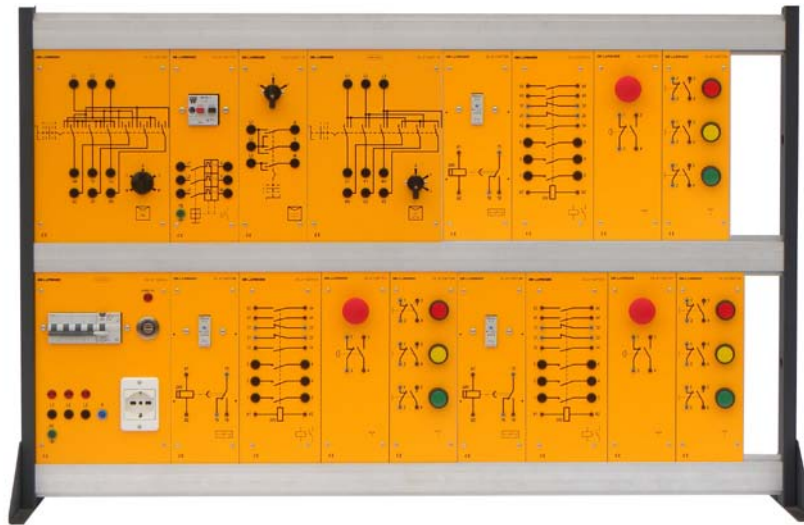




INTRODUCTION



A professional Electrician must provide a safe and reliable electrical service to ensure that all work is in accordance with the relevant National rules. This includes assembling, installing, testing and maintaining electrical wiring, equipment, appliances, etc. An electrician must also diagnose and repair malfunctioning systems, apparatus, and components when a fault is present.

This catalogue illustrates the laboratories for the study of industrial installations, where all trainers have modular structure and it consists of didactic panels with symbols and diagrams that are installed on a vertical frame. The modularity of these didactic systems grant to the students a direct and immediate approach to the topic, offering the opportunity to study various subjects performing different experiments.

This laboratory comprehends the following five configurations:

DL 2102TA - BASIC INDUSTRIAL INSTALLATIONS

Experiment:

- Single-pole control auxiliaries
- Contactor
- Logic operators
- Contactor self-supply
- Interlock between contactors
- Sequentially controlled contactors
- Exclusive-OR operator
- Excitation delayed timer
- De-excitation delayed timer
- Static timer



DL 2102TB - ADVANCED INDUSTRIAL INSTALLATION

Experiment:

- Thermal relay
- Manual star/delta starting
- Manual reverser
- Timed sequence control
- Pulse generator
- Automatic star/delta starting
- Star/delta starter with reverser
- Counter-current braking

DL 2102TC - BASIC MOTOR STARTING

Experiment:

- Manual starter with rotor resistances
- Automatic starter with rotor resistances
- Speed variator for Dahlander motor
- Speed variator and reverser for Dahlander motor
- Automatic reverser for three-phase asynchronous motor

DL 2102TD - ADVANCED MOTOR STARTING

Experiment:

- Motor starting with switch
- Star/delta starting with switch
- Reverser with switch
- Star/delta starting, 2 rotation directions, with switch
- Speed variator for Dahlander motor with switch
- Speed variator for Dahlander motor, 2 rotation directions, with switch

DL 2102TE - MOTOR STARTING WITH SENSORS

Experiment:

- Motor starting and control with limit switch
- Motor starting and control with inductive sensor
- Motor starting and control with capacitive sensor
- Motor starting and control with photoelectric barrage sensor
- Motor starting and control with photoelectric reflecting sensor
- Motor starting and control with level sensor
- Motor starting and control with level variations
- Motor starting and control with pulse programmer
- Sequence of motor starting, 2 rotation directions, with motor stop between the 2 operations with cam programmer



DL 2102T – TOTAL CONFIGURATION

Experiment:

- Thermal relay
- Manual star/delta starting
- Manual reverser
- Timed sequence control
- Pulse generator
- Automatic star/delta starting
- Star/delta starter with reverser
- Counter-current braking
- Manual starter with rotor resistances
- Automatic starter with rotor resistances
- Speed variator for Dahlander motor
- Speed variator and reverser for Dahlander motor
- Automatic reverser for three-phase asynchronous motor
- Motor starting with switch
- Star/delta starting with switch
- Reverser with switch
- Star/delta starting, 2 rotation directions, with switch
- Speed variator for Dahlander motor with switch
- Speed variator for Dahlander motor, 2 rotation directions, with switch
- Motor starting and control with limit switch
- Motor starting and control with inductive sensor
- Motor starting and control with capacitive sensor
- Motor starting and control with photoelectric barrage sensor
- Motor starting and control with photoelectric reflecting sensor
- Motor starting and control with level sensor
- Motor starting and control with level variations
- Motor starting and control with pulse programmer
- Sequence of motor starting, 2 rotation directions, with motor stop between the 2 operations with cam programmer



LIST OF MODULES:

		DL 2102TA	DL 2102TB	DL 2102TC	DL 2102TD	DL 2102TE	DL 2102T
DL 10115AV	Three-phase asynchronous squirrel cage motor		1	1	1	1	1
DL 2101T13	Transformer	1	1	1		1	1
DL 2102A	Three-phase motor			1			1
DL 2102AL	Three-phase power supply module	1	1	1	1	1	1
DL 2102ALCC	DC power supply					1	1
DL 2102D	Dahlander motor			1	1		1
DL 2102T01	Mush-room button	1		1			1
DL 2102T02	Pushbutton	1	1	2		1	2
DL 2102T03	Pilot lights	1	1	2		1	2
DL 2102T04	Contacteur	2	4	5		3	5
DL 2102T05	Thermal relay		1	1		1	1
DL 2102T09	Isolator			1			1
DL 2102T11	Position sensor module					1	1
DL 2102T12	Star/Delta starter				1		1
DL 2102T15	Direct starter with inversion				1		1
DL 2102T16	Inductive proximity sensor module					1	1
DL 2102T17	Capacitive proximity sensor module					1	1
DL 2102T18	Photoelectrical barrage sensor module					1	1
DL 2102T19	Photoelectrical reflecting sensor module					1	1
DL 2102T20	Level magnetic sensor module					1	1
DL 2102T20RMB	Flooding probes					1	1
DL 2102T24	Star/Delta starter with inversion				1		1
DL 2102T25	Star/Delta starter				1		1
DL 2102T26	Pole switching unit with inversion				1		1
DL 2102T30RM86	Level control					1	1
DL 2102T31V	Pulse counter					1	1
DL 2102T38	Programmer					1	1
DL 2102T67	Time relay	1	2	2			2
DL 2109T04	Switch unit				1		1
DL 2100-3M	Three-level work frame	1	1	1	1	1	2
TL 2102T	Test leads	1	1	1	1	1	1



ELECTRICAL INDUSTRIAL INSTALLATIONS



	DL 2102AL	DL 2101T13	DL 2102T01	DL 2102T02	DL 2102T03	DL 2102T04	DL 2102T67	DL 2102T05	DL 10115AV	DL 2102T09	DL 2102A	DL 2102D	DL 2109T04	DL 2102T12	DL 2102T15	DL 2102T24	DL 2102T25	DL 2102T26	DL 2102T11	DL 2102T16	DL 2102T17	DL 2102T18	DL 2102T19	DL 2102T20	DL 2102T20RMB	DL 2102T30RM86	DL 2102T31V	DL 2102T38	DL 2102ALCC	DL 2100-3M	TL 2102T
DL 2102TD																															
Motor starting with switch	1								1				1																1	1	
Star/delta starting with switch	1								1					1															1	1	
Reverser with switch	1								1					1															1	1	
Star/delta starting, 2 rotation directions, with switch	1								1						1														1	1	
Speed variator for Dahlander motor with switch	1										1					1													1	1	
Speed variator for Dahlander motor, 2 rotation directions, with switch	1										1						1												1	1	
DL 2102TE																															
Motor starting and control with limit switch	1	1		1	1	1		1	1										1										1	1	
Motor starting and control with inductive sensor	1	1		1	1	1		1	1											1								1	1	1	
Motor starting and control with capacitive sensor	1	1		1	1	1		1	1												1							1	1	1	
Motor starting and control with photoelectric barrage sensor	1	1		1	1	1		1	1													1						1	1	1	
Motor starting and control with photoelectric reflecting sensor	1	1		1	1	1		1	1														1					1	1	1	
Motor starting and control with level sensor	1	1		1	1	1		1	1														1					1	1	1	
Motor starting and control with level variations	1	1		1	1	1		1	1															1	1			1	1		
Motor starting and control with pulse programmer	1	1		1	1	1		1	1														1				1	1	1	1	
Sequence of motor starting, 2 rotation directions, with motor stop between the 2 operations with cam programmer	1	1		1	1	4		1	1																		1		1	1	
Total	1	1	1	2	2	5	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1	