


Datasheet Series ACL

| | | |
|---|--|---|
| Model | ACLS21050 |  |
| Order no. | 25-044-000-01 | |
| Basic operating modes | CC, CR, CP, CV | |
| Standard interfaces | RS-232, USB, LAN, CAN | |
| Number of phases | 1 | |
| Frequency | DC, 40 ... 1000 Hz | |
| Maximum AC input voltage VmaxAC | 500 V AC | |
| Maximum DC input voltage VmaxDC | 700 V DC | |
| Minimum input voltage Vmin¹⁾ | 10 V | |
| Maximum current Imax | 75 A | |
| Maximum peak current Ipeak | 300 A | |
| Power | 21000 W | |
| Resistance | 0.13 ... 94 Ω | |
| Rise/fall time²⁾ | 20 μs | |
| Load terminals³⁾ | PH3/10.16-ST76 | |
| Power consumption | 1380 VA | |
| Mains voltage Mains voltage switchable | 1/N/PE AC 230 V 50 ... 60 Hz 1/N/PE AC 115 V 50 ... 60 Hz | |
| Noise max. ca.⁴⁾ | 83 dB(A) | |
| Weight ca. | 146 kg | |
| Housing / 3D model⁵⁾ | 19" - 19 U / ACL_M19 | |
| Installation Depth⁶⁾ | | |
| Width x Height x Depth | 482 x 862 x 503 mm | |

1. Minimum input voltage for maximum static load current.
2. Rise and fall times are from 10 ... 90 % and 90 ... 10 % of maximum current (CC mode, tolerance ±20 %).
3. SBUS4-32: Touch-protected sunk binding post for 4 mm banana plugs / max. 32 A.
PH3/7.62-ST41: Phoenix plug strip 3-pole / Grid dimension 7.62 mm / max. 41 A.
=> incl. mating connector from PHOENIX CONTACT (Phoenix order no.: 1777846)
PH3/10.16-ST76: Phoenix plug strip 3-pole / Grid dimension 10.16 mm / max. 76 A.
=> incl. mating connector from PHOENIX CONTACT (Phoenix order no.: 1967469)
PH3/15-ST125: Phoenix plug strip 3-pole / Grid dimension 15 mm / max. 125 A.
=> incl. mating connector from PHOENIX CONTACT (Phoenix order no.: 1762602)
PH7/10.16-ST76: Phoenix plug strip 7-pole / Grid dimension 10.16 mm / max. 76 A.
=> incl. mating connector from PHOENIX CONTACT (Phoenix order no.: 1967508)
4. Measured at the front in distance of 1 m.
5. 1 U = 44.45 mm. Detailed dimensions by means of 3D models at www.hoecherl-hackl.com/downloads.

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6. Installation depth without wiring.

| Operating modes | | |
|--|--|---|
| Basic operating modes | CC, CV, CR, CP | |
| Frequency | | |
| Frequency range | DC, 40 ... 1,000 Hz | |
| Synchronization time | 1 ... 5 periods of input signal | |
| Synchronization time for rapidly changing frequencies or when connecting the input voltage | Synchronization to input/extern | Pre-synchronization to line voltage |
| | max. 500 ms | 0 ms |
| Accuracy of voltage setting ¹⁾ | | |
| | of setting | of corresponding range |
| Voltage | | |
| DC | ±0.5 % | ±0.1 % |
| AC | ±1 % | ±0.2 % |
| Accuracy of current setting ¹⁾ | | |
| | of setting | of corresponding range |
| Current | | |
| DC | ±0.2 % | ±0.15 % |
| 40 ... 400 Hz | ±0.5 % | ±0.3 % |
| > 400 Hz | ±0.75 % | ±0.5 % |
| Resolution | 14 bits | |
| Total harmonic distortion ²⁾ | | |
| 40 ... 400 Hz | <2 % | |
| > 400 Hz | <4 % | |
| Accuracy of resistance setting ¹⁾ | | |
| | of setting | of corresponding range |
| Resistance ³⁾ | ±1.5 % | ±1 % of resistance range ±0.3 % of current range |
| Accuracy of power setting ¹⁾ | | |
| | of setting | of corresponding range |
| Power ⁴⁾ | | |
| DC, 40 ... 400 Hz | ±1 % | ±0.25 % |
| > 400 Hz | ±1.5 % | ±0.3 % |
| Power ⁵⁾ | | |
| DC, 40 ... 400 Hz | ±3 % | ±0.5 % |
| > 400 Hz | ±5 % | ±2.5 % |
| Resolution | calculated from resolutions of voltage and current measurement and current setting | |
| Rise and fall time | | |
| CC mode | see model overview | |
| CP, CV mode | DC | ca. 10 ms |
| | AC | ca. 1 s |
| Accuracy of adjustable protections | | |
| | of setting | of current range |
| Overcurrent protection | ±1 % | ±0.2 % |
| Resolution | 12 bits | |
| Waveforms (Resolution: 360 points in 1° steps) | | |
| Sine | as fundamental waveform | |
| Arbitrary waveforms | based on sine, triangle or rectangle, editable pointwise | |
| Harmonics | 2 nd to 25 th Harmonics in variable proportions superimposable to the fundamental wave | |
| Crest factor | 1.4142 ... 4.0 with automatic amplitude correction | |
| Phase cut | -180 ... 180° | |
| Phase shift | -180 ... 180° (only in combination with crest factor or phase cut, no capacitive or inductive load) | |

| Measurement functions | | |
|---|---|------------------------|
| Numeric display | rms value voltage, rms value current, resistance, active power, apparent power, reactive power, frequency, power factor, crest factor | |
| Graphical display | last period of current and voltage with 360 points, temporal progression of rms values of voltage, current and/or power of focused channel | |
| Accuracy of measurements/display | | |
| | of measured (real) value | of corresponding range |
| Voltage | | |
| DC | ±0.2 % | ±0.05 % ±1 digit |
| AC | ±0.3 % | ±0.1 % ±1 digit |
| Current | | |
| DC | ±0.2 % | ±0.1 % ±1 digit |
| 40 ... 400 Hz | ±0.5 % | ±0.3 % ±1 digit |
| > 400 Hz | ±0.75 % | ±0.5 % ±1 digit |
| Resolution | 16 bits | |
| Resistance | calculated from voltage and current | |
| Power | calculated from voltage and current | |
| Sampling time | 200 µs, triggerable | |
| Frequency | ±0.1 % ±0.1 Hz | |
| Dynamic function (LIST) | | |
| Number of load levels | max. 300, with corresponding ramp and dwell times | |
| | min. | max. |
| Dwell time | 200 µs | 1,000 s |
| Ramp time | 0 s | 1,000 s |
| Resolution | 200 µs | |
| Accuracy of setting times | ±0.02 % | |
| Delay at triggered start | max. 300 µs | |
| Data acquisition | | |
| to external USB flash drive | | |
| Sampling time | 0.5 ... 30 s, resolution 100 ms | |
| Measurement data | timestamp, voltage, current | |
| Number of measurement points | limited by USB memory capacity | |
| Dateformat | .csv | |
| to internal memory | | |
| Sampling time | 200 µs ... 1,000 s, resolution 200 µs, static or synchronized with LIST function | |
| Measurement data | timestamp, voltage, current | |
| Number of measurement points | max. 40,000 | |
| Settings memory | | |
| Number of user settings | 9, selectable (incl. programmed waveform and List) 1 for last settings at power-off or power fail | |
| I/O port (option ACL06): control inputs and outputs | | |
| Control inputs | mode selection load input on - off selection of control source (internal, external) input mode (AC, DC) synchronization source (input, line, extern) synchronization input remote shut-down trigger input (low-active) | |
| Dig. input level | logical low: 0 ... 0.8 V, logical high: 3 ... 30 V | |
| Control outputs | load input activation state (low-active) status overload trigger output programmable output | |
| Dig. output level | logical low: 0 ... 0.8 V, logical high: 5 V/24 V selectable, max. 10 mA (push-pull) | |

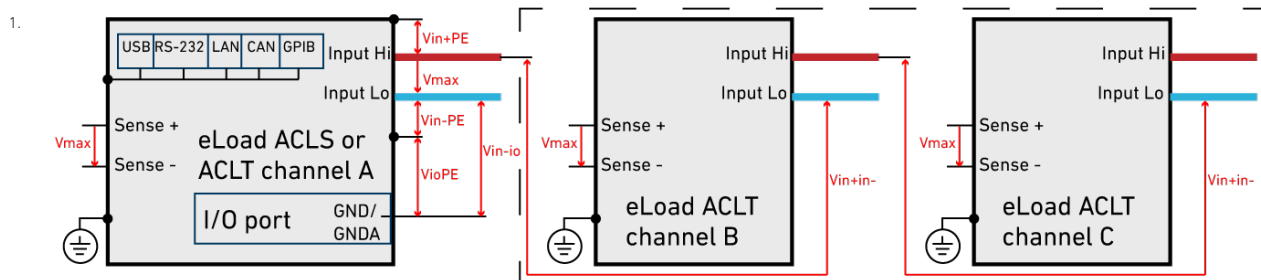
The specified accuracies refer to an ambient temperature of 23 ±5 °C. The specified accuracies are valid when the sense lines are connected and when the unit is connected to undisturbed voltages (ripple and noise < 0.1 %). At voltages with higher disturbance values the accuracy can change for the worse.

1. The accuracy applies for the specified frequencies. At higher frequencies the accuracy decreases.
2. Measured at I_{max}. THD increases at lower currents.
3. At 5 % V_{max} < V < 100 % V_{max} and 5 % I_{max} < I < 100 % I_{max}.
4. At V > 30 % V_{max} and I > 30 % I_{max}.
5. At V < 30 % V_{max} or I < 30 % I_{max}.

Technical Data

| I/O port (option ACL06): accuracy analog control 0 ... 10 V for current | | |
|---|--|---|
| | of setting | of corresponding range |
| Current | | |
| DC | ±0.2 % | ±0.1 % |
| 40 ... 400 Hz | ±0.5 % | ±0.3 % |
| > 400 Hz | ±0.75 % | ±0.5 % |
| Input resistance of analog inputs >10 kΩ | | |
| I/O port (option ACL06): accuracy analog monitor signals 0 ... 7 V / 0 ... 10 V for voltage and current | | |
| | of analog signal of real value | offset voltage |
| Voltage | | |
| DC, 40 ... 400 Hz | ±0.3 % | ±15 mV |
| >400 Hz | ±0.5 % | ±20 mV |
| Current | | |
| DC, 40 ... 400 Hz | ±0.5 % | ±30 mV |
| >400 Hz | ±0.75 % | ±50 mV |
| Maximum load capacity 2 kΩ. Analog monitor outputs as proportional AC curve or RMS value, selectable | | |
| I/O port (option ACL06): permissible voltages ¹⁾ | | |
| | AC mode The external circuit is mains voltage up to 500 V AC with overvoltage category II. | DC mode The external circuit is a DC voltage derived from mains voltage with overvoltage category II. |
| Vin-io (GND - Input LO) | max. 600 V AC | max. 800 V DC |
| VioPE (GND - PE) | max. 100 V AC | max. 100 V DC |
| Input | | |
| Input resistance | > 50 kΩ at deactivated load input | |
| Input capacity | see model overview | |
| Parallel operation | up to 3 devices in Master-Slave operation | |
| Max. input voltage Vmax | see model overview | |
| Min. input voltage Vmin for max. current | see model overview | |
| Input: permissible voltages ¹⁾ | | |
| Vin-PE (Input LO - PE) | max. 500 V ²⁾ | |
| Vin+PE (Input HI - PE) | max. 500 V ²⁾ | |
| Vin+in- (Input HI (A) - Input LO (B) / Input HI (B) - Input LO (C)) | max. 600 V ²⁾ | |
| Power | | |
| Continuous power | see model overview (at TA = 21 °C) | |
| Derating | -1.2 %/°C for TA > 21 °C | |
| Protection and Monitoring | | |
| Protective devices | overcurrent overpower overtemperature | |
| Monitoring | overvoltage undervoltage (if the input voltage is too low for the set current) | |

| Terminals | |
|---|--|
| Load input | see model overview |
| Sense | Phoenix PH2/7.62-BU16 |
| Operating conditions | |
| Operating temperature | 5 ... 40 °C |
| Stock temperature | -25 ... 65 °C |
| Max. operation height | 2,000 m over sea level |
| Pollution degree | 2 |
| Max. humidity | 80 % at 31 °C, linear decreasing to 50 % at 40 °C |
| Min. distance rear panel to wall or other objects | 70 cm |
| Cooling | temperature-controlled air cooling |
| Noise | see model overview |
| Mains voltage | see model overview |
| Mains cable | length max. 3 m cross-section of mains leads: 10 A cold device plug: (IEC C13): min. 1 mm ² 16 A cold device plug: (IEC C19): min. 1.5 mm ² |
| Power consumption | see model overview |
| Housing | |
| Dimensions, weight | see model overview |
| Color | front panel rear panel side panels, top |
| | RAL7035 (light grey) stainless steel RAL7037 (dusty grey) |
| Safety and EMV | |
| Protection class | 1 |
| Measuring category | CAT II |
| Electrical safety | EN 61010-1-2010/A1:2019/AC:2019-4 EN 61010-2-030:2010 |
| EMC | EN 61326-1:2013 EN 5501:2016/A1:2017 EN 61000-3-2:2014 EN 61000-3-3:2013 |
| Standard interfaces | |
| Data interfaces | RS-232, USB, LAN, CAN |
| I/O port | - |
| Available options | |
| Data interface | ACL02 GPIB interface |
| Hardware extensions | ACL06 ACL14 galvanically isolated I/O port castors |
| Calibration, warranty | |
| FCC-ACLxx | Factory Calibration Certificate, twice for free |
| Warranty | 2 years |



2. positive/negative DC voltage or RMS value of a sinusoidal AC voltage

Technical data of production series B, rev. 6. Subject to technical changes without notice.