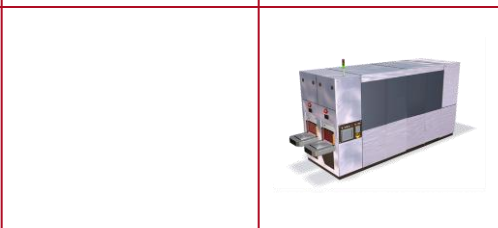




OMRON Corporation
Electronic & Mechanical Components Company
Introduction to Business

Applications

Application Examples



AV/Digital Products

Home Appliances

IT & Communications

Industrial

Automotive

Energy

Medical

Building Automation

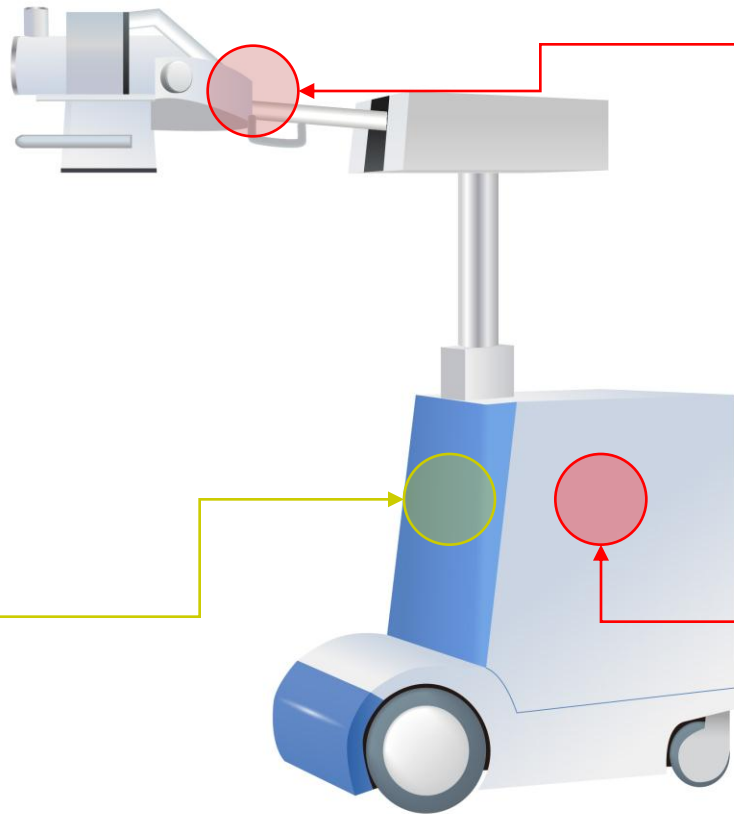
Vending Machines

Amusement Devices

X-Ray Equipment

Medical


- Relays
- Switches
- Connectors
- MEMS Sensors
- Micro Sensing Devices
- Image Sensing Technology



Radiation Devices

Device signal connection applications

PCB Relays
G6K/G6J-Y



Control Panels

Settings


Tactile Switches
B3SL/B3FS



Capacitors

Urgent block of high voltage

DC Power Relay
G9E Series



Patient Monitor / Kiosk / Dialysis

Medical

- Relays
- Switches
- Connectors
- MEMS Sensors
- Micro Sensing Devices
- Image Sensing Technology

LCD Display

Main board to LLD

FPC/FFC Connectors
XF2/3




Internal PCBs

Board to wire conection

MIL Connectors
XG4/5/2

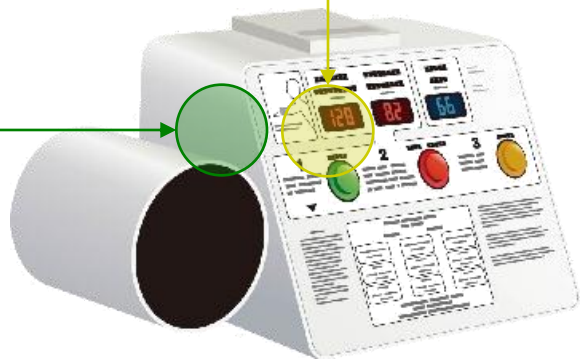
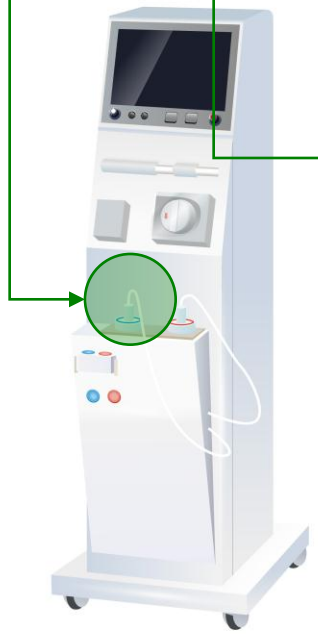
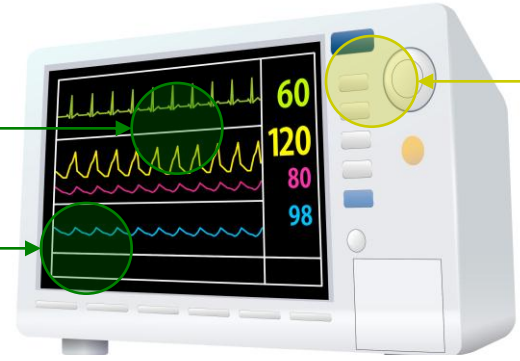
DIN Connectors
XC4/5/6/7



Control Section

Settings

Long-stroke
Tactile Switches
B3AL/B3F/B3FS




| | | | |
|-----------------------|--------------------------|------------|--------------|
| Relays | Switches | Connectors | MEMS Sensors |
| Micro Sensing Devices | Image Sensing Technology | | |

Inside Devices

Measuring flowrates of oxygen and nitrous oxide

**MEMS Flow Sensors
D6F-P/PH**

D6F-PH/200L digital



Inside Devices

Monitoring pressure


**MEMS Pressure Sensors
2SMPP-02**



Inside Devices

Measuring flowrates of oxygen and nitrous oxide

**MEMS Flow Sensors
D6F-20(LPM)**




Control Section

Settings


**Long-stroke Tactile Switches
B3AL/B3F/B3FS**



Door

Door inter-lock Safety detection

**Subminiature Basic Switches
SS**



Ultrasound / MRI (Magnetic Resonance Imaging system)

Medical

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■ Relays
 ■ Switches
 ■ Connectors
 ■ MEMS Sensors
■ Micro Sensing Devices
 ■ Image Sensing Technology

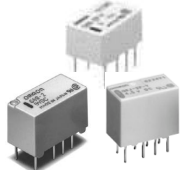
Control PCBs

Switching probe sensors, signal switching, and image switching

MOS FET Relays
G3VM



Signal Relays
**G6S/G6K/
G6J-Y**



High-frequency Relays
G6K-RF



Control Panel

Settings



Long-stroke
Tactile Switches
B3AL/B3F/B3FS

Between PCBs

Signal connections

HM Connectors
XC8/9



Half pitch Connectors
XH3/4



DIN Connectors
XC5



Power Supply and Contactors

Controlling drives

Power Relays
**G2R/
G6B/G6C**



Control PCBs

Switching probe sensors

MOS FET Relays
G3VM



Interface Connections

Interface connections

D-sub Connectors
XM2/3/4



USB Connectors
XM7



Sensor Module Connections

Sensor module connections

FPC/FFC Connectors
XF2/3



Power Supply

Turning equipment ON and OFF

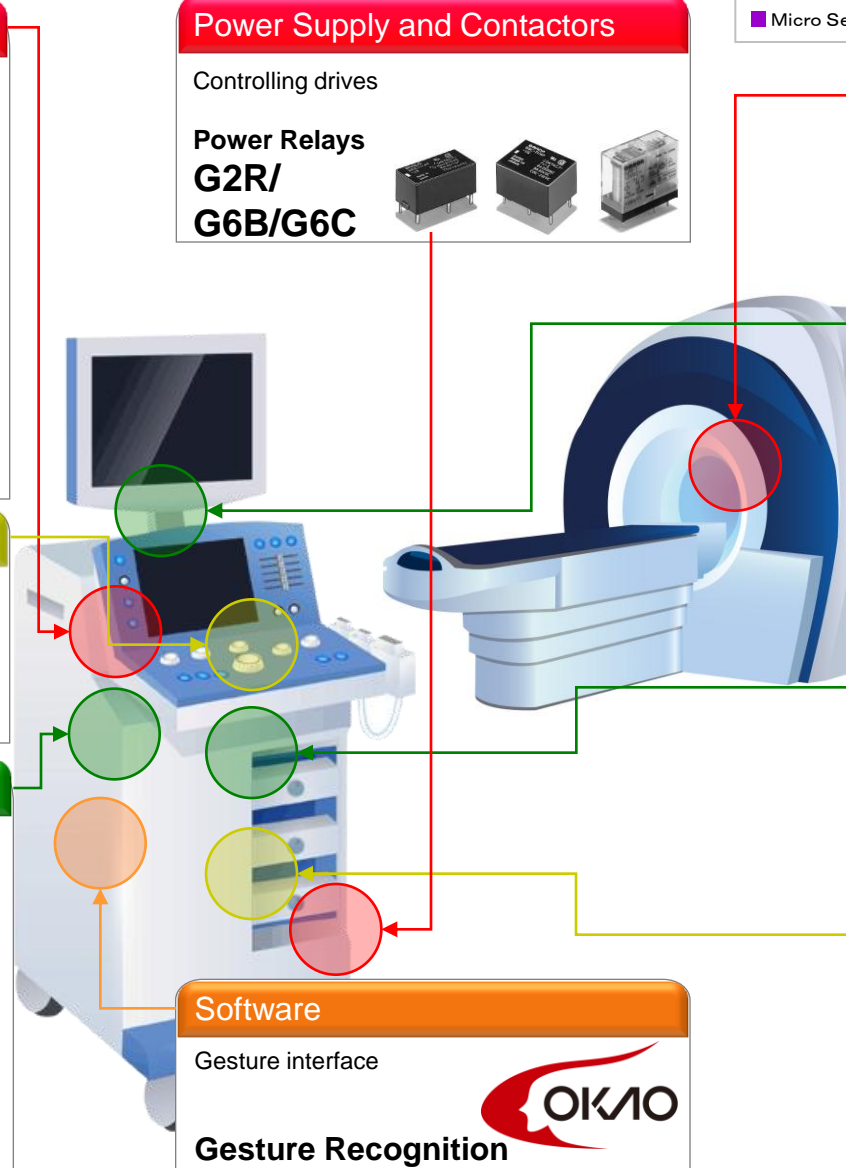
Rocker Switch
A8A/A8L/A8W



Software

Gesture interface

Gesture Recognition





Digital output, high accuracy, small size

Product Image



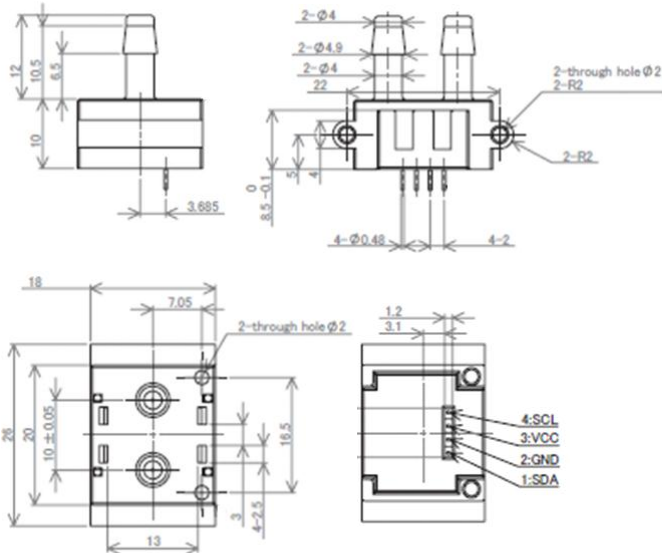
Applications

- HVAC / VAV
- Anesthesia
- Ventilator
- CPAP
- Oxygen concentrator

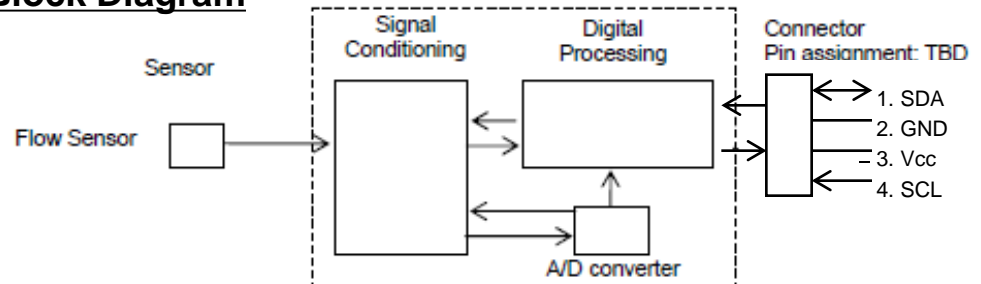
Target Spec.

| | | | |
|--------------------------|--------------------------------|-------|--------|
| Pressure Range | 0 to 250Pa | ±50Pa | ±500Pa |
| Supply voltage | 2.3 to 3.6 V (Typ. 3.3V) | | |
| Span accuracy | 3 %R.D. | | |
| Span repeatability | 0.5 %R.D. | | |
| Temperature compensation | +/- 0.5 %RD / 10 degree C | | |
| Resolution | 12 bits | | |
| Response time | Typ. 25 ms Max. 50 ms @12 bits | | |
| Interface | I2C | | |
| Operating temperature | -20 to +80 degree C | | |
| Storage temperature | -40 to +80 degree C | | |
| Orientation influence | Less than repeatability error | | |
| 0 point tolerance | +/- 0.2 Pa | | |

Dimensions



Block Diagram



▶ Spec. of D6F-200L digital



Digital output, high accuracy, small size

Product Image



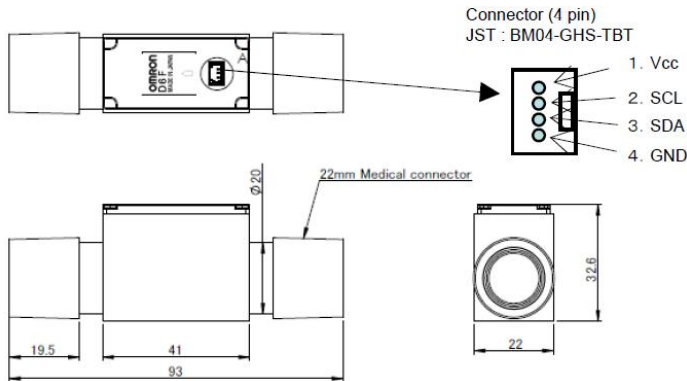
Applications

- Anesthesia
- Ventilator
- CPAP
- Oxygen concentrator

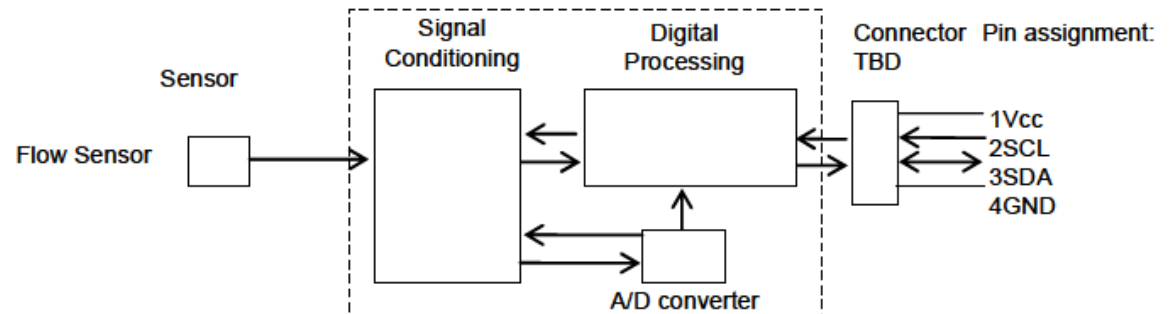
Target Spec.

| | |
|---|-------------------------|
| Measurement Range | 0 to 200 L/min. |
| Span accuracy | 3%R.D. |
| Offset accuracy | ±1 L/min. |
| Temperature-compensation | ±0.5%R.D. / 10°C |
| Resolution | 16 bits |
| Response time | Max. 5ms @16bits |
| Pressure drop | Max. 300Pa at 200L/min. |
| Warm-up time for first reliable measurement | TBD |
| Interface | I2C (SPI) |
| Operating temperature | -10°C to +60°C |
| Storage temperature | -30°C to +80°C |

Dimensions



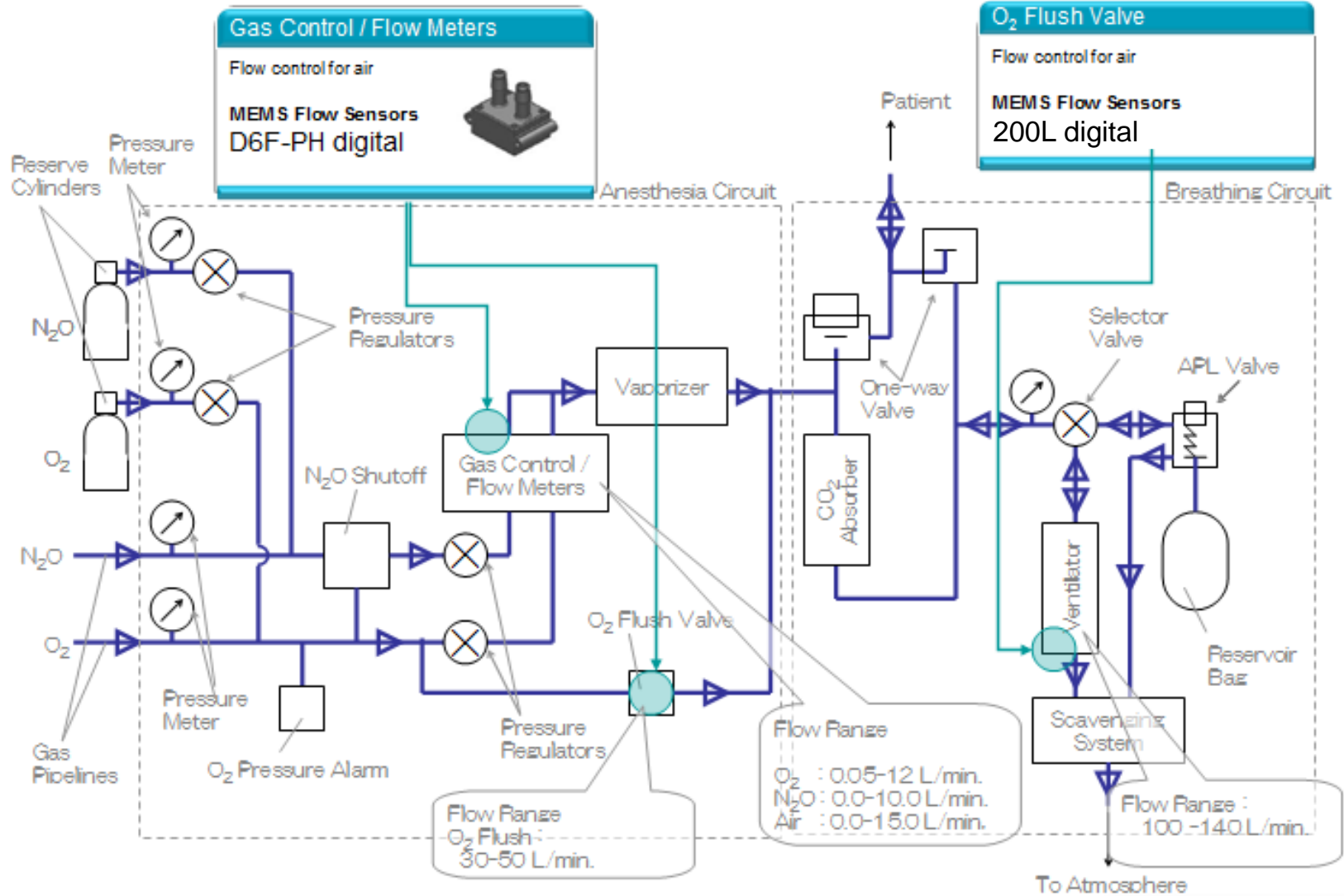
Block Diagram



▶ [Back to Anesthesia / Ventilator application](#)

Application Examples MD Sensors

Inside of Anesthesia



Note: Reproduced from Masuiki Masuikairo. Masuika Sinryo Practice. 2006 - Anesthesia Configuration

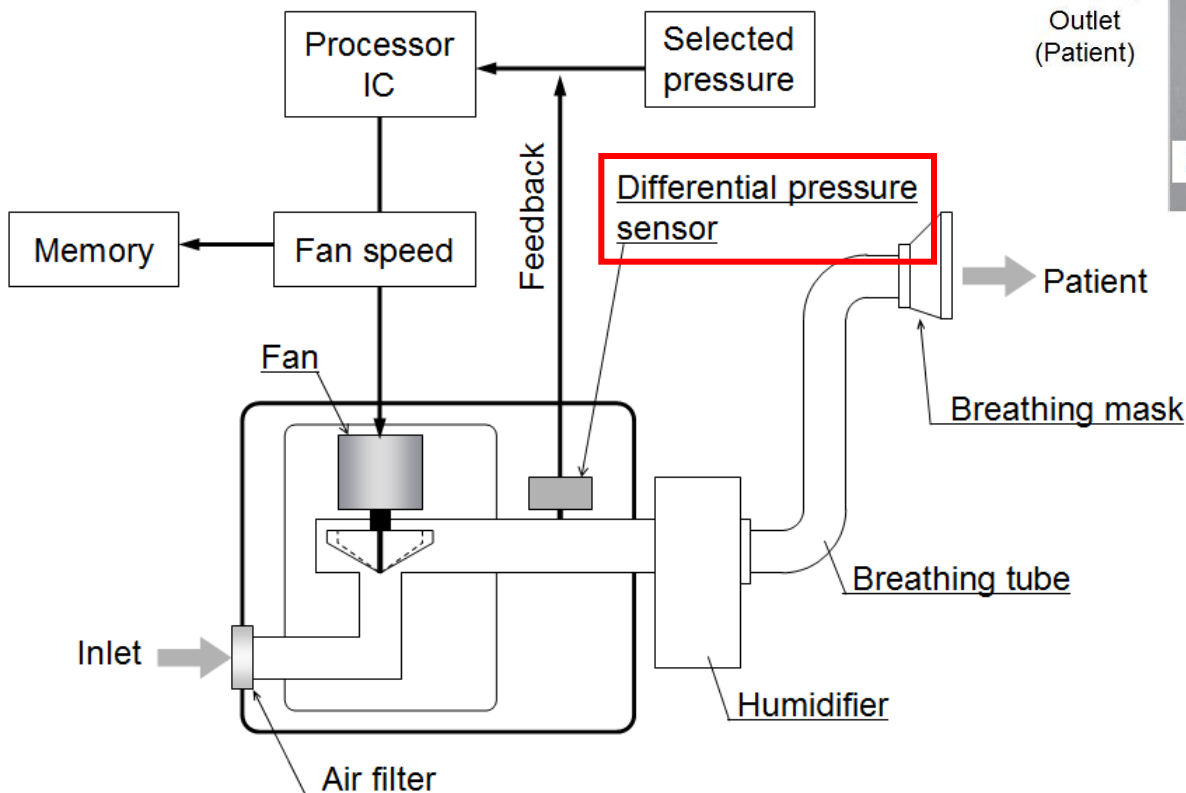
▶ Other applications

Inside of CPAP

CPAP : Continuous Positive Airway Pressure

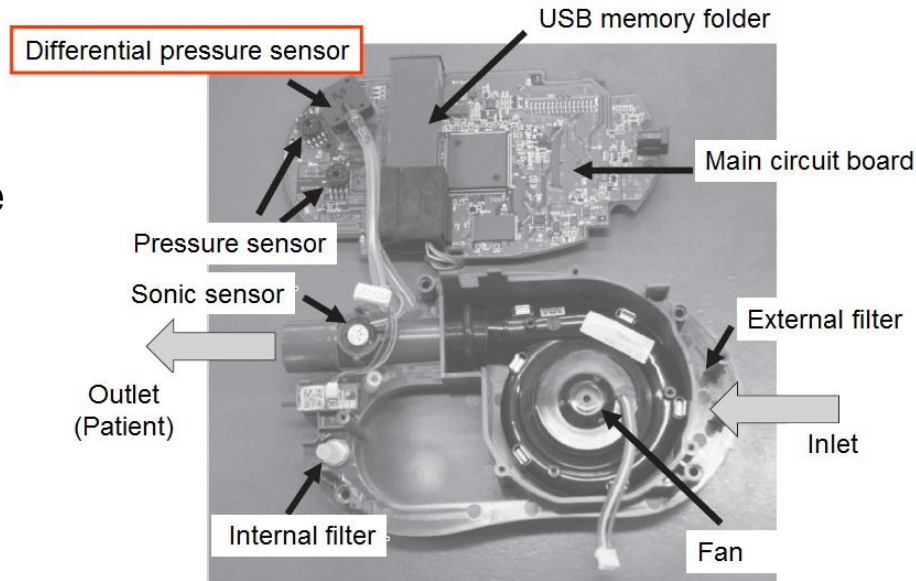
■ Schematic view of CPAP

(reproduced from reference 1)



reference 1:

Dr. Adriano Pittarelli : High Precision Pressure Sensors in CPAP Respiratory Therapy Equipment



Inside of CPAP

(reproduced from reference 2)

reference 2:

Yutaka Tokunaga : Structure of CPAP as Medical Device / Sleep Medicine 5 : 83-89, 2011

(徳永豊:医療機器としてのCPAPとその仕組み/睡眠医療5:83-89, 2011)

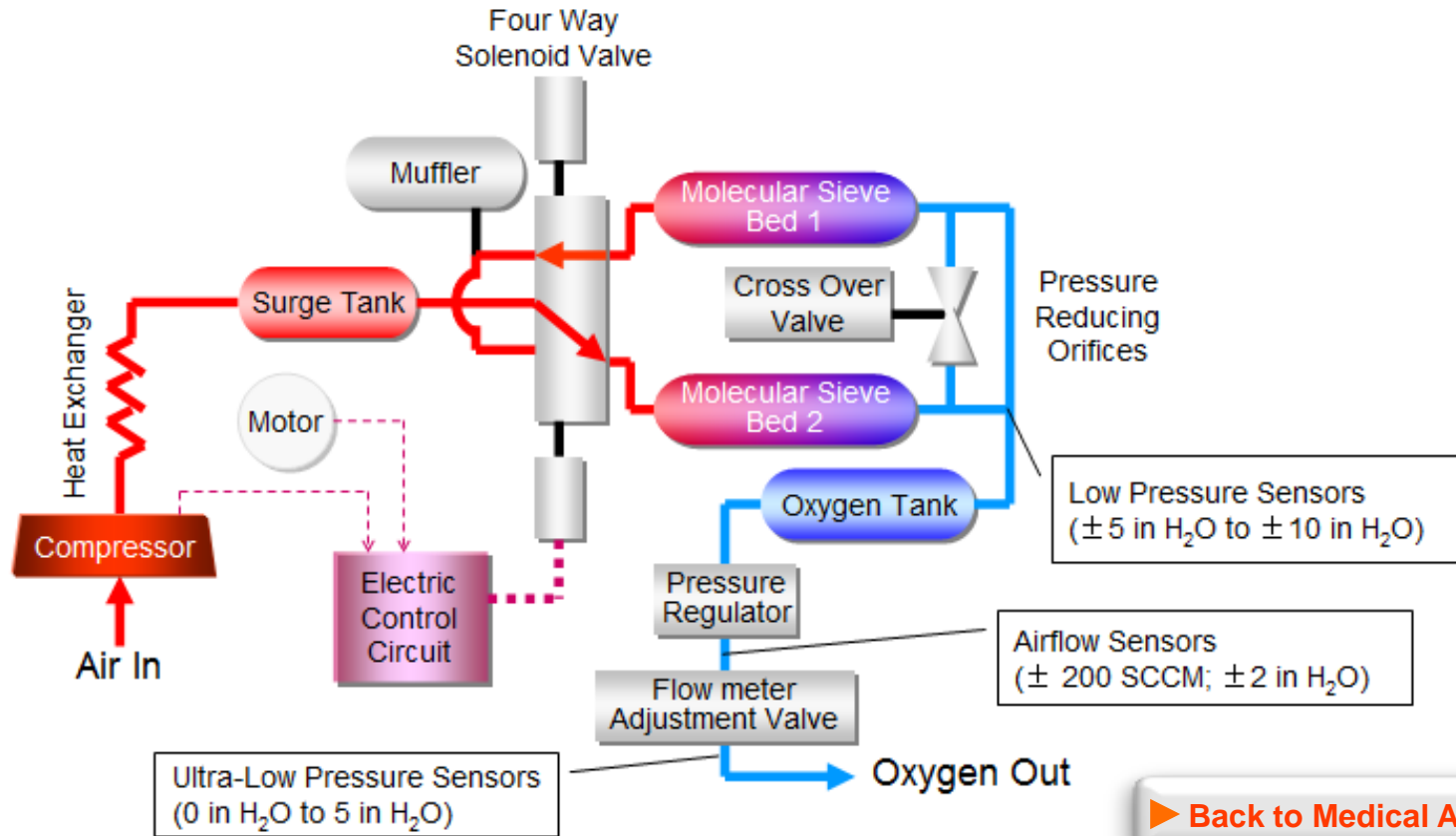




Oxygen concentrators are used for oxygen therapy; a medical treatment that provides higher levels of oxygen concentration to vital tissues and organs in the body for the patients of asthma, chronic bronchitis, anemia, pulmonary edema and congestive heart failure.

■ **Schematic view of Oxygen Concentrator**

(reproduced from reference 1)



▶ [Back to Medical Applications](#)