



etCO<sub>2</sub>

SpO<sub>2</sub>

IBP

OEM Modules for  
Patient Monitoring

2017/2018

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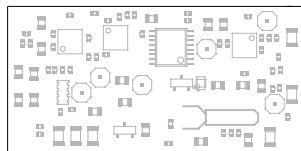
# EG00352

## Pulse Oximeter OEM Module



# SpO<sub>2</sub>

- Advanced 32-Bit processor technology with fourth generation algorithm, recommended for infants and adults
- Small size ( 40 x 20 mm ), maximum height 6 mm
- Lock-in based signal recovery down to a pulsation of 0.05% ( AC/DC ratio )
- Ultra low noise design for highest performance on centralized patients
- Greatly improved suppression of ambient light
- Lowered influence of electromagnetic disturbances
- Easily integrable into handheld and desktop devices
- Single power supply ( 3.3 V DC ), 50 mW
- Serial TTL level serial UART interface
- Transmission of SpO<sub>2</sub>, pulse rate, plethysmographic waveform, "quality"–signal, status information, and perfusion index
- High flexibility in interface protocols
- Measurement of pulse rate between 30 – 248 bpm
- Measurement of SpO<sub>2</sub> between 0 and 100%
- Data of desaturation study available for regulatory purposes
- Complete line of probes available, coded or uncoded
- Complies with ISO 9919:2009 and ISO 80601-2-61



Original Size

# PEARL100\*

## Pulse Oximeter OEM Module



# SpO<sub>2</sub>

- Advanced signal processor technology with artefact suppression, recommended for neonates, infants and adults
- Small size (77 x 53 mm), maximum height 6 mm
- Lock-in based signal recovery down to a pulsation of 0.05% ( AC/DC ratio )
- Ultra low noise design for highest performance on centralized patients
- Greatly improved suppression of ambient light and electromagnetic disturbances
- Easily integrable into handheld and desktop devices
- Single power supply ( 3.3-5.5 V DC ), 100 mW (@ 3.3 V)
- RS232 and TTL level serial UART interface
- Transmission of SpO<sub>2</sub>, pulse rate, plethysmographic waveform, "quality"-signal, status information, and perfusion index
- High flexibility in interface protocols
- Measurement of pulse rate between 30 and 248 bpm
- Measurement of oxygen saturation between 0 and 100%
- Data of desaturation study available for regulatory purposes
- Complete line of probes available, coded or uncoded
- Complies with ISO 9919:2009 and ISO 80601-2-61



\* Pulse Enhancement Artefact Rejection Logic  
PEARL is a registered trademark of Medlab GmbH

# PEARL200\*

## Pulse Oximeter OEM Module



# SpO<sub>2</sub>

- Advanced signal processor technology with fourth generation algorithm and artefact suppression, recommended for neonates, infants and adults
- Very small size (55 x 31.5 mm), maximum height 4 mm
- Position of probe and host connector identical to PEARL100 board
- Lock-in based signal recovery down to a pulsation of 0.05 % (AC/DC ratio)
- Ultra low noise design for highest performance on centralized patients
- Greatly improved suppression of ambient light and electromagnetic disturbances
- Easily integrable into handheld and desktop devices
- Single power supply (3.3 V DC), 90 mW for average finger thickness
- CMOS level serial asynchronous interface
- Transmission of SpO<sub>2</sub>, pulse rate, plethysmographic waveform, perfusion index, "quality"-signal, and status information
- Measurement of pulse rate between 30 and 250 bpm
- Measurement of oxygen saturation between 0 and 100 %
- Complete line of probes available, coded or uncoded
- Complies with ISO 9919:2009 and ISO 80601-2-61



\* Pulse Enhancement Artefact Rejection Logic  
PEARL is a registered trademark of Medlab GmbH

# EG01000

## One Channel ECG Module



# ECG

- Digital filtering including 50 or 60 Hz notch filter
- Small size ( 77 x 53 mm ), maximum height 10 mm
- Single power supply ( 5 V DC ), 100 mW
- RS232 and TTL level serial UART interface
- Can be used for highly accurate ECG triggering
- Integrated patient isolation according to IEC 60601-1
- Integrated defibrillation protection
- Integrated lead-off detection
- Transmission of pulse rate and ECG waveform
- Status messages and commands sent over serial interface
- Measurement of pulse rate between 30 and 248 bpm
- Three amplification stages
- Three curve transmission speeds
- ECG cables and evaluation kit available



### Applications:

Simple ECG Monitors

ECG Triggering for CT scanners, Gamma Cameras aso.

# EG01010

## Three Channel ECG Module



# ECG

- Advanced 32 Bit signal processor technology with digital filtering
- Small size ( 88 x 53 mm ), maximum height 10 mm
- Monitors Einthoven I, II or III with three lead cable
- Measurement of respiration rate over the electrodes (Option)
- Single power supply ( 5 V DC ), 200 mW
- RS232 and TTL level serial UART interface
- Integrated patient isolation according to IEC 60601-1
- Integrated defibrillation protection
- Integrated lead-off detection
- Complies with the newest version of IEC 60601-2-27
- Transmission of pulse rate and ECG waveform
- Measurement of pulse rate between 30 and 248 bpm
- Three amplification stages
- Three curve transmission speeds
- ECG cables and adapters available



### Applications:

ECG Monitoring

ECG Triggering for CT scanners, Gamma Cameras aso.



# EG04000

## Six Channel ECG Module



# ECG

- Advanced signal processor technology with digital filtering
- Small size (40 x 21 mm), maximum height 5 mm
- Monitors I, II, III, aVR, aVL, aVF with four lead cable
- Monitors I or II or III with three lead cable
- Integrated pacemaker detection
- Lead-off detection for each electrode
- Single power supply (3.3 V DC), <75 mW
- CMOS level serial asynchronous interface
- Highly accurate ECG trigger output
- Complies with the newest revision of IEC 60601-2-27
- Transmission of pulse rate, ECG waves and status messages
- R-wave detection, measurement of pulse rate (30 - 248 bpm)
- Four amplification stages, four curve transmission speeds
- ECG cables and adapters available



### Applications:

Low power ECG monitoring

Portable ECG recorders

Holter recorders

Event recording

Telemetry applications



# EG05000

## Seven Channel ECG Module



# ECG

- Advanced 32 Bit signal processor technology with digital filtering
- Small size ( 88 x 53 mm ), maximum height 10 mm
- Monitors I, II, III, aVR, aVL, aVF, and C with five lead cable
- Monitors I, II, III, aVR, aVL, aVF with four lead cable
- Monitors I, II, III with three lead cable
- Measurement of respiration rate over the electrodes ( Option )
- Single power supply ( 5 V DC ), 250 mW
- RS232 and TTL level serial UART interface
- Highly accurate isolated ECG Trigger output pin
- Patient isolation according to IEC 60601-1 ( 4 kV, Type CF )
- Integrated defibrillation protection
- Integrated pacemaker detection and lead-off detection
- Complies with the newest version of IEC 60601-2-27
- Transmission of pulse rate, ECG and respiration waveform
- Measurement of pulse rate between 30 and 250 bpm
- Four amplification stages
- Three curve transmission speeds
- ECG cables and adapters available



### Applications:

High-End ECG Monitoring

ECG triggering for CT scanners, Gamma Cameras aso.

# EG12000

## Twelve Channel ECG Module



# ECG

- Advanced signal processor technology with digital filtering
- Small size ( 88 x 53 mm ), maximum height 10 mm
- Mechanically compatible to the three and five channel modules
- Monitors I, II, III, aVR, aVL, aVF, and C1-C6 with ten lead cable
- Monitors I, II, III, aVR, aVL, aVF, and C with five lead cable
- Monitors I, II, III, aVR, aVL, aVF with four lead cable
- Monitors I, II, III with three lead cable
- Integrated pacemaker detection and lead-off detection for each electrode
- Measurement of respiration rate over the electrodes ( Option )
- Single power supply ( 5 V DC ), 250 mW
- RS232 and TTL level serial asynchronous interface
- Highly accurate isolated ECG Trigger output
- Integrated patient isolation according to IEC 60601-1, class CF
- Integrated defibrillation protection for limb leads
- Complies with the newest version of IEC 60601-2-27
- Transmission of pulse rate, ECG, and respiration waveform
- Four amplification stages, four curve transmission speeds
- ECG cables and adapters available



### Applications:

High-End 12 channel ECG Monitoring

ECG Triggering for CT scanners, Gamma Cameras aso.

# NIBScan

## Non-Invasive Blood Pressure Module



# NIBP

- Advanced 32 Bit signal processor with artefact suppressing algorithm
- Very small size: 80 x 60 mm, maximum thickness 26 mm, weight 85 g
- Innovative pneumatic manifold design
- High reliability due to low pneumatic part count
- Power supply: 5-15 Volt, one supply voltage only
- Low power consumption: max. 2500 mW measuring, 150 mW standby
- Purely oscillometric method, short measurement time
- Preselected or automatic pump-up pressure
- Redundant pressure sensor and pressure relieve valve
- Neonatal and adult mode
- Pulse rate: 30 - 240 bpm - SYS, DIA, MAP blood pressure: 5 - 280 mmHg
- Serial UART interface
- Transmission of pulse rate, systolic-, mean-, and diastolic pressure
- Status messages and commands sent over the serial interface
- Integrated automatic cyclic measurements, Stat mode available
- Complies with the newest version of IEC 80601-2-30
- Complies with EN 1060-1, EN 1060-3, EN 1060-4 and ISO 81060-2
- Clinically validated for adults, children and neonates
- Clinical test data available for regulatory / registration purposes
- Bladderless, reusable cuffs available in six sizes
- Latex free cuffs with bladder available in six sizes
- Neonatal disposable cuffs available



# EG01200

## Sidestream Capnography Module



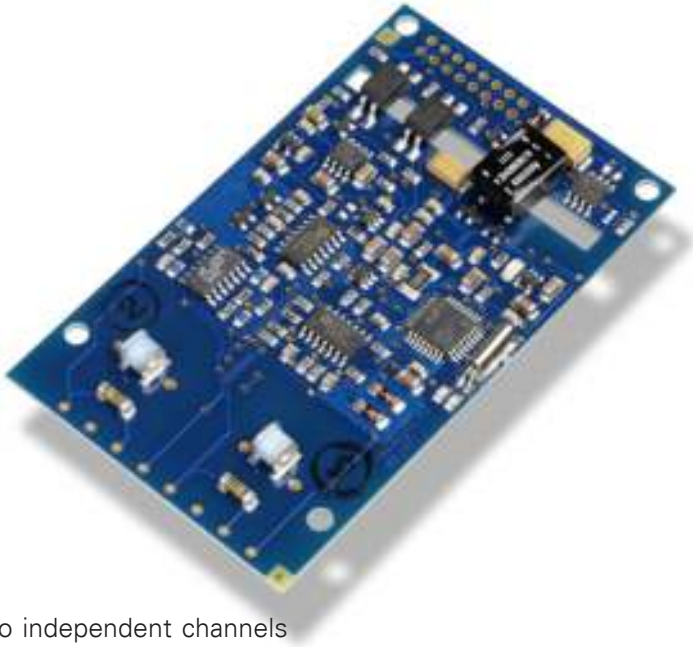
# etCO<sub>2</sub>

- Advanced technology, all compensations integrated
- Small size ( 77 x 53 mm ), maximum height 45 mm
- Single power supply ( 5.6V DC ), low power ( 300-500 mW )
- Measures etCO<sub>2</sub>, inCO<sub>2</sub>, respiration rate
- Capnogram can be transmitted in three different sample rates
- Measurement of respiration rate between 0 and 99 min<sup>-1</sup>
- Measurement of etCO<sub>2</sub> in either mmHg or %Vol ( 0-13% ), STPD
- Monitors bench temperature, ambient pressure, and flow rate
- Regulated flow rates of 60, 100, and 150 ml/min
- User adjustable compensation for N<sub>2</sub>O and O<sub>2</sub>
- Highest quality, long life-time pneumatics integrated ( >10000h )
- Integrated valve for auto-zeroing
- Two-point calibration
- Additional input for FiO<sub>2</sub> sensor ( galvanic oxygen cell )
- High resolution capnogram also on higher respiration rates
- Complies with the newest version of ISO 80601-2-55
- Status messages and commands send over serial interface
- RS232 and TTL level serial UART interface
- Mechanically compatible with other Medlab modules
- Filters and adapters available



# EG02000

## Invasive Blood Pressure Module



# IBP

- Two independent channels
- Works with standard pressure transducers of  $5\mu\text{V}/\text{mmHg}$
- Simulation mode built-in for easy integration into user system
- Waveform transmission speed selectable ( 50, 100, and 150 Hz )
- Displays static pressures and waveforms
- Integrated pulse rate detection: 30 bpm - 250 bpm
- Automatic detection of systolic -, mean-, and diastolic blood pressure
- Measuring range -10 mmHg to +300 mmHg (+/-1% accuracy)
- Zero point can be shifted by +/- 50 mmHg
- Zeroing commands built-in - independently for both channels
- Transmission of pulse rate, systolic -, mean-, and diastolic pressure
- Status messages and commands send over the serial interface
- Lifetime calibration
- Complies with IEC 60601-2-34
- Defibrillation protection and Patient isolation built-in ( 4 kV, Type CF )
- RS232 and TTL level serial UART interface
- Very small size: 88 x 53 mm, maximum thickness 10 mm
- Power supply: 5 Volt, one supply voltage only
- Power consumption: 500 mW max, depending on transducer impedance



# EG00700

## Two Channel Temperature Module



°C

- Two independent channels plus reference channel
- Small size ( 77 x 44 mm ), maximum height 10 mm
- Single power supply ( 5 V DC ), 60 mW
- RS232 and TTL level serial UART interface
- Integrated patient isolation according to IEC 60601-1 ( 4 kV, Type CF )
- Integrated sensor-off detection
- Transmission of temperature values, resolution 0.1°C
- Measuring range 20.1°C up to 45.0°C
- Compatible with all YSI 400 Probes
- Accuracy: +/- 0.1°C + Probe Tolerance



### Applications:

Patient Monitors

Temperature measurement for incubators aso.



# EG00751

## Nine Channel Precision Temperature Module



°C

- Nine independent channels, plus reference channel
- Small size ( 85 x 44 mm ), maximum height 10 mm
- Single power supply (5 V DC), 175 mW
- RS232 and TTL level serial asynchronous interface
- Integrated patient isolation according to IEC 60601-1, class CF
- Packet oriented transmission with checksum
- Transmits up to 10 measurements per second
- Resolution 0.01°C
- Measuring range 15.00°C up to 59.00°C
- Compatible with all YSI 400 Probes
- Defibrillation protection
- Accuracy: +/- 0.01°C to +/- 0.02°C + Probe Tolerance
- Made in Germany



### Applications:

Patient Monitors

Temperature measurement for incubators

Industrial precision temperature measurement



# MP01000

## Multiparameter Patient Monitoring Module



ECG  
SpO<sub>2</sub>  
NIBP  
Temp

### GENERAL

- Advanced signal processor technology with digital filtering for all parameters
- Small size (110 x 100 mm), maximum height 40 mm.
- Single power supply (6-15 V DC), 900 mW ( @7 V, while NIBP not measuring)
- Maximum power requirement 2800 mW, while NIBP measuring
- Power down input, powers down the complete system
- RS232 and TTL level serial asynchronous (UART) interface
- CAN interface with user selectable bit rate and identifier addresses
- Integrated patient isolation in accordance to IEC 60601-1
- Integrated defibrillation protection for ECG and temperature

### ECG

- Monitors I, II, III, aVR, aVL, aVF and one chest lead with five lead cable
- Measurement of pulse rate, range 30 – 249 bpm
- User selectable curve transmission rate and amplification
- Command selectable monitoring - or diagnostic bandwidth
- Integrated pacemaker detection and lead-off detection for each electrode
- Measurement of respiration rate over electrode impedance (optional)
- Highly accurate isolated ECG trigger output
- Complies with newest revision of IEC 60601-2-27

## SpO<sub>2</sub>

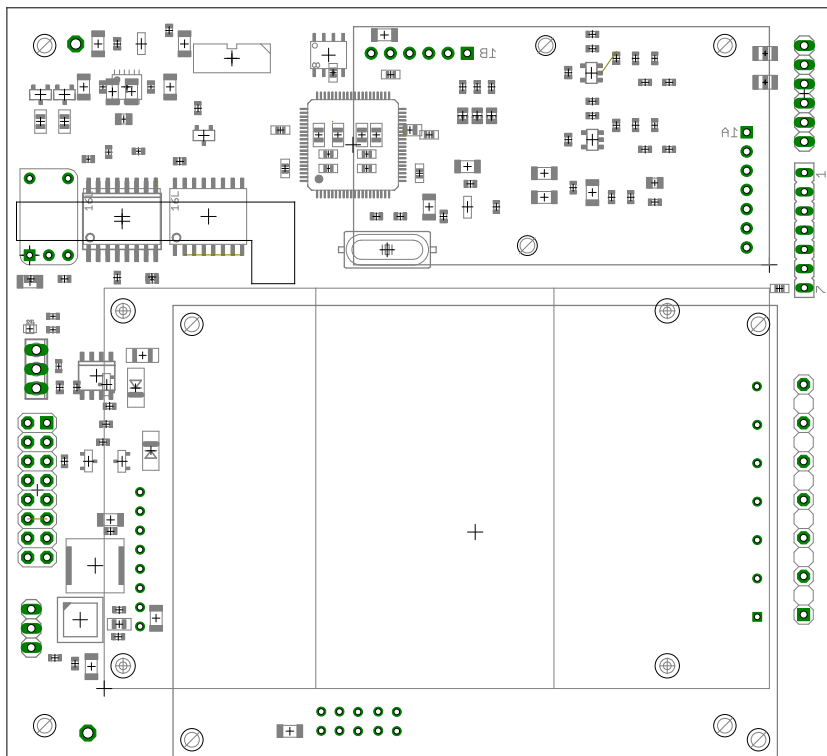
- Lock-in based signal recovery down to a pulsation of 0.05 % (AC/DC ratio)
- Ultra low noise design for highest performance on centralized patients
- Excellent suppression of artefacts, ambient light and EM-disturbances
- Transmits SpO<sub>2</sub>, pulse rate, plethysmographic waveform, perfusion index
- Selectable transmission speed of waveform and averaging of SpO<sub>2</sub>
- Complete line of re-usable and disposable probes available
- Complies with newest revision of ISO 80601-2-61

## NIBP

- Purely oscillometric method, short measurement time
- Redundant pressure sensor and pressure relieve valve for increased patient safety
- Neonatal and adult modes
- Transmission of pulse rate, systolic-, mean- and diastolic pressure
- User selectable automatic cyclic measurements
- Clinically validated for adults and neonates
- Complies with newest revision of IEC 80601-2-30 and ISO 81060-2

## TEMPERATURE

- Two independent channels, plus reference channel
- Measuring range 25.0 °C up to 50.0 °C
- Compatible with all YSI 400 Probes



# SpO<sub>2</sub> probes for EG00352 and PEARL100 / PEARL200



## Ordering Info

Reusable Probes:		
Type	Patient Weight	Order Number
Fingerclip P-200	>20 kg	00535
Fingerclip PS-200	>20 kg	00537
Oxiflex large R-200	>20 kg	00550
Oxiflex small RS-200	>10 kg	00570
Wrap Probe WR-200	>1 kg	00532
Y Probe Y-200	>1 kg	00526

Disposable Probes:		
Type	Patient Weight	Order Number
Disposable Adult	>20 kg	00520
Disposable Child	8 kg - 30 kg	00521
Disposable Infant	5 kg - 15 kg	00522
Disposable Neonate	<5 kg	00523

Medlab PEARL SpO<sub>2</sub> probes can be used with all Medlab pulse oximeters currently sold. They are the result of more than 15 years of experience in developing SpO<sub>2</sub> sensors. By using only the highest quality cabling, a Kevlar re-enforcement and a specially designed cable strain relief, we are able to offer all our reusable probes with a two year warranty.

The standard cable length of the sensors is 140 cm, extension cables are available as an option.



P-200  
Fingerclip probe



PS-200  
Small Fingerclip probe



R-200  
Oxiflex large finger probe



Patient Cable  
Lemo-DSUB



Y-200  
Universal Y-probe



RS-200  
Oxiflex small finger probe



WR-200  
Wrap probe



Extension Cable  
DSUB-DSUB



Disposable probes  
Delivery:  
Package of 24 pieces

# NIBScan Blood Pressure Cuffs



The NIBScan blood pressure cuffs combine comfort with durability. They are designed with great care and made of robust materials, without using latex or PVC.

The textile cuff is coated with a skin friendly material and is easy to clean. The bladder is made of strong but flexible polyurethane for high durability.

NIBScan blood pressure cuffs are available for monitors using single or double connection hoses. They are delivered in six sizes: three adult types, one type to be used on the thigh and two cuffs for children and infants. The cuffs are employed with threaded connectors as a standard, other connectors are available, please see the table on the right side.

## Applications

- Home Care
- Patient Monitoring
- Ambulatory Blood Pressure Recorders











## Ordering Info

Cuffs with one connection hose:		
Size	Limb Circumference	Order Nr
Infant	9-15 cm	90110
Child	14-21 cm	90210
Small adult	20-28 cm	90310
Normal adult	27-35 cm	90410
Large adult	34-44 cm	90510
Thigh	42-52 cm	90610

Cuffs with two connection hoses:		
Size	Limb Circumference	Order Nr
Infant	9-15 cm	90120
Child	14-21 cm	90220
Small adult	20-28 cm	90320
Normal adult	27-35 cm	90420
Large adult	34-44 cm	90520
Thigh	42-52 cm	90620

For the different connection systems, please add the following codes after the order number:

	Threaded connector - standard delivery
	Bayonet connector - Suffix SHP
	Locking connector - Suffix SMQ
	Luer-Lock connector - Suffix SDS
	Double threaded connector - Suffix CK
	Double Luer-Lock connector - Suffix DS
	Double locking connector - male-female Suffix DX
	Double locking connector - female-female Suffix MQ



# EKG

# NIBP

# Temp

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