

Current Transducer Interface Options

Selection Guide

LEM current transducers are recognized as leaders in the field of high current AC+DC sensors and used in conjunction with PPA series power analyzers, they allow N4L to provide world leading high power measurement systems.

The performance of any system involving external current sensors is largely dependent on the interfacing and connection technique. This is more complex than commonly imagined and often represents the difference between a good and bad system.

Power supply stability, constant and peak current rating, burden resistor selection, connection cable volt drop, noise rejection and total burden limits for a CT are some of the issues easily overlooked despite being critical to achieving an effective solution.

N4L current transducer interface accessories provide a solution to almost any high current power measurement environment with hardware specifically designed for ease of use, reliability, and optimum performance.

LEM-6 Interface



LEM-1 Interface



LEM-1 50W Power Module







LEM-1 120W Power Module



The ideal solution will depend upon the number of phases, the LEM CT's being used for each phase plus the distance between the power analyzer and the current sensor(s).

Interconnecting cables used in each system follow the key below:

Connection cable key

-  D type – Multi core cable - 2m standard - up to 6m optional
-  Safety BNC to BNC Std 1m
-  ± 15V DC Power
-  Touchproof 4mm – Coax - Safety BNC - up to 18m

Option 1 LEM-6 Interface Unit

The LEM-6 interface together with connection cables supplied as standard provides the most convenient and flexible solution for systems with up to 707 Arms on 3 to 6 phases.

Each phase has an individual DC-DC converter to optimise stability and 4 selectable burden resistor values. The 1 Ohm burden is used for full CT range measurements while the higher burden values provide additional measurement sensitivity in applications where a CT will continuously work in a low current region of its specified range.

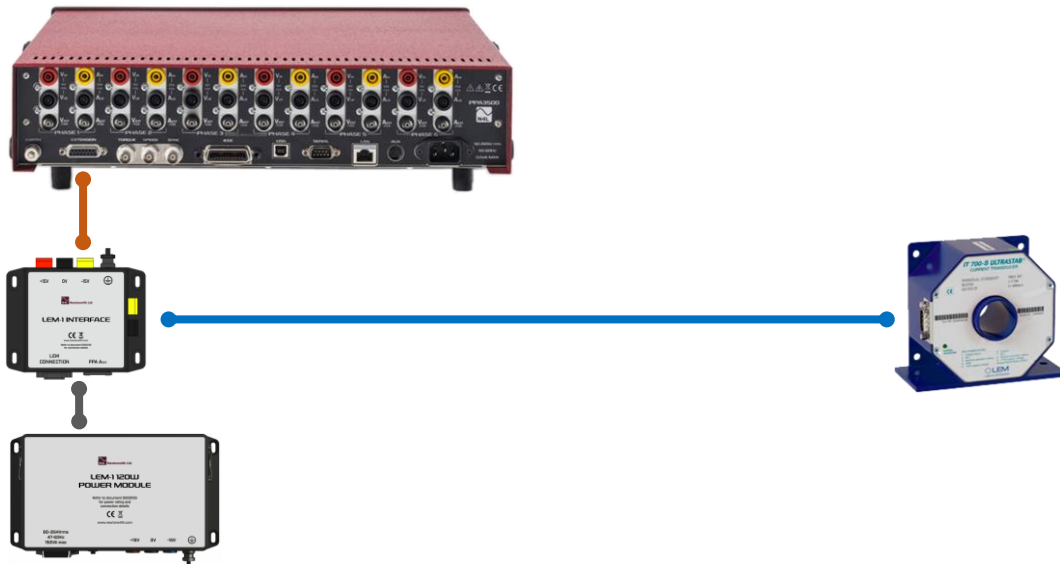
- | | |
|-------------------------------------|------------------------------------|
| Number of phases on one interface - | 3 to 6 |
| Calibrated Burden resistor values - | 4 per phase (1, 2.5, 5 and 10 Ohm) |
| Max CT secondary current - | 1A dc or ac peak per phase |
| Distance from Interface to CT(s) - | Up to 6m |



Where multiple burden resistors are not required, the CT current is above 707 Arms or the distance between the power analyzers and CT's is above 6m, the LEM-1 Interface powered by one of our LEM-1 Power Modules provides the solution.

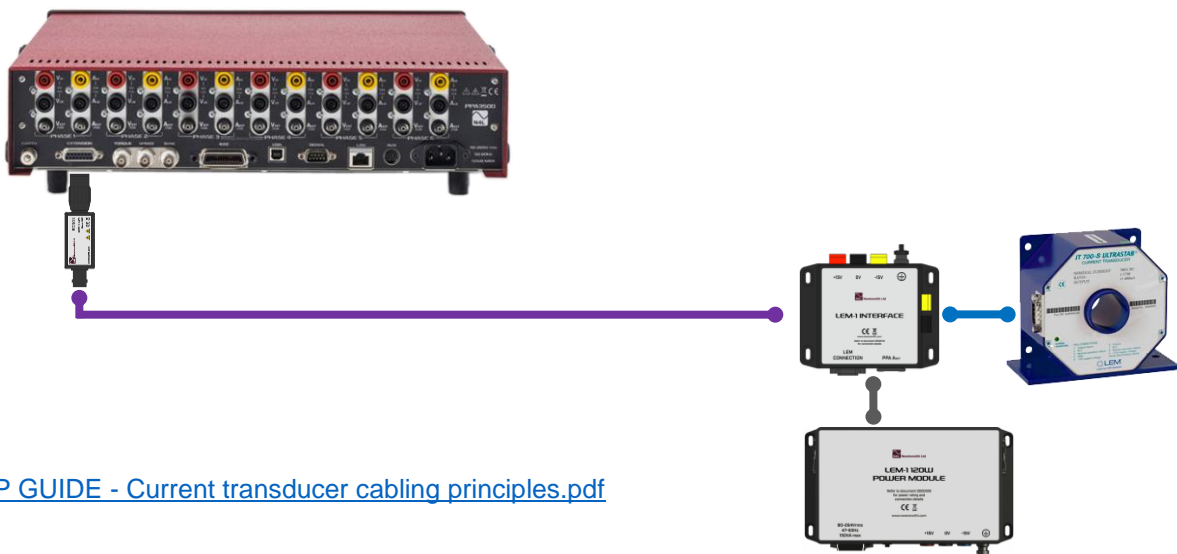
Option 2 LEM-1 Interface + LEM-1 Power Module

Number of phases on one interface - 1
 Calibrated Burden resistor value - 1 (1 Ohm)
 Max CT secondary current - 1.6Arms per phase
 Distance from Interface to CT - **Up to 6m**



Option 3 LEM-1 Interface + LEM-1 Power Module + BDR01

Number of phases on one interface - 1
 Calibrated Burden resistor value - 1 (1 Ohm)
 Max CT secondary current - 1.6Arms per phase
 Distance from Analyzer to Interface - **Up to 18m**



 [APP GUIDE - Current transducer cabling principles.pdf](#)

Multi-phase LEM-1 systems

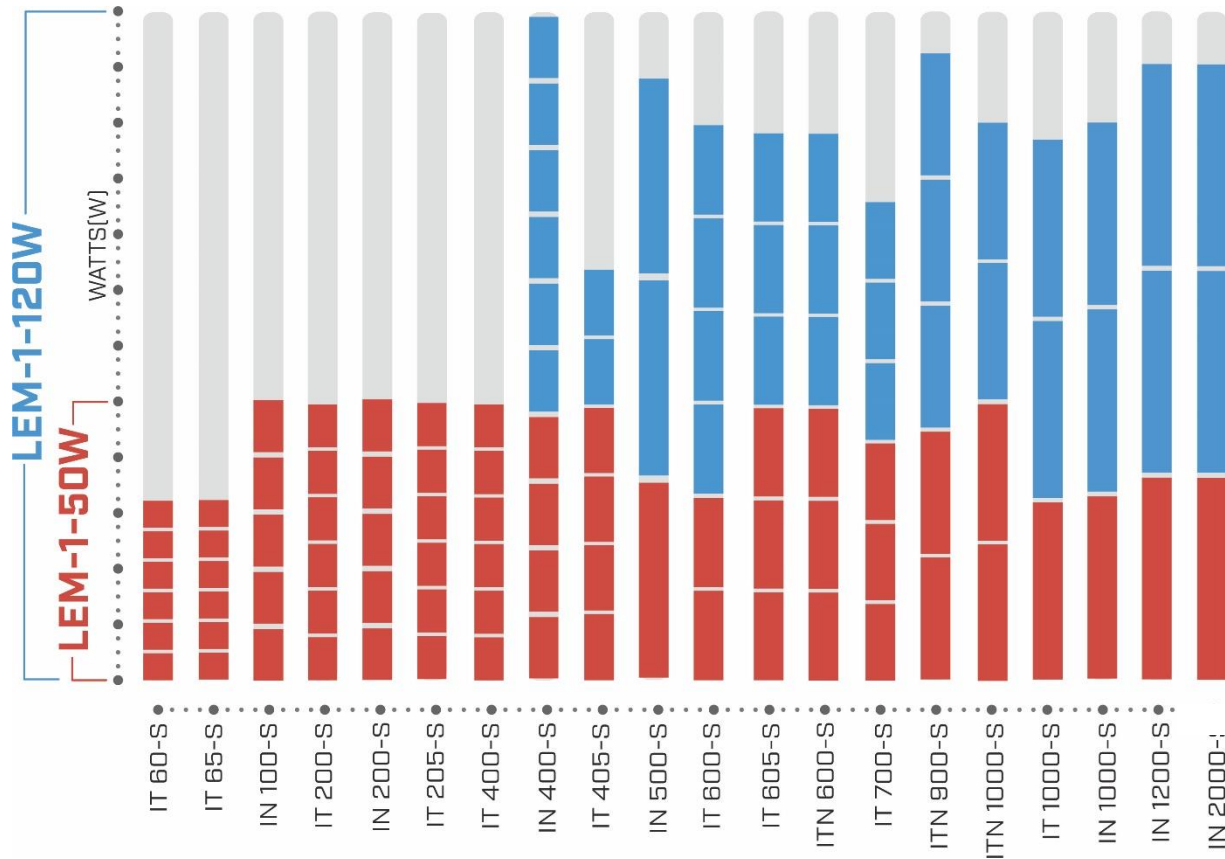
Featuring a universal AC power input and touchproof 4mm safety outputs for convenient connection to multiple LEM-1 interfaces, the LEM-1 Power Modules maintain a stable $\pm 15V$ DC supply over their complete power range plus a x2 full power capacity for 100ms to support overload capability available on most LEM CT's.



| CT Model | Max AC Amps RMS | LEM-6 Interface | LEM-1 Interface | LEM-1 50W Max LEM-1 / CT's | LEM-1 120W Max LEM-1 / CT's |
|------------|-----------------|-----------------|-----------------|----------------------------|-----------------------------|
| IT 60-S | 42 | Yes | Yes | 6 | 6 |
| IT 65-S * | 60 | Yes | Yes | 6 | 6 |
| IN 100-S | 100 | Yes | Yes | 5 | 6 |
| IT 200-S | 141 | Yes | Yes | 6 | 6 |
| IN 200-S | 200 | Yes | Yes | 5 | 6 |
| IT 205-S * | 200 | Yes | Yes | 6 | 6 |
| IT 400-S | 282 | Yes | Yes | 6 | 6 |
| IN 400-S | 400 | Yes | Yes | 4 | 6 |
| IT 405-S * | 400 | Yes | Yes | 4 | 6 |
| IN 500-S | 500 | | Yes | 1 | 3 |
| IT 600-S | 425 | Yes | Yes | 3 | 6 |
| ITN600-S | 424 | Yes | Yes | 3 | 6 |
| IT 605-S * | 600 | Yes | Yes | 3 | 6 |
| IT 700-S | 495 | Yes | Yes | 3 | 6 |
| ITN 900-S | 636 | Yes | Yes | 2 | 5 |
| ITN 1000-S | 707 | Yes | Yes | 2 | 4 |
| IT 1000-S | 707 | | Yes | 1 | 3 |
| IN 1000-S | 1000 | | Yes | 1 | 3 |
| IN 1200-S | 1200 | | Yes | 1 | 3 |
| IN 2000-S | 2000 | | Yes | 1 | 3 |

CT's marked * are NLA but are shown for legacy installations

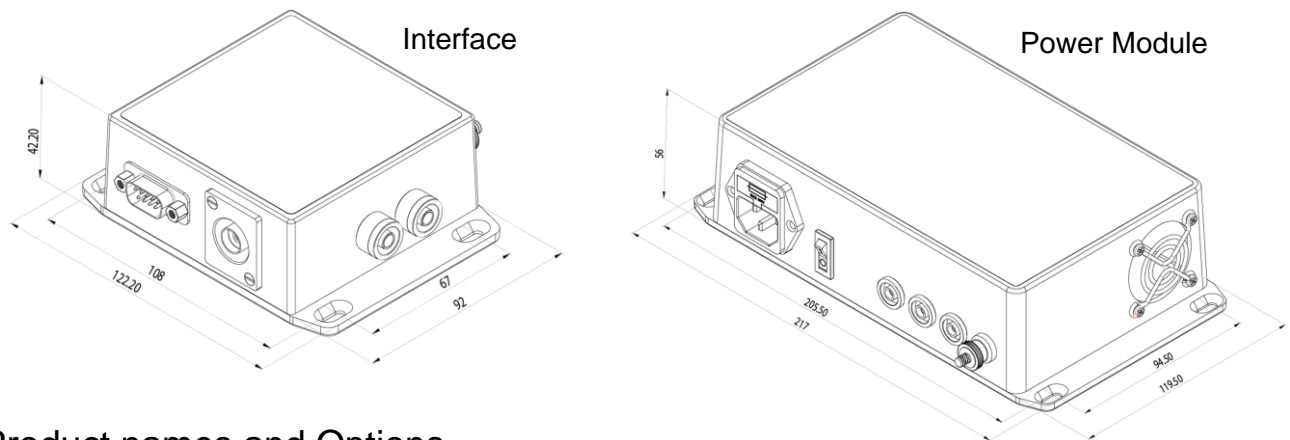
LEM-1 Power Module selection chart



LEM-1 Power Module electrical specification

| Parameter | LEM-1 50W | LEM-1 120W |
|---------------------|--|---------------|
| Input Voltage | 90-264 Vrms | |
| Input Frequency | 47-63Hz | |
| Output Voltage | DC \pm 15V | |
| Output Current | 1.67A Continuous | 4A Continuous |
| Load Regulation | \pm 1% @ 10-100% full load | |
| Overload capability | Continuous rating x2 for 100ms – 10% duty cycle | |
| Output protection | Short circuit protection with foldback – Auto recovery | |
| Operating Temp | -30°C to 70°C | |
| Typical Efficiency | > 85 % @ full load | |

LEM-1 Interface and Power Module dimensions



Product names and Options

OPTION 1

N4L-LEM6-3 Three Channel Interface

LEM6-3 - 19" rack mountable Three Channel System Interface Unit + 0.5m Safety BNC-BNC Leads + 4mm shorting connectors

N4L-LEM6-4 Four Channel Interface

LEM6-4 - 19" rack mountable Four Channel System Interface Unit + 0.5m Safety BNC-BNC Leads + 4mm shorting connectors

N4L-LEM6-5 Five Channel Interface

LEM6-5 - 19" rack mountable Five Channel System Interface Unit + 0.5m Safety BNC-BNC Leads + 4mm shorting connectors

N4L-LEM6-6 Six Channel Interface

LEM6-6 - 19" rack mountable Six Channel System Interface Unit + 0.5m Safety BNC-BNC Leads + 4mm shorting connectors

[LEM Interface Cable Assembly-2m](#)

[LEM-1 & LEM6 CT to interface cable 2m length - Supplied standard](#)

[LEM Interface Cable Assembly-3m](#)

[LEM-1 & LEM6 CT to interface cable 3m length - Optional](#)

[LEM Interface Cable Assembly-4m](#)

[LEM-1 & LEM6 CT to interface cable 4m length - Optional](#)

[LEM Interface Cable Assembly-5m](#)

[LEM-1 & LEM6 CT to interface cable 5m length - Optional](#)

[LEM Interface Cable Assembly-6m](#)

[LEM-1 & LEM6 CT to interface cable 6m length - Optional](#)

OPTION 2

LEM-1 Interface

LEM-1 Interface + 4mm & BNC shorting connectors + colour coded power leads + 0.5m Safety BNC-BNC Lead Unit Only - NO PSU

LEM-1 50W Power Module

Universal Input to $\pm 15V$ @ 1.67A Output Power module + IEC input lead

LEM-1 120W Power Module

Universal Input to $\pm 15V$ @ 4A Output Power module + IEC input lead

[LEM Interface Cable Assembly](#)

[As in Option 1 shown above](#)

OPTION 3

LEM-1 Interface

As in Option 2 shown above

LEM-1 50W Power Module

As in Option 2 shown above

LEM-1 120W Power Module

As in Option 2 shown above

[LEM Interface Cable Assembly](#)

[As in Option 1 shown above](#)

[LEM-1 Current Breakout Cable](#)

[4mm - Coax - Safety BNC - Connection cable - 4m](#)

[Current Breakout Cable Extension](#)

[Breakout cable extension - charged per meter up to 14m \(18m total\)](#)

[BDR01 - 1 Ohm Burden Resistor](#)

[1 Ohm Burden Resistor - 0.1% - BNC touchproof connectors](#)