

Check metering

What we install, what it measures, and how the data reaches you

A technical specification for South African commercial, industrial and multi-tenant sites.

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What check metering is for

A check meter is your own meter, installed alongside the utility's, measuring the same supply. It

exists to answer one question: does what you are billed match what you actually used?

Without it, a billing dispute comes down to your word against the utility's records. With it, you

have independent, time-stamped measurement of your own supply - which is the difference between an

argument and evidence.

The installed system

Four parts, no site IT involvement required:

- A Kamstrup OMNIPower CT revenue-grade three-phase meter, installed at your point of supply.
- Split-core current transformers, sized for your circuit (no need to disconnect cabling to fit).
- Cellular gateway, powered from the meter itself, pushing readings out over 4G/LTE.
- Your dashboard, where the data arrives - viewable, chartable and exportable.

We name the meter deliberately. "An independent meter" could mean anything; a Kamstrup OMNIPower CT is

a specific, type-approved instrument you can look up, and its approvals are printed below. If someone

proposes check metering and will not tell you exactly what they intend to fit, that is worth asking about.

Readings are pushed on a fixed interval. There is no site network connection, no fixed IP, no VPN

and nothing to install on your systems.

What it measures

Delivered on a 15-minute interval as standard (configurable; 60 seconds minimum).

Parameter	Unit	Coverage
Voltage	V	Per phase (L1, L2, L3)
Current	A	Per phase (L1, L2, L3), true primary amps
Power factor	-	Per phase (L1, L2, L3)
Frequency	Hz	System value
Active energy, cumulative	kWh	Import and export
Active energy, per interval	kWh	Import and export
Reactive energy, cumulative	kVArh	Import and export
Reactive energy, per interval	kVArh	Import and export
Apparent power	kVA	Total

From these, demand (kVA), average power (kW) and consumption profiles are derived for reporting -

which is what a demand-charge dispute actually turns on.

What it does not measure

We would rather you knew this up front than found out during an analysis. On the standard

configuration the following are NOT delivered:

Not delivered	Note
Per-phase active/reactive power (kW / kVAr)	Derived from energy per interval instead
Total harmonic distortion (THD)	Available on the meter; not in the standard pushed data set
Terminal temperature	Available on the meter; not in the standard pushed data set
Line-to-line voltage	Not measured by this meter
Neutral current	Not measured by this meter

THD, per-phase energy and terminal temperature can be added by reconfiguring the meter's analysis

logger and the gateway's push set. If harmonics are the question you need answered, say so before

installation and we will specify for it - or use a portable power-quality logger instead, which is

better suited to that job.

Accuracy and approvals

Item	Specification
Meter	Kamstrup OMNIPower CT, three-phase, current-transformer connected
Active energy accuracy	Class 1 (IEC) / Class B (MID). Class 0.5 (IEC) / Class C (MID) available
Reactive energy accuracy	Class 2 (IEC)
Type approval, active energy	EN 50470-1, EN 50470-3 (MID)
Type approval, active + reactive	IEC 62052-11, IEC 62053-22, IEC 62053-23
Power quality reference	EN 50160
Metering	Four-quadrant; import and export

This is a revenue-grade, type-approved meter - the same class of instrument utilities bill from. That

matters more than it might sound: a dispute is far harder to dismiss when your evidence comes from a

named, type-approved instrument built to the same standard as the utility's own, rather than from an

unspecified logger nobody can verify.

Electrical and environmental

Item	Specification
Configuration	Three-phase, four-wire (3P4W)
Nominal voltage	3 x 230 / 400 V AC
Nominal frequency	50 Hz (+/- 5 %)
Connection	Current-transformer connected
CT ratio supported	Up to 3 000 A / 5 A (or 600 A / 1 A)
Operating temperature	-40 C to +85 C
Current transformers	Split-core, Class 1, sized per circuit

Data and connectivity

Item	Specification
Meter protocol	DLMS/COSEM (Kamstrup KMP on the cellular link)
Gateway	4G/LTE Cat-1, bands B1 / B3 / B8 (2100 / 1800 / 900 MHz)
Antenna	External SMA antenna (required)
Gateway power	Drawn from the meter's module port - no separate supply
Push interval	900 s (15 min) standard; 60 s minimum
Site requirements	Cellular coverage at the board. No site network, fixed IP or VPN
Data delivery	Secure API feed into your Panda dashboard
Export formats	CSV / Excel, plus PDF reporting

A note on current transformers

This is the part most often got wrong, and it is worth a paragraph because it decides whether your

data is trustworthy.

A current transformer is only accurate across part of its range. Fit a CT rated far above your actual

load and it will under-read badly at the bottom of that range, where cheap low-class CTs lose a large

part of the signal to the core itself. We have measured a 20 % under-read from exactly this cause.

So CTs are specified per circuit against your real expected load, not bought in one size, and we use

Class 1 units. If you are commissioning check metering from anyone, ask them what CT class and ratio

they intend to fit and why. It is the question that separates a meter that produces evidence from one

that produces numbers.

What you get

- A live dashboard of your own supply - voltage, current, power factor, demand and consumption.
 - Your data, exportable to CSV or Excel whenever you want it. It is your data.
 - Board-ready PDF reporting.
 - Side-by-side comparison of the utility's billed figures against your measured reality - which is the whole point.
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About Panda Power

We are an independent electricity billing and metering analysis practice in Johannesburg. We audit

municipal and Eskom invoices, install revenue-grade check meters, and log and analyse power at

commercial and industrial sites. Analysis is compiled by a registered Professional Engineer.

We do not sell electricity, solar systems or generation equipment - so the meter tells you what it

tells you, and we have nothing riding on the answer.

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Companion guides: "How demand billing works" and "5 checks to run on your electricity bill".

Specifications are those of the standard installed configuration and are subject to change as

equipment is revised. Accuracy classes and approvals are those of the meter as type-approved by its

manufacturer. Final configuration, CT sizing and achievable accuracy depend on your site; we confirm

these at survey before installation.