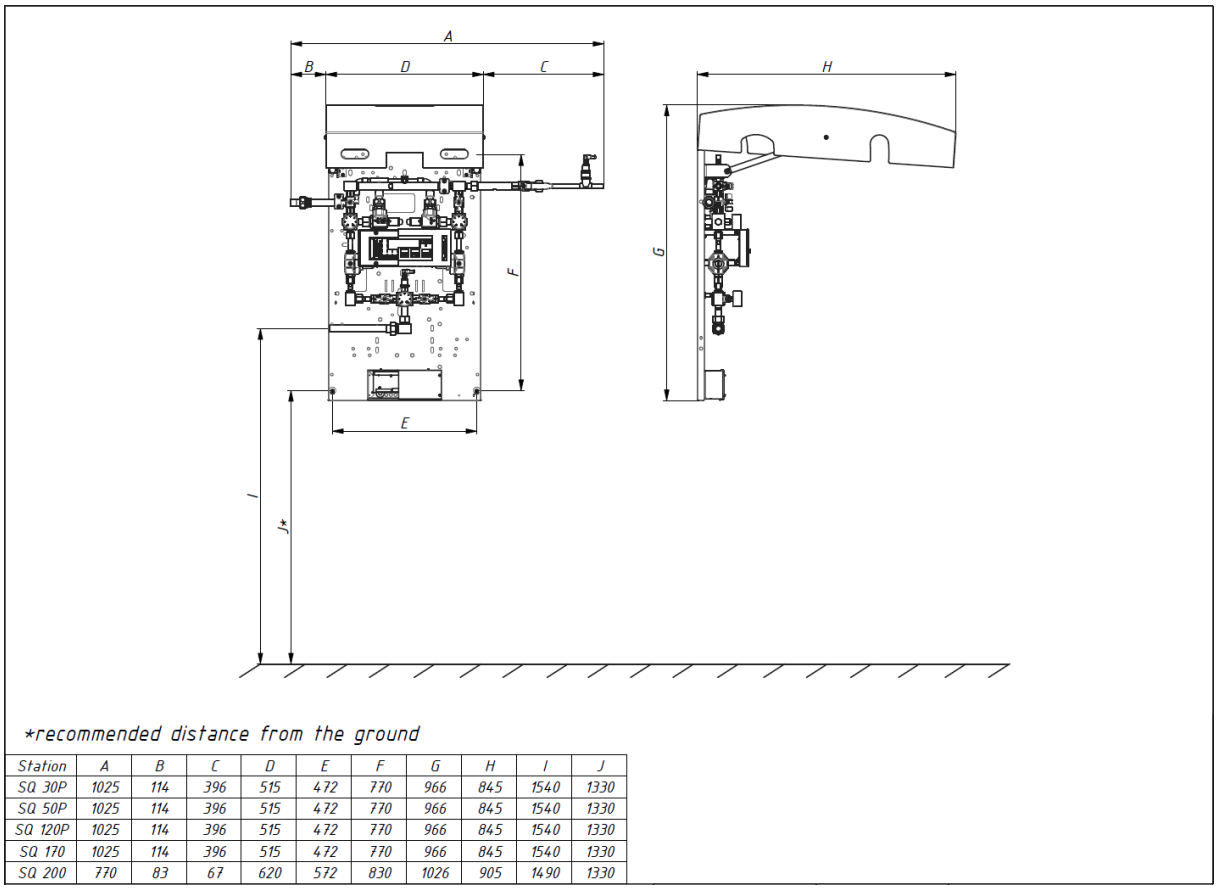


3.2 SQ 200 station



4 Installation and connection of components

4.1 Measurements for components installation

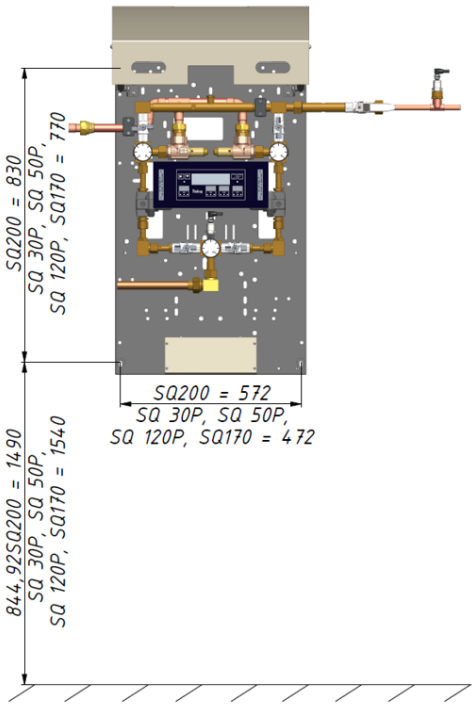


*recommended distance from the ground

Station	A	B	C	D	E	F	G	H	I	J
SQ 30P	1025	114	396	515	472	770	966	845	1540	1330
SQ 50P	1025	114	396	515	472	770	966	845	1540	1330
SQ 120P	1025	114	396	515	472	770	966	845	1540	1330
SQ 170	1025	114	396	515	472	770	966	845	1540	1330
SQ 200	770	83	67	620	572	830	1026	905	1490	1330

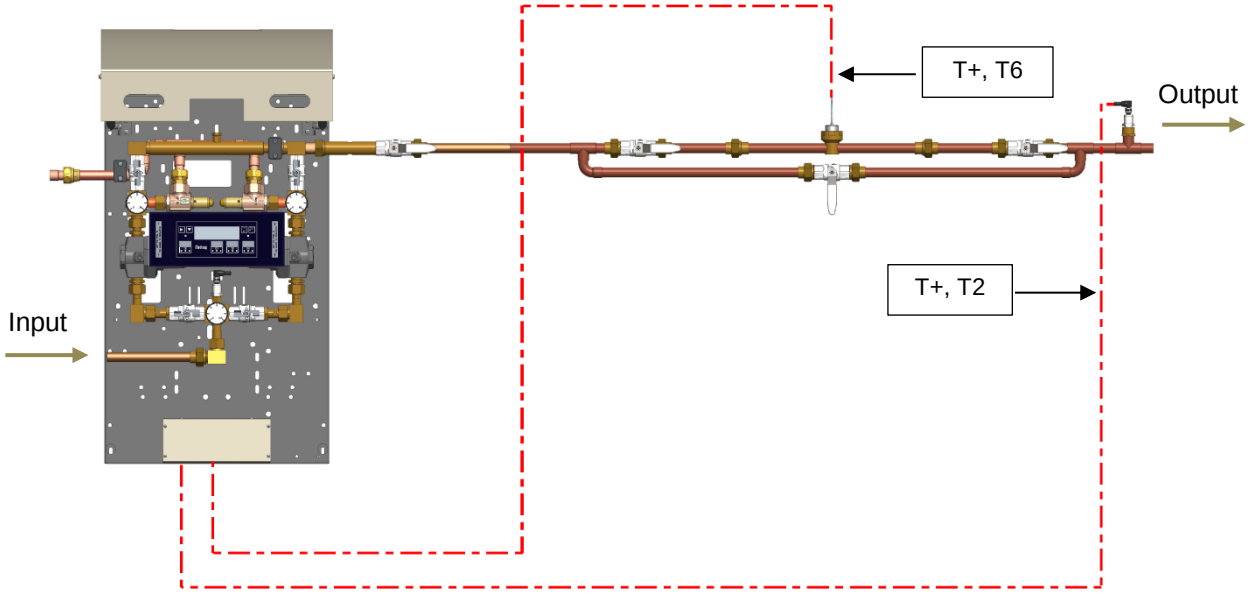
All dimensions are in millimetres!

STEP	DESCRIPTION
1	Fix SQ station with 4 screws



4.2 Pipeline and cable connections

STEP	DESCRIPTION
1	Install output pressure transmitter after all shut-off valves. Input transmitter is factory installed.
2	Flow sensor is optional and need to be installed on outgoing pipe – after all stations. Orientation of the pipe should be horizontal – be careful on direction of the flow, which is marked on sensor. It is required to make bypass installation for flow sensor – with bypass we ensure no interruption of the flow during servicing or calibration of the sensor.
3	Connect output and flow sensor cables to SQ station power supply module. For more details, check chapter Electrical connection.

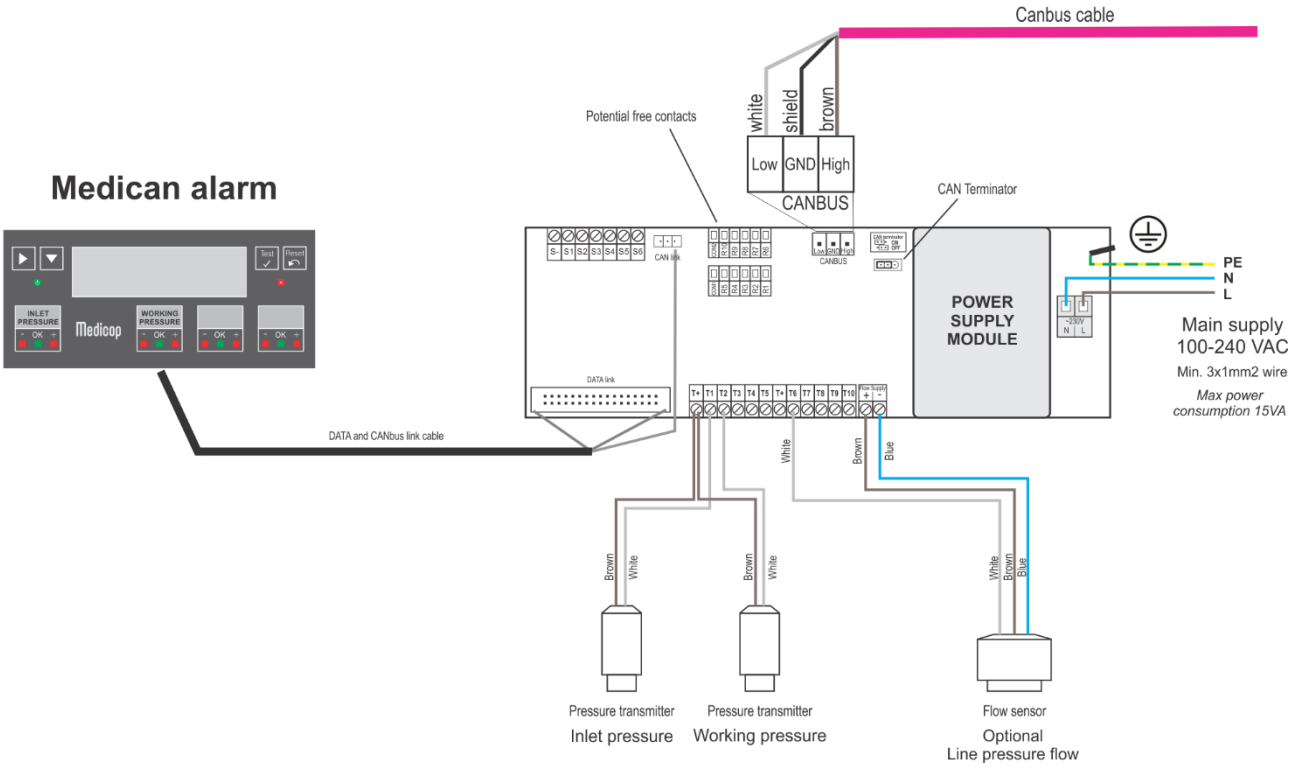


5 Electrical connection

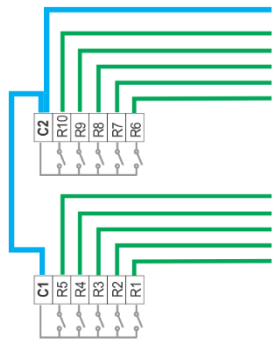
5.1 Sensor connections

For specific information about connections see software information form which is added to each delivery!

5.1.1 Wiring diagram for SQ station



Potential free contacts - details



closed —o—o— *- pressure OK*

open —o/ o— *- pressure HIGH or LOW*

Potential free contacts - default:

R1 – Inlet pressure High
R2 – Inlet pressure Low
R3 – Working pressure High
R4 – Working pressure Low
R5 – *(not used)*
C1 – (COMMON CONTACT)

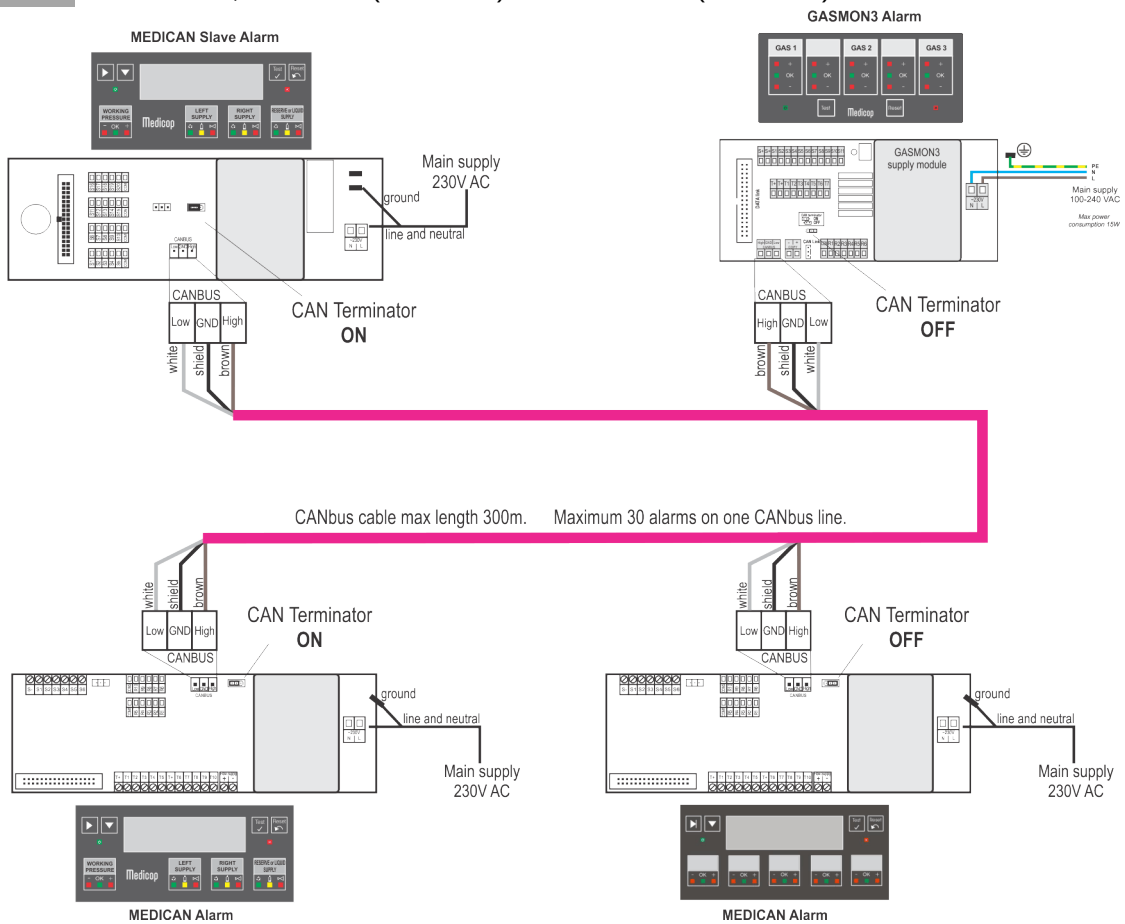
R6 – *(not used)*
R7 – *(not used)*
R8 – *(not used)*
R9 – *(not used)*
R10 – General alarm
C2 – (COMMON CONTACT)

Contact between COMMON and R1, R2, R3,... is closed when there is NO ALARM.

Maximum votage on potential free contact is 50V.
Maximum current on all relays together is 1A resistive load.

5.2 Connection on CANBUS network

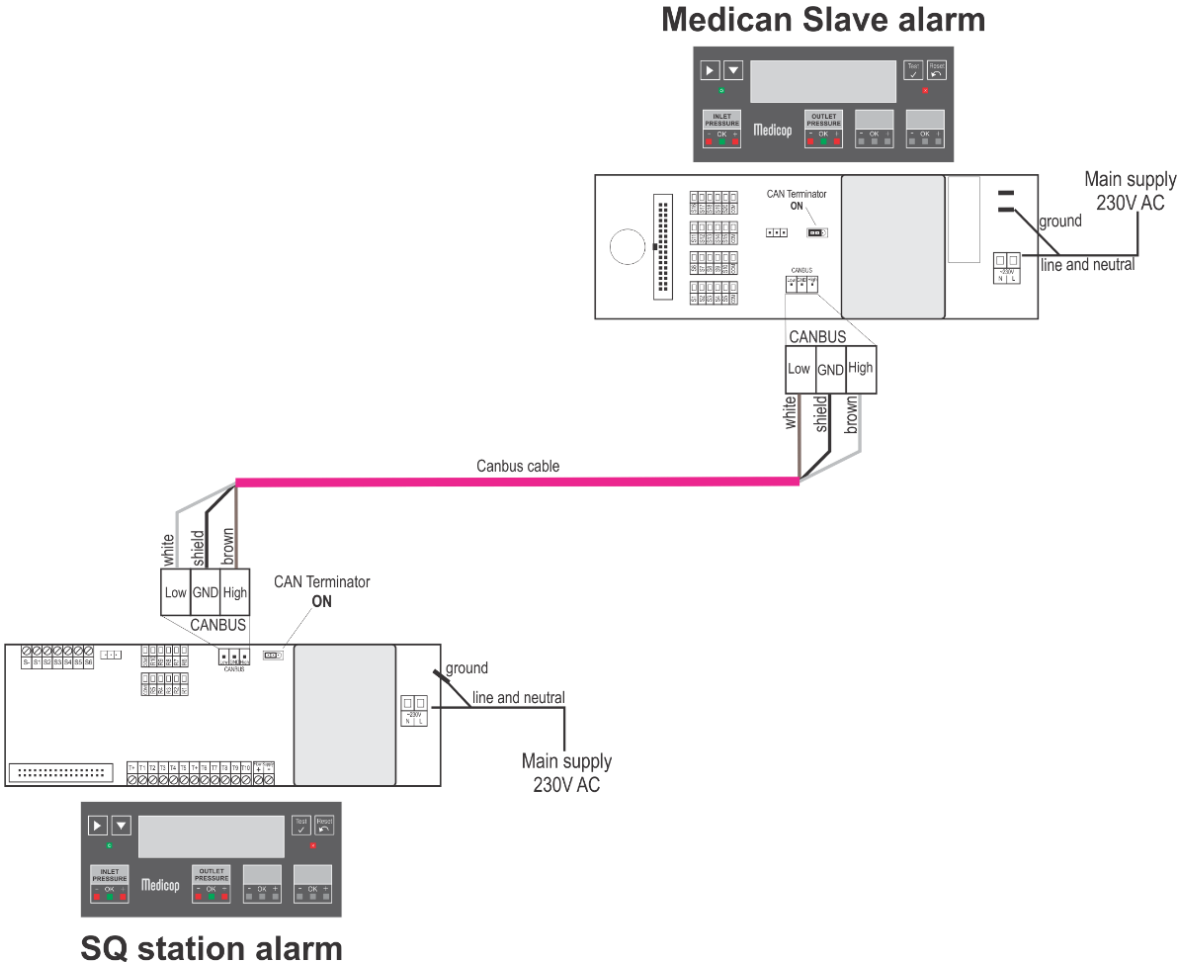
STEP	DESCRIPTION
1	All types of Medican and Gasmon3 alarms can be connected together into CANBUS network. This type of connection requires cable that is specified for CANBUS data transfer. Different manufacturer example: - NORTHWIRE FJ1939202 – 001 max. length 300 m - LAPP CABLE UNITRONIC BUS CAN UL/CSA 1x2x0,22 max. length 100 m - NETBUS CAN Y122 for 100m - NETBUS CAN Y175 for 300m Other cables are possible, but they have to meet following specifications: - Twisted pair with shield. - Conductor cross-section: for distance up to 100 m – around 0.25 mm^2, for distance up to 250 m – around 0.34 mm^2, for distance up to 300 m – around 0.5 mm^2. - Characteristic Impedance @ 1 MHz: 120 Ohms (min. 108, max. 132). - Specific line delay: Vp more that 65 % and less than 5 ns/m. - Capacitance between conductors: 40 pF/m (less than 70 pF/m). - Capacitance conductor to shield: 70 pF/m (less than 110 pF/m). Color of the CAN cable varies by manufacturer. Equally coloured cables must be connected to all alarms; inlet LOW (COLOR 1) and inlet HIGH (COLOR 2).



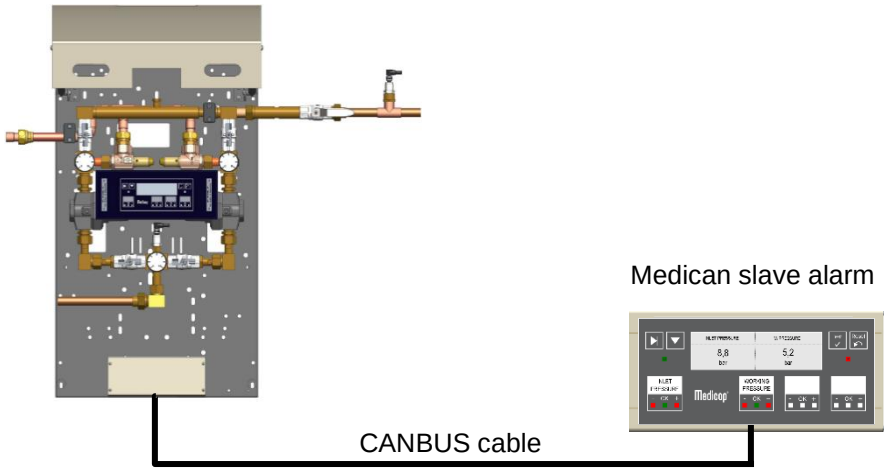
CANBUS SWITCH can be used for networks with big distances any many CANbus lines. One switch can join up to 4 CANbus lines in one big network. Many CAN switches can be used at the same time in one complex network.

5.3 Connection with Medican slave alarm

When two or more alarms are connected together with canbus cable, it is important to correctly set CAN Terminator jumpers on Powers supply modules.
Set jumper to position ON, on the first and last alarm. Set jumper on all alarms in the middle to position OFF.



SQ station with Medican alarm



6 Check before use

STEP	COMPONENT	PROCEDURE
1	Shut-off valves	All shut-off valves must be open.
2	All connections	Check all connection for possible leakage
3	Line pressure regulator	Check Final inspection report and original project specifications for pressure value.
4	Alarm display	Check all buttons, led, display, test button. Compare pressure on manometers and values on display.

7 Maintenance and cleaning

- For cleaning use only fat free cloths.
- Do not use solvents or flammable materials to clean.
- Electrical connections must not come into contact with moisture.
- External surfaces and front panel of alarm display can be cleaned with damp cloths.
- Interior surfaces of manifold can be cleaned with damp cloths.
- For electrical connections and back side of alarm display use dry cloths.

8 Servicing

The facility owner is responsible for necessary service and maintenance of the equipment. All service procedures must be performed by qualified personnel authorized by the manufacturer. Contact your local distributor for information about service intervals and procedures.

9 Product disposal

If the device is no longer in use, it should be properly disposed of to ensure local environmental protection regulations are met. The device does not contain any toxic or radioactive elements that could adversely affect the disposal site. The device itself and its components are not biodegradable in any way. If possible, base materials recycling is recommended.

Contact your local authority for the proper disposal method.

MATERIAL	COMPONENT
Steel	Base plate
Copper	Gas tubes and wires
Aluminium	Cover and mounts for electronics
Brass	Pressure regulators, and pipeline fittings
Plastic	Electronics housing
Glass	Electronics front panel

Note: Detailed material documentation is available upon request.

10 Optional equipment

Read separate manuals for optional equipment like Scales, Flow sensor, Modbus converter, 4-20mA duplicator card…

11 Technical specifications

	SQ station						
Manifold type	30	35	50	100	120	170	200
Flow capacity, one regulator, 10% pressure drop ** Outlet pressure 5 bar [Nm3/h] Outlet pressure 8 bar [Nm3/h] ***	 8 17		 37 60		 110 120	 180 190	 200 200
Max. inlet pressure [bar]	20						
Outlet pressure [bar]	1 – 10						
Number of LP valves	2						
Number of safety valves	2						
Power supply [V]	100-240 VAC 50/60 Hz						
Power consumption [VA]	18						
External circuit breaker [A]	10						
Pressure transmitter accuracy	Error max ±2 % FS						
Operating temperature [°C]	-20 to +50						
Relative humidity	5 - 95% non condensing						
Degree of protection (IP rating)	IP65						
Atmospheric pressure range [kPa]	70 - 106						
Ideal storage conditions	Temperature 15 – 27°C, Humidity 30 – 60%						
Alarm	Medican						
Transmitters	10						
Potential free contacts	10						
*Contacts like reed or pressure switch	6						
*Flow sensor	•						
*Modbus converter	•						
*4-20 mA duplicator card	•						
*External alarm	•						
Weight [kg]	29 / 29 / 30 / 33 / 31 / 33 / 36						
Dimensions without HP headers[mm]	515x840x180 (30 / 35 / 50 / 100 / 120 / 170 Nm^3/h) 620x900x180 (200 Nm^3/h)						
Standards and directives	EN ISO 7396-1, HTM 02-01 and MDD 93/42/EEC						

12 Revision history

DATE	VERSION	CHANGES
10.01.2018	v2.0	Initial release
17.04.2018	v2.1	Connection clamp for flow sensor (corrected to T6)
xx.xx.xxxx	v2.2	Updated Chapter 1, 11

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