



At the core of neonatal care

Philips InnerSense Esophageal Temperature Probe + Feeding Tube

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Core temperature:



just a glance away



Thermal instability is an enormous threat to premature neonates. Now, there is a way you can continuously monitor core temperature in your smallest patients. The Philips InnerSense Esophageal Temperature Probe + Feeding Tube (patent pending) takes temperature technology to the core of your smallest neonates. InnerSense shows you temperature changes, in real time, giving you the information you need to intervene promptly.

Know more

Studies show that esophageal temperature is a more accurate, more precise, more responsive, and more reliable surrogate for core (peripheral artery) temperature than are rectal, axillary, or skin temperatures. In these fragile patients, temperature changes can be sudden and dramatic, and skin temperature sensors or axillary spot checks do not promptly reflect what's going on internally. InnerSense is designed to give you a continuous, accurate view of esophageal temperature in a catheter that also includes a feeding lumen, packaged in as little as 5Fr – ideally suited for even the tiniest of patients.

Know early

The fragile development of a premature baby requires precise, responsive, and reliable technology that offers clinicians a comprehensive view of their patient's condition. With InnerSense, esophageal temperature is continuously displayed on almost any bedside monitor* – so that you can see temperature instability at a glance and have time to respond appropriately. Better still, by combining InnerSense with Philips IntelliVue patient monitors, you get a deep insight into neonatal thermal status. Optionally, you can measure multiple temperature values and the deltas between them, and can display these, trend them, show histograms on the screen, and finally store them for event evaluation.

*InnerSense is compatible with monitors that use the Medical Series 400 temperature resistance curves.

A comprehensive view of the most delicate patients

Uncontrolled temperature instability puts fragile newborns at risk of serious long-term health complications, ranging from hypoglycemia and hypoxia to respiratory distress and even death. In fact, more than four million babies worldwide die each year during the first four weeks of life,¹ and many more suffer from hyper- and hypothermia. According to UNICEF, preventing and managing hypothermia could help reduce neonatal mortality or morbidity by 18% to 42%.²

Yet hypothermia is remarkably common among preemies at the point of NICU admission. In fact, one study of U.S. hospitals found that core temperatures for vulnerable preemies were below 36°C (96.8°F) at the point of NICU admission in almost half the cases. That same study found that for premature infants weighing between 401g and 1499g at birth, each 1°C decrease in NICU admission temperature was associated with a 28% increase in mortality, as well as an 11% increase in late-onset sepsis.³

By continuously monitoring esophageal core temperature, you can get a clear real-time indication of the thermal condition of these fragile patients, showing you when temperature rises or falls dangerously in time to take appropriate clinical action.



“Please, do not disturb.”

This little phrase has become the driving mantra behind providing developmentally supportive care in the NICU. In fact, many clinical studies recommend limiting interruptions for preemies.⁴

For these delicate patients, any disturbance or agitation can adversely impact heart rate, calorie use, weight gain, and development. InnerSense reduces the frequent disturbances of taking temperatures by offering a continuous way to measure core temperature. And it is designed so that neonates can focus on feeding and growing, exactly as they should.



Philips Integrative Developmental Care Model*



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InnerSense makes sense

Philips InnerSense contributes to the practice of Developmental Care, offering esophageal temperature monitoring combined with nutritional delivery that promotes several of the core measures of Developmental Care.

- **Partnering with Families:** Support temperature monitoring during skin-to-skin care.
- **Safeguarding Sleep:** Lessen sleep disruptions by automating core temperature monitoring.
- **Optimizing Nutrition:** Support delivery of nutrition, medicine, and fluid through a conventional oral/enteral feeding tube.
- **Positioning & Handling:** Maintain developmentally appropriate positioning while limiting the handling of the fragile neonate.

In the NICU and beyond

Designed for the tiny bodies of premature infants, the range of InnerSense sizes means it can be useful also for full-term infants or small pediatric patients where temperature measurement is clinically indicated.

Examples of applications include — but are not limited to — the following:

- Therapeutic Cooling of term infants when precise temperature visibility and control is critical.
- Pediatric surgery and cardiac patients, who are anesthetized or intubated and need assistance measuring and managing their temperatures.



InnerSense Features

Temperature

- Sensor: Series 400 thermistor
- Sensor placement: Auto-locates in the distal esophagus, when feeding tube is placed properly
- Plug: 3.5mm
- Cable length: 80cm from manifold to temperature connector
- Monitoring: Continuous display of esophageal temperature on bedside monitor
- Monitoring: Display and optional comparison of multiple temperatures on Philips IntelliVue monitor
- Accuracy: $\pm 0.1^{\circ}\text{C}$ from 32°C to 43°C ($\pm 0.2^{\circ}\text{C}$ from 25°C to 45°C)

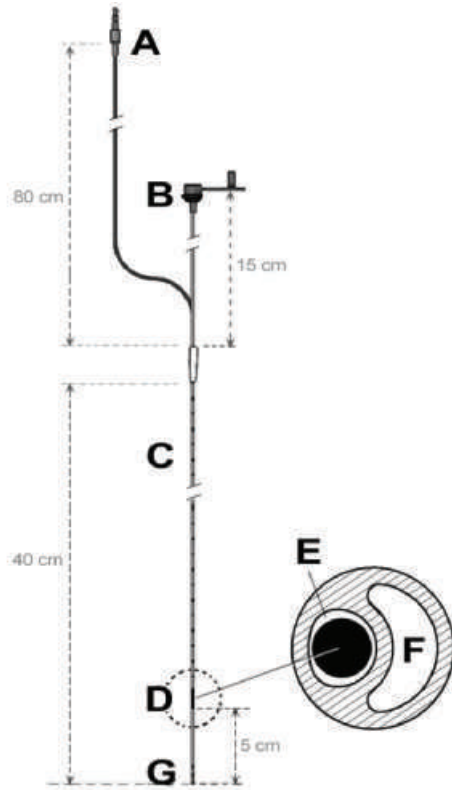
Catheter construction: Polyurethane, dual lumen, temperature lumen integrated into, but sealed from, feeding lumen

Indwelling duration: Up to 28 days

Feeding

- Connector: One-piece design; accommodates Philips Children's Medical Ventures and other leading (non-IV) oral/enteral syringes and extension sets
- Connector: Available in either purple or orange, to accommodate hospital preferences for enteral feeding color.
- Catheter sizes: 5Fr, 6.5Fr, 8Fr
- Catheter length: 15cm (feeding connector to manifold); 40cm (manifold to tip)
- Catheter markings: 5cm to 30cm (each cm)
- Distal tip (exhaust): Two non-opposing lateral eyes; rounded, closed tip

How it really works



Product description

InnerSense contains two separate lumens: one for feeding, the other for temperature.

A Temperature Connector connects to a compatible monitor via an extension cable.

B Feeding Connector with Tethered Closure Plug accepts oral/enteral syringes and enteral feeding sets.

C Feeding Tube with Radiopaque Stripe marked in 1cm intervals from 5 to 30cm from the distal tip.

D Temperature Sensor fixed between the 5cm and 6cm markings. The sensor auto-locates in the distal esophagus when placed properly.

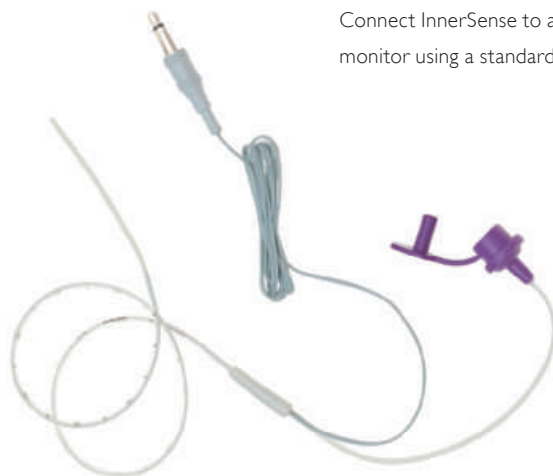
E Temperature Sensor Lumen isolates the temperature probe components from the fluid path.

F Feeding Lumen isolates feeding fluids from the temperature probe.

G Closed Rounded Tip with two offset lateral eyes facilitates emptying of liquid from tube.



InnerSense conveniently combines an esophageal temperature probe and a conventional NG/OG enteral feeding tube into a single device.



Connect InnerSense to a NICU bedside monitor using a standard adapter cable.

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¹ Lawn JE, Couzens S, Zupan J for the Lancet Neonatal Survival Steering Team. 4 million neonatal deaths: When? Where? Why? The Lancet 2005; 365: 891-900.

² UNICEF. Progress for children: a world fit for children statistical review. New York, NY: United Nations Children's Fund; 2007.

³ Laptook AR, Salhab VV, Bhaskar B; Neonatal Research Network. Admission temperature of low birth weight infants: predictors and associated morbidities. Pediatrics 2007;119:e643-9.

⁴ Periano & Algarin 2007, Fitzgerald et al. 1998. September, 2011.

Please visit www.philips.com/innersense for the full InnerSense story



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