

URM-00

- URM-01/PP
Stepper motor control
- URM-02/CC
DC motor (2-quadrant)
control
- URM-03/CA
AC three-phase motor
control
- URM-04/BL
Brushless motor control
- URM-05/4Q
DC motor (4-quadrant)
control
- URM-06/PS
Speed and position DC
motor control
- URM-SMC
Multifunzionale measuring
system
- URM-PCS
PC motors control



EDUCATIONAL KIT TO STUDY MOTORS CONTROL AND PROTECTION

It is composed of 35 modules with standard electrical control components, vertical frame and accessories to perform a wide range of experiments . Teaching and experimental series modules have been especially designed to provide a comprehensive, hands-on and complete instruction in the principles and operations of control circuits of the main types of electrical motors (open and closed loop) most widely used in industry today, such as:



- STEPPER MOTORS
- DC MOTORS
- AC MOTORS
- BRUSHLESS MOTORS

All the modules are completely self-sufficient and do not require any external devices or special equipment other than a common DC power supply and the standard laboratory measuring instruments in order to work. The system modularity allows to programme investments through the complete or partial purchasing of seven modules currently available.

A special computerized device known as "URM-SMC" enables automatic measurements, data acquisition and graphic monitoring of the signals using any PC. Full technical bibliography complete of the theory of the control circuits and many hands-on experiments are provided with each module ensuring a fast and effective learning of the subject. Each module can be used as easily either resting on a flat surface or fitted to a special vertical anodized aluminium frame.

URM-00

URM-01/PP
Stepper motor control

URM-02/CC
DC motor (2-quadrant)
control

URM-03/CA
AC three-phase motor
control



URM-01/PP STEPPER MOTORS AND RELATED ELECTRONIC DRIVE CIRCUITS

- 20 KHz PWM control
- Step angle degree: $1,8^\circ$
- 1/1, 1/2, 1/4 and 1/8 step angle selectable
- Power supply: 24 Vdc
- Peak output current: 2.5 A
- Mean output current: 1.5 A
- Motor power: 5W
- Max revs.: 1500
- Max torque: 24.5 mNm
- Step accuracy: 0.08mm
- Max output current: 5 A



URM-02/CC - FOR STUDY DC MOTOR DRIVES

- Connection to external DC motors
- Protected thyristor bridge
- Dual speed and current loop
- Speed feedback selectable from D.T. or I x R mode
- 24V/4W DC motor fitted with tachometer dynamo
- Adjustable electromechanical load with DC dynamo
- Stall torque: 31 mNm
- Efficiency: 81%



URM-03/AC - FOR STUDY THREE PHASE AC MOTOR DRIVES (INVERTER)

- Power supply: 220/240 Vac single-phase
- Acceleration/deceleration to/from 0 to rated speed in 5 seconds (adjustable)
- Output voltage: 220V three-phase on safety bushes
- Max power: 0.187KW
- Sinusoidal wave form
- Mosfet power stage
- Frequency generated from 2.5Hz to 100 Hz
- Frequency stability better than 1.5%
- Electronic short-circuit protection
- 220V/170W asynchronous three-phase motor on base
- Power supply safety insulator transformer



URM-00

URM-04/BL
Brushless motor control

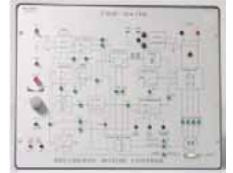
URM-05/4Q
DC motor (4-quadrant)
control

URM-06/PS
Speed and position DC
motor control



URM-04/BL - FOR BRUSHLESS MOTOR DRIVES

- Power supply: 24Vdc
- Max current: 3A
- Digital speed and analog current feedback
- Electronic braking
- PWM frequency: 10KHz
- Digital rotation sense detector
- Brushless 4-phase Dc motor on panel
- Built-in polyphase encoder
- Torque rate: 8 Ncm
- Max speed: 3000 rpm



URM-05/4Q - FOR STUDY DC 4 QUADRANT MOTOR DRIVES

- Power supply: 42 -48 Vac
- Output voltage: 48V on safety bushes (4 mm)
- Max current: 6,8A
- Power of DC motor : 250W (0,8 N/m)
- Adjustable acceleration and deceleration ramps
- Automatic sense of rotation reversing
- Dual thyristor bridge fully controlled
- Dual feed back (speed and current)
- Permanent-magnet DC motor with T.D (fitted on metal base)



URM-06/PS - DC MOTOR SPEED AND POSITION CONTROL

- Microprocessor position control
- Settings and regulations either via PC or manually
- 5 coded switches (contraves) for manual settings
- RS-232 interface
- PC managing software Windows environment
- Independent PID loops separately adjustable
- Tracking error indicator and automatic zero point
- 4Q drive with DC. Motor, encoder and load
- 60 cm. linear axis with mechanical indicator
- External PC control



URM-00

ELECTRONIC & FUNCTIONAL

- Industrial electronic drives (low power) with built-in latest technology
- Main test points and controls available on panel
- LEDs to indicate operating modes
- Short circuit electrical and electronic protection
- Test points on safety bushes
- Supplied complete of motor and speed detectors (see individual module)
- External speed regulation via PC
- Supplied complete with teaching manual containing theory and practical experiences

MECHANICAL

- Anodized aluminium and silk screened panel reproducing the various internal electronic circuits
- Easy mechanical mounting/removal system from the vertical frame
- Shaft lexan protection for any motor
- Plastic protection under the electronic circuits
- Highly reliable bushes for safe connections
- Side ventilation
- Rubber feet
- Dimensions: mm 375 x 303 x 110h



URM-SMC - COMPUTERIZED MEASURING SYSTEM FOR DATA ACQUISITION & GRAPHIC MONITORING

Multifunctional measuring system for data acquisition and graphic monitoring. It performs a wide range of measures: as oscilloscope, storage oscilloscope, true RMS voltmeter, spectrum analyzer and transient recorder.



- PC printer port connection
- Resolution: 12 bits 0.025%, Linearity: 10 bits
- Sampling frequency: 100KHz
- Software running in Windows XP environment
- Conversion time: 10 μ S
- Input impedance : 1Mohm/20pF
- Two separate input channels complete with 1:1 and 10:1 probes
- Accuracy: 0.25% \pm 1 LSB
- Measuring Instruments: oscilloscope, storage oscilloscope, true RMS voltmeter, spectrum analyzer and transient recorder

URM-PCS - PC MOTORS CONTROL

- It allows to drive URM series modules using a PC.
- PC serial port connections (RS-232)
- Resolution: 16 bits with oversampling
- Microcontroller (16 bit) control
- Conversion accuracy: 16 bit
- Signals outputs: 0 \div 10VDC or 0 \div \pm 10VDC
- Software for (Win 98/2000/XP)

