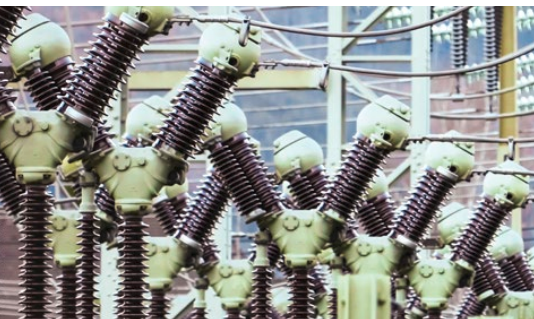


CIBANO 500

3-in-1 test system for
medium- and high-voltage circuit breakers



Medium- and high-voltage circuit breaker testing



The 3-in-1 solution for your convenience

OMICRON's CIBANO 500 is the world's first circuit breaker test system to combine

- > a multi-channel timing and travel analyzer
- > a high-accuracy digital low-resistance ohmmeter, and
- > a powerful and adjustable coil and motor supply (AC/DC).

The lightweight test system is optimized for on-site testing of

- > medium-voltage circuit breakers and
- > high-voltage circuit breakers (dead-tank and live-tank design).

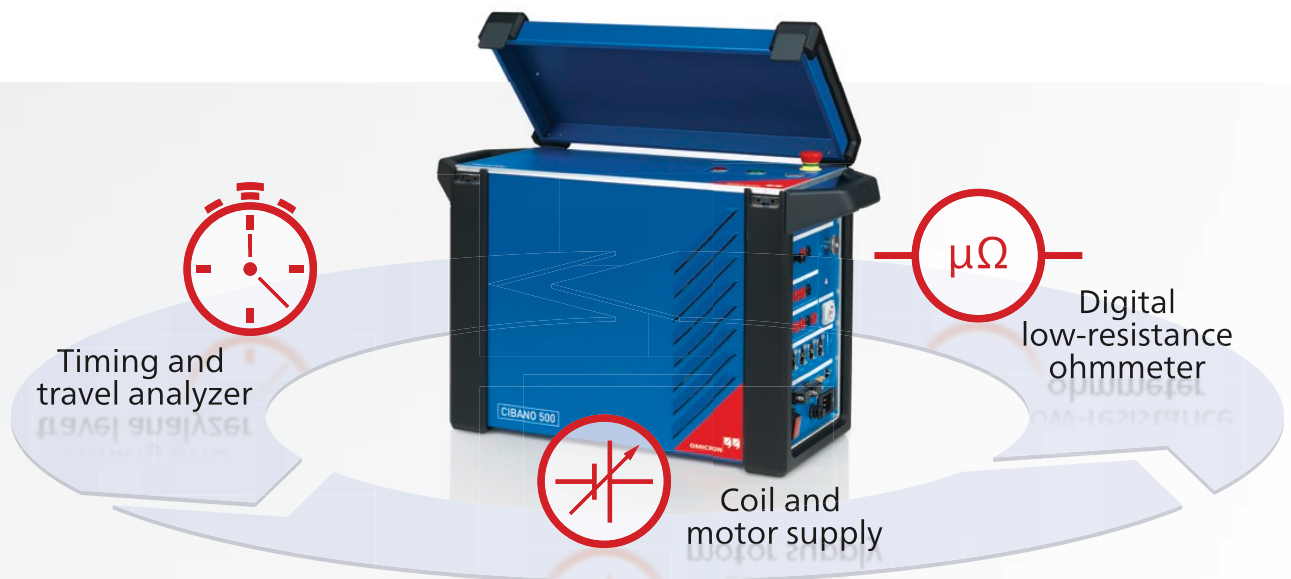
This innovative concept allows you faster and safer wiring, speeds up the whole test process, and delivers one combined test report for all tests carried out. EtherCAT® communication makes CIBANO 500 a futureproof and expandable device.

Active power for your circuit breakers

Due to CIBANO 500's integrated AC/DC power supply there is no longer any need for risky and time-consuming connections to live DC circuits. You can completely disconnect and isolate e.g. a medium-voltage breaker from the substation. This drastically increases your safety during measurements.

Additionally, you can operate independently from external power supply. Thus you can easily carry out commissioning tests on circuit breakers even if there is no station battery installed.

With its active power electronics, the power supply provides you with a constant output power during all tests resulting in stable and reproducible testing conditions.



Only 1 apparatus for the 5 standard tests

1 Static contact resistance test

CIBANO 500 checks for a low transmission resistance on the closed breaker to ensure that the load current flows with low losses.

2 Minimum pick-up test

CIBANO 500 determines the minimum voltage necessary to trip and close a circuit breaker. This test is to make sure that your equipment can also be reliably operated in case of low DC supply.

You can set the pass/fail level to a certain percentage of the nominal value. By applying short pulses with increasing amplitudes and breaks in-between CIBANO 500 makes sure that the trip coils don't heat up during testing. As a result, the test becomes safer and easier for you.

3 Timing tests

CIBANO 500 assesses the main contact timing and the delta timing. It can detect incorrect mechanical adjustments or wear phenomena of your circuit breakers by measuring differences between the fastest and slowest phase.

By analyzing their opening and closing time it can detect aging-related phenomena of the circuit breakers.

Possible sequences: O, C, CO, OC, O-CO, CO-CO, O-CO-CO. You can carry out all sequence tests with completely flexible timing.

4 Coil/motor current analysis

CIBANO 500 records the current signature curve of the coils and motors during the circuit breaker operation. Deviations from the expected signature show possible electrical or mechanical defects of the trip or close coils as well as of the release latch.

The trend of motor currents shows you the power needed by the motor. Elevated current levels indicate potential electrical fault in the motor.

5 Undervoltage condition test

To date, measuring the impact of undervoltage supply on close and trip operation was only a rough simulation, because the simulated supply voltage could not be adjusted accurately and continuously.

Using CIBANO 500's adjustable power supply, you simply set an exact undervoltage of the nominal value and measure the respective behavior of the circuit breaker's coils.

Your benefits

- > Easy-to-learn 3-in-1 system: digital low-resistance ohmmeter, AC/DC supply, and timing and travel analyzer
- > Versatile system which serves medium- and high-voltage circuit breakers
- > Futureproof and expandable by EtherCAT®
- > Fast operation due to low wiring effort
- > Safe due to integrated power supply: isolation from substation supply
- > Easy transportation to test site with light-weight test system (20 kg / 44 lbs)

Modular concept for simplified testing

CB MC2: making the difference

The main contact module CB MC2 makes testing even more convenient for you, especially on circuit breakers with larger dimensions. The combination of CIBANO 500 and CB MC2 offers you the following advantages:

- > Same wiring set-up for all circuit breaker tests: no time-consuming rewiring necessary
- > Overall wiring minimized and clearly arranged
- > Short high-current cables: easier and faster measuring set-up
- > Light-weight digital connection cables between CB MC2 modules and CIBANO 500: transmission of measuring results without interference

CB MC2: easier, faster, and safer testing

While using CB MC2, all 5 standard tests can be carried out in a row without any change in measuring set-up.

Static contact resistance test

With only one button press you get all contact resistance data of up to 6 interrupter units at a time.

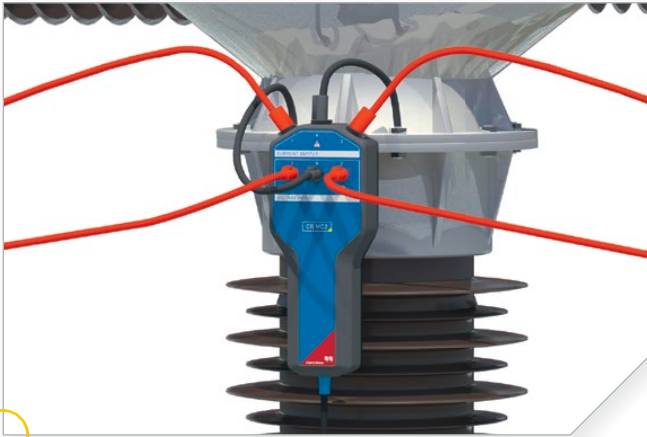
Timing tests

Using CB MC2 you can easily assess the resistor switch timing and analyze opening and closing times of circuit breakers with several interrupters in one phase or different phases.

Both sides grounded

It goes without saying that all above mentioned tests can be done while the circuit breaker is grounded on both sides. This results in increased security levels for operating personnel.





CB MC2: enhanced functionality

Dynamic contact resistance test

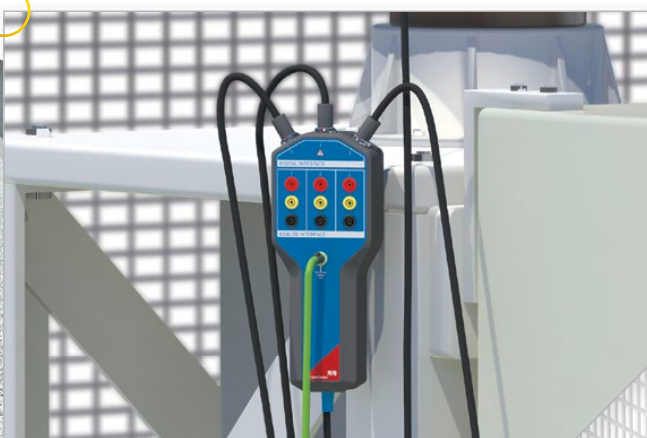
This test records the contact resistance value during circuit breaker operation and delivers information to you about wear-related problems with main and arcing contacts as well as with resistor switches.

This test can also be carried out without rewiring. In combination with the motion/contact travel test you can additionally determine the length and condition of SF₆ circuit breakers' arcing contacts.

Features of the main contact module CB MC2

2 high-current outputs and 2 sensitive voltage measurement channels.

- > Keeps high-current cables as short as possible, minimizing the weight of the necessary cables
- > A digitized measuring signal is produced directly at the interrupter keeping analog cables as short as possible: very low noise interference
- > Only one connection cable to the main unit: fast set-up and reduced risk of wiring errors



Transducer node CB TN3

Acquisition interface for measuring data of linear or rotary motion transducers

- > Interference-free digital transmission of measurement results to the main unit via one connection cable
- > Can be connected to most linear or rotary motion transducers

Integrity check of a circuit breaker's operating mechanism

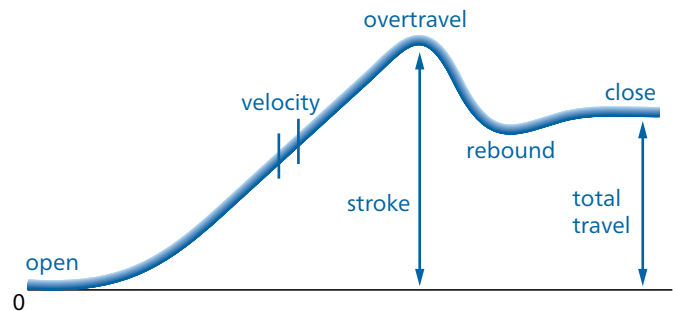
CB TN3: flexibility with open design

Motion/contact travel test

The configuration CIBANO 500, CB TN3, and a motion transducer checks the circuit breaker's complete operating mechanism and mechanical linkage.

As a result you get the performance values such as velocity, over-travel, rebound, etc., which can be compared to the manufacturer's reference data and data acquired by previous measurements. This provides you with indications about potential wear of the breaker.

Due to CIBANO 500's open design you can use most motion transducers available and only need to connect a CB TN3 unit between the transducer and CIBANO 500.



Performance values tested with CIBANO 500 and CB TN3

CB TN3: acquisition unit for motion data

As an interface, CB TN3 evaluates the travel of the circuit breaker's main contacts during operation. It consists of 3 analog and 3 digital channels for acquiring data from 3 linear or rotary motion transducers.

You can configure each channel for either an analog or a digital transducer at any given time. CB TN3 can be connected to most analog and digital (EIA-422 standard) motion transducers. By using digital transmission, the measurement results are sent interference-free to the main unit via one connection cable.

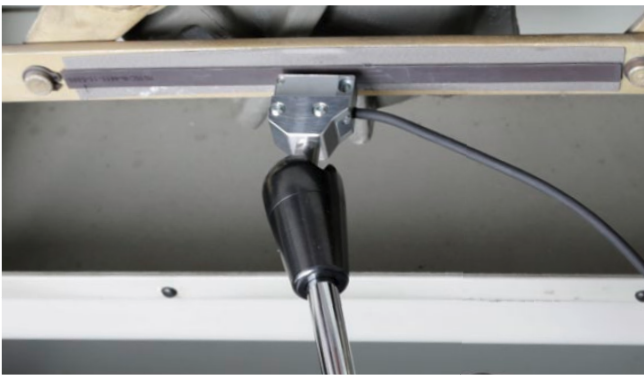


Transducer node CB TN3

CIBANO 500's magnetic tape concept

CIBANO 500 and CB TN3 measure linear motion using a linear transducer and a magnetic tape which serves as encoder. The transducer is connected to a static area of the circuit breaker's housing and the magnetic tape to the moving linear parts.

This magnetic tape concept is easy and robust. It quickly mounts to many surfaces while no CAD data is necessary for test preparation. Setup and measurement is completed within 30 minutes. Only one system is required for measuring both linear and rotary motion of most breaker types.



A piece of magnetic tape serves as encoder for the linear transducer

Your benefits

- > Only one system for checking the circuit breaker's complete operating mechanism and mechanical linkage
- > Flexible usage for linear and rotary motion measurements
- > Easy and fast measurement of linear motion with magnetic tape concept

One system for measuring both linear and rotary motion

Linear motion measurement



A magnetic tape serves as encoder for the transducer by simply affixing it to the circuit breaker's moving linear parts

Easy and robust mounting of linear transducer to a static area of the circuit breaker's housing with a flexible arm fixture



Rotary motion measurement



Easy connection of a rotary transducer to different rotating shaft sizes

The drill chuck covers different shaft diameters

The flexible coupling feature compensates for any misalignment between the shaft and transducer



Accessories for rotary and linear transducers

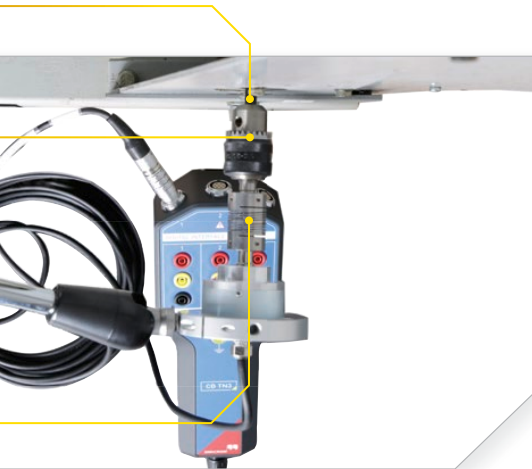


All of our mounting kit components have a robust, heavy-duty design in order to guarantee immobilization and minimize vibrations on the transducers.

In the event that vibrations are still strong, you can mount an additional arm fixture that supports the first one and further reduces the vibrational effects on the transducers.



You can easily mount the flexible arm fixture on almost any type of circuit breaker by using a parallel vice with a globe joint and arm extensions (available in two different lengths).



OMICRON also develops customized mounting kits for individual circuit breakers. So just let us know what your special requirements are and we can design the kit that is right for you.

If you need a specific adapter cable for the connection between CIBANO 500 and your medium-voltage circuit breaker, we will deliver it on request.

Powerful control software for convenient testing

Primary Test Manager™ (PTM)

With PTM, which is the control software for CIBANO 500, you can run your circuit breaker tests quickly, tailored to your specific demands as shown below.

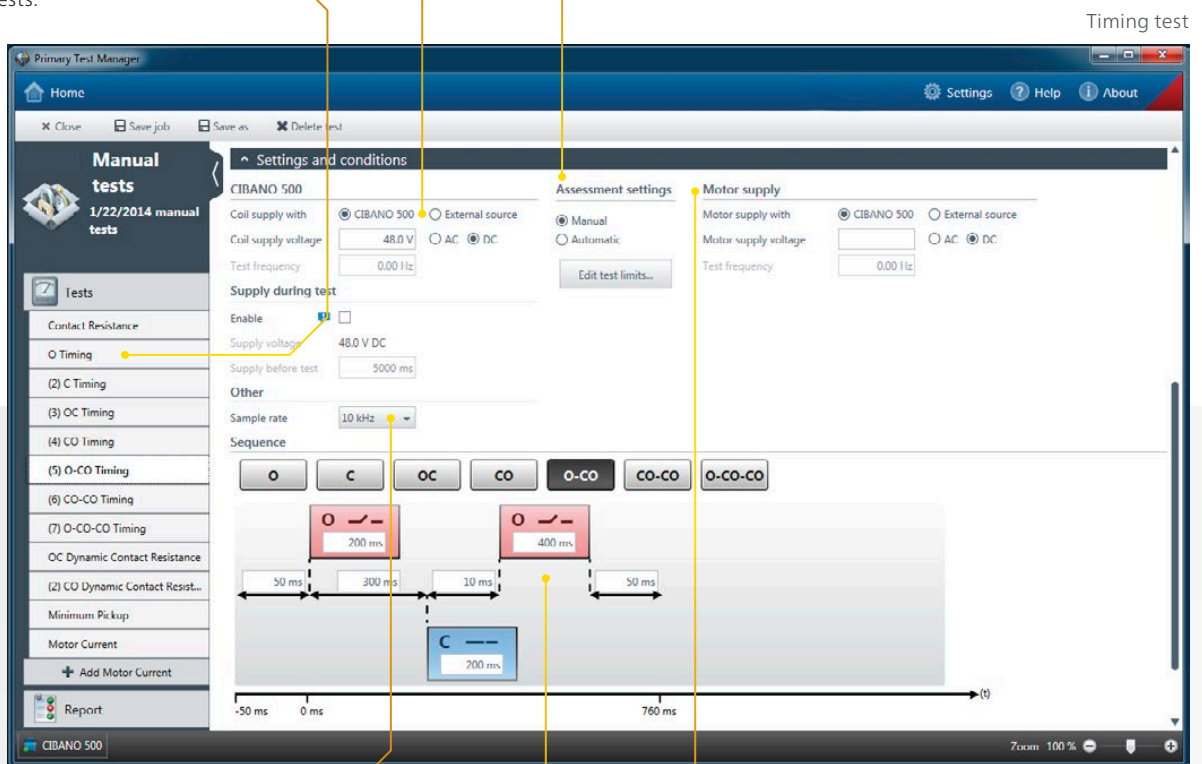
With its easy-to-follow wiring diagrams the software intuitively guides you through the entire test procedure in no time at all.

PTM's well-structured and comprehensive database enables you to manage all your circuit breaker data with ease, including nameplate data, respective tests and reports.

Get instant "pass/fail" assessments of the results.

Coils can be supplied via CIBANO 500 or via the station battery.

Set up your individual test plans by selecting single tests.



Flexible settings for different sample rates

A graphical overview of the testing sequence makes it easy to set the right timing.

The motor can be supplied via CIBANO 500 or via the station battery.

Easy testing supported by PTM

PTM delivers you the testing structure. All you have to do is set up your test plan by selecting single tests.

A graphical overview of the single test sequences makes it easy for you to enter the right test settings. You can choose between automatic or manual assessment and coils/motor supply via CIBANO 500 or the station battery.

Immediately after the tests you get a “pass/fail” assessment of the test results. At the end you get one combined report for all tests.

Set up your individual test plans.

All settings at a glance.

Dynamic contact resistance test

The screenshot shows the Primary Test Manager (PTM) software interface. The main window displays test results for a dynamic contact resistance test. The interface includes a sidebar with navigation options like Overview, Location, Asset, Tests, and Report. The main area displays a table of operating times for a breaker and contact travel characteristics. A 'Report' button in the sidebar is highlighted with a yellow circle.

Operating times for breaker																
Breaker	Open time	t min	t max	Open synchron.	t min	t max	Trip-free time	t min	t max	Trip-free time 2	t min	t max	Pause time	t min	t max	Assessment
A	50.60 ms	45.00 ms	51.00 ms	1.10 ms	0.50 ms	1.50 ms	55.60 ms	50.00 ms	60.00 ms	57.20 ms	50.00 ms	60.00 ms	401.70 ms	380.00 ms	420.00 ms	Pass
A 1	50.60 ms	45.00 ms	52.00 ms				54.30 ms	50.00 ms	60.00 ms	55.60 ms	50.00 ms	60.00 ms	402.80 ms	380.00 ms	420.00 ms	Pass
B	51.70 ms	45.00 ms	51.00 ms		0.50 ms	1.50 ms	55.40 ms	50.00 ms	60.00 ms	57.20 ms	50.00 ms	60.00 ms	401.90 ms	380.00 ms	420.00 ms	Fail
B 1	51.70 ms	45.00 ms	52.00 ms				55.40 ms	50.00 ms	60.00 ms	57.20 ms	50.00 ms	60.00 ms	401.90 ms	380.00 ms	420.00 ms	Pass
C	51.40 ms	45.00 ms	51.00 ms		0.50 ms	1.50 ms	55.30 ms	50.00 ms	60.00 ms	56.80 ms	50.00 ms	60.00 ms	402.20 ms	380.00 ms	420.00 ms	Fail
C 1	51.40 ms	45.00 ms	52.00 ms				55.30 ms	50.00 ms	60.00 ms	56.80 ms	50.00 ms	60.00 ms	402.20 ms	380.00 ms	420.00 ms	Pass

Contact travel characteristics				
Module	Channel / command	Avg. speed	Total travel	Stroke
CB TH3	Channel 1	309.77 mm/s	21.68 mm	23.14 mm
	Open 1	589.14 mm/s	17.93 mm	18.70 mm
	Close 1	314.31 mm/s	17.46 mm	20.93 mm
	Open 2	616.74 mm/s	17.53 mm	18.56 mm
	Close 2	309.77 mm/s	17.23 mm	20.56 mm
	Open 3	577.24 mm/s	21.68 mm	23.14 mm

Coil characteristics		
	Peak current	Assessment
Open 1	2.21 A	Fail
Close 1	6.15 A	Pass
Open 2	2.16 A	Pass
Close 2	6.11 A	Pass
Open 3	2.16 A	Pass

Get instant “pass/fail” assessments of the results.

Get one combined report for all tests.

Technical specifications

CIBANO 500

Output specifications, general

Frequency	DC / 15 Hz ... 400 Hz		
Power	V_{mains}	P_{30s}	P_{2h}
	> 100 V	1500 W	1000 W
	> 190 V	3200 W	2400 W

Voltage source (A & B)

Source	Range	$I_{\text{max}, 30s}^1$	$I_{\text{max}, 2h}^1$
DC	0 ... ±300 V	27.5 A	12 A
DC	0 ... ±150 V	55 A	24 A
AC	0 ... 240 V	20 A	12 A
AC	0 ... 120 V	40 A	24 A

Current source (A & B)

Source	Range	$V_{\text{max}, 5min}^1$	$V_{\text{max}, 15min}^1$
DC	3 × 0 ... ±33.3 A	50 V	n/a
DC	3 × 0 ... ±24 A	n/a	50 V

Command switches

3 channels, such as trip or close (command switches can be routed to any socket in section A or B). Typical voltage drop = 3 V.

Current per channel ⁵	Duty cycle
6 A _{RMS} AC or DC	continuous
15 A _{RMS} AC or DC	20 s on 80 s off
30 A _{RMS} AC or DC	10 s on 190 s off

Voltage input (V IN) CAT III²

Input	Range	Accuracy ³
DC	0 ... 420 V	0.5 % rd + 0.5 % fs
AC	0 ... 300 V	0.5 % rd + 0.5 % fs

Internal measurement of outputs (A) CAT III⁴

Range name	Range value	Accuracy ³
300 V	0 ... 300 V	DC: 0.1 % rd + 0.05 % fs AC: 0.03 % rd + 0.01 % fs

Internal measurement of outputs (B) CAT III⁴

Range name	Range value	Accuracy ³
300 V	0 ... 300 V	DC: 0.1 % rd + 0.05 % fs AC: 0.03 % rd + 0.01 % fs
3 V	0 ... 3 V	DC: 0.1 % rd + 0.05 % fs
300 mV	0 ... 300 mV	DC: 0.1 % rd + 0.1 % fs
30 mV	0 ... 30 mV	DC: 0.1 % rd + 0.1 % fs

Internal measurement of outputs

Range name	Range value	Accuracy ³
55 A	0 ... 55 A	DC: 0.1 % rd + 0.2 % fs
40 A	0 ... 40 A	AC: 0.1 % rd + 0.1 % fs

Resistance measurement

Range name	Range value	Meas. current	Accuracy ³
30 mV	0.1 μΩ ... 300 μΩ	100 A	0.2 % rd + 0.1 μΩ
300 mV	0.5 μΩ ... 3000 μΩ	100 A	0.2 % rd + 0.5 μΩ
3 V	5 μΩ ... 30 mΩ	100 A	0.2 % rd + 5 μΩ
3 V	50 μΩ ... 300 mΩ	10 A	0.2 % rd + 50 μΩ

Binary input (A) CAT III⁴

Binary input type	Toggleing with potential-free (dry) contacts or voltages (wet) up to 300 V DC
Maximum sample rate	40 kHz
Minimum resolution	25 μs

Power specifications

Voltage	Nominal: 100 V ... 240 V AC Permitted: 85 V ... 264 V AC
Frequency	Nominal: 50 Hz / 60 Hz Permitted: 45 Hz ... 65 Hz
Power fuse	Automatic circuit breaker with magnetic overcurrent tripping at I > 16 A
Power consumption	Continuous: < 3.5 kW Peak: < 5.0 kW
Connector	IEC320/C20, 1 phase

All input/output values are guaranteed for one year within an ambient temperature of 23 °C ± 5 °C / 73 °F ± 10 °F, a warm-up time longer than 25 min. and in a frequency range of 45 Hz to 65 Hz or DC. Accuracy values indicate that the error is smaller than ± (value read × reading error [rd] + full scale of the range × full scale error [fs]). For mains voltages below 190 V AC the system is subject to power restrictions. EtherCAT® is registered trademark and patented technology, licensed by Beckhoff Automation GmbH, Germany.



Interfaces

Digital	4 × EtherCAT ^{®6} , 1 × Ethernet, 1 × Serial, 2 × Safety
Analog	1 × analog input (V IN) 3 × analog input / analog output / binary input (A) 4 × analog input / analog output (B) 1 × booster interface

Environmental conditions

Temperature	Operating: -10 °C ... +55 °C / +14 °F ... +131 °F Storage: -30 °C ... +70 °C / -22 °F ... +158 °F
Relative humidity	5 % ... 95 %, non-condensing
Maximum altitude	Operating: 2000 m / 6550 ft, up to 5000 m / 16400 ft (with limited specifications, according to footnotes) Storage: 12000 m / 40000 ft

Mechanical data

Dimensions (W × H × D)	580 × 386 × 229 mm / 22.9 × 15.2 × 9.0 inch (W = 464 mm / 18.3 inch without handles)
Weight	20 kg / 44.1 lbs

Equipment reliability

Shock	IEC / EN 60068-2-27, 15 g / 11 ms, half-sinusoid, each axis
Vibration	IEC / EN 60068-2-6, frequency range from 10 Hz to 150 Hz, continuous acceleration 2 g (20 m/s ² / 65 ft/s ²), 10 cycles per axis

CE conformity

(EMC) Directive 2004/108/EC and low-voltage Directive 2006/95/EC

EMC	EN 61326-1 Class A, IEC 61326-1 Class A, FCC Subpart B of Part 15 Class A
Safety	EN 61010-1 / EN 61010-2-30 IEC 61010-1 / IEC 61010-2-30 UL 61010-1 / UL 61010-2-30

PC Requirements

Operating system	Windows 8™ 64-bit Windows 7™ 32-bit and 64-bit Windows XP™ with SP 3
CPU	Pentium™ 2 GHz or faster
RAM	min. 2 GB
Hard disk	min. 2GB of available space
Storage device	DVD drive
Graphics adapter	Super VGA (1280 × 768) or higher-resolution video adapter and monitor
Interface	Ethernet NIC
Necessary Microsoft [®] software	Microsoft Office [®] 2010, Office [®] 2007, or Office [®] 2003

¹ Within the above specified power limit

² From 2000 m to 5000 m altitude CAT III compliance only with half voltage

³ Means "typical accuracy"; 98 % of all units have an accuracy which is better than specified

⁴ From 2000 m to 5000 m altitude only CAT II compliance or CAT III compliance with half voltage

⁵ Valid while using one channel. Thermal derating when 2 or 3 channels are used in parallel

⁶ Advanced Packages only

Technical specifications

CB MC2



Current output

Channels	2
Current	0 ... 100 A DC

Static contact resistance measurement

Range	0.1 $\mu\Omega$... 1000 $\mu\Omega$
Accuracy ²	0.2 % rd + 0.1 $\mu\Omega$
Measuring current	100 A

Dynamic contact resistance measurement¹

Range	10 $\mu\Omega$... 200 m Ω
Accuracy ²	0.2 % rd + 10 $\mu\Omega$
Maximum sample rate	40 kHz

Pre-insertion resistance (PIR) measurement

Range	0 ... 10 k Ω
Accuracy ² (< 500 Ω)	0.5 % rd + 10 m Ω
Accuracy ² (500 Ω ... 10 k Ω)	3 % rd

Timing measurement

Maximum sample rate	40 kHz
Minimum resolution	25 μs

Interface

EtherCAT® interface to CIBANO 500

Environmental conditions

Temperature	Operating: -30 °C ... +70 °C / -22 °F ... +158 °F Storage: -30 °C ... +70 °C / -22 °F ... +158 °F
Relative humidity	5 % ... 95 %, non-condensing
Maximum altitude	Operating: 5000 m / 16400 ft Storage: 12000 m / 40000 ft

Mechanical data

Dimensions (W × H × D)	109 × 272 × 63 mm / 4.3 × 10.7 × 2.5 inch
Weight	1.2 kg / 2.6 lbs

Equipment reliability and CE conformity

Please see CIBANO 500 parameters.

CB TN3



Analog interface

Output

Channels	3
Voltage	5 ... 30 V DC
Current	10 ... 200 mA

Voltage Input

Channels	3
Range	30 V
Accuracy ²	0.1 % rd + 20 mV
Maximum sample rate	40 kHz

Current input

Channels	3
Range	50 mA
Accuracy ²	0.1 % rd + 20 μA
Maximum sample rate	40 kHz

Digital interface

Output

Channels	3
Voltage	5 ... 30 V DC
Current	10 ... 200 mA
Maximum power	5 W per channel

Input

Signal type	Velocity-proportional quadrature signals conform with EIA-422/485 standard
Max. input frequency	10 MHz

Interface

EtherCAT® interface to CIBANO 500

Environmental conditions

Please see CB MC2 parameters

Mechanical data

Dimensions (W × H × D)	109 × 272 × 63 mm / 4.3 × 10.7 × 2.5 inch
Weight	0.76 kg / 1.7 lbs

Equipment reliability and CE conformity

Please see CIBANO 500 parameters.

¹ Valid for test currents ≥ 10 A

² Means "typical accuracy"; 98 % of all units have an accuracy which is better than specified

Ordering information

CIBANO 500 Standard Package (order no. VE000900)

Hardware

1 × CIBANO 500

Software

1 × PTM software

1 × Static contact resistance license

1 × Timing license

Cables and accessories

4 × Crocodile clamp for secondary side (red + black)

2 × Kelvin clamp 100 A

12 × Terminal adapter

2 × Safety dongle

1 × Standard measurement cable set:

1 × 6 m red, 1 × 6 m black, 3 × 1 m black (2.5 mm²)

1 × Summary cable for A outputs (4 × 2.5 mm²)

1 × Summary cable for B outputs (5 × 2.5 mm²)

1 × Ethernet PC connection cable 3 m / 10 ft

1 × Grounding cable (green / yellow) 6 m / 19.5 ft (6 mm²)

1 × Power cord CIBANO

1 × Soft bag for small accessories

1 × CIBANO 500 transport case with wheels

1 × CIBANO 500 DVD

1 × CIBANO 500 "Getting started" manual

CIBANO 500 Advanced Package (order no. VE000901)

Hardware

1 × CIBANO 500 with EtherCAT® module

3 × CB MC2

Software

1 × PTM software

1 × Static contact resistance license

1 × Timing license

1 × Dynamic contact resistance license

1 × Current clamp license

1 × Minimum pick-up license

1 × Motor current license

Cables and accessories

Cables and accessories from CIBANO 500 Standard Package plus:

1 × Soft bag, 41 × 35 × 27 cm / 16 × 14 × 11 in (W × H × D)

3 × EtherCAT® cable 15 m / 49 ft

1 × Standard high-current cable set:

6 × 3 m red, 3 × 0.75 m black (10 mm², 6 mm banana plugs)

1 × Standard measurement cable set:

6 × 3 m red, 6 × 1 m black (2.5 mm²)

1 × Kelvin clamp set:

6 × red, 3 × black (1 × 6 mm and 1 × 4 mm banana plugs each)

1 × Y clamp set: 3x 6 mm connectors, 3x 4 mm connectors

6 × Crocodile clamp for secondary side (red + black)

1 × Soft bag with belt

1 × Elastic string



You can extend the functional scope of both packages by ordering one or several of the upgrade options or single articles.

Ordering information

EtherCAT® Hardware Upgrade Option (order no. VEHO0900)

For an upgrade of the CIBANO 500 Standard Package with any of the five Upgrade Options you also need to order the EtherCAT® Hardware Upgrade Option.

- 1 × EtherCAT® board
- 2 × Torx screws, M 3 × 8
- 1 × Torx screwdriver, TX10
- 1 × EtherCAT® exchange instructions



CB MC2 Upgrade Option (order no. VEHZ0900)

- 1 × CB MC2
- 1 × EtherCAT® cable 15 m / 49 ft
- 1 × Standard high-current cable set:
2 × 3 m red, 1 × 0.75 m black (10 mm², 6 mm banana plugs)
- 1 × Standard measurement cable set:
2 × 3 m red, 2 × 1 m black (2.5 mm²)
- 1 × Kelvin clamp set:
2 × red, 1 × black (1 × 6 mm and 1 × 4 mm banana plugs each)
- 4 × Crocodile clamp for secondary side (red + black)
- 1 × Y clamp set: 1 × 6 mm and 1 × 4 mm banana plugs
- 1 × Soft bag, 41 × 35 × 27 cm / 16 × 14 × 11 in (W × H × D)
(one bag comes with every three orders of VEHZ0900)



Motion Basic Upgrade Option (order no. VEHZ0902)

Hardware

- 1 × CB TN 3
- 1 × EtherCAT® cable 6 m / 20 ft
- 1 × Digital linear transducer with mounting kit adapter and connection cable to CB TN3
- 3 × Magnetic tape for linear transducer
- 1 × Soft bag, 41 × 35 × 27 cm / 16 × 14 × 11 in (W × H × D)
- 1 × Soft bag, 25 × 22 × 6 cm / 10 × 9 × 2.5 in (W × H × D)

Software

- 1 × Motion license

Mounting accessories

- 1 × Open-end wrench set: 2 × 16 / 18, 1 × 8 / 10
- 1 × Flexible arm
- 1 × Extension set for flexible arm: 1 × short, 1 × long
- 1 × Parallel vice for flexible arm
- 1 × Elastic string



Motion Linear Standard Upgrade Option (order no. VEHZ0905)

Hardware

- 1 × CB TN 3
- 1 × EtherCAT® cable 6 m / 20 ft
- 3 × Digital linear transducer with mounting kit adapter and connection cable to CB TN3
- 9 × Magnetic tape for linear transducer
- 1 × Soft bag, 41 × 35 × 27 cm / 16 × 14 × 11 in (W × H × D)
- 1 × Soft bag, 25 × 22 × 6 cm / 10 × 9 × 2.5 in (W × H × D)

Software

- 1 × Motion license

Mounting accessories

- 1 × Open-end wrench set: 2 × 16 / 18, 2 × 8 / 10
- 1 × Flexible arm set:
 - 1 × flexible arm, 2 × flexible arm with support clip
- 1 × Extension set for flexible arm: 3 × short, 3 × long
- 3 × Parallel vice for flexible arm
- 1 × Elastic string



Ordering information

Motion Rotary Standard Upgrade Option (order no. VEHZ0906)

Hardware

- 1 × CB TN 3
- 1 × EtherCAT® cable 6 m / 20 ft
- 3 × Digital rotary transducer with mounting kit adapter and connection cable to CB TN3
- 1 × Soft bag , 41 × 35 × 27 cm / 16 × 14 × 11 in (W × H × D)
- 1 × Soft bag , 25 × 22 × 6 cm / 10 × 9 × 2.5 in (W × H × D)

Software

- 1 × Motion license

Mounting accessories

- 3 × Flexible coupling 10 mm / 0.4 in
- 1 × Allen wrench 2.5 mm
- 1 × Open-end wrench set: 2 × 16 / 18, 2 × 8 / 10
- 1 × Flexible arm set:
 - 1 × flexible arm, 2 × flexible arm with support clip
- 1 × Extension set for flexible arm: 3 × short, 3 × long
- 3 × Parallel vice for flexible arm



Motion Universal Upgrade Option (order no. VEHZ0907)

Hardware

- 1 × CB TN 3
- 1 × EtherCAT® cable 6 m / 20 ft
- 3 × Digital linear transducer with mounting kit adapter and connection cable to CB TN3
- 3 × Digital rotary transducer with mounting kit adapter and connection cable to CB TN3
- 9 × Magnetic tape for linear transducer
- 2 × Sensor extension cable 10 m / 33 ft
- 2 × Soft bag , 41 × 35 × 27 cm / 16 × 14 × 11 in (W × H × D)
- 2 × Soft bag , 25 × 22 × 6 cm / 10 × 9 × 2.5 in (W × H × D)

Software

- 1 × Motion license

Mounting accessories

- 3 × Flexible coupling 10 mm / 0.4 in
- 3 × Drill chuck
- 1 × Allen wrench 2.5 mm
- 1 × Open-end wrench set: 2 × 16 / 18, 2 × 8 / 10
- 1 × Flexible arm set:
 - 3 × flexible arm, 3 × flexible arm with support clip
- 1 × Extension set for flexible arm: 6 × short, 6 × long
- 6 × Parallel vice for flexible arm



Cables and accessories

Description	Order no.
Elastic string for CB MC2 and CM TN3	VEHZ0918
Cables for CIBANO	
1 × Standard high-current cable, 3 m red, (10 mm ² , 6 mm banana plugs)	VEHK0904
1 × Standard high-current cable, 0.75 m black (10 mm ² , 6 mm banana plugs)	VEHK0905
1 × Ethernet PC connection cable 3 m / 10 ft	VEHK0622
1 × Cable for A outputs (4 × 2.5 mm ²)	VEHK0906
1 × Cable for B outputs (5 × 2.5 mm ²)	VEHK0907
1 × EtherCAT® cable 15 m / 49 ft	VEHK0908
1 × EtherCAT® cable 6 m / 20 ft	VEHK0909
1 × EtherCAT® cable coupling	VEHZ0909
1 × Grounding cable (gr / yl) 6 m / 19.5 ft (6 mm ²)	VEHK0615
1 × Standard measurement cable 1 m / 3 ft black (2.5 mm ²)	VEHK0900
1 × Standard measurement cable 6 m / 19.5 ft black (2.5 mm ²)	VEHK0901
1 × Standard measurement cable 6 m / 19.5 ft red (2.5 mm ²)	VEHK0902
1 × Standard measurement cable 3 m / 10 ft red (2.5 mm ²)	VEHK0903
12 × Flexible terminal adapter for screw type terminals (32 A)	VEHS0009

Clamps and transport accessories

Description	Order no.
Clamps	
1 × C-Probe 1 current clamp (measuring ranges 10 A and 80 A)	VEHZ0908
1 × Kelvin clamp, 3 × 4 mm connector red, 1 × 4 mm connector black	VEHZ0913
1 × Kelvin clamp red, 1 × 4 mm connector, 1 × 6 mm connector	VEHZ0914
1 × Kelvin clamp black, 1 × 4 mm connector, 1 × 6 mm connector	VEHZ0915
1 × Y clamp with 6 mm connector	VEHZ0916
1 × Y clamp with 4 mm connector	VEHZ0917
1 × Crocodile clamp set: 2 × red, 2 × + black, 4 mm	VEHZ0620
Transport accessories	
1 × CIBANO 500 transport case with wheels	VEHP0093
1 × Soft bag, red, 24 × 6 × 6 cm (W × H × D)	VEHP0094
1 × Soft bag, red / blue / yellow, 41 × 35 × 27 cm (W × H × D)	VEHP0095
1 × Soft bag, red / blue / yellow, 25 × 22 × 6 cm (W × H × D)	VEHP0020

Motion transducers and mounting accessories

Description	Order no.
1 × Digital linear transducer with mounting kit adapter and CB TN3 connection cable	VEHZ0919
1 × Digital rotary transducer with mounting kit adapter and CB TN3 connection cable	VEHZ0925
3 × Magnetic tape for linear transducer	VEHZ0920
1 × Flexible arm with support clip	VEHZ0921
1 × Short extension for flexible arm	VEHZ0922
1 × Long extension for flexible arm	VEHZ0923
1 × Parallel vice for flexible arm	VEHZ0924
1 × Drill chuck	VEHZ0926
1 × Flexible coupling 10 mm / 0.4 in	VEHZ0927
1 × Sensor extension cable 10 m / 33 ft	VEHK0910
1 × Adapter for digital transducers of Doble	VEHZ0911
1 × Adapter for digital transducer of Vanguard	VEHZ0912

Software licenses

Description	Order no.
1 × Timing license	VESM0905
1 × Dynamic contact resistance license	VESM0900
1 × Static contact resistance license	VESM0906
1 × Minimum pick-up license	VESM0901
1 × Motor current license	VESM0902
1 × Current clamp license	VESM0907
1 × Motion license	VESM0903

OMICRON is an international company serving the electrical power industry with innovative testing and diagnostic solutions. The application of OMICRON products allows users to assess the condition of the primary and secondary equipment on their systems with complete confidence. Services offered in the area of consulting, commissioning, testing, diagnosis and training make the product range complete.

Customers in more than 140 countries rely on the company's ability to supply leading-edge technology of excellent quality. Service centers on all continents provide a broad base of knowledge and extraordinary customer support. All of this together with our strong network of sales partners is what has made our company a market leader in the electrical power industry.

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