

Other compatible sensors

The following DCP Microsense sensors also work with the RCX sensor adapter but must be run with version 2.5 of Robolab or above:

Barometric Air Pressure sensor

DCP Part No D100041

Primarily designed for Barometric air pressure measurements for weather monitoring etc. Range 800-1100 millibar

Current probe set

DCP Part No D100068

Complementing the Voltage Measurement set, this probe adapter measures -1A to +1A and comes complete with a set of probes and clips.

Accelerometer

DCP Part No D100042

Solid State single axis accelerometer which measures horizontal or vertical acceleration with a range of -50 to +50 m/s/s and a resolution of 0.1m/s/s.

LUX sensor

DCP Part No D100073

High quality light sensor with built in eye-response filter for light intensity measurement in the range of 0 to 50000 LUX, primarily for environmental levels of natural light.

Redox / Ion Selective Electrode adapter

DCP Part No D100082

The Redox adapter enables a standard Ion selective electrode or Redox potential electrode to be connected to LogIT systems. It is fitted with a BNC type connector.

Designer Sensor set

DCP Part No D100058

This set contains two adapters designed to allow you to connect your own commercial or home made sensors into LogIT or LEGO RCX. One adapter is a digital adapter with a switch input contact and the other is an analogue adapter with range of 0 to 2.5V dc.

The LogIT System

The Microsense sensors used with the DCP LEGO sensor adapter are just part of a complete datalogging system called LogIT. Some of the dataloggers and sensors available are listed below but for more information or demo software of the LogIT dedicated datalogging system or the details of your nearest distributor please see our web site www.dcpmicro.com

Curriculum ideas

There are many curriculum ideas and experiments for using DCP sensors with RCX available free on the LEGO Dacta web site at www.lego.com/dacta/robolab

LEGO: www.lego.com/dacta/robolab

Sensors: www.dcpmicro.com/lego



www.dcpmicro.com

© DCP 0207/2 Trademarks acknowledged

LEGO RCX DCP sensor adapter



The DCP LEGO RCX sensor adapter adapter allows standard LogIT Microsense® sensors to be used with LEGO® RCX® and RoboLab version 2 extending sensing possibilities and allowing RCX to be used as a data logger as well as a controller. Another version of the sensor adapter will also be available for the LEGO NXT from mid 2007.

Which Microsense sensors can I use?

The current Microsense sensors which are supported in RoboLab 2 are shown over leaf. But be sure to download the latest sensor updates files of RoboLab 2 from the Dacta or DCP web site as there are enhanced sensor updates since the release of RoboLab 2.0 (see www.dcpmicro.com/lego)

Where can I get the sensor adapter and sensors?

The sensor adapter and RoboLab 2 are exclusively available from your LEGO Dacta dealer (see www.lego.com/dacta) and the DCP Microsense sensors are available from some Dacta dealers or from DCP LogIT datalogging system distributors world-wide - see www.dcpmicro.com for contact details. Please note that DCP Sensors are only supported in version 2 onwards of Robolab

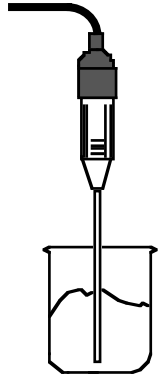
How does it work?

The adapter is far from just a LEGO 4 stud connector wired straight into a DIN socket! Although it looks very simple, the DIN socket of the adapter actually contains many micro-components (including 2 amplifiers, a voltage regulator, 6 diodes, resistors etc!) mounted on both sides of a miniature circuit board.

This micro circuitry regulates power from the RCX into a voltage suitable for the DCP Microsense sensors and also converts the output from the sensor into a signal suitable for the the RCX - all of this down just 2 wires! We made it small in order for it to fit right into the sensor socket so that the overall system remains compact and sensors can be hand held or used in a stand etc.

°C

PROTEMP TEMPERATURE



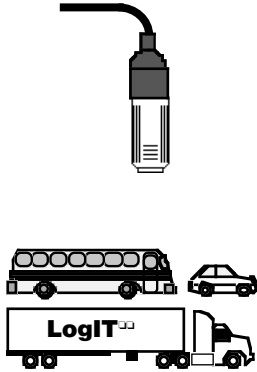
Melting Ice

- Range:**
-30°C to +130 °C
- Resolution:**
Better than 0.1°C
- Probe Length:**
180mm stainless steel
- Typical Accuracy with RCX**
+/- 2 %
- Suggested Investigations:**
- Temperature during changes in state
 - Temperature during fermentation
 - Conduction; convection; radiation
 - Cooling curves
 - Cooling by evaporation
 - Insulation
 - Gas laws (with pressure sensor)
 - and many more.

DCP Part N°
D100047

dB

SOUND LEVEL



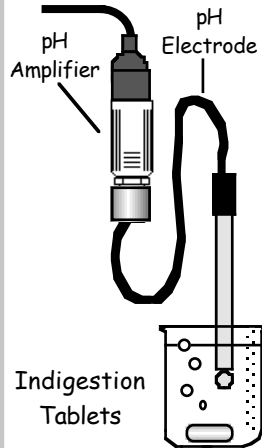
Noise Pollution

- Range:**
50dBA - 100dBA
- Frequency Response:**
Standard A-weighted
- Response Time (damping):**
approx. 0.5 seconds
- Typical Accuracy with RCX**
+/- 5 %
- Suggested Investigations:**
- Sound travel (absorption) through different materials
 - Reflected sound
 - Noise pollution
 - Amplitude of sound with distance
 - Enables sound levels to be 'visualised' and compared - useful for special needs requirements
 - Studying sound in a vacuum

DCP Part N°
D100060

pH

pH AMPLIFIER ADAPTER



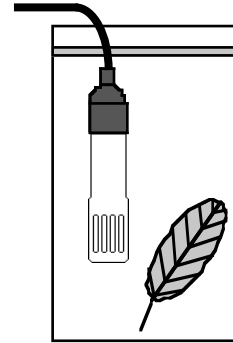
Indigestion
Tablets

- Range:**
0-14 PH
- Resolution:**
0.1 PH
- Typical Accuracy with RCX**
+/- 2% + electrode accuracy
- Suggested Investigations:**
- Rates of reaction involving pH change e.g. souring of wine or yoghurt making
 - Environmental monitoring
 - Acid based titration
 - Study of interaction between acids and alkali. e.g. With indigestion tablets.
- Note:**
Uses a standard pH Electrode with BNC plug - and also available as a set: DCP Part N° - D100086
- Ion selective electrodes + adapter available - overleaf**

DCP Part N°
D100056

%RH

RELATIVE HUMIDITY



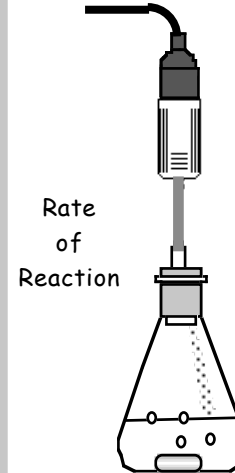
Transpiration
of a leaf

- Range:**
1-100% Relative Humidity
- Resolution:**
0.1 % R.H.
- Temperature Range:**
-20°C to 80°
- Typical Accuracy with RCX**
+/- 2 %
- Suggested Investigations:**
- Rate of transpiration and humidity
 - Environment studies (weather)
 - Moisture in breath
 - Moisture from burning fuels
 - Evaporation

DCP Part N°
D100077

kPa

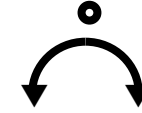
AIR PRESSURE



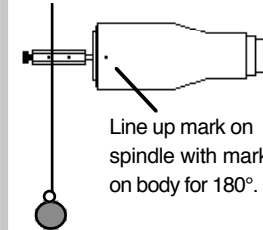
Rate
of
Reaction

- Range:**
0-200kPa (approx. 0-30 psi)
- Typical Accuracy with RCX**
+/- 5 %
- Suggested Investigations:**
- Gas laws - pressure, volume & temperature (used with ProTemp)
 - Fermentation
 - Rates of reaction - gas
- Note:**
- Take care not to bend the nylon pressure port. Use flexible silicone tubing or to connect to port.
 - To connect to a flask or similar push the barrel of a 1ml syringe through a hole in a stopper then join tubing supplied to barrel.
- Barometric Air Pressure**
also available - see overleaf

DCP Part N°
D100080



ROTARY POSITION



Line up mark on
spindle with mark
on body for 180°.

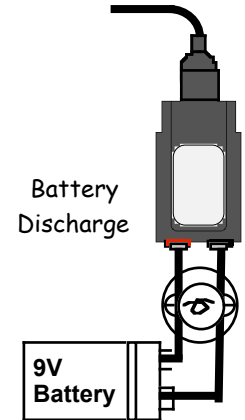
Studying Pendulums

- Rotation Span range:**
0-360° (340° measured)
- Torque:**
0.25 oz-in max
- Maximum Load:**
50 grams
- Typical Accuracy with RCX**
+/- 2 %
- Suggested Investigations:**
- Harmonic motion e.g. pendulum
 - Auxanometer - Plant growth
 - Tensile strengths
 - Expansion / elasticity of materials
 - Rise of bread dough
 - Connect to Spirometer for breath rate
 - Air resistance
 - Expansion/elasticity of materials

DCP Part N°
D100059

V dc

VOLTAGE MEASUREMENT



Battery
Discharge

- 9V Battery**
- Range:**
-24V dc to +24V dc
- Resistance over probes:**
410kΩ
- Typical Accuracy with RCX**
+/- 4%
- Suggested Investigations:**
- Measuring effect of solar cell or electric motor
 - Voltage in a circuit
 - Induced emf (use with large coil & magnet)
 - Potential difference measurement across resistor or lamp etc.
 - Battery discharge
 - Capacitor discharge
- Note:**
Supplied complete with a set of 4mm probes and clips.
- DC Current - see overleaf**

DCP Part N°
D100045