

# P6 - NCP SERIES

## GENERAL FEATURES

- Management via industrial Panel PC 15" with color touch-screen monitor and built-in keyboard
  - Possibility of tele-assistance through TEAM VIEWER
  - DATA BANK to record all the results, with easy search filters
- Predisposition for connection to company SERVER and to automatic production lines
  - 40 column printer for test receipt
  - AUTOTEST
  - Data archive and parameterization under password
  - Production batch and serial number management
- Recording of results on DATA BANK with search filters in Excel or Access format
- Power supply with the possibility of: stabilization, variable frequency, continuous regulation
- Indication of partial results on the monitor and final result by means of LED indicators and a rejection acoustic warning device
  - STOP CYCLE button to interrupt the test or cancel the result
  - Management of results and status of the machine to line PLC
    - Multilingual SW selectable

## OPTIONS

- Compensation to ambient temperature
  - Barcode reader
  - Labeling machine management
    - Signal lamps
- Partial discharges with PDIV and PDIS (IEC 60270, TS 60034-18-41 and NEW TS 60034-18-42 STANDARDS)
  - Vibration test

### H8/NET FULLY COMPUTERIZED TEST



Standard version for stators up to  
with 8 terminations, 5 tests.  
Max voltage 3 Kv.

### 06/C FULLY COMPUTERIZED FOR SMALL DIE CAST ROTORS



Testing for small die-cast rotors  
managed by PC. Maximum  
dimensions: Ø 120 mm, H 150 mm with  
and without shaft. Manual loading and  
unloading. Cycle time 10".

### N1 RELIEF LOSSES IN IRON OF STATOR PACKAGES



Specific versions according to the  
dimensions of the packages stator to  
test. Possibility of tests at 50 Hz; other  
frequencies on request.  
Visualization hysteresis curve.

# P SERIES



# P6 - NCP ONLOAD BRUSHLESS MOTOR TESTING



## TESTS

OHMIC RESISTANCE - FUNCTIONAL MEASURES  
GROUND EFFICIENCY - CHECK OF DIRECTION OF ROTATION  
INSULATION RESISTANCE - DYNAMIC TESTS WITH BRAKE  
DIELECTRIC STRENGTH - BACK EMF RELIEF  
SLIDING TEST - PARTIAL DISCHARGES

RISATTI INSTRUMENTS SRL  
Strada Goretta 92/N - 10079 Mappano (TO)  
Tel: 011-280289 Fax: 011-858027  
www.risatti.it - info@risatti.it

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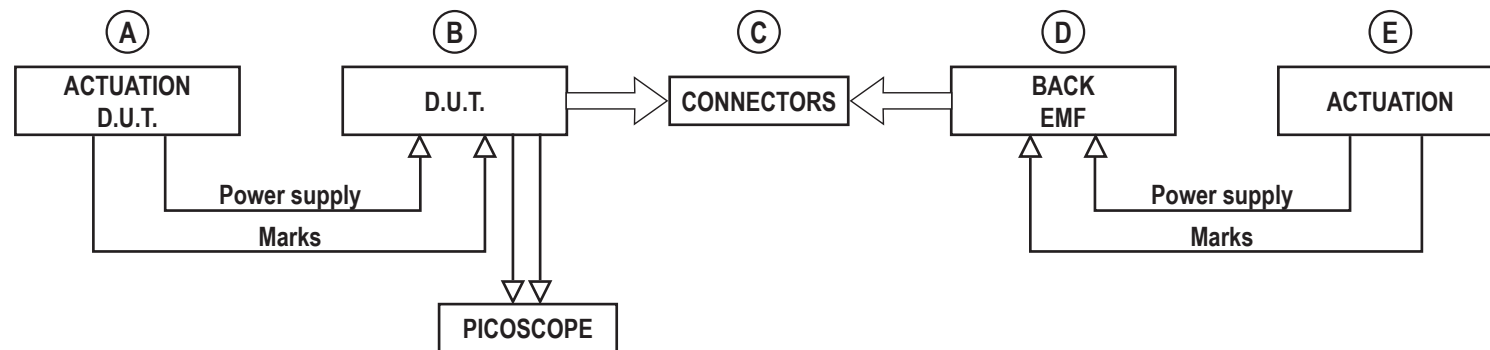
## TEST IN PRODUCTION OF BRUSHLESS MOTORS

Three-phase brushless motors with power according to request and voltages 230- 400 V 50-60 Hz, with drive, encoder and resolver.

## TECHNICAL FEATURES

The salient features of the P6 / NCP.02 system can be summarized as follows:

- INDUSTRIAL Panel PC, with 18.5 "color LCD monitor and TOUCH 5SCREEN of IP65 series
- 42 column printer for test receipt, rejection, periodic report
- Historical archives of the measurements made, available for further processing related to the control of the productive process
- Integrated self-test, for dielectric strength tests, insulation and ohmresistance, where a calibrated load integrated in the switching boards is applied to each measurement
- Programmable power supply, isolated from the mains and managed by software routine
- Protected workplace, on request



## SYSTEM

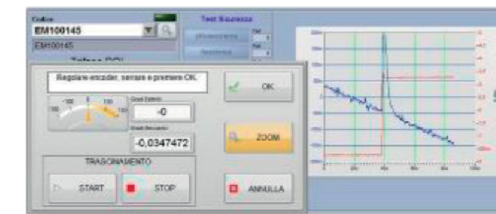
The Testing System is designed to allow, through the use of "modules" Hardware and Software, the realization of cycles and checks also on Customer Specification.

The main elements are:

- Analog and digital acquisition of signals (PICO SCOPE): the quantities being measured come acquired with precision and speed, SW processing will yield the result
- Joint (C): the piece under test (8), powered by the drive (A) is mechanically connected to the machine by means of a joint (C)
- The brushless motor (D) rotates the DUT and then measures it various dynamic parameters, including of particular importance the Back EMF and the related Kf factor



The signals collected by the digitizer are then processed via software, in this case the Back EMF survey includes the evaluation of the upper harmonics, allowing the identification of defects otherwise not evaluable. The analog matrix allows the diversion of all quantities to the digitizer analog: the image on the right illustrates the verification, and calibration procedure of the encoders: also in this case the high sampling rate, combined with a considerable acquisition depth, it allows highly precise evaluations and interventions, not only with regard to the relative report phase, but also the evaluation of the "quality" of the signal supplied by the encoders. The SW algorithms used take advantage of processing processes unthinkable at analog level, but at the same time the signals are conditioned also in an analogical way in order to be able to use the better the dynamics of the digitizer. In addition, the use of proprietary SW libraries, which proceed with the calculation using complex numbers, they allow precise analysis in the time and frequency domain: the maximum digitization frequencies, which reach the GS, together with various memory depths MSamples, allow adjustments and interventions of great precision.



## TYPE AND CHARACTERISTICS OF THE TESTS

### 1. MEASUREMENT OF THE OHM RESISTANCE

For each winding, and possibly on protector thermal, the ohmic resistance is measured with a four wires "KELVIN" system. The nominal value and the percentage of tolerance for each test are set using the keyboard.

Measuring range	0,02 Ω a 200 KΩ in 8 scales
Resolution	10 UΩ
Accuracy	0,5% of the full scale
Maximum current	2 A
Compensation of the resistance value measured at the ambient T (OPTION 9.6)	Using thermometric probe

### 2. EARTH CONDUCTOR EFFICIENCY TEST (CEI 50106)

Measures ohmic resistance with four-wire "KELVIN" system.

Output current	10 e 25 A
Maximum output voltage	12 VAC
Maximum programmable thresholds	(150 mΩ with current 25 A and 600 mΩ with current 10 A)

### 3. TEST OF INSULATION RESISTANCE (CEI 60034-1)

Test voltage	500 VDC stabilized
Test range	from 200 KΩ to 200 MΩ selfranging
Maximum current	3,3 mA

### 4. TEST OF DIELECTRIC STRENGTH (CEI 60034-1)

The test is carried out between the live and earthed parts.

Trial voltage	100 - 3000 V in steps of 20 V
Intervention current	0,5 - 30 mA

### 5. SLIDING TEST (OPZIONE 6.5)

Motor power supply at a PROGRAMMABLE voltage lower than the rated voltage. After a parameterized time, it is checked whether the current and power absorption are within the set thresholds.

### 6. FUNCTIONAL MEASURES

Through the AC power supply (point 8), the following are measured according to IEC 60688 STANDARDS:

Current and voltage
Strength
Power factor
Frequency
Active power
Reactive power
COSφ

### 7. PHASE ROTATION CHECK WITH HALL UVW SENSORS

### 8. CHECK OF ROTATION DIRECTION WITH LASER SENSOR AND AB ENCODER READING

### 9. CHECK NTC, WITH OHMMETER

### 10. DYNAMIC TESTS WITH PARKING BRAKE

### 11. BACK EMF RELIEF

The mechanical rotation of the rotor, which uses an external force, generates a rotating magnetic field, which induces an alternating current on the windings of the 3 phases of the stator. The acquired waveforms are compared with sample curves to determine the quality of the engine.