## index



## POWER SUPPLIES



DL 2102AL

Suitable for a three-phase supply at the mains voltage and frequency. Output: three-phase + N + T at safety terminals. Protection through differential magneto-thermal switch and pilot lamp.
Key operated switch for the three-phase supply and pilot lamps for the three phases.




DC Power Supply


DL 2102ALCC

Suitable for supplying the dc low voltage to the inductive, capacitive and optical sensors of the laboratory. Complete with a 12 V relay with a changeover NC contact.

## MODULES

## Emergency Pushbutton



DL 2102T01

Mushroom type red emergency pushbutton for the manual control and the fast opening of the circuit in case of emergency.
Complete with 1 NO and 1 NC contacts.
Isolating rated voltage:
660 Vac
Thermal rated current:
10 A

Three Pushbuttons


DL 2102T02

Three pushbuttons, red, yellow and green,
complete with 1 NO and 1 NC contacts, suitable for the manual control of electric circuits in direct and alternate current.
Isolating rated voltage:
660 Vac
Thermal rated current: 10 A


DL 2102T03

$$
020
$$

Three signalling LED lamps, red, yellow and green.

Contactor


DL 2102T04

It operates as a
three-pole power switch through the use of an electromagnet.
Provided with 3 NO
power contacts and 1 NO
auxiliary contact, the module also contains 4
additional auxiliary contacts, 2 NO and 2 NC. Coils voltage:
$24 \mathrm{Vac}, 50 / 60 \mathrm{~Hz}$
Isolating rated voltage:
660 Vac
Thermal rated current: 20 A
Thermal rated current of the auxiliary contacts:

Thermal Relay


Three-phase protection against overload and phase loss through a high sensitivity differential device with protection against faulty starting. Compensation of the variation of the ambient temperature between $25^{\circ} \mathrm{C}$ and $+60^{\circ} \mathrm{C}$. Isolating rated voltage: 690 V
Thermal rated current of the auxiliary circuit: 10 A

Time Relay


Multi-voltage and multifunction electronic timer, delayed at the excitation and at the de-excitation.
Power supply:
from 12 to 240 Vac , $50 / 60 \mathrm{~Hz}$
Timer selection from:
0.1 to 2 sec., 1 to 20 sec ., 0.1 to 2 min ., 1 to 20 min . Resettlement time: less than 50 milliseconds. Full scale adjustment accuracy: $\pm 5 \%$


DL 2102T09

Position Sensor


DL 2102T11

Limit switch with wheel piston that activates a double quick tripping switch for safety applications.
Isolating rated voltage: 690 V

Conventional thermal
current: 10 A
Switching frequency:
3600 cycles/hour

## Direct starter with

Switch for the star-delta
starting of three-phase
squirrel cage
asynchronous motors, with only one direction of rotation.
Rated voltage:
690 V, 50/60 Hz
Thermal rated current:
12 A
Output at 36 A safety terminals.

Three-pole fuse holder for $14 \times 51$ fuses, complete with cartridge fuses
Max. current:
690 V up to 25 A .


DL 2102T15

Three-pole inverter for three-phase squirrel cage asynchronous motors.
Rated voltage:
690 V, 50/60 Hz
Thermal rated current:
12 A
Output at 36 A safety terminals.

Star Delta Starter


DL 2102T12

Inductive Proximity
Sensor


DL 2102T16

Proximity switch with NO output.
Supply voltage:
$10 \div 30 \mathrm{Vdc}$
Max. output current:
150 mA
Switching distance:
8 mm .
Protection against polarity inversion and short circuit.
LED signal.

Capacitive Proximity


DL 2102T17

This sensor works on the variation of the parasitic capacity between the sensor and the object to be detected, that can be metallic as well as non metallic (wood, plastic, liquids, etc.).
Power supply voltage: $10 \div 30 \mathrm{Vdc}$
Output: PNP with NO contact.
Maximum working frequency: 10 Hz Max. Output current: 200 mA Switching distance: from 0 to 10 mm . Protection against short circuit. LED signal.

Photoelectrical Barrage Sensor


DL 2102T18
This sensor works on the typical principle of the photosensitive elements, that change their electrical characteristics according to the intensity of the light.
Power supply voltage: $10 \div 30 \mathrm{Vdc}$
Programmable output: PNP/NPN with NO contact.
Maximum working frequency: 250 Hz
Max. output current: 200 mA
Type of emitted light: infrared
Max. detection range: 15 m .
Protection against short circuit. LED signal.

Photoelectrical Reflecting Sensor


This sensor works on the principle that the object to be detected interrupts the beam of infrared light emitted by the transmitter and reflected, through a reflector, toward the receiver.
Interference with ambient light: > 10000 lx .
Power supply voltage: $10 \div 30 \mathrm{Vdc}$
Programmable output: PNP/NPN with NO contact
Maximum working frequency: 700 Hz
Max. output current: 200 mA
Type of emitted light: infrared
Max. detection range: 1.5 m .
Protection against short circuit. LED signal.


DL 2102T20

It is made of polypropylene and the buoyant element includes a permanent magnet that activates a reed contact in the sensor.
Output: NO contact
Max. switching voltage: 1500 Vac
Max. switching current:
3 A
Max. switching power:
120 VA
Minimum specific weight
of the liquids:
$0.75 \mathrm{~kg} / \mathrm{cm}^{2}$
Max pressure: $6 \mathrm{~kg} / \mathrm{cm}^{2}$

Flooding Probe


DL 2102T20RMB

Simulation of a container for liquids that can be filled up or emptied by means of a syringe.
Provided with a device with three probes in stainless steel of different lengths that can be connected to the module for the control of the level.

## Star/Delta Starter with



DL 2102T24

Pole Switching for
Dahlander Motors


DL 2102T25

Pole switching starter for
two-speed Dahlander motors.
Rated working voltage: 690 V, $50 / 60 \mathrm{~Hz}$
Thermal rated current:
12 A
Output at 36 A safety
terminals.


DL 2102T26

Pole switching starter, with two values of rpm and for two directions of rotation, suitable for two-speed Dahlander motors.
Rated working voltage: 690 V, 50/60 Hz
Thermal rated current:
12 A
Output at 36 A safety terminals.

Pulse Counter


Pulse counter for the starting and control of a squirrel cage three-phase asynchronous induction motor.

Programmer


DL 2102T38

Single-phase Transformer


DL 2101T13

Single-phase transformer for low voltage modules.
Primary: mains voltage
Secondary: $2 \times 12 \mathrm{~V}$
Rated power: 100 VA


Level control for conductive liquids that can be used in both filling and emptying.
Two levels of sensitivity that can be selected through a micro-switch. A micro-switch for the selection of filling or emptying.
Mains signalling LED.
Relay status signalling
LED.
Power supply: 24 Vac
Relay output:
1 changeover 10 A at
230V
Resistive load
Intervention time: 3
seconds

Three-pole Switch


Three pole switch.
Rated working voltage: 690 V, $50 / 60 \mathrm{~Hz}$
Thermal rated current:
12 A
Output at 36 A safety
terminals.


DL 2102A
Induction motor with slip ring rotor, complete with built-in manual braking
device and 3-step starting rheostat.
Rated power: 367 W


Three-phase squirrel cage pole changing induction motor.
Rated power: 367 W

## 6 <br> ELECTRICAL INDUSTRIAL INSTALLATIONS



Squirrel cage three-phase asynchronous induction motor, with three-phase stator winding and squirrel cage buried in the rotor.
Rated power: 180 W .


TL 2102T

Cable set for connecting modules experimentation DL 2102T.

Framework


DL 2100-2M
DL 2100-3M

Two or three level metal frame for mounting the modules of the laboratory.

SUGGESTED CONFIGURATIONS


| DL 2102TE |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | PE | ᄂ口 |  | $N z \square$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 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 | 1 | 2 | 1 |  |

