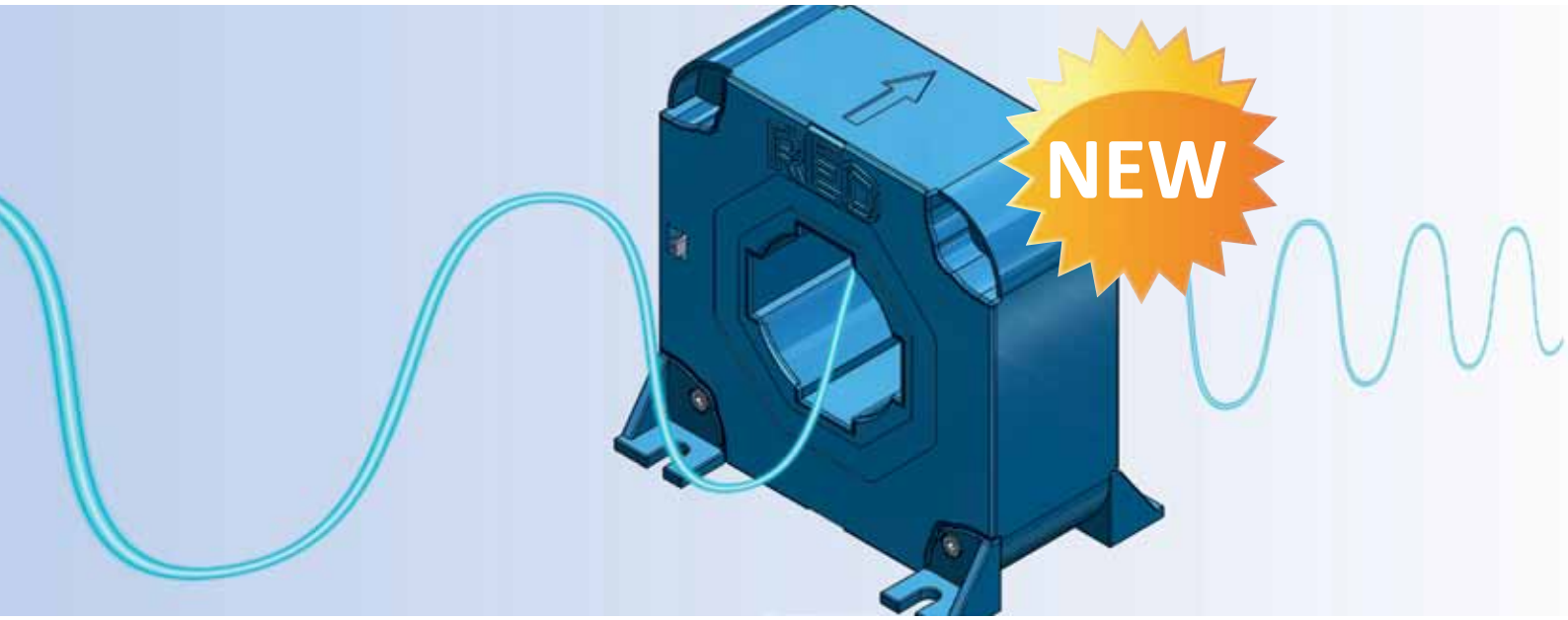


REO current sensor

Product Information WKO-2C

Pure|Power|Perfection

Content

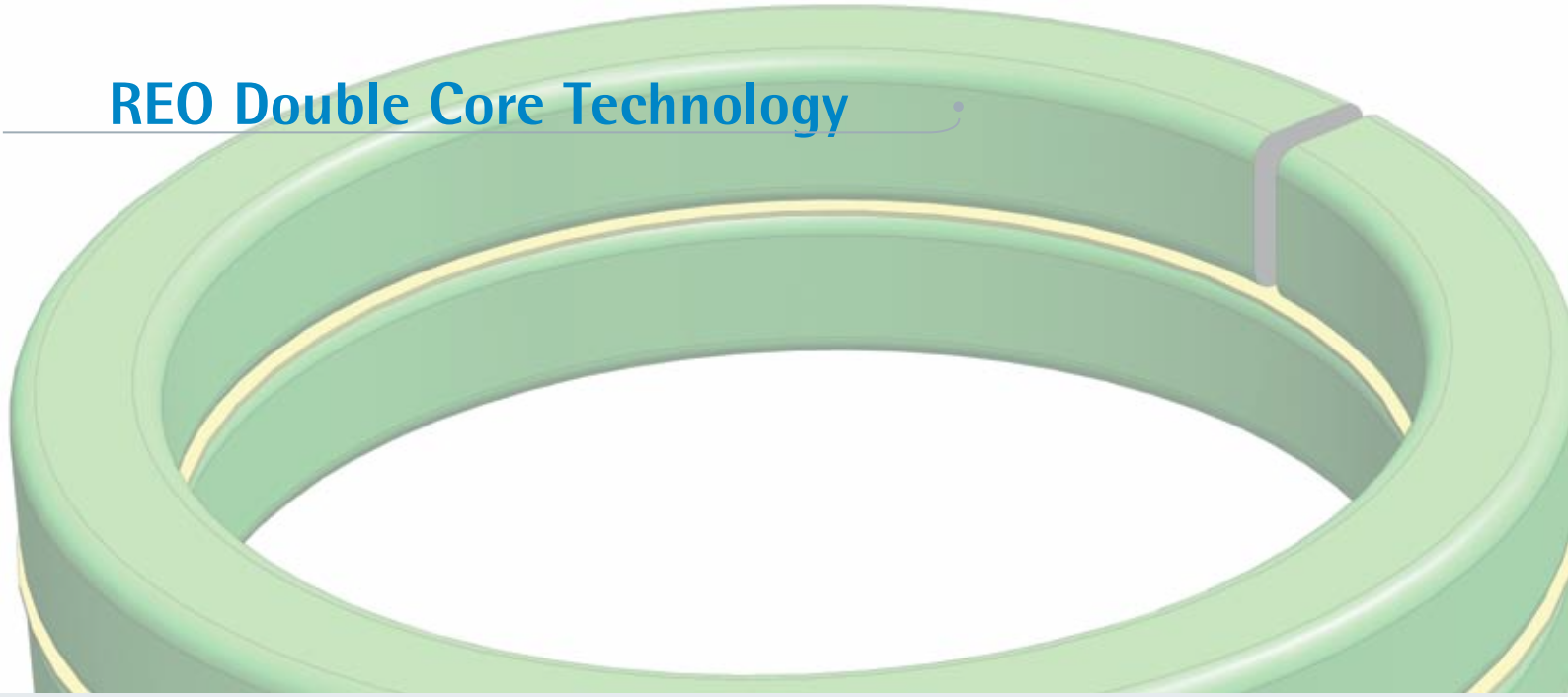
The advantages at a glance

- Solutions tailored for your specific requirements
- Modern core materials like nanocrystalline and amorphous are used for optimal performance
- UL-certified products
- REO speaks your language: Our worldwide field sales offices always keep us close to our clients - no matter what your language, time zone, or currency. A REO location is near you, guaranteeing fast, efficient and cost-effective handling for your order.
- Reliability through testing:

  All our current transformers are checked against the following criteria:

- phase shift between primary and secondary
- Response curve
- saturation
- Core/Winding relationship
- overcurrents and overvoltages
- dynamic behaviour of the whole current transformer

REO Double Core Technology



REO - Double Core Technology

In most applications, Closed loop current transducers deal with measurements in the range from DC to frequencies upto 120 kHz. For this application standard single core technology hall effect sensor mounted in the air gap is a good solution (see Figure 1).

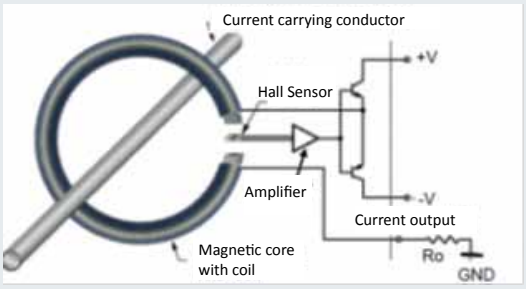


Figure 1: Closed loop compensated current transducer principle

In this design, the hall effect sensor located in the air gap, is used with a bipolar power stage to create an equal and opposite magnetic field in the core. This means that the current output signal is directly proportional to the primary current travelling in the conductor.

This principle works well for lower frequencies, but as frequencies increase the core inductivity becomes a larger factor and the compensating electronics are not able to function adequately. At this point, the unit acts like a conventional current transformer with poor linearity. This effect is demonstrated in Figure 2. This effect and subsequent lack of measurement accuracy is where the REO WKO 2C with double core technology is so important.

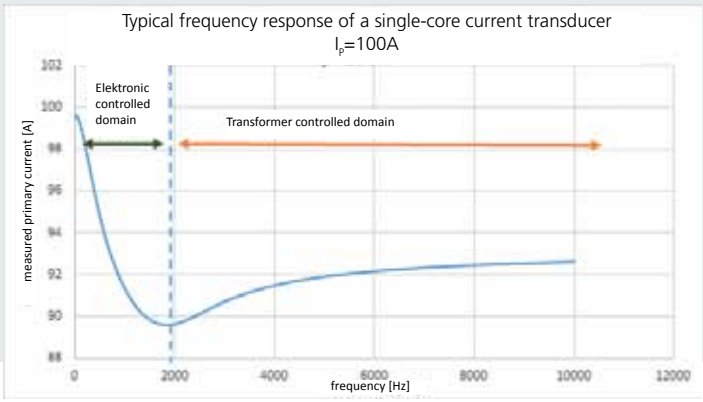


Figure 2: The peformance of the electronic and transformer stages are not balanced.

REO Double Core Technology

The REO design team developed a solution to achieve a smooth, high accuracy transition from electronics to transformer-controlled domain.

We took two identical cores and joined them together as shown in Figure 3. This patented solution significantly improves measurement accuracy.

- Due to the compensation effect, the current transducer is insensitive to external magnetic fields.
- Better frequency response

Figure 3: Double core, integrated hall sensor in core
Patent: DE 10 2008 036 582 A1

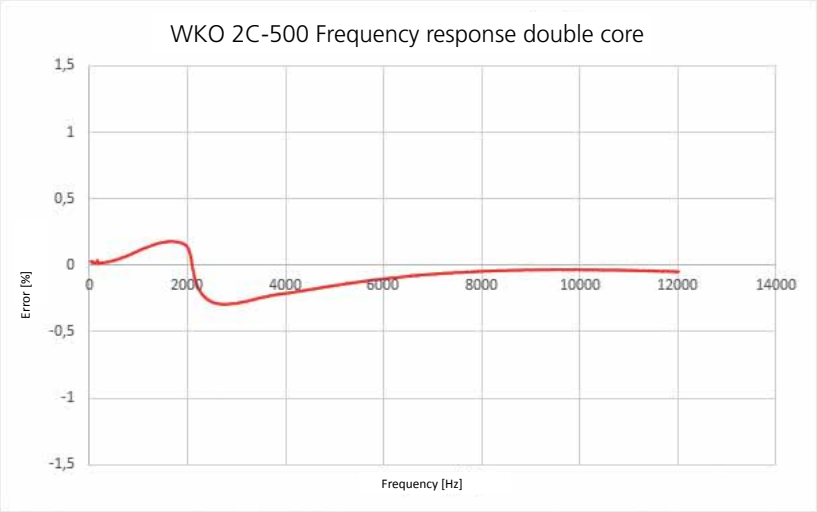


Figure 4: Double core frequency response

REO´s double core frequency response in Figure 4 shows the smooth transition between electric and transformer domains.
We have tested other current transducer technologies and we can safely say that only a few of them have acceptable smooth frequency transition performance as shown in Figure 5 below.

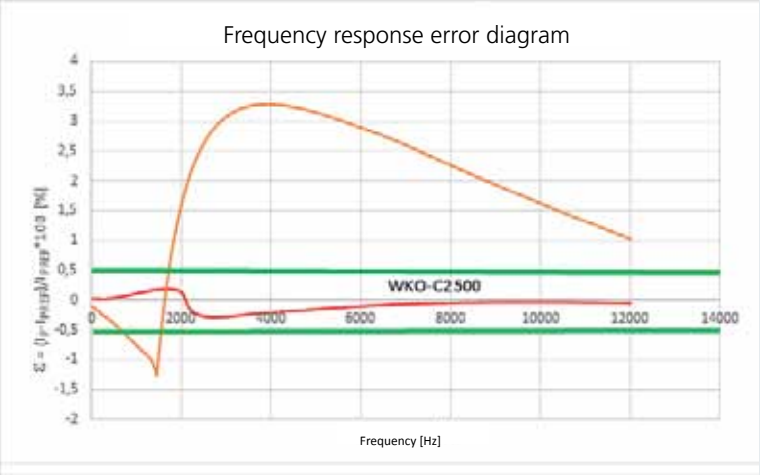


Figure 5: Comparison WKO-2C 500 and competitors products

REO WKO-2C

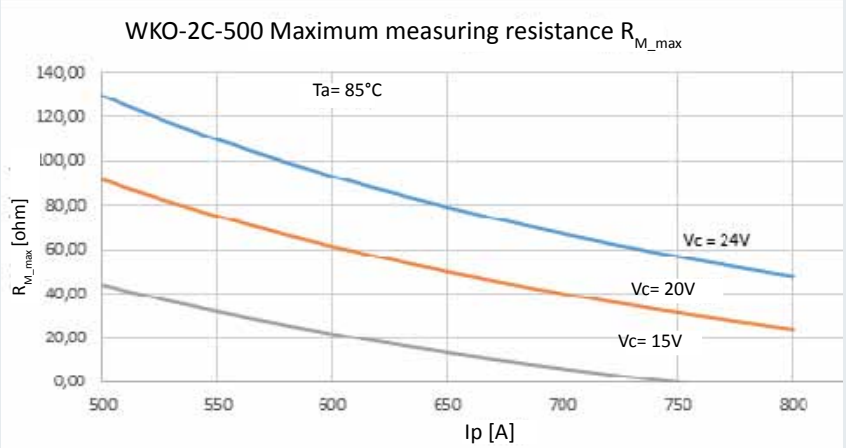
Benefits

- **High current measurement accuracy of 0.5%**
- **Modular mounting plates providing universal mounting options**
- **Lower sensitivity to external magnetic fields**
- **Bidirectional and isolated current measurement**
- **Current output**
- **REO double core technology**
- **All materials manufactured using UL listed materials**

REO has developed a new generation of closed loop (C/L) current transducers which guarantee increased current measurement accuracy better than 0.5% in the whole frequency range: DC to 120 kHz.

The new current transducer type WKO-2C is a completely new development utilizing REO's double core technology magnetic design. The unit uses the latest hall effect elements with an extended frequency response up to 120 kHz and accurate phase response.

Completely redesigned electronics ensures that the new C/L current transducer has better drift compensation and an extended temperature range from -40°C to 85°C.



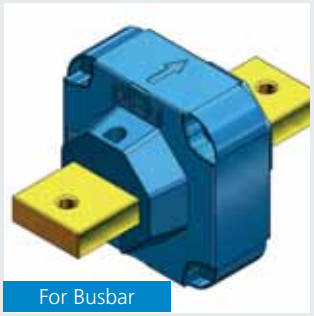
Modular construction

- Diverse mounting options with plugable bases or attachment for rails

- The multi-purpose mounting system means that the units can be used easily in new designs and in retro-fit applications.

= Plug+Play


mounting plate front - horizontal


For Busbar


mounting plate lateral


mounting plate lateral front - vertical

Typical applications

- Variable speed control of 3-phase AC-motor and servo motor drives
- Industrial inverters
- Uninterruptable power supplies
- All types of switched mode power supplies
- Power supplies for welding applications

Technical data

Type	Primary RMS Nominal-current I_{PN} [A]	Measurement range I_P [A]	Feed-in U_C [V]	Measurement accuracy X_G@Ipn [-20…70°C] von I_{PN} [%]	Ratio K_N	Secondary RMS Nominalcurrent I_{SN} [mA]	Secondary-winding Resistor Rs@85°C [Ω]	No-load current [mA]
WKO-2C-500	500	0 … ±1000	±15…24	< ±0,5	5000	100	72	36+I_S
WKO-2C-1000	1000	0 … ±1500	±15…24	< ±0,5	5000	200	38	24+I_S
WKO-2C-2000	2000	0 … ±3000	±15…24	< ±0,5	5000	400	22	78+ I_S

Accuracy and dynamic data

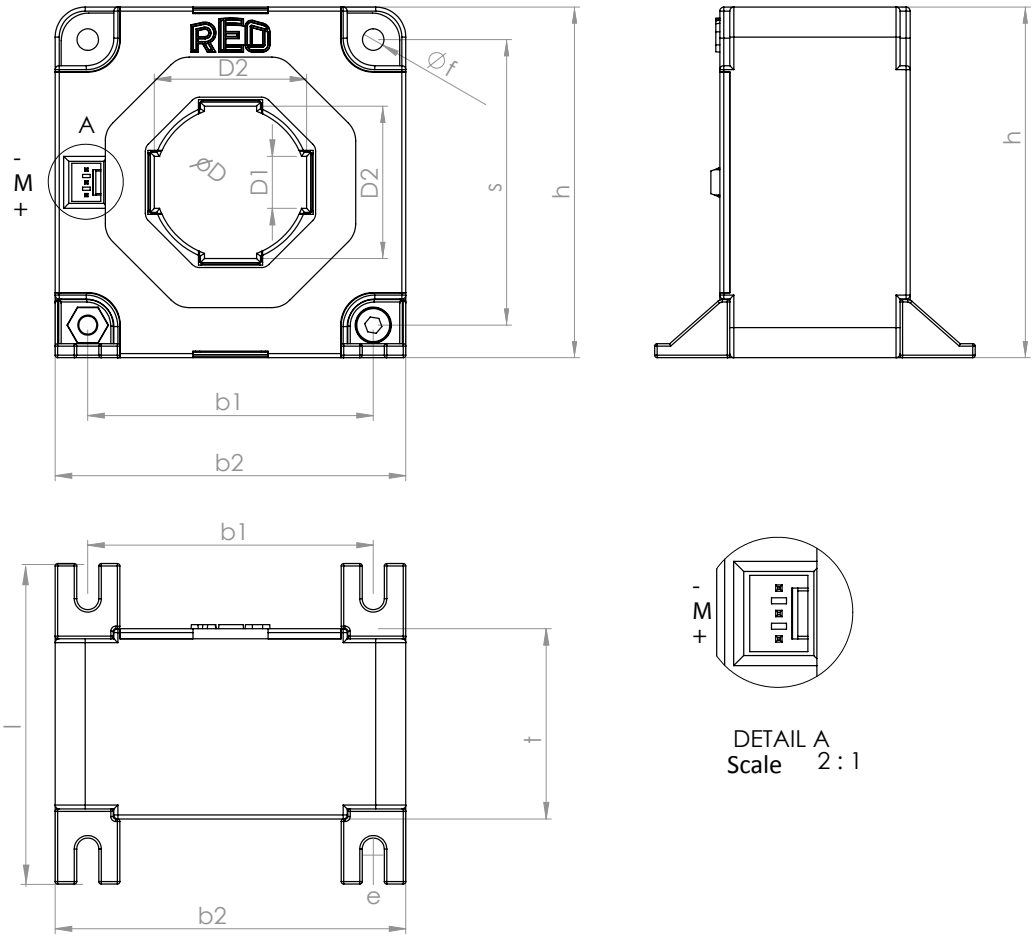
Type	Linearity-mistake e [%]	Offset-mistake@25° I_O [mA]	Offset Drift -25°C …+70°C I_{OT} [mA]	Reaction time t_{ra}[µs]	Response time 10%-90% t_a[µs]	dI/dt [A/µs]	Stock width -1dB [kHz]
WKO-2C-500	< ±0,1	< 0,2	< 0,5	< 0,5	< 0,5	> 100	DC .. 120
WKO-2C-1000	< ±0,1	< 0,3	< 0,5	< 0,5	< 0,5	> 100	DC .. 120
WKO-2C-2000	< ±0,1	< 0,5	< 0,5	< 0,5	< 0,5	> 100	DC .. 120

Isolation data

Type	Creepage distance dCp [mm]	Clearance dCi [mm]	Creep resistance [CTI]	AC-Isolation test 50/60Hz 1min Ud [kV]	Impulse voltage test 1,2/50µs Ui[kV]	dI/dt [A/µs]	Weight [kg]
WKO-2C-500	10	9	600	6	12,5	> 100	0,240
WKO-2C-1000	15	12	600	6	14,5	> 100	0,450
WKO-2C-2000	25	21	600	6	14,5	> 100	1,620

Mechanical Data

- **Diverse mounting options with plugable bases**
- **The multi-purpose mounting system means that the units can be used easily in new designs and in retro-fit applications.**



Type	b1 [mm]	b2 [mm]	t [mm]	s [mm]	h [mm]	D ∅ [mm]	D1/D2 [mm]	∅ f [mm]	∅ e [mm]
WKO-2C-500	57	70	38	57	70	30,2	10,4/30,4	4,3	4,3
WKO-2C-1000	78	94	42	78	94	38,5	13,5/40,5	5,3	5,3
WKO-2C-2000	102	135	52	102	135	57,5	20,5/60,5	6,5	6,5

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