ISP-8 ANNUNCIATOR INSTRUMENTS

USER MANUAL

ISP Alarm Annunciator

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----------NOTICE----------

Read this manual thoroughly before using ISP-8, and store in a safe place for reference.

Make sure that this manual is delivered to the final user.

The policy of Telepro Enerji is one of continuous improvement.

The right is reserved to alter the design on any structural details of the products at any time without giving notice.

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PREFACE

Please read this manual thoroughly before use, and keep the manual at hand for later reference. Also make sure that this manual is delivered to the final users**.**

!! WARNING !!

ALWAYS READ THIS MANUAL THOROUGHLY BEFORE USING ISP-8 ANNUNCIATORS.

THIS DEVICE CONTAINS HIGH VOLTAGE CIRCUITS THAT MAY BE FATAL TO HUMANS . USE EXTREME CAUTION DURING INSTALLATION. MAINTENANCE MUST BE PERFORMED BY QUALIFIED TECHNICIANS AND ALL POWER SOURCES MUST BE DISCONNECTED BEFORE ANY MAINTENANCE. SUFFICIENT NOTICE MUST BE GIVEN TO THE GENERAL OPERATORS AND WORKERS BEFORE STARTING.

- **ELECTRIC SHOCK MAY OCCUR IF THE FOLLOWING POINTS ARE NOT OBSERVED**
  - DO NOT OPEN THE BACK COVER PLATE

- **THE ANNUNCIATOR MAY BE DESTROYED IF THE FOLLOWING POINTS ARE NOT OBSERVED**
  - OBSERVE THE UNIT SPECIFICATIONS.
  - CONNECT ADEQUATE CABLES TO THE INPUT/OUTPUT TERMINALS.
  - ALWAYS KEEP THE UNIT I/O TERMINALS CLEAN.
  - DO NOT USE WATER OR ORGANIC SOLVENTS WHILE CLEANING THE UNIT. JUST USE DRY CLOTH
  - ALWAYS OBSERVE THE CAUTIONS LISTED IN THIS INSTUCTION MANUAL .

PRECAUTIONS FOR SAFETY

Items to be observed to prevent physical damage and to ensure safe use of this product are noted in this instruction manual.

The safety of any system available with the device, is the responsibility of person establishing the system!
The device, when used in a manner not specified by the Company, the protection provided by equipment may be impaired.The manufacturer is not responsible for the consequences ifthese conditions are not taken into account.

Safety precautions in the manual is considered to be as ***!! DANGER !!***and ***!! WARNING !!***
!! DANGER !! : WHEN A DANGEROUS SITUATION MAY OCCURIF HANDLING IS MISTAKEN LEADING FATAL OR MAJOR INJURIES, !! WARNING !! : WHEN A DANGEROUS SITUATION MAY OCCUR IF HANDLING IS MISTAKEN LEADING TO PHYSICAL DAMAGE, DEVICE PERFORMANCE DETERIORATION.

!! WARNING !!:PLEASE READ THIS MANUAL CAREFULLY BEFORE PERFORMING ANY OF THE PROCEDURES CONTAINED HEREIN. FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT SEVERE INJURY.
!! DANGER !!:HAVE A QUALIFIED ELECTRICAL MAINTENANCE TECHNICIAN INSTALL, ADJUST AND SERVICE THIS EQUIPMENT. FOLLOW THE NATIONAL ELECTRICAL CODE AND ALL OTHER APPLICABLE ELECTRICAL AND SAFETY CODES, INCLUDING THE PROVISIONS OF THE OCCUPATIONAL SAFETY AND HEALTH, WHEN INSTALLING EQUIPMENT.
!! DANGER !!: REDUCE THE CHANCE OF AN ELECTRICAL FIRE, SHOCK, OR EXPLOSION BY PROPER GROUNDING, OVER-CURRENT PROTECTION, THERMAL PROTECTION, AND ENCLOSURE. FOLLOW SOUND MAINTENANCE PROCEDURES.
!! DANGER !! : CIRCUIT POTENTIALS CAN BE MAX 220VDC . AVOID DIRECT CONTACT WITH THE PRINTED CIRCUIT BOARD OR WITH CIRCUIT ELEMENTS TO PREVENT THE RISK OF SERIOUS INJURY OR FATALITY.
!! WARNING !!: DO NOT OPEN THE DEVICE. THERE ARE NOT ANY CONSUMABLE COMPONENTS INSIDE IT.
!! WARNING !!: DEVICE SHOULD BE KEPT AWAY FROM HUMIDITY, WET, VIBRATION AND DUSTY ENVIRONMENT.
!! WARNING !!: DEVICE SHOULD BE STARTED ONLY IF ALL CONNECTIONS ARE DONE.

1. General Overview of the Device

In industrial process control, an annunciator panel is a system to alert operators of alarm conditions in the plant. Windows are provided, each engraved with the name of a process alarm. LED of each window are controlled by hard-wired switches in the plant, arranged to operate when a process condition enters an abnormal state.

In one common alarm sequence, the LED near the window will flash, internal buzzer will sound and a bell or horn relay output will be activated so as to external device to sound to attract the operator's attention when the alarm condition is detected. The operator can silence the alarm with a button, and the LED will remain lit as long as the process is in the alarm state. When the alarm clears (process condition returns to normal), the LED goes out.

Behavior of alarm systems, and colors used to indicate alarms, are standardized. Standards such as ISA 18.1 simplify purchase of systems and training of operators by giving standard alarm sequences

2.Features & Benefits

- The ISP-8 alarm annunciators that functional, flexible and reliable device are designed to fulfill all the requirements of Alarm condiditons.
- Horn or Bell output selection can be easily configurable with pushbuttons for each channels.
- Each ISP-8 annunciator is equipped with low power, long life LEDs. Each alarm point uses LEDs providing illumination in all light conditions Horn/Bell selections and other status.

- High Interference Immunity. All alarm inputs are provided with fully isolated inputs using optical couplers and a transient hardware and software filters.
- Common Outputs As standard, each unit is fitted with three common relays:
  Critical Audible Relay (HORN), Non-Critical Audible Relay (BELL), Fault Relay
- Integrated audible alarm,
- Changeable Printed Legends, can be printed out from any printer.
- Low Cost / Compact Design
- There are "software programmable" response – release time which provide flexible and safe performance for protection against induced magnetic fields resulted from maneuvers i.e CB opening/closing especially.With the help of ISPSİM^{TM} software;Response and release time are independently set between 3msec and 250msec. Response time is set to 5msec, release time is set to 20msec by default
- TELEPRO-ISP-8, is provided in case configuration, with panel type. Mechanical protection of our standard case is of IP51 from the front face. With user friendly screwed mounting system, it can be fast and safely mounted / dismantled

3. CONNECTIONS

All connections are made on the rear of the unit using two-part quick disconnect plug in terminals accepting up to 12 AWG (2.5mm2) wires.

!! DANGER !! :POWER SUPPLY CONNECTION WITH THE UNIT MUST BE DISCONNECTED COMPLETELY BEFORE ALL MAINTENANCE, REPAIR AND INSTALLATION OPERATIONS.

!! DANGER !!:WIRING MUST ALWAYS BE DONE BY A QUALIFIED ELECTRICIAN.

!! DANGER !!:ALWAYS INSTALL THE DEVICE BEFORE STARTING WIRING

3.1. "K" TERMINALS (POWER INPUT AND RELAY OUTPUTS)

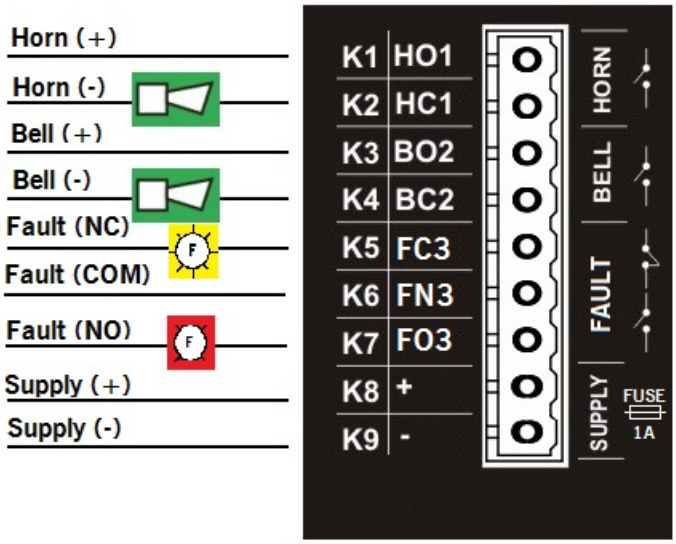


Figure 1-"K "Terminal layouts

!! DANGER !!:DURING ALL TERMINAL CONNECTION / DISCONNECTION, POWER SUPPLY CONNECTION MUST BE DISCONNECTED.FAILURE TO DO SO COULD LEAD TO ELECTRICAL SHOCKS OR FIRES.

!! DANGER !!:PAY ENOUGH ATTENTION TO THE SUPPLY TERMINALS POLARITY.

3.2. WIRING SCHEME

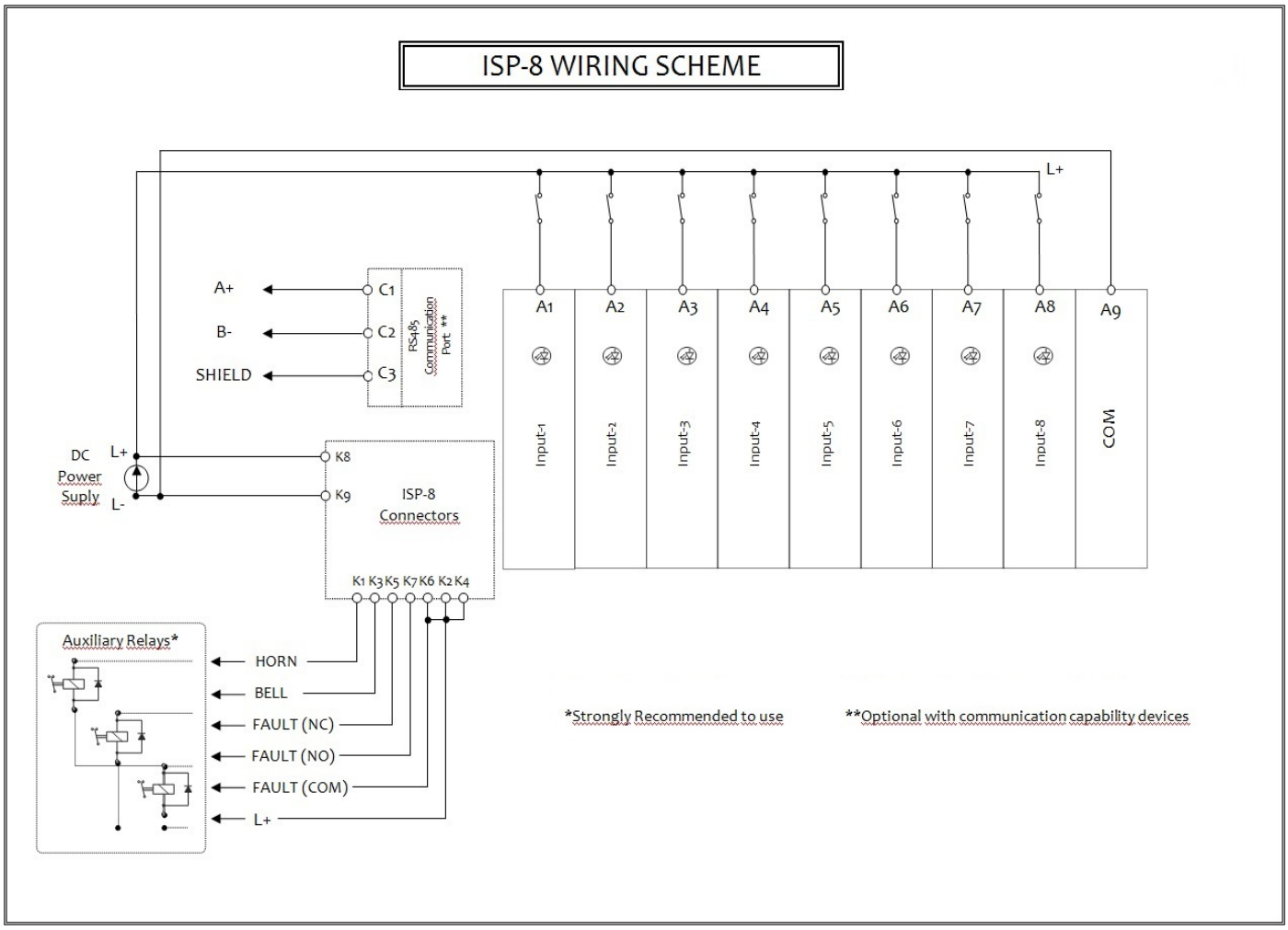


Figure 2-ISP-8 Wiring Scheme

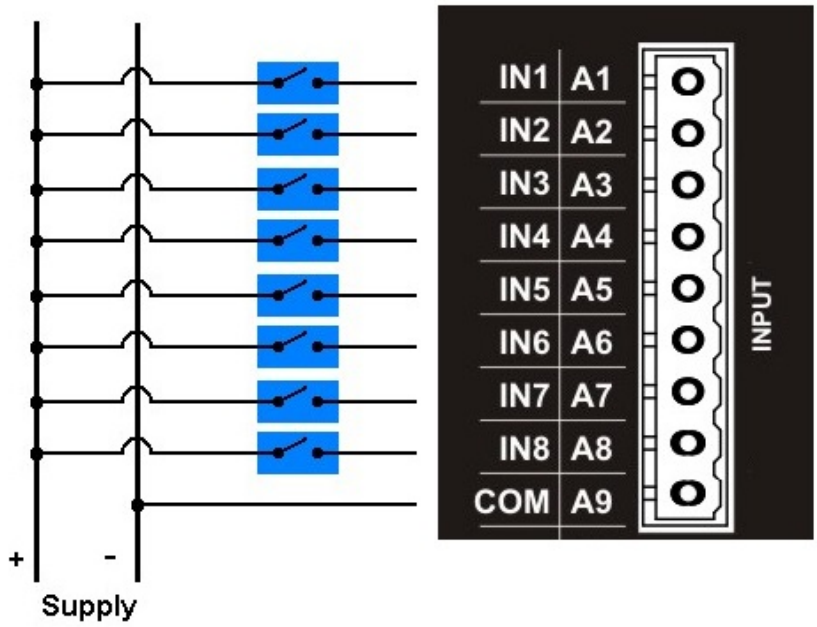


Figure 3- Terminal block sample connection

3.3. "C" TERMINALS (RS485 COMMUNICATION PORT)

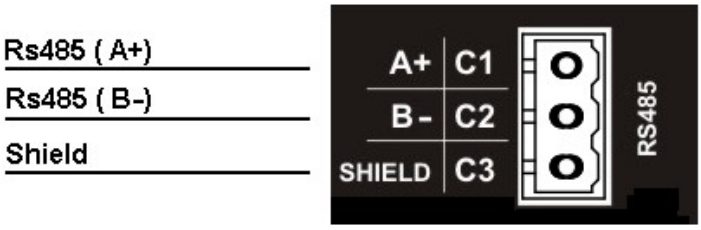


Figure 4

(Required 250ohm termination resistor for master and slave ports, both side of Rs485 comm. line)

!! WARNING !!: ***RS485 COMMUNICATION CABLE MUST BE SCREENED AND SCREENS MUST BE CONNECTED TO GROUND AT ONE END***

4. CONFIGURE RELAY OUTPUTS (HORN OR BELL) FOR ALL CHANNELS (MINI CONFIG MODE)

I- UnPlug "**A**" terminal,

II- Plug in "**K**" terminal (Supply and relay output)

III- After Pluged "**K**" ternimal, ISP-8 runs startup self test procedure

IV- Selft test steps are as follows;

IV-a- In the first step, all leds are solid red

IV-b- In the second step, all leds are solid green

IV-c- In the third step, Input channel leds turn off ,

IV-d- Internal buzzer turns on

V- Press Test Button firstly (all input channel leds are solid and buzzer turns on)

VI- In order to enter config mode; Press "Test Button" 

and "Horn Button" 

together for 3 Sec.

VII- After 3 secs later

VII-a- First input channel led blinks in 4Hz

VII-b- Other input channels leds are off

VII-c- **"Horn/Silent"** led turns off and **"Safe/Fail"** led blinks green in 4Hz

VIII- Press Horn Button 

to setup alarm output type (Horn or Bell) for input channel 1 while this led blinks in this step. When pressing "Horn Button",colour of channel 1 led changes to blinking other colour. (Blinking Red means Horn Output / Blinking green means Bell Output)

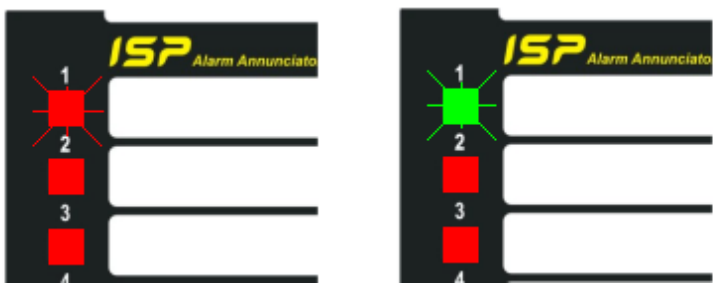


Figure 5

IX- Press Test Button 

to skip to the next input channel. When pressing "test button", next channel led blinks.

X- Press Ack Button 

to save input channel settings or Press "Reset Button" 

to cancel configuration settings. When pressing "Ack Button", ISP-8 saves your configuration and restarts up itself.

!! WARNING !!: IF ANY BUTTON IS NOT PRESSED FOR 60 SEC IN CONFIG MODE, THEN ISP-8 RETURNS TO THE LATEST WORKING PROCESS MODE.

Another configuration method is using ISPsim software tool by connecting via RS485 port.You can download ISPsim software from our web site.By following each step explained in ISPsim user manual, you can easiliy configure each channel and change alarm sequence steps or functions from the defaults.

5. Tag Labeling and Front Panel Installation

Window for each channel can be named with label template supplied by Telepro. In order to do tag labeling, please follow the order explained in below pictures1,2,3.Whenever requested, labels can be easily changed later.

Picture1-Gently hold and unlock front panel frame at one side as shown

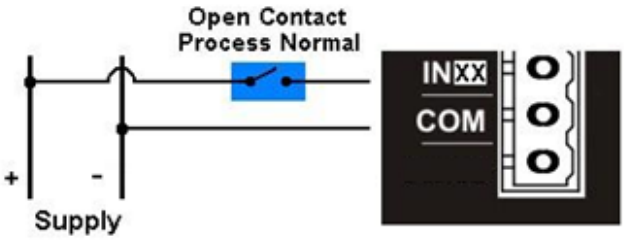
Picture2-Remove front panel frame from the unit

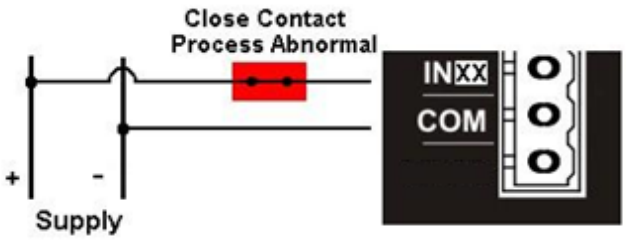
Picture3-Insert tag label into slots as seen below

Before installing the ISP-8 to the Panel,please remove 2pcs of panel mounting sleeves.Then plug-in the unit to the hole on the panel. Fix it to the panel wall with two sides by using 2pcs of panel mounting sleeves provided.And then start wiring according to the scheme provided.

6. Output Relay and Led Status

6.1. Alarm States and Relay Outputs





Example

	1 – Set the first channel to Bell Output (Green Indication), 2 – Set the second channel to Horn Output (Red Indication), 3 – Press Ack Button and save the configuration and exit, 4 – Return to regular working mode.

For Channel 1

	Initial Test	***Test Fail***	***Process Normal***	***Process Abnormal***
Horn / Bell Relay	Open / Open	Open / Open	Open / Open	Open / Closed
Fault Relay (NO/NC)	Open /closed	Closed/Open	Open /closed	Open /closed
Channel 1 Led	Solid Green	Off	Off	Blinking Green 4Hz
Horn / Silent Led	SolidRed/Green	Off	Solid Green	Solid Green
Safe / Fail Led	Blinking White/ Solid Green	Blink Red	Solid Green	Solid Green

For Channel 2

	Initial Test	***Test Fail***	***Process Normal***	***Process Abnormal***
Horn / Bell Relay	Open / Open	Open / Open	Open / Open	Open / Closed
Fault Relay (NO/NC)	Open /closed	Closed/Open	Open /closed	Open /closed
Channel 2 Led	Solid Red	Off	Off	Blinking Red 4Hz
Horn / Silent Led	SolidRed/Green	Off	Solid Green	Solid Green
Safe / Fail Led	Blinking White/ Solid Green	Blinking Red	Solid Green	Solid Green

6.2. HORN / SILENT LED STATUS

I- Green Blink

Condition: Unacknowledged Abnormal Process.

Result:

- ⇨ *Horn / Bell Relays are Turned On*
- ⇨ *Horn or Bell Relay Outputs or both of them are (**CLOSED**)Active*

II- Red Blink

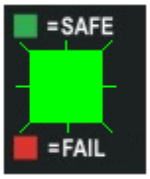
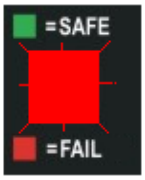
Condition: Unacknowledged Abnormal Process.

Result:

- ⇨ *Horn / Bell Relays are Turned Off*
- ⇨ *H/B Relay Outputs are (**OPEN**)Passive*

III- Green Solid  *Condition: Normal Process/ Acknowledged abnormal proces.* *Result:* ⇨ *Horn / Bell Relays are Tuned Off* ⇨ *H/B Relay Outputs are (**OPEN**)Passive*	**IV- Red Solid**  *Condition: Normal Proces /Acknowledged abnormal proces in silent Mode.* *Result:* ⇨ *Horn / Bell Relays are Tuned Off* ⇨ *H/B Relay Outputs are (**OPEN**)Passive*
V- Led Turned Off  *Relay Outputs in Configuration Mode*	

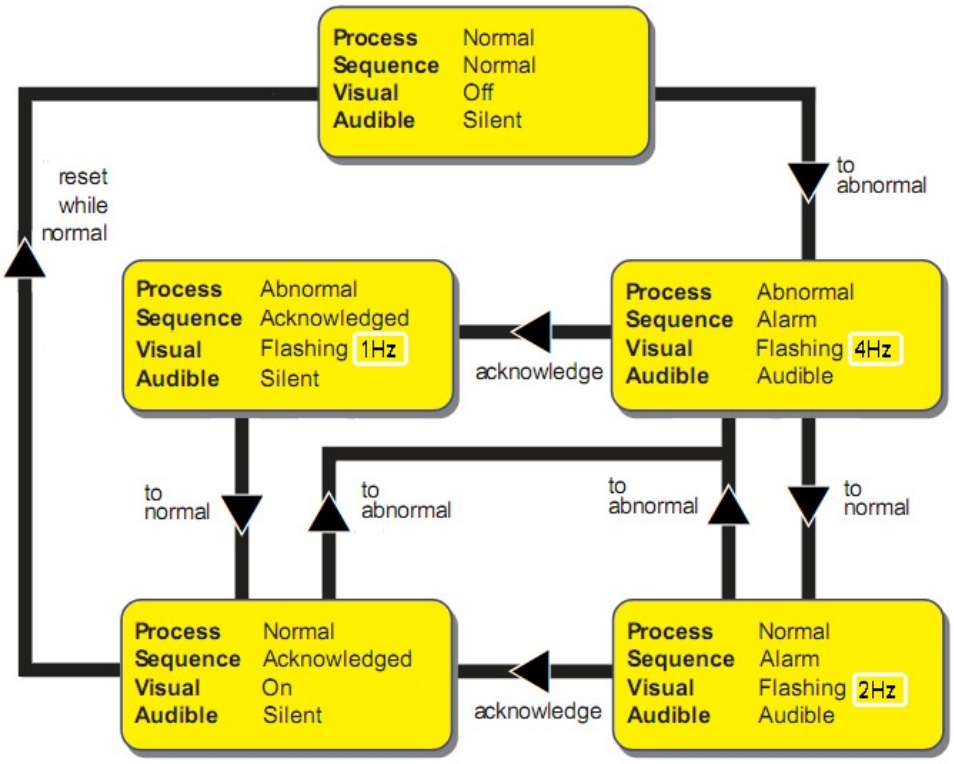
6.3. SAFE / FAIL LED STATUS

I- Green Blink  *Condition: Manuel configuration mode via push-button settings*	**II- Red Blink**  *Condition: Unconfigured / Initial Test Fail,*
III- Green Solid  *Condition: **In Regular Process Mode*** *Initial test procedures – **PASS***	**IV- Red Solid**  *Condition: **In Regular Process Mode*** *Relay outputs configuration mode via RS485 Communication (while writing config to ISP)*
V- Led Turned Off  *No Power or Hardware Failure*	

6.4. INPUT CHANNELS LED STATUS

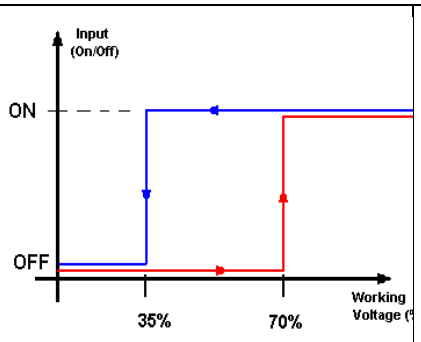
<table>
<tr>
<td>I – Solid Green
 
Acknowledged Alarm,
Process :Normal
Horn/Bell Relays :Open / Open</td>
<td>II – Solid Red
 
Acknowledged Alarm,
Process :Normal
Horn/Bell Relays :Open / Open</td>
</tr>
<tr>
<td>III – Blink Green (4Hz)
 
UnAcknowledged Alarm
Process :Abnormal
Horn/Bell Relays :Open / Closed</td>
<td>IV – Blink Red (4Hz)
 
UnAcknowledged Alarm
Process :Abnormal
Horn/Bell Relays :Closed / Open</td>
</tr>
<tr>
<td>V – Blink Green (2Hz)
 
UnAcknowledged Alarm
Process :Normal
Horn/Bell Relays :Open / Closed</td>
<td>VI – Blink Red (2Hz)
 
UnAcknowledged Alarm
Process :Normal
Horn/Bell Relays :Closed / open</td>
</tr>
<tr>
<td>VII – Blink Green (1Hz)
 
Acknowledged Alarm
Process :Abnormal
Horn/Bell Relays :Open / Open</td>
<td>VIII – Blink Red (1Hz)
 
Acknowledged Alarm
Process :Abnormal
Horn/Bell Relays :Open / Open</td>
</tr>
<tr>
<td colspan="2">IX – Leds are off
 
There is no alarm
Cleared all alarms with Reset Button After the acknowledged all alarms.</td>
</tr>
</table>

7. Alarm Sequence (Modified - ISA-S18.1 Code-M (Manual Reset))



They are set to Code M "manual reset" by factory default but you can change alarm sequence according to requirements of the application via RS485 port by using ISPsim software tool.

8. Technical Specification

INPUTS		
Input Types	Optocoupled, MOV Protected, Transient Filters,sharing common return	
Input current	Per input channel max: 5 mA	
Input Resistance (min)	20 kΩ for 24/48Vdc; 75... 200 kΩ for 110/220Vdc	
Input On/Off Voltages		
Surge Withstand Transient to IEC 255.4 1.2/50mS	Common Mode: 1kV	Series Mode: 2kV
Response Time	Progamble 3-250ms / Default : 5ms	
Release Time	Progamble 3-250ms / Default : 20ms	

OUTPUTS

Visual	2colour (Red-Green) LED Alarms and other status
Audible	Integrated 23mm Buzzer
Horn / Bell / Fault Relays	Integrated 2pcs of FormA Relays (NO) for H/B indication and 1pc of FormC (NO/NC) for system internal fault.
Contact Ratings	1 A @48Vdc / 0.2 A @250Vdc

POWER REQUIREMENTS

Supply Voltage	24/48Vdc (18-60Vdc); 110/220Vdc (88-242Vdc)
Supply Power	5W

!! WARNING !!:

REINFORCED INSULATION: SHOWS THAT THERE IS NO NEED TO GROUND THE DEVICE BOX.

USER INTERFACE

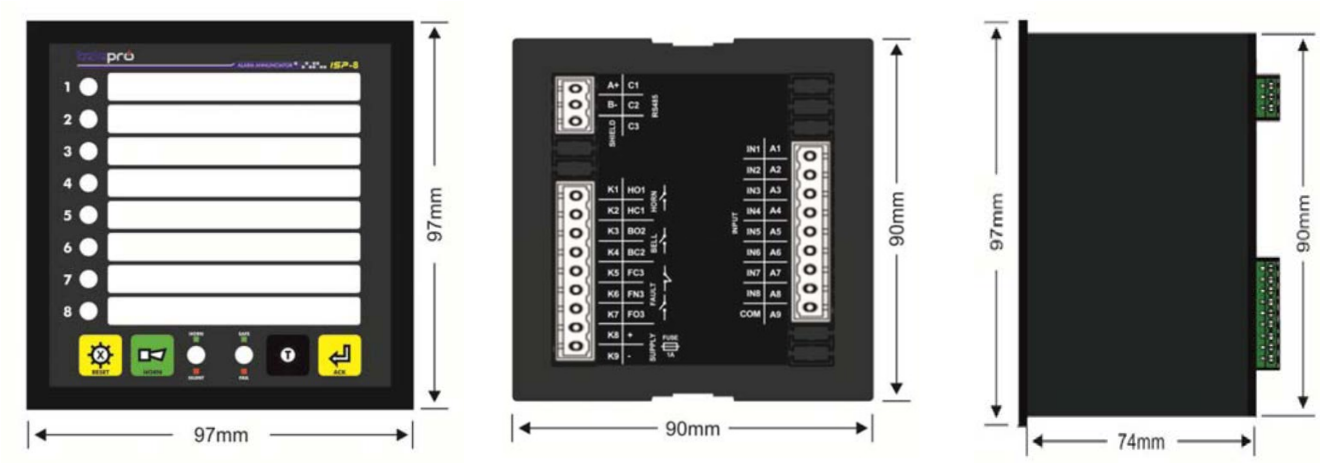
Pushbuttons	Test - 	Horn - 
	Ack - 	Reset - 
Labeling	Changeable Printed Legends,	
Terminals	Screw-type removable terminals. Maximum wire size: 12 AWG (2.5 mm)	

ENVIRONMENTAL SPECIFICATION

Operating Temperature	-20°C to +55° C
Storage Temperature	-25°C to +80° C
Humidity	0-95% RH, non condensing

Case	Flush Panel mounting: 96x96x75mm
Protection from the front face	IP51

MECHANICAL DIMENSIONS



ISP-8-outline dimensions

MODBUS ADRESS MAPPING

Isp-8 Modbus Register Maps

Communication Parameters:

19200/ 8/ n/ 1 ➔baud rate:19200 / bit :8 / parity bit:no / stop bit :1

Requires at least 3ms between answers and query.

Basic Registers:

Adress (Hex)	Read/ Write	Section	Range	Description
0x0001	R	Bit 0..7	6	Firmware Version
		Bit 8..15	0x58	Firmware Model Id = Isp508
0x0002	R	Bit 0..7	1	Boot (Hardware) Version
		Bit 8..15	0x58	Boot (Hardware) Model Id = Isp508
0x000F	W	Bit 0..15	0x0001	Channel 1 Toggle Simulation "dec=1"
			0x0002	Channel 2 Toggle Simulation "dec=2"
			...	...
			0x0008	Channel 8 Toggle Simulation "dec=8"
			...	...
			0x0081	Reset Key Press Simulation "dec=129" (single shot)
			0x0082	Horn Key Toggle Simulation "dec=130" (toggle)
			0x0083	Test Key Press Simulation "dec=131" (press)
			0x0084	Acknowledge Key Press Simulation "dec=132" (single shot)
			0x0085	Test Key De-press Simulation "dec=133"(release)

Signal Status Registers:

0x0033	R	Bit 0	0/1	1= Config Eeprom Contents Valid	
		Bit 1		1= Configuration Updated since last power cycle	
		Bit 2		1= Front Panel Configuration Mode Pending	
		Bit 3		1= Test Mode Pending	
		Bit 4		1= Horn Enabled, 0=Horn Disabled	
		Bit 8		1= Output #1 Active (horn)	
		Bit 9		1= Output #2 Active (bell)	
		Bit 11		1= Output #3 (fault)	
0x0034	R	Bit 0	0/1	Input #1	Input States
		Bit 1		Input #2	0=Normal,
		...		...	1=Abnormal
		Bit 7		Input #8	
0x0035	R	Bit 0	0/1	Input #1	Activity Register States
		Bit 1		Input #2	0=Inactive,
		...		...	1=Active
		Bit 7		Input #8	(Indicating not yet Acked by User)
0x0036	R	Bit 0	0/1	Input #1	Holding Register States
		Bit 1		Input #2	0=Normal,1=Holding
		...		...	(Indicating already Acked but
		Bit 7		Input #8	Abnormal)

ISA18.1 Configuration Dependant Registers:

Adress (Hex)	Read/Write	Section	Range	Description	
0x0038	R	Bit 0	**0/1**	Input #1	First Alarm Indication States
		Bit 1		Input #2	0=Normal,
		...		...	1=Alarm
		Bit 7		Input #8	
0x0039	R	Bit 0	0/1	Input #1	Momentary Indication States
		Bit 1		Input #2	0=Normal,
		...		...	1=Momentary
		Bit 7		Input #8	
0x003A	R	Bit 0	0/1	Input #1	Acknowledged Indication States
		Bit 1		Input #2	0=Normal,
		...		...	1=Acknowledged
		Bit 7		Input #8	
0x003B	R	Bit 0	0/1	Input #1	Ringback Indication States
		Bit 1		Input #2	0=Normal,
		...		...	1=Ringback
		Bit 7		Input #8	
0x003C	R	Bit 0	0/1	Input #1	Red Color Indication States
		Bit 1		Input #2	0=Normal,
		...		...	1=Red
		Bit 7		Input #8	

0x003D	R	Bit 0	0/1	Input #1	Green Color Indication States
		Bit 1		Input #2	0=Normal,
		...		...	1=Green
		Bit 7		Input #8	

MODEL DESCRIPTION – ORDER CODE

Model	Code	Explanation
ISP-8	ISP-8-NX-DC XX	8Channel inputs &2outputs, No Communication
ISP-8	ISP-8-SX-DC XX	8Channel inputs &2outputs, ModbusRTU communication
ISP-8	ISP-8-MX-DC XX	32Channel inputs &2outputs, ModbusRTU, Event recorder

XX: Represents supply voltage (24/48Vdc, 110/220Vdc)

9. MAINTENANCE AND INSPECTION

The causes and countermeasuresfor errors are shown in Table-1.

Table-1 Troubleshooting

Phenomenon	Causes and countermeasures
Safe/Fail LED and Horn/Silent LED are OFF	1. Hardware failure. Send the unit to telepro 2.Power is OFF 3.MCB is OFF. Change MCB If necessary.
Corresponding LED is not lit eventhough it's channel is connected to +Vdc (i.e switch in the field is closed).The abnormal condition is present.	1.Check If (+Vdc) is not going to the field. Or Check "com"(-Vdc) connection. 2.Check If its input terminal block screw istightened or loose. 3.Measure the channel input voltage with respect to COM with a multimeter.If it is inside the normal limits, the device is broken.Then send the unit to Telepro
All channels are ON without giving inputs signals	HW failure. Send the unit to Telepro
More than one channels are ON while one input is given.	HW failure. Send the unit to Telepro
Horn or Bell relay does not give output when input channel(s) is ON	1.Check the Horn/Silen LED If it is red. 2.Check ISA18.1 configuration with ISPsim software If the channels are not set to any of relay type. 3.If none of them, it is HW failure. Send the unit to Telepro
Fault relay is not activated while entering manual config mode	SW failure. Send the unit Telepro

INSPECTION IN THE FIELD

ITEM	INSPECTION
Package contents	Check If there is any missing content in the product package
ISP-8 appearance	Check If there is any sign of shock/damage on the front or any part of the unit when receiving product and after taking it from the box. ***!!NOTE!! :IF THERE IS ANY NOTICEABLE PHYSICAL DAMAGE , OR ANY CONTENT ARE MISSING, PLEASE CONTACT TELEPRO IMMEDIATELY.*** Check terminal connection of the unit If there is dirt and dust, and clean If necessary, after installing the product in the panel. ***!!WARNING!!: DO NOT USE WATER OR ORGANIC SOLVENTS WHILE CLEANING THE UNIT. JUST USE DRY CLOTH***
ISP-8 nameplate	View the rare nameplate and verify that the correct model has been ordered.

Terminal block	Tighten the terminal blocks and their screws if loose after installing the product in the panel.
Temperature/ Humudity	Ensure that temperature and humidity of the environment are inside the limits indicated in the technical specifications. If necessary, measure them.
Supply Voltage	Ensure that supply voltage is inside the limits indicated in the technical specifications. If necessary, measure them.
Indicator	Confirm that LEDs on the front face properly light and H/B relays properly output as follows; 1)First energise the unit and check If fail/safe LED and horn/silent LED are ON. 2)Push test button to check that all channel LEDs and H/B relay outputs are ON 3)Push Horn button to check If corresponding LED turns to red and H/B relays become passive

10. APPENDIX-1 USER MANUAL REVISION HISTORY

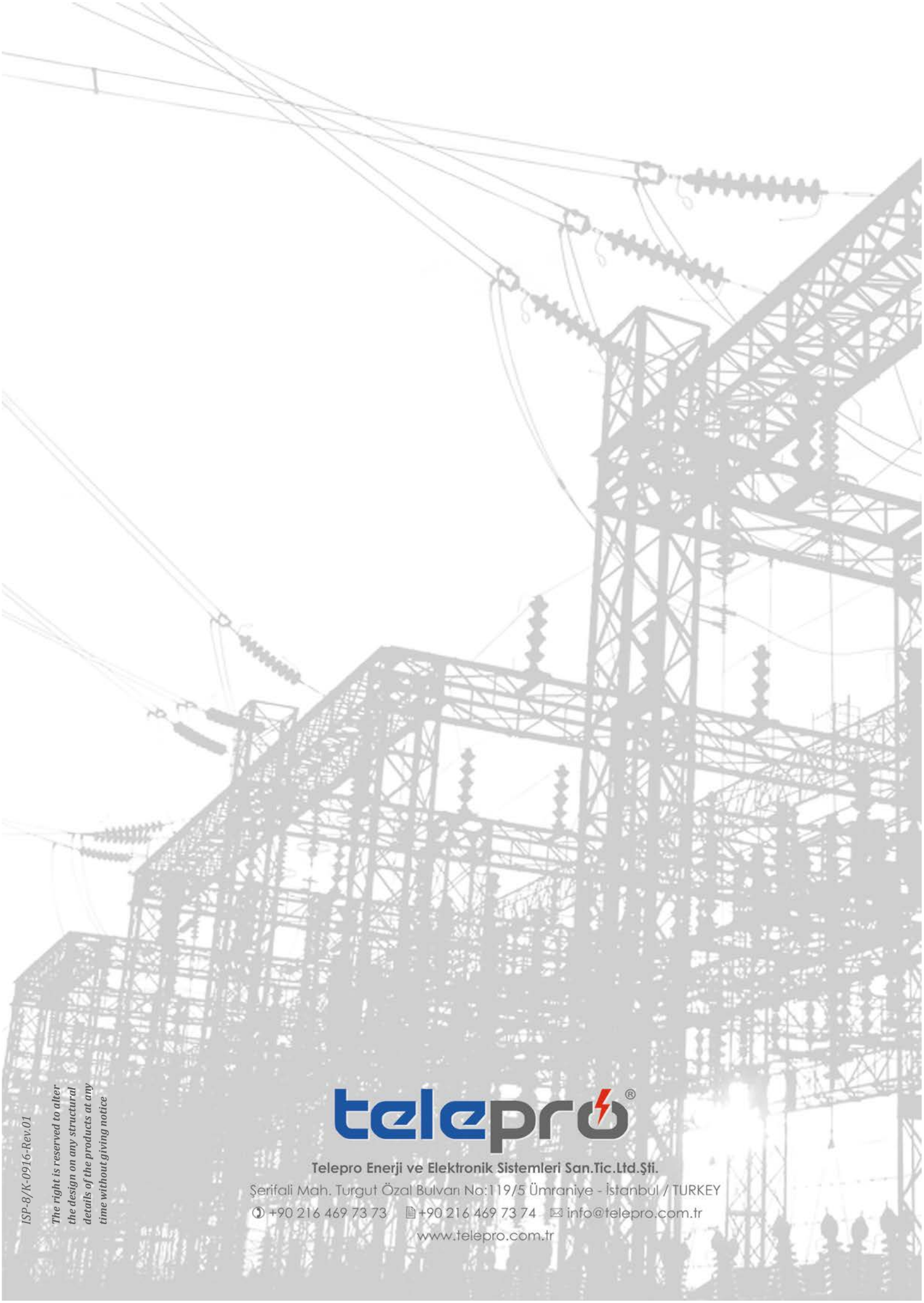
Revision	Page	Revision Details	Software Version

11. SERVICE AND TECHNICAL SUPPORT LINE

ISP-8 contact information for product support is indicated below:

SERVICE &TECH.SUPPORT

Email: info@telepro.com.tr
Tel: +90 216 469 73 73
Fax: +90 216 469 73 74
Homepage: http://www.telepro.com.tr/



ISP-8/K-0916-Rev.01

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