

# Leganza Manual

# Index

<b>CHAPTER 1</b>	<b>What is Leganza?</b>	
1.1	Introduction- - - - -	<b>2</b>
1.2	Features and Capabilities- - - - -	<b>3</b>
1.3	Overview of Leganza Contacts - - - - -	<b>4</b>
<b>CHAPTER 2</b>	<b>Installation of Leganza unit</b>	
2.1	Preliminary Advice on Installation- - - - -	<b>5</b>
2.2	Electrical connections- - - - -	<b>6</b>
<b>CHAPTER 3</b>	<b>LESOF</b>	
3.1	Introduction- - - - -	<b>8</b>
3.2	Installing LESOFT 4.0 on PC- - - - -	<b>9</b>
3.3	Features of LESOFT- - - - -	<b>10</b>
3.4	Special Functions	
3.4.1	Timers- - - - -	<b>12</b>
3.4.2	Counters- - - - -	<b>16</b>
3.4.3	Time switch (Clock) - - - - -	<b>18</b>
3.4.4	Analog Functions- - - - -	<b>20</b>
<b>CHAPTER 4</b>	<b>LESOF in Full screen Mode</b>	
4.1	Overview- - - - -	<b>21</b>
4.2	Description of various windows- - - - -	<b>22</b>
4.3	Entering Programs- - - - -	<b>24</b>
4.4	Error Messages- - - - -	<b>26</b>
4.5	Program Simulation on PC- - - - -	<b>27</b>
4.6	Simulation with Leganza unit- - - - -	<b>28</b>
4.7	Parameters of special Functions- - - - -	<b>29</b>
<b>CHAPTER 5</b>	<b>LESOF in Leganza mode</b>	
5.1	Overview- - - - -	<b>30</b>
5.2	Entering Programs- - - - -	<b>32</b>
5.3	Run Function- - - - -	<b>36</b>
5.4	Parameters of special Functions- - - - -	<b>37</b>
5.5	Password- - - - -	<b>39</b>
<b>CHAPTER 6</b>	<b>Other features of LESOF</b>	
6.1	Transfer Data between PC and Leganza unit- - - - -	<b>40</b>
6.2	Select Leganza Configuration- - - - -	<b>41</b>
6.3	Printing the Programs- - - - -	<b>42</b>
<b>CHAPTER 7</b>	<b>Working with Leganza</b>	
7.1	Introduction- - - - -	<b>43</b>
7.2	RUN Mode- - - - -	<b>44</b>
7.3	Transferring data to and from Memory card- - - - -	<b>45</b>
7.4	Set Clock- - - - -	<b>46</b>
<b>CHAPTER 8</b>	<b>Technical Specifications</b>	
8.1	Electrical Specifications- - - - -	<b>47</b>
8.2	Leganza Parameters strength- - - - -	<b>47</b>
8.3	Mechanical Dimensions- - - - -	<b>48</b>
<b>APPENDIX A</b>	<b>LEGANZA Sample Programs - - - - -</b>	<b>49</b>

## **CHAPTER 1**

### **What is Leganza?**

#### **1.1 Introduction**

Leganza is ideally suitable for a variety of industrial and domestic Automation applications. Leganza is a miniature PLC (Programmable Logic Controller) designed to simplify the electrical wiring of intelligent solutions. Leganza is very simple to implement, its flexibility and its high performance allow users to save significant amount of time and money.

It is very compact and lightweight. It is mountable on a DIN rail and also can be base mounted by fixing two screws. Input-output and power connections can be made using the easily accessible terminals. To protect keys and the LCD display from dust, a hinged cover is provided.

For applications that require more input-outputs than those available on Leganza, extension modules are available. Maximum three extension modules can be connected to each Leganza.

Leganza has a built in serial interface for connecting it to a PC. A memory card is also available for program back up.

## **1.2 Features and Capabilities**

### **Connections**

Digital Inputs, Analog Inputs and Digital outputs can be wired to Leganza. Along with the physical connections user can also use soft connections (special functions) like Counter, Timer, Time switch (clock), and Auxiliary switch as a part of the program. All types of automation parameters are provided, so no extra device needs to be connected to Leganza. Leganza alone is sufficient for most of the automation and control applications.

### **Enter program**

Leganza program is nothing but a logical connection of Leganza parameters like inputs, outputs, special functions etc. User can enter program with the keypad on Leganza or he can make use of LESOFT, which runs on a PC, and is much easier to use. The programs can be changed as per the application thus it provides more Flexibility, Versatility.

### **Debugging**

While executing (running) the Programs on Leganza, the programs and the parameters can be viewed at the run time. Some of the parameters can even be changed during the “run” (provided the run-time lock is not activated). Hence program development speed can be increased.

### **Transfer**

Leganza provides facility to transfer the programs in following ways.

- Leganza > PC-LESOFT
- PC-LESOFT > Leganza
- Leganza > Memory card
- Memory card > Leganza

Programs can be transferred to PC or Memory card and saved. Thus no need to enter a same program again and again.

### **LCD display**

4 X 12 lines LCD display is provided on Leganza. On LCD display, the programs can be viewed and edited. At the run time input output status can be observed. Thus gives better vision.

### **Supply flexibility**

AC as well as DC models are available which operate on a wide voltage band. Select a proper model by referring to the Technical specifications.

### **Connecting more number of inputs and outputs**

With the extension module number of inputs and outputs can be increased. Maximum three Extension Modules can be used with one Leganza. So it is easy to configure the systems which require more I/Os .

### 1.3 Overview of Leganza Contacts

Notation	No. of Contacts available in AC Model 87DDT0	No. of Contacts available in AC Model 87DDT8	No. of Contacts available in DC Model 88DDT0	No. of Contacts available in DC Model 88DDT8	Description
I	8	8	6	6	Digital inputs for Leganza. Can be used as Normally close as well as normally open.
J	8	8	6	6	Digital inputs for Extension module A Can be used as normally open as well as normally close.
K	8	8	6	6	Digital inputs for Extension module B Can be used as normally open as well as normally close.
L	8	8	6	6	Digital inputs for Extension module C Can be used as normally open as well as normally close.
Q	4	4	4	4	Potential free output points for Leganza
U	4	4	4	4	Potential free output points for Extension module A
V	4	4	4	4	Potential free output points for Extension module B
W	4	4	4	4	Potential free output points for Extension module C
Z	4	4	4	4	Auxiliary input. Used as push buttons. Can be used as manual inputs
M	16	16	16	16	Auxiliary relays. Used to save intermediate results
T	8	16	8	16	Timer function Can be used in four different modes. Trigger, Reset coils can be used for one timer.
C	8	16	8	16	Counter function Can be used in Up counting as well as down counting mode. Count, Direction, Reset coils can be used for one counter.
O	4	4	4	4	Time switch (clock) function Four blocks can be programmed at a time. Can not be used as coil.
A	0	0	8	12	Analog function Analog voltage V1- V8 (whichever is connected) can be used in the equation. Can not be used as coil.
lines	64	250	64	250	Program length
S/w	LESOFT 4.0	LESOFT 5.0	LESOFT 4.0	LESOFT 5.0	Version to be installed.

## **CHAPTER 2**

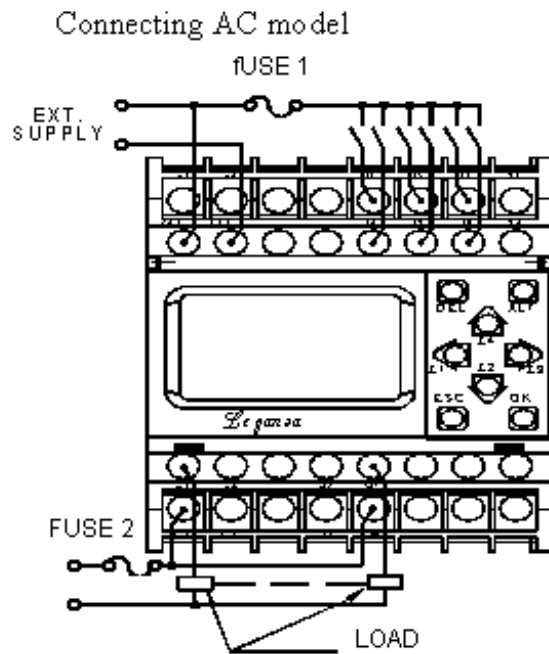
### **Installation of Leganza unit**

#### **2.1 Preliminary advice on installation**

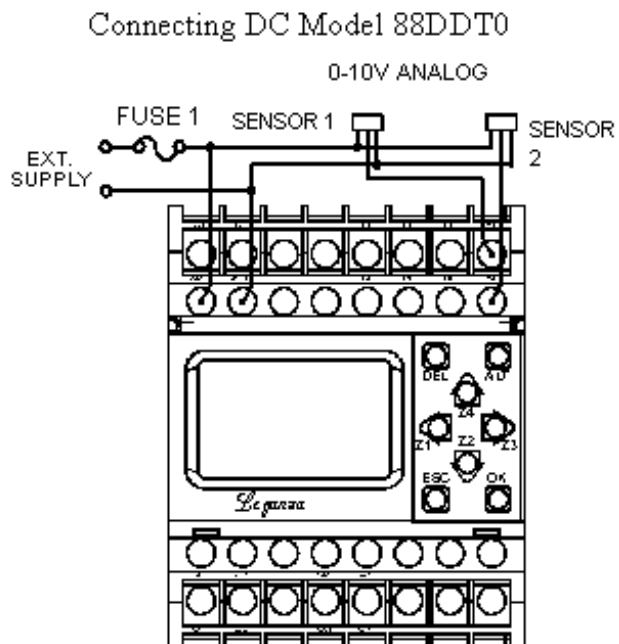
- Power down the device
- Take all necessary measures to avoid unwanted relay triggering.
- Check to ensure that no voltage is present.
- Make the necessary ground and short circuit connections.
- Always follow the instructions stated in this user's guide.
- Remember, only qualified personnel are authorized to implement the Leganza.
- Automation and control devices must be installed so that they are protected against any risk of involuntary actuation.
- It is essential to ensure that all control system connections meet applicable safety standards.
- Fluctuations or variations in the mains supply voltage should not exceed the tolerance thresholds stated in the technical characteristics, as they may cause operating failures and lead to potentially dangerous situations.
- Take care to meet the standards that apply to emergency stop systems in order to avoid potentially dangerous situations. Ensure that releasing the emergency stop system does not cause the automated system to suddenly restart.
- Take all necessary measures to ensure that an application interrupted by a drop or a break in the supply voltage can continue correctly and also ensure that no dangerous states, no matter how brief, may occur.

## 2.2 Electrical connections

Connecting the 110-240 V AC model: **87DDT0** / **87DDT8**



Connecting 12-24 V DC Model: **88DDT0** / **88DDT8**



## Connecting extension modules





## **CHAPTER 3**

### **LESOFT**

#### **3.1 Introduction**

LESOFT 4.0 is one of the accessories of Leganza. It has to be installed on a PC and it simplifies the task of program development. Of course, user can enter, debug and run the programs directly on Leganza, but LESOFT will provide an easy way and more flexibility.

LESOFT 4.0 provides following facilities.

- Entering the program. In two ways:
  - In Full screen mode
  - In Leganza mode
- Saving programs
- Debugging the Programs.
- Running the programs in Leganza mode
- Printing programs
- Simulation: with Leganza and only on PC
- Transferring programs.

### **3.2 Installing LESOFT 4.0 / LESOFT 5.0 on PC**

**To install LESOFT, the PC need to have following configuration:**

- Color monitor with minimum resolution 1024 X 768
- Processor: Pentium II and above OR Equivalent
- Free Hard disk: minimum 20 MB
- RAM: 32 MB
- CD Drive for installation of LESOFT

**Installation procedure:**

Insert a CD in CD Drive.

Go in the respective directory.

Click on "Set up" on the CD.

Software will get installed automatically. It will also place an icon on the desktop its own.

You can start LESOFT either from the desktop or from "Start – Programs – LESOFT Group--LESOFT4.0".

For removing LESOFT from your PC use "Uninstall" from the "Start – Programs – LESOFT Group-Uninstall".

### 3.3 Features of LESOFT

**Entering the Programs:** Programs can be entered very easily. It is not necessary to learn the programming language. User only has to select contact type and contact number and place at proper place. Most of the time contacts will get connected automatically. User can enter comments for better readability and for reference.

**Saving programs:** As LESOFT allows user to save individual programs on the PC.

**Debugging:** LESOFT is very powerful in error handling. It displays a variety of errors at the time of program entry itself so that user can make corrections.

**Running the programs on PC:** User can test the program on PC. User can use buttons provided on the screen to simulate the input connections. Scroll bar can be used to simulate Analog input. The actuation/ de-actuation of the relays can be monitored on the screen.

**Simulation of Leganza unit in Leganza mode:** In Leganza mode of LESOFT, user can see complete simulation of Leganza unit. User can enter and RUN the program. User can do everything, which is possible on Leganza unit. Operating procedure of this mode is very similar to operating the Leganza unit.

**Printing:** User can take print outs of programs in two different formats.

**Simulation with Leganza unit:** User can connect Leganza unit to PC using a serial cable and program can be run through PC. In this mode the program on PC runs, but the inputs are taken from Leganza and outputs are sent to Leganza unit (and the extension modules, if connected). This mode is useful in debugging the entire system since the actual I/O are used.

**Transferring program:** Programs can be transferred from PC to Leganza and from Leganza to PC. This saves Program entering time with Leganza unit.

### **3.4 Special Functions**

In addition to the inputs and outputs Leganza has four types of special functions: timers, counters, time switch (clock) and analog functions. These functions can be combined in any logical manner with the inputs and outputs in the programs. Each special function has a specific notation and is associated with certain preset parameters which user must set at the time of entering the programs.

### 3.4.1 Timers



The Timer function is used to delay, prolong and control actions after a set period of time. It has a Reset input, a Trigger input and an output which indicates time-out.

#### Notation

There are 16 timers available in both models. Timers can be used as contact as well as coil. In Leganza  $T_n$  is written for nth timer. T stands for Timer and n is for timer number (1 to 16). Thus T8 represents the eighth timer.

#### Timer used as Contact

- **Normally open (  $T_n$  )** : In this type of contact TRUE value is valid.
- **Normally closed. (  $\overline{T_n}$  )** : In this type of contact FALSE value is valid.

#### Timer used as Coil

- **Trigger Input (  $TT_n$  )** : In timer functions trigger is required to start timer operation (Timer cycle).
- **Reset Input (  $RT_n$  )** : Reset input is used to reset the current Timer value to zero. The Trigger contact is disabled and the block is ready for a new timer cycle.

Note: If Reset and trigger become true simultaneously then the relay contact does not switch, and the timer does not run.

#### Timing

Leganza allows different timing ranges.

**S** - Time value is specified in seconds

Maximum time is 999.9 S

Resolution: 100 mS

**M: S** - Time value is specified in minutes: seconds

Maximum time is 99.59 M

Resolution: 1S

**H: M** - Time value is specified in hours: minutes

Maximum time is 99.99 H

Resolution is 1M

Note: If Time value = 0 and Trigger is given then unpredictable operation may take place, this condition is shown as Program Error during program entry.

**Locking:** Leganza provides facility to “Lock” the parameters. This means if a parameter is locked, user cannot change the values at the RUN time.

In Unlocked mode, effect of changing the time value in “RUN” Mode is as follows:

#### Case 1

Current Time is 000.0, trigger not received, and reset not received  
Set time: 030.0 s  
Enter and store new time value: 020.0 s  
Result: Relay switches at 020.0S after next trigger signal is received.

#### **Case 2**

Trigger input is given to Timer; time is running and reset not received.  
Set time: 030.0 s  
Current Time: 010.0 s  
Enter and store new time value: 020.0S  
Result: Relay switches at 020.0S

#### **Case 3**

Trigger input is given to Timer; time has already elapsed, reset not received.  
Set Time: 060.0 s  
Current Time: 060.0 s  
Enter and store new time value: 080.0 s  
Result: Timer output remains active, 080.0 s is used for next timer cycle.

#### **Timer Functions**

There are 4 types of Timer functions. Each type triggers a specific kind of operation used to handle all possible cases in an application.

**A: On Delay Timer:** After receiving the trigger signal, the relay contact operates after delay time. (Make contact closes / break contact opens after the delay).

**B: OFF Delay Timer:** After receiving the trigger signal, the relay contact operates immediately (make contact closes / break contact opens). It remains operated as long as the trigger input is present. The timer starts when it detects that the trigger input is removed. The relay contact then switches after the set time has expired (make contact opens / break contact closes).

**C: Single Pulse Timer:** After receiving the trigger signal, the make contact closes (or break contact opens) for the specified time. Once trigger it is independent of the trigger signal.

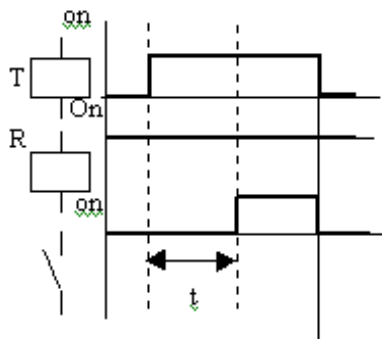
**D: Flashing Timer:** The relay contact opens and closes periodically for the same time duration (pulse generator). The specified time value is always half of the period length.

## A : On Delay Timer

### Timing Diagram

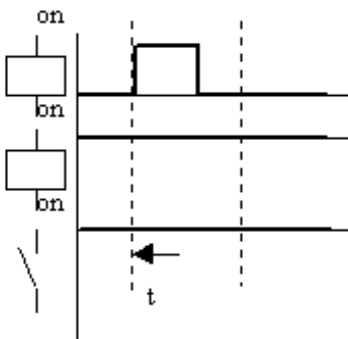
#### Case1

Trigger input remains high  
And the relay contact switches



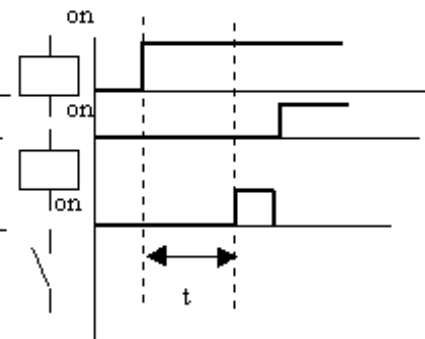
#### Case2

Trigger input goes low  
before time is reached



#### Case 3

Reset input interrupts function



#### Application:

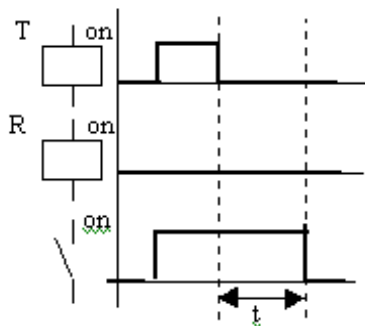
Delay to start a conveyor belt after a delay to ensure that the sensor is already active before the conveyor belt starts moving.

## B: OFF Delay Timer

### Timing diagrams

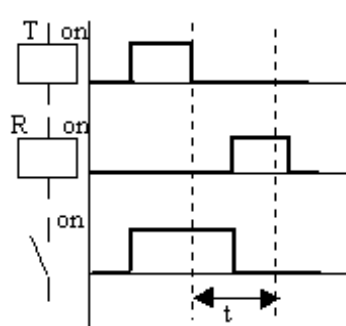
#### Case 1

No reset, normal function



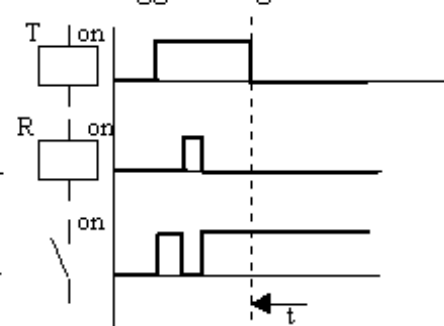
#### Case 2

Reset goes high while off delay



#### Case 3

Reset goes high while  
trigger is high



#### Applications:

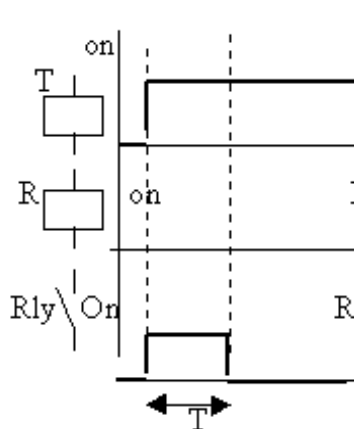
To ensure that motors, conveyor belts or ventilators etc. continue to function for a specified time after switching off the control signal.

### C: Single Pulse Timer

#### Timing diagram

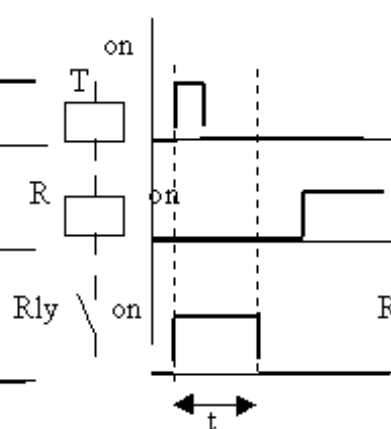
##### Case 1

Input pulse is shortened



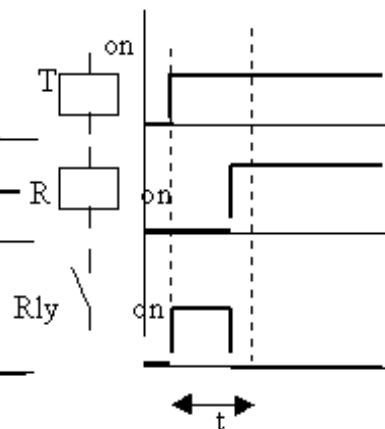
##### Case 2

Input pulse is lengthened



##### Case 3

Input pulse is interrupted by reset



#### Applications:

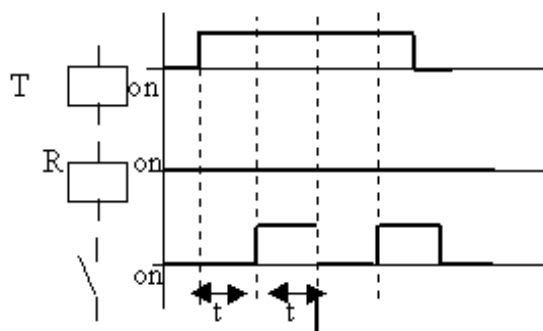
Short impulses are lengthened and long impulses are shortened.

### D: Flashing Timer

#### Timing Diagrams

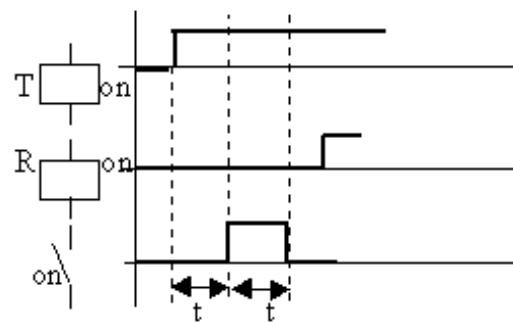
##### Case 1

Relay flashes



##### Case 2

Relay flashes but is switched off  
When reset input goes High



Note: The Leganza starts flashing cycle with the make contact open  
(see figure above)

Note: The Leganza starts flashing cycle with the make contact open  
(See figure above)

#### Applications:

Flashing of warning lamps etc.



### 3.4.2 Counters



The Counter function is used to count events. It has one "Count" input which changes the counter value on each change from off-to-on. The "Direction" input is to select the UP / DOWN mode. Reset input to make the counter equal to zero in up counting mode and equal to preset value in down counting mode.

**Notation:** There are 16 Counter functions available in both models.

Counters can be used as contact as well as coil. In Leganza Cn is written for nth timer. C stands for Counter and n is for counter number. Thus C7 represents seventh counter.

#### Counter used as Contact

- Normally open (C1 to C16): In this type of contact TRUE value is valid.
- Normally closed (c1 to c16): In this type of contact FALSE value is valid.

#### Counter used as Coil

**Count Input (CC1 to CC16):** The count input is used for changing the counter value. Each time this coil is triggered, the counter increments or decrements by 1, depending on the counting direction.

**Direction input (DC1 to DC16):** Direction input decides counter mode, Up / Down.. If this coil is active, the counter counts down. The counter counts up if this coil is not active or is not used in the program (unconnected).

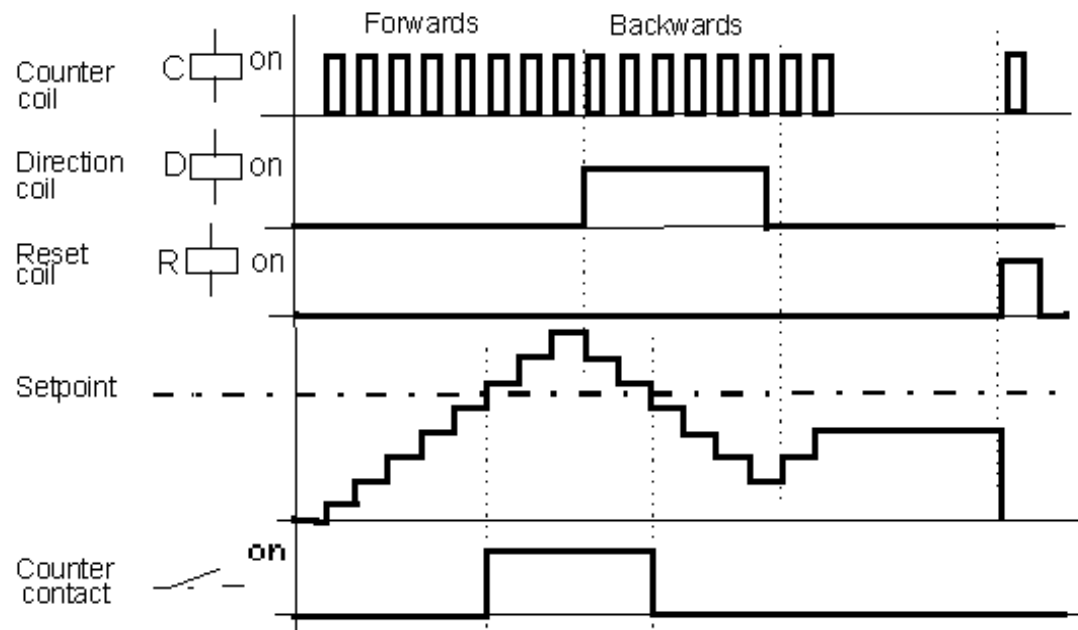
**Reset Input (RC1 to RC16):** Reset input is used to reset the current counter value to zero in up counting mode and to set the counter to the preset value in the down counting mode.

Note: Count and direction both inputs are required for down counting.

#### Counter value

Leganza allows maximum count value equal to 9999.

**Locking:** Leganza provides facility to lock the parameters. If the parameters are locked then user can not change the values at RUN time. If the counter value is unlocked then user can change the value at RUN time.



### 3.4.3 Time switch (Clock)



The Time switch (Clock) function block is used to validate time slots during which actions can be performed. It acts just like a programmable weekly timer and has four operating ranges (A, B, C, D) used to control its output.

**Notation:** There are 4 Time switch (clock) functions available in both models. Time switch (clock) can be used only as contact. In Leganza ☉n is written for nth Time switch (clock). ☉ stands for Time switch (clock) and n is for number. ☉4 represents fourth Time switch (clock).

#### Time switch (clock) used as Contact

1. Normally open (☉n): In this type of contact TRUE value is valid.
2. Normally closed. (Lower case ☉n): In this type of contact FALSE value is valid.

#### Time settings

**Start Day** - For each range, any valid start day (Sunday to Saturday) can be specified.

**End day** - For each range, any valid end day (Sunday to Saturday) is specified. If only one day is to be chosen, this field can be left blank.

**Start Time** - For each range, a start operating time (00:00 to 23:59) is specified.

**Stop Time** - For each range, a stop operating time (00:00 to 23:59) is specified.

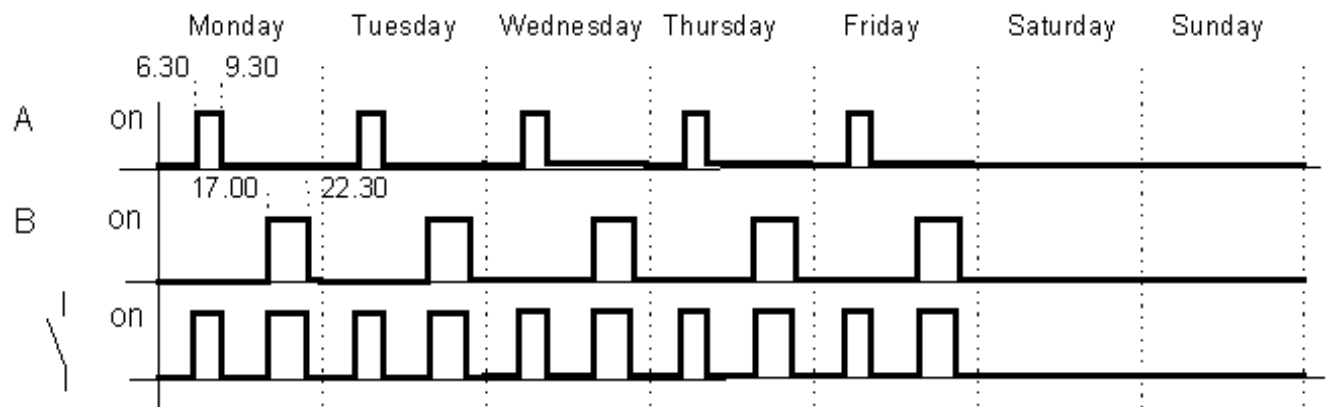
**Operating Ranges** - Four operating ranges are A, B, C and D. During the operation, these ranges are cumulated: The Time switch (clock) output is valid over all of the selected ranges.

**Locking:** Leganza provides facility to lock the parameters. If the parameters are locked then user can not change the values at RUN time.

Example 1

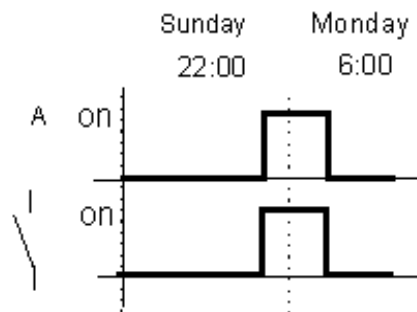
Enter timing – Block A From Monday to Friday On Time 6:30 Off time 9:30

Block B from Monday to Friday On time 17:00 Off time 22:30



### Example 2

Enter timing – Block A From Sunday to Monday On time 22:00 Off time 6:00



### 3.4.4 Analog Functions: (Used only for 88DDT0 & 88DDT8)



The analog function blocks can be used only with the following Leganza model: 88DDT0. This product works on 12 to 24 V DC supply voltage. There are two analog inputs, marked as V1 and V2.

**Notation:** There are 12 Analog functions available. Analog functions can be used as contact only. In Leganza “An” is written for nth analog function. The “A” stands for Analog function and n is for analog-function number. Thus A8 represents eighth analog function.

#### Analog function used as Contact

- **Normally open (A1 to A12):** In this type of contact TRUE value is valid.
- **Normally closed. (a1 to a12):** In this type of contact FALSE value is valid.

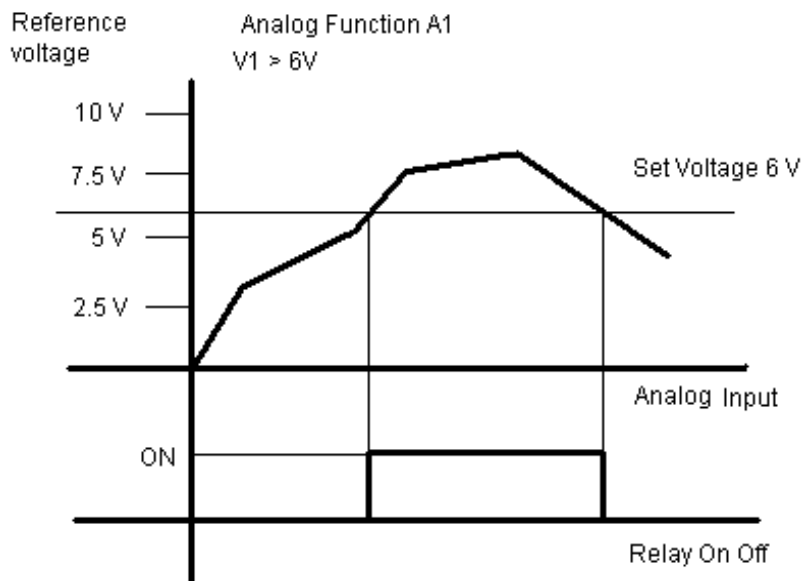
#### Analog voltage

Analog voltage ranging from 0 to 10 V DC can be given to each input: V1 and V2. Analog voltage of one input can be compared with either the voltage of the other input or with a reference voltage. Both Analog Inputs have 0.1 in-built Hysteresis.

**Locking:** Leganza provides facility to lock the parameters. If the parameters are locked then user cannot change the values at RUN time.

Example

$$A1 = V1 > 6V$$



## CHAPTER 4

### LESOFT in Full screen Mode

#### 4.1 Overview

Double click on the LESOFT icon on the desktop, Leganza software main screen will appear. Program that was active in the previous session will be displayed on the screen.

LESOFT displays a variety of information along with the program.

- It displays File name and path on the top.
- It displays the manus provided by Leganza software.
- User can select program display mode.
  - Leganza
  - PLC ladder
  - Electrical
- User can select program content windows.
  - Program
  - Parameter
  - Comment
- Leganza configuration is displayed according to the user selection.
- PC clock is displayed - LESOFT uses PC clock for functions related to time.
- It shows program with comments.
- I/O Function selector window gives information about Extension module selection. It also shows the available functions. It also shows the number of contacts available for a particular function if clicked on that function icon.
- Program errors window displays errors in the program if any.

## 4.2 Description of various windows

The "LESOFT" uses three types of main Windows:

- The Window in which user can view, enter and edit the Program. User can set properties of contacts and of coils by right clicking on the respective box .The electrical connections can be made or removed by simply clicking the mouse on the connections
- The I/O Function Selector window, from which user can choose contact and coil types, numbers, and Comments to each contact.
- The Program Errors window shows the errors in the program at the time of editing

The I/O function selector and error windows can be removed or displayed through the "View" menu on the top line.

Other important windows are:

- **Pop up menu window:**

Click right the mouse on any contact or coil in the program. This window will appear near the mouse pointer tip. User can select:

Contact or coil type  
Delete / connect contact  
Delete / insert line  
Properties if applicable

- **Timer properties window:**

Click on "Properties" menu line from the pop up menu window for a timer then this window will appear. This window allows changing the properties of timer function. At the RUN time also, the user can upgrade the properties of timer function if the timer is not locked.

- **Time switch (clock) properties window:**

Right Click on the Time switch (clock) and select "Properties" menu line from the pop up menu. This window will appear. This window allows changing the properties of Time switch (clock) function. At the RUN time also, the user can upgrade the timings if not locked.

- **Counter properties window:**

Click on "Properties" menu line from the pop up menu for a counter, this window will appear. This window allows changing the properties of counter function. At RUN time also, the user can upgrade the settings if the counter is not locked.

- **Analog properties window:**

This window will appear only if 88DDT0 model is selected in the configuration. Click on "Properties" menu line from the pop up menu for an analog function. This window allows changing the properties of analog function. At RUN time user can upgrade the properties if function is not locked.

- **Edit print footer window:**

From “File” drop down menu select “Edit Print Footer”. User can enter information about project name, author, date etc. This will be printed on every page of the program print-out.

- **Configuration window:**

Click on “Configuration” in the top line to activate this window. User can select model type and extension modules from this window. Since the input-output configuration depends on the Leganza model chosen, it is recommended that proper configuration should be chosen before starting any program entry.

- **Transfer window:**

Click on the “Transfer” menu, this window will appear. It shows serial communication (Com) ports available on your PC for transfer, default baud rate and serial communication settings. User can select direction of data transfer.

- **Input output window:**

Click on the “Simulation – Only on PC” menu or on the “Simulation – with Leganza unit” to get this window. The digital inputs used in Leganza are available here as check boxes. Analog voltages are available as scroll bars. Outputs which are activated are shown as red. User can press RUN button to start the simulation. Pause button to halt the simulation and EXIT to stop simulation.

- **Z-Keys window:**

Start simulation by pressing RUN. Then this window will appear. Z1 – Z4 keys represents Auxiliary input in Leganza.

- **Leganza mode window:**

Click on “View – Leganza mode” to get this window. This window gives the idea of Leganza unit and its working. It shows simulation of Leganza unit. Users can do all operations as if he is working with Leganza unit.



### 4.3 Entering Programs

Click on “File – New” from the menu bar to create a new program.

A blank screen will appear. Now you can start entering the program. Ensure that you have chosen proper Leganza Configuration before starting the program entry.

#### Choose contact type:

Position the cursor at the place where you want to insert the contact by a left click with mouse. The position will get highlighted. Choose the required contact type and Contact Number from I/O function selector. Click on the required contact and contact number, which will be highlighted for a few seconds. The selected contact will appear at the position selected in the program. The selected contact number will be shown with a tick mark to indicate that it has been used in the program. You can right click on any of the contact to change its type and properties.

#### Connecting inputs and outputs

Each circuit connection runs from left to right. Please remember this when you interconnect contacts and relay coils. User can draw a circuit connection horizontally from left to right and vertically between adjacent circuit connections. An intersection of circuit connections represents an electrical connection.

#### Horizontal connection:

To make a horizontal connection, click on the horizontal dotted line in the connection box of the circuit. Or to make connection in contact box, press right button and select “Joining link”. Generally when an output coil is placed in the fourth column, it is get horizontally connected automatically.

#### Vertical connection:

To make a vertical connection click on the vertical dotted line in the connection box of the circuit. Vertical connection represents OR connection. For deleting a connection just left click on the connection line.

To delete a coil, Press right click on the connection you want to delete, and press Delete contact or delete coil.

#### Inserting and deleting a whole line in the program

Right click on the row above that you want to insert a line and select “Insert Line”. Right click on the row that you want to delete and select “Line Delete”.

#### Specifying parameters:

In the program-editing window, take mouse pointer to the required contact position. Right click of mouse and select “Properties”. The properties window will appear in the program

#### Adding readability to the program

Writing comments adds readability. You can write comments for each program line. You can write a comment for each contact and coil. To do this, click on the connection number from the I/O function selector window and write comment.

#### Example

Go to the position contact 1, row 1 select the position by left clicking the mouse. Select “I” (input) connection from I/O selector window. A number of “I” type contacts will appear at the bottom. Select I1 by mouse. “I1” will get displayed at the selected Position, which is in the first row, and at contact 1 position. “I1” will get selection mark. Write comment to I1 as ‘On switch’.

Now click at the position coil – row 1. Select “Q: from I/O function selection and then select contact number “Q1” by clicking on it. Q1 will get displayed at the selected position and “Q1” will get a selection mark. Add comment to Q1 as ‘Lights’

Both coil and connection will get automatically connected. Select “Q1” by a right click of mouse. Select “State change contactor” parameter. It is understood that when ‘On switch’ is ON Lights will be ON. Thus better readability.

#### 4.4 Error Messages

LESOFT shows errors at the time of editing only.

The errors can be seen in the Program Errors window.

The window shows Err. No, Line no, Err. Location. Err. Description

Errors displayed are listed below.

1. Left connection missing
2. Right connection missing
3. UP Connection open or not required
4. DOWN Connection open or not required
5. Should be defined, since it is used as a contact
6. Coil is assigned more than once
7. Coil is assigned in multiple ways
8. Coil Set/ Reset Improper
9. Counter must have Count input in Coil column
10. Timer must have non-zero Preset Time
11. Timer Trigger is used more than then once
12. Timer Reset is used more than then once
13. Counter - Count Input is used more than then once
14. Counter - Reset is used more than then once
15. Counter - Direction is used more than then once
16. Extension Module should be selected in Configuration
17. Text - Reset is used more than once
18. Improper or missing Connection
19. Analog functions are not permitted in this model
20. At least one block of Time switch (clock) must have days defined.
21. Preset value of counter must be non-zero.
22. Check the ON-OFF timing of TIME SWITCH (CLOCK)

#### 4.5 Program Simulation on PC

In this type of simulation, a Leganza unit is not required. The program will run on PC without the actual input-outputs. In this mode all inputs are available as check boxes. One can click on the box and make input ON or OFF. Similarly output can be seen on PC. Whenever output coil is in ON condition, it will show as RED circle.

**Run:** Press RUN to start simulation.

**Pause:** Pause acts as halt the program. One can change the properties in between. If pressed RUN again program will start from the last condition, the condition where the program was paused.

**Exit:** When pressed Exit button Simulation will get terminated. To start simulation one has to select "Simulation" again. All states of outputs and special functions will get reset.

If the input check box is checked then:

- It is a TRUE condition for normally open contact.
- It is a FALSE condition for normally closed contact.

If the input check box is not checked then:

- It is a FALSE condition for normally open contact.
- It is a TRUE condition for normally closed contact.

#### Example -

Assume that the program "I1 -- -- -- Q1" already entered.

Select "Simulation – Only on PC" and then press the RUN button to start simulation.

Click on "I1" check box, Q1 will become ON.

Click on "I1" again, Q1 will become OFF.

It indicates that when I1 switch is ON lights will glow. If I1 is OFF lights will be OFF.

#### 4.6 Simulation with Leganza unit

For simulation with Leganza user has to connect a serial cable from PC to Leganza. Input conditions are taken from Leganza and shown on PC in the check boxes.. Similarly whenever output is in ON or OFF condition as the result of program execution, it is shown on PC as well as relay on Leganza will operate. In this mode the program in the Leganza unit is ignored, and the one in the LESOFT on PC will be running. Only the inputs are taken from Leganza unit and outputs are directed to the Leganza unit.

One can connect physical inputs and outputs to Leganza.

To simulate the program, click on “Simulation – with Leganza unit” in the menu bar.

It shows the available serial communication ports (COM ports). Select COM Port to which the Leganza unit is connected with the serial cable.

Inputs - outputs window will appear which will show the status of inputs and outputs of Leganza.

Example -

Assuming that the program “I1 -- -- Q1” already entered, and also assuming that the 110- 240 V AC model (87DDT0) is selected:

Make the Electrical connections on the Leganza as follows:

Connect a switch between Live terminal “L” and input terminal “I1”.  
Connect a lamp to output Q1.

Connect the serial cable between Leganza and PC

To start simulation, press RUN button on LESOFT screen.

Press “Run” on Leganza unit and select “PC as Master”.

Take the switch to ON position. The lamp connected to Q1 will become ON.  
Take the switch to OFF position. The lamp connected to Q1 will become OFF.

In this case the program will be executed from PC and actual input, outputs will be used from Leganza. Input output status can be seen on the PC screen also.

#### **4.7 Parameters of special Functions**

When entering a Program, the function block parameters must be filled in. To set the function parameters right click with mouse on the contact or coil in the program edit window. The Property windows are displayed for:

1. Timer function block
2. Counter function block
3. Time switch (clock) function block
4. Analog function block

##### **Timer function properties**

1. Indication whether the timer is used in the program.
2. Timer lock status
3. Preset timing
4. Timer Inputs: Trigger and Reset, whether these are used as coils and will receive a signal.
5. Comment
6. Timer function.
7. You can select any other timer for viewing the properties.

##### **Counter function block**

1. Indication whether the counter is used in the program.
2. Counter lock status
3. Preset counter value
4. Counter Inputs: Count, Direction and Reset, whether these are used as coils and will receive a signal.
5. Comment
6. You can select any other counter for viewing the properties.

##### **Time switch (clock) function block**

1. Indication whether the Time switch (clock) is used in the program.
2. Time switch (clock) lock status
3. Preset time for all blocks (A, B, C, D)
4. Comment
5. It allows viewing another Time switch (clock) properties.
6. It shows selected time slots graphically.

##### **Analog function block**

1. Indication whether the Analog Function is used in the program..
2. Analog lock status
3. Analog function selection: voltage comparator input selection
4. Comment
5. It allows viewing another analog function properties.

## CHAPTER 5

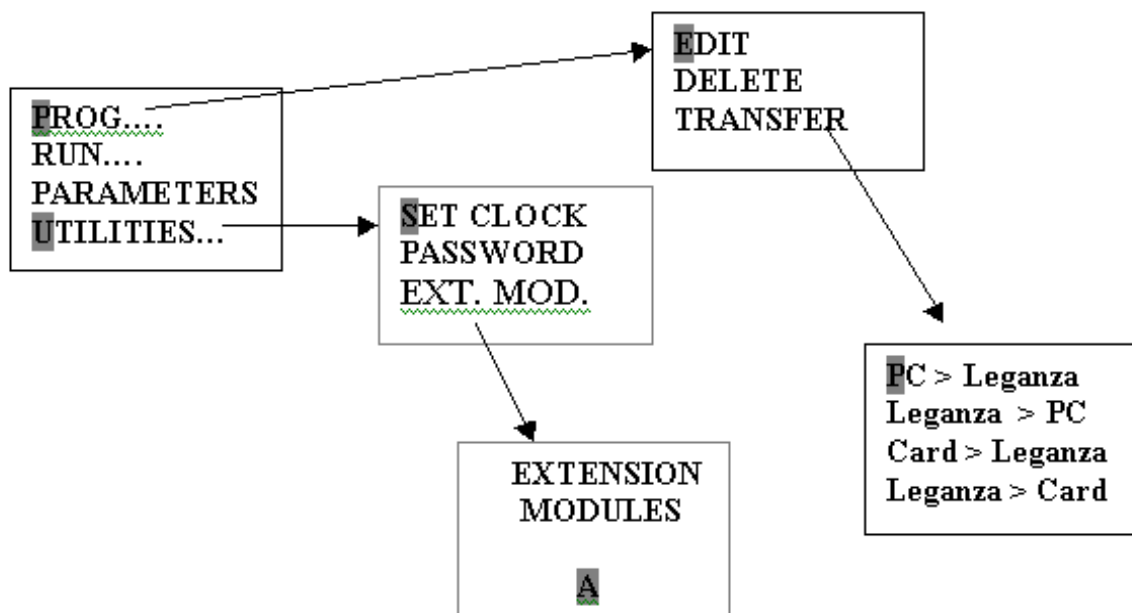
### LESOFT in Leganza mode

#### 5.1 Overview

This mode of LESOFT, which can be activated through the “View” menu, is very useful in understanding how the Leganza works in stand-alone mode. The PC depicts the Leganza layout of LCD display and the keyboard. All menus and commands are very similar to Leganza unit. In this mode user can perform all tasks like program entry, debug and execution. It does not require a physical connection to Leganza unit. All inputs and outputs are simulated on the PC.

This chapter, which describes how LESOFT works in Leganza mode, can also be used as instruction manual of Leganza.

The block diagram below gives idea about the functions available in Leganza & the path to that function.



#### Description of Leganza Functions

##### Main menu Functions

**PROGRAM:** This function lets the user enter the Program that will make the Leganza work. The program is nothing but connections of inputs, outputs, and special functions. For information on how to enter programs, refer to the next section. This function may be password protected.

**RUN:** This function lets the user start program execution. Either the user can use the RESET Mode or the CONTINUE Mode.

The RESET Mode will reset all the previous states of Inputs/ Outputs, and will clear timer and counter states, and will start afresh.

The CONTINUE Mode will not change the previous states of the Inputs/ Outputs and special functions, and will continue the execution of the program.

**PARAMETERS:** This function lets the user display and change parameters of special functions like timer, counter, Time switch (clock) and analog functions used in the program. This may be password protected and may have additional individual lock for each parameter.

**UTILITIES:** This function lets the user set the clock and activate / deactivate Password facility. On the Leganza unit one can select the extension Module (A / B / C). In the LESOFT on PC, extension modules have to be chosen using the "Configuration" menu.

## SUB FUNCTIONS OF PROGRAM MENU

**EDIT:** EDIT function allows the user to enter a new program or edit an existing program. Also it allows editing the existing one. If Password is set, this function is accessible only with correct password.

**DELETE:** This function will clear the entire program stored in the Leganza. If password is set, this function will work only with correct password.

**TRANSFER:** This function will transfer the program.

<b>PC &gt; Leganza:</b>	A program is transferred from PC to the Leganza unit
<b>Leganza &gt; PC:</b>	A program is transferred from Leganza to the PC
<b>Card &gt; Leganza:</b>	Loading from the memory card
<b>Leganza &gt; Card:</b>	Transfer to the memory card

The "Transfer" menu is not available in LESOFT as a sub menu of "Program". You can invoke the first two transfer functions for the "Transfer" menu on the top line of the screen.

## SUB FUNCTIONS OF UTILITIES

**SET CLOCK** This function is used to set the day and time: Day of the week, Hours-Minutes. This function is available only on Leganza unit. In LESOFT you do not have this function, and the time/ day can be set on the PC using one of the Windows utilities.

**PASSWORD:** This function allows setting or removing password. If password is set, certain functions like Program, Parameters are protected and are accessible only when correct password is entered. The Password can be set or removed, the status is indicated by the open or closed lock symbol.

**EXT. MOD.:** This function allows the selection of the Extension Modules (A / B / C). Maximum 3 Extension Modules can be connected to the Leganza Main Unit. In the LESOFT on PC, extension modules have to be chosen using the "Configuration" menu.



## 5.2 Entering Programs

If you choose to enter or edit a program directly on Leganza unit or in the Leganza mode of LESOFT, you can select the "Edit" option from the "Program" submenu.

### Description of the keys

The 8 keys located on the front of the Leganza are used to configure, program and control the application. They perform the following actions.

**DEL Key:** Press this key to delete a program element, or a blank line, if the cursor is located in the 1<sup>st</sup> (left most) column.

**ALT Key:** Press this key to insert a program line, when cursor is blinking in the first column. This also selects/ deselects Wiring Connection mode. In RUN Mode, this key can be used to select one of the 3 displays.

**OK Key:** Press this key to make a selection. During the parameter entry this key saves the changes and proceeds to next parameter.

**ESC Key:** Press this key to exit the menu or a selection. Saves the Program entered in the Program -Edit Menu. During the parameter entry it proceeds to next parameter without saving the changes.

**ARROW keys:** On the program editing screen, the arrow keys are used to move Up, left, down and right. The position on screen is shown by a "■" cursor or respective blinking text. On the parameter screen, left / right arrow moves the cursor to Next / previous position, and up / down keys increment / decrement the value.

**AUXILIARY KEYS (Z-Keys):** Arrow keys are called auxiliary keys in Run mode. They are used as push buttons to get signals from user. If user goes in PAR (parameter mode) or in PRG (program mode) in RUN mode, then these keys are not available as z-keys. At that time these keys are used as arrow keys.

The format of Program is:

- Maximum 64 lines of program
- Each line will have up to 3 contact elements and one coil element.
- Unless the contact is joined to previous or next line using the vertical joining links, a coil is a must in every line.
- Do not leave blank lines in the program, since this will unnecessarily increase the execution time.

### Entering a contact

- 1 – Place the ■ blinking cursor in the required position.
- 2 – Press **OK**.
- 3 – Choose the required element using the **Up** or **Down** keys.
- 4 – Use the **Right Arrow** key to move to the number.
- 5 – Choose the number using **Up** or **Down** keys.
- 6 – Press **OK** or **Right Arrow** to accept and to go to next position.

When the contact element is a timer, counter, clock or an analog function, use OK key rather than right arrow key to accept it. This will open a parameter display screen where you can enter various preset values.

### Entering a coil

- 1 – Place the ■ blinking cursor in the required position.
- 2 – Press **OK**.
- 3 – Choose the required element using the **Up** or **Down** keys.
- 4 – Use the **Right Arrow** key to call-up the number.

- 5 – Choose the number using **Up** or **Down** keys.
- 6 – Use the **Left Arrow** key to move to the type of coil.
- 7 – Choose the type of coil using **Up** or **Down** keys.
- 8 – Press **OK** or **Right Arrow** to accept and to go to next position.

### Entering the Joining Links

In most cases, the Leganza automatically enters the joining links. However, to enter a link manually, proceed as follows.

- 1 – Place the ■ blinking cursor next to the desired location.
- 2 – Press ALT to start the link ("↙" cursor).
- 3 – Move the cursor to the desired location using the arrow keys. As the cursor moves, the link is drawn.
- 4 – Press ALT to exit to normal mode.

Repeat this action as many times as necessary to link all the elements together as required.

### Replacing a link with a contact

To replace a link with a contact, simply place ■ cursor at the required location and press **OK** to enter the contact as described on the previous page.

### Entering a new element

In each line there are three possible positions of the blinking cursor ■, where a contact can be placed. A coil can be placed only in the right most column of each line

### Changing an element

To change an element in an existing program, simply move to the element to change, press **OK** and follow the same procedure as when entering a new element.

### Deleting an element

To delete an element, simply place the ■ cursor on the required element, then press **Del**. Generally, the deleted element must be replaced by a link.

### Deleting links between elements

To delete a link, simply move the ■ cursor next to the desired position, press the ALT key to change the cursor to ↙ and press Del. Key. This may delete some of the required connections, which may be restored by the same method as above.

### Deleting a program line

Program lines are deleted lines by line. Proceed as follows:

- Move the cursor to the first column of the blank line, if necessary delete the elements one by one to create blank line.
- Press **Del**. The line is deleted.

**Note:** It is possible to delete the entire program stored in the Leganza. To do this, call up the “DELETE” option in the Program menu and validate the deletion of all program lines.

### Inserting a program line

To insert a program line, simply move ■ cursor to the first column of the line immediately above the one to create and press ALT.

### Example

By following the indications below, the user can enter the two-way switch program.

**Note:** It is assumed that the password function is disabled.

- On the main screen move the cursor to “Program” and press OK button
- Move the cursor to “Edit” and Press OK Button to select the editing mode
- A blank screen appears and a blinking black box (cursor) is displayed. If the screen shows the earlier program, use “Delete” function in the Program menu to remove the old program and then restart the “Edit”
- Press OK. “I1” will be displayed on the screen. “I” will blink. Leganza prompts the user to select the type of contact
- Press Right Arrow, “1” will blink. User has selected a contact, which is one of the digital inputs (I). Leganza now prompts you to select the input number
- Since we require “I1” as the first contact, press Right Arrow. The ■ will blink. You have just validated the contact entry to assign the input I1. The ■ is moved ready to enter the second contact
- Press **OK**. The right hand “I” will blink. The Leganza prompts you to select the type of contact.
- Press Up Arrow “i” will blink. You have just selected the reverse contact of input I1.
- Press Right arrow, the “1” will blink. Now to change the input number press Up Arrow. The “2” blinks. Now simply validate this selection
- Press OK Or Right arrow. The ■ blinks. Move to the end of the line ready to enter the coil.
- Press right arrow. The ■ blinks. Now enter the coil.
- Press OK. The “Q” blinks. Now all that remains is to select the other parameters for this coil.
- Press OK Key. The “1” blinks. Coil “Q1” is validated.
- Press OK Key. The coil is validated. The ■ moves down to next line and the links are displayed automatically.
- Press OK Key. The “I” located on the second line blinks
- Press Up Arrow to change the contact to “i”.
- Press Right arrow. The 1 located on the second line blinks.
- Press Right Arrow. The ■ blinks
- Press OK. The I on the second line blinks

- Press right arrow. The **1** in the second line blinks
- Press Up Arrow. The **2** in the second line blinks.
- Press Right arrow. The **■** blinks. Now enter the link between the two lines.
- Press ALT. The **↯** blinks. It indicates that it is now possible to set the link between the two lines.
- Press Up arrow. The contact point blinks showing a **↯** sign. Press ALT key to restore normal mode.
- Press ESC. The screen displays the menu as shown. The **■** blinks and the 'EDIT' option is selected
- Press ESC. The screen displays the main menu.
- Press Down Arrow. The Leganza points to the RUN mode. The Leganza can now be set to RUN
- Press OK. This will show the run-time screen. This screen allows the user to view the inputs, outputs and functioning of the two-way switch (switch action, indicator lights ON or OFF, light ON or OFF).

This simple application example demonstrates the user how to enter the program. The following points should be remembered:

When a **■** blinks use the OK button to add an element (contact or coil). When an element (I, Q, M etc.) blinks, it is possible to use the Up and Down arrow keys on the keypad to change the element. When the **↯** blinks, the arrow keys can be used to draw the connecting links. To switch back to normal **■** cursor press ALT Key.

### 5.3 Run Function

To RUN the program press Program -- Run from the main menu.

The display will show:

RESET  
CONTINUE

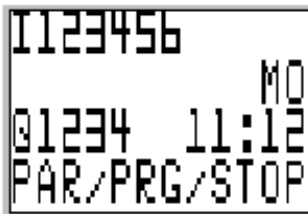
If Reset is selected then all status of all outputs and function blocks will get reset.

If Continue is pressed then program execution will proceed without changing either outputs or the current values of the function blocks.

User can press ALT key to show either the Parameters or Program while the program is running. This feature is useful for debugging.

RUN Mode Display Screen (For 88DDT0)

Run mode main screen



The screen shows:

1. Input status display
2. Output status display
3. Current day and time
4. Display mode Selection (PAR / PRG / STOP)

When the Parameter or Program is displayed, Z-keys (Auxiliary keys) are not available as push buttons.

Parameter window in RUN mode: Press Alt & OK to select PAR (parameter window). User can see the parameters of the special functions at RUN time. User can even change some of the parameter properties if the function is not locked. Arrow-keys are used to change the parameter values if required.

Program window in RUN mode: Press Alt, Alt & OK to select PRG (program window). User can see the program at RUN time. User can not change the program. If the program elements are activated( the status is True), are shown in black background. Only up and down arrow keys are used to go through the program.

**Note: In Run mode changing extension module is not allowed. If changed then again start RUN with Reset option.**

## 5.4 Parameters of special Functions

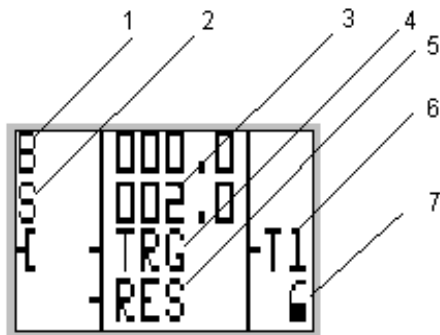
When entering a Program, the function block parameters must be filled in. These parameter-setting screens are displayed for:

- Time switch (clock) function block,
- Analog function block,
- Timer function block,
- Counter function block.

Regardless which screen is displayed, the parameter setting principle is the same.

- 1 – Use the Right and Left arrow keys to move the ■ cursor onto the parameter to be changed.
- 2 – Change the parameter value using the Up and Down arrow keys.
- 3 – Finish data entry by pressing Esc (without saving the changes) or OK (after saving the changes) key to return to program entry screen.

The parameters of all function blocks are accessible through the “Parameter” form the Main Menu also.



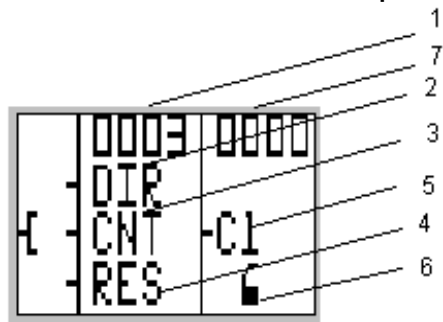
### Timer function block coils and parameters

- 1 -Type of Timer (4 possible types, refer to the further pages)
- 2 -Preset time unit.
- 3- Preset time, the time value to be reached.
- 4 -Timer control input (Trigger).
- 5 -Timer number.
- 6 -Timer reset input.
- 7 -Timer preset value lock

#### Note:

When a “-[ “ is displayed in this screen, it indicates that the element was used in the program lines. This symbol will appear in the PARAMETER and RUN Menus.

### Counter function block coils and parameters

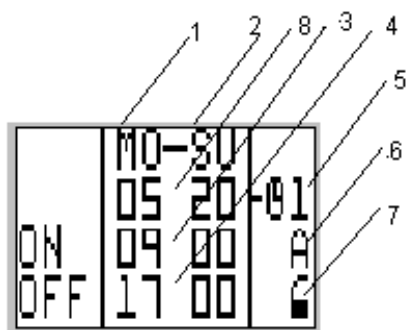


- 1 – Value to reach – also called the preset value
- 2 – Counter direction input (up/down counting).
- 3 – Counter input
- 4 – Reset input.
- 5 – Validity output – when the preset is reached.
- 6 – Block locking

**Note:** The only parameter that can be changed is the preset value. Its value is between 0 and 9999.

When a “-[]” is displayed in this screen, it indicates that the element was used in the program. This symbol appears in the PARAMETER and RUN Menu.

### Time switch (clock) function block parameters





- 1-Start Day
- 2-End Day
- 3-Start time
- 4-End Time
- 5-Block Number
- 6-Operating Ranges
- 7-Block locking

## 5.5 Password

### Password purpose

The password secures access to the following main menu options: "PROGRAM-EDIT", "DELETE", "PARAMETERS" and "TRANSFER" The password comprises four numeric digits from 0 to 9. Therefore the password can have any value between 0 and 9999. The Password is entered as follows.

### Entering the password

- Select Password from UTILITIES menu. The  means that no password is set yet.
- Press Up Arrow. The 1 on the left blinks. Now enter the password
- Enter the password using the arrow keys The digit being changed blinks
- Press OK The password is activated and the user is returned to the utilities menu Password shows  next time

### Canceling password protection

To cancel password protection, simply enter the current password (see above).

The password is inhibited which is shown by the open lock symbol in the next password screen.

### Changing the password

To change the password, simply cancel the former one and enter a new one (refer to the method described above). If you have forgotten your password press the keys "DEL, ALT, ESC, OK" sequentially.



## **CHAPTER 6**

### **OTHER FEATURES OF LESOFT**

#### **6.1 Transfer Data between PC and Leganza unit**

Leganza allows communication between the PC and "Leganza":

##### **PC to Leganza**

Transfers the current program from the PC to "Leganza".

It will automatically detect the Serial ports available. You can connect a serial cable to any one port available.

Make Leganza (Receiver) ready for transfer before issuing the command on PC.

To do this, press 'Program – Transfer - PC>Leganza' on Leganza

Then press "PC>Leganza" button on PC.

Current program on the screen will get transferred to Leganza.

Transfer completion message "Transfer complete" will appear on the PC.

Exit.

##### **Leganza to PC**

Transfers the program from "Leganza" to the PC.

Make PC (receiver) ready first by pressing "Leganza to PC" in LESOFT.

Give transfer command on Leganza. Press "Program – Transfer - Leganza>PC"

Program in Leganza will get transferred to PC.

Transfer completion message " Transfer Complete " will appear on PC.

Exit.

## 6.2 Select Leganza Configuration

Configuration allows selection of Leganza model and Extension modules. Maximum three extension modules can be connected to one Leganza. Extension modules of same type can be connected. One can set the configuration as per the requirement. Each program can have different configuration. Configuration will get saved along with the program in the file. It will get automatically reloaded when a previously saved file is opened. Note that during “Simulation with Leganza” the configuration selected in LESOFT must match the actual configuration of Leganza.

### **6.3 Printing the Programs**

Print outs can be taken using LESOFT-40.  
It allows you to print program in details as well as in short.  
Click on "File" menu to see the printing options.

#### **Edit Print footer**

One can enter the print footer information.  
Information about the Project, version etc can be written. A provision is made to enter some additional information. File name and path and the page numbers will be automatically added to the footer.

#### **Print Short**

Print Short option prints the program in short. No comments will get displayed. It prints all 64 lines in a single page.

#### **Print Details**

Print details option prints the program in details. All comments will get displayed. 10 lines will get printed on a single page. You will have choice of selecting a particular part of program for printing.

## **CHAPTER 7**

### **Working with Leganza**

#### **7.1 Introduction**

Working with Leganza unit is very easy once user is familiar with LESOFT – Leganza mode. The functions and utilities are same in both Leganza unit and LESOFT-Leganza mode. The difference between the two is Leganza uses actual electrical input / output connections and LESOFT-Leganza mode uses soft switches / buttons as inputs. Also Leganza uses Real time clock and LESOFT-Leganza mode uses PC clock. Leganza unit has one more additional facility to transfer data to and from memory card.

## **7.2 RUN mode**

Run mode is same as described in the Chapter 5, LESOFT in Leganza mode- RUN mode. Leganza unit has PC as master function in addition to Reset & Continue functions. This function used when Leganza unit is used for simulation with LESOFT. In this mode actual program is RUN from LESOFT. Input & output conditions are taken from Leganza unit. Serial cable needs to be connected between Leganza unit & PC.

### 7.3 Transferring data to and from Memory card

Transferring data to memory card is useful when user wants to load the same program in many Leganza units. In this case instead of using PC user can make use of memory card, which is capable of storing one program. This feature is particularly useful on the production line where user is not required to edit and debug the program and a PC is not available.

#### Memory Card > Leganza

This transfer is used to reload an application into the Leganza. It avoids the need to re-enter an existing application.

The following method is used:

1. Install the Memory card in the connector after removing the serial cable, if present.
2. Move cursor to the **"TRANSFER"** function from the "Program" menu.
3. Press the **OK** key to validate.
4. Select the **Card > Leganza** function.
5. Press the **OK** key to validate.

Note: Before transferring data to the Leganza, use the DELETE command in the PROGRAM Menu to clear the contents of internal function blocks of the Leganza.

#### Leganza > Memory Card

The Leganza has an optional EEPROM. This function lets the user load the application in the Leganza into the Memory Card.

The following method is used:

1. Install the Memory card in the connector after removing the serial cable, if present.
2. Select the **"TRANSFER"** function from the "Program" menu.
3. Press the **OK** key to validate.
4. Select the **Leganza > Card** function.
5. Press the **OK** key to validate.

**Caution:** Do not remove the card during the data transfer to and from the card. Avoid using PC>Legaza and Leganza>PC commands when a memory card is installed in the connector. Similarly avoid using Leganza>Card and Card>Leganza commands when a serial cable is connected to the Leganza connector.

#### **7.4 Set Clock**

##### **Set Day and Time**

Select Utilities by using OK button.

Select Set Clock using OK Button.

Set clock window will appear. Then set Day and time using Up and Down keys.

## CHAPTER 8

### Technical Specifications

#### 8.1 Electrical Specifications

	<b>88DDT0 / 88DDT8</b>	<b>87DDT0 / 87DDT8</b>
Digital Inputs	6 ( I1 – I6 )	8 ( I1 - I8 )
Weekly clock	YES	YES
Supply Voltage (Ur)	12 – 24V DC	110 – 240 V AC
Supply Variation	- 10 % to +10% of Ur	- 20 % to +10% of Ur
Max. input current	100 mA	100 mA
Digital Input Voltage range	Max 2.5V DC OFF ("0") Min. 5V DC ON ("1")	Max 40V AC OFF ("0") Min. 80V AC ON ("1")
Max. Digital Input Current	1mA	1mA
Relay outputs	4	4
Analog inputs	2 (0-10 VDC)	-

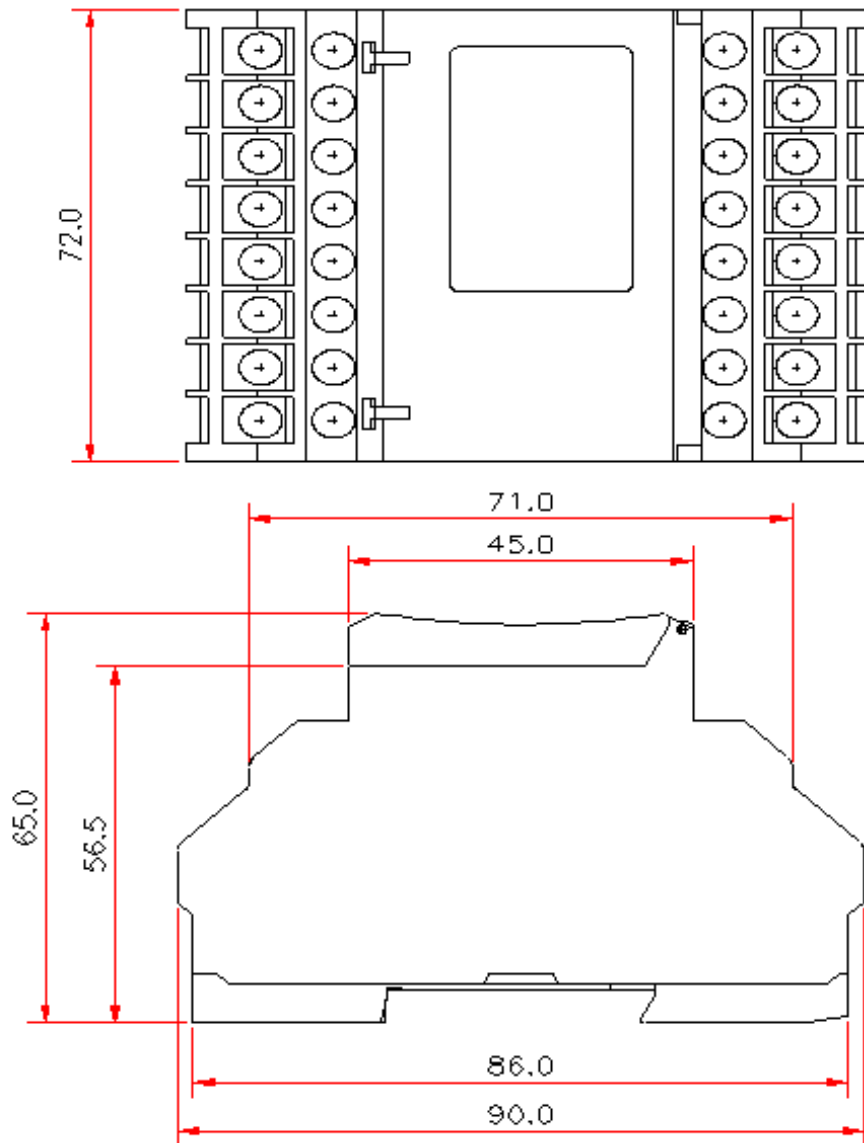
#### 8.2 Leganza Parameters strength

<b>Parameter</b>	<b>88DDT0</b>	<b>87DDT0</b>	<b>88DDT8</b>	<b>87DDT8</b>
Inputs	6	8	6	8
Analog inputs	2	0	2	0
No. of Extension Modules	3	3	3	3
Ext. Mod I/p	6	8	6	8
Ext. Mod. Analog I/P	2	0	2	0
Out puts	4	4	4	4
Ext. Mod outputs	4	4	4	4
Timers	8	8	16	16
Counters	8	8	16	16
Time switch (clock)	4	4	4	4
Analog Functions	8	0	12	0
Auxiliary Relays	16	16	16	16
Program lines	64	64	250	250



### 8.3 Mechanical Dimensions

Mechanical dimensions



## APPENDIX A

### Leganza sample programs

Example 1	Watering of greenhouse plants
Example 2	Watering of roadside plants
Example 3	Bell system in a factory
Example 4	Roll down shutters
Example 5	Shop lighting
Example 6	Parking lot
Example 7	Cream stirrer in a dairy
Example 8	Exterior and Interior lighting
Example 9	Load Utilization
Example 10	Step switch – ventilator

**Note:** All programs are stored in directory ‘sample programs’.

#### Example 1

Leganza used as **WATERING OF GREENHOUSE PLANTS**

##### Greenhouse requirements

There are two types of plants in green house.

Type 1 – this type of plants need water every morning and evening for 3 minutes

Type 2 – this type of plants need water every alternate evening

##### Leganza Solution

Greenhouse wants Leganza to control watering.

##### Leganza uses

I1 – ON Switch

Q1 – Solenoid valve for watering plant type 1

Q2 – Solenoid valve for watering plant type 2

⌚1 – To set timing for plants type 1

Block A: From Mon. to Sun ON time 6:00 OFF time 6:02

Block B: From Mon. to Sun ON time 18:00 OFF time 18:02

⌚2 – To set timing for plants type 2

Block A from Mon. to Sun ON time 8:00 OFF time 8:02

#### Example 2

Leganza used for **WATERING OF ROADSIDE PLANTS**

##### Watering requirements

A system is required to control the watering of road side plants such that the pedestrians has an option to walk on either side of road.

Plants need water daily twice.

In the morning from 6:00 to 6:03 side 1 and 6:10 to 6:13 side 2

In the evening from 8:00 to 8:03 side 1 and 8:10 to 8:13 side 2

##### Leganza Solution

Leganza to control watering.

### **Leganza uses**

I1 – ON Switch

Q1 – Solenoid valve for watering plant on one side

Q2 – Solenoid valve for watering plant on the other side

⌚1 – To set timing for plants side 1

Block A from Mon. to Sun ON time 6:00 OFF time 6:03

Block B from Mon. to Sun ON time 20:00 OFF time 20:03

⌚2 – To set timing for plants side 2

Block A from Mon. to Sun ON time 6:10 OFF time 6:13

Block B from Mon. to Sun ON time 20:10 OFF time 20:13

### **Example 3**

Leganza used as **BELL SYSTEM e.g. IN FACTORY**

#### **Factory activities**

From Mon. to Thu. Factory starts at 8:00 and ends at 16:30

On Fri factory starts at 8:00 and ends at 15:30

Breakfast time: Everyday from 9:45 to 10:00

Lunch time: Everyday from 12:45 to 13:30

#### **Leganza Solution**

Bell should ring 2 minutes each time

### **Leganza uses**

I1 – ON Switch

Q1 – Bell

⌚1 – Time switch (clock) settings to set factory timings

Block A from Mon. to Fri. ON time 8:00 OFF time 8:01

Block B from Mon. to Fri. ON time 9:45 OFF time 9:46

Block C from Mon. to Fri. ON time 10:00 OFF time 10:01

Block D from Mon. to Fri. ON time 12:45 OFF time 12:46

⌚2 – Time switch (clock) settings to set factory timings.

Block A from Mon to Thu. ON time 13:30 OFF time 13:31

Block B from Mon to Thu ON time 16:30 OFF time 16:31

⌚3 – Time switch (clock) to set factory timings

Block A from Mon. to Fri ON time 13:30 OFF time 13:31

Block B from Mon. to Fri ON time 15:30 OFF time 15:31

### **Example 4**

Leganza used as **ROLL DOWN SHUTTERS CONTROLLER**

#### **Requirements**

Opening and closing of shutters is to be controlled.

There are two types of operations by which shutters can be controlled.

Type 1 – Manual operation

Type 2 – Automatic operation

#### **Leganza Solution**

Leganza allows shutters to control manually as well as by Leganza.

If in manual operation mode, shutter will be opened whenever Shutter open key is pressed and shutter will be closed whenever shutter close key is pressed.

In Automatic operation mode, Shutter will open only for time 7:00 AM to 6:00 PM

Closing of shutters also depends upon photosensitive switch.

Manual mode and Automatic mode operation is decided by a switch.

### **Leganza uses**

I1 – Photo-Sensitive switch to detect sufficient light

I2 – Manual switch to take shutter UP

I3 – Manual switch to take shutter Down

I6 – Operation mode switch to select manual mode or automatic mode

Q1 –Shutter Up

Q2 –Shutter Close

⌚1 – To set timing for Shutter close

Block A from Mon. to Sun. ON time 7:00 OFF time 18:00

### **Example 5**

Leganza used for **CONTROLLING SHOP LIGHTING**

#### **Shop activities**

Shop is open from Monday to Friday from 8:00 AM to 10:00 evening.

On Saturday from 8:00 to Midnight

On Sunday Midday to 8:00 in the Evening.

When Shop opens Regular lighting is turned ON.

When sunlight is insufficient, additional light is turned ON.

During nighttime when shop is closed minimum light is ON.

To highlight some special items, whenever customer passes from special item window, spotlight turns ON.

### **Leganza Solution**

Shop has four types of lights.

1. Lighting during the daytime.
2. Additional lighting in the evening
3. Minimum lighting during night.
4. Spotlights to light particular articles.

### **Leganza uses**

I1 – Photosensitive switch to detect additional lighting requirement.

I2 – ON Switch

Z1– Test Switch: .to test all types of lights.

I4 – Motion detector to decide spot light to turn ON

Q1 – Lighting during day time

Q2 – Additional lighting in the evening

Q3 – Lighting during the night

Q4 – Spot lights

⌚1 – Time switch (clock) used to set timing for which shop is open

Same Time switch (clock) is used for timing from Monday to Friday, Saturday and Sunday.

Block A from Mon. to Fri. ON time 8:00 OFF time 10:00

Block B from Sat to Sat. ON time 8:00 OFF time 00:00

Block C from Sun to Sun ON time 12:00 OFF time 18:00

T1 – Timer is used to set time for which all lights are to be turn ON for testing purpose.

Timer is used in OFF delay mode Z1 is used to trigger the timer.

T2 – Timer is used to set the timing for which spotlight to turn ON.

Timer is used in OFF delay mode. Motion detector is used to trigger the timer.

### Example 6

Leganza used for controlling parking lot

#### Requirement

Parking lot is available for certain time.  
Vehicles entering and exiting need to count  
Lights should be controlled as per the Vehicle entry and the pedestrians access buttons.  
CO2 level in the parking lot should be monitored.  
Manual entries are permitted.

#### Leganza Solution

Parking lot timings are from Mon. to Fri 8:30 AM to 5 PM and on Sat 9:30 Am to 12 Noon  
Smoke detector is connected to detect CO2 level  
Pedestrian's access points are near the elevator so that they can put ON the lights when they come to take out the vehicle.

#### Leganza uses

Leganza and Extension module A

I1 – Vehicle entry  
I2 – Vehicle Exit  
I3 – Pedestrian's access point  
I4 – Pedestrian's access point  
Q1 – RED light to indicate parking lot Full  
Q2 – Green light to indicate parking lot is available  
Q3 – Parking lights  
Q4 – Exhaust Fan  
T1 – Timer used to set time for lights ON  
    T1 is used in  
T2 – Timer used to set time for Fan  
C1 – Counter to count number of vehicles.  
Z1 – Manual mode  
Z2 – Automatic mode  
Z3 – Manual Exit  
Z4 – Manual entry  
A1 – Equation for CO2 level.  
⌚1 – Parking lot timing.

### Example 7

Leganza used to control **CREAM STIRRER IN A DAIRY**

#### Requirement

In a dairy a Cream Stirrer is continuously need to rotate. To control this, Leganza is used.  
Leganza should allow automatic control as well as direct / continuous operation.

#### Leganza Solution

To select automatic operation or continuous operation a switch is used.  
In Continuous operation mode Stirrer runs continuously without interrupt where as in Automatic operating mode stirrer switches ON and OFF.  
ON for 15 Seconds and OFF for 10 seconds.  
Signal is given in case of any error or fault condition in the system.  
In case of fault, a fault indicator and alarm should get activated. Alarm gives sound in continuous on OFF mode unless fault is acknowledged.

Acknowledgement signal is given to Leganza.

### **Leganza uses**

I1 – Automatic / Continuous mode selector. High – Automatic mode  
Low – Continuous mode.  
I3 – Fault condition  
I4 – Acknowledgement for alarm only  
Q1 – Stirrer  
Q2 – Fault indicator  
Q3 – Alarm  
T1 – Timer for Stirrer ON (used in Pulse mode timer 15 Sec)  
T2 – Timer for Stirrer OFF (used in OFF delay mode Timer 10 Sec)  
T3 – Timer for Alarm beep of time 1 sec ON – OFF (used in Flashing mode)

### **Example 8**

Leganza used to **CONTROL EXTERIOR AND INTERIOR LIGHT OF A HOUSE**

#### **Requirement**

Lights should be controlled only in the evening. From 7:00PM TO 5:00 AM in the morning.  
Whenever a person comes from any direction, Exterior light in the corresponding direction should become ON for specified time. Time is such that a person should be able to pass from there. Lights should be made ON only in the dark.

For some cases user need to put ON all exterior lights, which is independent of time and darkness.  
In case of alarm input signal from buglers alarm system signal, all exterior as well as interior lights are ON along with buzzer.  
Buzzer is made continuous ON and OFF.

#### **Leganza Solution**

Three motion detectors are connected in three directions.  
Another detector is connected which will make all exterior lights ON.

### **Leganza uses**

I1 – Photosensitive switch to detect darkness.  
I2 – Motion detector position 1  
I3 – Motion detector position 2  
I4 – Motion detector position 3  
I5 – Motion detector position 4  
I6 – Alarm Contact  
Q1 – Exterior lighting 1  
Q2 – Exterior lighting 1  
Q3 – Exterior lighting 1  
Q4 – Interior lighting  
T1 – Timer is used to set time for which Lights to be made ON in one direction  
Timer use in OFF delay mode. I2 is used as trigger to this timer  
T2 – Timer is used to set time for which Lights to be made ON in second direction  
Timer use in OFF delay mode. I3 is used as trigger to this timer  
T3 – Timer is used to set time for which Lights to be made ON in third direction  
Timer use in OFF delay mode. I4 is used as trigger to this timer  
T4 – Timer is used to set time for which, all exterior lights to be made ON  
T5 – Timer is used to set time for which interior as well as exterior lights to be made ON

⌚1 – To set timing for which the motion detectors are sensed.

### Example 9

Leganza used for **LOAD UTILIZATION: Switching a group of three similar loads**

#### Requirement

An application needs two loads in operation. For less wear and tear three loads are used and two of them are to be used at a time so Leganza is needed. To ensure equal wear and tear of the loads, they must be alternately switched ON and OFF.

In case of fault condition at any one load, other two are continuously ON.

#### Leganza Solution

Two loads should be ON at a time.

Leganza will start with load 1and2 then it will switch to 2and3 and then 3and1.

#### Leganza uses

I1 – Fault at load 1

I2 – Fault at load 2

I3 – Fault at load 3

Q1 – Load 1

Q2 – Load 2

Q3 – Load 3

Q4 – Fault indicator

T1 – Timer is used to set time for which Load 1and2 will be in operation

T2 – Timer is used to set time for which Load 2and3 will be in operation

T3 – Timer is used to set time for which Load 3and1 will be in operation

M4 – Dummy output used to get the start condition.

### Example 10

Leganza used for **STEP SWITCHING eg. VENTILATORS**

#### Requirement

Leganza used to switch between different levels of a ventilator.

Four doors of a ventilator are to make ON or OFF step by step. The buttons connected decides whether to open the door or to close the door.

While opening the doors, each door should open after certain time even tough button pressed twice at a time.

#### Leganza Solution

Button I1 starts the ventilator at level 1. If the button is pressed again, level 2 is opened that is one level up. Similarly, when another button I2 is pressed, ventilator closes the door one level down.

#### Leganza uses

I1 – Button for upward direction

I2 – Button for downward direction

Q1 – Contactor level 1

Q2 – Contactor level 2

Q3 – Contactor level 3

Q4 – Contactor level 4

T1 – Timer is used to set minimum delay between level 1 and 2 opening

T2 – Timer is used to set minimum delay between level 2 and 3 opening

T3 - Timer is used to set minimum delay between level 3 and 4 opening

C1 – Counter used to count number of levels opened before level 1  
C2 - Counter used to count number of levels opened before level 2  
C3 - Counter used to count number of levels opened before level 3  
C4 - Counter used to count number of levels opened before level 4