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HIGH PERFORMANCE CIRCUIT BREAKER ANALYZER CBV-32

PURPOSE OF THIS DOCUMENT

CBV-32

This document has been written to present you the CBV-32, a new High Voltage Circuit Breaker analyzer designed and built by Zensol.

CBV-32 AND CBA-32P

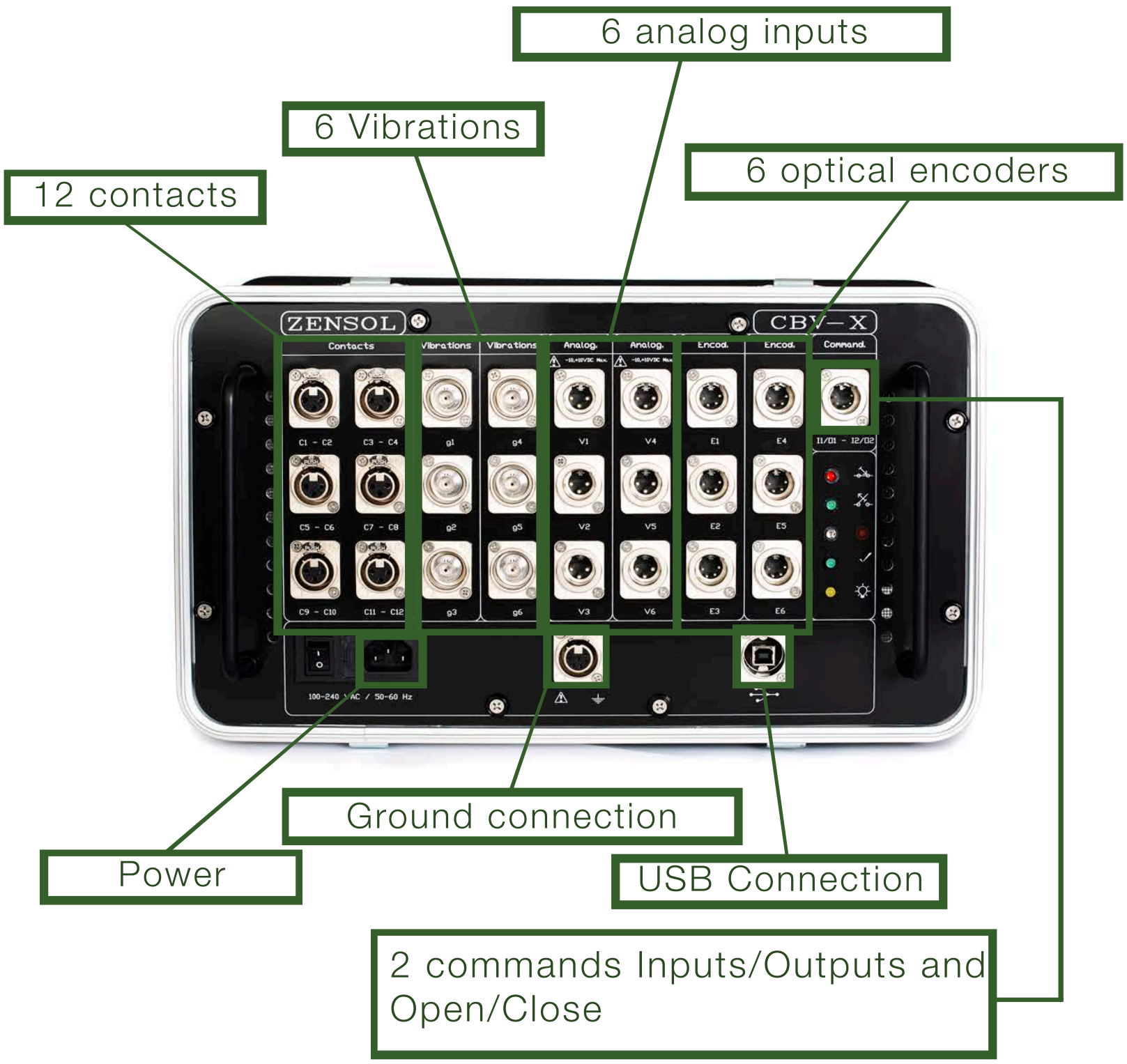
We will use this opportunity to make a brief comparison between the existing CBA-32P instrument and the new CBV-32.

DID YOU KNOW?

The CBA-32P is still available with its 24 dry contacts whereas the 8 and the 16 dry contacts options have been replaced by the new CBV-X.

WHAT IS THE CBV-X?

The CBV-X is the only instrument able to perform in a SINGLE test timing, motion, vibration and dynamic resistance of contacts associated to different measurements of current and voltage.



QUICK COMPARAISON BETWEEN CBA-32P AND CBV-32

CBA-32P

CBV-32

The CBA-32P and the CBV-32 share the same cables, same modules and the same accessories.

In red: The differences

In green: The commonalities

COMPARISON OF THE CHARACTERISTICS BETWEEN THE CBA-32P AND CBV-32

	CBA-32P characteristics	CBV-32 characteristics
Sampling frequency	10khz	200khz
Sampling time	100 microseconds (µs)	5 microseconds (µs)
Analog inputs	0-10 Volts	-10, +10 Volts
Analog/Digital Conversion	12 bits	16 bits
External trigger	—	Works on any analog input Rising of falling edge AC or DC Signals

PROBLEMS DETECTED AND METHODS OF TESTING ON CIRCUIT BREAKERS

Detected problems	Test methods	CBA-32P		CBV-32	
		Online	Offline	Online	Offline
Contact timing	Timing test		X		X
Contact bounce	Timing/motion test		X		X
Bad damping	Motion test		X		X
Main contact wear	Micro-ohmmeter test		X		X
Arcing contact wear	Dynamic resistance test		X		X
Open and close coil assessment	Coil current test	X	X	X	X
Motor assessment	Current and voltage test	X	X	X	X
First trip	Measure current over 3 phases	X		X	X
Bad mechanical adjustment	Vibration test			X	X
Bad alignment	Vibration test			X	X
Bad contact timing	Vibration test			X	X

TIMING

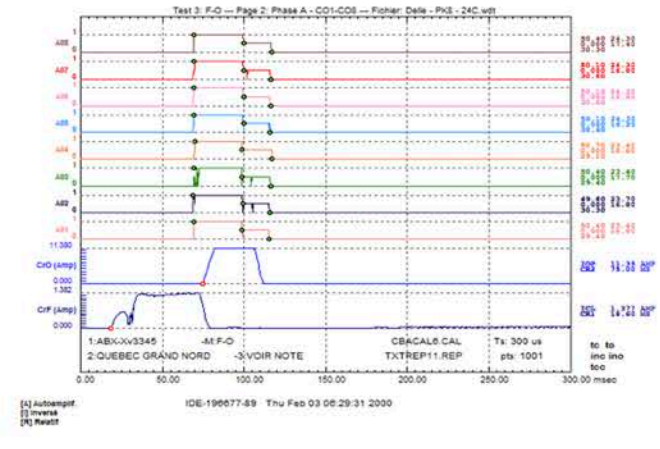
ARCTIC CABLES FOR CONTACTS

CABLE EXTENSION CONTACT/DISPLACEMENT

GROUND CABLE

COMMAND CABLE

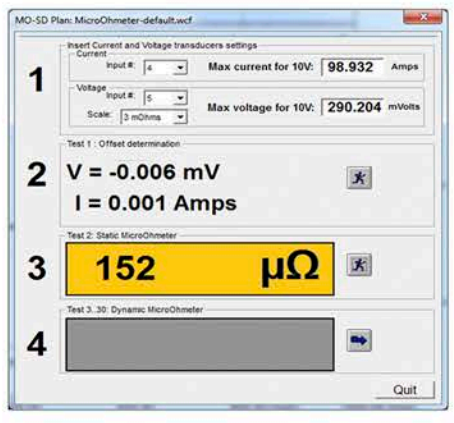
52 a/b CABLE

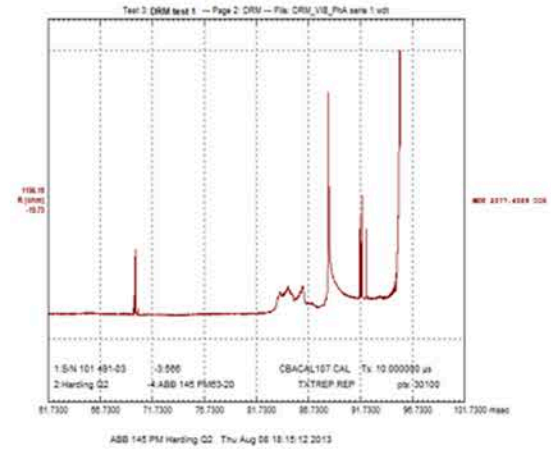


DYNAMIC RESISTANCE

DRM

The figure on the left shows the static resistance of a main contact (as given by a micro-ohmeter) while the figure on the right shows the dynamic resistance of an arc contact.





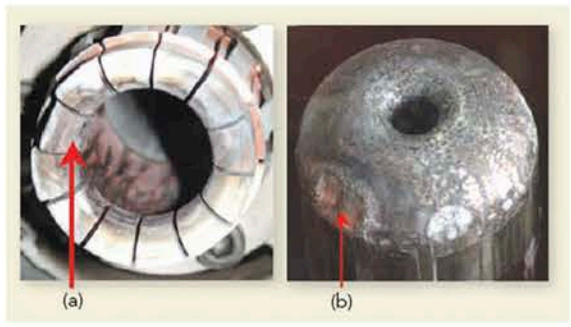
DYNAMIC RESISTANCE (DRM)

WHY?

Dynamic Contact Resistance Measurement (DRM) is a widely recognized method to determine the condition of a breaker's main and arcing contacts, without opening it. The DRM test (KIT MO-SD) is the ideal tool to observe the changes on the contacts as a function of time.

For circuit breakers, this resistance may be measured either at the rated speed or at slow speed, during an open operation.

Bad contact alignment



Arc pitting on fixed contacts

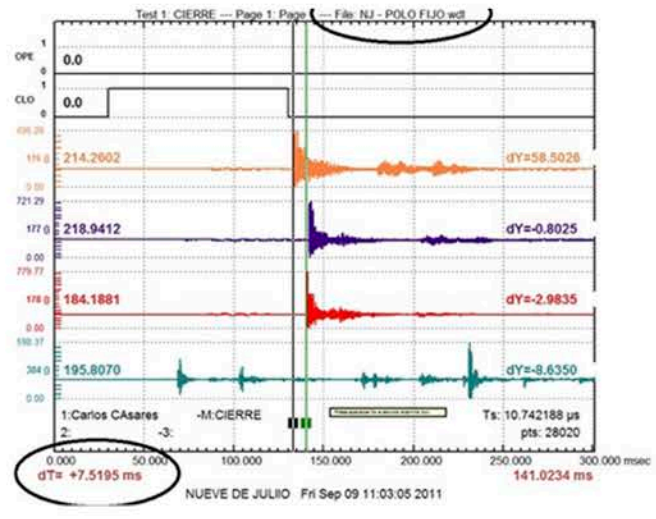
Detected problems	Static micro-ohmmeter	Dynamic micro-ohmmeter
Arcing contact wear		X
Arcing contact length		X
Main contact wear	X	X
Bad contact alignment		X
Bad contact adjustment		X
Hot spots (High joint resistance)	X	X
Contacts fingers		X
Contact surfaces		X
Blasting nozzles		X
Crossing joints		X

VIBRO-ACOUSTIC, WHY?

Accelerometer

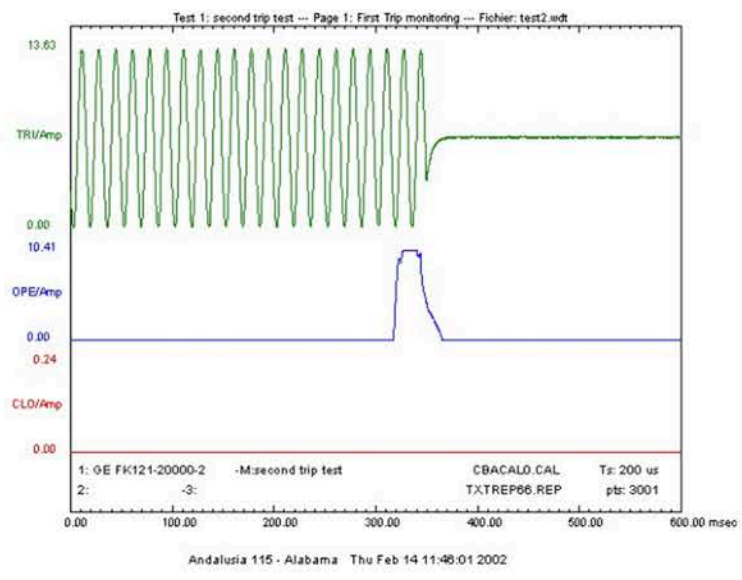
Mounting base

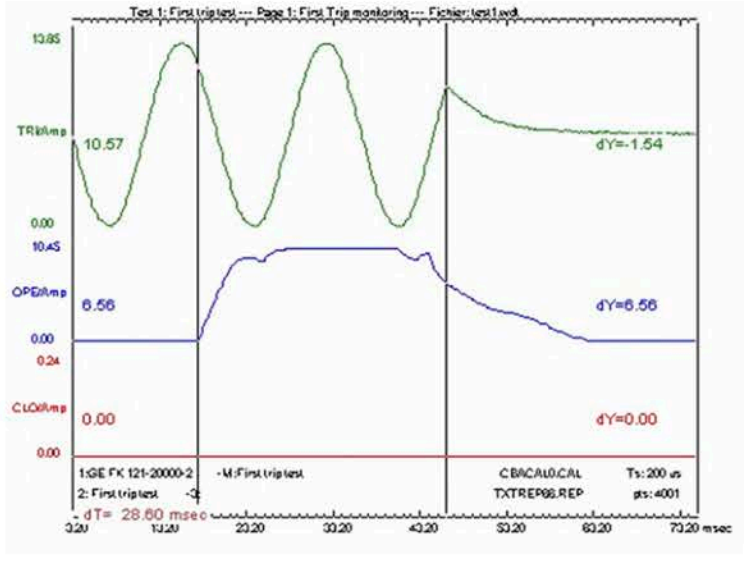
· Non-intrusive
· Identify problems that classical tests cannot detect
·On-line/Off-line
·Timing test easily done on-line



FIRST TRIP MONITORING
Z-FT

Example of high voltage line current tripping

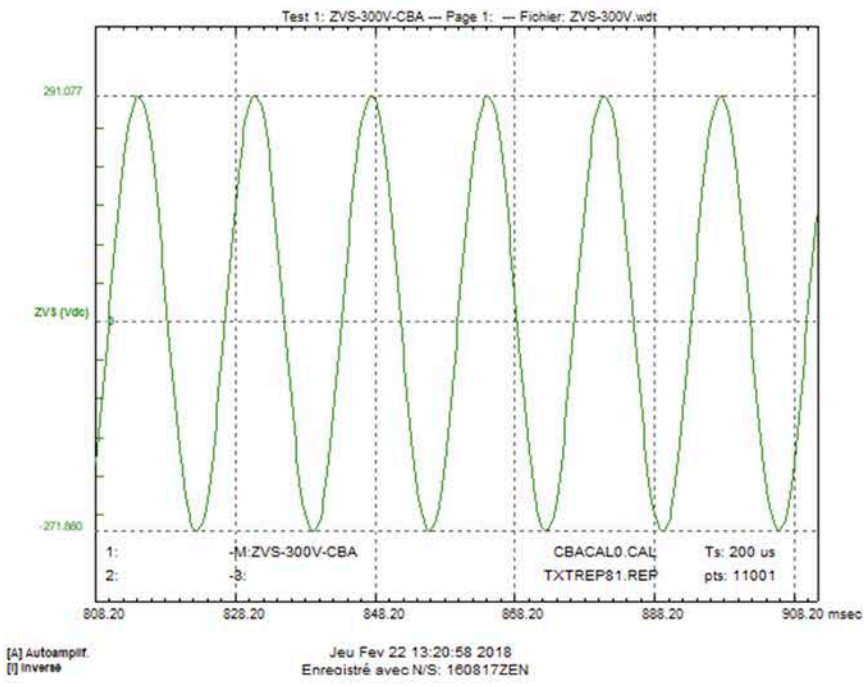




VOLTAGE TRANSDUCER

ZVS-300V

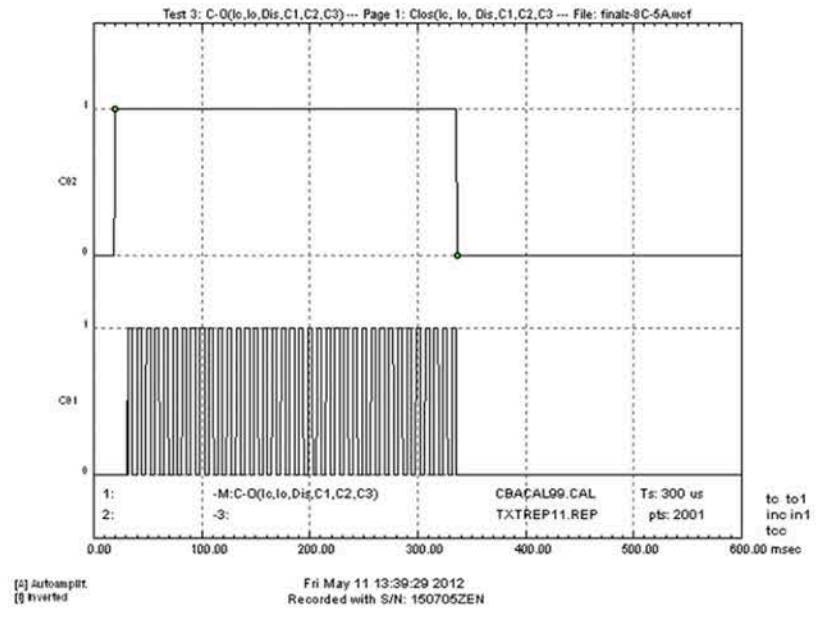
Voltage transducer from -300V, +300V input voltage with analog output -10V, +10V.
For example, during a timing test, the ZVS-300V allows you to measure the variation of the battery voltage 129VDC or yet again the voltage signal of 120VAC, 240VAC.



VOLTAGE TRANSDUCER

ZVD-AC-DC-300-CONTACT

Voltage transducer between 0 and +/- 300V with digital output 0 and 1.
For example, during a timing test, the ZVD-AC-DC-300-CONTACT allows you to observe the timing of a "live" contact of 129VDC. The digital output will be 0 if the input voltage is less than 60VDC and 1 if the input voltage is greater than 60VDC.



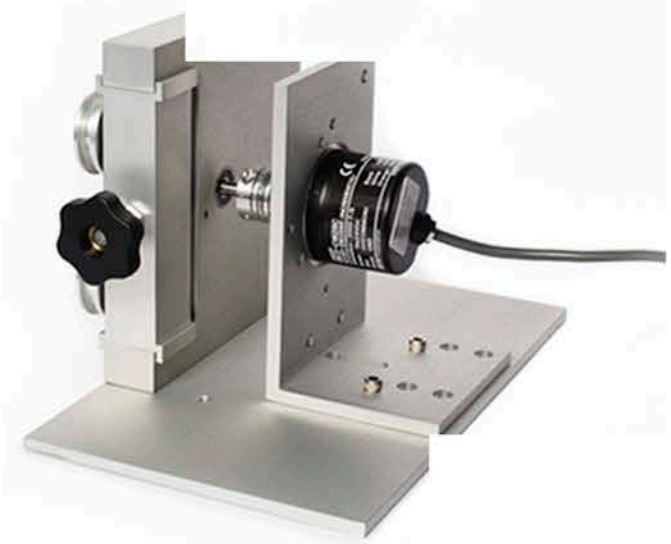
CURRENT CLAMP AC/DC 30A
CT-CLAMP-AC/DC

For example, by using several of these current clamps, additional coil currents can be measured during closing/opening of contacts during timing tests.

MOTION TEST
KIT ZLB

For linear measurements, use the resistive motion transducer ZLT or the digital ZLD-200.

MOTION TEST
KIT ZLR



Transform a linear motion into a rotary motion.

MOTION TEST
KIT ZMS

Allows you to fix any types of sensors (resistive or optical) on any circuit breakers.

PRESSURE TRANSDUCER

ZPS 5000

Measurement of the instantaneous variation of pressure during opening or closing operations.

A complete and innovative solution for testing high-voltage circuit breakers!

MODULAR SOLUTION

A modular solution that allows you to buy the different available modules according to your needs.

CONSTANT INNOVATION

Zensol is constantly creating new modules compatibles with the CBA and CBV (call us for more information).

HOURS

Monday to Friday
8:30am to 5pm

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