The RedLab 1008 is an inexpensive, complete USB mini DAQ lab in pocket size. It is the ideal alternative solution for simple DAQ and control applications with USB for a small budget. And it is a good solution for education or experiment.

- 8 single-ended or 4 differential analog inputs.
- 12 bit A/D conversion up to 1.2 kS/s, 8 kS/s up to 4000 values.
- Input range differential: ±20 V, ±10 V, ±5 V, ±4 V, ±2.5 V, ±2.0 V, ±1.25 V, ±1.0 V, programmable.
- 2 analog outputs, 10 bit.
- 32 bit event counter.
- 24 digital I/O channels, wired to a 37-pin D-sub connector. Expandable with relays or opto-isolation using the ME-UB series.
- 4 additional discrete digital I/O channels with screw terminals.
- USB 11 compatible.
- Size [mm]: 157 (L) x 102 (W) x 40 (H).

### Ordering codes

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Contents:</th>
</tr>
</thead>
<tbody>
<tr>
<td>RedLab 1008</td>
<td>Complete USB mini DAQ lab.</td>
<td>RedLab 1008, USB cable, screw driver, software and instructions for use on CD.</td>
</tr>
<tr>
<td>RedPack 1008</td>
<td>RedLab 1008 bundled with software ProfiLab-Expert&lt;sup&gt;1)&lt;/sup&gt;</td>
<td>RedLab 1008, USB cable, screw driver, software and instructions for use on CD. RedPack 1008: ProfiLab-Expert&lt;sup&gt;1)&lt;/sup&gt;</td>
</tr>
</tbody>
</table>

### Accessory

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ME AK-D37/2</td>
<td>2 m cable, 37-pin D-sub female-male, 1:1 contacted. Connects RedLab 1008 to ME AB-D37F or ME-UB37.</td>
</tr>
<tr>
<td>ME-UB37F</td>
<td>Terminal block, 37-pin D-sub female connector to spring terminals.</td>
</tr>
<tr>
<td>ME-UB37</td>
<td>Terminal block, 37-pin D-sub female connector to spring terminals. Can be plugged directly to the RedLab.</td>
</tr>
<tr>
<td>ME AK-DUB</td>
<td>Cable, connects 3 ME-UB boxes to aRedLab 1008: 37-pin D-sub female connector to 3x 15-pin D-sub male connectors + mini phone jack for external power supply for the ME-UB boxes.</td>
</tr>
<tr>
<td>ME-UB series</td>
<td>External expansion box, with relays or opto-isolation. For the digital ports. Use in any combination: ME-UB15, ME-UBRE, ME-UBOI, ME-UBOD. The ME-UB15 can also be replaced by a terminal block ME AB-D15F.</td>
</tr>
<tr>
<td>MW17-GR/6</td>
<td>12 V/500 mA power supply/mains adaptor for ME-UBRE, ME-UBOD, ME-UBOI.</td>
</tr>
<tr>
<td>ME-UB-D15F</td>
<td>Terminal block, 15-pin D-sub female connector to spring terminals. Can be used instead of ME-UB15, for digital ports.</td>
</tr>
<tr>
<td>ProfiLab-Expert</td>
<td>Graphic software. Available as an optional accessory or included in the bundle RedPack&lt;sup&gt;1)&lt;/sup&gt;.</td>
</tr>
</tbody>
</table>

### Software included in package

- TracerDAQ [strip chart recorder and data logger]. Universal Library (programming language support for Windows). InstaCAL utility (for easy installation, calibration and test). Driver for LabVIEW. Optional or with RedPack: ProfiLab-Expert<sup>1)</sup>.

<sup>1)</sup> ProfiLab-Expert may not support the full sample rate.

### Specifications

#### Analog inputs

- **Channels**: 8, individually configurable as 8 single-ended or 4 differential channels. Connectors: Screw terminals
- **Ranges**: ±20/±10/±5/±4/±2.5/±2.0/±1.25/±1.0 V
- **Rate**: Max. 8 kS/s
- **Resolution**: 12 bit differential, 11 bit single-ended
- **Trigger**: Source programmable external DIO0...DIO3

#### Analog outputs

- **Channels**: 2 voltage outputs: Screw terminals
- **Ranges**: 0...5 V
- **Rate**: Software controlled 100 S/s (single channel), 50 S/s (dual channel)
- **Resolution**: 10 bit

#### Digital I/O

- **Discrete I/Os**: 4, independently programmable as inputs or outputs [screw terminals]. 5 V/TTL. Input, high: 3.0 V min., 15.0 V absolute max.; input, low: 0.8 V max.; output, no load: V<sub>i</sub>, -0.4 V min., V<sub>o</sub>, typ; output, 1 mA load: V<sub>i</sub>, -1.5 V.
- **Protected with 1.5 kΩ serial resistor.**
- **Port I/Os**: 24 I/O channels arranged in 4x 8 bits ports, each port programmable as inputs or outputs (type 82C55). All pins standard with pull-up to V<sub>i</sub> via 47 kΩ. Input, high: 2.0 V min., 5.5 V absolute max.; input low: 0.8 V max., -0.5 V absolute min.; output high: (IOH=-2.5 mA) 3.0 V min.

#### Counter

- **Channels**: 1 channel, event counter. Connector: Screw terminals
- **Resolution**: 32 bit
- **Frequency**: Input frequency max. 1 MHz
- **Pulse width**: High/low 500 ns min.
- **Voltage**: Input low: 0 V min., 1.0 V max.; input high: 4.0 V min., 15.0 V max.

#### General

- **Size [mm]**: 157 (L) x 102 (W) x 40 (H)
- **Power supply**: Via USB
- **Interface**: USB 1.1 low-speed, max. 3 m USB cable
- **Connector**: Screw terminals, 37-pin D-sub male. USB Type B
- **Environmental**: Storage and operating temperature -40...85°C, 0...90% rel. humidity, non-condensing
Complete all-round pocket size DAQ labs

The USB DAQ modules RedLab 1208, 1408 and 1608 fit into a vest pocket. At the same time they contain a complete mini DAQ lab each, either with 12, 14 or 16 bit A/D resolution and additional digital I/Os, which can be used for control or switching applications. Use the RedLabs in mobile applications or when there is shortage of space.

- RedLab 1208 and 1408: 12 bit or 14 bit multi I/O mini DAQ lab for USB:
  - 8 single-ended or 4 differential A/D channels.
  - 12 bit or 14 bit A/D conversion. Ranges up to ±20 V.
  - 2 D/A channels, 10 bit (1208)/12 bit (1408) conversion.
  - 16 TTL/CMOS digital I/O channels.
  - 32 bit event counters.

- RedLab 1608: 16 bit multi I/O mini DAQ lab for USB:
  - 8 simultaneous single-ended A/D channels.
  - 16 bit A/D converter per channel. Input ranges up to ±10 V.
  - 8 discrete digital I/O channels.
  - 32 bit event counter.

- Screw terminals.
- Size [mm] only 83 x 80 x 25.4.

---

### Specifications

#### Analog inputs

**RedLab 1208**

- Number: 12 bit or 14 bit differential
- A/D conversion: 12 bit or 14 bit multi I/O DAQ lab for USB:
  - 8 single-ended or 4 differential A/D channels.
  - 12 bit or 14 bit A/D conversion. Ranges up to ±20 V.
  - 2 D/A channels, 10 bit (1208)/12 bit (1408) conversion.
  - 16 TTL/CMOS digital I/O channels.

**RedLab 1408**

- Number: 12 bit or 14 bit differential
- A/D conversion: 12 bit or 14 bit multi I/O DAQ lab for USB:
  - 8 single-ended or 4 differential A/D channels.
  - 12 bit or 14 bit A/D conversion. Ranges up to ±20 V.
  - 2 D/A channels, 10 bit (1208)/12 bit (1408) conversion.
  - 16 TTL/CMOS digital I/O channels.

**RedLab 1608**

- Number: 16 bit multi I/O DAQ lab for USB:
  - 8 simultaneous single-ended A/D channels.
  - 16 bit A/D converter per channel. Input ranges up to ±10 V.
  - 8 discrete digital I/O channels.

#### Input ranges

- ±20 V, ±10 V, ±5 V, ±4 V, ±2.5 V, ±2.0 V, ±1.25 V, ±1.0 V

#### External trigger

- 1 TTL input, 1 CMOS input

#### Analog outputs

**RedLab 1208**

- Number: 12 bit or 14 bit differential
- D/A conversion: 12 bit or 14 bit multi I/O DAQ lab for USB:
  - 14 bit differential, 8 single-ended (11 bit)/4 differential (12 bit), max. 8 kS/s (LS) or 50 kS/s (FS)
  - 12 bit or 14 bit A/D conversion. Ranges up to ±20 V.
  - 2 D/A channels, 10 bit (1208)/12 bit (1408) conversion.

**RedLab 1408**

- Number: 12 bit or 14 bit differential
- D/A conversion: 12 bit or 14 bit multi I/O DAQ lab for USB:
  - 12 bit or 14 bit A/D conversion. Ranges up to ±20 V.
  - 2 D/A channels, 10 bit (1208)/12 bit (1408) conversion.

**RedLab 1608**

- Number: 16 bit multi I/O DAQ lab for USB:
  - 16 bit A/D converter per channel. Input ranges up to ±10 V.
  - 8 discrete digital I/O channels.

#### Output ranges

- ±10 V, ±5 V, ±2.0 V, ±1.0 V

#### Digital I/O

**RedLab 1208**

- Number: 16 TTL/CMOS channels, arranged in 2x 8 bit ports, each port programmable as input or output

**RedLab 1408**

- Number: 16 TTL/CMOS channels, arranged in 2x 8 bit ports, each port programmable as input or output

**RedLab 1608**

- Number: 8 discrete CMOS channels, independent configuration as inputs or outputs

#### Counter

**RedLab 1208**

- Number: 32 bit event counter, 1 TTL level

**RedLab 1408**

- Number: 32 bit event counter, 1 TTL level

**RedLab 1608**

- Number: 32 bit event counter, 1 TTL level

#### General

**RedLab 1208**

- Size [mm]: 83 x 80 x 25.4

**RedLab 1408**

- Size [mm]: 83 x 80 x 25.4

**RedLab 1608**

- Size [mm]: 83 x 80 x 25.4

#### Power supply

- From PC via USB

#### Interface

- USB 1.1 low-speed

#### Connector

- I/O: 2x 10 screw terminals, USB

#### Environmental

- Operating temperature 0...70°C, storage temperature -40...85°C, 0...90% rel. humidity, non-condensing

---

1) Profilab-Expert may not support the full sample rate.
With RedLab TC and TEMP you can connect your temperature sensors to a PC via USB. While the low-cost model TC supports thermocouples only, the TEMP variant can also be used with RTDs, thermistors or semiconductor sensors. The sensor type is selected via software. The models CF have an additional data logger functionality with CompactFlash memory.

- 8 independent, differential input channels for temperature measurement.
- **RedLab TC and RedLab TC CF (5201)** support: Thermocouples type J, K, T, E, R, S, B, N. Linearization of measurement values, CJC as well as conversion to °C or °F directly in the module.
- **RedLab TEMP and RedLab TEMP CF (5203)** support 4 types of sensors: Thermocouples (type J, K, T, E, R, S, B, N), RTDs (2-, 3-, 4-wire, eg. 4x 3-wire RTDs), thermistors, semiconductor temperature sensors. The 8 channels can also be operated with a mix of different sensor types without additional signal conditioning.
- Precise 24 bit A/D converter.
- Integrated sensor for environmental temperature (CJC/cold junction compensation).
- 8 additional digital I/O lines.
- **Models CF**: Data logger function incl. 64 MB CompactFlash. Configuration and data “download” to PC via USB. Otherwise stand-alone operation independently from PC (battery buffered).
- Plug’n’Play USB 2.0 (full-speed, USB cable included). Power supply via USB.

---

**Software included in package:***

- TracerDAQ (strip chart recorder and data logger), Universal Library (programming language support for Windows), InstaCAL utility (for easy installation, calibration and test). Driver for LabVIEW. Optional or with RedPack: ProfiLab-Expert1).

1) ProfiLabExpert may not support the full sample rate.

---

**Accessory***

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ProfiLab-Expert</td>
<td>Graphic software. Available as an optional accessory or included in the bundle RedPack1).</td>
</tr>
</tbody>
</table>

---

**Ordering codes and functions**

**RedLab TC and TEMP***

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>RedLab TC</td>
<td>Temperature DAQ box</td>
</tr>
<tr>
<td>RedLab TC CF (5201)</td>
<td>Temperature logger</td>
</tr>
<tr>
<td>RedLab TEMP</td>
<td>Temperature DAQ box</td>
</tr>
<tr>
<td>RedLab TEMP CF (5203)</td>
<td>Temperature logger</td>
</tr>
</tbody>
</table>

**Bundles with ProfiLab-Expert**

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>RedPack TC</td>
<td></td>
</tr>
<tr>
<td>RedPack TC CF</td>
<td></td>
</tr>
<tr>
<td>RedPack TEMP</td>
<td></td>
</tr>
<tr>
<td>RedPack TEMP CF</td>
<td></td>
</tr>
</tbody>
</table>

**Contents:**

- RedLab TC/TEMP (CF), USB cable, screw driver, software and instructions for use on CD.
- RedPack: ProfiLab-Expert1).
- Logger models “CF”: 64 MB CompactFlash memory card.

---

**Specifications***

**Analog inputs**

<table>
<thead>
<tr>
<th>RedLab TC [CF]</th>
<th>RedLab TEMP [CF]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number</td>
<td>8 differential. Integrated temperature sensor for CJC. Module warm-up time min. 30 min</td>
</tr>
<tr>
<td>Input types and specs</td>
<td>- Thermocouple J, K, T, E, R, S, B, N, ( \pm 0.080 \text{ V} )</td>
</tr>
<tr>
<td></td>
<td>- RTDs (100 ( \Omega ) PT): ( 0 \ldots 0.5 \text{ V} )</td>
</tr>
<tr>
<td></td>
<td>- Thermistors (standard 2,252 \ldots 30,000 ( \Omega ) ): ( 0 \ldots 2 \text{ V} )</td>
</tr>
<tr>
<td></td>
<td>- Semiconductor/IC (TMP36 or equivalent): ( 0 \ldots 2.5 \text{ V} )</td>
</tr>
<tr>
<td>A/D converter</td>
<td>4 dual 24 bit sigma-delta converters</td>
</tr>
<tr>
<td>Isolation</td>
<td>Min. 500 VDC between DAQ connectors and USB interface</td>
</tr>
<tr>
<td>Input data</td>
<td>Voltage max. ( \pm 25 \text{ V} ) power-on, ( \pm 40 \text{ V} ) power-off. Impedance min. 5 GΩ. Input coupling: DC</td>
</tr>
<tr>
<td>Open TC detect</td>
<td>Automatically enabled when the channel pair is configured for thermocouple sensor. Max. open detection time 3 s</td>
</tr>
<tr>
<td>Max. throughput rate</td>
<td>Depending on number of channels between 2 S/s (1 channel) to 2 S/s per channel, total 16 S/s (8 channels). Analog inputs run continuously. Each channel is sampled twice per second</td>
</tr>
</tbody>
</table>

**Digital I/O**

<table>
<thead>
<tr>
<th>RedLab TC [CF]</th>
<th>RedLab TEMP [CF]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number</td>
<td>8 discrete, independently programmable as inputs or outputs</td>
</tr>
<tr>
<td>Types and specs</td>
<td>CMOS. Input high: 2.0 V min./5.5 V abs. max. Input low: 0.8 V max./-0.5 V abs. min. Output high ( (\text{IOL}=2.5 \text{ mA}) ): 0.7 V max. Output low ( (\text{IOH}=-2.5 \text{ mA}) ): 3.8 V min.</td>
</tr>
</tbody>
</table>

**Data logger**

<table>
<thead>
<tr>
<th>RedLab TC CF</th>
<th>RedLab TEMP CF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Models CF</td>
<td>Configuration, data transfer to PC via USB. Stand-alone operation, independent from PC. Logging to CompactFlash</td>
</tr>
</tbody>
</table>

**General**

<table>
<thead>
<tr>
<th>RedLab TC [CF]</th>
<th>RedLab TEMP [CF]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Size (mm)</td>
<td>( 127 \text{ (L)} \times 88.9 \text{ (W)} \times 35.56 \text{ (H)} )</td>
</tr>
<tr>
<td>Power supply</td>
<td>From PC via USB, max. 100 mA; models &quot;CF&quot;: Battery buffered</td>
</tr>
<tr>
<td>Interface</td>
<td>USB 2.0 full-speed, compatible with USB 1.1, 2.0</td>
</tr>
<tr>
<td>Connectors</td>
<td>2x 10 and 2x 16 screw terminals. USB: Type B. Cable to type A included. Models &quot;CF&quot;: CompactFlash Slot</td>
</tr>
<tr>
<td>Environmental</td>
<td>Operating temperature 0...70°C, storage temperature 40...85°C, 0...90% relative humidity, non-condensing</td>
</tr>
</tbody>
</table>

1) 8 differential channels. 2) 2-wires with one sensor: 4 differential channels. 2-wire with two sensors: 8 differential channels. 3-wire with one sensor per channel-pair: 4 differential channels. 4-wire: 8 differential channels.
Temperature measurement with wireless data transmission

**RedLab WLS Series**

USB modules are a very handy and reliable solution for data acquisition: They allow the I/O hardware to move close to the sensor. Thus only insusceptible digital data has to be transmitted to the PC. But there may be cases where you want to get rid of any cables. With the RedLabs WLS you can chose from transmitting data to a PC via USB or via wireless USB. Simply add the wireless USB receiver RedLab WLS-IFC to the PC. You will notice the difference only in the distance of your transmission: It can be up to 730 m for wireless!

- Specifications of the DAQ modules correspond to the pure USB versions (models without “CF”, see page 56):
  - RedLab WLS-TC see RedLab TC and
  - RedLab WLS-TEMP see RedLab TEMP.
- Communications functionality additional to USB:
  - Communication also via 802.15.4 wireless protocol.
  - Distance: Up to ~40 m indoor and 730 m outdoor.
- Receiver at the PC - interface modul (gateway) RedLab WLS-IFC:
  - Can be used with one or more RedLab WLS modules.
  - Supports RedLab WLS-TC and RedLab WLS-TEMP.
  - Power supply via USB from PC, no external power supply.
  - All configuration settings via software.
  - LED for wireless status of communication.
- Plug’n’Play USB 2.0 (full-speed, USB cable included).

---

**Software included in package:**

- TracerDAQ (strip chart recorder and data logger). Universal Library (programming language support for Windows). InstaCAL utility (for easy installation, calibration and tests). Driver for LabVIEW.

---

**Ordering codes RedLab TEMP and TC**

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>RedLab WLS-TC</td>
<td>Wireless and USB temperature DAQ box for thermocouples J, K, T, E, R, S, B, N</td>
</tr>
<tr>
<td>RedLab WLS-TEMP</td>
<td>Wireless and USB temperature DAQ box for thermocouples J, K, T, E, R, S, B, N and RTDs (2-, 3-, 4-wire), thermistors, semiconductor temperature sensors</td>
</tr>
</tbody>
</table>

**Contents:** RedLab WLS-TC or WLS-TEMP, USB cable, screw driver, power supply, software and instructions for use on CD.

**RedLab WLS-IFC**

- Interface module (gateway) from wireless USB to USB (host side/at PC).

**Contents:** RedLab WLS-IFC, USB cable

**Complete bundles:**

- RedLab WLS-TC+IFC RedLab WLS-TC + RedLab WLS-IFC
- RedLab WLS-TEMP+IFC RedLab WLS-TEMP + RedLab WLS-IFC

---

**Specifications**

**RedLab WLS-TC**

- Functions The technical specifications correspond to the model RedLab TC

**RedLab WLS-TEMP**

- Functions The technical specifications correspond to the model RedLab TEMP

**RedLab WLS-IFC**

- Functions Interface/gateway from PC USB interface to wireless. Power supply from PC via USB. Status LED for wireless communication
- Wireless 802.15.4 protocol. Distance: Up to ~40 m indoor and 730 m outdoor
- USB 2.0 full-speed.
- Size IFC (mm) ~79 x 75 x 26,5

---
Analog output modules with digital I/O and counter

These RedLab series modules are intended for analog output. They have 4, 8 or 16 analog outputs with 16 bit resolution. A bidirectional synchronization pin allows to update the D/A converter outputs on multiple modules simultaneously. In addition there are 8 digital I/O channels and a 32 bit event counter.

- Depending on model 4, 8 or 16 analog outputs.
- Resolution 16 bit.
- Output ranges ±10 V/0…10 V, models with current outputs also 0…20 mA.
- Additional 8 discrete CMOS digital I/O channels.
- 32 bit event counter.
- Reliable screw terminals.
- Plug’n’Play USB 2.0 (full-speed, USB cable included). Power supply via USB.
- High drive models: Power supply included.

---

**Software included in package:**

- TracerDAQ (strip chart recorder and data logger), Universal Library (programming language support for Windows), InstaCAL utility (for easy installation, calibration and test), Driver for LabVIEW. Optional or with RedPack: ProfiLab-Expert1).

---

**Accessory:**

- ProfiLab-Expert: Graphic software. Available as an optional accessory or included in the bundle RedPack1).

---

**Ordering codes and functions**

<table>
<thead>
<tr>
<th>Model</th>
<th>Analog outputs</th>
<th>Ranges</th>
<th>Digital I/O</th>
<th>Event counter</th>
<th>Contents</th>
</tr>
</thead>
<tbody>
<tr>
<td>RedLab 3101</td>
<td>4, 16 bit</td>
<td>±10 V/0…10 V</td>
<td>8, CMOS</td>
<td>1x 32 bit</td>
<td>USB DAQ box, USB cable (type A-B), screw driver, CD with software/PDF user manual.</td>
</tr>
<tr>
<td>RedLab 3102</td>
<td>4, 16 bit</td>
<td>±10 V/0…10 V, 0…20 mA</td>
<td>8, CMOS</td>
<td>1x 32 bit</td>
<td>High drive model 3110, 3112, 3114: Power supply.</td>
</tr>
<tr>
<td>RedLab 3103</td>
<td>8, 16 bit</td>
<td>±10 V/0…10 V</td>
<td>8, CMOS</td>
<td>1x 32 bit</td>
<td></td>
</tr>
<tr>
<td>RedLab 3104</td>
<td>8, 16 bit</td>
<td>±10 V/0…10 V, 0…20 mA</td>
<td>8, CMOS</td>
<td>1x 32 bit</td>
<td></td>
</tr>
<tr>
<td>RedLab 3105</td>
<td>16, 16 bit</td>
<td>±10 V/0…10 V</td>
<td>8, CMOS</td>
<td>1x 32 bit</td>
<td></td>
</tr>
<tr>
<td>RedLab 3106</td>
<td>16, 16 bit</td>
<td>±10 V/0…10 V, 0…20 mA</td>
<td>8, CMOS</td>
<td>1x 32 bit</td>
<td></td>
</tr>
<tr>
<td>RedLab 3110</td>
<td>4, 16 bit</td>
<td>±10 V/0…10 V, high drive</td>
<td>8, CMOS</td>
<td>1x 32 bit</td>
<td></td>
</tr>
<tr>
<td>RedLab 3112</td>
<td>8, 16 bit</td>
<td>±10 V/0…10 V, high drive</td>
<td>8, CMOS</td>
<td>1x 32 bit</td>
<td></td>
</tr>
<tr>
<td>RedLab 3114</td>
<td>16, 16 bit</td>
<td>±10 V/0…10 V, high drive</td>
<td>8, CMOS</td>
<td>1x 32 bit</td>
<td></td>
</tr>
</tbody>
</table>

**Bundles with ProfiLab-Expert:**

- RedPack 3101
- RedPack 3102
- RedPack 3103
- RedPack 3104
- RedPack 3105
- RedPack 3106
- RedPack 3110
- RedPack 3112
- RedPack 3114

**Contents:**

- RedLab 31xx, USB cable, screw driver, software and instructions for use on CD. High drive models RedLab 311x: Power supply RedPack: ProfiLab-Expert1).

---

**Specifications**

<table>
<thead>
<tr>
<th>Models</th>
<th>3101</th>
<th>3103</th>
<th>3105</th>
<th>3102</th>
<th>3104</th>
<th>3106</th>
<th>3110</th>
<th>3112</th>
<th>3114</th>
</tr>
</thead>
<tbody>
<tr>
<td>Description</td>
<td>16 bit analog output modules with 4, 8, 16 channels plus digital I/O</td>
<td>16 bit analog output modules with 4, 8, 16 high drive channels plus digital I/O</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Analog outputs</td>
<td>4, 8, 16</td>
<td>4, 8, 16</td>
<td>4, 8, 16</td>
<td>4, 8, 16</td>
<td>4, 8, 16</td>
<td>4, 8, 16</td>
<td>4, 8, 16</td>
<td>4, 8, 16</td>
<td>4, 8, 16</td>
</tr>
<tr>
<td>D/A convert.</td>
<td>16 bit, 100 kHz (depending on system)</td>
<td>16 bit, 100 kHz (depending on system)</td>
<td>16 bit, 100 kHz (depending on system)</td>
<td>16 bit, 100 kHz (depending on system)</td>
<td>16 bit, 100 kHz (depending on system)</td>
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<td>16 bit, 100 kHz (depending on system)</td>
<td>16 bit, 100 kHz (depending on system)</td>
<td>16 bit, 100 kHz (depending on system)</td>
</tr>
<tr>
<td>Range</td>
<td>±10 V/0…10 V (output current per output typ. ±3.5 mA)</td>
<td>±10 V/0…10 V (output current per output typ. ±3.5 mA)</td>
<td>±10 V/0…10 V (output current per output typ. ±3.5 mA)</td>
<td>±10 V/0…10 V, high drive: Max. load per channel 40 mA (source/sink)</td>
<td>±10 V/0…10 V, high drive: Max. load per channel 40 mA (source/sink)</td>
<td>±10 V/0…10 V, high drive: Max. load per channel 40 mA (source/sink)</td>
<td>±10 V/0…10 V, high drive: Max. load per channel 40 mA (source/sink)</td>
<td>±10 V/0…10 V, high drive: Max. load per channel 40 mA (source/sink)</td>
<td>±10 V/0…10 V, high drive: Max. load per channel 40 mA (source/sink)</td>
</tr>
<tr>
<td>Digital I/O</td>
<td>±10 V/0…10 V (output current per output typ. ±3.5 mA)</td>
<td>±10 V/0…10 V (output current per output typ. ±3.5 mA)</td>
<td>±10 V/0…10 V, high drive: Max. load per channel 40 mA (source/sink)</td>
<td>±10 V/0…10 V, high drive: Max. load per channel 40 mA (source/sink)</td>
<td>±10 V/0…10 V, high drive: Max. load per channel 40 mA (source/sink)</td>
<td>±10 V/0…10 V, high drive: Max. load per channel 40 mA (source/sink)</td>
<td>±10 V/0…10 V, high drive: Max. load per channel 40 mA (source/sink)</td>
<td>±10 V/0…10 V, high drive: Max. load per channel 40 mA (source/sink)</td>
<td>±10 V/0…10 V, high drive: Max. load per channel 40 mA (source/sink)</td>
</tr>
<tr>
<td>Number, type</td>
<td>1x 32 bit event counter</td>
<td>1x 32 bit event counter</td>
<td>1x 32 bit event counter</td>
<td>1x 32 bit event counter</td>
<td>1x 32 bit event counter</td>
<td>1x 32 bit event counter</td>
<td>1x 32 bit event counter</td>
<td>1x 32 bit event counter</td>
<td>1x 32 bit event counter</td>
</tr>
<tr>
<td>Power supply</td>
<td>From PC via USB</td>
<td>Power supply 5 V/10 W</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interface</td>
<td>USB 2.0 full-speed, compatible with USB 1.1, 2.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Connectors</td>
<td>- (power supply from PC via USB)</td>
<td>Connector for power supply</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| Environmental | Operation temperature 0…60°C, storage temperature -40…85°C, 0…90% relative humidity non-condensing | }
Digital acquisition, control and switching with USB

The RedLab 1024 lets you control digital inputs and outputs via USB. For example, you can control switching operations or relays or acquire digital states. The unbeatable benefits of the module are its small, space-saving size, its easy installation and handling as well as its low price.

- Digital interface module for USB.
- 24 TTL/CMOS digital I/O channels (82C55), arranged in three 8 bit wide ports.
- HLS: High drive inputs/outputs instead of TTL/CMOS 82C55.
- 32 bit event counter.
- Screw terminal connectors.
- Size (mm) only 83 x 80 x 25.4.

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Software included in package:

TracerDAQ [strip chart recorder and data logger]. Universal Library (programming language support for Windows). InstaCAL utility (for easy installation, calibration and test). Driver for LabVIEW. Optional or with RedPack: ProfiLab-Expert1).

1) ProfiLab-Expert may not support the full sample rate.

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Accessory

- ProfiLab-Expert Graphic software. Available as an optional accessory or included in the bundle RedPack1).

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Specifications

Digital inputs/outputs

- Number: 24 bidirectional input/output channels, arranged as 3 x 8 bit wide ports or 2 x 8 bit and 2 x 4 bit wide ports; each port programmable as input or output.
- Version LS: 82C55 TTL/CMOS, by default all lines are connected to Vg via a 47 kΩ resistor [standard]. Optional pull-down to GND possible.
  - Input high: 2.0 V min./5.5 V abs. max. Input low: 0.8 V max./-0.5 V abs. min. Output high: (IOH=-2.5 mA) 3.0 V min.
- Version HLS: High drive, 74ACT373 inputs/74FCT244 outputs
  - Internal 47 kΩ resistor, user configurable for pull-up or pull-down via external connector "port x pull-up/pull-down" to USB +5 V or GND. Ports A, B and C configurable independently.
  - Input high: 2.0 V min./5.5 V abs. max. Input low: 0.8 V max./-0.5 V abs. min. Output high: (IOH=-15 mA) 2.4 V min. Output low: (IOL=64 mA) 0.55 V max.
  - Max. current = 15 mA per output

Counter

- Number: 1x 32 bit event counter
- Input frequency: Max. 1 MHz

General

- Size (mm): ~83 x 80 x 25.4

Power supply

- From PC via USB

Connector

- I/O: 2x 10 screw terminals, USB: Type B. Cable to type A included in package (max. 3 m cable possible)

Environmental

- Operating temperature 0...70°C, storage temperature -40...85°C; 0...90% rel. humidity, non-condensing

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RedLab Series Designs

<table>
<thead>
<tr>
<th>Design</th>
<th>Mini</th>
<th>Midi</th>
<th>Special form design</th>
<th>Special design</th>
</tr>
</thead>
<tbody>
<tr>
<td>Size (mm, approx.)</td>
<td>83 x 80 x 25.4</td>
<td>127 x 88.9 x 35.56</td>
<td>78 x 75 x 25.5</td>
<td>157 x 102 x 40</td>
</tr>
<tr>
<td>Models</td>
<td>RedLab 1208, RedLab 1408, RedLab 1608, RedLab 1024</td>
<td>RedLab 4301, RedLab 4303, RedLab 3xxx, RedLab TC and TEMP (CF), RedLab WLS-TC, and TEMP</td>
<td>RedLab WLS-IFC</td>
<td>RedLab 1008</td>
</tr>
<tr>
<td>I/O connectivity</td>
<td>2 rows of screw terminals</td>
<td>2 rows of screw terminals</td>
<td>-</td>
<td>2 rows of screw terminals, 37-pin D-sub</td>
</tr>
</tbody>
</table>
16 bit counter and timer box for USB

Now you can build counter applications also with USB using the RedLabs 4301 and 4303. The RedLabs’ 5 or 10 counters with 16 bit resolution can operate in the modes event counting, frequency measurement, frequency division, single-shot, square signal generation with symmetric or variable duty cycle (PWM/pulse width modulation).

- RedLab 4301: 5x 16 bit counters up to 20 MHz.
- RedLab 4303: 10x 16 bit counters up to 20 MHz.
- Counter chip type 9513.
- Operating modes: Event counting, frequency measurement, frequency division, single-shot, square signal generation with symmetric or variable duty cycle (PWM).
- Interrupt control.
- 8 digital inputs, 8 digital outputs.
- Screw terminal connectors.
- Size [mm] 127 x 90 x 36.

USB Connectors Type A and Type B

USB type A connector - at a PC/notebook or hub

USB type B connector - at an USB device (eg. MEphisto Scope)

<< USB type A “extender”