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Series WKO-2C

Double core technology closed-loop current transformers



Unique Selling Point

- High current measurement accuracy of 0.3%
- Modular mounting plates providing universal mounting options
- Lower sensitivity to external magnetic fields
- Bidirectional and isolated current measurement up to ±750A current output
- Modular mounting plates
- REO double core technology
- All materials manufactured using UL listed materials

Description

REO has developed new generation of closed loop (C/L) current transducers which guarantees increased current measurement accuracy better than 0.3% in the whole frequency range: DC to 150 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 150 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.

- According to: EN 50178:1997, UL 94-V0
- Frequency range: (-3 dB) DC...150 kHz

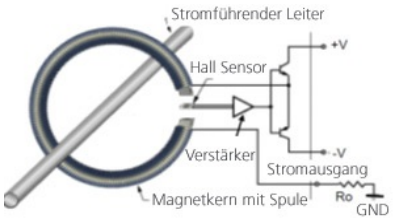
Typical applications

- 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

- Primary rated current : 500 - 2000 A
- Measurement range : 0...4000 A
- Frequency range : 150000 Hz

Mode of operation



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Technical data

Type	Primary RMS Nominal-current IPN [A]	Measurement range IP [A]	Feed-in UC [V]	Measurement accuracy XG@Ipn [-20...70°C] von IPN [%]	ratio KN	Secondary RMS Nominalcurrent m ISN [mA]	Secondary-winding Resistor Rs@85°C [Ω]	No-load current [mA]
WKO-2C-300	300	0 ... ±2000	±11,4...25,2	< ±0,3	2000	150	13	26+IS
WKO-2C-500	500	0 ... ±1000	±11,4...25,2	< ±0,3	5000	100	76	26+IS
WKO-2C-1000	1000	0 ... ±2700	±14,25...25,2	< ±0,3	5000	200	42	26+IS
WKO-2C-2000	2000	0 ... ±4000	±14,25...24	< ±0,3	5000	400	26	26+IS

Accuracy and dynamic data

Type	Linearity-mistake e [%]	Offset-mistake@25° IO [mA]	Offset Drift -25°C ...+70°C IOT [mA]	Reaction time tra[µs]	Response time 10%-90% ta[µs]	dI/dt [A/µs]	Band with -1dB [kHz]
WKO-2C-300	< ±0,1	< 0,5	< 25	200	400	400	120/150
WKO-2C-500	< ±0,1	< 0,5	< 25	200	400	400	120/150
WKO-2C-1000	< ±0,1	< 0,5	< 25	200	400	400	120/150
WKO-2C-2000	< ±0,1	< 0,5	< 25	200	1000	1000	150

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]	Weight [kg]
WKO-2C-300	14	13	600	6	12,5	0,340
WKO-2C-500	14	13	600	6	12,5	0,260
WKO-2C-1000	20	18	600	6	12,5	0,700
WKO-2C-2000	35	30	600	6	12,5	1,600

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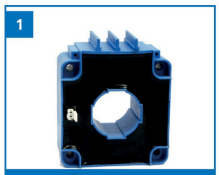
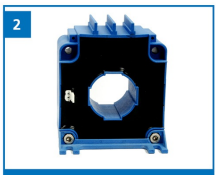
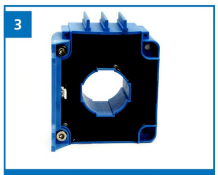


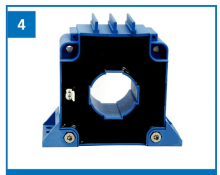
WKO-2C
Basic model with Molex plug



WKO-2C-F
Basic model with Molex plug and mounting feet frontal



WKO-2C-FG
Basic model with Molex plug and mounting feet frontal, fitted on the left



WKO-2C-L
Basic model with Molex plug and mounting feet lateral

Type - Fig.1	WKO-2C Basic model with Molex plug / Article No.
WKO-2C-500	30642 0 1 501 4 20 00
WKO-2C-1000	30642 0 1 102 4 20 00
WKO-2C-2000	30642 0 1 202 4 20 00

Type - Fig. 2	WKO-2C-F Basic model with Molex plug and mounting feet frontal / Article No.
WKO-2C-F-500	30642 0 1 501 4 21 00
WKO-2C-F-1000	30642 0 1 102 4 21 00
WKO-2C-F-2000	30642 0 1 202 4 21 00

Type - Fig. 3	WKO-2C-FG Basic model with Molex plug and mounting feet frontal, fitted on the left/ Article No.
WKO-2C-FL-500	30642 0 1 501 4 23 00
WKO-2C-FL-1000	30642 0 1 102 4 23 00
WKO-2C-FL-2000	30642 0 1 202 4 23 00

Type - Fig. 4	WKO-2C-L Basic model with Molex plug and mounting feet lateral / Article No.
WKO-2C-L-500	30642 0 1 501 4 24 00
WKO-2C-L-1000	30642 0 1 102 4 24 00
WKO-2C-L-2000	30642 0 1 202 4 24 00

Type – without illustration	WKO-2C-FR Basic model with Molex plug and mounting feet frontal, fitted on the right / Article No.
WKO-2C-FR-500	30642 0 1 501 4 22 00
WKO-2C-FR-1000	30642 0 1 102 4 22 00
WKO-2C-FR-2000	30642 0 1 202 4 22 00

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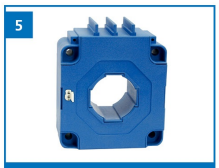

WKO-2C-A
Basic model with front cover



WKO-2C-A-F
Basic model with front cover and mounting feet frontal



WKO-2C-A-L
Basic model with front cover and mounting feet lateral

Type - Fig.5	WKO-2C-A Basic model with front cover / Article No.
WKO-2C-A-500	30642 0 1 501 1 00 00
WKO-2C-A-1000	30642 0 1 102 1 00 00
WKO-2C-A-2000	30642 0 1 202 1 00 00

Type - Fig.6	WKO-2C-A-F Basic model with front cover and mounting feet frontal / Article No.
WKO-2C-A-F-500	30642 0 1 501 1 01 00
WKO-2C-A-F-1000	30642 0 1 102 1 01 00
WKO-2C-A-F-2000	30642 0 1 202 1 01 00

Type - Fig.7	WKO-2C-A-L Basic model with front cover and mounting feet lateral / Article No.
WKO-2C-A-L-500	30642 0 1 501 1 04 00
WKO-2C-A-L-1000	30642 0 1 102 1 04 00
WKO-2C-A-L-2000	30642 0 1 202 1 04 00

Type – without illustration	WKO-2C-A-FR Basic model with front cover and mounting feet frontal, fitted on the right / Article No.
WKO-2C-A-FR-500	30642 0 1 501 1 02 00
WKO-2C-A-FR-1000	30642 0 1 102 1 02 00
WKO-2CA-FR-2000	30642 0 1 202 1 02 00

Type – without illustration	WKO-2C-A-FG Basic model with front cover and mounting feet frontal, fitted on the left / Article No.
WKO-2C-A-FL-500	30642 0 1 501 1 03 00
WKO-2C-A-FL-1000	30642 0 1 102 1 03 00
WKO-2C-A-FL-2000	30642 0 1 202 1 03 00

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Series WKO-2C

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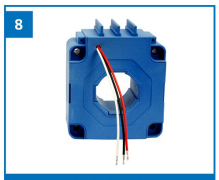
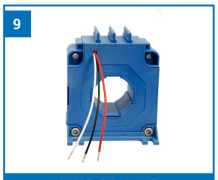
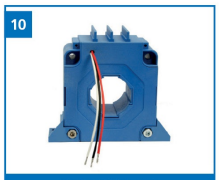


WKO-2C-A-K
Model with front cover and litz wires



WKO-2C-A-K-F
Model with front cover, litz wire and mounting feet frontal



WKO-2C-A-K-L
Model with front cover, litz wire and mounting feet lateral



WKO-2C-A-K-FG
Model with front cover, litz wire and mounting feet frontal fitted on the left



WKO-2C-A-S-F
Model with front cover and litz wire with plug, with mounting feet frontal

Type - Fig.8	WKO-2C-A-K Model with front cover and litz wires / Article No.
WKO-2C-A-K-500	30642 0 1 501 8 00 00
WKO-2C-A-K-1000	30642 0 1 102 8 00 00
WKO-2C-A-K-2000	30642 0 1 202 8 00 00

Type - Fig. 9	WKO-2C-A-K-F Model with front cover, litz wire and mounting feet frontal / Article No.
WKO-2C-A-K-F-500	30642 0 1 501 8 01 00
WKO-2C-A-K-F-1000	30642 0 1 102 8 01 00
WKO-2C-A-K-F-2000	30642 0 1 202 8 01 00

Type - Fig. 10	WKO-2C-A-K-L Model with front cover, litz wire and mounting feet lateral / Article No.
WKO-2C-A-K-L-500	30642 0 1 501 8 04 00
WKO-2C-A-K-L-1000	30642 0 1 102 8 04 00
WKO-2C-A-K-L-2000	30642 0 1 202 8 04 00

Type - Fig. 11	WKO-2C-A-K-FG Model with front cover, litz wire and mounting feet frontal fitted on the left/ Article No.
WKO-2C-A-K-FG-500	30642 0 1 501 8 03 00
WKO-2C-A-K-FG-1000	30642 0 1 102 8 03 00
WKO-2C-A-K-FG-2000	30642 0 1 202 8 03 00

Type - Fig. 12	WKO-2C-A-S-F Model with front cover and litz wire with plug, with mounting feet frontal
WKO-2C-A-S-F-500	30642 0 1 501 9 01 00
WKO-2C-A-S-F-1000	30642 0 1 102 9 01 00
WKO-2C-A-S-F-2000	30642 0 1 202 9 01 00

Type – without illustration	WKO-2C-A-S Model with front cover and litz wire with plug / Article No.
WKO-2C-A-S-500	30642 0 1 501 9 00 00
WKO-2C-A-S-1000	30642 0 1 102 9 00 00
WKO-2C-A-S-2000	30642 0 1 202 9 00 00

Type – without illustration	WKO-2C-A-K-FR Model with front cover, litz wire and mounting feet frontal fitted on the right / Article No.
WKO-2C-A-K-FR-500	30642 0 1 501 8 02 00
WKO-2C-A-K-FR-1000	30642 0 1 102 8 02 00
WKO-2C-A-K-FR-2000	30642 0 1 202 8 02 00

Type – without illustration	WKO-2C-A-S-FG Model with front cover, litz wire with plug and mounting feel frontal fitted on the left / Article No.
WKO-2C-A-S-FG-500	30642 0 1 501 9 03 00
WKO-2C-A-S-FG-1000	30642 0 1 102 9 03 00
WKO-2C-A-S-FG-2000	30642 0 1 202 9 03 00

Type – without illustration	WKO-2C-A-S-FR Model with front cover, litz wire with plug and mounting feet frontal fitted on the right / Article No.
WKO-2C-A-S-FR-500	30642 0 1 501 9 02 00
WKO-2C-A-S-FR-1000	30642 0 1 102 9 02 00
WKO-2C-A-S-FR-2000	30642 0 1 202 9 02 00

Type – without illustration	WKO-2C-A-S-L Model with front cover, litz wire with plug and mounting feet lateral / Article No.
WKO-2C-A-S-L-500	30642 0 1 501 9 04 00
WKO-2C-A-S-L-1000	30642 0 1 102 9 04 00
WKO-2C-A-S-L-2000	30642 0 1 202 9 04 00

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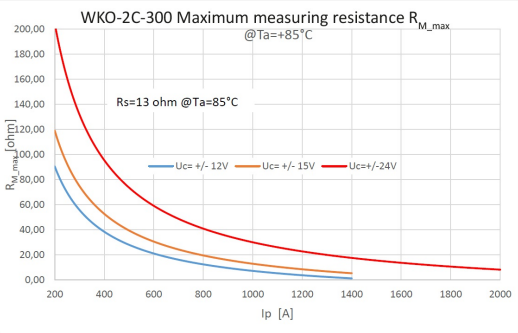
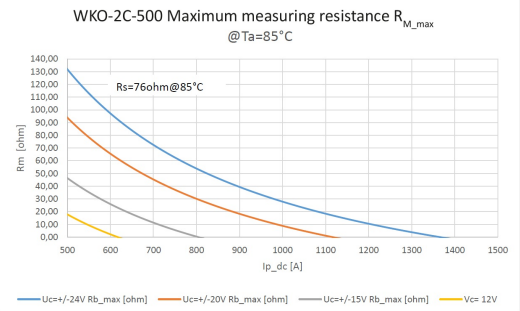
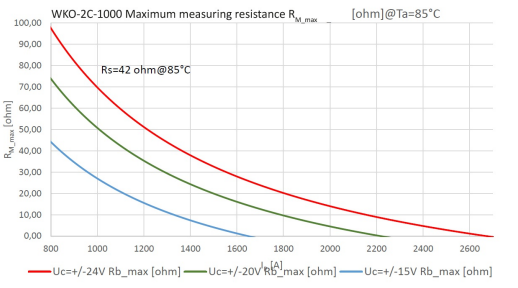
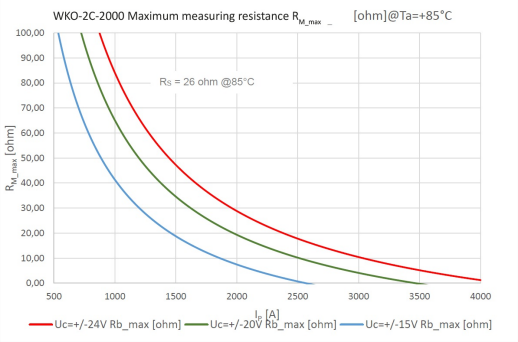
Maximum measuring resistance









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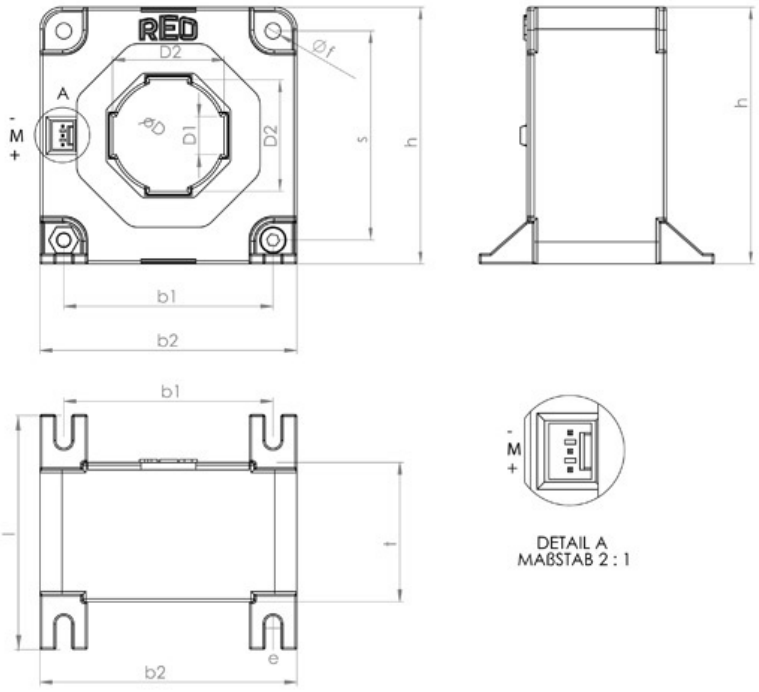
Double core technology closed-loop current transformers

Dimension drawing



Dimensions

Type	b1 [mm]	b2 [mm]	t [mm]	s [mm]	h [mm]	D Ø [mm]	D1/D2 [mm]	Ø f [mm]	Ø e [mm]
WKO-2C-300	57	70	38	57	70	30,2	10,4/30,4	4,3	4,3
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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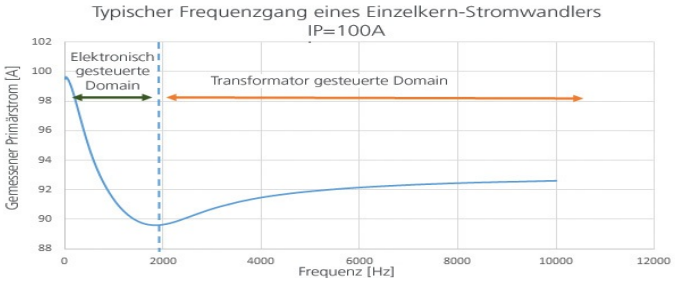
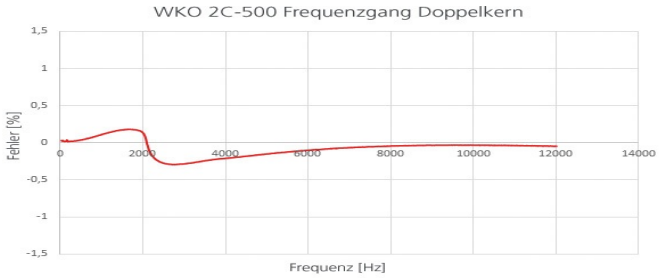
REO - Double Core Technology

In most applications, C/L current transducers deal with measurements in the range from DC to mains frequencies 120kHz. For this purpose standard single core technology hall effect sensor mounted in the air gap is a good solution.

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 measureable element on 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 "Electronic and transformer phases are out of tune". This effect and subsequent lack of measurement accuracy is where the REO WKO 2C with double core technology is so important.





REO´s double core frequency response in Figure 4 shows the smooth path between electric and transformer domains.

We have tested other current transducer products and we can safely say that only a few of them have acceptable smooth frequency transition performance as shown in Figure "Comparison WKO-2C 500 and competitors products" below.

