



## CT-BOX

Digital Current Transducer Box  
for the Highest Accuracy Current Measurements

Precision Current  
Transducers



Your **DIGITAL**  
**POWER ELECTRONICS**

Partner.



## CT-BOX

- Precise and accurate current measuring system includes current transducer and measuring unit to obtain best-in-class performances
- Internal calibration and thermal stabilization to obtain excellent stability of current measurements
- Oscilloscope (up to 100 ksps) and Data-Logger

### FEATURES

- Digital Interface
  - Ethernet 10/100 Mbit TCP/IP
  - USB (only Data-Logger)
  - RS-232 (only Data-Logger)
- < 1 ppm/K Temperature Coefficient
- < 0.005 % Full-Scale Accuracy (with High-Accuracy Calibration Option)
- Configurable Recorder on microSD-Flash
- Trigger I/ O and Alarm Output
- External Temperature Sensors
- Analog Voltage Monitor
- Local Display for Current Readings
- Desktop or Rack Mounting in 1U
- Integrated Fan-less AC/DC Power Supply
- CT-BOX Viewer Dedicated Software

### APPLICATIONS

- Test & Measurement Setups
- Sensing Element in Calibration Systems
- Power Supplies
- Biomedical Devices

The CT-BOX is a stand-alone system designed to measure with the highest accuracy and precision DC and AC currents, providing the readings in different digital formats.

The CT-BOX system is developed to be used with the 0-FLUCS current output DCCTs allowing measurements of currents up to kA.

The system integrates a burden resistor and a conditioning network feeding a 24-bit temperature stabilized ADC in order to reach < 1 ppm/K temperature stability. The digital section interfaced to the ADC performs a calibrated measurement in order to eliminate the non-ideal behavior thus providing a 0.005% full-scale current value accuracy (optional).

The ADC sampling frequency can be configured up to 100 kHz allowing to acquire high frequency components and fast current transients.

Current readings can be triggered in different modes:

- by an external LVTTTL or TTL signal;
- by a remote command sent to the digital interface;
- internally, setting the sampling period and the acquisition window.

The time-stamp, the current readings and the external temperature values are stored in a microSD Flash memory allowing long-term acquisitions.

The microSD memory can be either read via Ethernet, USB or RS-232 interfaces or removed from the system and transferred to other devices in order to download its content.

A temperature probe can be plugged on the back of the system if needed in order to also read and store external temperature values.

A local display showing current readings as well as other settings - e.g. IP address, mode of operation - is present.

A configurable alarm output can be used to signal to an external device if a pre-set current threshold



#### About Us

ELS Instruments (formerly CAEN ELS) is a leading company in the design of power supplies and state-of-the-art complete electronic systems for the Physics research world, having its main focus on dedicated solutions for the particle accelerator community and high-end industrial applications.

-  Power Supply Systems
-  Precision Current Measurements
-  Beamline Electronics Instrumentation
-  FMC and MicroTCA

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has been exceeded. An integrated function allows to compensate for measurement setup offset currents.

The unit integrates a low-noise mixed AC/DC power supply to connect the

CT-BOX directly to the AC mains. The extremely compact design (1U-9") allows using the instrument as benchmark or to install the systems in a 1U-19" rack.

| Technical Specifications          | CT-BOX                                                                    |
|-----------------------------------|---------------------------------------------------------------------------|
| AC Line Input                     | 90-260 V(AC), 46-440 Hz                                                   |
| Maximum Power Consumption         | 25W                                                                       |
| Current Accuracy                  | < 0.01 % (standard)<br>< 0.005 % (High-Accuracy option)                   |
| Current Resolution                | 24-bit                                                                    |
| Sampling Frequency                | 0.1 Hz - 100 kHz                                                          |
| Thermal Coefficient (typ.)        | < 1 ppm/K                                                                 |
| Current Ranges Available [A]      | 100, 150, 200, 300, 400, 600, 1000                                        |
| Current Readings                  | 7 ½ digits                                                                |
| Linearity                         | < 25 ppm/FS                                                               |
| Long Term Stability               | < 10 ppm/FS                                                               |
| Noise                             | < 1 ppm (up to 10 Hz readout)<br>< 5 ppm (up to 10 kHz readout)           |
| Offset                            | < 1 ppm/FS (with Zero Offset function)                                    |
| Number of Memory Readings         | depending on microSD card capacity                                        |
| LED Indicators                    | Power OK, DCCT connected, Status, SD reading/writing, Acquisition running |
| Temperature Probe Resolution      | 0.1 °C                                                                    |
| Temperature Probe Accuracy        | ± 0.5 °C                                                                  |
| Temperature Accuracy              | 0.05%                                                                     |
| Digital Interfaces                | Ethernet 10/100 Mbps TCP-IP<br>USB 2.0<br>RS-232                          |
| Analog Monitor                    | ±10 V (LEMO connector)                                                    |
| Trigger Inputs                    | Digital Interface (soft-trigger)<br>TTL 5V - LVTTTL compatible            |
| Alarm Output                      | TTL 5V<br>Solid State Relay                                               |
| Mechanical Dimensions (L x W x H) | 180 x 220 x 41 mm                                                         |
| Operating Temperature             | 0 ... 40 °C                                                               |



**CT-BOX**  
also for 1U - 19" installation

| Ordering Code | Acronym     | Description                                                                                                |
|---------------|-------------|------------------------------------------------------------------------------------------------------------|
| WCTBOX100XAA  | CT-BOX-100  | 100A Current Transducer Digital Box with Local Display and Ethernet, USB, RS-232 Communication Interfaces  |
| WCTBOX150XAA  | CT-BOX-150  | 200A Current Transducer Digital Box with Local Display and Ethernet, USB, RS-232 Communication Interfaces  |
| WCTBOX200XAA  | CT-BOX-200  | 200A Current Transducer Digital Box with Local Display and Ethernet, USB, RS-232 Communication Interfaces  |
| WCTBOX300XAA  | CT-BOX-300  | 300A Current Transducer Digital Box with Local Display and Ethernet, USB, RS-232 Communication Interfaces  |
| WCTBOX400XAA  | CT-BOX-400  | 400A Current Transducer Digital Box with Local Display and Ethernet, USB, RS-232 Communication Interfaces  |
| WCTBOX600XAA  | CT-BOX-600  | 600A Current Transducer Digital Box with Local Display and Ethernet, USB, RS-232 Communication Interfaces  |
| WCTBOX1000XA  | CT-BOX-1000 | 1000A Current Transducer Digital Box with Local Display and Ethernet, USB, RS-232 Communication Interfaces |
| WCTBOXMBXAAA  | CT-BOX-MB   | CT-BOX mounting brackets for 1U - 19" cabinet installation                                                 |
| WCTBOX1YXAAA  | CT-BOX-YC   | CT-BOX In-House Yearly Calibration Service (< 0.01% accuracy)                                              |
| WCTBOXSICLXA  | CT-BOX-HAC  | CT-BOX High-Accuracy Calibration Service (<0.005% accuracy)                                                |

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