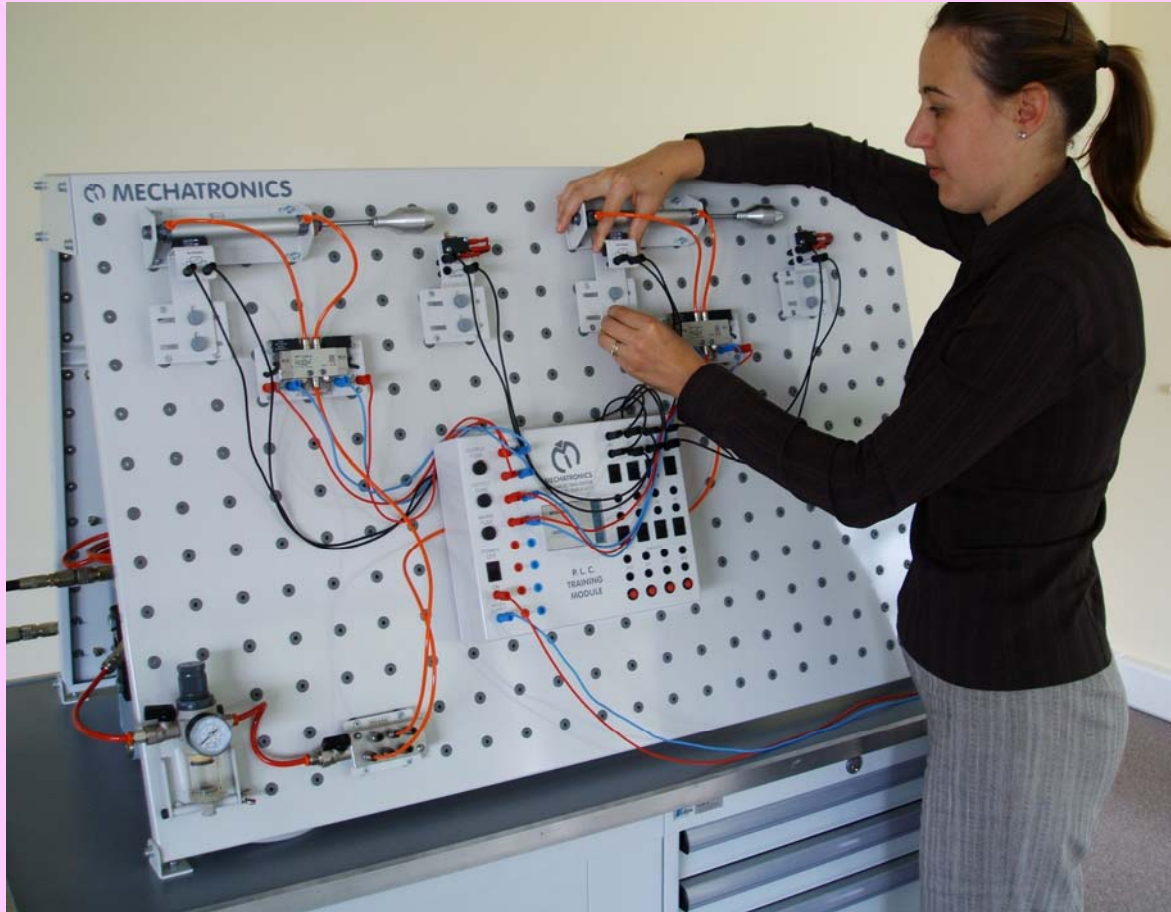


PROGRAMMABLE LOGIC CONTROL (P. L. C.) TRAINING SYSTEMS

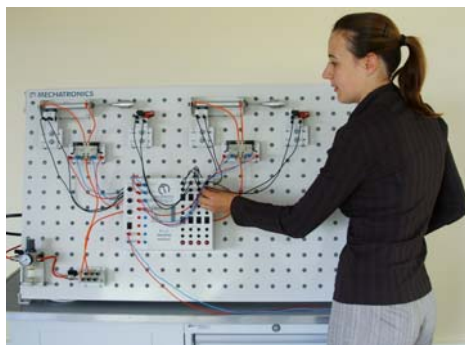


Practical 'Hands ON' training systems for those taking part in Multi-skilling, Cross-skilling, NVQ or Modern Apprenticeship Training programmes



MECHATRONICS

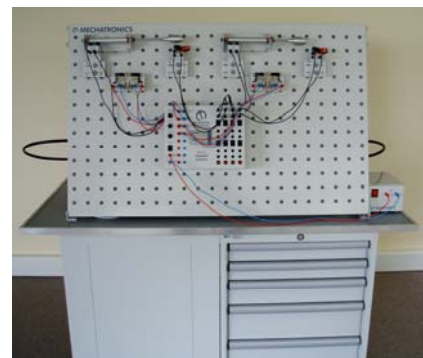
The Programmable Logic Control (P.L.C.) Training Systems from **MECHATRONICS** have been specifically developed for use with electro-pneumatic and electro-hydraulic systems, thereby creating a fully integrated Mechatronics training package.



Student constructing and testing P.L.C. circuit

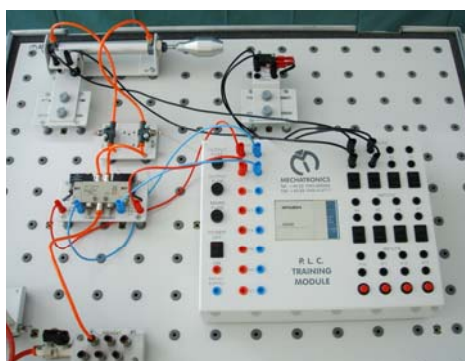
This package can be used as an integral part of any effective electrical / electronic or indeed multi-skilling training programme.

Simple connection of all P.L.C. inputs and outputs is made possible by means of the plug-in connections on the front face of the P.L.C. module.



Sample circuit – P.L.C. control of pneumatics on laboratory trolley

Inputs can be from external components such as push buttons, limit switches, cylinder proximity switches, pressure switches and sensors (inductive, capacitive, optical etc.), alternatively the inputs can be forced by means of toggle switches and push buttons, which are already built into the P.L.C. module (thus reducing the amount of external wiring required, this makes it easier and quicker for students to build fully operational systems).



Sample circuit with P.L.C. unit connected to pneumatics equipment on compact circuit building panel

All connections to the P.L.C. module are made via shrouded safety sockets and the required connection cable/s are terminated with the counterpart shrouded safety plugs. This also allows connection to other items of **MECHATRONICS** electrical / electronic training equipment used in the electro-pneumatic and / or electro-hydraulic training systems, ensuring total compatibility.

Different makes and models of P.L.C. are available.



Mitsubishi FX1S unit built into 16 swg steel enclosure (powder coated and screen printed), All connections pre-wired to shrouded safety sockets

The complete assembly, test and disassembly of circuits is therefore rapid, easy and efficient, thus maximising the time available when 'putting the theory into practice'.

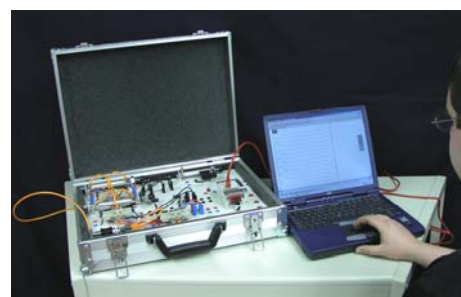
These Programmable Logic Control (P.L.C.) training systems are ideally suited to achieve the practical requirements of numerous courses such as City & Guilds, BTEC and SEMTA, amongst others, at minimal capital outlay.



Set of Components – P.L.C. (shown with PC software, also available with hand-held programmer)

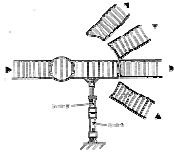
Complete packages of Courseware and Teachware, including purpose designed practical exercises are also included to fully support the training hardware.

A 'total system' can therefore be supplied that is 'ready to use' without the need for precious development time.



Briefcase format P.L.C. kits are also available for those who require maximum portability

Exercise: Conveyor Selection



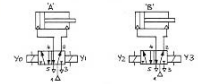
In the following diagram of a large conveyor, pieces, which arrive on a roller conveyor, are to be distributed to one of two different destinations. Such distribution is to be done by means of a conveyor. The direction of the conveyor is controlled by means of two electric relays which receive signals from the belt. The control and timing of each relay is described by means of the PL programme such as follows. The signals received are designated 'X' and 'Y' and the relays are designated 'R1' and 'R2'. The relay will follow the programme until it is stopped.

- Selection of 'R1' will select 'Y' and 'R2' will select their previous position.
- Selection of 'Y' will select 'R1' and 'R2' will select their previous position.
- Selection of 'X' will select both 'R1' and 'R2' to start when their previous position.

Support Materials available:-

- Exercises/Solutions with Question/Answer Papers:
 - Programmable Logic Control (P.L.C.)
- Manuals & Textbooks

Solution: Conveyor Selection



LADDER PROGRAM		INSTRUCTION PROGRAM		
NO.	RELAY	PROGRAM STEP NO.	INSTRCTY	DATA
01	R1	10	LD	X1
02	R1	10	AND	X2
03	R1	10	OR	X3
04	R1	10	OUT	Y1
05	R1	10	END	
06	R2	20	LD	X1
07	R2	20	AND	X2
08	R2	20	OR	X3
09	R2	20	OUT	Y2
10	R2	20	END	
11	R1	30	LD	X1
12	R1	30	AND	X2
13	R1	30	OR	X3
14	R1	30	OUT	Y3
15	R1	30	END	
16	R2	40	LD	X1
17	R2	40	AND	X2
18	R2	40	OR	X3
19	R2	40	OUT	Y3
20	R2	40	END	

Sample Exercise from 'Collection of Exercises'

Solution for sample exercise

Features:

- P.L.C. module built into sturdy, powder coated, screen printed, steel enclosure
- Easy to use
- Quick and safe plug-in connections
- Choice of programming methods
- Different makes and models of P.L.C. available
- Extremely wide range of components available
- Electrical supply and outputs fused
- Full range of support materials

Advantages:

- Low capital cost
- Genuine industrial components
- Eliminates need for tools
- Replaces permanently mounted components for easily interchangeable items
- Simple connection to **MECHATRONICS** electro-pneumatic and electro-hydraulic systems
- Ergonomically pleasing design
- Minimum space required
- Portable
- Easy to link into existing system/s
- Supplied complete with 'Collection of Exercises/Solutions with Question/Answer papers'

Benefits:

- Improved quality of training
- Improved appearance
- Create professional image
- Can cater for a wider client base, due to different makes and models of P.L.C. available
- No tools required
- Cost effective system
- Extensive number of exercises possible
- Supplied ready for use (no precious development time required)

Safety:

- Electrical supply switched and fused
- Outputs fused
- All electrical connections made via shrouded safety sockets and plugs
- 24V d.c. supply

TECHNICAL SPECIFICATION

Electrical Supply: 24V d.c.
Inputs: 12 (can be wired externally or switched / forced on module itself)
Outputs: 8 relay @ 1 amp per output

OTHER PRODUCTS

MECHATRONICS International Ltd are specialist manufacturers of an extensive range of training equipment which includes the following:-

Training Hardware:-

In addition to the Programmable Logic Control (P.L.C.) Training Systems we are also manufacturers of training systems in all of the following subject areas:-

***Pneumatics
Electro-pneumatics
Hydraulics
Electro-hydraulics
Proportional hydraulics
Mechanical Transmissions
Industrial Handling
CIM / FMS***

These systems are modular and available in a wide variety of formats, they are compatible with each other and therefore may be combined together or used individually. All the required hardware from a single component through to complete, very extensive 'Turnkey Systems' can be supplied.

Teachware & Courseware:-

To support the training systems hardware we have developed a full range of Teachware suitable for use by Instructors, Lecturers, Tutors and Teachers.

Courseware suitable for use by students is available in the form of 'Industry Related' practical exercises, supported by question and answer papers, relevant to the exercises, thereby offering a complete structured assessment system. This material is covered by copyright but is supplied with a licence, which allows copying, by the purchaser for training and educational purposes.



MECHATRONICS International Ltd

Mechatronics House, Unit 9, Lancaster Park, Newborough Road, Needwood,
Burton-on-Trent, Staffordshire, DE13 9PD, England

Tel: +44 (0) 1283-575444
Web: www.mech.co.uk

Fax: +44 (0) 1283-575766
email: admin@mech.co.uk

E. & O. E.

As the company operates a system of continually striving to improve its products and services we reserve the right to change, amend or modify the product/s without prior notification.