

# Scuba water quality probes



# Scuba water quality probes

Royal Eijkelpkamp offers a wide range of indicators, sensors and many other kits and packages to help you with your water analysis. Our Royal Eijkelpkamp water quality range contains an excellent selection of Scuba water quality probes suitable for various applications. All Scuba probes may be used for discrete sampling, profiling, as self-powered loggers, or connected to telemetry stations for continuous real-time monitoring, with water quality data accessible via cloud-based software. The Scuba probes communicate RS-232, SDI-12 or Modbus, for flexibility in connecting to a variety of different data loggers and PLCs. We offer the largest selection of water quality sensor technologies in the industry. So in addition to standard configurations, each Scuba probe may be customised for your specific application. Pick sensors of your choice to fully populate larger probes, or add a battery pack to convert a probe to a logging device.

## Rugged

- Anti-corrosive housings and sensors
- Industry leading 3 year warranty
- Anti-fouling options

## Intelligent

- Sensor health indicator
- Automatic recording of internal calibration data
- LED status indicator

## Simple

- One touch and automatic data capture
- Fast easy calibration
- Intuitive software

## Medium sensor options

- PAR
- Chlorophyll
- Blue-green algae
- Rhodamine
- Crude oil
- Refined oil
- CDOM/FDOM
- Fluorescein dye
- Optical brighteners
- Tryptophan

\* Depth and ORP (must have pH) optional on any probe



All Scuba water quality probes feature anti-corrosive housings and sensors, robust marine bulkhead connectors, and additional anti-fouling options (copper gauze). The larger probes feature a central wiper system. LED status indicators on each sensor provide important diagnostic information. Each probe includes an industry-leading 3 year warranty. Operate your probes with a variety of display options, via a direct, Bluetooth or telemetry connection. All probes are connectable with our modems (GDT Multiple or Prime Plus). Intuitive control software, available for Windows, iOS and Android is included at no additional cost with every probe. Offered as complete packages you are provided with everything you need to get testing water.

## Scuba Trimeter

Get all the features of a Scuba, including top-grade sensors and simple software, in an instrument designed for economy.

The Scuba Trimeter (Ø 50 mm) holds any one sensor\* (e.g. turbidity, dissolved oxygen (DO) or EC), plus temperature and depth sensors (both are optional). For example, a 3-parameter configuration could be turbidity, temperature, and depth. Another example could be Dissolved Oxygen (DO) and temperature. Offered as complete packages you are provided with everything you need to get testing water.

\*Exceptions include PAR, CO<sub>2</sub> and Transmissometer.



## Scuba 50 and Scuba 65

Royal Eijkelpkamp's water quality probe Scuba 50 (50 = diameter probe in mm) comes standard with temperature, pH, conductivity, and dissolved oxygen sensors, and optional ORP and depth sensors. The optical DO sensor features a long-life (5+ years) replaceable cap, and the probe includes a separate and easy refillable reference sensor. Eliminating expensive consumables ensures low cost of ownership over the life of the probe. Connect the Scuba 50 to any of our field display options for sampling in the field, or add a battery pack or solar panel for autonomous deployments. Connect to a telemetry station for viewing real time data in the cloud. Eijkelpkamp's compact Scuba 65 (Ø 65 mm) is an excellent choice when your application calls for turbidity monitoring, but only a few additional sensors.

Both water Scuba probe packages represent the essentials in basic water quality monitoring.

Next to a hand meter, the probes can be used in combination with the GDT Prime Plus as well as the GDT-Multiple modem for wireless data transfer of the measurements. In this configuration it fits seamlessly in the Smart Sensing concept of Royal Eijkelpkamp.





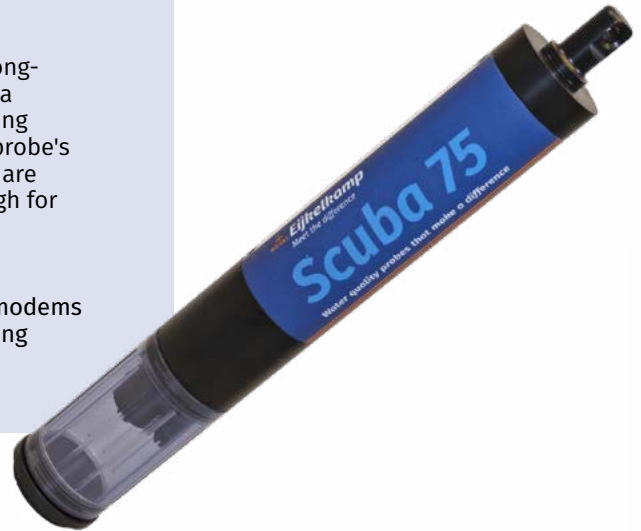
## Scuba 75

Royal Eijkelpomp's compact but sturdy Scuba 75 water quality probe measures 75 mm in diameter and packs the big 4 essential sensors: acidity, conductivity, dissolved oxygen (with wiper) and temperature. All into one small, rugged probe! Additional optional sensors include ORP and depth.

The Scuba 75 is available in two configurations, the 75A and 75B. The Scuba 75A also includes a wiped turbidity sensor, while the 75B can accommodate one ISE sensor.

The Scuba 75 model features an optical DO sensor with a long-lasting (5+ years) replaceable cap. The probe also includes a separate and easily refillable reference sensor. By eliminating expensive consumables, a low cost of ownership over the probe's lifetime is ensured. These lightweight water quality probes are both ideal for spot checking and profiling, and tough enough for extended deployments.

The probes can be used as hand-held meters, but also in combination with the GDT Prime Plus or the GDT-Multiple modems for telemetry. They fit in seamlessly with the Smart Sensing concept of Royal Eijkelpomp.





## Scuba 90

The water quality probe Scuba 90 (Ø 90 mm) accommodates up to 11 different sensors, making it extremely versatile for a wide variety of water quality monitoring applications. The Scuba 90 is the larger of our advanced portable multiparameter water monitoring probes and is designed for long term deployment, utilising a central cleaning system to keep the fitted sensors clean and reduce the effects of biofouling common in extended deployments.

The Scuba 90 is also available in two configurations, the 90A and 90B. Both models come with a range of standard sensors included (turbidity, temperature, pH, conductivity, dissolved oxygen), with the option to add ORP and depth sensors. Much like its smaller counterpart it offers more customisation options that allow you to add extra sensors to the probe. The Scuba 90A model will also accommodate 2 fluorometers, plus 2 ISE sensors and the Scuba 90B will accommodate 3 fluorometers. The Scuba 90 feature our optical DO sensor with long-life (5+ years) replaceable cap, and refillable reference sensor. The Scuba 90 probes are ideal for spot checking and profiling, and are tough enough for extended deployments.

Next to a hand held meter the probes can be used in combination with the GDT Prime Plus or the GDT-Multiple. The probe fits seamlessly in the Smart Sensing concept of Royal Eijkelkamp.



## Scuba 105

Royal Eijkelkamp's water quality probe Scuba 105 (Ø 105 mm) holds more sensors than any multiparameter probe in the industry. It is ideal for long-term telemetry deployments, utilising a central cleaning system to keep the fitted sensors clean and reduce the effects of biofouling common in extended deployments.

The Scuba 105 comes standard with turbidity, temperature, pH, conductivity, and dissolved oxygen sensors, with the option to add ORP and depth sensors. In addition to these standard sensors, the probe will accommodate 3 fluorometers, plus 3 ISE sensors.

Next to a hand held meter the probe can be used in combination with the GDT Prime Plus or the GDT-Multiple. The probe fits seamlessly in the Smart Sensing concept of Royal Eijkelkamp.



# Scuba standard sensor configurations

**Ø50**  
**Scuba 50**

- temperature
- pH/ORP\*
- reference
- conductivity
- DO
- depth\*/vented depth\*

**Ø50**  
**Trimeter**

- temperature
- depth\*/vented depth\*
- Any single sensor (except any ISE sensor)

**Ø65**  
**Scuba 65**

- temperature
- pH/ORP\*
- reference
- conductivity
- turbidity
- depth\*/vented depth\*

**Ø75**  
**Scuba 75A**

- temperature
- pH/ORP\*
- reference
- conductivity
- DO
- turbidity
- depth\*/vented depth\*
- Optional DO wiper**

**Ø75**  
**Scuba 75B**

- temperature
- pH/ORP
- Reference
- Conductivity
- DO
- depth\*/vented depth\*
- optional: 1 ISE sensor**

**Ø90**  
**Scuba 90A**

- temperature
- pH/ORP\*
- reference
- conductivity
- DO
- turbidity
- depth\*/vented depth\*
- 2 x small
- 2 x medium
- central wiper

**Ø90**  
**Scuba 90B**

- temperature
- pH/ORP\*
- reference
- conductivity
- DO
- turbidity
- depth\*/vented depth\*
- 3 x medium
- central wiper

**Ø105**  
**Scuba 105**

- temperature
- pH/ORP\*
- reference
- conductivity
- DO
- turbidity
- depth\*/vented depth\*
- 3 x small
- 3 x medium
- central wiper

Small	Medium
nitrate	chlorophyll a
ammonium	BGA
chloride	Rhodamine
sodium	Crude Oil
TDG	Refined Oil
calcium	CDOM/FDOM
bromide	fluorescein
	optical brighteners
	tryptophan

- ORP is combined with pH and is optional on all models
- A small sensor may be substituted for any medium sensors
- Depth sensor is optional on all models


## Field-proven methods to minimise fouling

The extended turbidity brush cleans turbidity and other sensors, such as DO, chlorophyll, and BG algae. The MiniCleaner is a stand-alone wiper system used when you don't have an extended turbidity brush. The copper-cauze kit wraps the sensors in copper gauze that slowly dissolves, bathing the sensors with the copper ions that discourage biofouling. Copper gauze is superior to solid copper, which becomes ineffective once oxidised.



## Scuba software

The Scuba software features simple to use, intuitive menus. Instructions take the user through the calibration of each sensor. Easy set-up for discrete sampling “snapshot” files or log files for internal logging, using Windows architecture. All files are in .csv format.

		Scuba Logging is OFF		Circulator is OFF		Wipe One Cycle Now		Clear Screen				
		Capture One Line of Data to PC with Annotation		Capture One Line of Data to PC without Annotation		List Bluetooth Scuba		Restart				
08/16/22		10:34:46	26.775	7.36	709.3	0.41	709.3	100.3	7.87	-0.07	11.19	24.1
DATE	TIME	Temp deg C	pH units	SpCond uS/cm	Turb FNU	SpCond uS/cm	HDO %Sat	HDO mg/L	Chl ug/L	bg ppb	NH4 mg/L	
08/16/22	10:34:44	26.775	7.36	709.3	0.53	709.3	100.3	7.87	-0.07	11.36	25.8	
08/16/22	10:34:42	26.775	7.34	709.3	0.53	709.3	100.3	7.87	-0.06	11.39	25.8	
08/16/22	10:34:40	26.775	7.35	709.3	0.47	709.3	100.3	7.87	-0.05	11.54	26.5	
08/16/22	10:34:38	26.775	7.31	709.3	0.35	709.3	100.3	7.87	-0.05	11.38	25.2	
08/16/22	10:34:36	26.775	7.34	709.3	0.35	709.3	100.3	7.87	-0.06	10.88	26.4	
08/16/22	10:34:34	26.785	7.34	709.2	0.32	709.2	100.3	7.87	-0.06	10.87	26.8	
08/16/22	10:34:32	26.775	7.33	709.2	0.24	709.2	100.3	7.87	-0.07	11.21	27.1	
08/16/22	10:34:30	26.775	7.33	709.2	0.23	709.2	100.4	7.87	-0.05	10.96	27.5	
08/16/22	10:34:28	26.785	7.33	709.3	0.30	709.3	100.4	7.87	-0.05	10.67	27.7	
08/16/22	10:34:26	26.785	7.25	709.2	0.34	709.2	100.4	7.87	-0.07	10.72	28.1	
08/16/22	10:34:24	26.785	7.32	709.3	0.26	709.3	100.4	7.87	-0.06	10.93	29.0	
08/16/22	10:34:22	26.785	7.27	709.3	0.27	709.3	100.4	7.87	-0.06	11.04	27.8	
08/16/22	10:34:20	26.785	7.31	709.3	0.38	709.3	100.4	7.87	-0.06	11.13	27.5	
08/16/22	10:34:18	26.785	7.32	709.3	0.41	709.3	100.3	7.87	-0.05	11.17	32.0	
08/16/22	10:34:16	26.785	7.33	709.4	0.51	709.4	100.3	7.87	-0.05	10.75	30.3	
08/16/22	10:34:14	26.785	7.35	709.3	0.69	709.3	100.4	7.87	-0.06	10.73	29.1	
08/16/22	10:34:12	26.785	7.28	709.3	0.80	709.3	100.4	7.88	-0.06	10.52	31.3	
08/16/22	10:34:10	26.785	7.29	709.2	0.71	709.2	100.4	7.88	-0.06	10.64	38.8	

## Mobile version

ScubaLink software is available for Android and iOS with small screen features like “swipeable” pages and large, high-contrast numbers for easier visibility in sunlight.



## Accessories for every application

Standard accessories include flow cells, copper-gauze anti-fouling kits, cable reels, SDI-12 converters, hard-sided cases, soft padded backpacks, pipe kits to protect logging units in the field, weather stations, ScubaMobile Bluetooth, and a full line of calibration standards including secondary calibration standards for fluorometers.

### Scuba water quality probe specifications

	Scuba Trimeter	Scuba 50	Scuba 65	Scuba 75	Scuba 90	Scuba 105
Diameter	50 mm	50 mm	65 mm	75 mm	90 mm	105 mm
Length - w/o battery pack	343 mm	483 mm	483 mm	483 mm	483 mm	483 mm
- Add internal battery pack	559 mm	686 mm	686 mm	686 mm		
Weight - with IBP	1270 gr	1089 gr	1134 gr	2268 gr	4082 gr	4536 gr
-without battery	998 gr	816 gr	998 gr	1633 gr	2268 gr	2812 gr
Number of sensors	Any single sensor plus depth and temp option	Up to 6	Up to 6	Up to 7	Up to 11	Up to 13
Battery pack	3 D	3 D	3 D	8 C	6 C	6 C
Operating temperature	-50 to 50 °C					
Depth rating	200 m, max depth for ISE and TDG sensors is 15 meters					
Communications	RS-232, SDI-12, USB or Bluetooth					
Sample rate	1 Hz					
Data memory	>1,000,000 logged readings					

Sensor specification					
Sensor	Parameter	Range and units	Resolution	Accuracy	Comments
Temperature	Temperature	-50 to 50 °C	0.01	±0.1	Calibration not required
pH / ORP	pH	0 to 14 units	0.01	±0.1 within 10 °C of calibration; 0.2 otherwise	Refillable reference electrode; corrected for temperature; typical sensor life >6 years; optional ORP sensor is combined with pH sensor
	ORP	-999 to 999 mV	0.1	±20 mV	
Turbidity	Turbidity	0 to 1000 FNU	0.01	±0.3 FNU or ±2% of reading w.i.g.	Filtered for non-turbidity spikes; includes wiper to clean the optics; FNU and NTU are interchangeable
		1000 to 4000 FNU		±4% of reading	
Transmissivity	Transmissivity	0 to 100% transmission	0.01	Linearity of 0.99 R <sup>2</sup>	Transmissometer mounts externally to Scuba
Dissolved oxygen (optical sensor)	Concentration	0 - 20 mg/l	0.01	±0.1	Compensated for temperature and salinity; EPA approved "lifetime" luminescence method; typical sensor cap life > 6 years
		20 - 30 mg/l	0.01	±0.15	
		30 - 50 mg/l	0.01	±5% of reading	
	% Saturation	0 to 500% saturation	0.1	Corresponds with the accuracy of the concentration reading	
Conductivity	Specific conductance, µS/cm	0 to 5000 µS/cm	0.1	±0.5% of reading or ±1 w.i.g.	Corrected for temperature; four easy-to-clean graphite electrodes; optional sensor provides ±0.5% of reading accuracy to 100 mS/cm.
	Specific conductance, mS/cm	0 to 100 mS/cm	0.001	±1% of reading ±0.001	
	Salinity	100 to 275 mS/cm	0.001	±2% of reading	Calculated from conductivity and temperature, PSU is equivalent to ppt
		0 to 70 PSU	0.01	±2% of reading	
Pressure	Depth	0 to 25 m	0.01	±0.05	Compensated for temperature and salinity
		0 to 200 m		±0.4	
	Vented depth	0 to 10 m	0.001	±0.003	Compensated for temp, salinity, barometric pressure
	Barometric pressure	400 to 900 mm Hg	0.1	±1.5	Included with depth sensor
	Total dissolved gas (TDG)	400 to 1400 mm Hg	0.1	±1	Compensated for temp; maximum depth 15m
Fluorometers	Chlorophyll a - blue	0 to 500 µg/l	0.01	Linearity of 0.99 R <sup>2</sup>	Highest-quality fluorometric sensors; fluorometers often require non-trivial calibration; custom optics available upon request
	Chlorophyll a - red	0 to 500 µg/l			
	Rhodamine dye	0 to 1000 ppb			
	Phycocyanin (freshwater BGA)	0 to 4500 ppb			
	Phycocerythrin (marine BGA)	0 to 750 ppb			
	CDOM/FDOM	0 to 1500/3000 ppb			
	Optical brightener	0 to 2500 ppb			
	Tryptophan	0 to 5000 ppb			
	Fluorescein dye	0 to 500 ppb			
	PTSA	0 to 650 ppb			
	Refined oil	0 to 20 ppm			
Ion-selective electrodes (ISE's)	Ammonium	0 to 100 mg/l as nitrogen	0.1	±10% of reading or 2 mg/l w.i.g.	Corrected for ionic strength (via conductivity readings); the accuracy specification relies on non-trivial maintenance practice and frequent calibration near the temperature of measurement; sensors require periodic tip replacement
	Nitrate	0 to 100 mg/l as nitrogen			
	Chloride	0.5 to 18,000 mg/l			
	Sodium	0.05 to 20,000 mg/l			
	Calcium	0 to 40,000 mg/l			
	Bromide	0 to 80,000 mg/l			
PAR	Photometric PAR	10,000 µmol/cm <sup>2</sup>	0.1	±5% of reading	LiCor spherical sensor
CO <sub>2</sub>	Carbon dioxide	0 to 2000 ppm	0.1	±3% of full scale	Other ranges available
For best accuracy, always calibrate near the anticipated field readings, and near the temperature of the anticipated field readings. Specifications indicate typical performance and are subject to change.					

All of the information in this brochure is provisional. We reserve the right to amend equipment, procedures and specifications.