

## STUDY OF THE 3-PHASE ASYNCHRONOUS MOTOR 300W

## Ref. PACK-ACFR1

## COMPOSITION OF THE SET

- 1 Squirrel cage three-phase induction motor
- 1 Powder brake
- 1 Torque sensor
- 1 DC tachogenerator
- 1 Variable three-phase power supply
- 1 Magnetolectric voltmeter
- 1 AC & DC Multimeter Clamp
- 1 Display unit torque - speed - power
- 1 TRMS Wattmeter
- 1 Stand on wheels
- 1 Safety leads set



DELIVERED WITH TEACHING RESSOURCES

## EDUCATIONAL OBJECTIVES

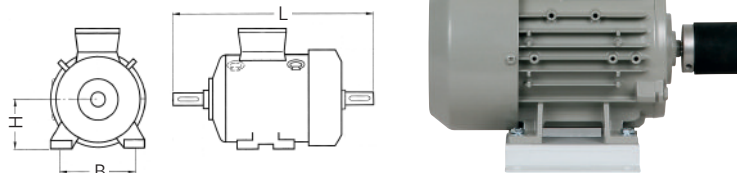
- Study the stator and the rotor of an asynchronous motor.
- Understand the STAR/DELTA motor coupling.
- Study the pairs number of poles and the influence on the rotating speed.
- Note, calculate and plot the electrical and mechanical quantities of the motor.

- Realize the balance sheet of motor powers.
- Understand the working of a powder brake.
- Use an ammeter clamp

## SQUIRREL CAGE INDUCTION MOTOR

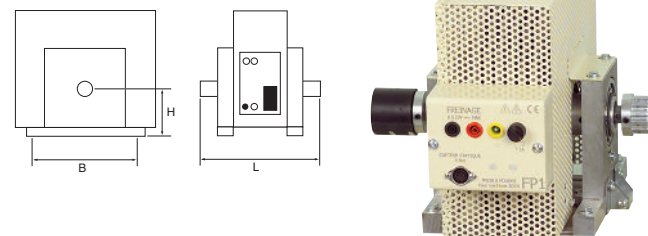
This engine works as well with a speed variator as directly connected to a 3-phase supply.

U (V)	230/400V
I (A)	1.5 / 0.9
H / B / L	90 / 172 / 235mm
Weight	8.2 kg



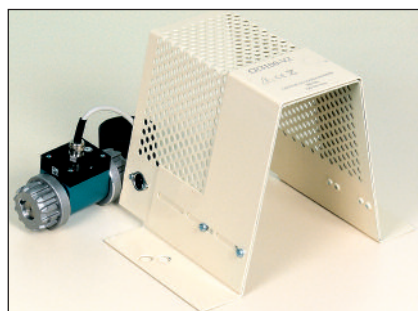
## POWDER BRAKE

Voltage/Current max for blocking	2V / 0,1A
Max torque	35Nm
H / B / L	90 x 172 x 240mm
Weight	18 kg
Ventilation	Natural



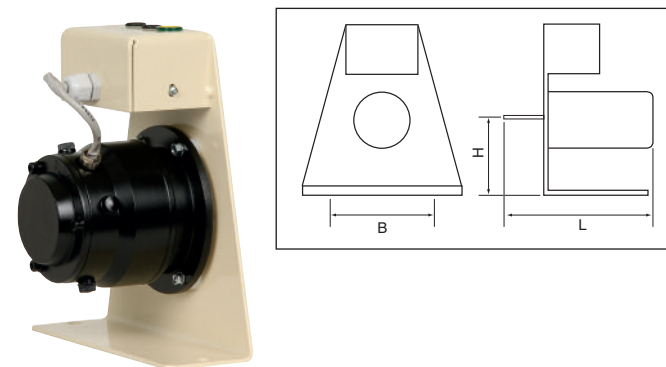
## TORQUE SENSOR

Sensor range	20 Nm
Use with	an important inertia
Torque output signal	0 to 5V for the measuring span in Nm (0 to -5V according the rotating way).
Maximum rotating speed	2000 rpm.
Sensor supply	between 12 and 28 VDC.



## DC TACHOGENERATOR

Deliver a continuous voltage proportional to the rotating speed.	
Voltage at 1000rpm	10V
Connector	safety terminals
H / B / L	90 x 172 x 170mm

AC VARIABLE POWER SUPPLY  
FOR 3-PHASE MACHINES

Cover design with circuit-breaker and light.	
Primary on mains cable.	
Power	3.72kVA
Primary	380/400V
Secondary	0-430V
Secondary	5A
Weight	30kg
Dimensions	280 x 340 x 510mm



## SPEED - TORQUE - POWER DISPLAY UNIT

## DIRECT DISPLAY

- of the mechanical torque in Nm
- of the speed of rotation in rpm
- of the power in W

Calculates internally the mechanical power  $P_u = M 2\pi n / 60$



## CLAMP / MULTIMETER AC &amp; DC

- Auto power off after 25mm
- Recopy output 10mV/A 20kHz
- Back lighting of the screen

Display	4.000 counts
Converter	AC & DC
Bandwidth	50Hz to 500Hz
opening of the jaws	12mm
VDC / VAC	400mV to 600V
IDC / IAC	4 to 80A
OHM	4Ω to 40MΩ
Farad	40nF to 100μF
Fréquencymeter	5Hz to 10MHz
.....))	Ring for R < 150Ω
Ranging	Auto & Manual
Protection	CATIII 600Vrms pol2
Power source	2 batteries LR03
Dimensions / Weight	210 x 70 x 37mm / 200g



## SAFETY LEADS Ø4 REAR STACKING

- Very supple wire 30A
- Contacts formed into spring strips
- Working voltage 600V CAT III
- Test voltage 7400V during 1 mn
- Conforms to the standard CEI1010



## MAGNETOELECTRIC VOLTMETER

VDC	100mV to 1000V (1,5%)
VAC	3 to 1000V (2%)
Scale length	90mm
Protection	CAT III 600V Pol 2
Safety terminals	yes
Fuses	HPC 500V 500mA
Impedances	VDC : 20kΩ/V - VAC : 6,3kΩ/V
Dimensions / Weight	170 x 110 x 53mm / 500g



## TRMS WATTMETER



Function	U	I	W
Ranges	400Vrms single-phase 700Vrms 3-phase	20Arms	0.2 - 2 - 20kW
Accuracy in % of reading	1% from 0 to 50kHz	2% 0 ~ 20kHz 3% 20 ~ 50kHz	2% 0 ~ 20kHz 3% 20 ~ 30kHz 5% 30 ~ 70kHz
Protection	Electronic breaker	20A delayed fuse	
Impedance	1.5MΩ	<5mΩ	
Recopy outputs	10VDC/1000Vrms	10VDC/20Arms	10VDC/ 0,2kW - 2kW - 20kW

WATTELEC is a digital multimeter with floating inputs simultaneously displaying the 3 electric values: voltage, current and power. WATTELEC measures the TRMS effective values of the U I W measurements, possibly with direct component superimposed. The wide bandwidth of the apparatus allows measurements to be made from DC to 70kHz or on chopped signals (frequency converters, industrial choppers, rectified supplies etc.). The apparatus voltage and current inputs are insulated between each other and relative to earth. WATTELEC measures single phase and balanced three phase powers.

DISPLAY  
Height of digits 14mm (text: 6mm).  
Power ranges are switched automatically.  
Supplied with user manual

## MOTORS STAND AND ACCESSORIES

The set is supplied with coupling, fastening, covers and guide rails

