ESPAN

Alarm & Monitoring

ESPAN-04 Series

Annunciator System
Compact Programmable Type

User Manual

ESP TECHNOLOGIES LIMITED

www.esptechno.com

Content

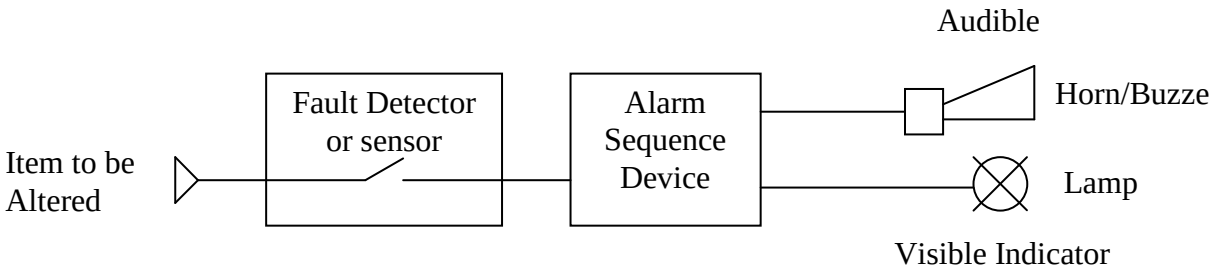
Introduction

The Annunciator system ESPAN-04 series incorporate the latest microprocessor technology to provide a versatile and flexible alarm system suitable for a wide range of applications such as the alarm for general switchgear cubicle or local control panel of GIS, local control cabinet of power transformer and all of control panel which need alarm function. It indicates fault status by using special high brightness LED which can be changed by software for 3 colors (Red , Green , Amber) The ESPAN - 04 series can be selected by the number of alarm input 8,10,16 and 20 alarm which specified when order.

General Description

Optimizing an industrial installation requires automation of control and is usually accompanied by an alarm or supervisory system of certain parameters called “fault”.

Definition of fault is expressed by the opening or closing of a contact. This information represents any modification of a physical or mechanical parameter converted into an electrical signal by the intermediary of a detector or sensor.



Annunciator is a device or group of devices that call attention to changes in process conditions that have occurred. An annunciator usually calls attention to abnormal process conditions, but may be used also to show normal process status. Annunciator usually included sequence logic circuits, visual displays, audible devices, and manually operated pushbuttons such as Acknowledge, Reset, Test, etc.

Annunciators can range from a single annunciator cabinet, to complex annunciator systems with many lamp cabinets and remote logic cabinets.

Features

- Aluminum housing, DIN format 96 x 96 mm.
- Operating delay time can be selected by software starting from 200 up to 2400 ms.
- Built-in three push buttons for Acknowledge, Reset and Test.
- Label is single paper sheet which slide into a small transparent envelope recessed in the front panel.
- All inputs are isolated with opto - coupled, NO or NC volt-free contact can be selected by software.
- Alarm sequences (Auto / Manual Reset / Indicator) of each input can be selected by software.
- Alarm sound type (Bell / Buzzer) of each input can be selected by software.
- High brightness LED display (3 mm.) in 3 colors (R, G, A) can be selected by Software.
- Integrated two test functions (Lamp Test & Function Test) in one push button. (“TEST”)
- Time of auto acknowledge function can be set from 1 - 240 seconds.
- Aux power supply 24, 48Vdc and 95-265. Vac/dc. (specify when order)
- Built-in heart beat function which illuminated by LED lamp to display healthy status as self-supervision function.
- Supervisory contact (watchdog) for warning status.
- Communication port : USB for configuration , RS485 – Modbus RTU for serial interface.
- Alarm monitor software for remote monitoring and control (Ack / Reset / Test)

Option :

- Relay output module : The auxiliary contact output or repeat relay module, normally used for remote alarm or remote control as given design. These modules are 8, 10, 16 and 20 relay output which shall be specify when order.

Specifications

General Information

Input contact	: NO or NC
Input Response Time	: Less than 20 ms,
Field contact voltage	: 24, 48, 110, 125, 220 Vdc ± 10% , 220 Vac/ 50 Hz
Active alarm point	: 8, 10, 16, 20
Alarm sequences	: Manual reset / Auto reset / Indicator function
Display Lamps	: Ultra - bright LED in 3 colors (Red, Green, Amber)

Power Source

Input voltage	: 24Vdc, 48Vdc , 95 - 265 VAC/DC
Power consumption (max)	: 10 Watt

Environment

Operating Temp	: -10 to 55 °C
Storage Temp	: -10 to 70 °C
Humidity	: up to 95%

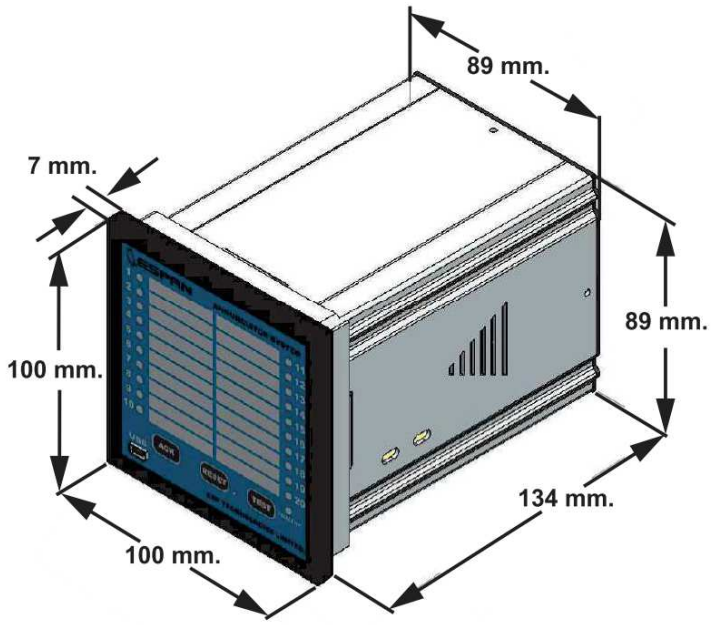
Output

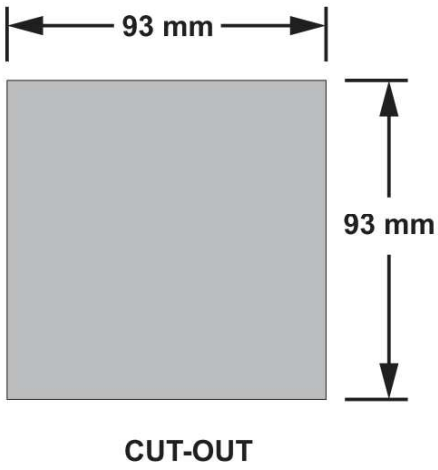
Audible alarm	: 2 N.O. contact (rating: 10A @ 28 Vdc or 10A @ 120 Vac)
Repeat relay module (option)	: 24 Vdc for input coil, 1 N.O. contact (rating: 10A@ 28 Vdc or 10A @120 Vac)
Response time	: 20 ms, nominal

Dimension

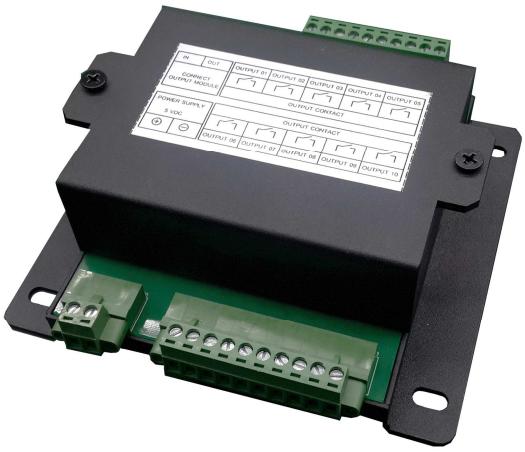
Overall	: ESPAN04 (100 L x 100W x 134D mm.)
	: Relay output Module (142 L x 125W x 50H mm.)
Cut-Out	: ESPAN04 (93 x 93 mm.)
Weight	: ESPAN04 (720 g.)
	: Relay output Module (560 g.)

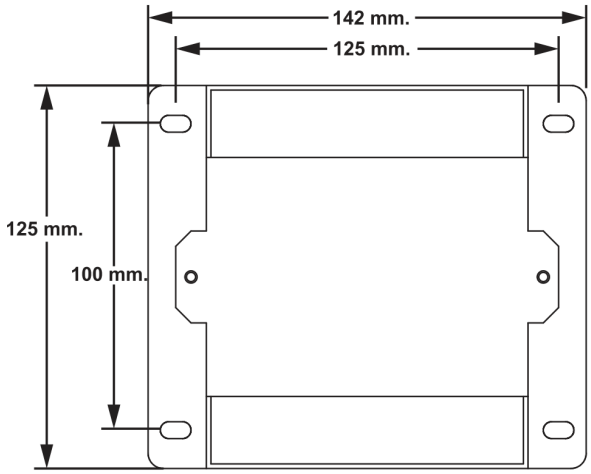
Dimension and Cut - Out





Relay Output Module





Operating Principle

When an alarm signal is occurred, it will initiate Bell/Buzzer to operate. In the meantime, it will produce output direct to the display LED, which makes LED flicking. After pressing an acknowledged push button, Bell or Buzzer is silenced but LED is steady on. If an alarm signal is return to normal status then the alarm is cancelled. However, the light of the indicating display LED will be sustained. Unless the reset push button switch is activated. Then the LED will be turn off and return to its initial condition. The “TEST” push button included two functions; The first function is “Lamp TEST” if push and hold this push button less than 3 seconds, it will light up all LED lamp at the front panel only. The second function is “Function Test” if push and hold this push button more than 3 seconds, the LED lamp will start flicking and Bell/Buzzer alarm. This “TEST” push button is provided for checking purpose of all LED and operating function at normal condition. While checking all LED and suddenly some of the alarm signals are occurred, the alarm sequence will be operated as usual without effect from the lamp test sequence. Alarm sequence can be selected by software for manual reset sequence or auto reset sequence, which described as below;

Alarm Sequence

Sequence : Manual Reset

Standard sequence : ANSI/ISA-S18.1-1981 (Annunciator sequences & specifications)

STANDARD	SIGNAL	NORMAL	ALERT	ACK BEFORE/AFTER RETURN TO NORMAL	RETURN TO NORMAL	RETURN TO NORMAL BEFORE ACK	RESET
M-1-2-14	VISUAL LAMP	OFF	FLASH	STEADY ON	STEADY ON	FLASH	OFF
	AUDIBLE SOUND	OFF	ON	OFF	OFF	ON	OFF

Manual reset occurs after acknowledged when the process condition has turned to normal and the reset push button is pressed.

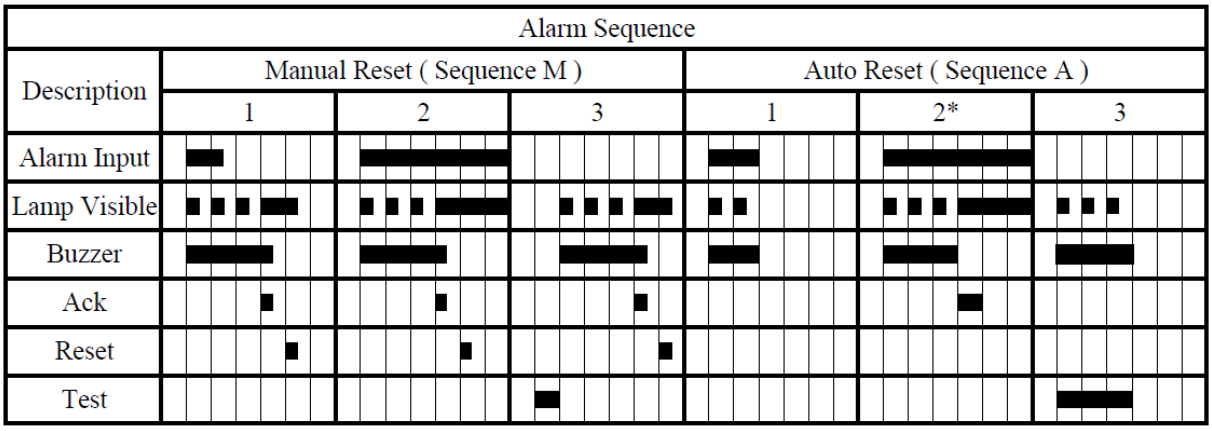
Sequence : Automatic Reset

Standard sequence : ANSI/ISA-S18.1-1981 (Annunciator sequences & specifications)

STANDARD	SIGNAL	NORMAL	ALERT	RETURN TO NORMAL BEFORE ACK	ACK BEFORE RETURN TO NORMAL 2*	RETURN TO NORMAL
A-1-2-14	VISUAL LAMP	OFF	FLASH	OFF	STEADY ON	OFF
	AUDIBLE SOUND	OFF	ON	OFF	OFF	OFF

Automatic reset occurs after acknowledged and the process condition has turned to normal.

Alarm Sequence Chart



- **Manual reset sequence**

  In this mode, the momentary fault inputs will be latched until acknowledgement and reset to clear. Alarm device is silenced , lamp stop flashing and steady on when acknowledged command.

  Manual reset of the alarm can be done only process conditions return to normal.

- **Auto reset sequence**

  In this mode, If alarm contact returns to normal before acknowledgement then the alarm function will immediately reset on acknowledge stage.

- **Input Indicator Function**

  This function is same as indicator lamp. When an alarm signel feed through an assigned input of annunciator, the LED display lamp of that design fault will lid or steady on . After alarm input returns to normal then the display lamp will automatic off.

How to connect the system

Terminal X1

Pin 1- 20 (F01 ~ F20) : Connect to fault input signal or filed contact.

Terminal X2

Pin 1 , 2 (Output SUP.) : The auxiliary contact outputs or repeat relays, normally used for alarm or remote status in case of no power supply or aux. supply fail.

Pin 3,4 / 5,6 (Buzzer/Bell) : User can connect Buzzer or Bell via primary power source.

Pin 8,9 (Supply) : Connect to + and – of aux. power supply.

Pin 10 (Alarm Com) : must be connected to common of fault input signal or filed contact.

Terminal X3

Pin 1 (TEST) : must be connected to the lamp test (LT) push button switch. which is N.O. contact and the opposite side of the P.B. switch must connect to COM.

Pin 2 (RES) : must be connected to the reset (RES) P.B. switch and do the same as TEST.

Pin 3 (ACK) : must be connected to the acknowledged (ACK) P.B. switch and do the same as TEST the purpose is to do horn stop.

Pin 4 (COM) : must be connected to common of P.B switch TEST, RES and ACK.

Terminal X4

Tx , Rx (Modbus RTU) : Connection for serial interface (RS485-Modbus/ASCII).

Terminal X5

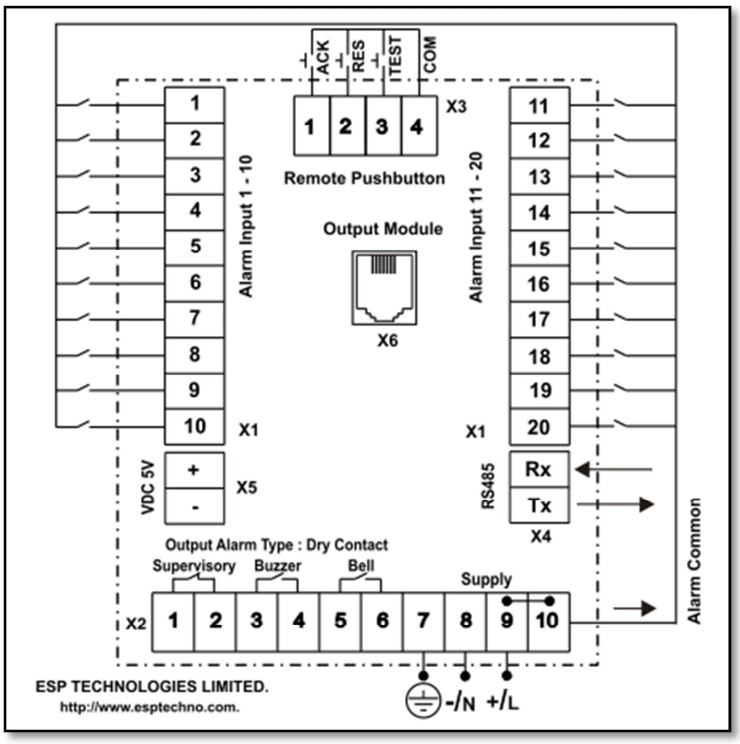
+ , - (5VDC) : Output power supply for relay output module.

Terminal X6

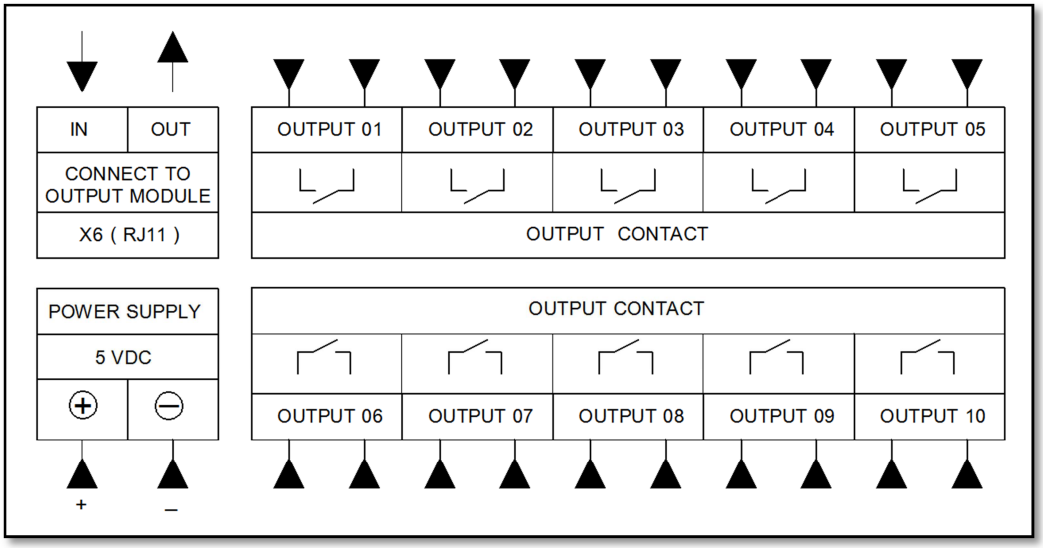
RJ11 (Relay output) : To connect with relay output module (Option) by RJ11 cable.

Circuit Wiring Diagram

Connection Diagram of ESPAN04



Connection Diagram of ESPAN04 Relay Output Module (OPTION)



How to Configured the ESPAN 04

USB Type A (Computer)

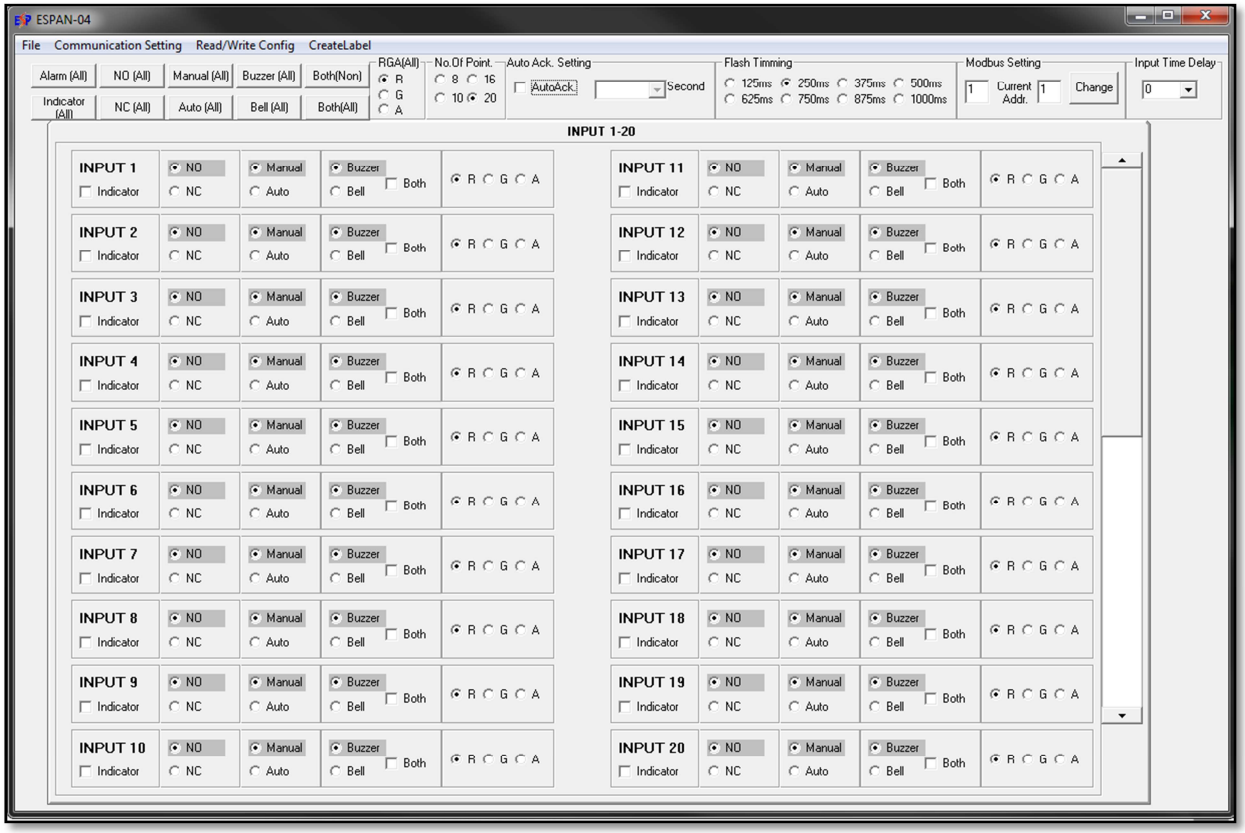
MINI USB Type B (Annunciator)

Software Configuration

1. After connect the notebook with the master module, then apply the configuration software of ESPAN-04 V1.6 , simply double click on setup icon as shown on the picture below then follow up the screen instruction until finish. .

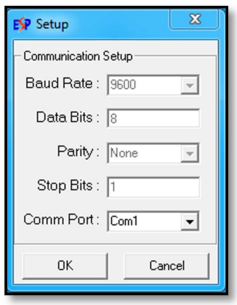
Note : The configuration software will be found in attached CD or may download from www.esptechno.com

2.Start the configuration software from start menu. The configuration window will display as following picture.



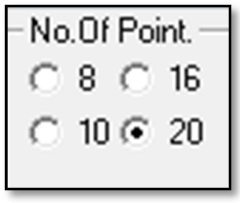
3.Communication Setup

First of all users have to choose which com port that connect to ESPAN-04. Select setup menu which locate on the top of configuration program. The setup window will display as picture shown as below .

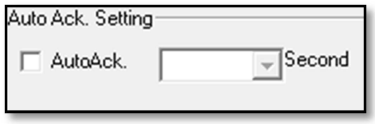


4.There are 9 parameters that can be configured by users

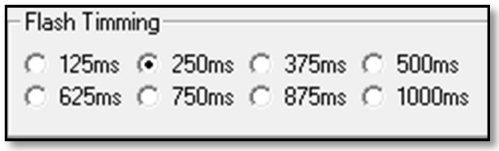
4.1 Number of Alarm Point ： Start from 8 ,10 ,16, 20 alarms



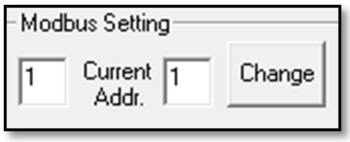
4.2 Auto Acknowledge : User can choose auto acknowledge function if required , afterward select a delay time that can be set between 1-240 seconds.



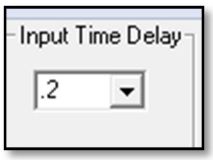
4.3 Lamp Flashing Rate : The flashing rate can be specified or choosen from the flash timing of configuration window. The range of flashing rate starting from 125ms to 1000ms (125 ms. per step).



4.4 Modbus Setting : User can choose address or change address of the master module as required.



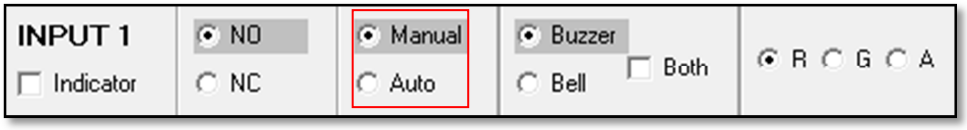
4.5 Input Time Delay : User can choose input time delay which start from 0.2 , 0.4 , 0.6 , 0.8 , 1.0 , 1.2 , 1.4 , 1.6 , 1.8 , 2.0 , 2.2 , 2.4 Sec.



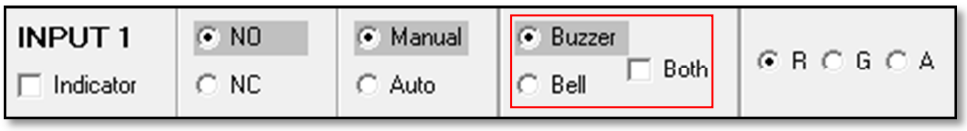
4.6 Input Indicator : User can select indicator function in case of some requirement

4.7 Alarm Control Type : User can choose fault input type which shall be dry contact only such as NO (Normally Open) or NC (Normally Close) contact.

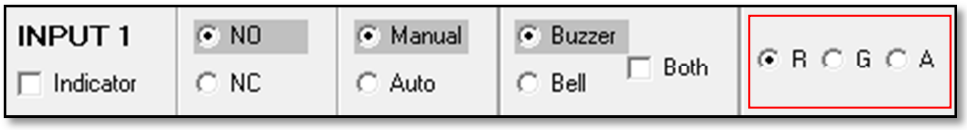
4.8 Alarm Sequences : There are two sequences, the first sequence is manual reset and the second is auto reset. Detail of each sequence is explained in operation section of this manual.



4.9 Audible Alarm Type : There are three choices which can be selected. (which are bell or buzzer or both)



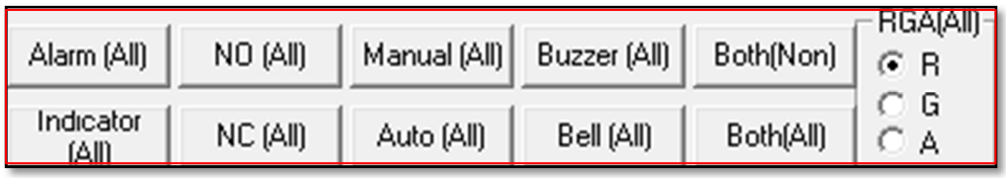
4.10 LED Color Type : User can select color of LED indicator such as Red , Green , Amber.



Note : All Parameters can be configured independently, input by input except for flashing rate which has to be changed for all input.

5. Shortcut Menu

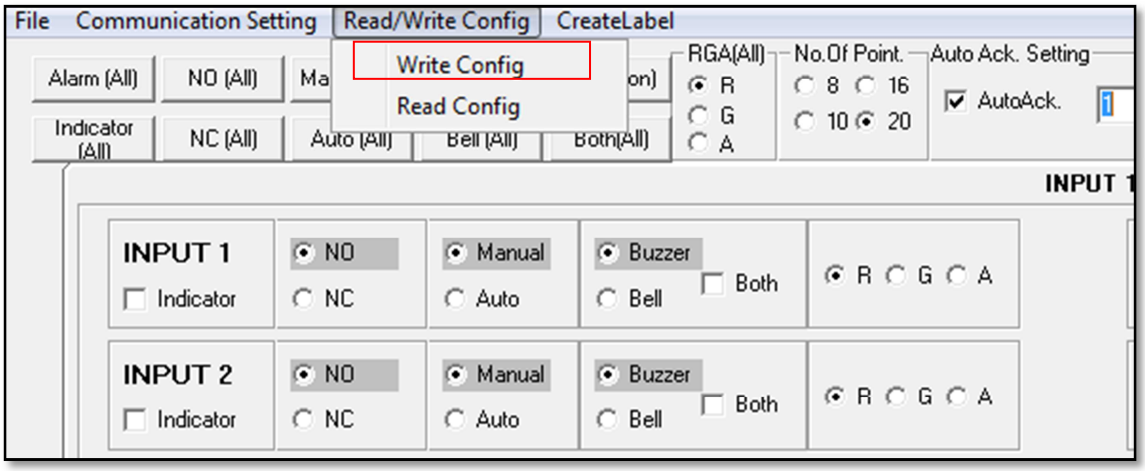
To select the same function. User can simply choose the shortcut menu witch locate in the middle of the configuration window as shown as below.



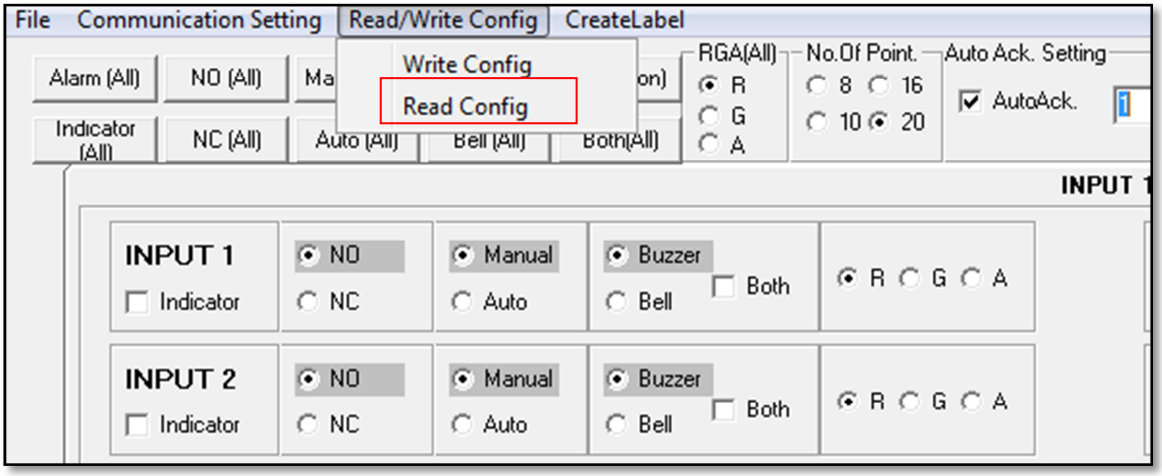
For example press on “NO (ALL)” button, when all input is connected to normally open contact.

6.Read and Write configuration

6.1 After all input have been configured, to write the configuration of all parameter of ESPAN-04, press WriteConfig button witch locate at the top right hand of the configuration window as shown as below picture.

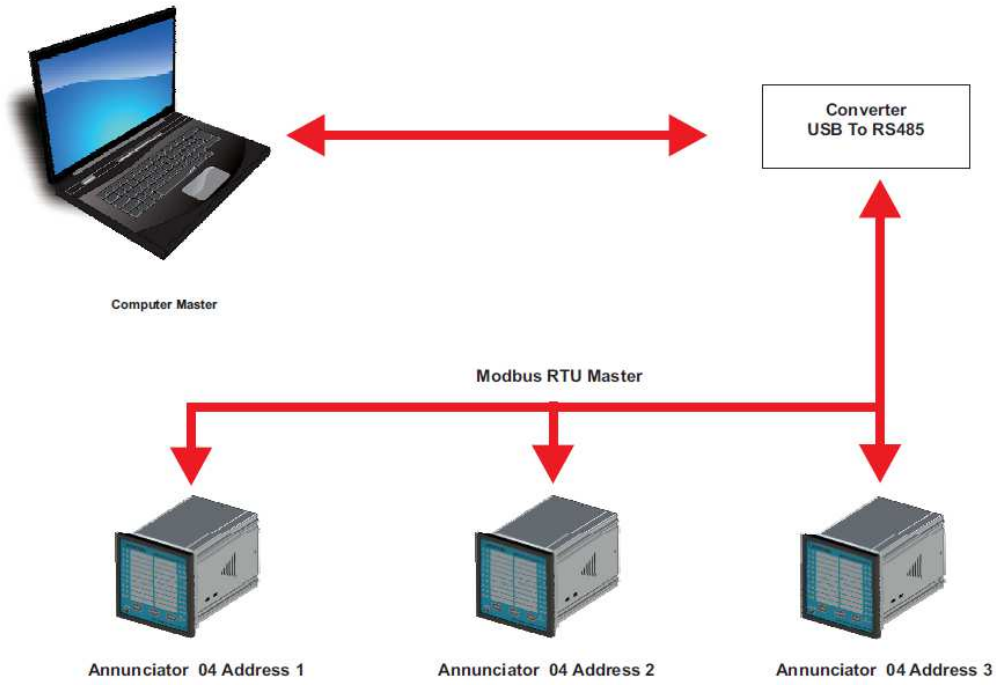


6.2 The program allow user to read configuration in the same way as write configuration. Press ReadConfig button then all configured parameters will show on the screen as shown as below picture.

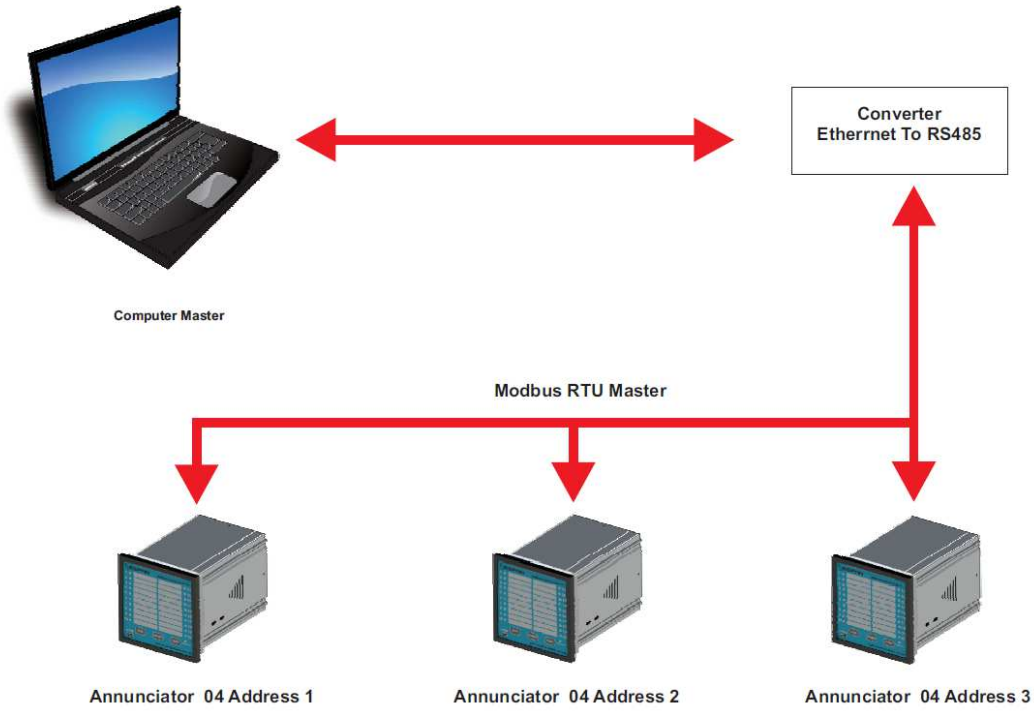


Configuration System for Serial Interface

Modbus RTU



TCP/IP



Procedure for factory repairing and returning

A. Prepare a Return Material Authorization Form (available from ESPAN or its local representative) with the following information:

- Model and Serial Number of the equipment.
- Specify Failure Symptom
- Operating Environment (indoor, outdoor, temperature, vibration, etc.)
- Approximate date of installation or number of operating hours.
- Name and telephone number of contact person if questions arise.

B. Enclose the information with the equipment and pack in a commercially accepted shipping container with sufficient packing material to ensure that no shipping damage will occur.

Ship to the appropriate location as below

Attention:
Service Department
ESP Technologies Company Limited
76/82 Changwattana Rd., Anusawari,
Bangkhen, Bangkok 10220, Thailand

Telephone: +66(0)25226245~7
Fax: +66(0)25226248

C. Your equipments will be tested, repaired and inspected at the factory and return within ten days (exclude shipping back period).

D. In case of urgent service needs or repairing status enquiry, please contact the appropriate Service Department or your local ESPAN representative.

WARRANTY:

- **ESP Technologies Ltd. warrants equipment of its own manufacture to be free from defects in material and workmanship, under normal conditions of use and service.**
- **ESP Technologies Ltd. will replace any components found to be defective, upon its return, transportation charges prepaid, within one year of its original purchase.**
- **ESP Technologies Ltd. will extend the same warranty protection on accessories, which is extended or implied, beyond its obligation to replace any components involved. Such warranty is in lieu of all other warranties expressed or implied.**