Warning

The 725B System described herein operates on a logic voltage of 24VDC and as standard 24VDC is used for the field contact supply voltage.

Internal or External power supplies using higher voltage AC/DC primary sources and optional high voltage field contact voltages may be present. If this is the case please ensure the necessary precautions are taken.

REV	DATED	DESCRIPTION	AUTHOR	APPROVED
0	31-08-06	First Issue	P.Cartmell	T. McLeman
1	16-10-07	Filter Part Numbers Corrected	P.Cartmell	D. Fishkin
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7	20-08-08	Correction to ISA R Sequence	P. Cartmell	D. Fishkin
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12	13-05-09	Selection of AC Signal Inputs added	P.Cartmell	D.Fishkin
13	01-09-09	Standard Comm's details added	P.Cartmell	D.Adams
14	02-02-10	Enhanced Sleep Mode Features added	P.Cartmell	D.Adams
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SECTION 1 - INTRODUCTION

General

The RTK 725B Series alarm annunciator is used to inform the operator that a process has gone beyond set limits using visual and audible alarms.

The Annunciator is manufactured from universal cells which can be assembled in an array to provide the number of rows and columns required to suit individual panel designs. Each cell within the annunciator is able to contain either:- one large, two medium or four small alarm windows and the window is illuminated by “plug-in” universal white LED’s assemblies providing a maintenance free solution, a reduction in power consumption and lower heat dissipation.

Large, Medium & Small Window Sizes

Programmable Features

The 725B is equipped with a host of customer selectable features which can be accessed via a USB programming port located behind the pushbutton face plate. Once connected to a PC running the RTK supplied configuration software the user can enable or disable pre-defined functions as required. Selection of features is on a per channel basis with no special tools or programming knowledge required.

The Pushbutton assembly can be used to view the dynamic state of all signal inputs and to set the non alarm state of each alarm to normally open or normally closed as detailed in later sections.

Glossary of Terms

Cell:	A single module 60mm x 60mm which can be joined to adjacent cells in varying heights and widths to provide the number of alarms required. The number of alarms available per Cell depends on the window size required.
N/C:	A Normally Closed contact which opens in the abnormal state.
N/O:	A Normally Open contact which closes in the abnormal state.
EN:	Energised Relay Coil that De-Energises in the abnormal state.
DE-EN:	De-Energised Relay Coil that Energises in the abnormal state.
Form A:	Normally Open Single Pole, Single Throw Relay (SPST) contact that Closes in the abnormal state.
Form B:	Normally Closed Single Pole, Single Throw Relay (SPST) contact that Opens in the abnormal state.
Form C:	Changeover contacts, Single Pole, Double Throw (SPDT) contact both poles change in the abnormal state.
FCV:	Field Contact Voltage. (Wetting Voltage)
Card:	Refers to individual electronic circuit boards. There are various types of Cards used within the 725B i.e. Alarm Cards, Relay Cards, Supply Cards and Communication Cards.

Annunciator Model Code Definition

Code	Description
	Model No
B	***Series 725B***
	Window Size
S	***Small – 30 mm w x 30mm h***
M	***Medium – 60mm w x 30mm h***
L	***Large – 60mm w x 60mm h***
I	***Intermixed – combinations of the above as required***
	Cells Wide
1 – G	***1 = 1 cell wide to 9 = 9 cells wide*** ***A = 10 cell wide to G = 16 cells wide***
	Cells High
1 – G	***1 = 1 cell high to 9 = 9 cells high*** ***A = 10 cell high to G = 16 cells high***
	Pushbutton Module
X	***Not fitted***
P	***Integral***
	Number Of Active Alarms
0	***Hundreds***
3	***Tenths***
2	***Units Example shown = 32 ways***
	Repeat Relay Facility
X	***Not fitted***
R	***Single repeat relay per channel***
D	***Dual repeat relay per channel***
C	***Repeat relays powered by signal voltage***
	Integral Power Supply
X	***Not fitted***
U	***Universal Input Power Supply – 85 to 264VAC OR 88 to 360VDC***
D	***Redundant Universal Input Power Supplies - 85 to 264VAC OR 88 to 360VDC***
	Signal Input Type
1	***24VAC/DC or 125VAC/DC***
2	***48VAC/DC or 250VAC/DC***
3	***24VAC/DC or 125VAC/DC differential inputs***
4	***48VAC/DC or 250VAC/DC differential inputs***
	Tropicalisation Coating
X	***Not Required***
C	***Tropicalised***

Ground Detection

X	***Not Fitted***
G	***Internal Ground Detection card fitted***

Additional Remote Pushbutton Inputs (3 per card)

X	***Not Fitted***
1 – A	***1 = 3 x additional remote pushbutton Inputs fitted to 9 = 27 x additional remote pushbutton Inputs fitted A = 30 x additional remote pushbutton Inputs fitted to***

Common Relay Cards (4 per card)

X	***Not Fitted***
1 – 7	***1 = 4 x additional common relays fitted to 7 = 28 x additional common relays fitted***

Time Stamping

X	***Not Fitted***
T	***Time stamping of alarms enabled***

Synchronisation Card

X	***Not Fitted***
S	***Sync Card fitted for use with a remote GPS or IREG B Signal***

Communication Hardware

X	***Not Fitted***
E	***Entry Level – Addressing each alarm card individually***
S	***Standard – RS485 and Ethernet***
A	***Advanced – RS485, Ethernet, Additional Serial Port and Printer Port***
D	***Dual Standard - RS485 and Ethernet***
R	***Dual Advanced - RS485, Ethernet, Additional Serial Port and Printer Port***

Protocol Options

X	***Not Fitted***
1	***RTK AMS (Entry Level), Serial Modbus and AMS(Standard)***
2	***Serial Modbus RTU (Entry Level), Serial and Ethernet Modbus (Standard)***
3	***DNP3***
4	***Future***
5	***Future***
6	***Future***

Special Options

X	***Not Fitted***
1 – Z	***Reserved for Special Options***

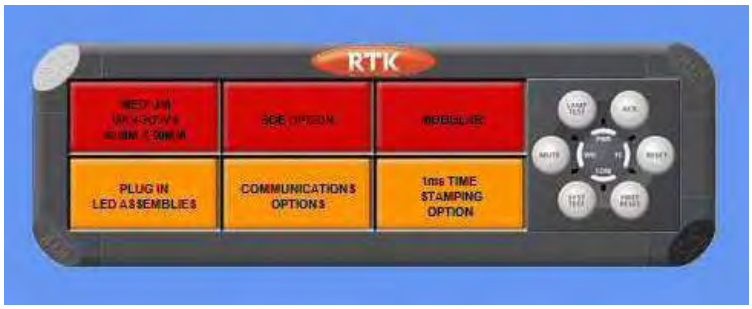
Product Overview

The 725B is a modular alarm annunciator constructed from 60mm x 60mm cells to form a single unit suitable for mounting in a panel cut-out. This modular design allows units to be constructed in vast range of heights and widths to suit individual panel designs and allows systems to be supplied from a single alarm to a maximum of 256 alarms per annunciator.

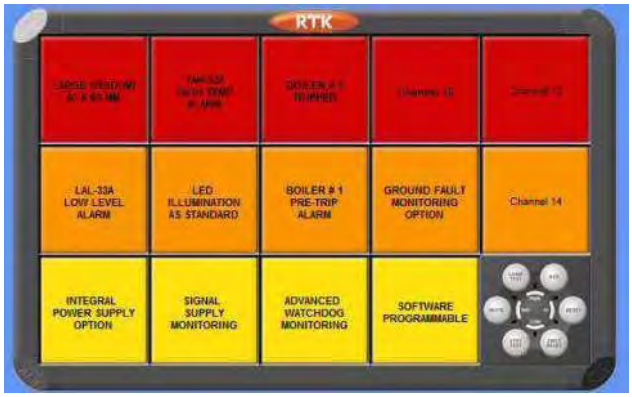
System Front View

Typical Small Window Version

Typical Medium Window Version



Typical Large Window Version



Number Of Alarms Per Cell
Each 60mm x 60mm cell within the annunciator can contain 1, 2 or 4 alarms depending on the required window size:-

Window Style	Window Size (W x H)	Alarms per Cell
Large	60mm x 60mm	1
Medium	60mm x 30mm	2
Small	30mm x 30mm	4

If requested at the time of order the unit can be supplied with intermixed window sizes in any combination

Integral Pushbutton Location
When viewing the front of the annunciator the bottom right hand corner is normally reserved for the integral pushbutton module.

If advised at the time of order the following alternatives are available

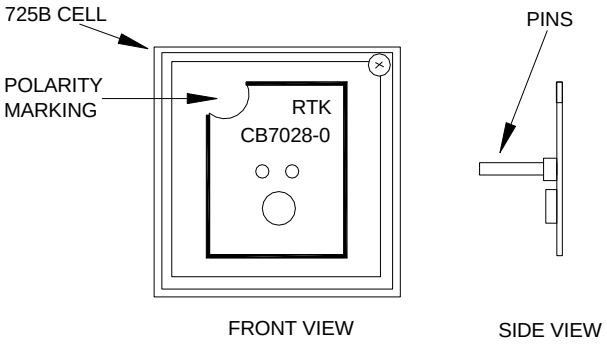
1. The integral pushbutton module can be placed in any cell within the annunciator.

2. The integral pushbutton module can be replaced with active alarm channels and remote pushbuttons can be used to control the alarm annunciator.

3. The Pushbutton assembly can be supplied as a remote assembly which can be interconnected with the annunciator via a factory supplied ribbon cable

Window Illumination

Each channel is illuminated by white “Plug-In” LED’s which offer a maintenance free solution, lower heat dissipation and lower power consumption. Each LED assembly is equipped with 2 pins that allows it be “plugged” into the 2 pin socket in the cell behind each alarm window.



Please note the CB7028POP1 white LED assembly is factory fitted with the half circle in the top left hand corner as shown above.

If the LED assembly is inserted while power is applied to the system the LED may blink when it is first inserted but will automatically return to the off state if no alarm is present.

If it is inserted upside down, no damage will occur but the LED will not function.

To remove the LED assembly a pair of pin-nosed pliers can be used on the sides of the circuit board to gently pull the assembly towards you.

The number of LED’s required per window is governed by the window size.

- Small window versions use a single LED assembly
- Medium window versions use two LED assemblies
- Large window versions use four LED assemblies

LED Failure Indication

The 725B is equipped with LED monitoring to provide indication of total loss of indication to a channel using the Watchdog, WD, LED mounted on the face of the Pushbutton Module or the software diagnostic facility as described later in the manual. As an option a common relay can be used to provide remote indication of LED failure if required.

Window Colours

Each channel is equipped with its own removable lens assembly, which, contains a coloured filter and a laser printed film legend.

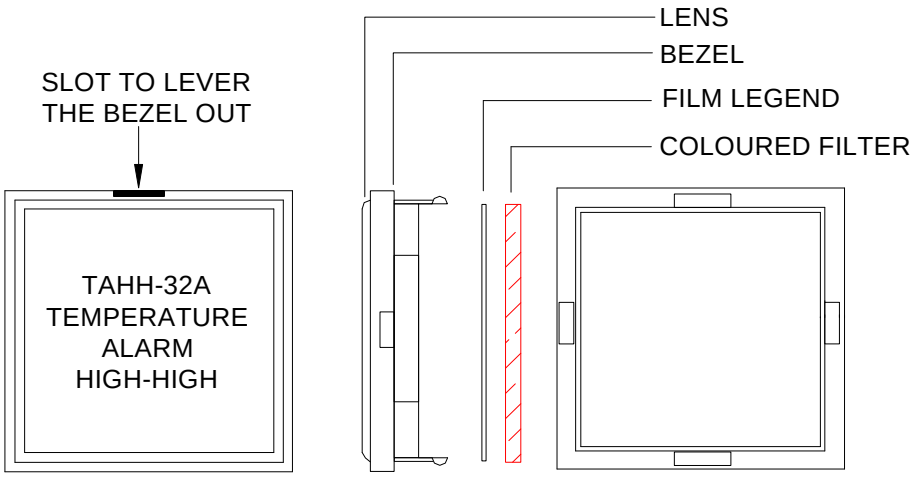
White filters are used in standard applications but coloured filters can be used as an alternative to provide a clear indication of alarm type.

For example Red can be used for trip alarms, amber for pre-alarms and green for status. A choice of Six colours are available:- White, Red, Amber, Yellow, Green or Blue.

Adding or Changing Film Legends

Each lens assembly has a small slot in the upper ridge of the surround bezel, which allows a flat blade terminal screwdriver to be used to gently lever the assembly from the annunciator.

Once the assembly has been removed the lens, coloured filter and film legend can be accessed by gently pushing outwards on the side of the inside face of the bezel to allow the lens to clear the associated moulding tabs.



Filter & Bezel Spare Parts Numbers

Part	Small Window	Medium Window	Large Window
Bezel	ML-7227-S	ML-7227-M	ML-7227-L
Clear Lens	ML-7228-S	ML-7228-M	ML-7228-L
Red filter	ML-7229-S-RD	ML-7229-M-RD	ML-7229-L-RD
Amber filter	ML-7229-S-AM	ML-7229-M-AM	ML-7229-L-AM
Yellow filter	ML-7229-S-YW	ML-7229-M-YW	ML-7229-L-YW
Blue filter	ML-7229-S-BL	ML-7229-M-BL	ML-7229-L-BL
Green filter	ML-7229-S-GN	ML-7229-M-GN	ML-7229-L-GN

Laser Printed Legends

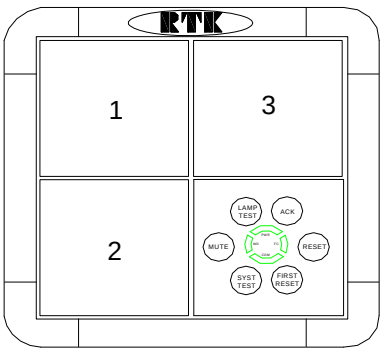
Film legends can be easily created in a style, size, font and language using Microsoft Excel or the RTK supplied configuration software.

Once the legend details have been entered they can be laser printed onto overhead transparency film and placed between the clear front lens of the window assembly and the associated coloured filter as shown above.

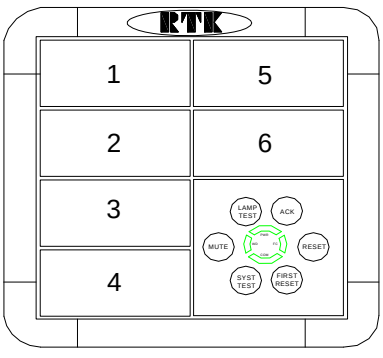
Window Numbering System

RTK have adopted the following window numbering system to aid with the location of the film legend and the associated alarm cards.

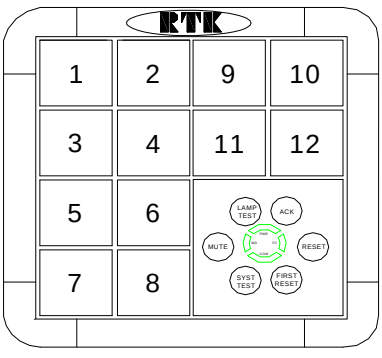
This method is used to ensure that the legend matches the functions selected for the designated alarm.



Large Window Version



Medium Window Version



Small Window Version

Integral Pushbutton Module
On standard systems the pushbutton / programming module is located in the bottom right hand corner of the annunciator when viewed from the front.

If advised at time of order the pushbutton module can be located in any alternative cell within the annunciator.

Pushbuttons
Six Pushbuttons:- Lamp Test, Systems Test, Mute, Ack, Reset and First Reset, are available to allow the user to control any of the customer selectable ISA sequences.

Some users prefer to lock out specific pushbutton functions and any of the integral pushbuttons can be disabled in software.

A typical example is first reset where the user prefers to use a remote key switch to reset the first up indication in place of the integral pushbutton.

Watchdog Monitoring LED's
As alarm annunciators are used in safety critical applications it is important that that the functions of the annunciator are also monitored and the 725B is equipped with an extensive self diagnostic facility and four green status LED bars are used to provide dynamic monitoring of logic power, field contact supply, watchdog and communications states.

The LED's indicate

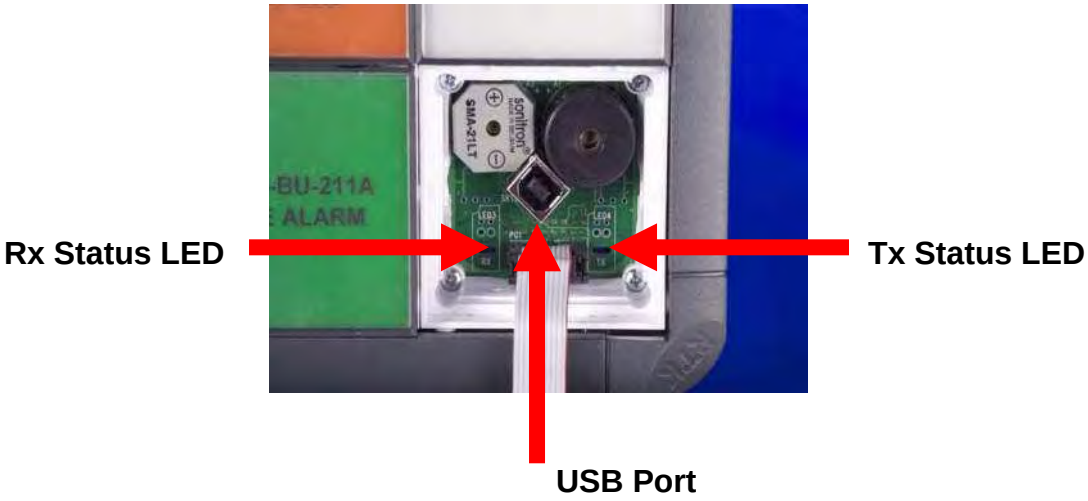
1. PWR = 24VDC logic power to individual cards
2. FC = Field contact power & contact loop resistance monitoring
3. COM = Communications
4. WD = Watchdog monitoring of individual cards

When power is initially applied to the unit the four green LED bars illuminate in a rotational sequence whilst the system verifies that all of the expected cards are present and once the start up routine is complete the LED's stay ON if all functions are fully operational.

USB Programming port

A small flat blade screwdriver can be used to gently ease the top edge of the pushbutton face plate out which allows access the USB programming port which can be used to:-

1. Upload a configuration from an existing 725B
2. Download a configuration to the 725B
3. View diagnostic data whilst fault finding.



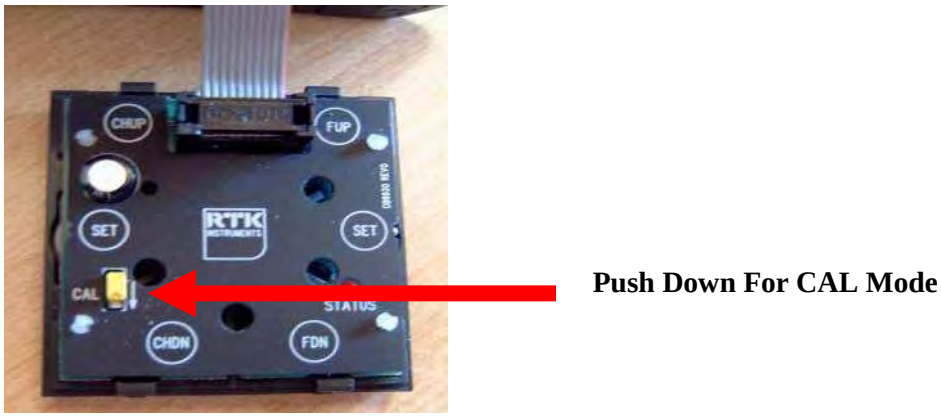
Once the user connects the supplied cable between a PC and the USB programming port the four green LED bars on the front of the pushbutton module will flash in unison to indicate that the port is being used.

Tx and Rx Status LED's are provided to indicate any communication activity between the 725B and host PC.

Full details of programming are provided in later sections of this manual.

CAL Mode

The 725B unit can be placed into CAL mode which allows the user to view the dynamic status of the associated plant inputs or the user can use the pushbutton module to set the non alarm state of each alarm (N/O or N/C).



To place the unit into CAL mode the CAL switch needs to be pushed down in the direction of the arrow as indicated above.

Whilst in CAL mode the PWR / COM LED bars flash followed by the WD / FC LED bars and this sequence cycles until the cal switch is turned off.

Please note whilst in CAL mode the pushbuttons have alternative functions and the CAL switch must be in the OFF mode for the normal pushbutton functions to operate correctly.

If an alarm occurs whilst in CAL mode the audible will sound and once the user places the switch back to normal the alarm will be displayed in the normal way.

Signal Input Contact Status

During commissioning or fault finding the user can easily determine the current status of all of the plant inputs connected to the alarm annunciator by placing the unit into CAL mode.

Once in this mode **each** window on the 725B indicates the dynamic status of the associated plant input.

- If the alarm window is OFF the associated plant input is OPEN
- If the alarm window is ON the associated plant input is CLOSED

Please note: The OPEN and CLOSED indication refers to the customer's field contact and is not related to the non alarm state set in the annunciator. (N/O or N/C)

Configuring Alarm Inputs for use with N/O or N/C field contacts

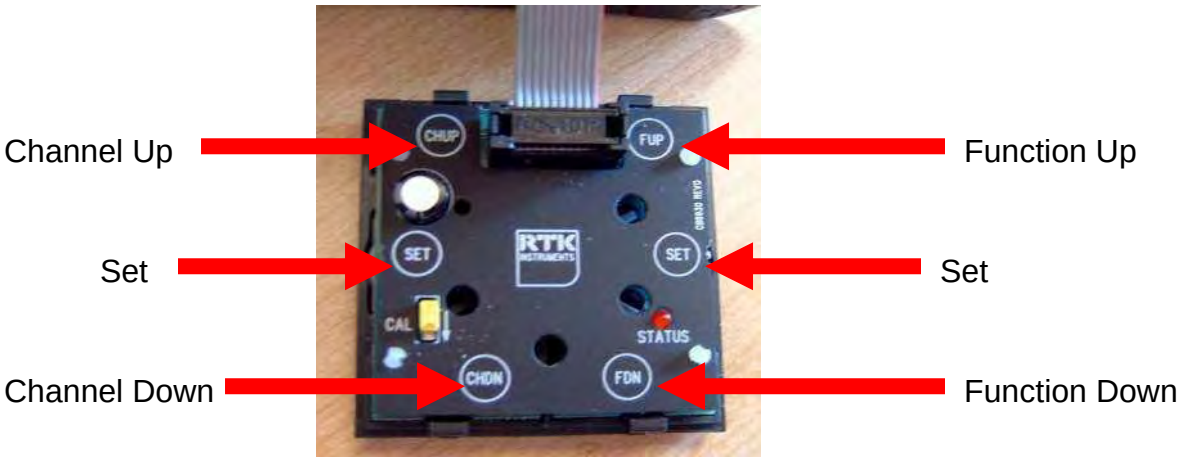
The non alarm state of each alarm channel can be configured in software to allow the channel to operate from either a N/O or N/C contact as described later in this manual.

As an alternative the integral pushbutton module can be used to set this function by sliding the CAL switch down to the ON position.

When in CAL mode the function of the integral pushbuttons changes to allow the user to navigate between channels, select the function and set the function as detailed below.

Pushbutton	***Abbreviation***	***Function in CAL Mode***
Lamp Test	***CHDN***	***Channel Down***
Ack	***FDN***	***Function Down***
Mute	***SET***	***Set***
Reset	***SET***	***Set***
System Test	***CHUP***	***Channel Up***
First Reset	***FUP***	***Function Up***

The alternative function of each pushbutton is indicated on the inside face of the pushbutton assembly but it is the pushbutton on the front of the assembly that is used to physically activate the function.



Function Up / Down

The integral pushbutton module has two functions.

1. It can be used to dynamically view the status of all signal inputs to determine which inputs are open or closed.

2. It can be used to set the non alarm state of each alarm channel to N/O or N/C.

When the unit is first switched to CAL mode it defaults to the contact monitoring state. If the user wishes to change the non alarm contact state of any inputs the Function Up (First Reset Pushbutton) must be pressed.

Once the Function Up has been selected the top left hand window flashes to indicate that the 1st channel is in programming mode and the user can set of navigate to each channel as required.

Channel Up / Down
The user is able to navigate to the required channel by pressing the System Test (channel up) to navigate to channel 1 to 2 to 3 etc and Lamp Test Pushbutton (channel down) to navigate from channel 3 to 2 to 1 etc.

Setting the Non Alarm Input State
Once the user has navigated to the required channel each time the Mute, or Reset, pushbutton is pressed the input state is inverted from N/O to N/C.

- If the status LED is OFF the channel is suitable for use with N/O contacts.

- If the status LED is ON the channel is suitable for use with N/C contacts.

CAUTION:- This information is only saved when the user navigates to another channel (up or down). If the user places the CAL switch to the OFF position without navigating to an adjacent channel the information will not be stored.

Remote Pushbutton Module
As an alternative the 725B can be fully equipped with alarm windows and the Pushbutton Module can be supplied as a remote item or the user can use conventional panel mounting momentary, N/O, pushbuttons to control the annunciator.

In these applications the common watchdog / relay, WR, card part no CB6641POP2 is equipped with a USB programming port which is located on the underside of the associated cell. Full details are provided in section 2 of this manual

Audible Alarms
Two internal audible alarms are provided as standard behind the pushbutton module for use as critical and non critical audibles.

As standard the audibles provide a steady tone but each horn can be software selected to pulse if required. The volume of each horn is selectable in software from 0 to 100% of span and a test volume feature is provided as described later in the manual. Please note if the pulse option has been selected the software “test volume” function overrides the pulse feature to make adjustment simpler.

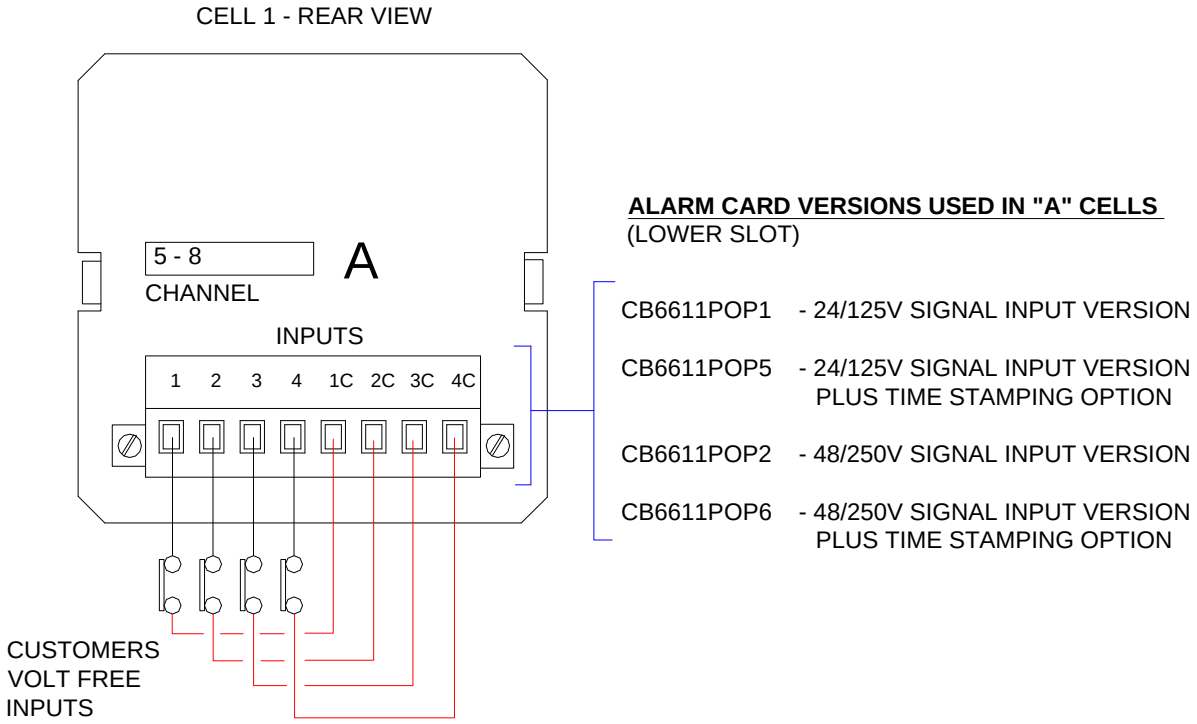
Each channel can be set in software to activate either of the integral horns.

SECTION 2 – CELL TYPES

Each 725B alarm annunciator is constructed from modular building blocks, “CELLS”. The type of card installed within each cell is dependent on the options required.

The following pages detail the individual cell types, available options and each annunciator can be manufactured using combinations of cells and types to suit individual panel designs.

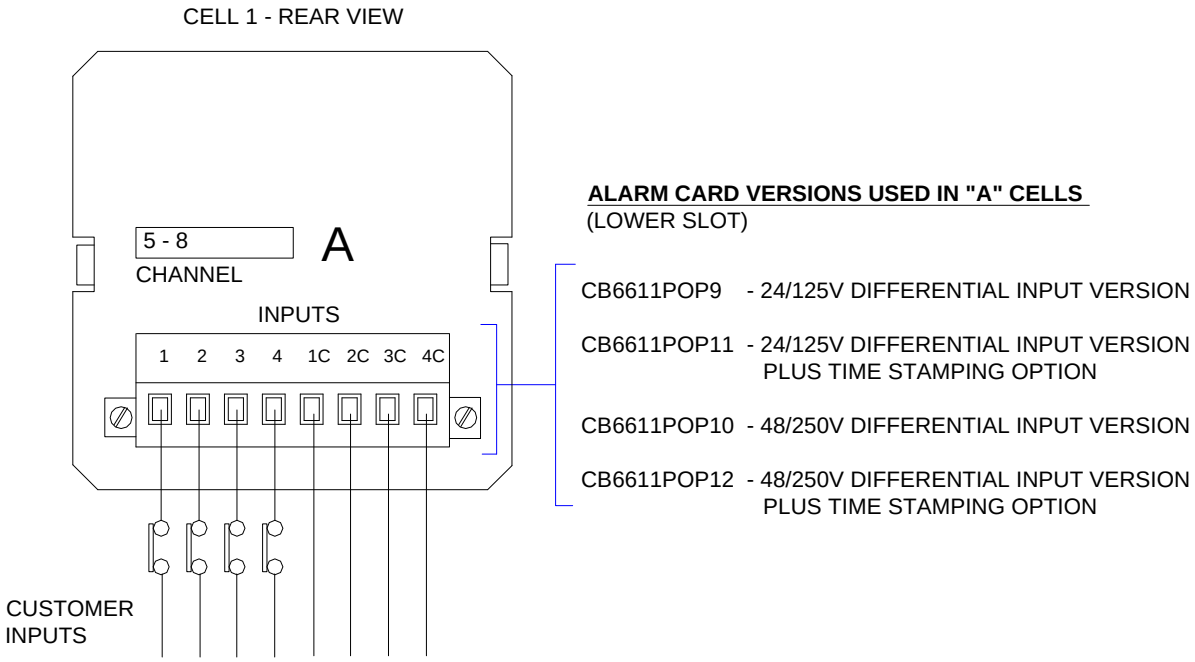
A Cell Detail (**A**larm Cell)



Cell type **A** is used to provide:-

- Four digital inputs for use with volt-free or powered contacts
- The drawing above indicates the standard card types available for cell type A

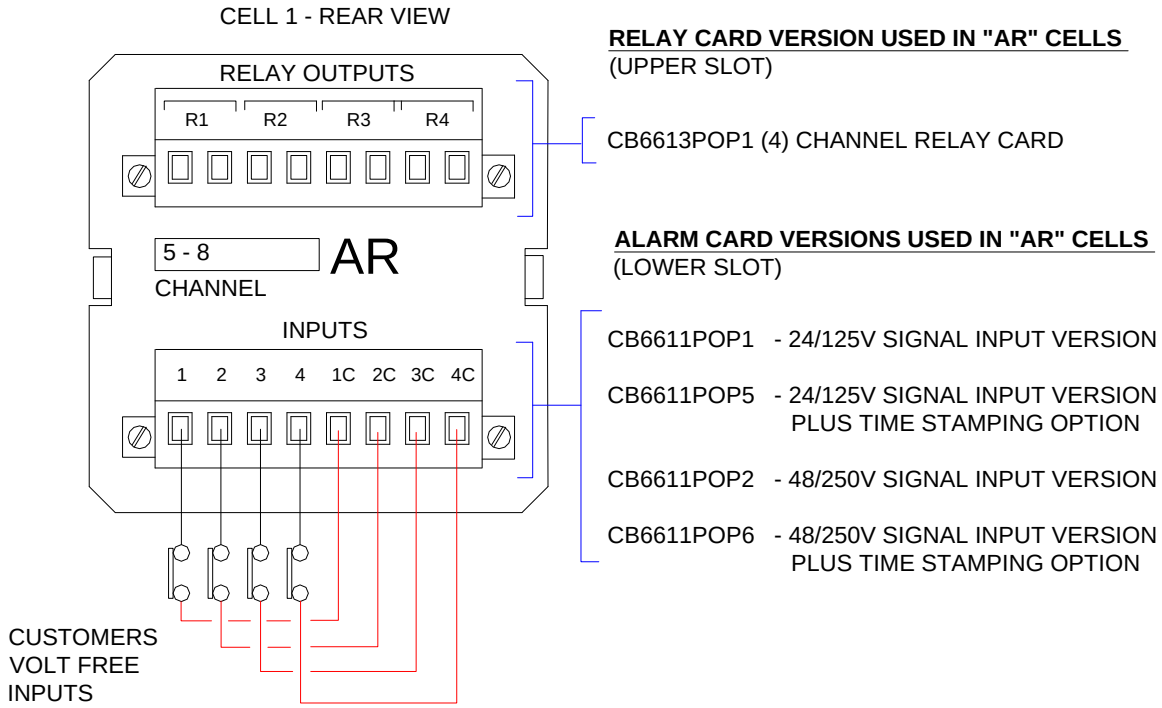
A Cell - Differential Input Version



Cell type **A** is used to provide:-

- Four isolated digital inputs for use with volt-free or powered contacts
- The drawing above indicates the OPTIONAL differential input version where each channel is provided with a fully isolated bi-polar input.

AR Cell Detail (**A**larm – **R**elay Cell)

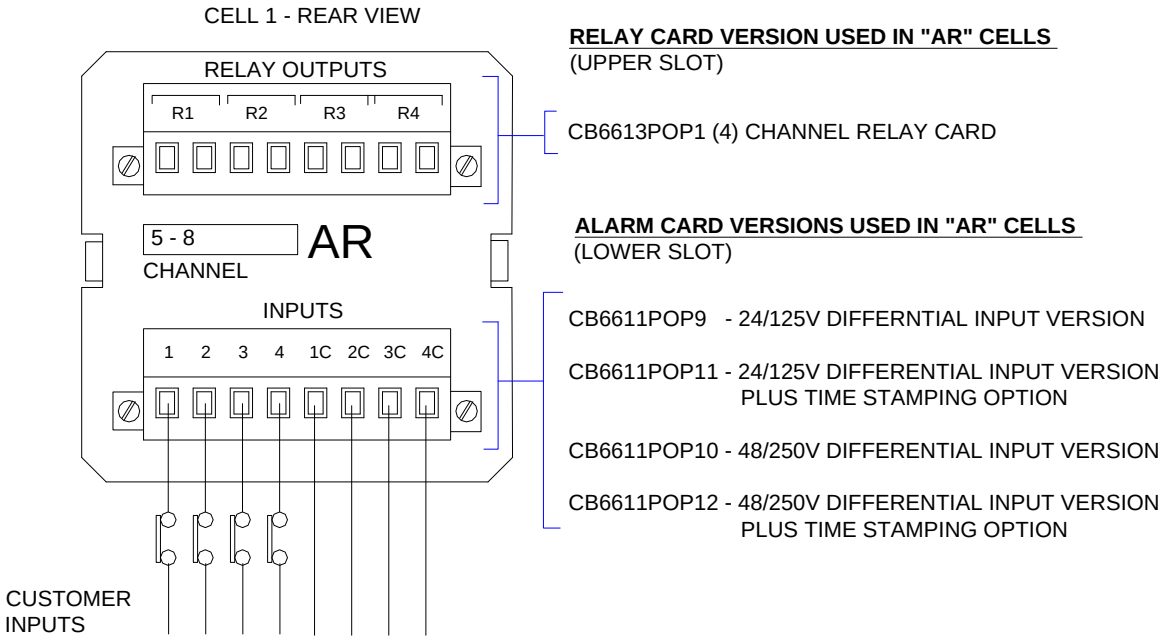


Cell type **AR** is used to provide:-

- Four digital inputs for use with volt-free or powered contacts
- Four repeat relays providing volt-free contact outputs for use with third party devices
- Each of the output contacts can be set to N/C or N/O using a 3 way header and 2 way shorting bar located on the card.
- The coil state can be programmed to be either EN or DE-EN per relay

The drawing above indicates the standard card types available for cell type AR

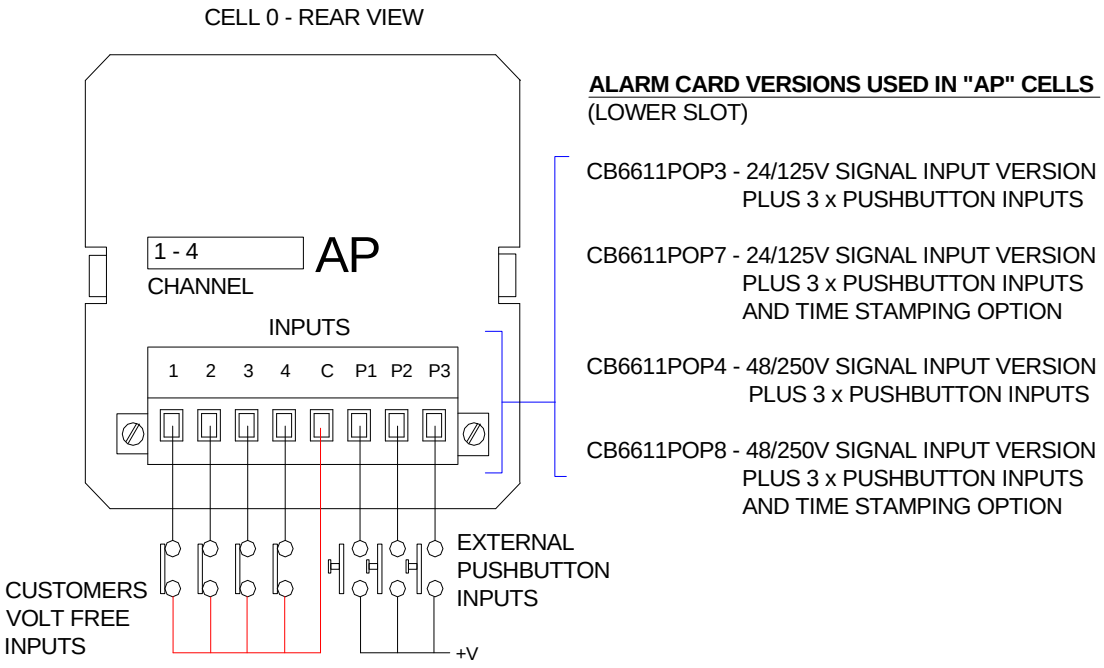
AR Cell - Differential Input Version



Cell type **AR** is used to provide:-

- Four isolated digital inputs for use with volt-free or powered contacts
- Four repeat relays providing volt-free contact outputs for use with third party devices
- Each of the output contacts can be set to N/C or N/O using a 3 way header and 2 way shorting bar located on the card.
- The coil state can be programmed to be either EN or DE-EN per relay
- The drawing above indicates the OPTIONAL differential input version where each channel is provided with a fully isolated bi-polar input.

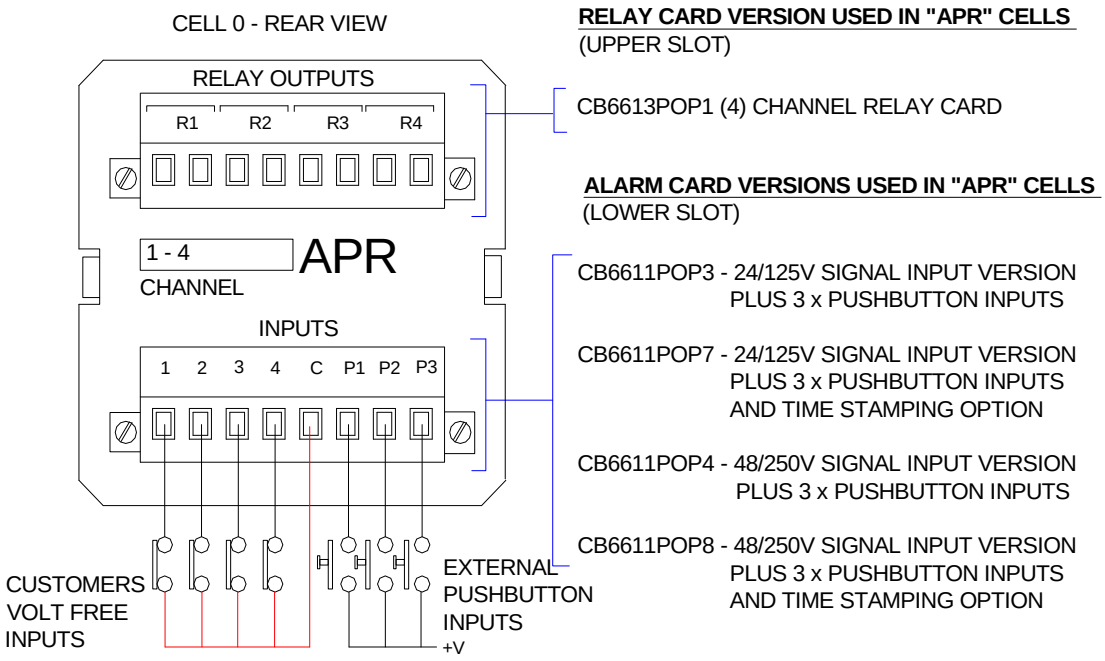
AP Cell Detail (**A**larm – **P**ushbutton Cell)



Cell type **AP** is used to provide:-

- Four digital inputs for use with volt-free or powered contacts
- Three external pushbutton inputs for use with optional remote mounting pushbuttons as required.
- Each of the external pushbutton inputs can be programmed to operate as either:- Lamp Test, Silence, Acknowledge, Reset, 1st Reset or System Test or Sleep Mode as required. The common return for all remote pushbuttons is +V (+24VDC)
- The drawing above indicates the standard card types available for cell type AP.
- Multiple AP cells may be used in applications that require more than 3 x pushbutton inputs or in systems using multiple pushbutton groups to control selective channels

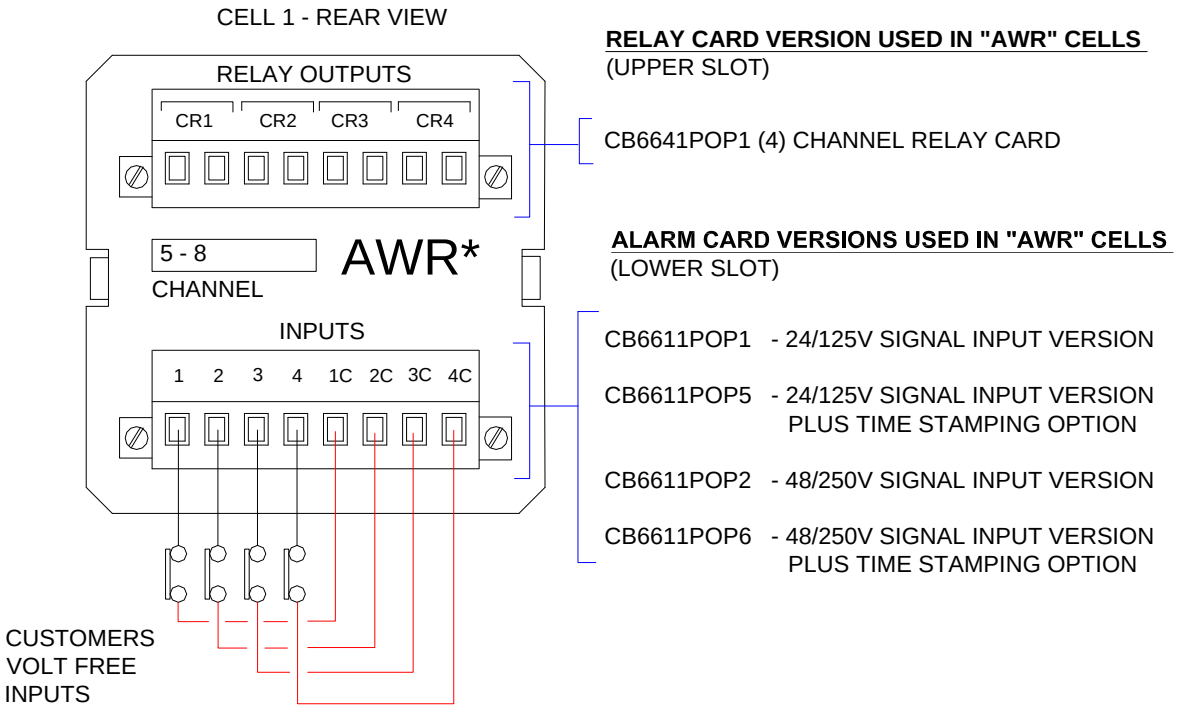
APR Cell Detail (**A**larm / **P**ushbutton – **R**elay Cell)



Cell type **APR** is used to provide:-

- Four digital inputs for use with volt-free or powered contacts
- Three external pushbutton inputs for use with optional remote mounting pushbuttons as required.
- Each of the external pushbutton inputs can be programmed to operate as either:- Lamp Test, Silence, Acknowledge, Reset, 1st Reset or System Test or Sleep Mode as required. The common return for all remote pushbuttons is +V (+24VDC)
- Four repeat relays providing volt-free contact outputs for use with third party devices
- Each of the output contacts can be set to N/C or N/O using a 3 way header and 2 way shorting bar located on the card.
- The coil state can be programmed to be either EN or DE-EN per relay
- The drawing above indicates the standard card types available for cell type APR.
- Multiple APR cells may be used in applications that require more than 3 x pushbutton inputs or in systems using multiple pushbutton groups to control selective channels.

AWR Cell Detail (**A**larm – **W**atchdog **R**elay Cell)

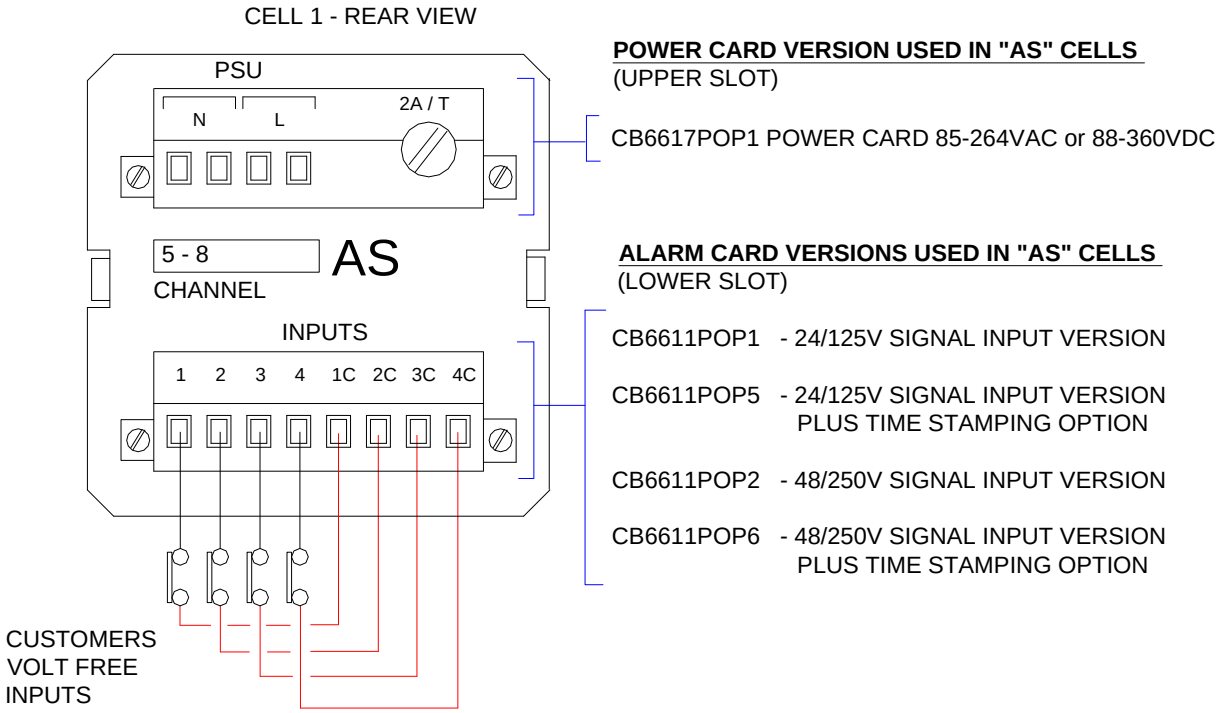


Cell type **AWR*** is used to provide:-

- Four digital inputs for use with volt-free or powered contacts
- Four Common Relays which can be programmed for use as horn, common alarm or diagnostic watchdog relays
- Each of the output contacts can be set to N/C or N/O using a 3 way header and 2 way shorting bar located on the card.
- The non alarm coil state of each relay can be programmed to be either EN or DE-EN
- ***** = AWR Card i.e. AWR1, AWR2, etc the suffix number is used in systems using multiple AWR Cells to aid programming / wiring.

The drawing above indicates the standard card types available for cell type AWR

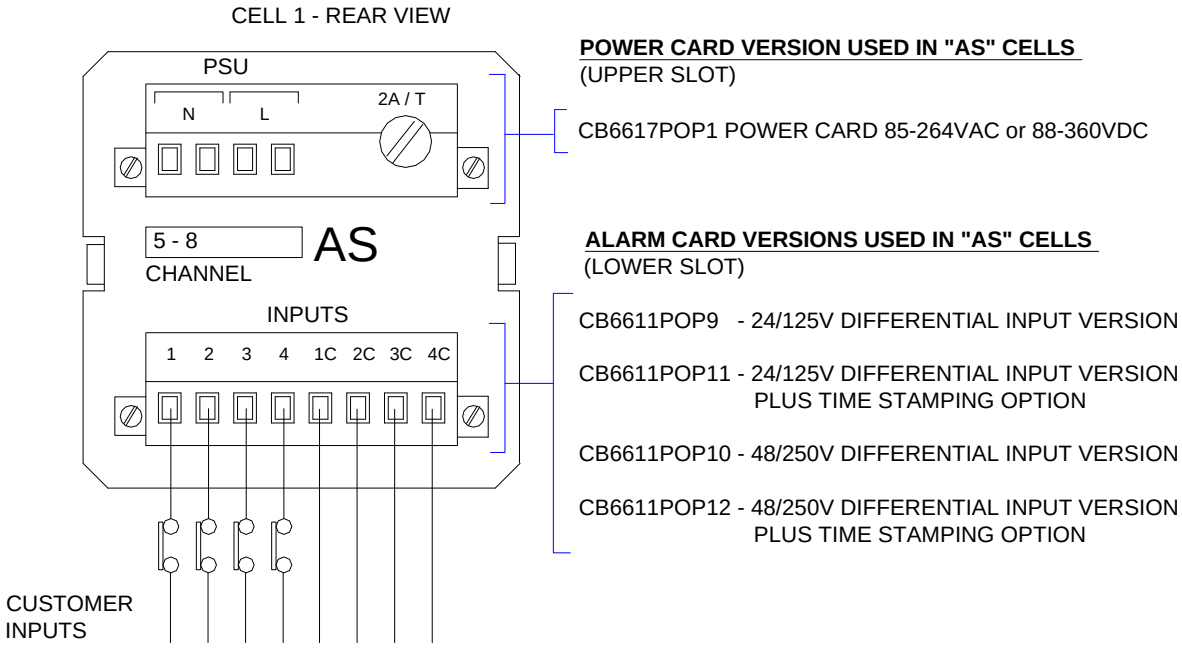
AS Cell Detail (**A**larm – **S**upply Cell)



Cell type **AS** is used to provide:-

- Four digital inputs for use with volt-free or powered contacts
- Universal Input Power Supply capable of accepting either:-
- AC voltages in the range 85-264VAC or
- DC voltages in the range 88-360VDC
- The Power Supply card is located in the upper card slot as typically shown above.
- The power supply is suitable for use with a number of cells which varies depending on the window size used and the options fitted.
- Multiple power supply cards can be used in larger annunciators.
- The drawing above indicates the standard card types available for cell type AS

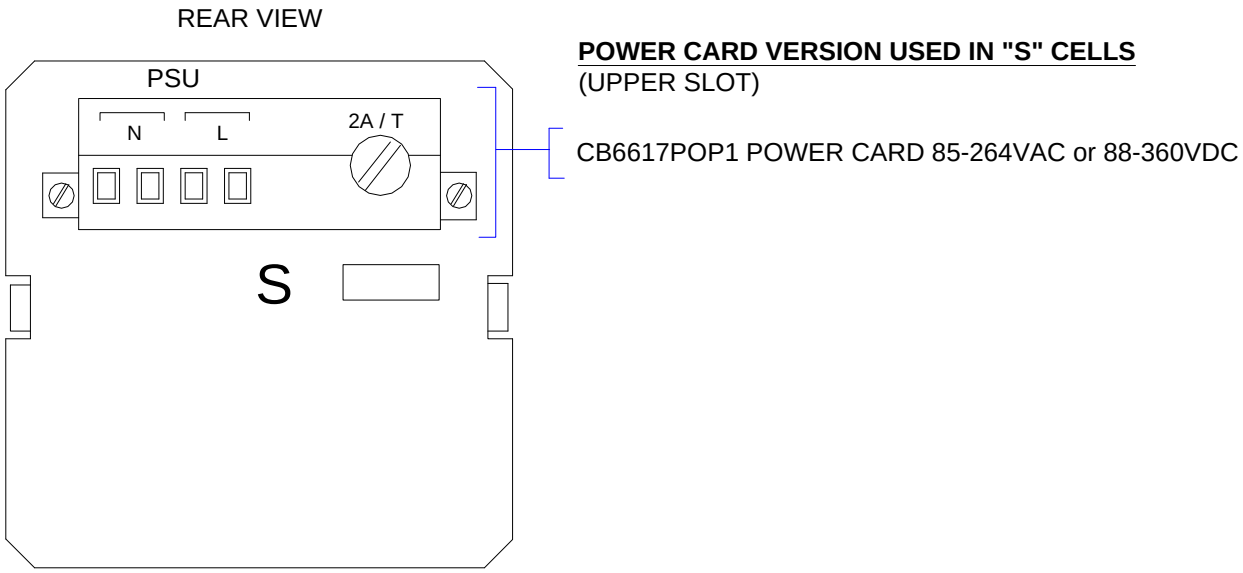
AS Cell - Differential Input Version



Cell type **AS** is used to provide:-

- Four Isolated digital inputs for use with volt-free or powered contacts
- Universal Input Power Supply capable of accepting either:-
- AC voltages in the range 85-264VAC or
- DC voltages in the range 88-360VDC
- The Power Supply card is located in the upper card slot as typically shown above.
- The power supply is suitable for use with a number of cells which varies depending on the window size used and the options fitted.
- Multiple power supply cards can be used in larger annunciators.
- The drawing above indicates the standard card types available for cell type AS
- Fuse FU-2A-004 5 x 20 mm 2A Fuse is used to protect the primary

S Cell Detail (**S**upply Cell)

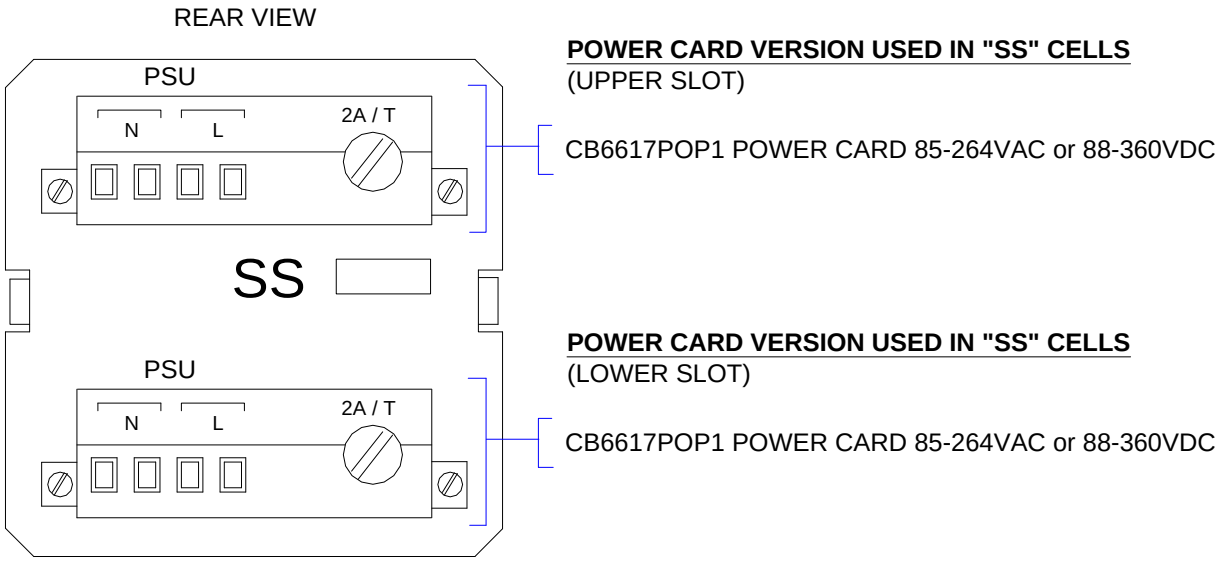


Cell type **S** is used to provide:-

- Universal Input Power Supply capable of accepting either:-
- AC voltages in the range 85-264VAC or
- DC voltages in the range 88-360VDC
- The Power Supply card is located in the upper card slot as typically shown above.
- The power supply is suitable for use with a number of cells which varies depending on the window size used and the options fitted.
- Multiple power supply cards can be used in larger annunciators.
- Fuse FU-2A-004 5 x 20 mm 2A Fuse is used to protect the primary

SS Cell Detail

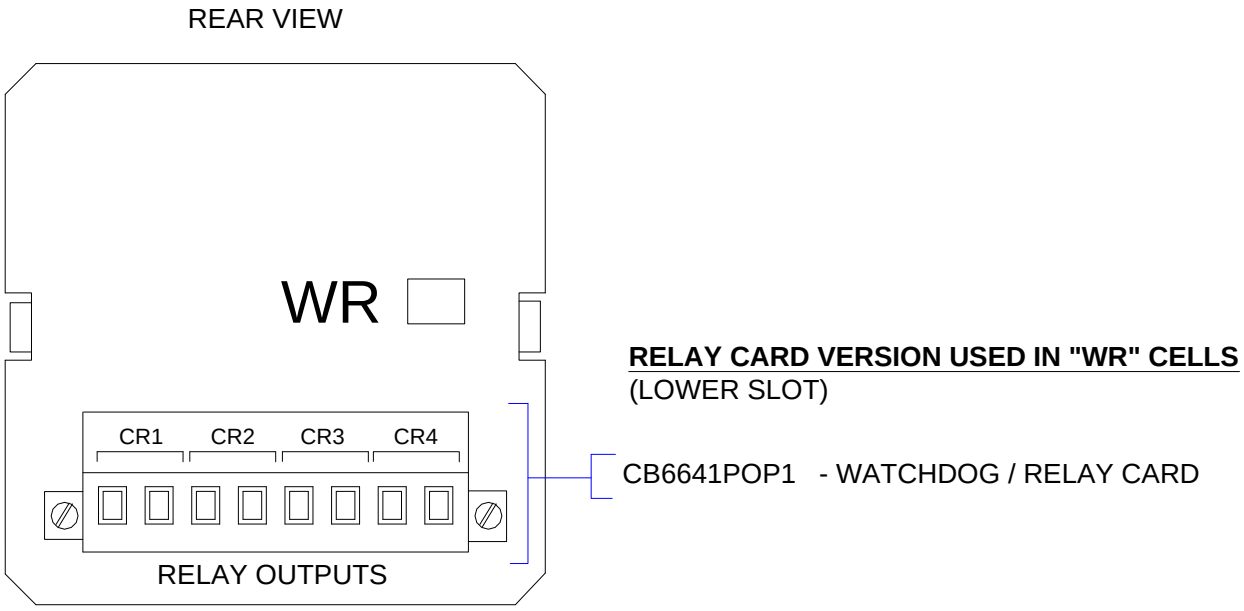
(Supply - Supply Cell)



Cell type **SS** is used to provide:-

- Dual Universal Input Power Supply each capable of accepting either
- AC voltages in the range 85-264VAC or
- DC voltages in the range 88-360VDC
- The Power Supply cards are located in the upper and lower card slot of the cell as typically shown above.
- The dual power supply is suitable for use with a number of cells which varies depending on the window size and the options required.
- Multiple power supply cards can be used in larger annunciators as required.
- Fuse FU-2A-004 5 x 20 mm 2A Fuse is used to protect the primary

WR Cell Detail (**W**atchdog - **R**elay Cell)

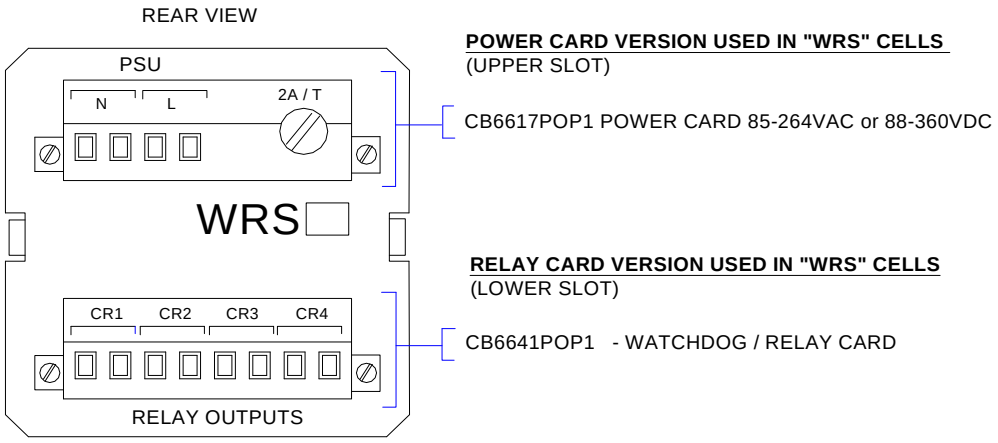


Cell type **WR** is used to provide:-

WR cells are equipped with a four channel relay card which provide

- Four Common Relays which can be programmed for use as horn, common alarm or diagnostic watchdog relays
- Each of the output contacts can be set to N/C or N/O using a 3 way header and 2 way shorting bar located on the card.
- The non alarm coil state of each relay can be programmed to be either EN or DE-EN.

WRS Cell Detail (**W**atchdog / **R**elay - **S**upply Cell)

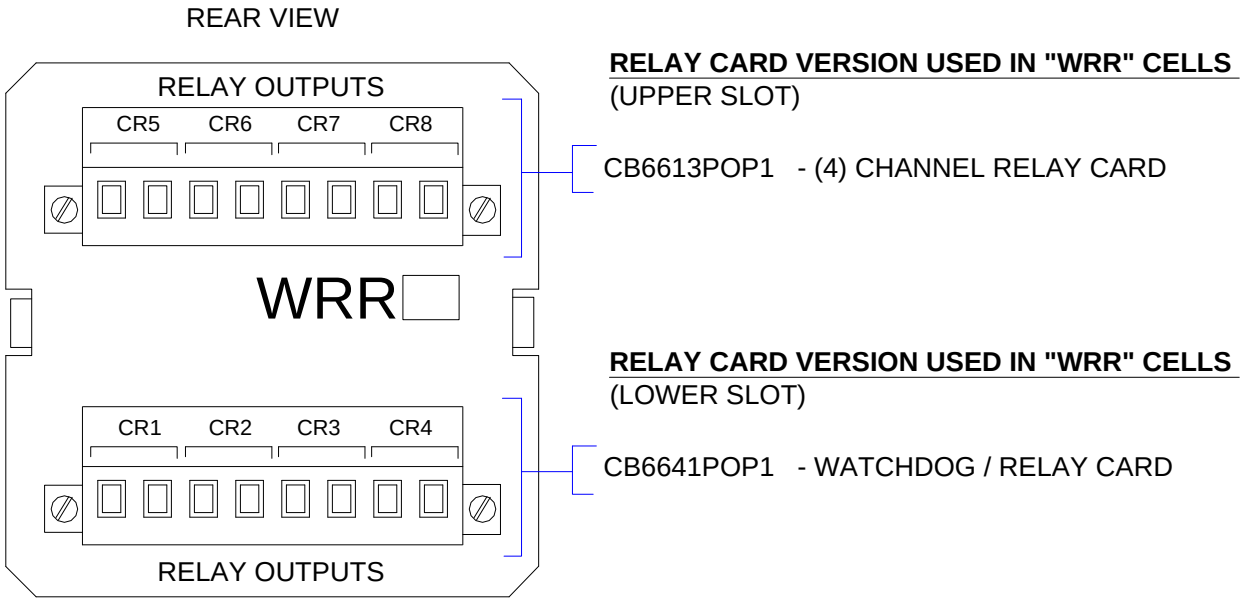


Cell type **WRS** is used to provide:-

WR cells are equipped with a four channel relay card which provide

- Four Common Relays which can be programmed for use as horn, common alarm or watchdog relays
- Each of the output contacts can be set to N/C or N/O using a 3 way header and 2 way shorting bar located on the card.
- The non alarm coil state of each relays can be programmed to be either EN or DE-EN
- Universal Input Power Supply capable of accepting:-
- AC voltages in the range 85-264VAC or
- DC voltages in the range 88-360VDC
- The Power Supply card is located in the upper card slot and the common relay card is located in the lower card slot as typically shown above.
- The power supply is suitable for use with a number of cells which varies depending on the window size and options required
- Multiple power supply cards can be used in larger annunciators as required.
- Fuse FU-2A-004 5 x 20 mm 2A Fuse is used to protect the primary

WRR Cell Detail (**W**atchdog / **R**elay - **R**elay Cell)

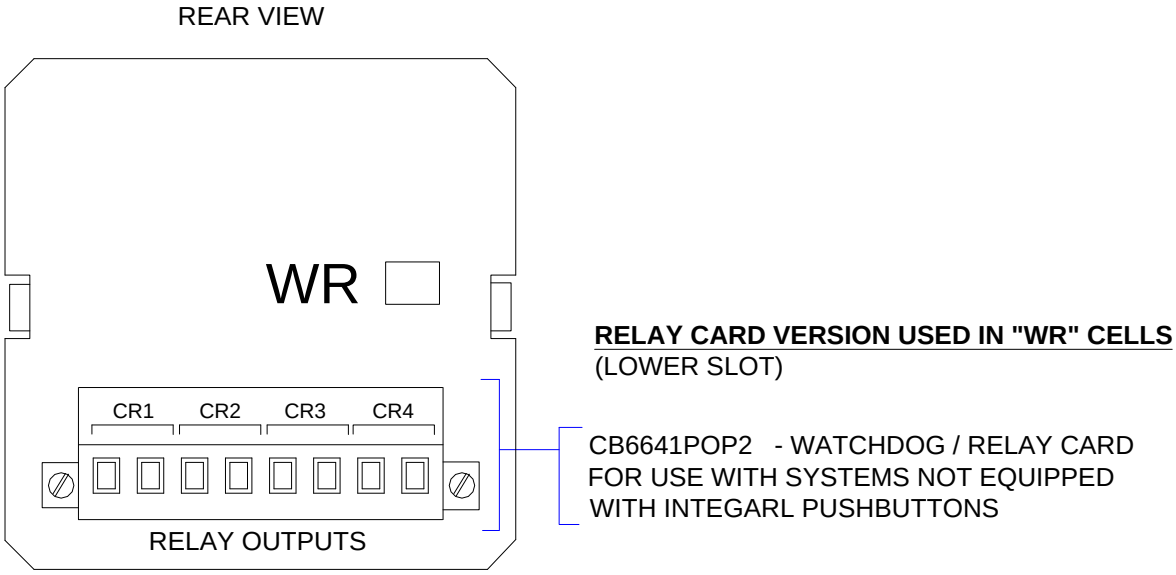


Cell type **WRR** is used to provide:-

WRR cells are equipped with two four channel relay cards which provide

- Eight Common Relays which can be programmed for use as horn, common alarm or diagnostic watchdog relays
- Each of the output contacts can be set to N/C or N/O using a 3 way header and 2 way shorting bar located on the card.
- The non alarm coil state of each relay can be programmed to be either EN or DE-EN

Optional WR Cell Detail (**W**atchdog - **R**elay Cell) used on systems not equipped with integral Pushbutton / Programming Modules

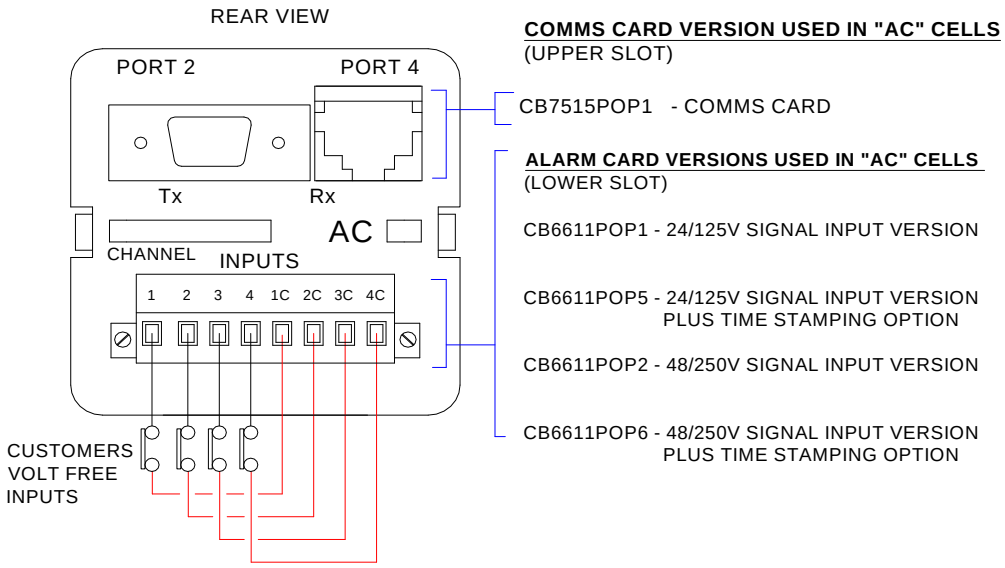


This version of Cell type **WR** is used on systems that are not equipped with the integral pushbutton / programming module.

This version of the WR cell is equipped with a four channel relay card plus a USB programming port which provide

- Four Common Relays which can be programmed for use as horn, common alarm or diagnostic watchdog relays
- Each of the output contacts can be set to N/C or N/O using a 3 way header and 2 way shorting bar located on the card.
- The non alarm coil state of each relay can be programmed to be either EN or DE-EN.
- USB Programming port which is located on the underside of the associated cell to allow the unit to be programmed.

AC Cell Detail (**A**larm – **C**omm's Cell)



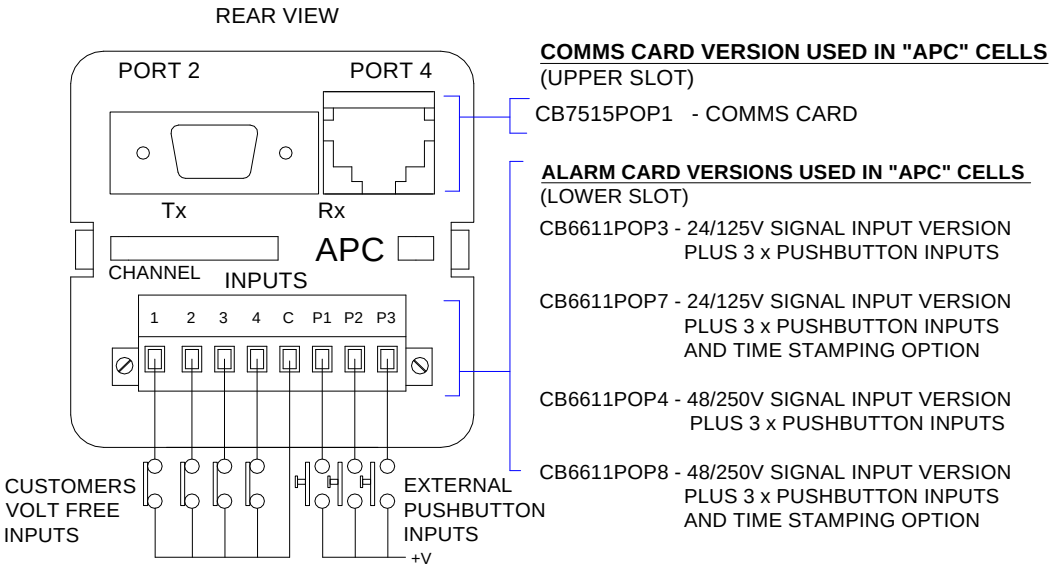
Cell type **AC** is used to provide:-

- Four digital inputs for use with volt-free or powered contacts.

Comm's Card that provides:

- One isolated RS485 Port via a standard 9-way D-type connector.
- One isolated Ethernet port via a standard RJ45 connector.
- Rx and TX LED's on both ports for diagnostic purposes.

APC Cell Detail (**A**larm – **P**ushbutton - **C**omm's Cell)



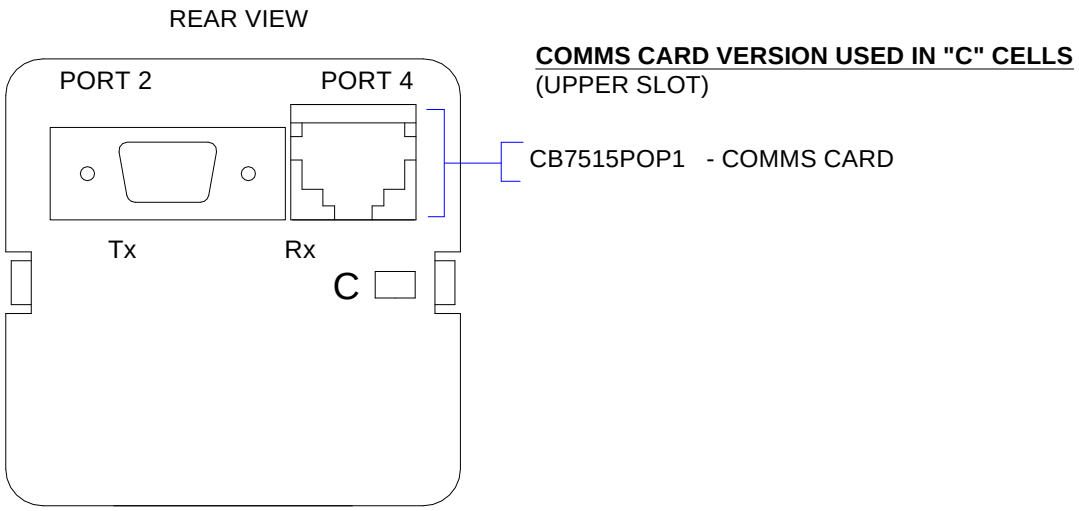
Cell type **APC** is used to provide:-

- Four digital inputs for use with volt-free or powered contacts
- Three external pushbutton inputs for use with optional remote mounting pushbuttons as required.
- Each of the external pushbutton inputs can be programmed to operate as either:- Lamp Test, Silence, Acknowledge, Reset, 1st Reset or System Test or Sleep Mode as required. The common return for all remote pushbuttons is +V (+24VDC)
- The drawing above indicates the standard card types available for cell type APC.

Comm's Card that provides:

- One Isolated RS485 Port via a standard 9-way D-type connector.
- One Isolated Ethernet port via a standard RJ45 connector.
- Rx and TX LED's on both ports for diagnostic purposes.

C Cell Detail (**C**omm's Cell)

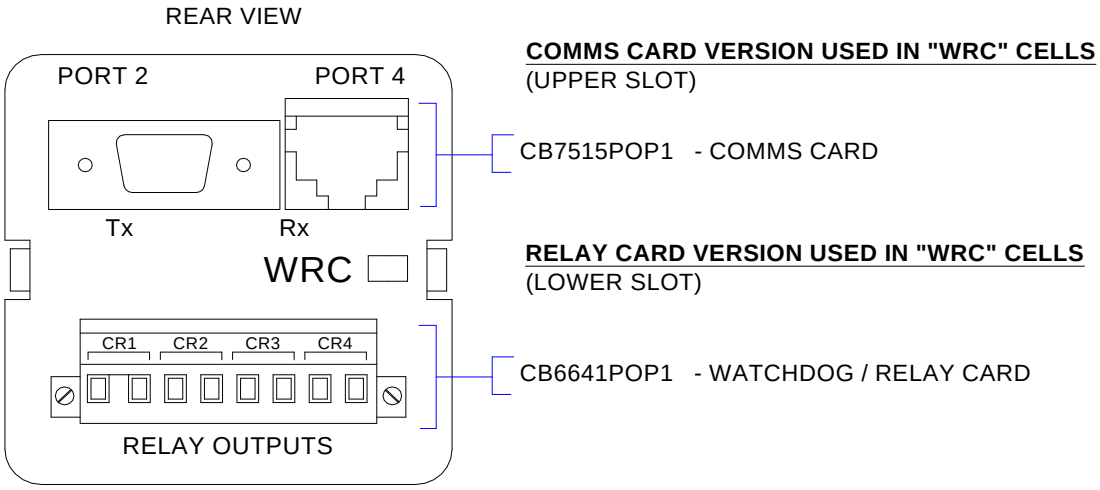


Cell type **C** is used to provide:-

Comm's Card that provides:

- One Isolated RS485 Port via a standard 9-way D-type connector.
- One Isolated Ethernet port via a standard RJ45 connector.
- Rx and TX LED's on both ports for diagnostic purposes.

WRC Cell Detail (**W**atchdog / **R**elay - **C**omm's Cell)



Cell type **WRC** is used to provide:-

WR cells are equipped with a four channel relay card which provide

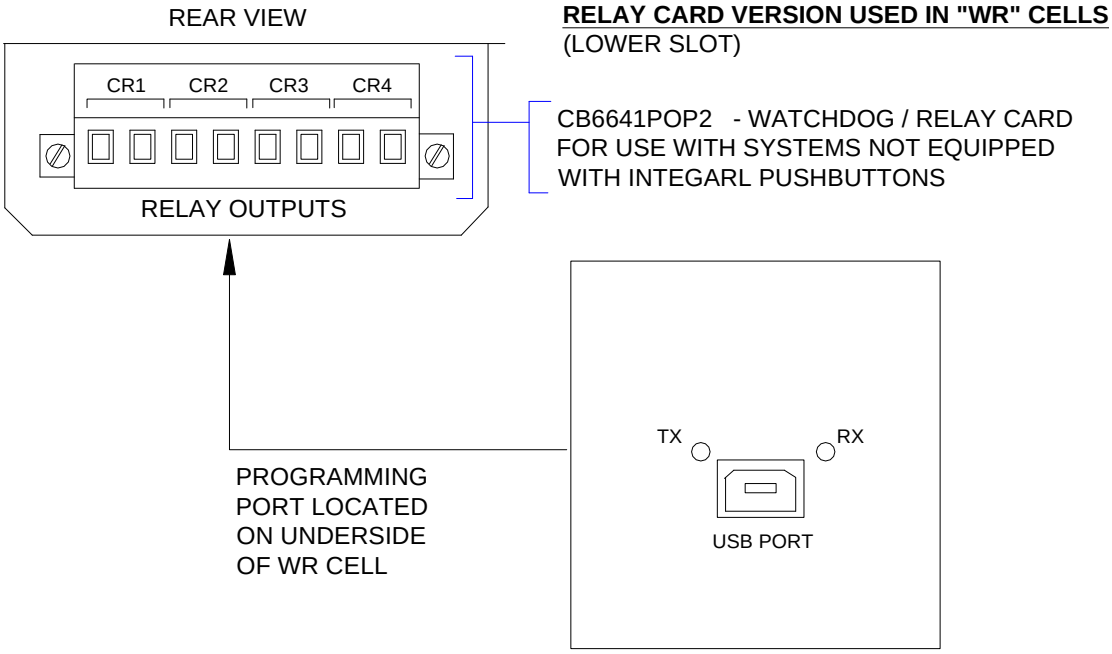
- Four Common Relays which can be programmed for use as horn, common alarm or watchdog relays
- Each of the output contacts can be set to N/C or N/O using a 3 way header and 2 way shorting bar located on the card.
- The non alarm coil state of each relays can be programmed to be either EN or DE-EN

Comm's Card that provides:

- One Isolated RS485 Port via a standard 9-way D-type connector.
- One Isolated Ethernet port via a standard RJ45 connector.
- Rx and TX LED's on both ports for diagnostic purposes.

USB Programming Port Location

The USB port has TX and RX Status LED's to monitor communication activity.



SECTION 3 – LOGIC SUPPLY & FUSING

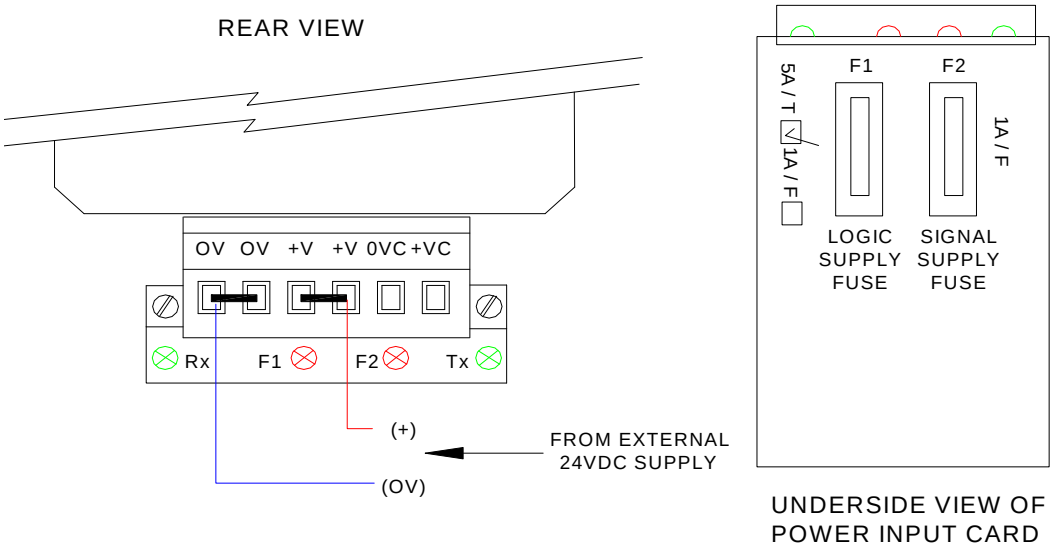
All 725B Alarm Annunciators operate from a 24VDC logic supply.

Externally Powered Systems

When external power supplies are used 24VDC must be connected to terminals OV and +V as shown below.

Fuse F1, (5 x 20mm 5A), is provided on the underside of the power input card to protect the alarm logic and +24VDC is internally linked to all of the associated cards within the system.

Red LED **F1** is used to indicate that the +V fuse has blown.



Fuses

FU-1A-002 - 5 x 20mm 1A signal supply fuse
FU-5A-003 - 5 x 20mm 5A logic supply fuse

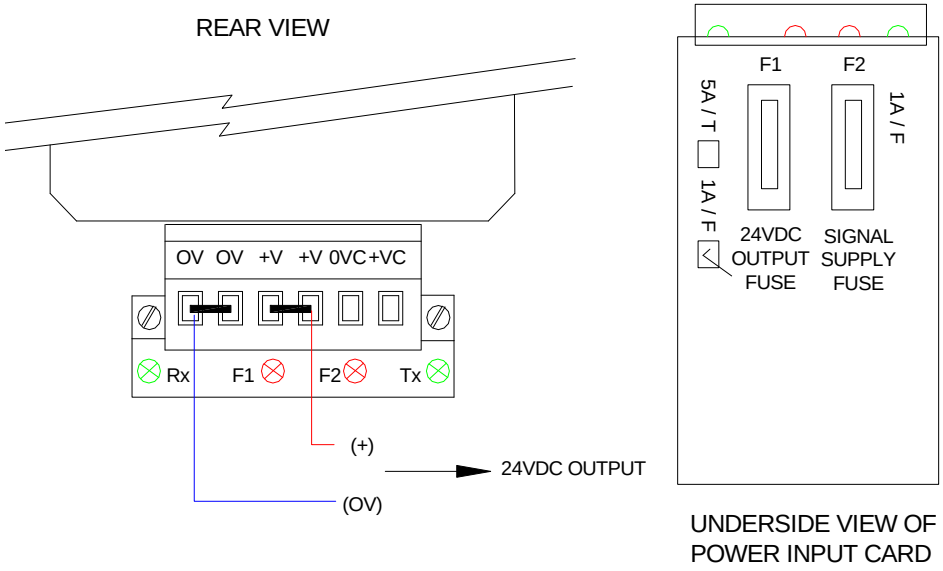
SI/O Card Versions

Part No	Description
CB6648POP1	Used on standard versions with remote power supplies
CB6648POP3	Used on versions with RS485 communications & remote power supplies

Systems using Internal Power Cards

When internal power supply cards are used the logic voltage is internally connected and +V is used to provide a 1A 24VDC output for use as a signal supply voltage.

Fuse F1 (5 x 20 mm 1A), is provided on the underside of the power input card to protect the 24VDC output.



Fuses

FU-1A-002 - 5 x 20mm 1A signal supply fuse
FU-1A-002 - 5 x 20mm 1A – 24vdc output protection fuse

SI/O Card Versions

Part No	Description
CB6648POP2	Used on standard versions with integral power supplies
CB6648POP4	Used on versions with RS485 communications & integral power supplies

SECTION 4 - SIGNAL VOLTAGE SETTING / WIRING

Setting Inputs for use with 24VDC or 125VDC

On standard 725B systems each 4 channel alarm card is suitable for use with 24VDC or 125VDC signal inputs.

Each channel on the alarm card is equipped with a 3 pin header and 2 way shorting bar that allows the user to set the input to match the required signal input voltage level. (24V or 125V)

Setting Inputs for use with 24VAC or 125VAC

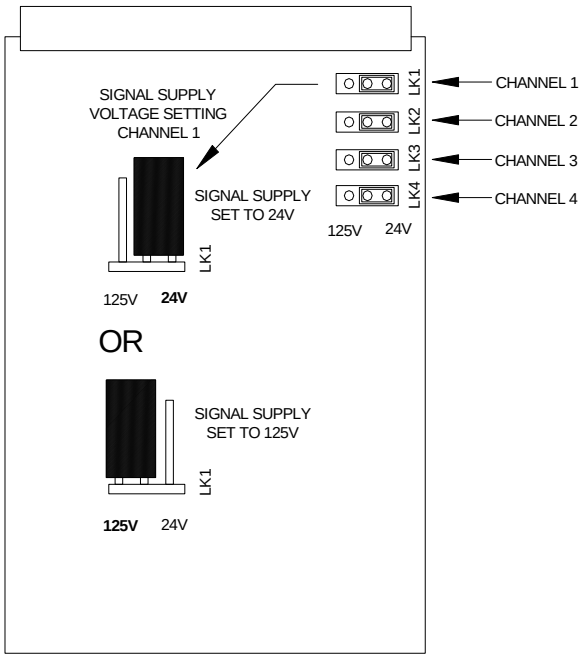
725B signal inputs are bi-polar and therefore suitable for use with 24VAC or 125VAC.

Each channel on the alarm card is equipped with a 3 pin header and 2 way shorting bar that allows the user to set the input to match the required signal input voltage level. (24V or 125V)

However when using AC inputs additional filters are added which result in a 25mS response time before the alarm activates.

In systems using Time Stamping the alarm would still indicate the time the alarm first occurred to the millisecond.

To set the signal supply voltage on each input to either 24VDC, 24VAC, 125VDC or 125VAC a drop-down menu is provided in the Configuration Software. Selection is made under the Input tab using the drop-down menu labelled “Field Contact Voltage (V)”



The settings are available on the following (4) channel alarm cards

Card Type	*Features*
CB6611POP1	***24/125V Signal Input***
CB6611POP3	***24/125V Signal Input plus 3 x Pushbutton Inputs***
CB6611POP5	***24/125V Signal Input and Time Stamping Option***
CB6611POP7	***24/125V Signal Input plus 3 x Pushbutton Inputs and Time Stamping Option***

Differential Input Versions

Card Type	*Features*
CB6611POP9	***24/125V Differential Signal Inputs***
CB6611POP11	***24/125V Differential Signal Inputs plus Time Stamping Option***

Setting Inputs for use with 48VDC or 250VDC

As an option 725B systems can be supplied with each 4 channel alarm card suitable for use with 48VDC or 250VDC signal inputs.

Each channel on the alarm card is equipped with a 3 pin header and 2 way shorting bar that allows the user to set the input to match the required signal input voltage level. (48V or 250V)

Setting Inputs for use with 48VAC or 250VAC

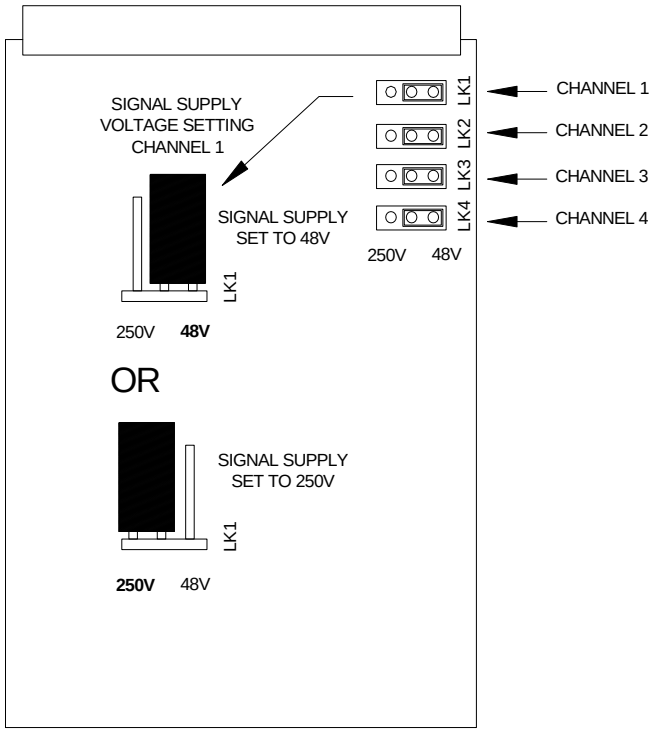
725B signal inputs are bi-polar and therefore suitable for use with 48VAC or 250VAC.

Each channel on the alarm card is equipped with a 3 pin header and 2 way shorting bar that allows the user to set the input to match the required signal input voltage level. (48V or 250V)

However when using AC inputs additional filters are added which result in a 25mS response time before the alarm activates.

In systems using Time Stamping the alarm would still indicate the time the alarm first occurred to the millisecond.

To set the signal supply voltage on each input to either 48VDC, 48VAC, 250VDC or 250VAC a drop-down menu is provided in the Configuration Software. Selection is made under the Input tab using the drop-down menu labelled “Field Contact Voltage (V)”



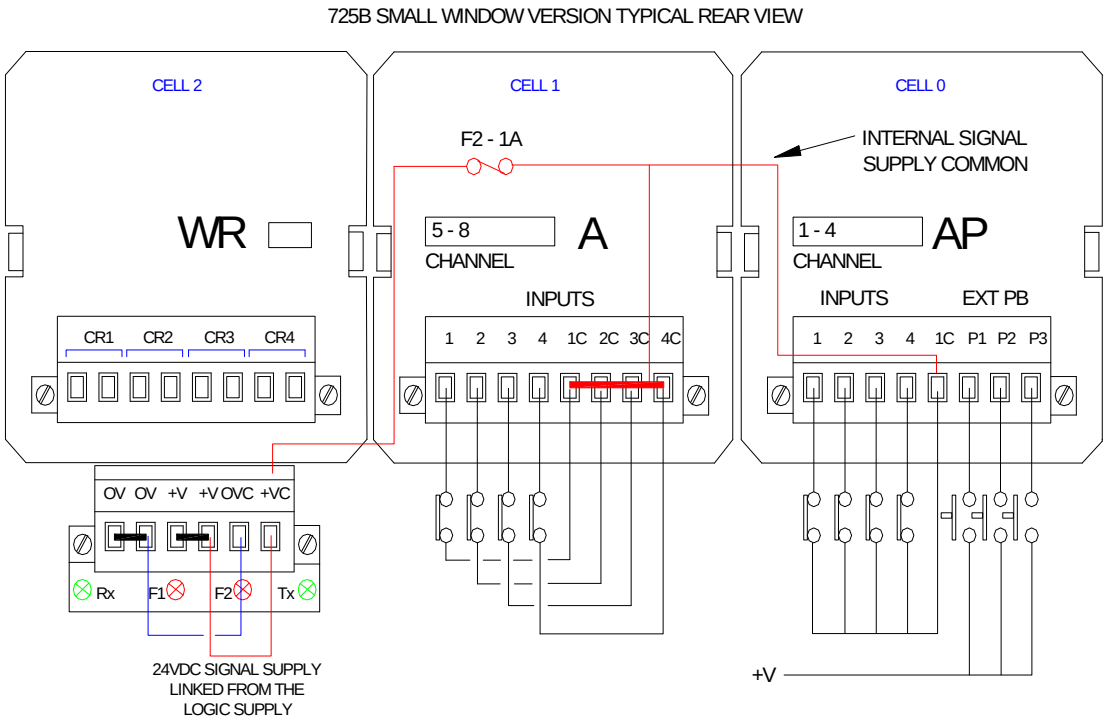
The settings are available on the following (4) channel alarm cards

Card Type	*Features*
CB6611POP2	*48/250V Signal Input*
CB6611POP4	*48/250V Signal Input plus 3 x Pushbutton Inputs*
CB6611POP6	*48/250V Signal Input and Time Stamping Option*
CB6611POP8	*48/250V Signal Input plus 3 x Pushbutton Inputs and Time Stamping Option*

Differential Input Versions

Card Type	*Features*
CB6611POP10	*48/250V Differential Signal Inputs*
CB6611POP12	*48/250V Differential Signal Inputs plus Time Stamping Option*

Standard 24VDC Signal Input Wiring



Each channel on the alarm card is provided with a 3 pin header and 2 way shorting bar which allows the user to select the inputs to operate on 24V

On standard 725B systems the 24VDC logic supply is factory linked to the signal supply input terminals as follows:-

Logic Supply		***Signal Supply***
OV	To	OVC
+V	To	+VC

This provides a +24VDC signal contact supply on all C terminals as shown above.

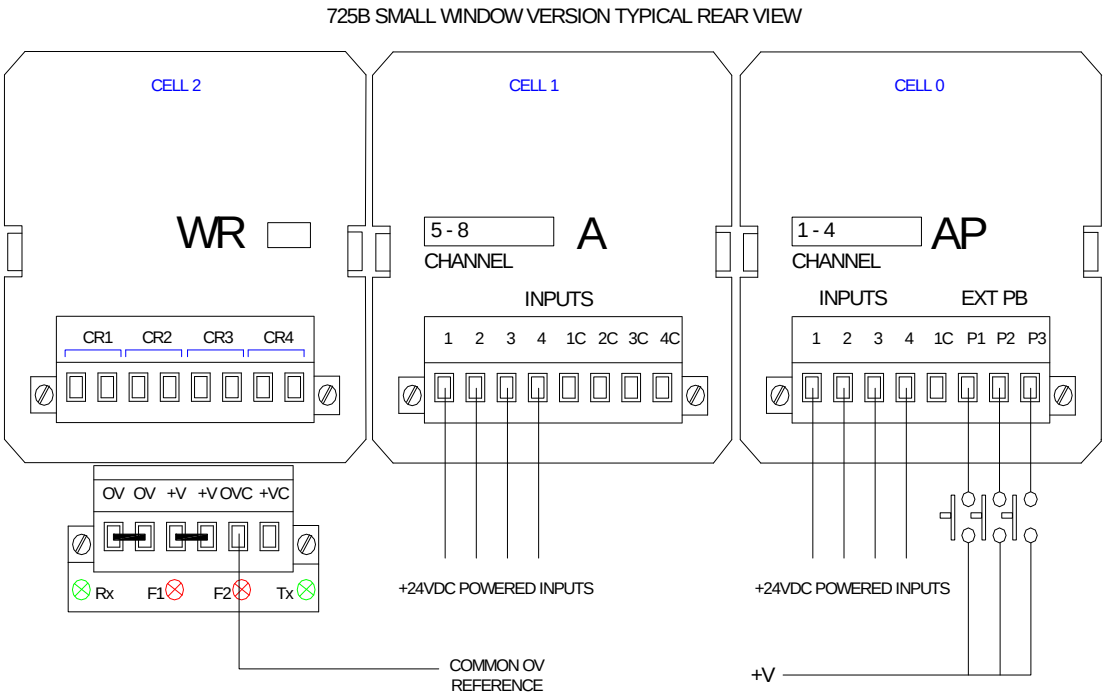
LED F2 is used to indicate that the signal supply, (+VC), fuse has blown.

As all *C terminals are internally linked the customer can connect each input contact to a dedicated terminal as shown in the middle cell or a single feed can be used for multiple contacts as shown in the right hand cell.

The common return for all remote pushbuttons is +V (+24VDC)

To set the signal supply voltage on each input to 24VDC a drop-down menu is provided in the Configuration Software. Selection is made under the Input tab using the drop-down menu labelled “Field Contact Voltage (V)”

Optional 24VDC Powered Input Wiring



Each channel on the alarm card is provided with a 3 pin header and 2 way shorting bar which allows the user to select the inputs to operate on 24V

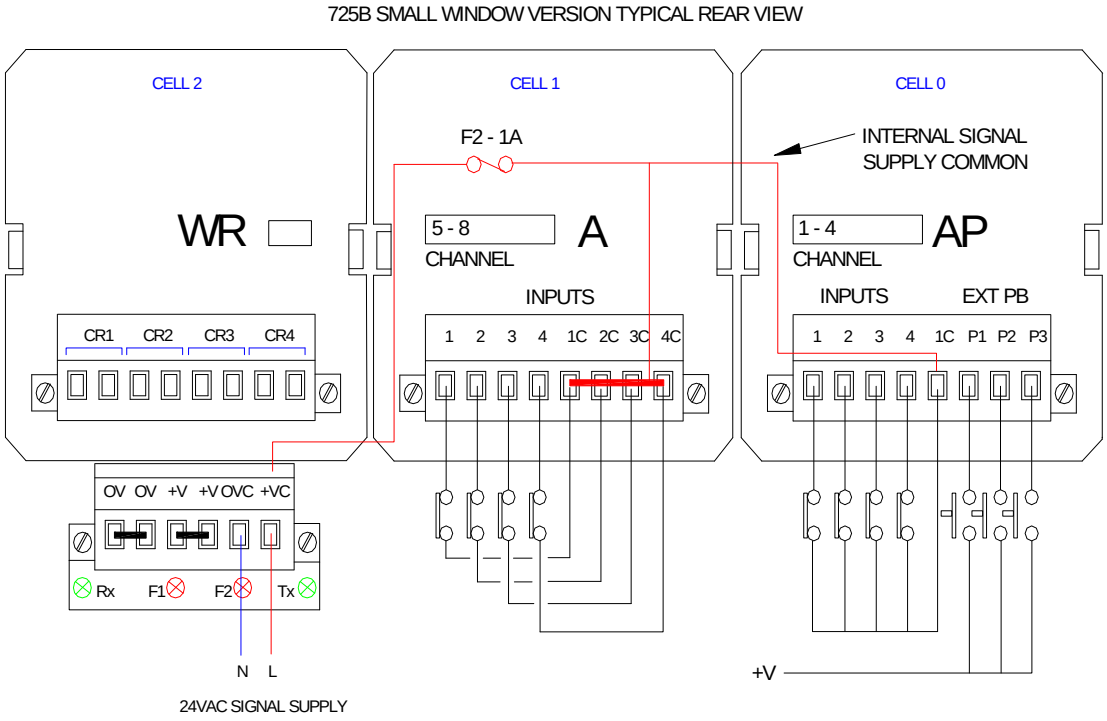
On standard 725B systems the jumper is set to 24VDC and the user is able to power the inputs from 3rd party devices, (PLC, DCS etc).

In these applications the user needs to connect the OV of the 3rd party device to the common OVC as shown above and the powered +24VDC input can be directly connected to the associated input terminal

The common return for all remote pushbuttons is +V (+24VDC)

To set the signal supply voltage on each input to 24VDC a drop-down menu is provided in the Configuration Software. Selection is made under the Input tab using the drop-down menu labelled “Field Contact Voltage (V)”

Optional 24VAC Signal Input Wiring



Each channel on the alarm card is provided with a 3 pin header and 2 way shorting bar which allows the user to select the inputs to operate on 24V

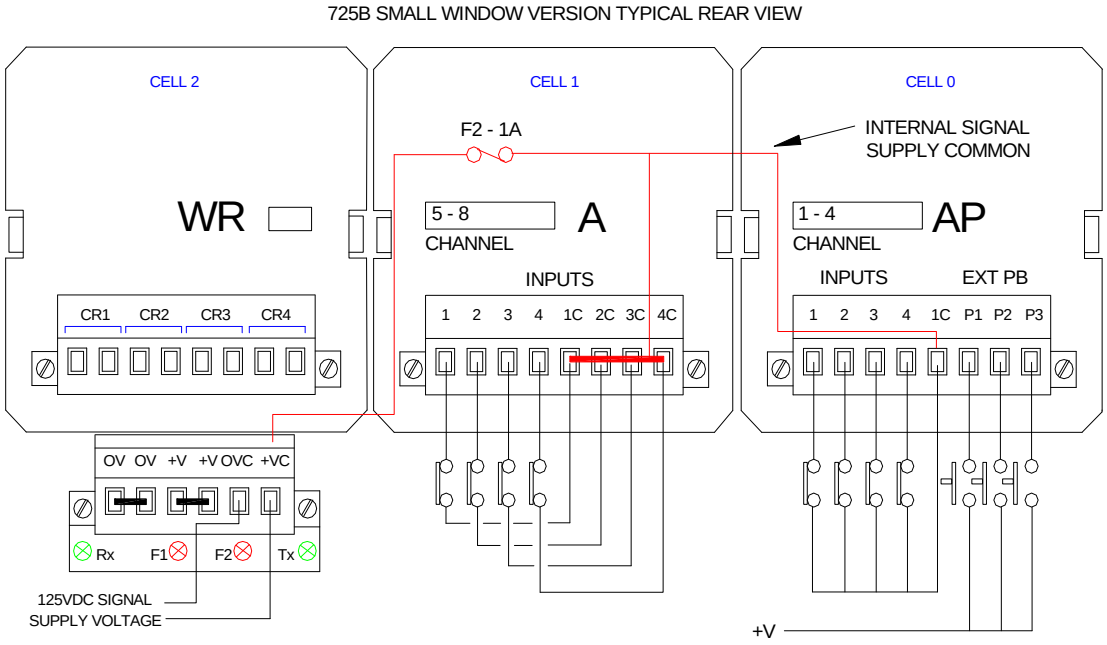
LED F2 is used to indicate that the signal supply, (+VC), fuse has blown.

As all *C terminals are internally linked the customer can connect each input contact to a dedicated terminal as shown in the middle cell or a single feed can be used for multiple contacts as shown in the right hand cell.

The common return for all remote pushbuttons is +V (+24VDC)

To set the signal supply voltage on each input to 24VAC a drop-down menu is provided in the Configuration Software. Selection is made under the Input tab using the drop-down menu labelled “Field Contact Voltage (V)”

Optional 125VDC Signal Input Wiring



Each channel on the alarm card is provided with a 3 pin header and 2 way shorting bar which allows the user to select the inputs to operate on 125V.

On 725B systems where 125VDC is required as a signal supply voltage this needs to be derived externally and connected to terminals OVC and +VC as typically shown above.

IMPORTANT:- Please ensure there are no external links between the logic supply and the signal supply input terminals i.e. OV and OVC and +V and +VC before applying the high voltage signal supply

LED F2 is used to indicate that the signal supply, (+VC), fuse has blown.

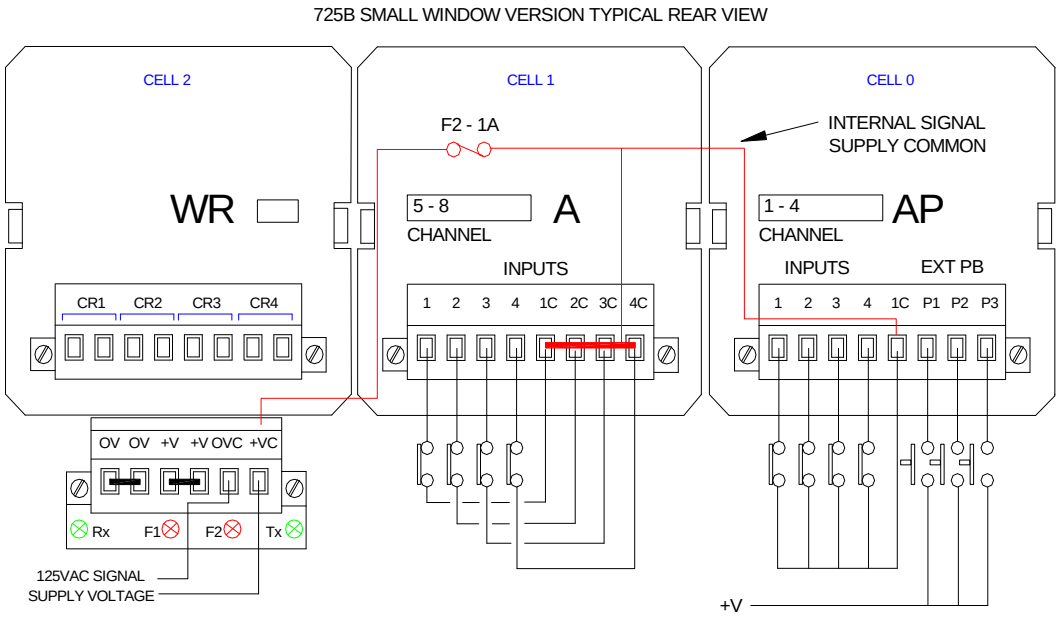
Fuse F2, (5 X 20mm 1A), is provided on the power input card to protect the signal supply voltage and the 125VDC is internally linked to all associated input card *C terminals to allow distribution to the external field contacts.

As all *C terminals are internally linked the customer can connect each input contact to a dedicated terminal as shown in the middle cell or a single feed can be used for multiple contacts as shown in the right hand cell.

The common return for all remote pushbuttons is +V (+24VDC)

To set the signal supply voltage on each input to 125VDC a drop-down menu is provided in the Configuration Software. Selection is made under the Input tab using the drop-down menu labelled “Field Contact Voltage (V)”

Optional 125VAC Signal Input Wiring



Each channel on the alarm card is provided with a 3 pin header and 2 way shorting bar which allows the user to select the inputs to operate on 125V.

On 725B systems where 125VAC is required as a signal supply voltage this needs to be derived externally and connected to terminals OVC and +VC as typically shown above.

IMPORTANT:- Please ensure there are no external links between the logic supply and the signal supply input terminals i.e. OV and OVC and +V and +VC before applying the high voltage signal supply

LED F2 is used to indicate that the signal supply, (+VC), fuse has blown.

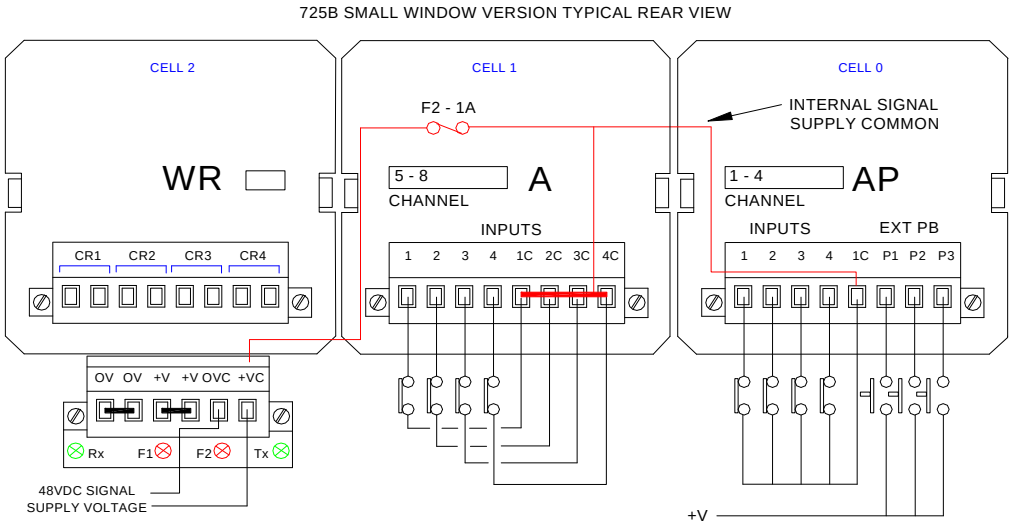
Fuse F2, (5 X 20mm 1A), is provided on the power input card to protect the signal supply voltage and the 125VAC is internally linked to all associated input card *C terminals to allow distribution to the external field contacts.

As all *C terminals are internally linked the customer can connect each input contact to a dedicated terminal as shown in the middle cell or a single feed can be used for multiple contacts as shown in the right hand cell.

The common return for all remote pushbuttons is +V (+24VDC)

To set the signal supply voltage on each input to 125VAC a drop-down menu is provided in the Configuration Software. Selection is made under the Input tab using the drop-down menu labelled “Field Contact Voltage (V)”

Optional 48VDC Signal Input Wiring



Note:- In applications that require 48VDC signal inputs RTK supply optional 4 channel alarm cards in place of the standard version

48VDC Signal Supply

Each channel on the alarm card is provided with a 3 pin header and 2 way shorting bar which allows the user to select the inputs to operate on 48V.

On 725B systems where 48VDC is required as a signal supply voltage this needs to be derived externally and connected to terminals OVC and +VC as typically shown above.

IMPORTANT:- Please ensure there are no external links between the logic supply and the signal supply input terminals i.e. OV and OVC and +V and +VC before applying the high voltage signal supply

LED **F2** is used to indicate that the signal supply fuse has blown.

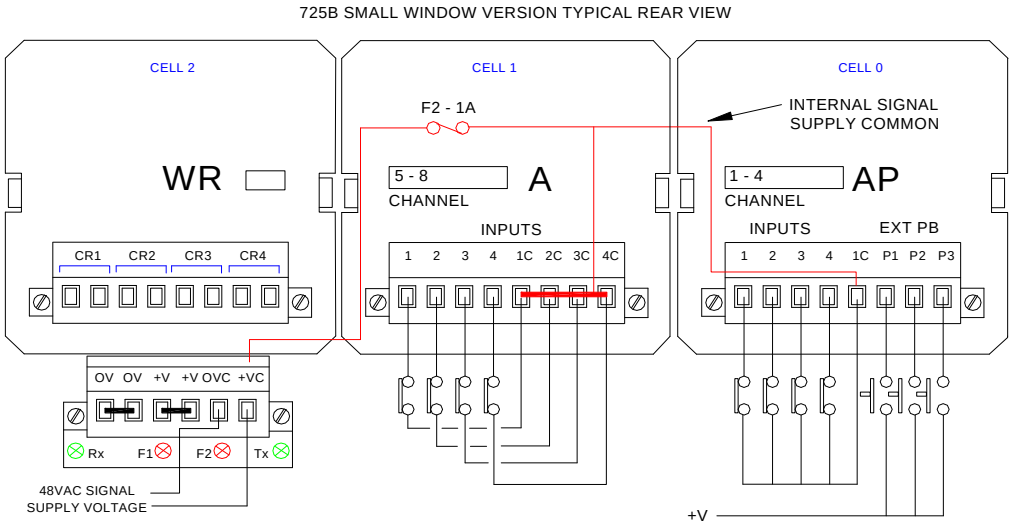
Fuse F2, (5 X 20mm 1A), is provided on the power input card to protect the signal supply voltage and the 48VDC is internally linked to all of the associated input card *C terminals to allow distribution to the external field contacts.

As all *C terminals are internally linked the customer can connect each input contact to a dedicated terminal as shown in the middle cell or a single feed can be used for multiple contacts as shown in the right hand cell.

The common return for all remote pushbuttons is +V (+24VDC)

To set the signal supply voltage on each input to 48VDC a drop-down menu is provided in the Configuration Software. Selection is made under the Input tab using the drop-down menu labelled “Field Contact Voltage (V)”

Optional 48VAC Signal Input Wiring



Note:- In applications that require 48VAC signal inputs RTK supply optional 4 channel alarm cards in place of the standard version

48VAC Signal Supply

Each channel on the alarm card is provided with a 3 pin header and 2 way shorting bar which allows the user to select the inputs to operate on 48V.

On 725B systems where 48VAC is required as a signal supply voltage this needs to be derived externally and connected to terminals OVC and +VC as typically shown above.

IMPORTANT:- Please ensure there are no external links between the logic supply and the signal supply input terminals i.e. OV and OVC and +V and +VC before applying the high voltage signal supply

LED **F2** is used to indicate that the signal supply fuse has blown.

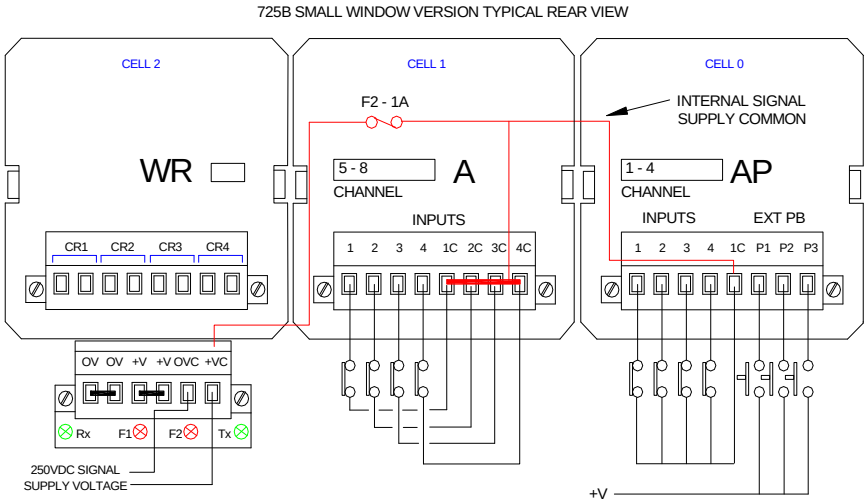
Fuse F2, (5 X 20mm 1A), is provided on the power input card to protect the signal supply voltage and the 48VAC is internally linked to all of the associated input card *C terminals to allow distribution to the external field contacts.

As all *C terminals are internally linked the customer can connect each input contact to a dedicated terminal as shown in the middle cell or a single feed can be used for multiple contacts as shown in the right hand cell.

The common return for all remote pushbuttons is +V (+24VDC)

To set the signal supply voltage on each input to 48VAC a drop-down menu is provided in the Configuration Software. Selection is made under the Input tab using the drop-down menu labelled “Field Contact Voltage (V)”

Optional 250VDC Signal Input Wiring



Note:- In applications that require 250VDC signal inputs RTK supply optional 4 channel alarm cards in place of the standard version

250VDC Signal Supply

Each channel on the alarm card is provided with a 3 pin header and 2 way shorting bar which allows the user to select the inputs to operate on 250V.

On 725B systems where 250VDC is required as a signal supply voltage this needs to be derived externally and connected to terminals OVC and +VC as typically shown above.

IMPORTANT:- Please ensure there are no external links between the logic supply and the signal supply input terminals i.e. OV and OVC and +V and +VC before applying the high voltage signal supply

LED **F2** is used to indicate that the signal supply fuse has blown.

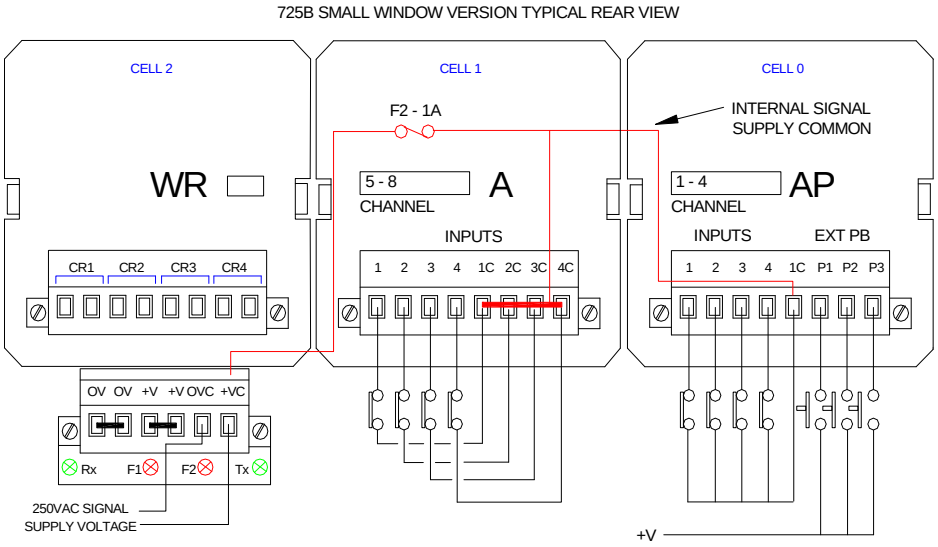
Fuse F2, (5 X 20mm 1A), is provided on the power input card to protect the signal supply voltage and the 250VDC is internally linked to all associated input card *C terminals to allow distribution to the external field contacts.

As all *C terminals are internally linked the customer can connect each input contact to a dedicated terminal as shown in the middle cell or a single feed can be used for multiple contacts as shown in the right hand cell.

The common return for all remote pushbuttons is +V (+24VDC)

To set the signal supply voltage on each input to 250VDC a drop-down menu is provided in the Configuration Software. Selection is made under the Input tab using the drop-down menu labelled “Field Contact Voltage (V)”

Optional 250VAC Signal Input Wiring



Note:- In applications that require 250VAC signal inputs RTK supply optional 4 channel alarm cards in place of the standard version

250VAC Signal Supply

Each channel on the alarm card is provided with a 3 pin header and 2 way shorting bar which allows the user to select the inputs to operate on 250V.

On 725B systems where 250VAC is required as a signal supply voltage this needs to be derived externally and connected to terminals OVC and +VC as typically shown above.

IMPORTANT:- Please ensure there are no external links between the logic supply and the signal supply input terminals i.e. OV and OVC and +V and +VC before applying the high voltage signal supply

LED **F2** is used to indicate that the signal supply fuse has blown.

Fuse F2, (5 X 20mm 1A), is provided on the power input card to protect the signal supply voltage and the 250VAC is internally linked to all associated input card *C terminals to allow distribution to the external field contacts.

As all *C terminals are internally linked the customer can connect each input contact to a dedicated terminal as shown in the middle cell or a single feed can be used for multiple contacts as shown in the right hand cell.

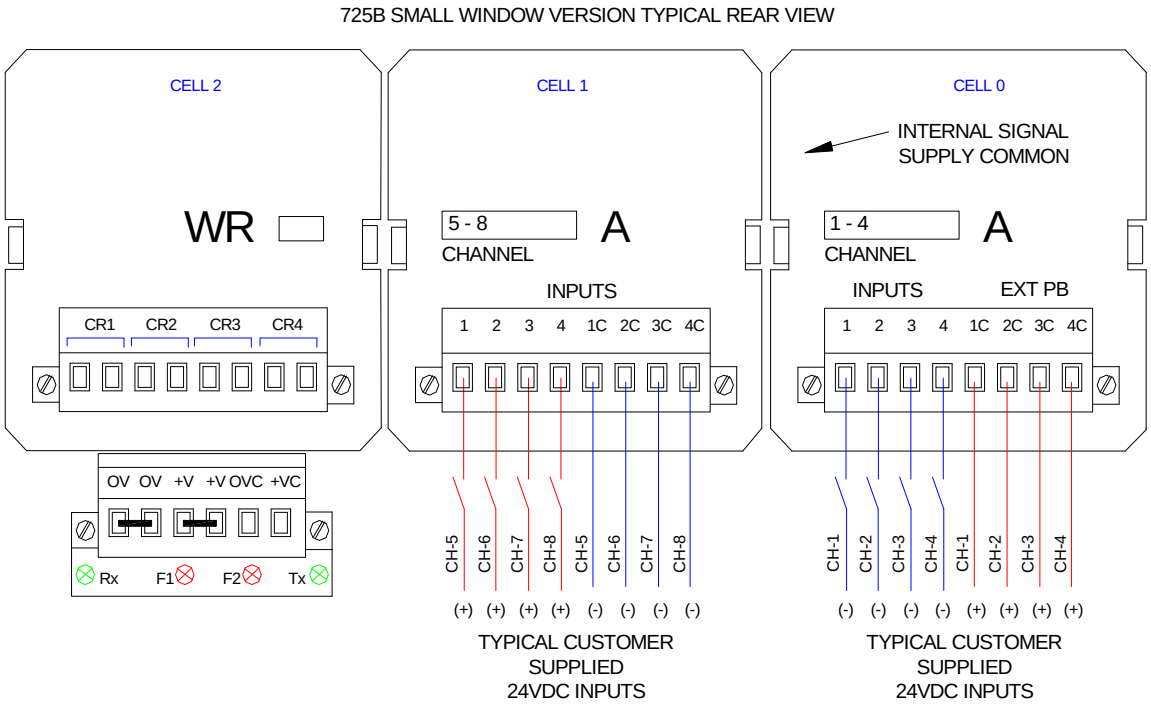
The common return for all remote pushbuttons is +V (+24VDC)

To set the signal supply voltage on each input to 250VAC a drop-down menu is provided in the Configuration Software. Selection is made under the Input tab using the drop-down menu labelled “Field Contact Voltage (V)”

Optional Differential Input Version Wiring

As an option RTK can supply fully isolated inputs for each alarm way.

As the Inputs are bi-polar the user can switch AC or DC voltages as required.



In the above typical example cell 0 is shown with OV switched inputs and cell 1 is shown with +24V switched inputs

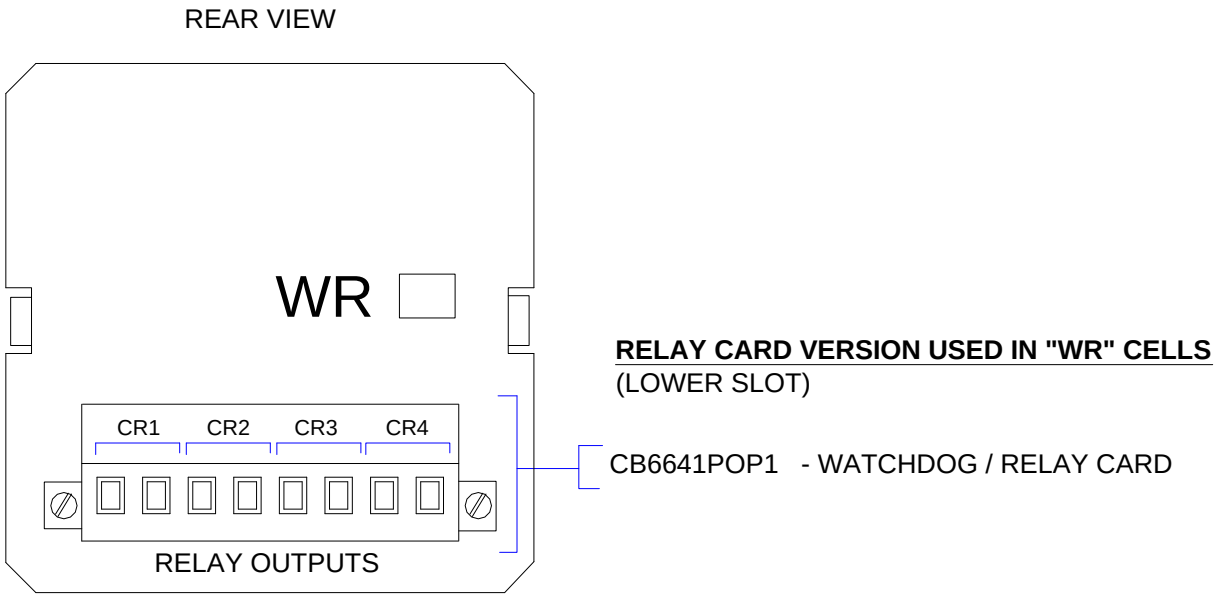
Standard 24V/125V AC/DC Version

Each (4) channel alarm card is provided with a 3 pin header and 2 way jumper link per channel which allows the user to select the input for use with either 24V or 125V as required.

Optional - 48V/250V AC/DC Version

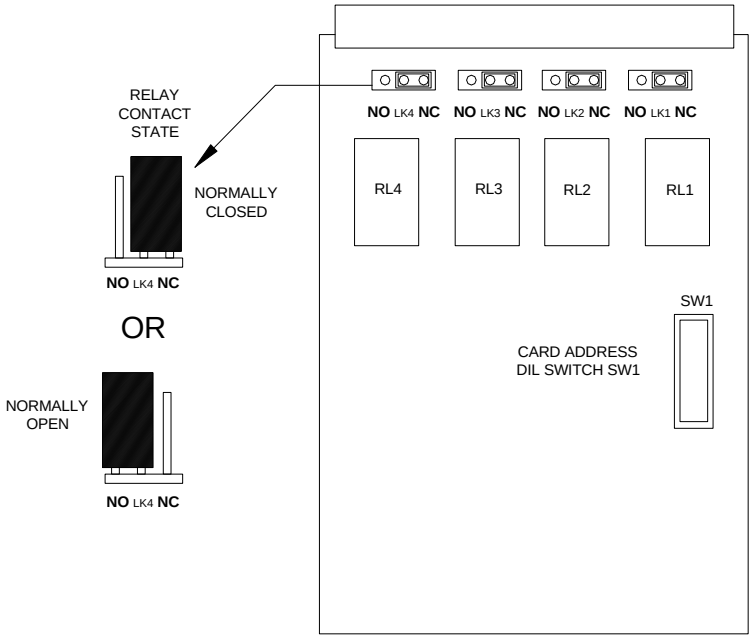
Each (4) channel alarm card is provided with a 3 pin headers and 2 way jumper link which allows the user to select the input for use with either 48V or 250V as required.

SECTION 5 – COMMON RELAYS



Four common relays are located in the WR Cell within the Annunciator as shown above.

Each relay is equipped with a C/O contact and the user can select the contact state to N/C or N/O using a 3 way header and 2 way shorting bar located on the card as shown below.



The coil state of each relay can be set to EN or DE-EN as described in the software configuration section of this manual.

Multiple common relay cards may be present in larger systems to provide the necessary features.

The function of each common relay can be set within the software allowing the relay to operate as:-

Group Relay

Once channels have been assigned to groups and the “group operation” has been defined the user is able to link a group to a common relay under the “WR” Tab within the software

The common relay will therefore act in accordance with the selected “group operation” which can be one of the following:-

First-Up
Activates when the first alarm occurs within a group

Input
Activates on alarm and remains active until the input has returned to normal.

Alarm
Activates on alarm and remains active until the input has returned to normal and the alarm has been reset to the off state

Audible
Activates on alarm and remains active until the mute or acknowledge pushbutton has been pressed.

Group Relay with Reflash

A common relay can be set to reflash each time a new event occurs within the group to prevent subsequent events being masked by a standing alarm

Pushbutton Follower Relay

Any common relay can be set to follow the action of any pushbutton.

The common relay function should be set to match the required pushbutton i.e. if lamp test is selected the common relay contact will activate in sympathy when the lamp test pushbutton is pressed.

Diagnostic / Watchdog Relay

Any common relay can be set to operate as diagnostic / watchdog relay to provide a volt free contact for use with 3rd party devices to indicate that a fault has occurred within the annunciator.

The following options are available:-

All Faults Monitoring

The common relay will activate when any error is detected within the system

Field Contact Monitoring

If the signal supply used to initiate each alarm channel is lost or the internal signal supply protection fuse has blown the relay will change state and will remain in the abnormal state until power has been restored. In addition the system can provide an indication of line resistance

System Fault Monitoring

If a system fault is detected within the unit the relay will change state and will remain in the abnormal state until the system is functioning correctly.

Communication Failure Monitoring

If the system detects a loss of data on the communication link the relay will change state and will remain in the abnormal state until communications are functioning correctly

Power Failure Monitoring

If the 24VDC logic power fed to the annunciator is lost or the internal logic supply protection fuse has blown the relay will change state and will remain in the abnormal state until power has been restored.

Card Fault Monitoring

If any of the cards within the system are not functioning correctly the relay will change state and will remain in the abnormal state until the card functions correctly.

Ground Fault Monitoring

If the optional ground fault monitoring card is fitted the common relay will change state whenever a ground fault is detected and will remain in the abnormal state until the ground fault has been cleared.

LED Failure Monitoring

If any window suffers a total failure of the LED assemblies the common relay will change state and will remain in the abnormal state until illumination is restored. (Please note:- The system checks for LED failure on an hourly basis)

GPS Monitoring

On systems supplied with optional time stamping and GPS time sync. the common relay will activate if the GPS time sync. is not available.

Printer Fault Monitoring

On systems supplied with optional time stamping and online printing of alarms the common relay will change state when any printer errors occur and will remain in the abnormal state until the printer error has been resolved.

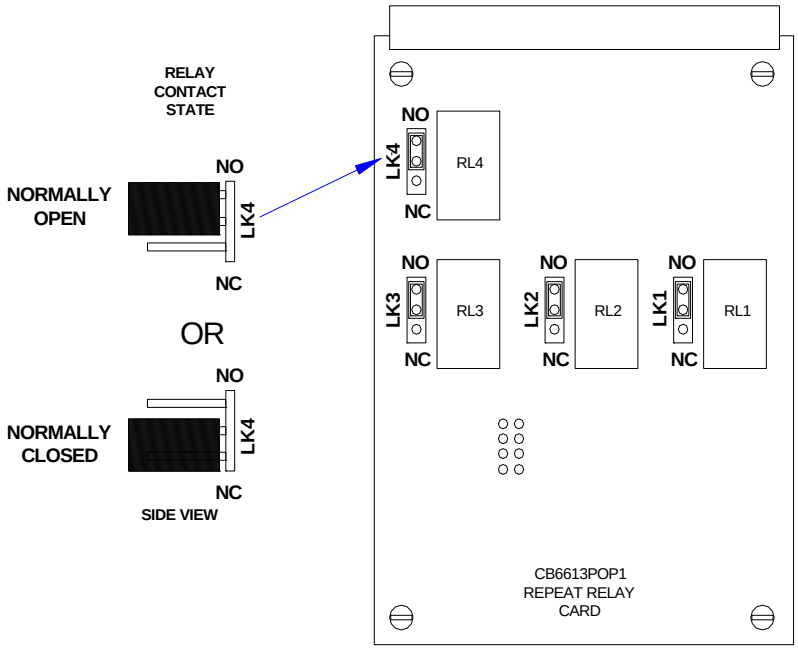
Real Time Clock Fault Monitoring

The common relay will change state if any faults are detected in the RTC and will remain in the abnormal state until the RTC returns to normal.

SECTION 6 – INDIVIDUAL CHANNEL REPEAT RELAYS

Each four channel alarm card can be supplied with an optional four channel relay card, part no CB6613POP1, which plugs into the four channel alarm card and provides the user with a volt-free contact per alarm channel for use with 3rd Party devices.

Each relay is equipped with a C/O contact and the user can select the contact state to N/C or N/O using a 3 way header and 2 way shorting bar located on the card as shown below



Each relay can be configured in software to operate in accordance with one of the following:-

Input Follower

The relay changes state each time there is a change to the associated signal input contact.

Logic Follower

The relay changes state on alarm and remains in the abnormal state until the input has returned to normal and the logic has been reset using the pushbuttons associated with the ISA sequence set for this channel.

Display Follower

The relay changes state on alarm and faithfully follows the display window i.e. Flashing, Steady or Off depending on the alarm sequence selected for this channel.

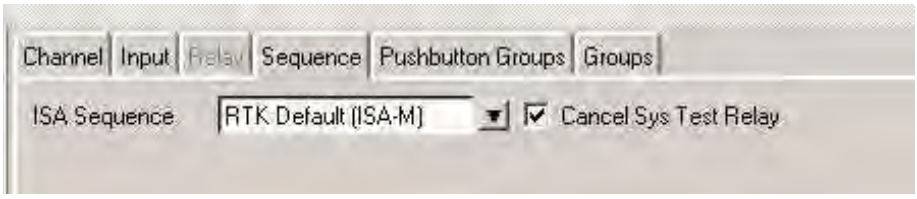
Cancel System Test Relay

On systems supplied after February 1st 2010 using configuration software version 2.0.5 or higher the user is able to prevent the individual channel repeat relays operating when the system test pushbutton is pressed.

This feature was previously only available in “View in Advance” mode

This feature is selectable under the sequence tab as shown below and is selectable on a global basis i.e. individual channel repeat relays can be set to operate on system test or can be prevented from operating when system test is pressed.

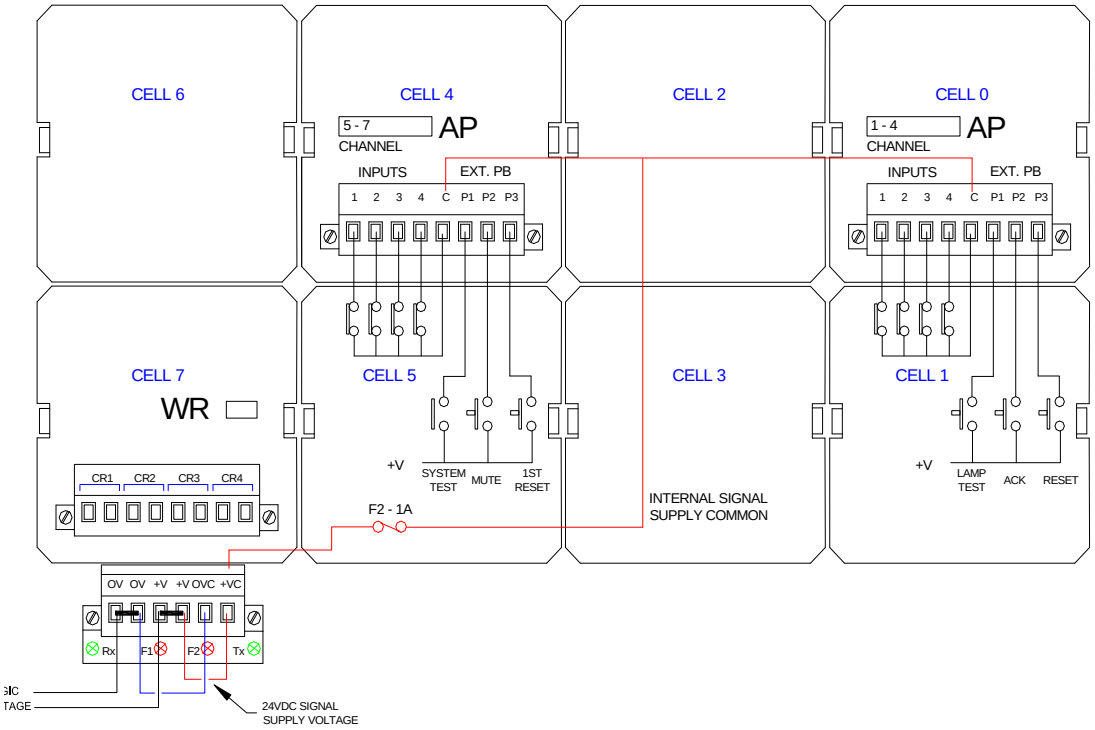
In the example below the repeat relays will not operate during system test.



SECTION 7 - TYPICAL 725B REAR VIEWS

The following details are provided as typical examples of 725B Annunciator rear views showing alarm inputs, remote pushbutton inputs, common alarm relay outputs, 24VDC logic and signal wiring

Typical Large Window Version,
(each alarm window = 60mm w x 60mm h)



The above rear view shows a typical large window 725B annunciator 4 cells wide x 2 cells high with seven active alarms, common relay card and an integral pushbutton module.

Each cell within the Annunciator is used to display a single channel.

In the example above cell 0 and cell 4 are equipped with a four channel alarm card plus provision for three remote pushbutton inputs. As standard the pushbutton inputs are software configured as follows:-

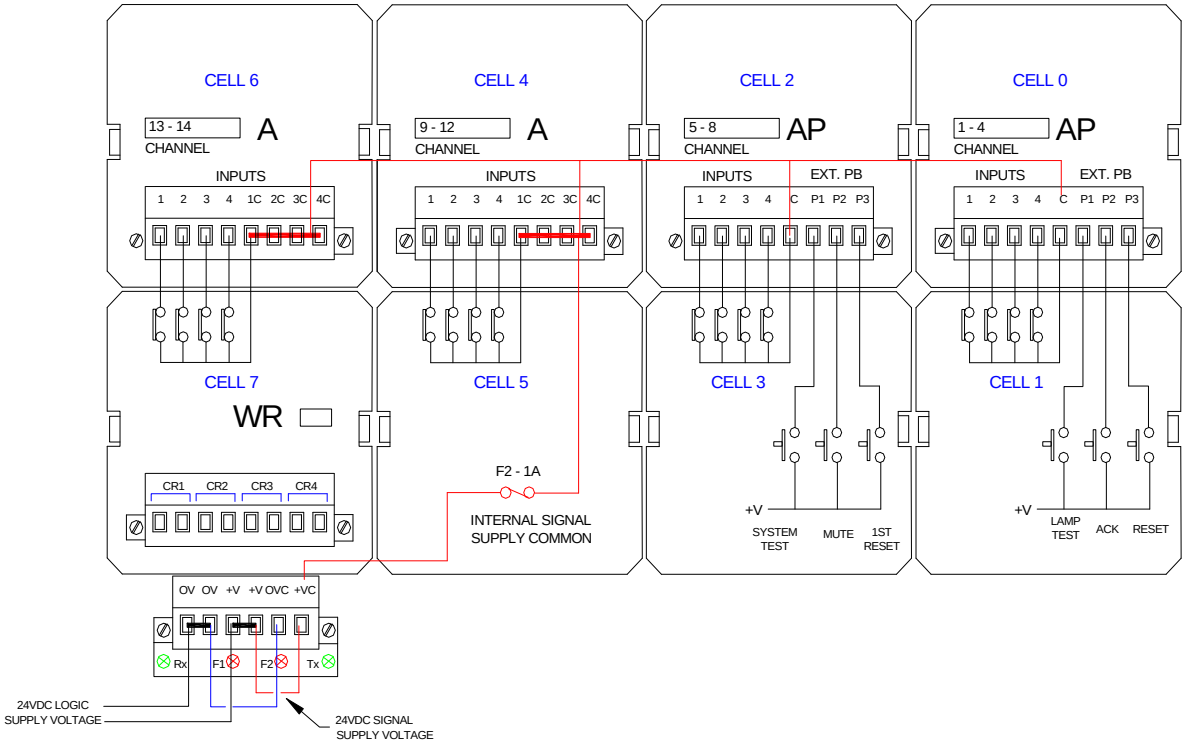
Cell 0 ---- **P1** = Lamp Test / **P2** = Ack / **P3** = Reset

Cell 4 ---- **P1** = System Test / **P2** = Silence / **P3** = 1st Reset

These can be reconfigured in software as required.

In large window versions of the 725B only the first cell in a group of four is supplied with an alarm card and the outputs are distributed to the next three cells – working down in columns then moving onto the next row.

Typical Medium Window Version,
(each alarm window = 60mm w x 30mm h),



The above rear view shows a typical medium window 725B configured 4 cells wide x 2 cells high with fourteen active alarms, common relay card and an integral pushbutton module.

Each cell within the Annunciator is used to display two alarm channels.

In the example above cell 0 and cell 2 are equipped with a four channel alarm card plus provision for three remote pushbutton inputs. As standard the pushbutton inputs are software configured as follows:-

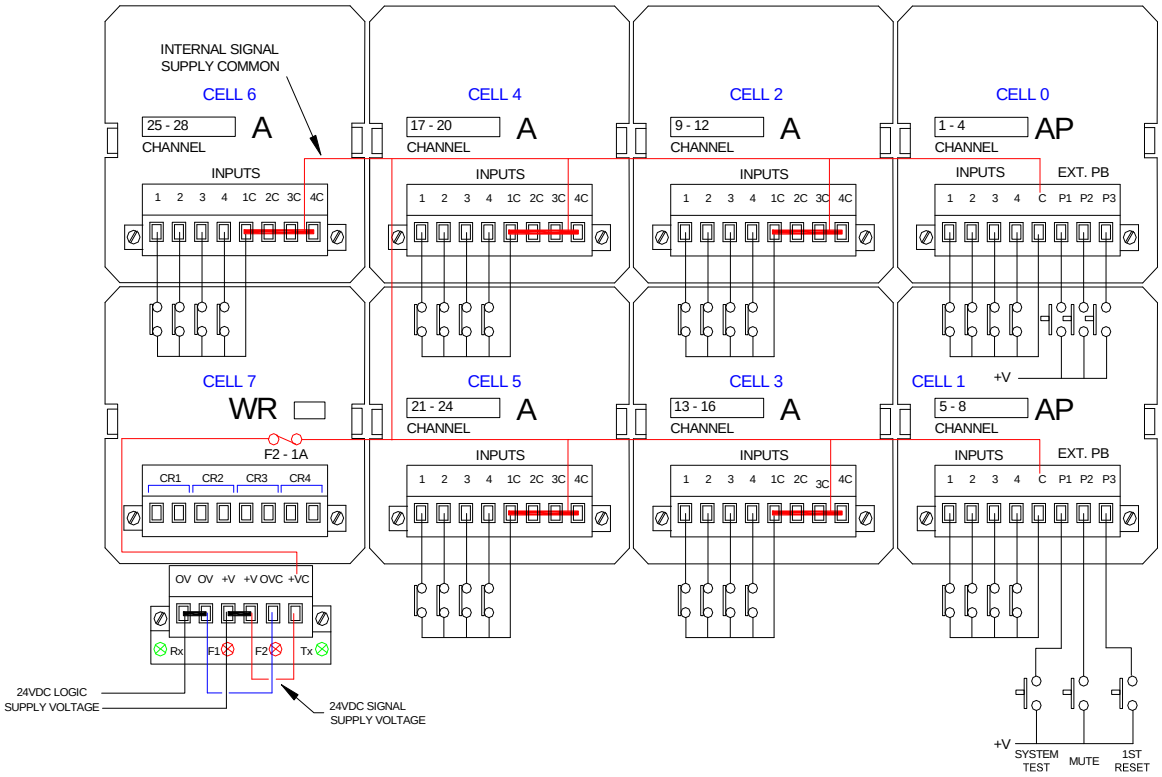
Cell 0 ---- **P1** = Lamp Test / **P2** = Ack / **P3** = Reset

Cell 2 ---- **P1** = System Test / **P2** = Silence / **P3** = 1st Reset

These can be reconfigured in software as required.

In medium window versions of the 725B only the first cell in a group of two is supplied with an alarm card and the outputs are distributed to the next cell – working down in columns and then moving onto the next row.

Typical Small Window Version, (each alarm window = 30mm w x 30mm h),



The above rear view shows a typical small window 725B configured 4 cells wide x 2 cells high with twenty eight active alarms, common relay card and an integral pushbutton module.

Each cell within the Annunciator is used to display four alarm channels.

In the example above cell 0 and cell 1 are equipped with a four channel alarm card plus provision for three remote pushbutton inputs. As standard the pushbutton inputs are software configured as follows:-

Cell 0 ---- **P1** = Lamp Test / **P2** = Ack / **P3** = Reset

Cell 1 ---- **P1** = System Test / **P2** = Silence / **P3** = 1st Reset

These can be reconfigured in software as required.

In small window versions of the 725B each cell is supplied with an alarm card and the outputs are distributed to four channels within the cell.

SECTION 8 - INSTALLATION

Unpacking

Once the item has been unpacked please visually examine the unit for any signs of transit damage before installing the unit into the control system. If any damage has occurred please report the damage to the freight forwarder and copy RTK. The alarm annunciator is supplied with panel mounting clamps locked in place, however please check all packages to ensure that no additional pieces are left in the box as any auxillary items like power supplies, horns, pushbuttons or spares kits will be packed separately.

Please double check that all items listed on the packing list have been unpacked before disposing of any packing material.

Mounting

Standard 725B units are designed for panel mounting, as an option they can be supplied fitted within 19” filler plates to allow direct mounting into Industry standard 19” rack systems or fully integrated into wall or floor standing panels.

Panel Mounting

CABINET DIMENSIONS IN MM						
WIDE				HIGH		
Cells	Overall	Cut-Out		Cells	Overall	Cut-Out
1	88	74		1	88	74
2	148	134		2	148	134
3	208	194		3	208	194
4	268	254		4	268	254
5	328	314		5	328	314
6	388	374		6	388	374
7	448	434	X	7	448	434
8	508	494		8	508	494
9	568	554		9	568	554
10	628	614		10	628	614
11	688	674		11	688	674
12	748	734		12	748	734
13	808	794		13	808	794
14	868	854		14	868	854
15	928	914		15	928	914
16	988	974		16	988	974

Please note:-
The cut out tolerance should be with ±2mm.

Annunciator depth is 143mm

Caution
The above table indicates the dimensions based on the number of **cells** high and wide this should not be confused with the number of alarm windows.

The number of windows available per cell is determined by the window style

Window Style	Window Size mm	Alarms PER cell
Large	60 W x 60 H	1
Medium	60 W x 30 H	2
Small	30 W x 30 H	4

19” Rack Mounting
725B Alarm Annunciators are suitable for mounting within 19” racks using suitable filler plates which can be supplied as optional items.

Units from 1 to 7 cells wide are possible within the 19” rack dimensional limits

The number of cells high is dependant on the available space available within the 19” rack.

Wall Mounting
RTK offer a full integration service where Panel mounted Annunciators are supplied within an industry standard Wall mounting Enclosure, with all customer connections typically wired to Weidmuller terminals for ease of connection to the field device.

Floor Standing
RTK offer a full integration service where Panel mounted Annunciators are supplied within an industry standard Floor Standing Enclosures, with all customer connections typically wired to Weidmuller terminals for ease of connection to the field device.

SECTION 9 - SOFTWARE INSTALLATION

725B Configurator Installation

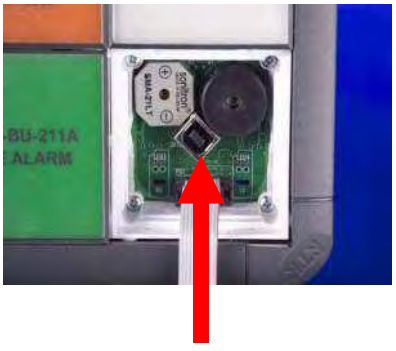
The configuration program and associated drivers are supplied on a CD along with a USB cable. Before connecting the cable to the Annunciator please ensure the software has been loaded onto a local PC or laptop.

First place the CD into the associated Drive and locate the file titled RTKConfiguratorInstaller.exe. If you require desktop and start menu short cuts please tick the option boxes as shown below.

After the program has been installed, please ensure the Annunciator is powered and then the pushbutton faceplate can be removed to expose the USB port as described below:

A small flat blade screwdriver can be used to gently ease the top edge of the pushbutton face plate out which allows access the USB programming port which can be used to:-

4. Upload a configuration from an existing 725B
5. Download a configuration to the 725B
6. View diagnostic data whilst fault finding.



USB Port

USB Drive Installation

With the Annunciator powered plug the USB cable into the USB Port and the other end of the cable into the PC or laptop.

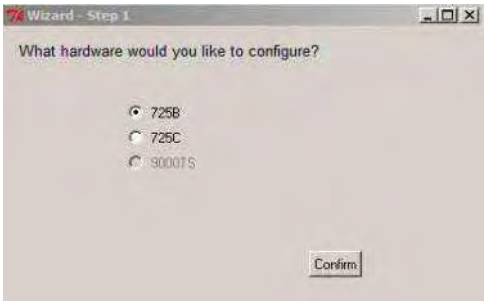
The “Found New Hardware” Balloon will appear. Click on the balloon to launch the New Hardware Wizard. Select “Install from a specific location”

Click next and note the root path shown next to the browse control button in the details below. If this path is not visible use browse to locate the following: - “C:\Program Files\RTK Instruments\Configurator\drivers”

During the driver install, an information box appears. Please select the “Continue Anyway” button to proceed.

The associated drivers should now be fully loaded and ready to use.

The following screen appears once the software has been initialised which invites the user to select the hardware type to be configured as shown below.



Select the 725B radio button using a left mouse click and once this has been selected the user is prompted to select one of three options:-

Auto Detect Hardware Configuration.

If a 725B System is connected to the associated PC via the USB programming port and communication has been established the software will be able to read the configuration data direct from the annunciator system.

Load from a Saved File

If a 725B configuration file has been previously saved the user can load the data to the configuration software using “Load from a saved file” and normal Microsoft Windows ® navigation techniques to select the stored data.

Note: This doesn’t include any port mapping data, this must be loaded separately from the mapping spreadsheet.

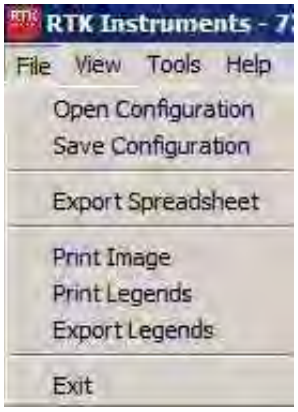
Create a New System

This menu is greyed out and the feature is only used during the manufacturing process to define the system structure.

After the software has loaded the user is able to access the following Menu’s

File Menu

The File Menu provides access to the following:-.



Open Configuration

Selecting the File Menu followed by “Open Configuration” allows a previously saved configuration file to be uploaded. Standard Microsoft Windows ® navigation techniques allow the user to locate the file and a left mouse click on the “Open” command button uploads the configuration for review or modification.

Save Configuration (*.rtk)

Once the user has created a “new” or modified an “existing” configuration the associated file can be saved using the File Menu followed by “Save Configuration”. Standard Microsoft Windows ® navigation techniques can be used to define the location and after a file name has been defined a left mouse click on the “Save” command button completes the process.

Export Spreadsheet

Once a configuration has been defined the user is able to export all of the configuration data to a Microsoft Excel spreadsheet for record purposes.

Print Image

The configuration software provides access to front or rear views of the annunciator and these views can be printed if required. Once “Print Image” has been selected additional sub menus are available to allow selection of printer type, page size, orientation etc.

Print Legends

The configuration software allows the user to define the alarm legends for each channel as described later in this manual.

Once the Legend details have been entered into the software the user can

1. Print a paper copy of the legends for record purposes

2. Use acetate film in a laser printer to print the alarm legends which can be fitted to the alarm annunciator as required.

Export Legends

As an alternative the user can save an electronic copy of the legend details using the “Export Legends” menu and standard Microsoft Windows ® navigation techniques to save the file in Microsoft Excel format.

Exit

The “Exit” Menu allows the user to quit the application but please ensure that you save any configuration changes before selecting exit.

View Menu

The following options are available under the “View” menu

Normal View

In the “Normal View” the number of groups displayed is limited to 8. A max of 32 Groups are available within the 725B for use as Horn, First Up or Common Alarm groups and the additional groups are accessed under the advanced view.

Advanced View

In more complex applications the “Advanced View” allows full access to all 32 groups and other advanced features within the annunciator as shown in the example below.

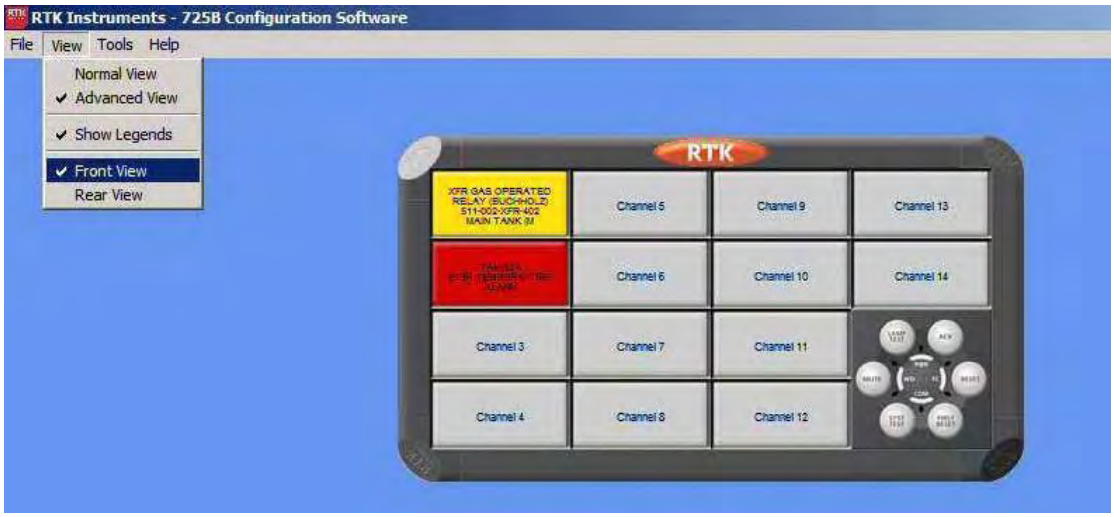
Show Legends

The alarm text and colour of each alarm way can be displayed within the configuration software by selecting the “View” menu followed by the “Show Legends” as shown below. Channel numbers are used as default to identify each alarm way and the nameplate colour is set to red however the user is able to edit the text and colour of each channel to match the annunciator fascia and to aid navigation within the software.

As a default the window colour is Red and the channel number is used to identify each alarm way. The user is able to edit the alarm text and colour of each channel to provide a clearer view and to aid navigation within the software.

Front View

The front view of the alarm Annunciator is displayed by default to simplify configuration. This view is defined under the “View” menu followed by “Front View” as shown below.



Rear View

As an alternative the rear view of the alarm annunciator can be displayed showing details of the associated cells.

This view is accessed using the “View” menu followed by “Rear View” as shown below.

Tools Menu

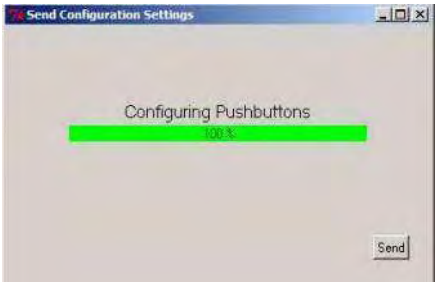
The following options are available under the “Tools” menu

Send Settings

Selecting the “Send Settings” menu allows the user to transmit the configuration to the associated 725B Annunciator. Once selected the Communications Port will be displayed and the “Send” command key should be pressed using a left mouse click.

If an annunciator is not detected the following error message will be displayed.

If communication is established a status bar is used to provide a visual indication of progress as shown below.

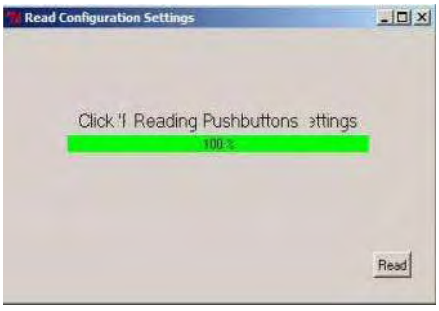


Receive Settings

Selecting the “Receive Settings” menu allows the user to read the configuration from the associated 725C Annunciator. Once selected the “Read” command key should be pressed using a left mouse click.

If an annunciator is not detected the following error message will be displayed.

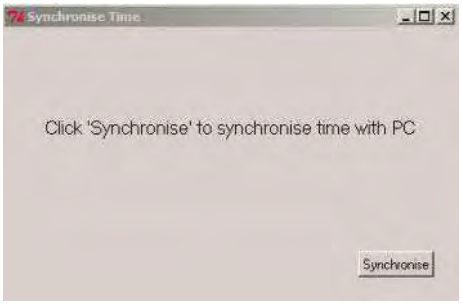
Once communication has been established a status bar is used to provide a visual indication of progress as shown below.



Synchronise Time

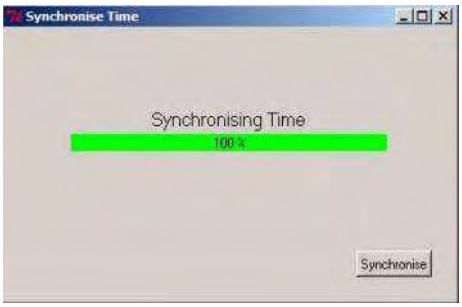
725B Systems are available with a Sequential Event Recording option which provides Time Stamping of each alarm to a minimum of 1ms resolution. The time stored within the 725B system can be synchronised to the PC by selecting “Tools” and “Synchronise Time” menu.

Once selected the user is presented with the following screen



If the user wishes to proceed a left mouse click from the “Synchronised” command button will commence transmission between the PC and the Annunciator.

A status bar provides indication of transmission, and once it has reached 100% the user can close the associated window.

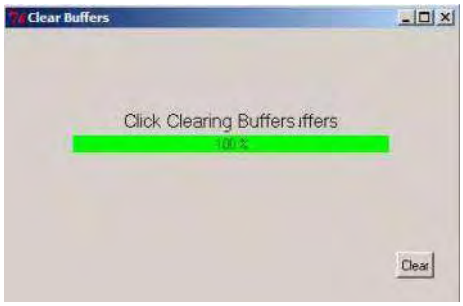


Clear Buffers

CAUTION
The user must be aware that this command erases ALL historical alarm data therefore this command should be used with caution.

Event Buffers are provided within the 725B Annunciator to store alarm data and time stamp information for future analysis however during the installation and commissioning phase these buffers can contain a large number of false alarm data. Selecting the “Tools” and “Clear Buffers” menus provides access to the following screen.

Selecting the “Clear” command button using a left mouse click will erase all of the stored data and a status bar is used to indication progress.



Once the “Status Bar” has reached 100% the window can be closed.

Restore System Settings to Default

If the software has been used to trial configurations the unit can be returned to factory default settings using the “Tools” menu followed by “Restore System Settings to Default” as shown below.

CAUTION

This setting will automatically convert **ALL** of the Systems options to the factory default setting and therefore it should only be used with caution. Full details of default settings are provided in the rear of this manual.

Help

Dynamic help screen provide help for specific features as required. At any time the user can select the “Help” Menu to access information on the selectable features of the 725B.

The user is able to search by topic and navigate forward and backwards within the help call out screens as required.

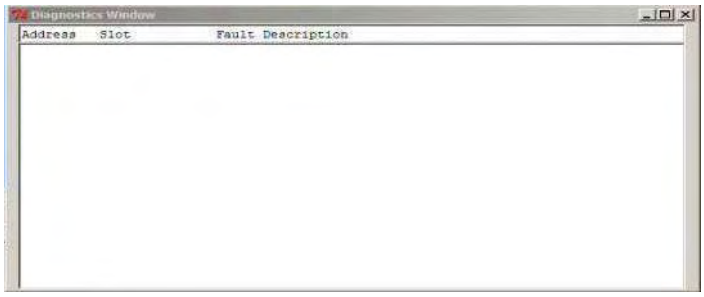
About Configurator

This allows the user to view the revision number of the configuration software

Diagnostics

All units are supplied with an inbuilt diagnostic facility which allows the user to connect the supplied USB cable to a PC equipped with the configuration software to provide dynamic diagnostic feedback.

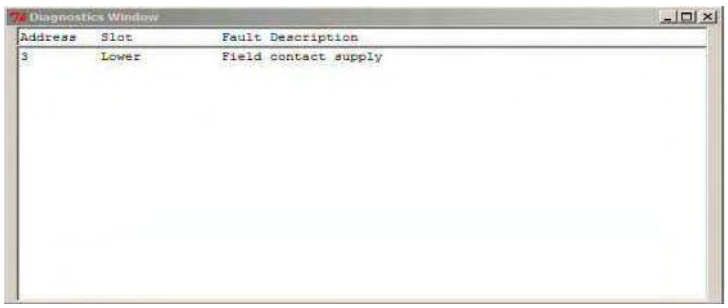
Once selected the following screen will appear



If no errors are detected the diagnostic window will be blank as shown above

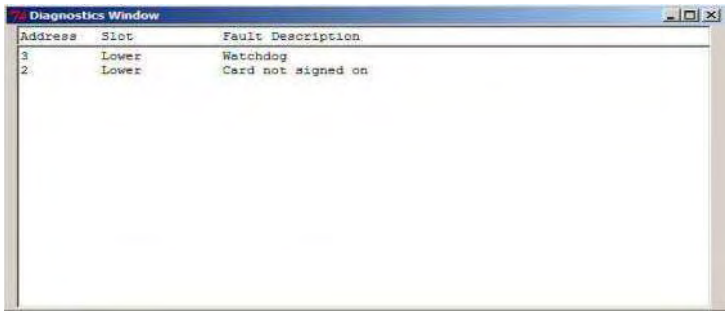
Example 1

In the typical example shown below the signal supply voltage has not been detected, typically as a result of a blown fuse, and the error message indicates that the user should check the field contact supply.



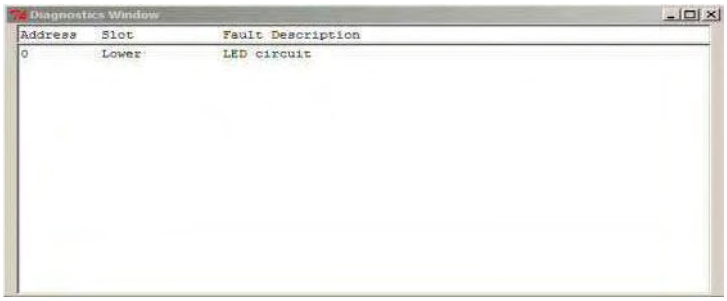
Example 2

In the example shown below a watchdog alarm is present as the system has detected an error with an alarm card, (address 2), which has not been detected.



LED Failure Alarm

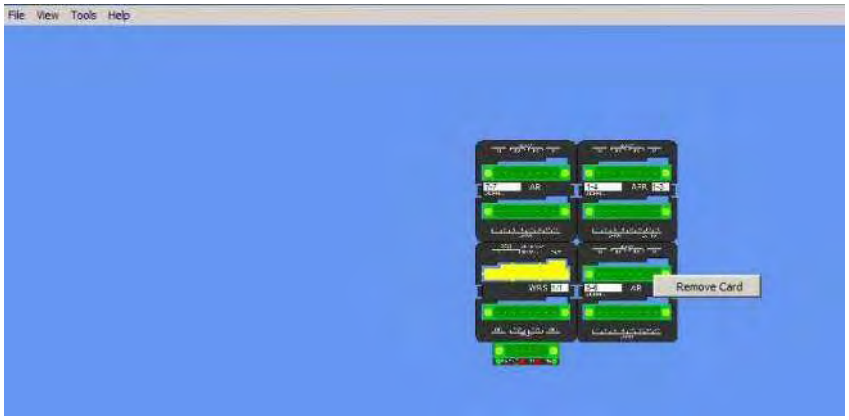
Each channel within the annunciator is equipped with plug in LED assemblies which provide the window illumination. If a window suffers a total loss of LED's the watchdog LED located on the pushbutton module will flash and software diagnostics can be used to provide indication as typically shown below



A common relay can be set to operate when LED failure has been detected if required.

Add / Remove Cards

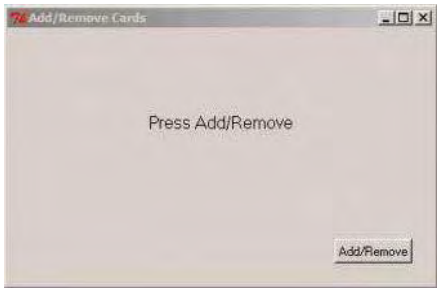
The user is able to use this feature to remove specific cards in software by selecting the “View” Menu followed by rear view and then a right mouse click over the rear terminal view of the specific card allows the user to select Remove Card as shown below.



Once a card has been removed in software the associated terminal view changes to yellow from green to indicate that the card is no longer present.

If the user wishes to complete the removal of the card from software the “Tools” menu provides access to the Add/Remove Cards download function as shown below

Once selected the user will be prompted to press the Add/Remove control button to confirm that they wish to proceed

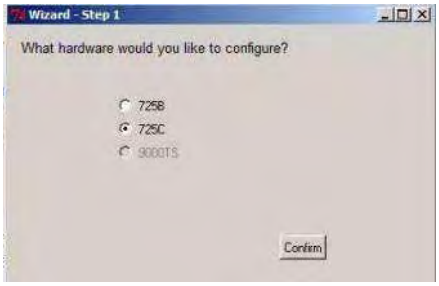


Once the control button has been pressed the download status is provided to confirm data transfer or an error flag will appear if problems occur.

SECTION 10 – AUTO DETECT HARDWARE.

The user is able to “Auto Detect Hardware Configuration” after loading the software and connecting the USB cable to the associated ports.

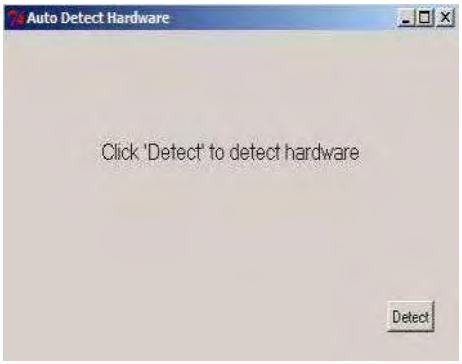
Once the application has been launched the user can select the 725C radio button using a left mouse click.



After pressing the “Confirm” button the user is prompted to select one of three options:-

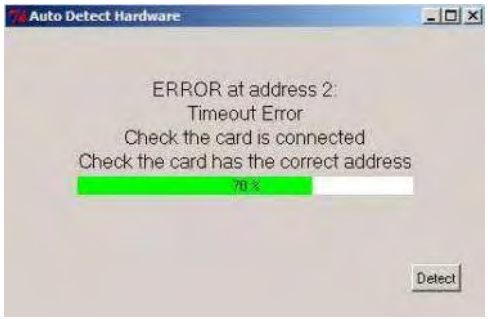
To upload the setting from a 725B select “Auto Detect Hardware Configuration”

Once the confirm radio button has been pressed using a left mouse click the user will be prompted with a Detect radio button as shown below.



If an annunciator is not detected the following error message will be displayed.

If any conflicts are found during the detection process an error message will provide diagnostic details to assist the user with fault finding.



In this example the card set to address 2 has not been successfully detected and the auto detect halts until the user resolves the issue

If a 725B System is connected to the associated PC and communication has been established the software will be able to read the configuration data direct from the annunciator system.

Once upload is complete the Annunciator graphic should match the supplied instrument and the associated fields will indicate all of the configured features.

Please refer to Section 6 & 7 for details of configurable options

SECTION 11 – CREATE A NEW SYSTEM

This section is used by the factory to define the structure of the system prior to delivery

Physical Size Tab

A drop-down menu is provided to the right of each of the following three fields to allow the cabinet to be defined. The graphical view of the Annunciator is dynamically updated as selections are made.

Window Size

The window size defines the number of windows available in each 60mm x 60mm cell in accordance with the following chart.

Window Style	Window Size (W x H)	Alarms per Cell
Large	60mm x 60mm	1
Medium	60mm x 30mm	2
Small	30mm x 30mm	4

Windows Wide

Once a window size has been assigned the user is able to select the total number of windows wide within the range defined below.

Window Style	WINDOWS WIDE
Large	Selectable from 1 to 16 Wide
Medium	Selectable from 1 to 16 Wide
Small	Selectable in pairs from 2, 4, 6, 8, 10, 12, 14 to 16 Wide

Windows High

Once a window size has been assigned the user is able to select the total number of windows high within the range defined below.

Window Style	WINDOWS HIGH
Large	Selectable from 1 to 16 Wide
Medium	Selectable from 1 to 16 Wide
Small	Selectable in pairs from 2, 4, 6, 8, 10, 12, 14 to 16 Wide

Pushbutton Module

Standard 725B Systems are supplied with an integral pushbutton / programming module located in the bottom right hand corner of the Annunciator when viewed from the front as typically shown below.

To enable the integral pushbutton function the drop down menu to the right of the “Pushbutton Module” field needs to be selected to Integral.

In standard systems the Pushbutton module is located in the bottom right hand corner as shown above.

Once the user has configured the basic unit a left mouse click on the “Next” control button navigates to the “Window Configuration” screen. This screen is only required in applications that use mixed window sizes.

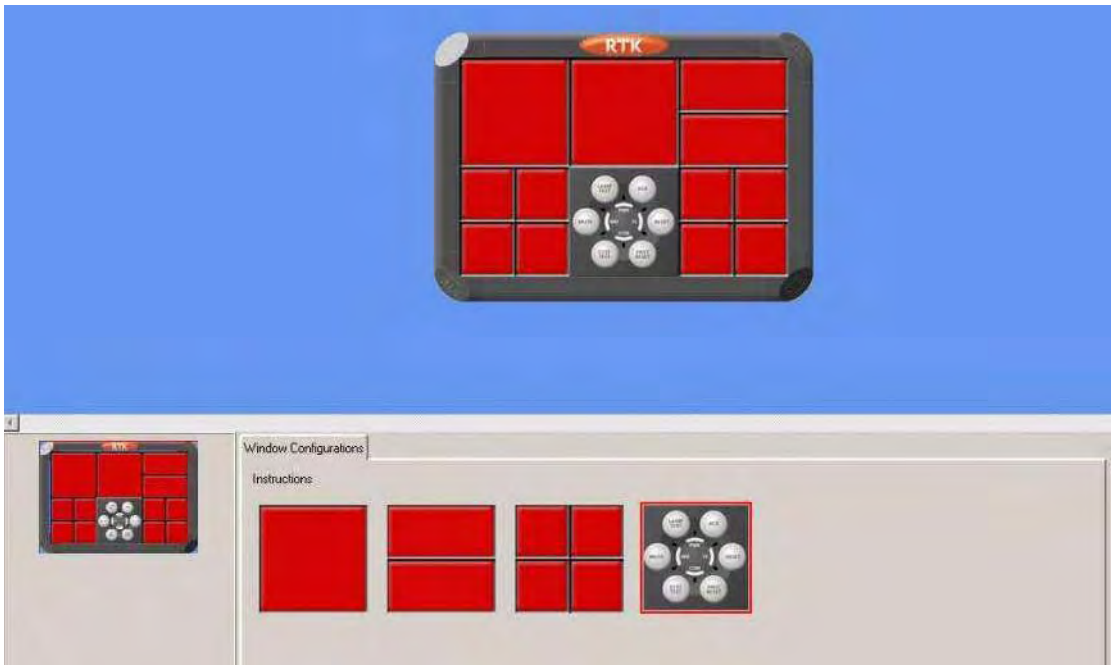
The “Next” control button can be used to proceed with configuration.

Window Configuration Tab

This section is only used in systems supplied with mixed window sizes on standard system the user can bypass this screen using the “Next” control button.

Mixed Window Sizes

The “Window Configuration” Tab allows the user to define the window style of each cell. A left mouse click on one of the four cells shown under the tab automatically copies the style. The selection is confirmed when a red border appears around the icon as typically shown below. A left mouse click into any cell in the annunciator graphic pastes the style.



The “Next” control button can be used to proceed with configuration.

Repeat Relays and Power Tab

This tab provides access to the fields associated with optional repeat relay per channel facilities and Integral Power Supplies.

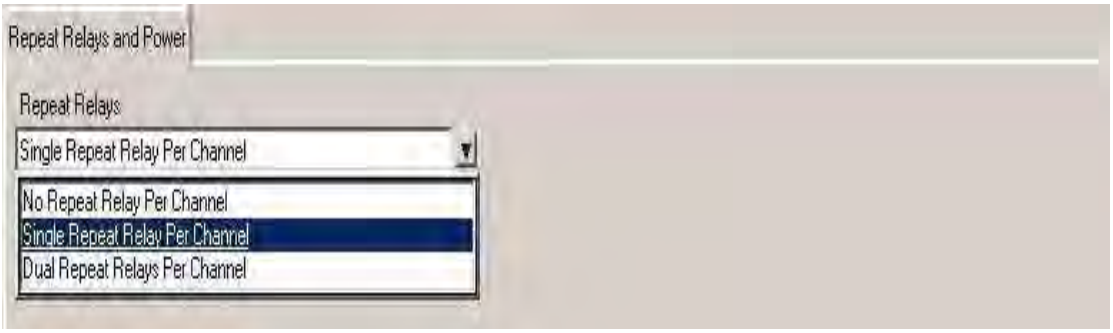
No Repeat Relays

On standard systems there individual channel repeat relays are not fitted and therefore the drop down menu is set to “No Repeat Relays”.

Repeat Relays

As an option each channel can be supplied with a dedicated repeat relay facility to provide an isolated output for use with 3rd party devices.

In these applications the drop-down menu needs to be set to “Single Repeat Relay Per Channel” as shown below.



Dual Repeat Relays

As an option each channel can be supplied with dual repeat relays to provide two isolated outputs for use with 3rd party devices.

In these applications the drop-down menu needs to be set to “Dual Repeat Relays Per Channel” as shown below

Power Supply

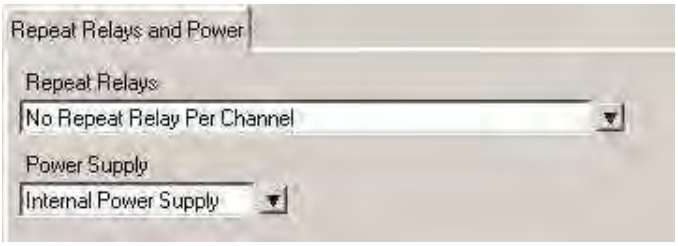
725B Systems operate on a logic voltage of 24VDC and this can be supplied via External or Internal Power Supplies.

External Power Supply

In Systems using an externally derived 24VDC the drop down menu under the “Power Supply Field” needs to set to be “External Power Supply” as shown below.

Integral Power Supply

If the annunciator system is directly powered from either 72 to 144VDC or 85 to 264VAC integral universal power supplies are used to convert to 24VDC and the drop down menu needs to be set to “Integral Power Supply”.



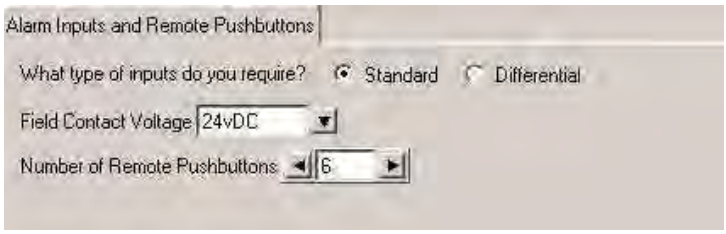
The “Next” control button can be used to proceed with configuration.

Alarm Inputs and Remote Pushbuttons Tab

Alarm Inputs

Standard systems use optically isolated digital inputs fed via a volt-free contact or externally powered device. In these applications the standard input radio button is checked as shown below.

.



If the annunciator has been supplied with the differential input option, which provides fully isolated inputs per alarm channel, the Differential input radio button is checked.

The field contact voltage should be set to either DC or AC – in the example above the standard version uses +24VDC to trigger the signal inputs

Number of Remote Pushbuttons

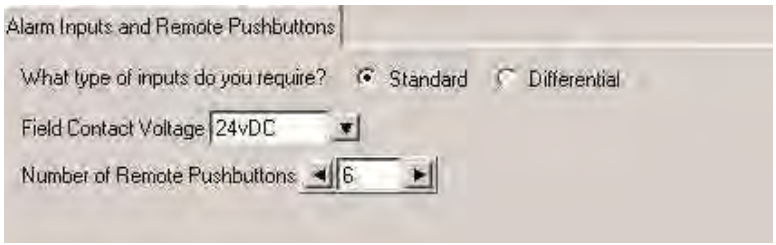
On standard 725B Systems 6 control Inputs are provided in the system for use with external control inputs typically used when remote pushbuttons or remote Inhibit switches are required.

Example 1

Function Required	***Number of Remote Inputs Required***
Lamp Test	***1***
Acknowledge	***1***
Reset	***1***
System Test	***1***
Silence	***1***
1st Reset	***1***
Total	***6***

The control inputs are provided on the first 2 alarm cards in the system ie each card will provide 4 digital inputs for the alarms plus 3 control inputs for the pushbutton functions.

The “Number of Remote Pushbuttons” Field should be set to 6 using the navigation buttons as shown below.



Example 2:- Remote Pushbuttons **plus** Inhibit Group Inputs

Function Required	***Number of Remote Inputs Required***
Lamp Test	***1***
Silence	***1***
Acknowledge	***1***
Reset	***1***
Inhibit Group 1	***1***
Inhibit Group 2	***1***
Total	***6***

The control inputs are provided on the first 2 alarm cards in the system ie each card will provide 4 digital inputs for the alarms plus 3 control inputs for the pushbutton / inhibit functions.

Example 3:- Remote Pushbuttons **plus** Sleep Mode Input

Function Required	***Number of Remote Inputs Required***
System Test	***1***
Acknowledge	***1***
1st Reset	***1***
Sleep Mode	***1***
Total	***4***

The control inputs are provided on the first 2 alarm cards in the system ie each card will provide 4 digital inputs for the alarms plus 3 control inputs for the pushbutton / sleep mode functions.

The “Number of Remote Pushbuttons” Field should be set to 6.

Example 4:- 2 x Remote Pushbutton Groups plus 2 x Group Inhibit

Function Required	***Number of Remote Inputs Required***
Pushbutton Group 1	
System Test	***1***
Acknowledge	***1***
1st Reset	***1***
Pushbutton Group 2	
System Test	***1***
Acknowledge	***1***
1st Reset	***1***
Inhibit	
Inhibit Group 1	***1***
Inhibit Group 2	***1***
Total	***8***

The control inputs are provided on the first 3 alarm cards in the system ie each card will provide 4 digital inputs for the alarms plus 3 control inputs for the pushbutton / inhibit functions.

The “Number of Remote Pushbuttons” Field should be set to 9.

Error Message
If the number of Remote Pushbutton Inputs selected exceeds the number of Alarm cards available a warning message appears to advise the user that the configuration is not possible.

Common Relays

A four channel common relay card is provided as standard and each relay can be assigned to a group, fault or pushbutton.

Example 1:- 1 x Horn, 2 x Common Alarm and 1 x Fault Relay

Function Required	***Number of Common Relays***
Horn Relay	***1***
Group 1 Relay	***1***
Group 2 Relay	***1***
System Fault Relay	***1***
Total	***4***

In this application the 4 common relays provided as standard are sufficient.

The “Number of Common Relays” Field should be set to 4 as shown below.

Example 2:- 2 x Horn, 3 x Common Alarm and 1 x Fault Relay

Function Required	***Number of Common Relays***
Horn Group 1 Relay	***1***
Horn Group 2 Relay	***1***
Group 1 Relay	***1***
Group 2 Relay	***1***
Group 3 Relay	***1***
System Fault Relay	***1***
Total	***6***

In this application the 4 common relays provided as standard are insufficient and an additional 4 channel common relay card would be provided.

Example 3- 2 x Horn, 3 x Common Alarm, 1 x Acknowledge Output and 1 x Fault Relay

Function Required	***Number of Common Relays***
Horn Group 1 Relay	***1***
Horn Group 2 Relay	***1***
Group 1 Relay	***1***
Group 2 Relay	***1***
Group 3 Relay	***1***
Ack PB Follower	***1***
System Fault Relay	***1***
Total	***7***

In this application the 4 common relays provided as standard are insufficient and an additional 4 channel common relay card would be provided.

The “Number of Common Relays” Field should be set to 8.

Error Message
If the number of Relays selected exceeds the space available a warning message appears indicating how many relays cannot be fitted.

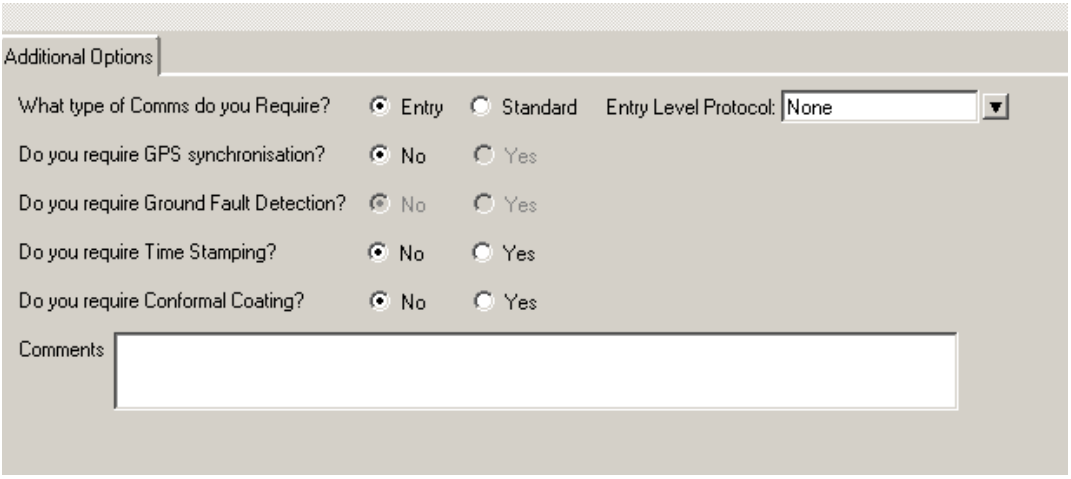
The “Next” control button can be used to proceed with configuration.

Additional Options

Additional Options

The following features are available as an option

1. Entry Level Communication and required protocol
2. Standard Communication
3. GPS synchronisation
4. Ground Fault Detection
5. Time Stamping
6. Tropicalisation
7. Any additional comments



The “Next” control button can be used to proceed with configuration.

The basic configuration of the system is now complete and the user is able to save the basic configuration for use as a master template.

Saved Configuration

The File and “Save Configuration” menu provide normal Microsoft Windows navigation for file saving.

Once a file has been saved you will not need to define any of the preceding settings again.

SECTION 12 – SAVED CONFIGURATIONS

Open Configuration

The File and “Open Configuration” menu provides normal Microsoft Windows navigation allowing a previously saved configuration to be opened from the stored location.

Once a previous configuration file has been opened the user can review configuration settings as detailed in Section 6 & 7.

SECTION 13 – SYSTEM SETTINGS

General Tab

The fields listed under the “General” tab allow the user to uniquely identify each Alarm Annunciator System to aid with the storage and retrieval of configuration data.

The user can update any of the fields within the software but the changes will only be saved after the “**Confirm Settings**” control button is pressed using a left mouse click.

Plant Name

In the example shown above the annunciator is located in RTK Instruments Ltd.

Description

This field is used to identify the specific plant area or annunciator function within the plant..

Tag No.

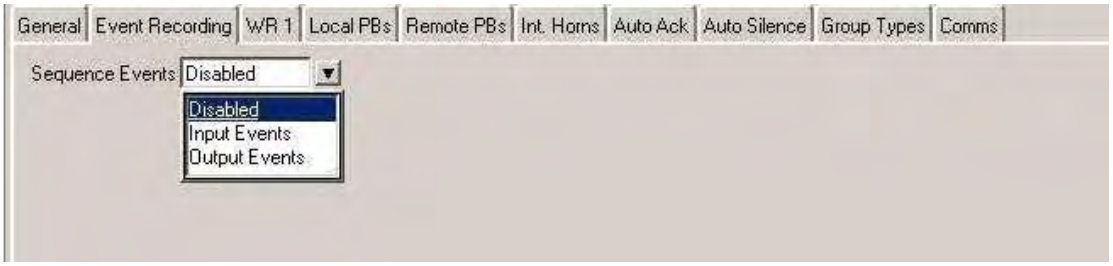
This field allow a Customer assigned number to be used to identify a unique alarm annunciator.

Serial No.

A serial number is automatically provided once the software is communicating with the alarm annunciator.

Event Recording Tab

If the Time Stamping option of the 725B has been supplied the user can enable or disable the type of events to record – using the following fields.



Sequence Events

The user is able to “Disable” the Sequence Events feature or enable recording of Input or Output Events”.

Input Events

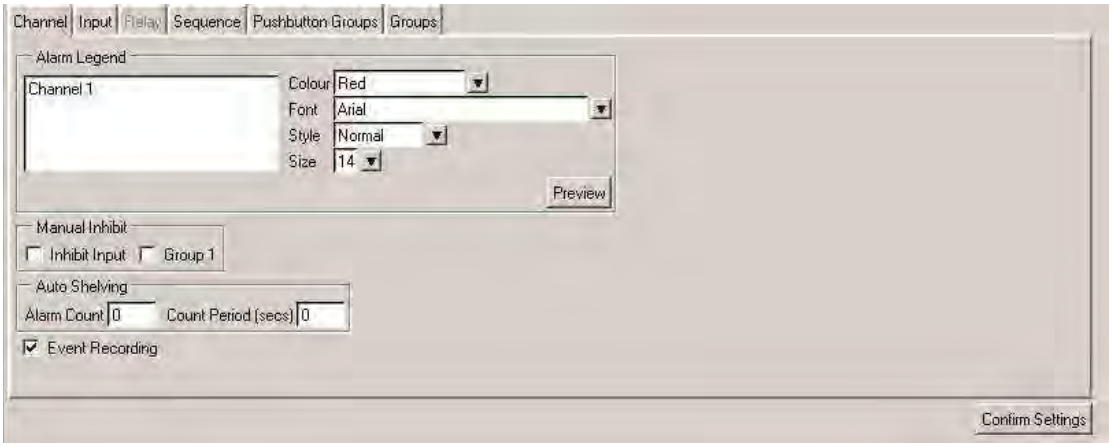
The user is able to “Enable” the Input Events feature to provide historical data indicating the time and date inputs occur and return to normal.

Output Events

The user is able to “Enable” the Output Events feature to provide historical data indicating additional alarm sequence information for example “first-up”, subsequent.

Individual Channel Enable

In addition to the global SOE “enable” setting detailed above the user can enable or disable Event Recording on a per channel basis using the tick box indicated below under the channel tab

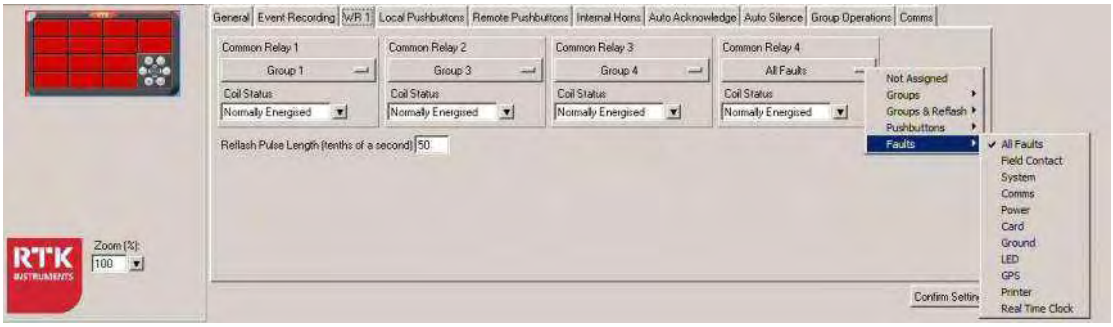


The user is able to update any field within the software but the changes will not take effect until the “Confirm Settings” control button is pressed using a left mouse click.

WR1 Tab

The WR1 Tab, (Watchdog / Relay), allows the user to assign any of the common relays for use as a Group, Pushbutton Follower or Fault Relays.

On standard 725B systems one 4 channel relay card is used to provide common relays.



Relay 1 – 4 (Available on all standard systems)

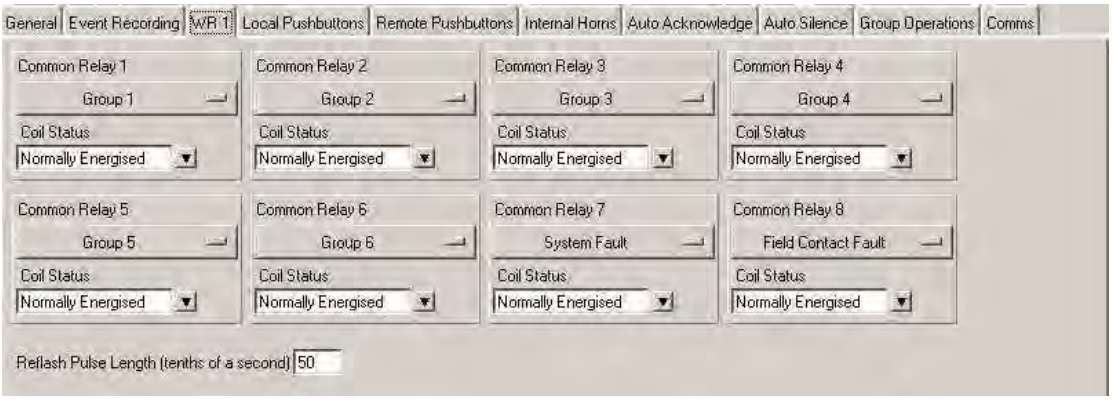
A drop-down menu is accessed using a left mouse click on the control button associated with each Relay. This menu is used to define whether the Relay operates as a Group, Pushbutton Follower or Fault Relays.

In some applications users require more than 4 common relays, in these instances a single or multiple 4 channel relay cards can be used to expand the system.

The **WR1** Tab provides configuration for a maximum of 8 Relays.

Relay 1 to 8 (Relay 5 to 8 - Optional)

In the example below one additional 4 Channel Relay card has been fitted, providing 8 Relays in total.

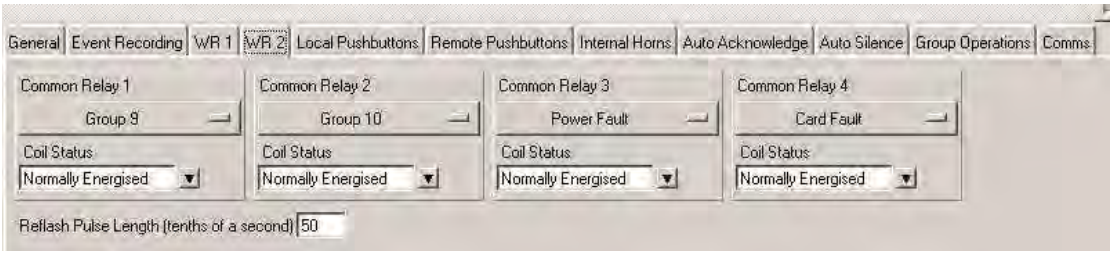


If more than 8 Relays are installed two WR* Tabs will be available to configure Relays 9 onwards, as shown in the following typical examples.

WR2 Tab

Relay 1 to 12 (Relay 5 to 12 – Optional)

In the example below a total of 12 Relays are fitted with Relay 1 to 8 being configured under the WR1 Tab and the remaining Relays being configured under the WR2 Tab.



This pattern continues as shown below, (4 Relays per additional card),

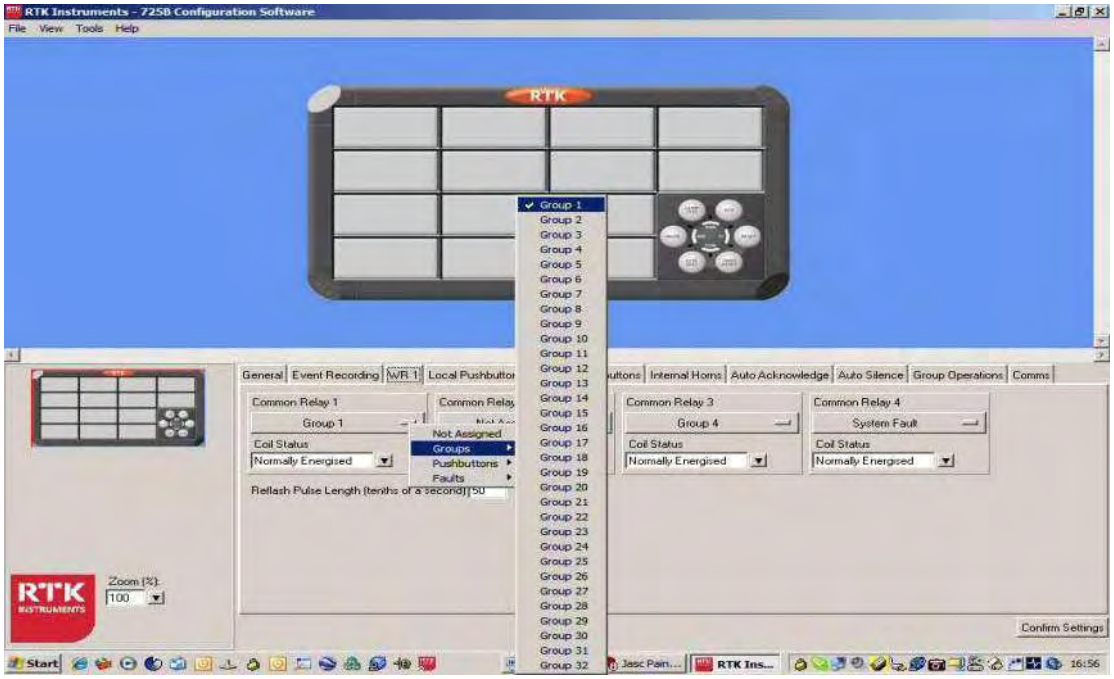
No of Common Relays	*WR* Tab No*	*Relay No*
4	*WR1*	*1 to 4*
8	*WR1*	*1 to 4*
	WR1	*1 to 4*
	WR1	*1 to 4*
12	*WR1*	*1 to 4*
	WR2	*1 to 4*
	WR1	*1 to 4*
16	*WR1*	*1 to 4*
	WR2	*1 to 4*
	WR2	*1 to 4*
ETC		

Group Relay.

Each Channel within the Annunciator can be assigned to a single or multiple Groups. These Groups can be software linked to any of the common relays to provide contact outputs for use with 3rd Party devices.

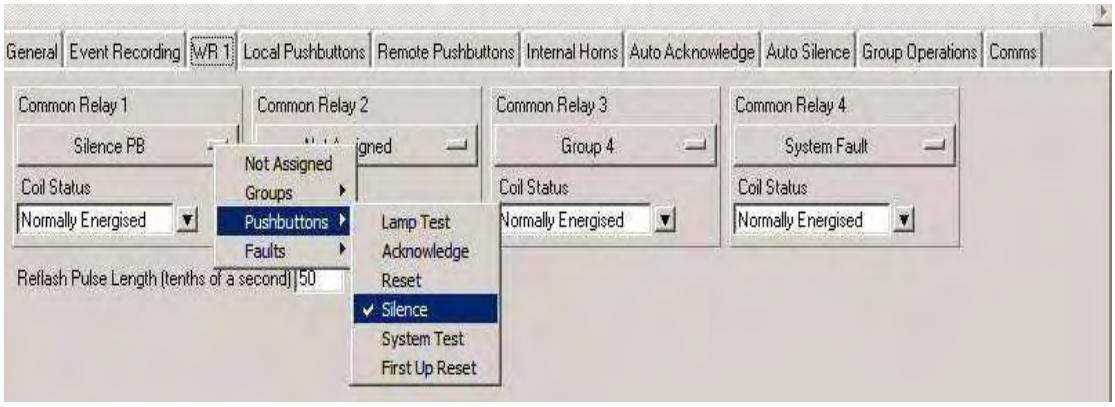
In the example below **Relay 1** is being assigned to **Group 1** and a left mouse click would complete the selection.

Once the Relay has been assigned the “Control Button” is automatically updated to indicate its function. I.E. Relay 3 has been assigned to Group 4 and Relay 4 has been assigned as a System Fault Relay.



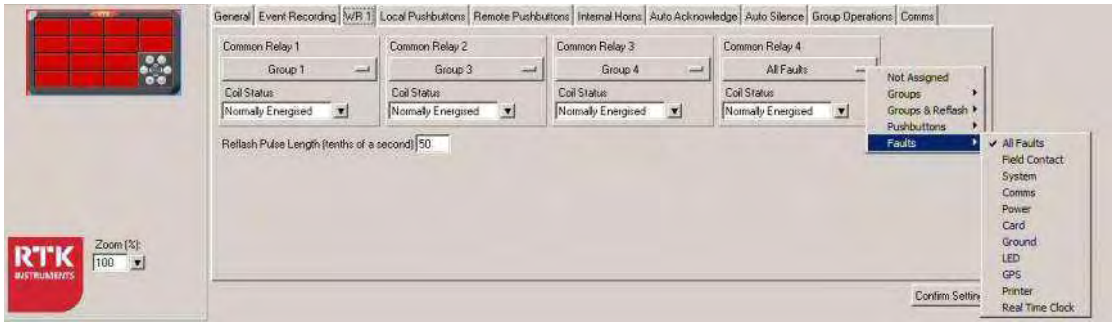
Pushbutton

Any one of the Common Relays can be assigned to any of the Pushbutton functions shown below. In this example Relay 1 has been assigned as a Silence Pushbutton Follower and each time the Silence Pushbutton is activated on the Annunciator the contacts on Relay 1 will change state.



Fault Relay.

Any of the Common Relays can be assigned to a diagnostic fault condition to provide a contact output in the event of logic, signal supply, communication or system failure. In the example below Relay 4 has been assigned as System Fault Relay.



Summary of Fault Relay function

Field Contact
Monitors the Field Contact voltage

System
Monitors the complete System.

Comm's
Monitors the Communication link

Power
Monitors the 24VDC Logic power

Card
Monitors individual Alarm Cards

Ground
For use with systems fitted with ground fault detection to indicate a ground fault has occurred.

LED
Provides an output if any of the LED's used to illuminate individual windows becomes faulty.

Please note:- The system scans the LED state on an hourly cycle or during power up.

GPS
For use with systems provided with GPS clock sync to indicate a failure

Printer
For use with systems provided with time stamping and printers to indicate that a printer failure has occurred.

Real Time Clock
Used to indicate a failure in RTC time sync.

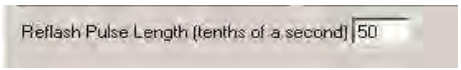
As well as being able to set the function of each relay the user can set the non alarm coil state of each relay as follows:-

Coil Status
The Coil Status of each Relay can be set using the drop-down menu. In the example below Relay 1 has been set to Normally De-Energised.

Reflash Pulse Length
Common Alarm Relays change state on alarm and remain active until the alarm has been cleared.

When multiple alarms appear in the same group “Reflash” is used which allows the Relay to drop out and re-alarm each time a new alarm occurs within the same group.

As the Common Alarm Relay Contact are used with 3rd Party devices, the “Reflash” pulse length can be set to match the requirements of the device.



The user is able to update any field within the software but the changes will not take effect until the “Confirm Settings” control button is pressed using a left mouse click

Local Pushbuttons Tab

In some applications customers prefer to disable selective Integral Pushbutton functions in preference to Remote Pushbutton control.

The user is therefore able to enable any of the 6 Pushbutton functions using the Tick-Boxes shown below.

Remote Pushbuttons Tab

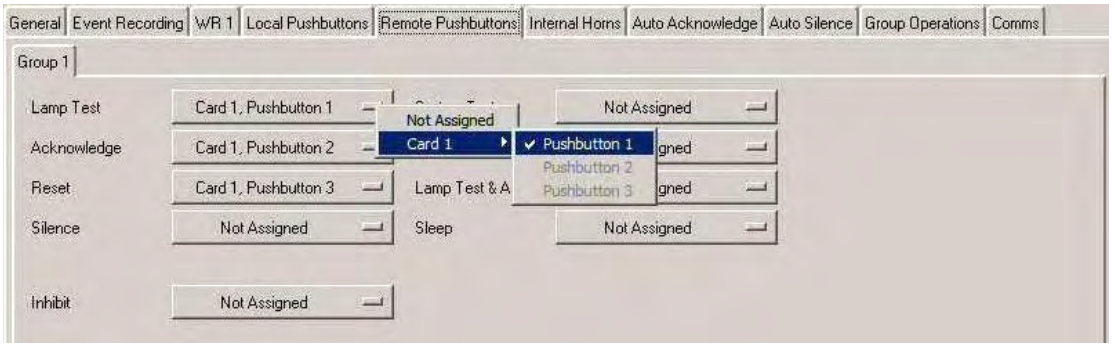
In certain applications remote pushbuttons inputs are required.

All 725B Annunciators are able to accept a minimum of 3 external control inputs. The first alarm card in the system can be wired to remote Pushbuttons, Sleep or Inhibit Group Switches as required.

In applications that require more than 3 x inputs each adjacent Alarm Card can be provided with 3 x additional Inputs as required.

A drop-down menu allows any Pushbutton function to be assigned to a Card capable of accepting hardwired control inputs.

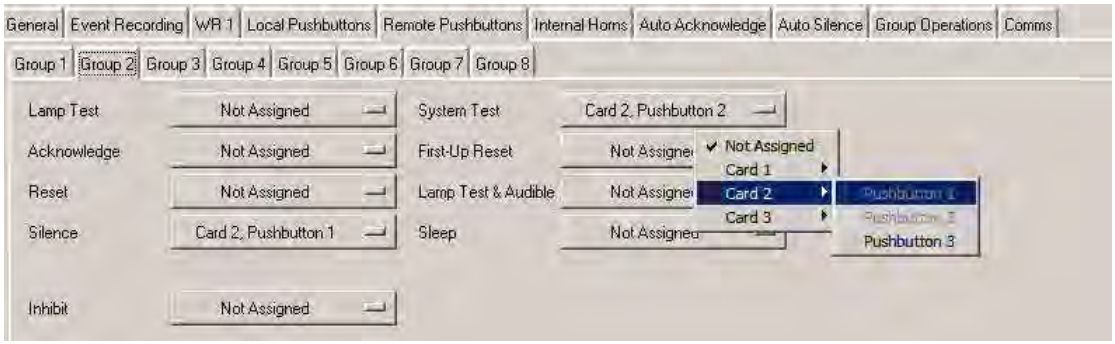
In the example below Lamp Test has been assigned to Card 1 Pushbutton input 1. Please note: Pushbutton 2 and 3 are greyed out as they have already been assigned to other Pushbutton functions.



Additional Pushbutton Groups

In more complex applications the user may prefer to use more than one Pushbutton Group within the Annunciator. For example: Groups of alarms associated with specific plant areas can be controlled by unique externally mounted Pushbuttons.

To access the additional pushbutton groups the user must select the “View” menu followed by “Advanced View” which will allow pushbutton groups 1 to 8 to be configured as shown below.

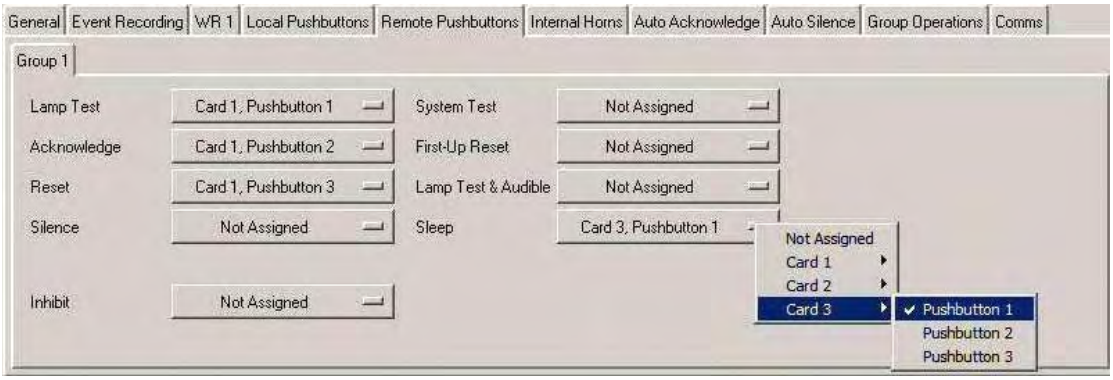


In the example shown 3 alarm cards are each equipped with 3 x remote pushbutton inputs providing 9 x inputs in total

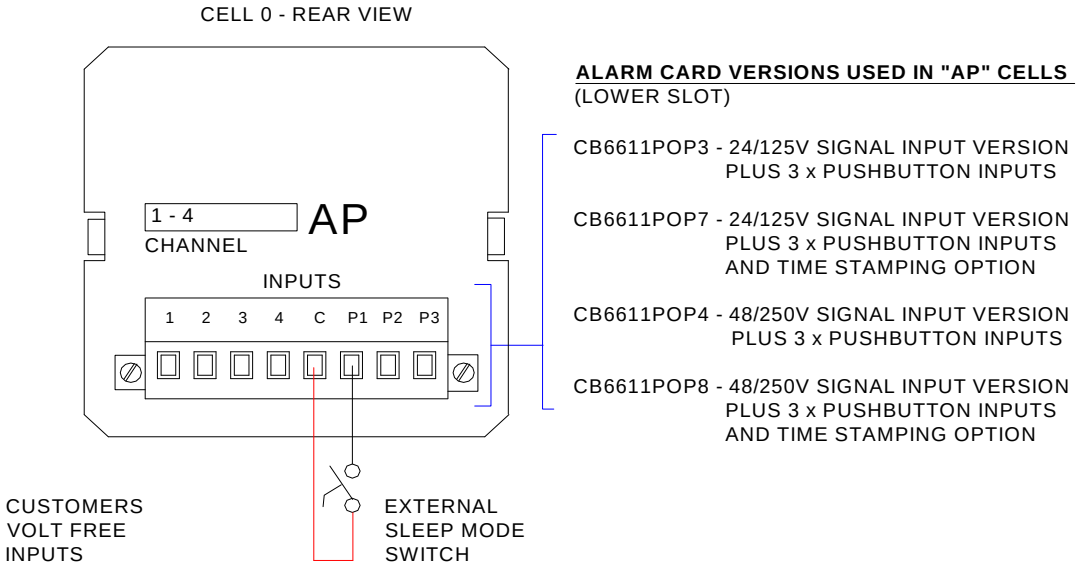
Sleep Mode

Sleep mode is typically used in sub station applications where the visual and audible outputs are disabled during unmanned periods to reduce the drain on the associated station batteries and to prevent noise pollution.

Whilst in sleep mode the logic of the annunciator will continue to react in the normal way including the operation of common alarm relays, watchdog relays and optional signal duplicating relays, only the drive signals to the LED's and audibles are disabled. A remote hardwired control input is required to activate Sleep Mode and this input needs to be wired to an alarm card fitted with pushbutton inputs. The Sleep function can be assigned to any available pushbutton input. In the example below it is being assigned to Card 1 Pushbutton input 1.



The annunciator unit can be set to sleep mode at any time using a remote mounting normally open maintained switch. When closed the LED's and Audible Alarms are disabled to preserve power and prevent noise pollution.



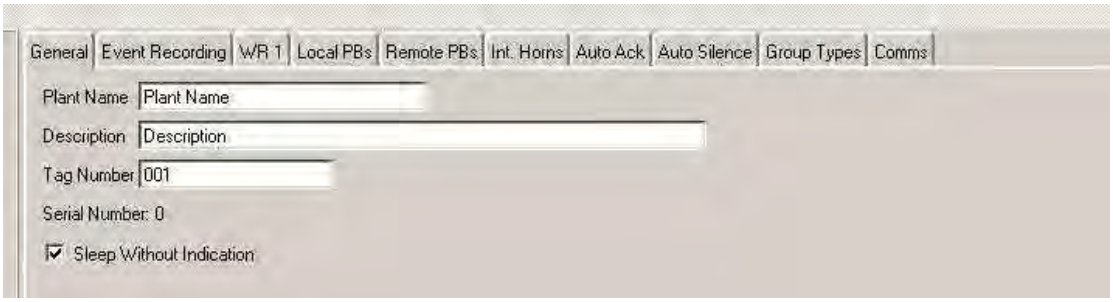
Note: - All normal pushbutton functions are inhibited during sleep mode to ensure that the operator can view any alarms that occurred as soon as the unit is returned to its normal operational state.

Sleep Mode - Heartbeat

As the illumination, horns and pushbuttons are all disabled during sleep mode RTK provide a periodic “heartbeat” pulse to all windows as an indication that the annunciator has been manually placed into sleep mode and is continuing to monitor as normal.

Some utility companies prefer to disable the “heartbeat” pulse and for 725B units shipped after September 8th 2008 this facility has been added as a configurable feature.

To disable the sleep mode “heartbeat” using the supplied 725B configuration software, (version 1.0.9. or above), the user will need to select the check box for “sleep mode without indication” under the general tab as shown below



Once selected the user will need to select confirm settings and then the change can be saved to a local file or downloaded to the 725B using the supplied USB cable.

Once communication has been established between the laptop / PC and the annunciator the change can be downloaded using the tools – send settings menu.

Please note:-

“Sleep Without Indication” will only disable the “heartbeat” pulse i.e. all of the alarms will still be captured and individual channel (if fitted), or common alarm relays, will operate as normal whilst the unit is in sleep mode.

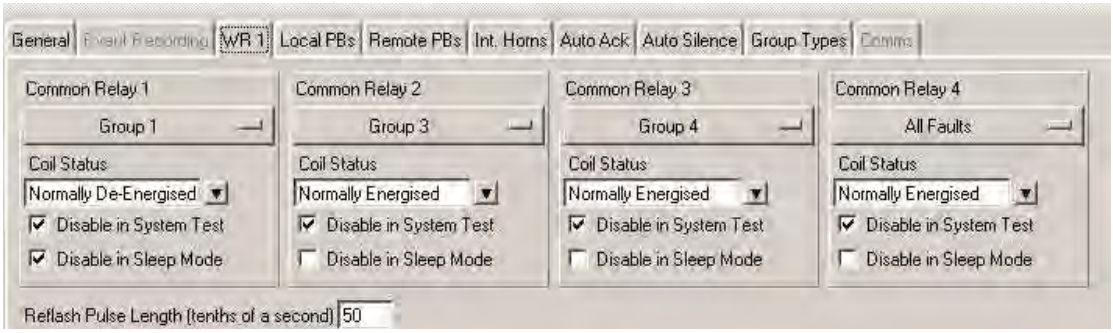
Once the annunciator unit is returned to the normal mode alarms will be displayed and horns / pushbuttons will operate as normal.

WR Relay Operation Whilst In Sleep Mode

On systems supplied after 1st February 2010 using configuration software version 2.0.5 or higher the common relays can be selected to operate during sleep mode or can be inhibited if required.

In the example shown below common relay 1 has been set to be disabled during sleep mode and common relays 2 – 4 will operate as normal.

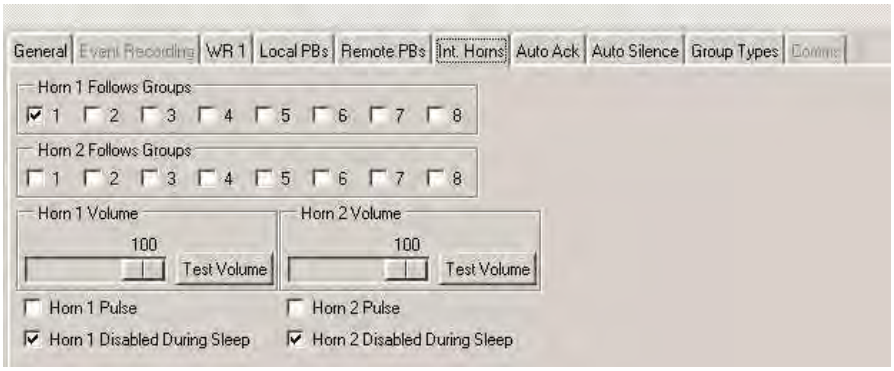
In addition each common relay can be set to operate when the system test pushbutton is pressed or they can be inhibited. In the example below common relay 1 – 4 are all disabled when system test is pressed



Internal Horn Options Whilst In Sleep Mode

On systems supplied after 1st February 2010 using configuration software version 2.0.5 or higher the internal horns can be selected to operate during sleep mode or can be inhibited if required.

In the example below both internal horns are shown as being disabled during sleep mode

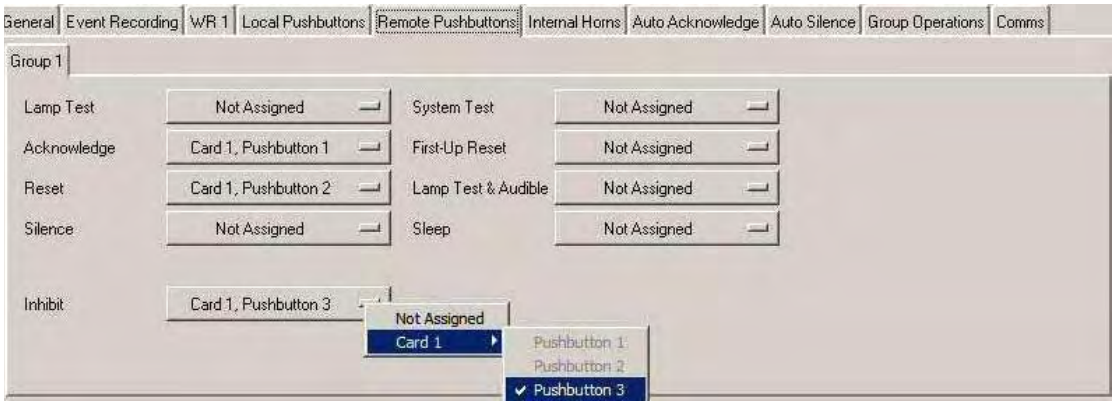


Inhibit

Alarm channels can be assigned to anyone of 8 Inhibit Groups (This is described in detail later in the manual).

Each inhibit group requires the use of a remotely mounted maintained switch which can be wired to any alarm card fitted with the pushbutton input option. Once the card and pushbutton input (1, 2 or 3) have been determined the Input needs to be assigned to the associated Inhibit Group using the drop-down menu. Please note if Pushbutton 1, 2 or 3 are greyed out they have already been assigned to other functions.

In the example below Group 1 Inhibit is assigned to Card 1 Pushbutton Input 3 and Pushbutton 1 and 2 are greyed out as they have been assigned to acknowledge and reset.



If the Inhibit switch is selected to the closed position all of the alarms in the group will be “Inhibited” until the switch is returned to the off position.

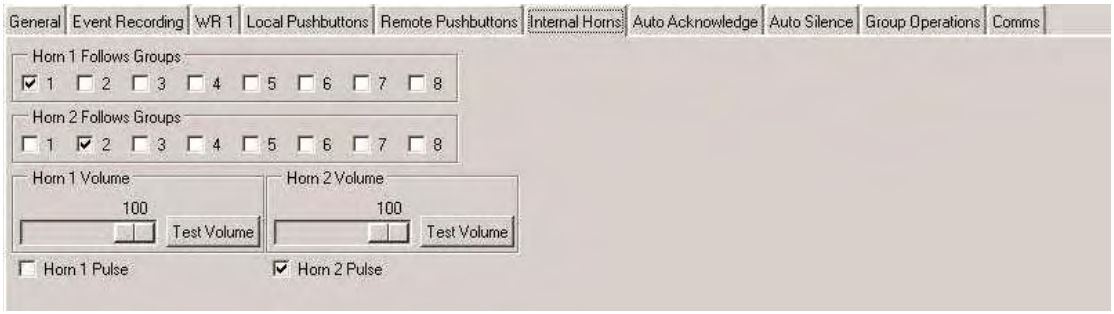
Internal Horns Tab

2 x Internal Horns, Horn 1 & Horn 2, are supplied with each 725B Annunciator and these can be assigned to follow any of the Horn Groups.

In the example shown below:-

1. Horn 1 has been set to follow Horn Group 1

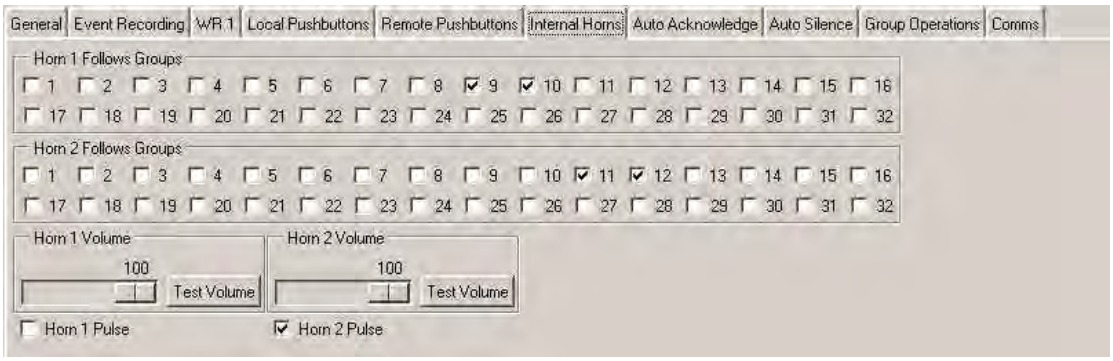
2. Horn 2 has been set to follow Horn Group 2.



Please note: This describes how to assign Horn 1 and 2 to follow any Group which has been set to Audible under the Group Operations Tab. However before the internal horns will function:-

1. Individual channels must be assigned to groups.
2. The Group Operation must be set to Audible on the assigned group.
3. The internal horns must be assigned to follow the correct group.

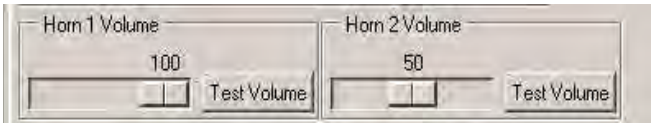
In more complex applications additional Groups are available and either of the Internal Horns can be set to follow any of these groups. To access the additional features the user must select the “View” menu followed by “Advanced View”. In the example shown below Horn 1 has been set to follow Horn Group 9 & 10 and Horn 2 has been set to follow Horn Group 11 & 12.



Test Internal Horn Volume

As Annunciators are used in areas with different levels of background noise the volume of each of the internal audibles can be adjusted using the slider bar.

In the example shown below Horn 1 has been set to 100% and Horn 2 has been set to 50%.



A test pushbutton is provided to the right of the slider bar to verify that the audible is working correctly.

Please note the function described below that allows Horn 1 or 2 to be set to pulse is overridden during volume testing to make adjustment easier, as soon as an alarm occurs the pulse feature is re-enabled.

Please note:-

The Annunciator must be connected via the USB serial link for this feature to function.

Horn 1 or 2 Pulse

As an option the user can interrupt the standard audible tone using a pulse generator. Either of the internal horns can have this feature enabled. In the example shown below Horn 2 has been set to “Pulse”

The user is able to update any field within the software but the changes will not take effect until the “Confirm Settings” control button is pressed using a left mouse click

Auto Acknowledge Tab

In applications that are not manned 100% of the time, noise pollution can be prevented using the Automatic Acknowledge feature.

This can be set using the Tick-Boxes in the “Auto Acknowledge Follows Horn Groups” field.

The “Delay” field allows the user to enter a time Delay in seconds.

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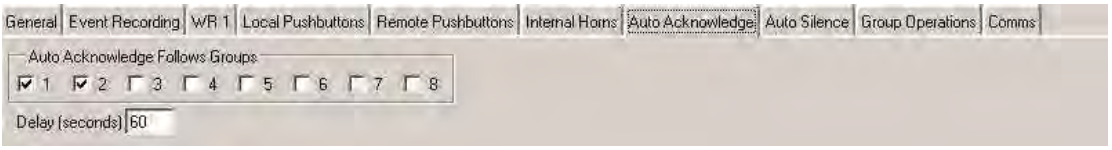
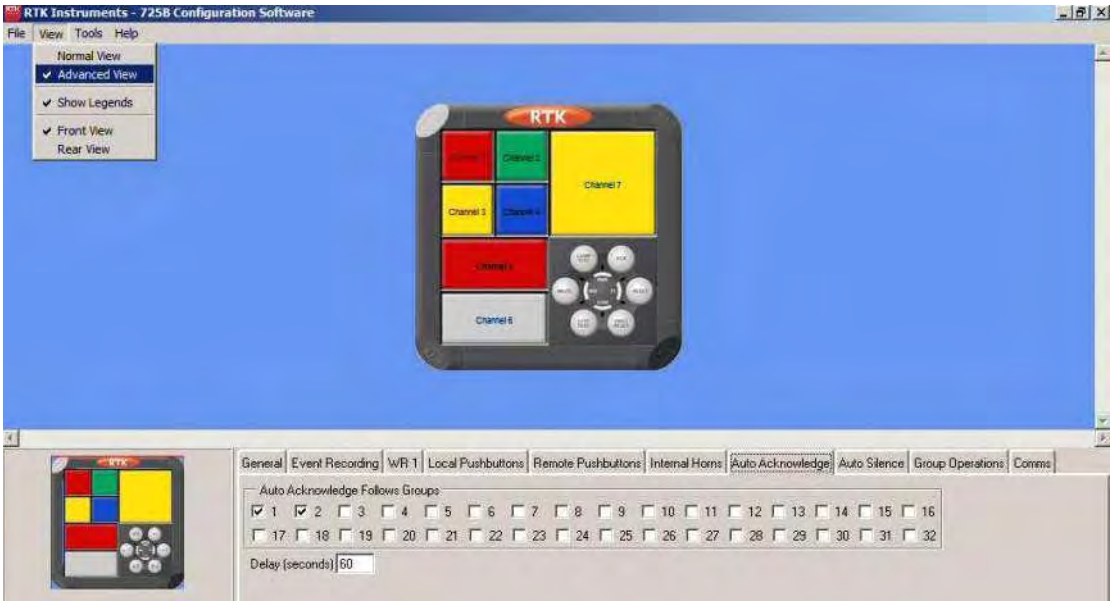


Once set the system will automatically acknowledge the alarms associated with the selective group after the preset time period has elapsed.

In more complex applications which exceed 8 Groups selecting the “View” menu followed by “Advanced View” allows all 32 Groups to be displayed as shown below.



Note: On systems supplied after 1st February 2010 using configuration software version 2.0.8 or higher the Auto Acknowledge operates the Acknowledge group 2 pushbutton, as this allows you the flexibility to pick which channels to auto acknowledge. To set a channel to auto acknowledge it must be put into Acknowledge Pushbutton group 2 using the pushbutton group tab on the individual channel.

Auto Silence Tab

In applications that are not manned 100% of the time, noise pollution can be prevented using the Automatic Silence feature.

The user can choose to automatically Silence any of the available Groups using the Tick-Boxes in the “Auto Silence Follows Horn Groups” field.

The “Delay” field allows the user to enter a time Delay in seconds.

Once set the system will automatically Silence the alarms associated with the selective group after the preset time period has elapsed. Please note: This feature only Silences the audible alarm, the visual alarm will continue to operate in accordance with the selected ISA sequence.

In more complex applications which exceed 8 Groups selecting the “View” menu followed by “Advanced View” allows all 32 Groups to be displayed as shown below.

Note: On systems supplied after 1st February 2010 using configuration software version 2.0.8 or higher the Auto silence operates the silence group 2 pushbutton, as this allows you the flexibility to pick which channels to auto silence. To set a channel to auto silence it must be put into silence Pushbutton group 2 using the pushbutton group tab on the individual channel.

Group Operations Tab

Any channel within the Annunciator can be assigned to a single or multiple Groups and once assigned the “Group Operations Tab” allows the user to define the function of each group. A typical configuration example is shown below:-

1. Group 1 & 2 have been set as “Audible”
2. Group 3 & 4 have been set as “Alarm”
3. Group 8 has been set as “First Up”

A drop down menu is provided below each group, which allows the user to set the “Group Operation” to provide one of the functions detailed below:-

First-Up

When a 1st up alarm occurs within the associated group, the group signal will be active until the 1st alarm has been reset.

ALARM STATE	GROUP
Off	Off
1st Alarm to occur in a Group	Active
1st Alarm Reset	Off

Input

When a signal Input, on any alarm in the associated group, goes to the abnormal state the group signal will be active and the signal will remain active until the signal input returns to the non alarm state.

ALARM STATE	GROUP
Off	Off
Input Abnormal	Active
Input Returns to Normal	Off

1. If the signal input of another alarm within the same group is in the abnormal state the group signal will remain active.

2. If 1 x channel within the group is in the abnormal state a 2nd alarm occurring within the same group will have no effect on the group signal as it will already be active.

3. When used with “WR” common relay cards reflash can be used to provide a momentary pulse each time a new alarm occurs within the same group.

Alarm
When any alarm in the associated group goes into alarm the group signal will be active and it will remain active until the signal input has returned to normal **and** the alarm has been cleared to the “off state” using the associated controlling pushbuttons.

ALARM STATE	GROUP
Off	Off
Input Abnormal	Active
Input Returns to Normal	Active
Alarm Reset to the Off State	Off

1. If any other alarm, within the same group, is visible on the annunciator because its signal input is abnormal or it is waiting to be cleared by the operator the group signal will remain active.

2. If 1 x channel within the group is in the abnormal state a 2nd alarm occurring within the same group will have no effect on the group signal as it will already be active.

3. When used with “WR” common relay cards reflash can be used to provide a momentary pulse each time a new alarm occurs within the same group.

Audible
When any alarm in the associated group goes into alarm the group signal will be active and it will remain active until the audible signal is cleared using the mute or acknowledge pushbutton.

ALARM STATE	GROUP
Off	Off
Input Abnormal	Active
Silence or Ack	Off

Before Groups will function:-

1. Individual channels must be assigned to groups.

2. The Group Operation must be set as detailed above.

3. The Group can be assigned to Common Relays as detailed under the WR* Tab

Advanced View
In more complex applications, which require more than the standard 8 Groups, selecting the “View” menu followed by “Advanced View” allows all 32 Groups to be displayed.

Comm's Tab – Entry Level Comm's

The communication tab provides access to settings using the drop menus shown below.

Communications settings are available as follows:-

Protocol:-
The following protocols can be selected using the drop down menu shown above.

1. No Communications required
2. RTK – AMS which allows the 725B to communicate with optional RTK supplied Alarm Management Software
3. Modbus RTU Protocol for use with 3rd party devices

Please Note: - The Baud Rate, Parity and Timeout Settings are only displayed when the user selects the Advanced View using the View Menu.

Baud Rate:-
The following baud rates can be selected using the drop down menu shown above.

1. 9,600
2. 19,200
3. 38,400

Parity:-
The following parities can be selected using the drop menu shown above.

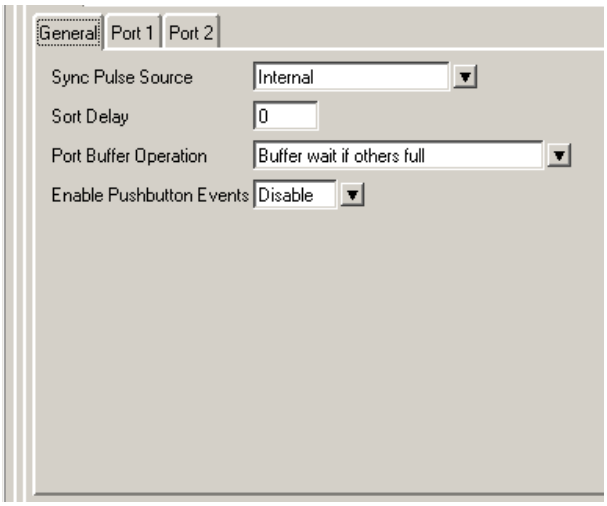
1. Odd
2. Even
3. None

Timeout:-
If communication is not established within a specified period of time the user can use the watchdog facility to flag a loss of communication. As the time required establishing communication can vary depending on application and 3rd party device settings the user is able to enter a timeout time in ms from 1 to 65,536 ms

Comm's Tab – Standard Comm's

The communication tab provides access to settings for the following tabs

General Tab



The General tab provides access to the general settings for each comm's cards using the following options:

Sync Pulse Source:-
Select the source of the global 1Hz sync pulse that is provided to the annunciator, the following are selectable from the drop down list.

1. Internal – Sync is generated by the comm's card using the RTC

2. External rising Edge – Sync is generated by an external source with the rising edge used to sync the system.

3. External Falling Edge – Sync is generated by an external source with the falling edge used to sync the system

Sort Delay:-
When events are received from the alarm cards into the sort buffer, a sort delay can be set.

During this period the events are sorted into time/date order with the oldest event first in the buffer.

Once the period has expired the events are transferred into the port buffers. If set to 0 the sort delay is disabled.

The delay is selectable from 1 to 65,536 seconds.

Additional settings are available under advanced view. These are:

Port Buffer Operation:-
The functionality of the multiple port buffers is also selectable with the following options:

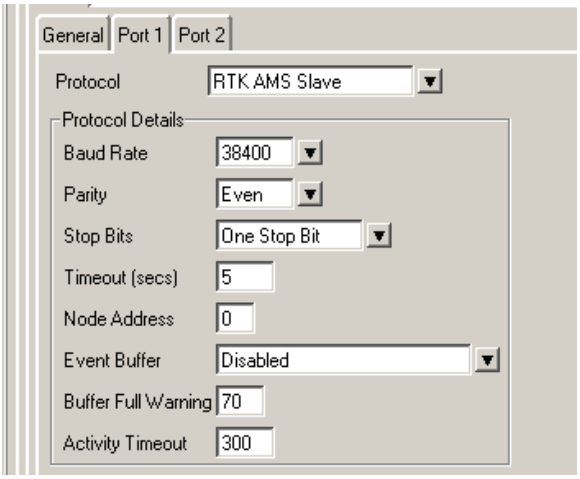
1. Buffer Wait if other full – Wait if the other port buffers are full before passing events from the sort buffer. Otherwise the ports that are full will not receive the events passed from the sort buffer.

2. Buffer Wait if others full and active – Wait if the other port buffers are full and are still active before passing events from the sort buffer. Ports become inactive if the activity timeout has been reached otherwise the ports that are full will not receive the events passed from the sort buffer.

3. Buffer don't wait if full – Don't wait if the other port buffers are full before passing events from the sort buffer. This means if any buffers are full they won't receive the events passed to the other port buffers that are not full.

Enable Pushbutton Events:-
When time stamping is enabled it is possible to create events for the pushbutton activity. This can be enabled and disabled on the comm's card.

Port Tabs



Port 1 is the RJ11 port located on the XS485 or FC485. Port 2 is the 9-way d-type connector on the comm's card.

The following settings are available on both port unless otherwise stated:-

Protocol:-
The following protocols can be selected using the drop down menu shown above.

1. No Protocol
2. Configuration Slave – Port to be used to connect to the configuration software.
3. RTK AMS Slave – AMS which allows the 725B to communicate with optional RTK supplied Indicium Software
4. Modbus RTU Slave Protocol for use with 3rd party devices
5. Modbus ASCII Slave Protocol for use with 3rd party devices
6. Wharton Protocol for use with the Wharton 4850/4860 Time Sync message
7. Modbus RTU Master Protocol for use with 3rd party devices
8. Modbus ASCII Master Protocol for use with 3rd party devices

Note: on Port 1 while the USB connector is plugged in the port is automatically configured as configuration slave. Once the cable is removed it reverts back to its original configuration.

Baud Rate:-
The following baud rates can be selected using the drop down menu shown above.

1. 9,600
2. 19,200
3. 38,400

Parity:-
The following parities can be selected using the drop menu shown above.

1. Odd
2. Even
3. None

Stop bits:-
The following stop bits can be selected using the drop menu shown above.

1. One Stop bit
2. Two Stop bits

Timeout:-
If communication is not established within a specified period of time the user can use the watchdog facility to flag a loss of communication. As the time required establishing communication can vary depending on application and 3rd party device settings the user is able to enter a timeout time in seconds from 1 to 65,536 sec's

Node Address:-
Port node address is selectable from 0 – 255.

Additional settings are available under advanced view. These are:

Buffer Full Warning:-
If the buffer is becoming full the comm's card can produce a warning event that will be recorded and displayed in Indicium as an event or attached to the watchdog to warn the user they maybe an issue that is causing the buffer to fill up. The warning level is selectable from 10 – 90%.

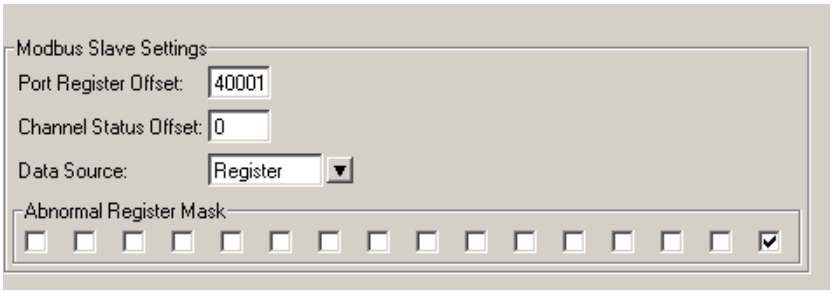
Buffer Operation:-
For protocols that pass time stamped data, the port buffer can be enabled to work in certain ways, these are:

1. Disabled – If the Buffer is not used it can be disabled.
2. Keep Oldest Events – When the buffer gets full it doesn't over write the oldest events.
3. Keep New Events – Overwrite the oldest events with new events when the buffer becomes full.

Activity Timeout:-
If communication is not established within a specified period of time then the port can become inactive. If the port has a buffer then this buffer can be closed if the port in inactive for a specified period. This allows other port buffer to continue taking events from the sort buffer without having to wait for the inactive port. The user is able to select an activity timeout in seconds from 1 to 65,536 sec before the port becomes inactive.

Additional Protocol Setting
Each protocol may have settings which are specific to the protocol. These settings only appear when the protocol is selected:

Modbus RTU/ASCII Slave Protocols



Port Register Offset:-
The start register to access the port register data can be changed on the comm's card by allowing the start register to be offset. This maybe required for connection to 3rd party. This offset is selectable from 0 to 65,536 and is set to 40001 as default.

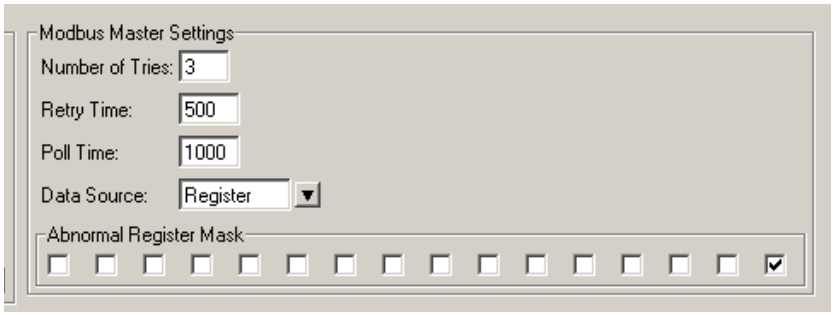
Channel Status Offset:-
The start register to access the channel status can be changed on the comm's card by allowing the start register to be offset. This maybe required for connection to 3rd party software which doesn't support a start register of 0. This offset is selectable from 0 to 65,536 and is set to 0 as default.

NOTE: if both the port and channel status register offset overlap or are the same start value when the customer reads data it will default to contact status data.

Data Source:-
The data source format of the register can be set to the following:
Coil – Data for each address will be stored in coils, and can be read via Function 1 or written to via Function 15.
Register - Data for each address will be stored in its own register and can be read via Function 3 or written to via Function 6 or 16.

Abnormal Register Mask:-
If the data source format is register a mask can be applied to mask out unused bits. In the example below only bit 0 is a valid bit, all other bits are ignored.

Modbus RTU/ASCII Master Protocols



Number of Tries:-
Number of times the master will try to communicate to the slave before the port will timeout.

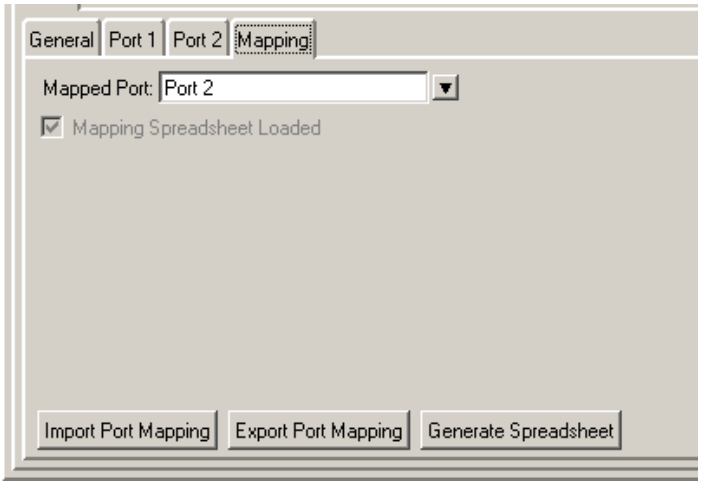
Retry Time:-
Time period in milliseconds the master will wait for a response from the slave before re-trying.

Poll Time:-
Time in milliseconds to wait before sending next message after a valid response.

Data Source:-
The data source format of the register can be set to the following:
Coil – Data for each address will be stored in coils, and will be read via Function 1 or written to via Function 15.
Register - Data for each address will be stored in its own register and can be read via Function 3 or written to via Function 6 or 16.

Abnormal Register Mask:-
If the data source format is register a mask can be applied to mask out unused bits. In the example below only bit 0 is a valid bit, all other bits are ignored.

Mapping Tab



The mapping tab allows the port mapping data to be setup.

Mapped Port:-
The port which the mapping will be enabled on.

Import Port Mapping:-
Import mapping setting from the Mapping excel spreadsheet

Export Port Mapping:-
Export the current mapping setting to a excel spreadsheet.

Generate Spreadsheet:-
Generate a blank template spreadsheet for setting up the port mapping.

SECTION 14 – CHANNEL SETTINGS

To configure individual channels the user must first select a window on the Annunciator graphic, using a left mouse click, to access additional menus.

Please Note:- It is possible to programme multiple channels using one of the following methods:-

Selective windows can be highlighted if the “Ctrl” Key on the keyboard is held down while you click on selective windows. Once the channels have been selected the user is able to select to navigate between tabs and select any feature. The background colour for all selectable field is White, however, this changes to Blue if the selective channels are not all set to the same function on the specific field. If the user wishes to proceed

Group of windows can be highlighted if the user clicks on the first window in the group and then holds down the “Shift Key” on the keyboard while you click on the last window in the group.

Channel Tab

The following features are available under the “Channel” Tab.

Alarm Legend

Each of the windows within the Annunciator needs to have a unique Legend to help the operator identify the alarm. The user types the alarm legend into the alarm legend field and drop-down menus allow selection of font, style and size to suit each application. Once the selection has been made a “Preview” button allows the user to review the appearance before saving the data. The preview pane must be closed before the user is able to continue configuring.

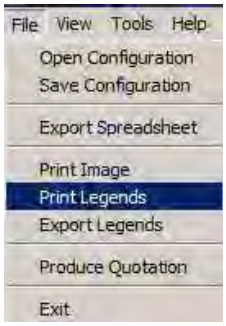
Once the data has been saved the user is able to Display the Legends on the Annunciator graphic for ease of configuration.

Show the Legends

To display Legends use the “View” Menu and select “Show Legends”.

Print the Legends

Legends can be printed for review using the “File” Menu and selecting “Print Legends”.



Export the Legends

Legends can be exported to a Microsoft Excel Template for future reference using the “File” Menu and selecting “Export Legends”.

Manual Inhibit

Each Channel can be manually inhibited within the software or a Channel can be assigned to an Inhibit Group. Once Channels have been assigned to a Group and a remote pushbutton input has been configured to operate the same Group they can be manually inhibited via a remote switch.

Inhibit Input

To manually inhibit a Channel the Inhibit input “Tick Box” must be checked as shown below.

Group 1 to Group 8

In the “Normal view” a single inhibit group is available and any channel can be assigned to Group 1 and a remote pushbutton input can be used to inhibit a group of alarms via a remote key switch.

In applications that require multiple inhibit groups the user must select the “View” Menu followed by “Advanced View” to access up to 8 inhibit groups.

Any Input can be assigned to any inhibit group so that a number of alarms can be manually inhibited via a number of remote key switch.

In the example below a Channel has been assigned to Inhibit Group 1 and 3.

Auto Shelving

On Systems supplied with the Sequence of Events Recording option a faulty alarm loop or loose cable can quickly flood the associated event buffers. Auto shelve allows the user to configure:-

Function	Description
Alarm Count	The Maximum number of alarms the user believes will occur within a set period before the alarm count is considered abnormal
Count Period	The Time period in seconds

If the number of Input events exceeds the abnormal count within the count period the Input will be automatically shelved and a dated and timed message will be generated to inform the user that auto shelving has occurred on the specific channel. Events that occurred prior to the auto shelve will be stored in the relevant buffers in the normal way to aid fault finding and the alarm will automatically drop out of auto shelve when it has returned to normal operating patterns.

In the example below the user has indicated that 5 alarms occurring within 1200 seconds is considered abnormal.

Event Recording

Each channel can be set to allow data to be passed to the associated event buffers by enabling the Event Recording “Tick-Box”.

Colour

Colours are often used on Annunciator Systems to assist the operator in identify the type of Alarm. Traditionally Red is used for “Trip Alarms”, Amber for “Pre-Alarms”, White for “Process Alarms” and Green for “Status”. To aid channel navigation within the software each alarm window on the graphical display can be set to match the colour of the physical annunciator window. A drop down menu allows the user to select any of the six colours listed below and once the “Confirm Setting” control button is pressed using a left mouse click the associated graphic will be updated.

Input Tab

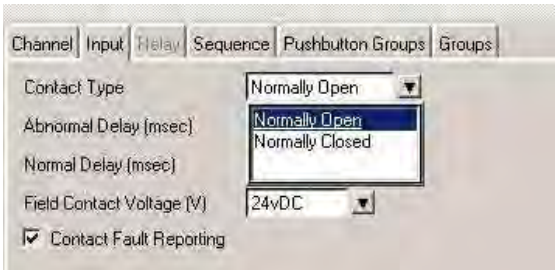
The following options are available under the “Input” Tab

Contact Type

A drop-down menu allows the user to assign the Contact Type for each Channel. In the example below a Channel is being configured to “Normally Open” (Close to Alarm). As an option each Channel can be set to Normally Closed (Open to Alarm).

Note: On system supplied prior to 30th July 2010 The input status is OR’d with the actual contact state. If the input is serial only please ensure the contact type is set to Normally Open and no customer wiring is made to the customer terminals located on the rear of the associated cell.

With serial inputs 0 = Input Normal and 1 = Input Abnormal



Delay Timers

Each channel is equipped with timers that allow the user to select:-

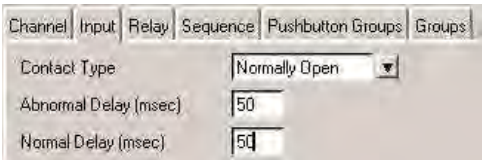
Abnormal Delay (ms)

This option will prevent the alarm from occurring unless it has been present for a pre-set period of time.

Normal Delay (ms)

This option will prevent the alarm from being Reset until the delay time has elapsed.

In the example shown below the Alarm must be present for a minimum of 50 ms before it is activated and must have returned to normal for the same period before it can be reset.



Field Contact Voltage.

Standard 725B Systems use 24VDC as a Field Contact Voltage.

As an option an external customer supplied power source can be used as a signal supply voltage.

24V or 125V (AC or DC)

On standard 725B Annunciators each channel can be hardware / software configured for use with 24V or 125V AC or DC signal voltages.

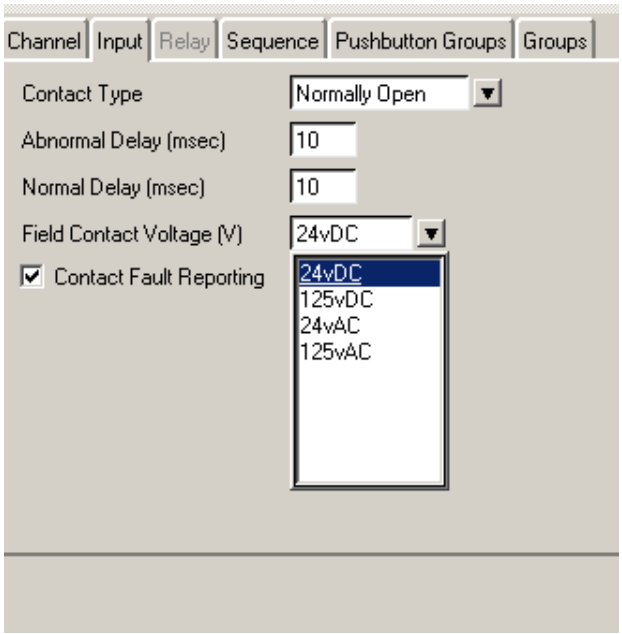
48V or 250V (AC or DC)

As an option, which must be specified at ordering phase, alternative alarm cards can be supplied allowing each channel to be hardware / software configured for use with 48V or 250V AC or DC signal voltages.

Field Contact Voltage (V) selection

Each channel is hardware & software configured to match the specified signal supply voltage at time of order.

To check or adjust this selection select the required voltage using the drop-down menu as shown below

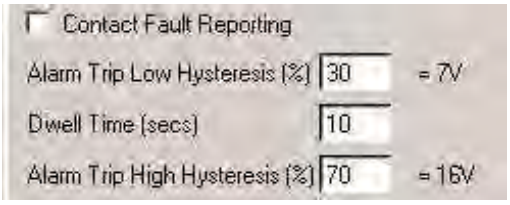


Please remember any changes to the field contact voltage must be hardware & software configured

Contact Fault Monitoring

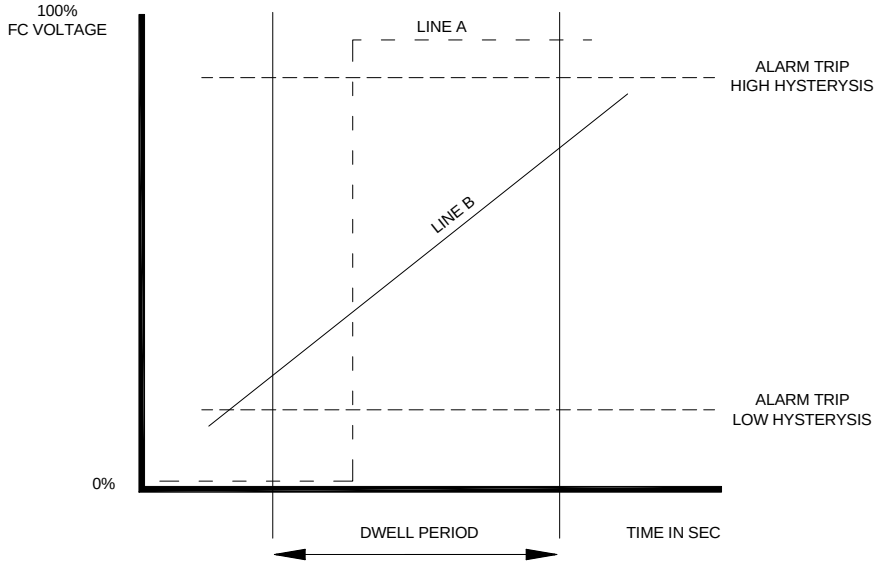
If required the user can enable Contact Fault Reporting to indicate that the input device has deteriorated beyond set limits due to contact or wiring faults.

To access this features the user must select the “View” Menu followed by “Advanced View” and the alarm trip fields shown below will be visible.



The following limits apply to each setting

- Alarm Trip Low Hysteresis (%) = 10%
- Dwell Time (secs) = 256 seconds max
- Alarm Trip High Hysteresis (%) = 90%



These settings allow the user to define the trip points of each digital input and therefore any degradation in field wring can be detected and a watchdog alarm can be generated. In the above example the Low trip is set to 30% and the high trip is set to 70% with a dwell time of 10 seconds.

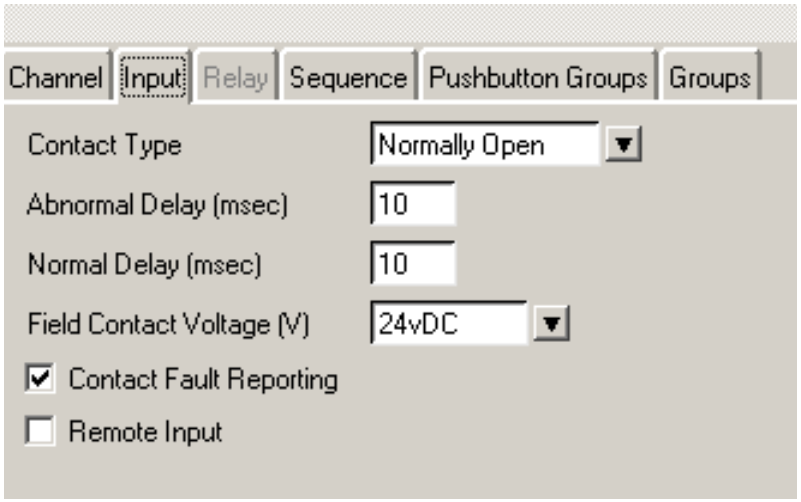
Once a channel goes into alarm the dwell period is used to measure how long the switching voltage is present. If the circuit is healthy the switching voltage is typically shown by LINE A. If the circuit has a resistive value the switching voltage is typically shown by LINE B.

Please note:-
Contact fault reporting only applies to signal inputs using DC voltages.

Remote and Local inputs

On systems supplied after 30st July 2010 using configuration software version 2.0.9 or higher each individual input can be set to be driven from the local terminals or remotely via comms.

Note: The input will also take note of the contact type selection for both options. When set to remote:
0 = Input Normal and 1 = Input Abnormal when set to Normally Open
1 = Input Normal and 0 = Input Abnormal when set to normally closed



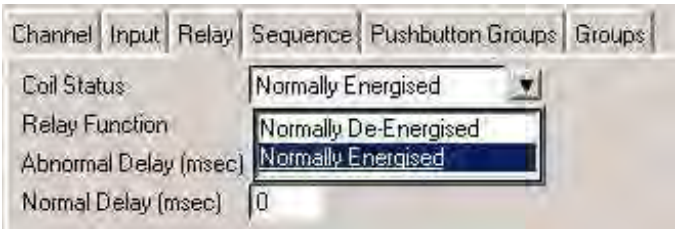
Relay Tab

If the System is provided with Repeat Relays on a per Channel basis the user will be able to access the fields listed under the “Relay Tab”. Please Note: On systems supplied with Dual Repeat Relays per channel both Relays are automatically set to the same state, (Coil State and Relay function)

If the field has been greyed out Repeat Relays have not been selected within the System set up software.

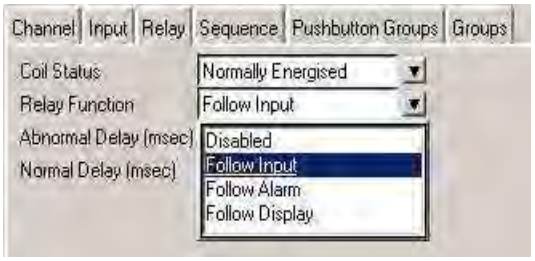
Coil Status

The Non-Alarm Coil State of each Relay can be set to Normally Energised or Normally De-Energised as required. In the example below a Channel is being set to Normally Energised.



Relay Function

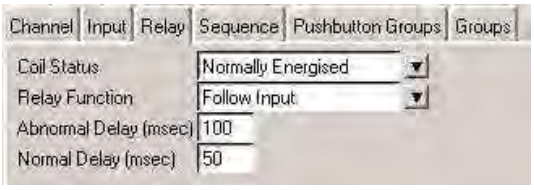
The function of each Relay can be set to follow the Input, follow the Alarm Logic or follow the Display. In the example shown below a Channel is being set to follow the Input.



Abnormal Delay

Each Repeat Relay can be set to activate after a preset time period has elapsed.

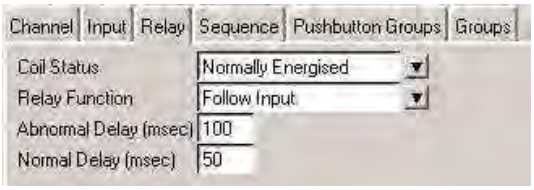
In the example shown below a Relay has been set to 100mS and therefore the Relay will not change state until this time has elapsed.



Normal Delay

Each Repeat Relay can be prevented from changing state unless the change in state has occurred for a set time period.

In the example shown below a Relay has been set to 50mS and therefore the Relay will not change state until this time has elapsed.



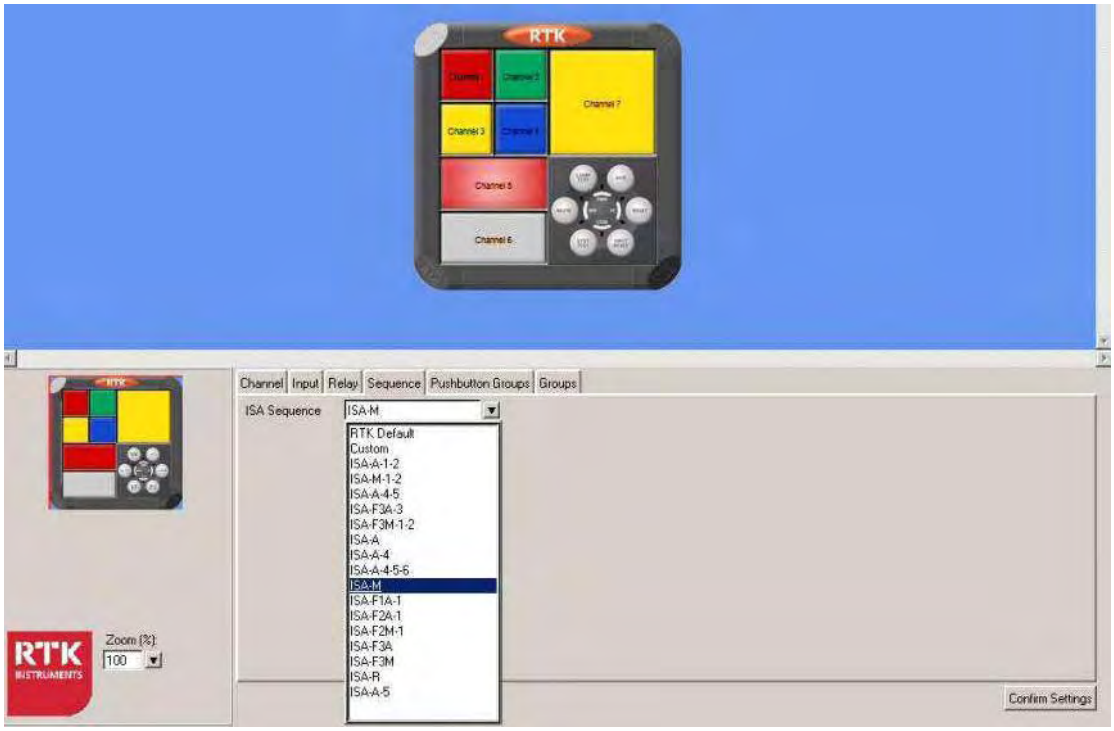
Alarm Sequences

Within the alarm annunciator market a common standard has been adopted by all key manufacturers and end users with regards to operational sequences. These standards are used worldwide to define the visual indication, audible alarm and the action the operator must take to control the annunciator.

The Instrument Society of America provide full details of each alarm sequence within ISA 18.1-1979 (R1992) and RTK are fully compliant with the stated sequences. The most common sequences are detailed within this section of the manual.

To define a sequence the user can simply select any of the listed ISA sequences, as typically shown below.

In this example channel 5 is being set to ISA M sequence.



Pushbuttons

Six pushbuttons are provided on the annunciator unit to allow the user to be able to control any of the available sequences which can be set on a per channel basis.

Lamp Test – is used to test the LED assemblies by illuminating them in a steady state for as long as the pushbutton is pressed

Functional Test – is used to simulate an input on all channels and therefore all windows and horn circuits will operate in accordance with the selected ISA sequence and additional pushbuttons will need to be pressed to step through the alarm sequence to return the unit to its normal state

Mute – is used to silence the audible alarm whilst allowing the associated alarm window to continue to operate in accordance with the selected ISA sequence

Acknowledge – is used to silence the alarm and change the state of the associated alarm window in accordance with the selected ISA sequence

Reset – is used to return the alarm to the normal off state once the Input has returned to the normal condition

First Reset – is used to reset the flash sequence on the first alarm to occur within a defined group of alarms. Once first reset has been pressed the next alarm to occur within the group will flash at the first up alarm rate.

Audible Alarms
Each channel within the annunciator can be set to operate either of the two integral audible alarms or they can be assigned to common relays configured as horn relays as required.

Additional Features

Automatic Reset
Once a channel has been acknowledged and its input has returned to normal the alarm can be set to automatically reset without the operator having to press the reset pushbutton

Non Latch Sequence – (No Lock In)
Alarms can be set to non lock-in, which allows the alarm to automatically return to the non alarm state as soon as the signal input returns to normal

Ringback Sequence
Ringback sequence is used to inform the operator both visually and audibly that an alarm condition has cleared and the channel can be reset to its normal off state. When a contact returns to normal the associated window will flash at approx ½ the speed of a normal alarm and the audible will sound. This identifies the specific alarm and informs the operator that the alarm can be reset to its normal off state.

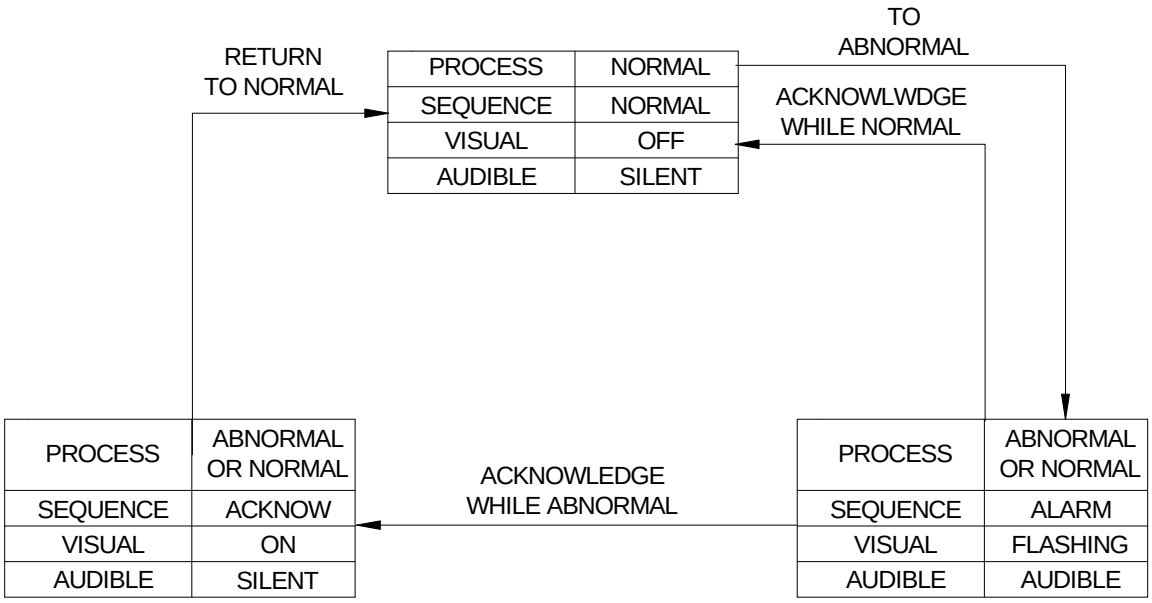
First Up Sequences
When monitoring devices with interlinked functions such as a turbine or compressor it is often important to know the specific alarm that occurred first, as it will invariably result in cascade of secondary alarms. This allows the operator to focus on the root cause of failure and therefore limits the downtime and associated costs. This is achieved by having the first-up alarm flashing in a different manner compared to the subsequent alarms. Four different first-up sequences are available F0, F1, F2 and F3 as detailed below and in the following sequence tables.

F0 The standard mode adopted by RTK Instruments, which indicates the first-up alarm by flashing at twice the rate of subsequent alarms.
F1 In this mode subsequent alarms appear in the acknowledged state, hence they do not flash. The audible device does not operate when subsequent alarms occur, unless still operating from the first alarm. The acknowledge pushbutton will reset the first-up indication.
F2 In this mode all subsequent alarms do not flash, they will however operate the audible device. The acknowledge pushbutton will reset the first-up indication.
F3 In this mode initial alarms appear with an intermittent flash rate and subsequent alarms flash at a steady rate. On acknowledge subsequent alarms revert to the steady on state and only the first alarm continues to flash at a slower rate.

Please note auto reset and non lock- in functions are not recommended when using first up sequences as the true sequence of events cannot be guaranteed.

The most common sequences are detailed below:-

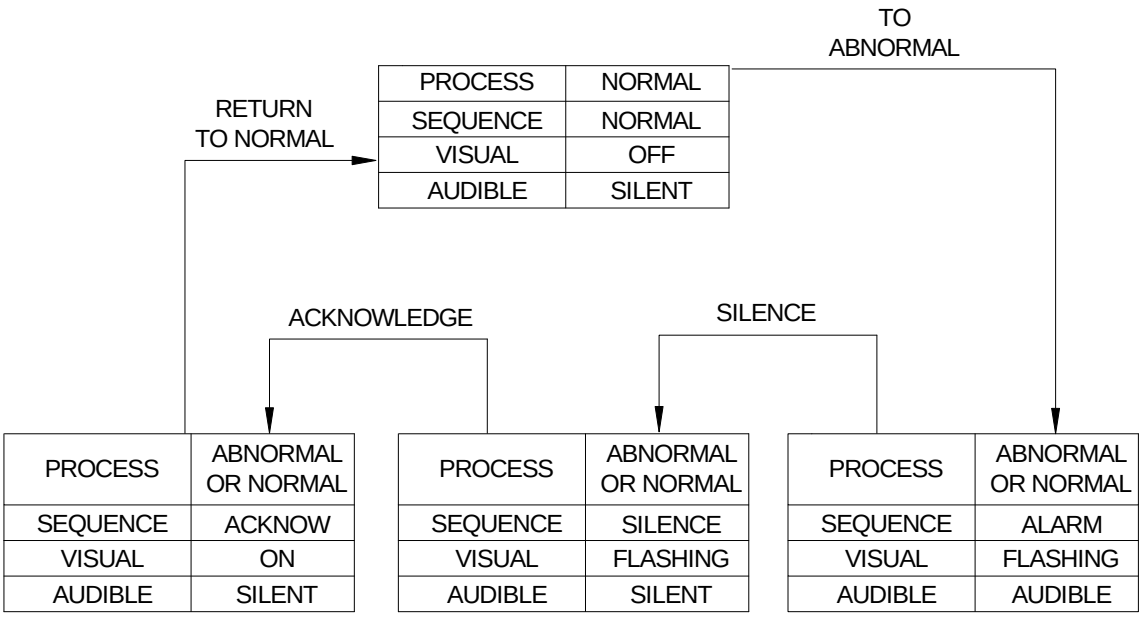
ISA A – Automatic Reset – Lock In



Sequence Features

1. Acknowledge and test pushbuttons.
2. Alarm audible device
3. Lock In of momentary alarms until acknowledged
4. The Audible device is silenced and the flashing stops when acknowledged.
5. Automatic reset of acknowledged alarms when the process has returned to normal
6. Operational test

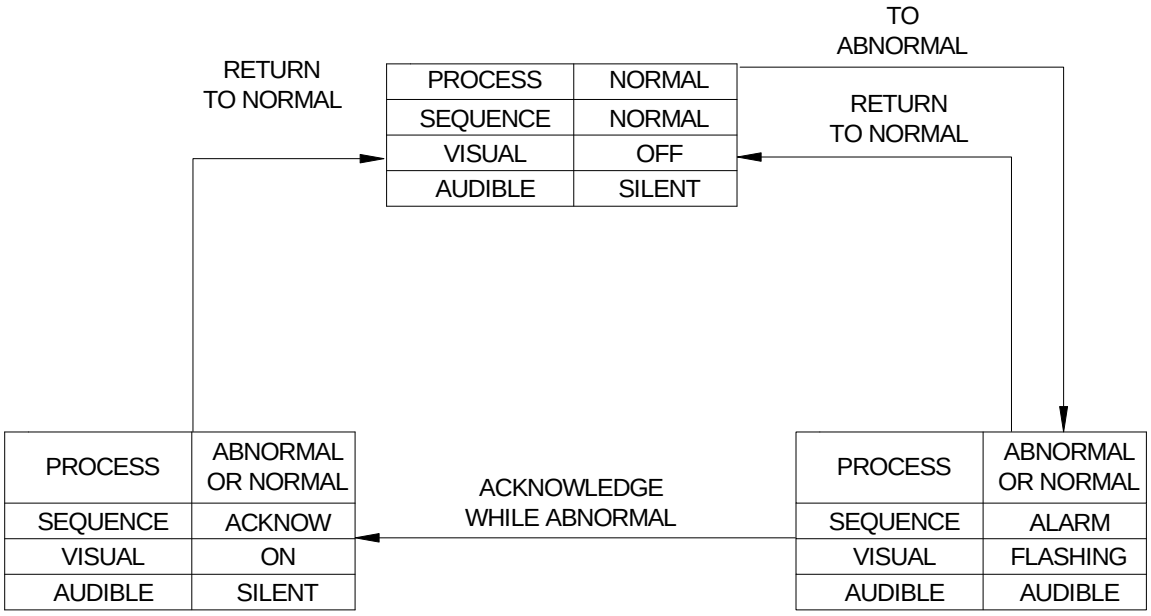
ISA A-1-2 – Automatic Reset – Silence Pushbutton Interlock



Sequence Features

1. Acknowledge, silence and test pushbuttons.
2. Alarm audible device
3. Lock In of momentary alarms until acknowledged
4. Silence pushbutton must be pressed before acknowledge
5. Silence stops the audible alarm only
6. The flashing stops when acknowledged.
7. Automatic reset of acknowledged alarms when the process has returned to normal
8. Operational test

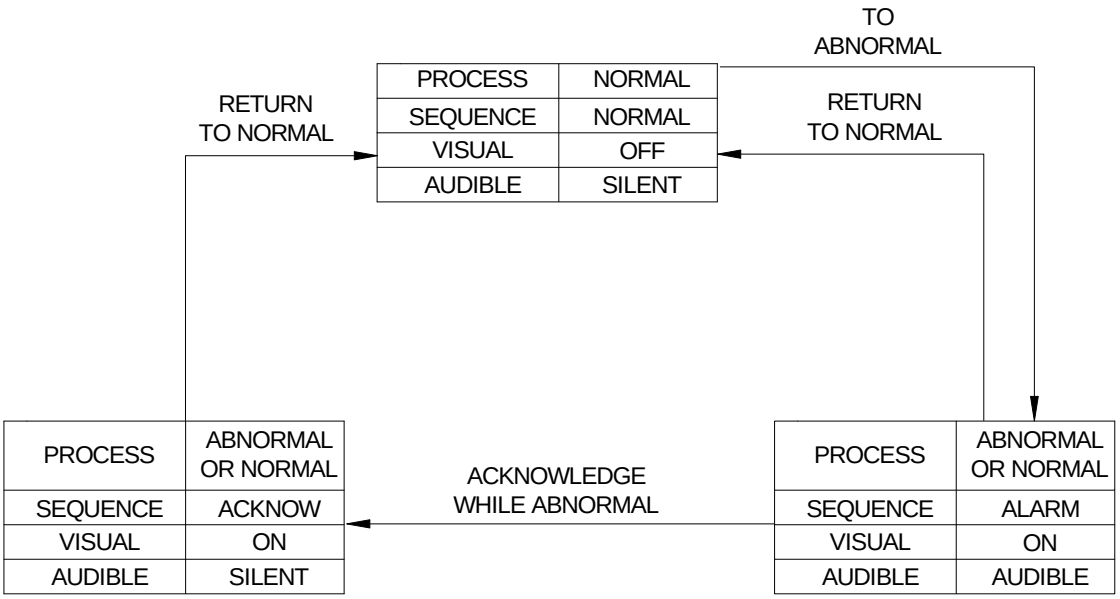
ISA A-4 – Automatic Reset – Non Lock In



Sequence Features

1. Acknowledge, and test pushbuttons.
2. Alarm audible device
3. Non Lock In of momentary alarms
4. The audible device is silenced and the flashing stops when acknowledged.
5. Automatic reset of alarms when the process has returned to normal before or after acknowledge (Non Lock In)
6. Operational test

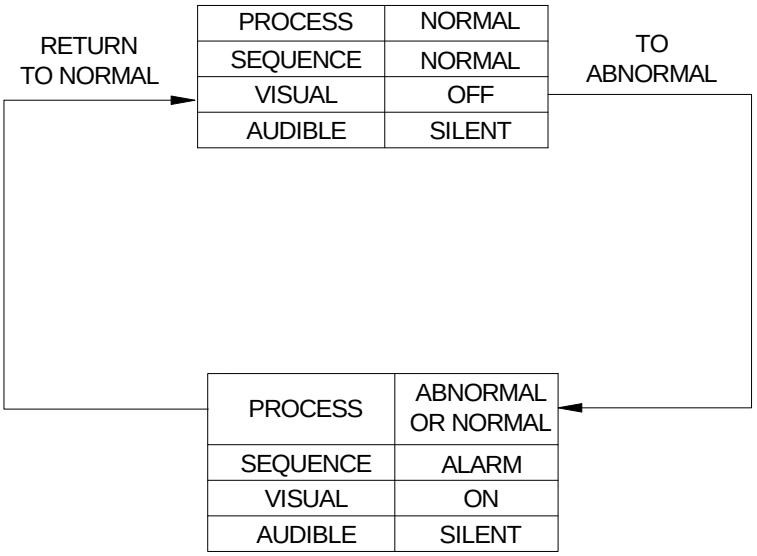
ISA A-4-5 – Automatic Reset – No Flashing



Sequence Features

1. Acknowledge, and test pushbuttons.
2. Alarm audible device
3. The visual alarm does not flash
4. Non Lock In of momentary alarms
5. The audible device is silenced when acknowledged.
6. Automatic reset of acknowledged alarms when the process has returned to normal
7. Operational test

ISA A-4-5-6 – Status



Sequence Features

1. Test pushbutton.
2. No alarm audible
3. The visual alarm does not flash
4. Non Lock In of momentary alarms
5. Automatic reset of alarms when the process has returned to normal before or after acknowledge (Non Lock In)
6. Operational test

Please Note:-

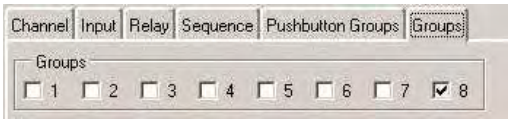
The drop down menu within the configuration software allows the user to select ISA Sequence A-4-5-6 to obtain Status Only indication however the audible alarm circuit will need to be disabled separately due to the large number of horn groups available within the system.

If the audible alarm sounds on a channel that has been set to ISA A-4-5-6 please check that the alarm is not part of a group which has been assigned to operate as an audible in the group operations tab.

In the example below Group 8 is being used as an audible group

Group Tab

This screen shot indicates that a channel / channels have been set to Group 8

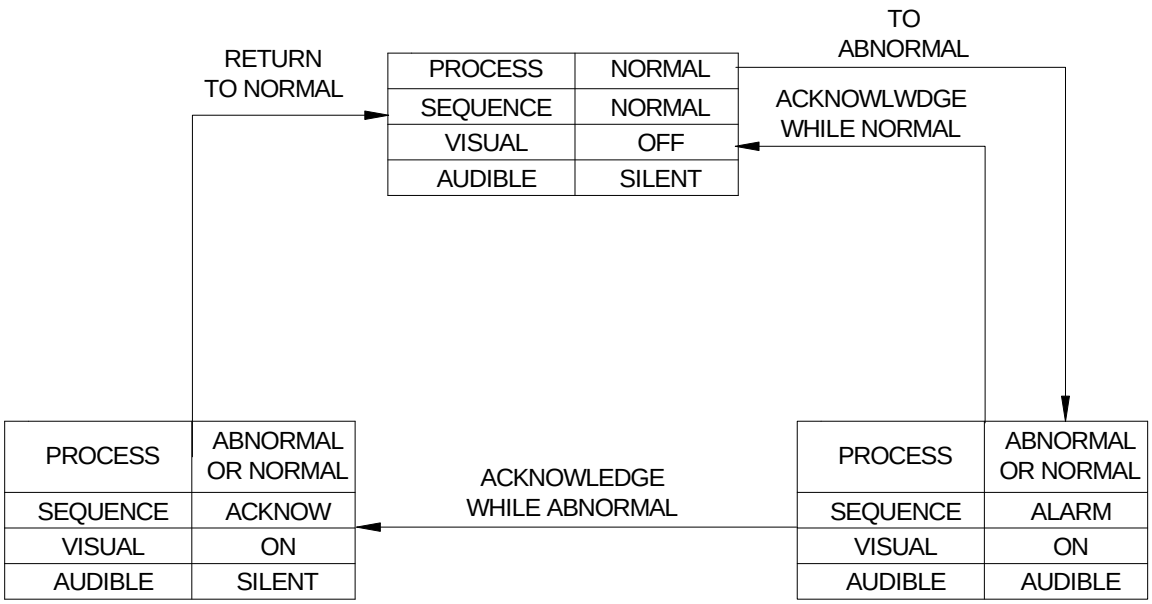


Group Operations Tab

This screen shot indicates that Group 8 has been set to operate as an Audible alarm

To prevent the audible sounding on a status window the user should select a single status alarm window or group of status alarm windows and uncheck the tick box associated with a Group being used as an Audible in the example above this would be Group 8

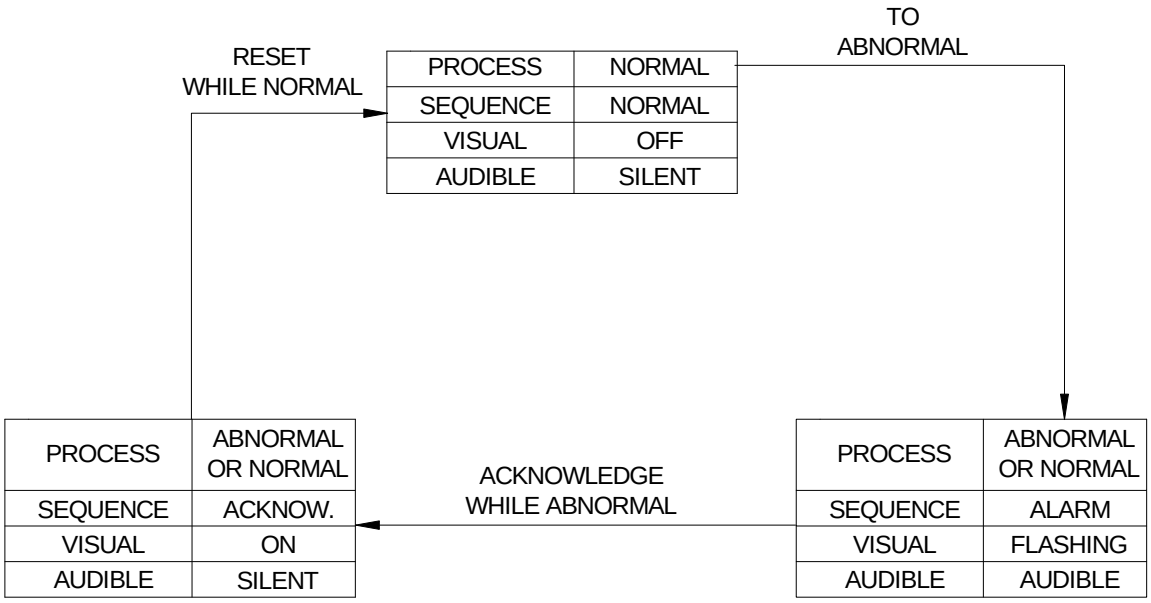
ISA A-5 – Automatic Reset – No Flash



Sequence Features

1. Acknowledge and test pushbuttons.
2. Alarm audible device
3. The visual alarm does not flash
4. Lock In of momentary alarms until acknowledged
5. The Audible device is silenced when acknowledged.
6. Automatic reset of acknowledged alarms when the process has returned to normal
7. Operational test

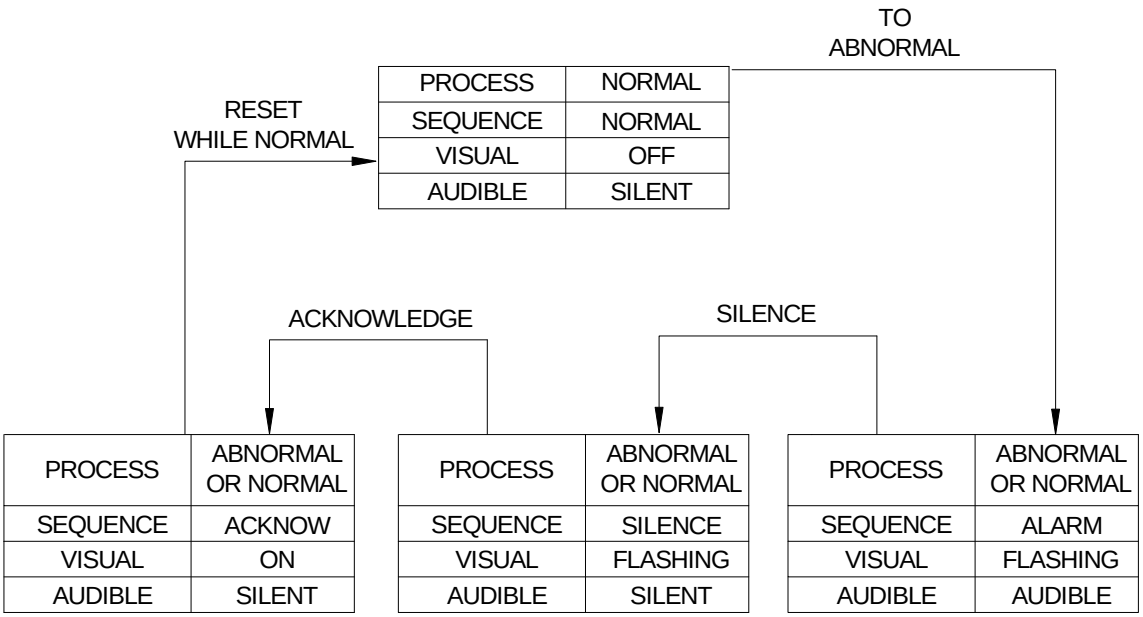
ISA M – Manual Reset – Lock In



Sequence Features

1. Acknowledge, reset and test pushbuttons.
2. Alarm audible device
3. Lock In of momentary alarms until acknowledged
4. The Audible device is silenced and the flashing visual alarm stops when acknowledged.
5. Manual reset of acknowledged alarms when the process has returned to normal
6. Operational test

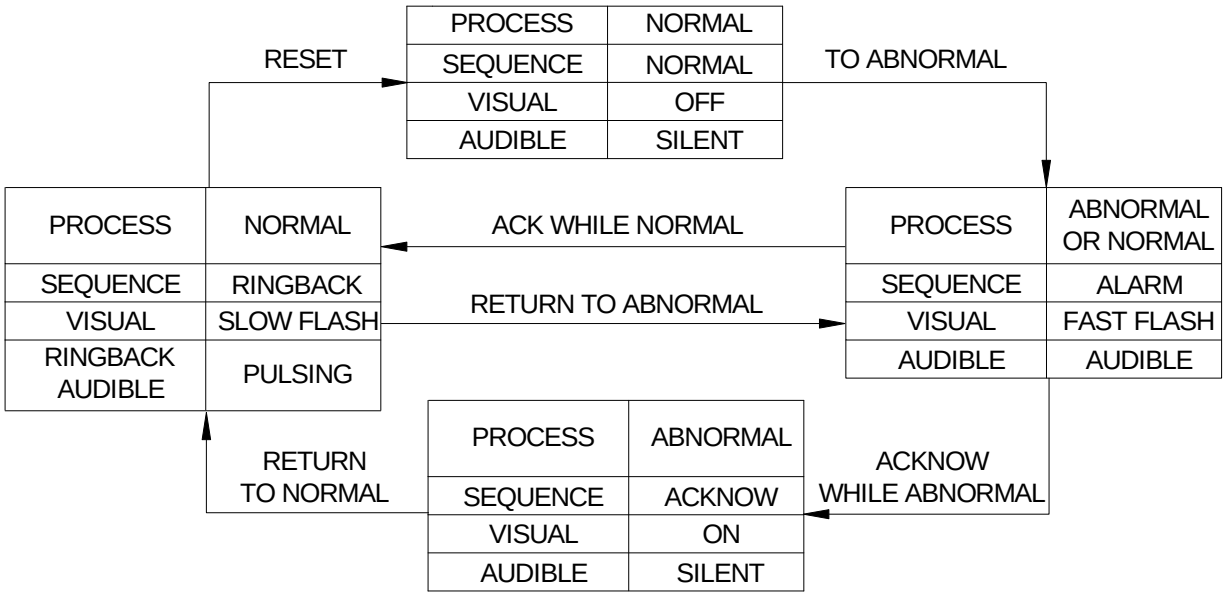
ISA M-1-2 – Manual Reset – Silence Pushbutton Interlock



Sequence Features

1. Acknowledge, reset and test pushbuttons.
2. Alarm audible device
3. Lock In of momentary alarms until acknowledged
4. Silence pushbutton must be pressed before acknowledge
5. Silence stops the audible alarm only
6. The flashing stops when acknowledged.
7. Manual reset of acknowledged alarms when the process has returned to normal
8. Operational test

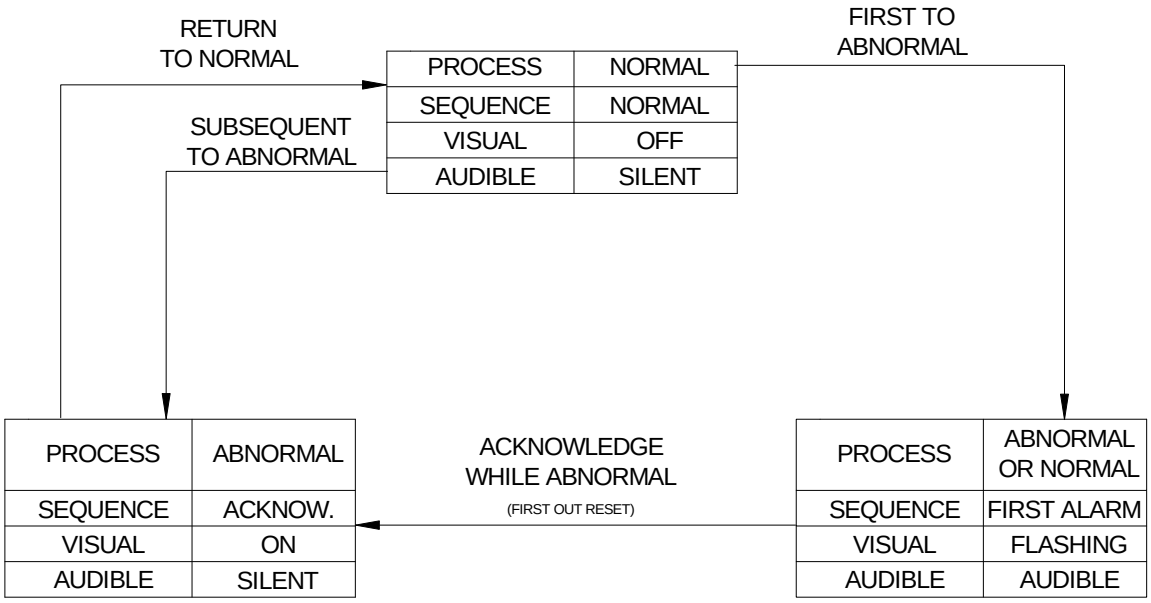
ISA R – Ringback



Sequence Features

1. Acknowledge, reset and test pushbuttons.
2. Alarm audible device. (optional Ringback audible device)
3. Lock In of momentary alarms until acknowledged
4. The audible device is silenced and the flashing stops when acknowledged
5. Ringback visual ad audible indications when the process condition returns to normal
6. Manual reset of Ringback indications
7. Operational test

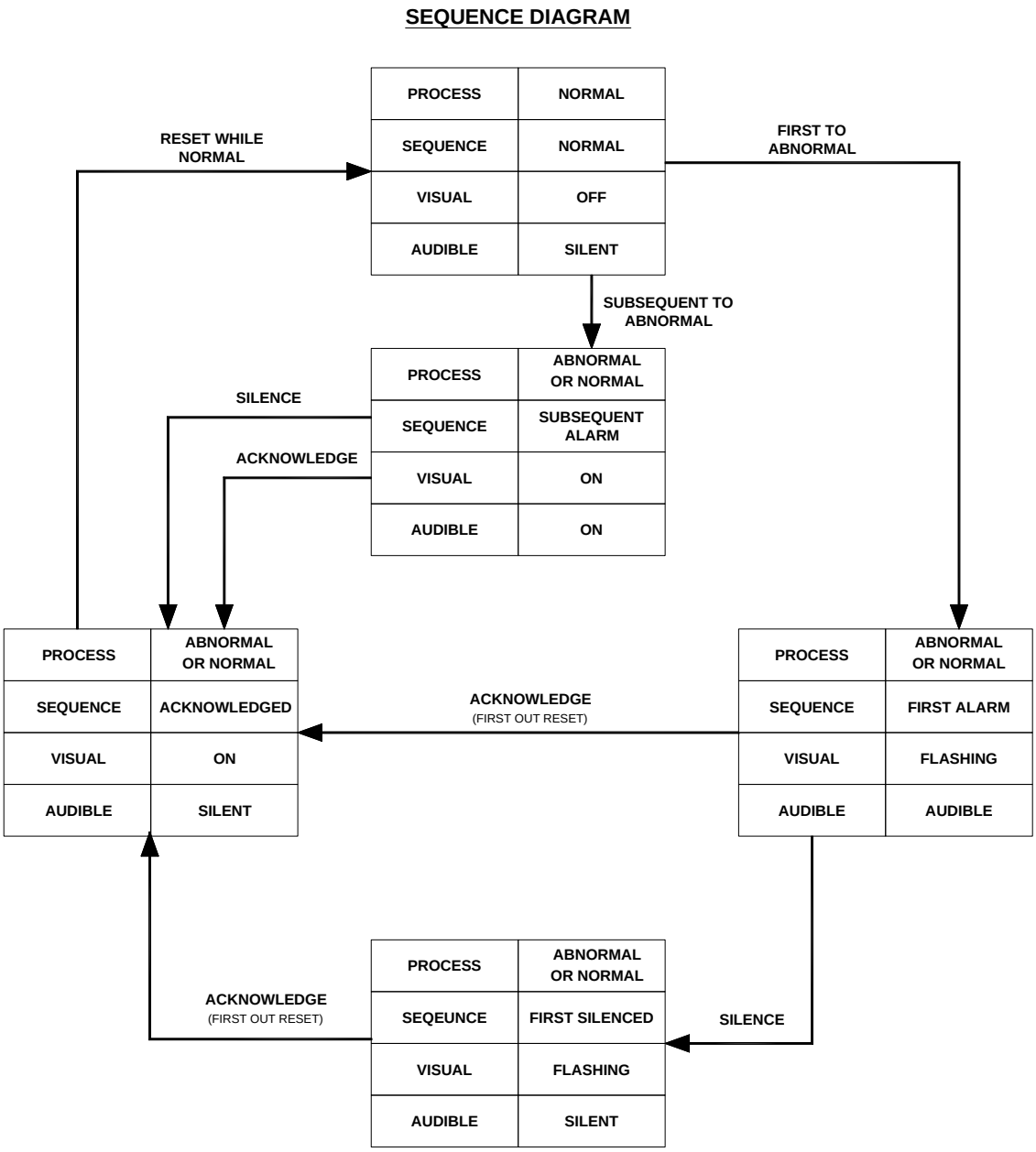
ISA F1A-1 – Automatic Reset First Up



Sequence Features

1. Acknowledge and test pushbuttons.
2. Alarm audible device
3. Lock In of momentary first alarm only, no lock in of momentary subsequent alarms
4. Flashing and audible indications for first alarm only, new subsequent alarms go to the acknowledge state.
5. First out indication is reset and the audible is silenced when acknowledged.
6. Automatic Reset of acknowledged alarm indications when the process returns to normal
7. Silence pushbutton can be used to silence the audible alarm only

ISA F2M-1 – Manual Reset First Up



SEQUENCE ISA F2M-1

(MANUAL RESET FIRST OUT WITH NO SUBSEQUENT ALARM FLASHING & SILENCED PUSHBUTTON)

LINE	PROCESS CONDITION		PUSHBUTTON OPERATION	SEQUENCE STATE	VISUAL DISPLAY	ALARM AUDIBLE DEVICE	REMARKS
1	NORMAL			NORMAL	OFF	SILENT	
2	FIRST	ABNORMAL		FIRST ALARM	FLASHING	AUDIBLE	LOCK-IN
3	SUB.	ABNORMAL		SUB. ALARM	ON	AUDIBLE	LOCK-IN
4	FIRST	ABNORMAL OR NORMAL	ACKNOWLEDGE BEFORE SIL	TO LINE 7			FIRST OUT RESET
5	SUB.	ABNORMAL OR NORMAL					
6	FIRST	ABNORMAL OR NORMAL	SILENCE	FIRST SILENCED	FLASHING	SILENT	
7	SUB.	ABNORMAL OR NORMAL	SILENCE	ACKNOWLEDGE	ON	SILENT	MANUAL RESET REQUIRED
8	FIRST	ABNORMAL OR NORMAL	ACKNOWLEDGE AFTER SILENCE	TO LINE 7			FIRST OUT RESET
9	NORMAL		RESET	NORMAL	OFF	SILENT	MANUAL RESET

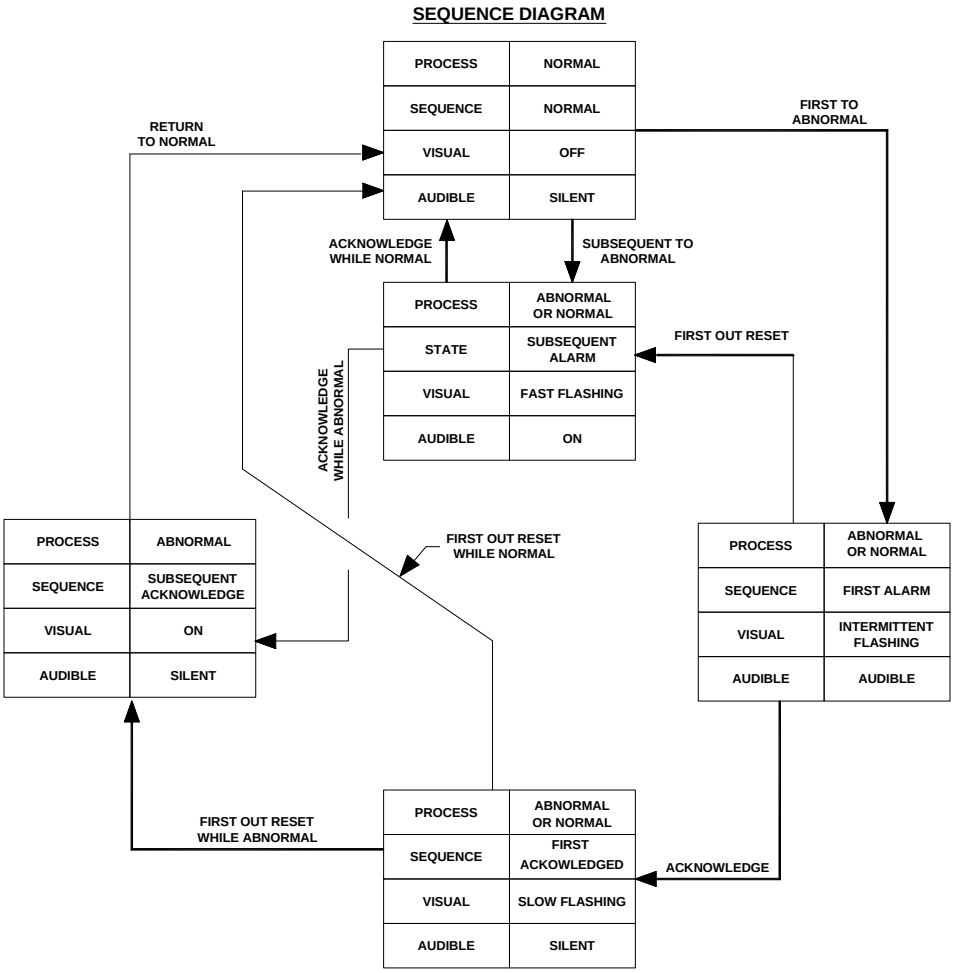
SEQUENCE FEATURES

1. Silence, acknowledge, reset and test pushbuttons
2. Alarm audible device
3. Lock-in of momentary alarms until acknowledged.
4. Option1 – silence pushbutton to silence the alarm audible device while retaining the first out flashing indication
5. Flashing indication for first alarm only. new subsequent alarms have the same visual indication as acknowledged alarms.
6. First out indication is reset when acknowledged
7. Manual reset of acknowledged alarm indications after process conditions return to normal.
8. Operational test

ISA F2A-1 – Automatic Reset First Up

This sequence is the same as ISA F2M-1 with the exception that the alarms are automatically reset once the process has returned to normal.

ISA F3A – Automatic Reset First Up



SEQUENCE ISA F3A

(AUTOMATIC RESET FIRST OUT WITHOUT FLASHING & RESET PUSHBUTTON)

SEQUENCE TABLE

LINE	PROCESS CONDITION		PUSHBUTTON OPERATION	SEQUENCE STATE	VISUAL DISPLAY	ALARM AUDIBLE DEVICE	REMARKS
1	NORMAL			NORMAL	OFF	SILENT	
2	FIRST	ABNORMAL		FIRST ALARM	INTERMITTENT FLASHING	AUDIBLE	LOCK-IN
3	SUB.	ABNORMAL		SUB. ALARM	FAST FLASHING	AUDIBLE	LOCK-IN
4	FIRST	ABNORMAL OR NORMAL	FIRST OUT RESET BEFORE ACKNOWLEDGE	TO LINE 3			FIRST OUT RESET
5	FIRST	ABNORMAL OR NORMAL	ACKNOWLEDGE	FIRST ACKNOWLEDGED	SLOW FLASHING	SILENT	FIRST OUT RESET REQUIRED
6A	SUB.	ABNORMAL		SUB. ACKNOWLEDGE	ON	SILENT	MAINTAINED ALARM
6B	SUB.	NORMAL		TO LINE 8			MOMENTARY ALARM
7A	FIRST	ABNORMAL	FIRST OUT RESET AFTER ACKNOWLEDGE	TO LINE 6A			FIRST OUT RESET
7B	FIRST	NORMAL		TO LINE 8			FIRST OUT RESET
8	NORMAL			NORMAL	OFF	SILENT	AUTOMATIC RESET

SEQUENCE FEATURES

1. Silence, acknowledge, reset and test pushbuttons
2. Alarm audible device
3. Lock-in of momentary alarms until acknowledged.
4. Flashing indication for first alarm only. New subsequent alarms have the same visual indication as acknowledged alarms.
5. First out indication is reset when acknowledged
6. Manual reset of acknowledged alarm indications after process conditions return to normal.
7. Operational test

ISA F3A-3 – First Out Reset Interlock

This sequence is the same as F3A with the addition of First Reset Interlock which requires acknowledge to be pressed before First Reset will function.

ISA F3M – Manual Reset First Out

This sequence is the same as F3A with the addition of Manual Reset. All alarms must be manually reset once the process has returned to normal.

ISA F3M-1-2 – Manual Reset First Out with Silence Interlock

This sequence is the same as F3A with the addition of Silence Interlock and Manual Reset.

The Silence pushbutton must be operated before alarms can be acknowledged. The Silence pushbutton stops the Audible alarm only.

All alarms must be manually reset once the process has returned to normal.

Pushbutton Groups

Global Pushbutton Groups

Pushbutton functions are available on 725B annunciators which can be used to Test or control the alarms in accordance with ISA S18.1 Alarm Sequences.

In standard applications all channels are assigned to a single Pushbutton Group, (Group 1), however the user can enable or disable any of the functions on a per channel basis.

In the example shown below the Silence Pushbutton has been disabled for Channel 1.

Multiple Pushbutton Groups

In more complex applications each channel can be assigned to any of (8) Pushbutton Groups.

To access the additional groups the user must select the “View” menu followed by “Advanced View”. This will allow the 8 Groups to be displayed as shown below.

In the example below Lamp Test, Ack & Reset have been assigned to Pushbutton Group 2 for channels 9 to 14.

Please Note:-

Pushbutton Group 1 is assigned to the Internal Pushbutton Module and any additional Pushbutton Groups will require the use of external pushbuttons.

On standard systems (3) Pushbutton Input terminals are available on the first alarm card in the system for use with remote pushbuttons. If more than (3) remote inputs are required adjacent cards are supplied with pushbutton inputs, (3 per card).

Alarm Groups

Each channel within the annunciator can be linked to form part of a single or multiple Alarm Group (Group 1 to 8). Groups are typically used to provide summary alarm information that can be used by 3rd party devices (DCS / PLC / SCADA / Supervisor Consoles).

Channels can be assigned to a single or multiple Groups using a left “mouse” click on the associated field. In the example below a Channel has been assigned to Alarm Group 1 & 2.

Additional Groups

In more complex applications the user is able to access additional menus which allow any Channel within the Annunciator to be linked to a maximum of 32 Groups

To access the additional features the user must select the “View” menu followed by “Advanced View” to reveal the additional Groups as shown below.

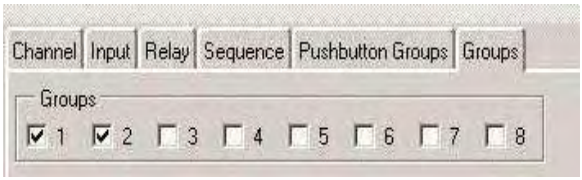
In the above example Channel 1 has been assigned to Group 1, 4 , 8 and 21.

Once an Alarm Group has been defined the user can assign a single or multiple Relays to any of the Groups as detailed under the “WR1” Watchdog / Relay Tab Setting within this manual.

Horn Groups

Each Channel within the annunciator can be linked to form part of a single or multiple Horn Groups. Horn Groups are typically used to provide different tones for critical and non-critical alarms, but they can also be used when alarms need to be repeated to 3rd Party devices and the signal needs to be reset once the local alarm has been acknowledged.

Channels can be assigned to a single or multiple Groups using a left “mouse” click on the associated field. In the example below a Channel has been assigned to Group 1 & 2.



Additional Horn Groups

In more complex applications the user is able to access additional menus which allow any Channel within the Annunciator to be linked to a maximum of 32 Horn Groups.

To access the additional features the user must select the “View” menu followed by “Advanced View” to reveal the additional Horn Groups as shown below.

In the example shown above Channel 6 has been assigned to Horn Group 1, 3 & 5. Once a Horn Group has been defined the user can assign a single or multiple Relays to any of the Groups as detailed under the “WR1” Watchdog / Relay Tab Setting within this manual.

Internal Horns:- Either of the 2 x Internal Horns can be set to operate from any Horn Group as required.

SECTION 15 - SPECIFICATIONS

Logic power

24VDC (19 – 28VDC)

Power Supplies

1. **Integral power supplies**
   Universal Input Type capable of accepting
   85 – 264VAC OR
   88 – 360VDC

   Each power supply can power up to 40 small windows, 20 medium windows or 10 large windows.

2. **Multiple integral power supplies**
   In larger systems multiple integral power supplies can be used

3. **Remote power supplies**
   RTK offer a complete range of remote mounting AC/DC OR DC/DC power supplies in various wattages to suit individual applications and separate data sheets are available for these units.

Redundant power supplies

In safety critical applications integral or remote power supplies can be supplied in redundancy allowing the system to operate from two power sources.

Quiescent current

Each channel requires 20mA in the non alarm state

Alarm state current

The following table details the current required per channel whilst in the alarm state.

Window Size	Small	Medium	Large
Standard systems	40mA	60mA	100mA
Systems with repeat relays	50mA	70mA	110mA
Pushbutton module, common relays & integral audibles			200mA

Signal Inputs

All inputs are provided with optical isolators capable of withstanding a 1000 volts megger test to ground.
The standard unit provides 24VDC as a signal supply voltage and options exist for 24VAC, 48V AC/DC, 125V AC/DC or 250V AC/DC.

Input response time

The user can select the response time required per channel in the range 1ms to 65S using the RTK supplied configuration software.

First-Up discrimination

Better than 10mS

Outputs

Individual channel repeat relays

As an option each channel within the Annunciator can be supplied with a dedicated repeat relay with SPDT contacts allowing the user to jumper select a N/C or N/O contact for use with 3rd Party devices.

Contact rating

Voltage	Rating (resistive)
24VDC	2A
125VDC	0.5A
125VAC	1A

Common relays

All units are provided with a minimum of four common relays which can be software configured for use as Group, Horn or Watchdog relays. Additional common relays can be supplied as optional extras.

Contact rating

Voltage	Rating (resistive)
24VDC	2A
125VDC	0.5A
125VAC	1A

Audible alarms

Two integrally mounted audible alarms are provided on systems using the integral pushbutton module. Each audible has a unique tone and the configuration software allows the user to adjust the volume and to pulse either audible as required. Common relays can be configured to operate as audible alarms as required.

Communications

Standard 725B units are provided with RS232 Modbus port with RTU or ASCII protocols. Optional protocols such as DNP3 are available

Environmental Specifications

Temperature

Operating Temperature - 20 to + 60 Degrees C

Storage Temperature - 20 to + 80 Degrees C

Humidity 0 – 95% RH, Non Condensing

Protection

Annunciator front: IP41
Annunciator rear: IP20
Optional covers and Enclosures available for IP54 up to IP67

Radiated RFI Immunity

IEC 61000-4-3

Conducted RFI Immunity

IEC 61000-4-6

Radiated Emissions

IEC 61000-6-3

Conducted Emissions

IEC 61000-6-3

Radiated Power Frequency Magnetic Field

IEC 61000-4-8

ESD Effects

IEC 61000-4-2

Dielectric Withstand

1500V RMS

Surge Withstand – Oscillatory

ANSI C37.90.1

Electrical Fast Transient/Burst Immunity

IEC 61000-4-4

Surge Immunity

IEC 61000-4-5

Approvals

SECTION 16 - SPARE PARTS LIST

Four Channel Alarm Cards

24V / 125V Signal Input Versions

Part No	Description
CB6611POP1	Standard alarm card
CB6611POP3	Alarm card plus three remote pushbutton inputs
CB6611POP5	Alarm card plus sequential event recorder memory
CB6611POP7	Alarm card with three remote pushbutton inputs and sequential event recorder memory

24V / 125V Differential Input Versions

Part No	Description
CB6611POP9	Alarm cards with differential inputs
CB6611POP11	Alarm cards with differential inputs plus sequential event recorder memory

48V / 250V Signal Input Versions

Part No	Description
CB6611POP2	Standard alarm card
CB6611POP4	Alarm card plus three remote pushbutton inputs
CB6611POP6	Alarm card plus sequential event recorder memory
CB6611POP8	Alarm card with three remote pushbutton inputs and sequential event recorder memory

48V / 250V Differential Input Versions

Part No	Description
CB6611POP10	Alarm cards with differential inputs
CB6611POP12	Alarm cards with differential inputs plus sequential event recorder memory

Four Channel Repeat Relay Card

Part No	Description
CB6613POP1	Four Channel Repeat Relay Card

Common Relay Card

Part No	Description
CB6641POP1	Common Relay Card used in WR Cell on systems supplied with integral pushbutton modules
CB6641POP2	Common Relay Card used in WR Cell on systems supplied with remote pushbutton modules

White LED Assembly

Part No	Description
CB7028POP1	“Fit & Forget” White LED Assembly

Integral Power Supply

Part No	Description
CB6617POP1	Integral Universal Input Power Supply Card

Pushbutton Card

Part No	Description
CB6678POP1	Pushbutton Assembly Spare Card

SI/O Cards (Logic/Signal Power Input Cards)

Part No	Description
CB6648POP1	Standard Power Input Card used with External PSU
CB6648POP2	Standard Power Input Card used with Integral PSU
CB6648POP3	Power Input Card used with External PSU c/w RS485 Communications
CB6648POP4	Power Input Card used with Integral PSU c/w RS485 Communications

SI/O Card (For use with remote Pushbutton Module)

Part No	Description
CB6648POP5	Standard Power Input Card used with External Pushbutton Module version

Ground Detector Card

Part No	Description
CB7042POP	Ground Fault Detector Card

Communication Card

Part No	Description
CB7515POP1	Standard Communication Card

Spare Coin Cell Battery

Part No	Description
BA-3V-001	Coin Cell Battery Type CR2032 3V

USB Programming Cable

Part No	Description
725B-USB	USB Programming Cable

Bezels

Part No	Description
ML-7227-L	Bezel for use with 60mm x 60mm Large Windows
ML-7227-M	Bezel for use with 60mm x 30mm Medium Windows
ML-7227-S	Bezel for use with 30mm x 30mm Small Windows

Clear Lens

Part No	Description
ML-7228-L	Lens for use with 60mm x 60mm Large Windows
ML-7228-M	Lens for use with 60mm x 30mm Medium Windows
ML-7228-S	Lens for use with 30mm x 30mm Small Windows

Spares Kits (External Power Supply Version)

Part No	Description
CB7028POP1	White LED Assembly
FU-1A-002	Signal Supply Fuse 5 x 20 mm 1A
FU-8A-003	Logic Supply Fuse 5 x 20 mm 8A

Spares Kits (Internal Power Supply Version)

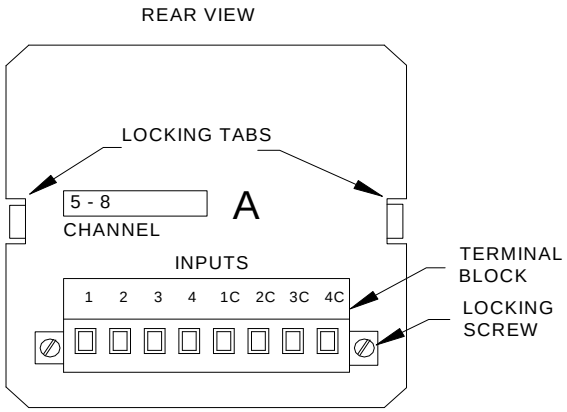
Part No	Description
CB7028POP1	White LED Assembly
FU-1A-002	Signal Supply & 24VDC Output Fuse 5 x 20 mm 1A
FU-2A-003	Primary Supply Fuse 5 x 20 mm 2A

SECTION 17 - SERVICING

Module Removal

All of the cards within the 725B are removable from the rear of the instrument

To remove a card we recommend the following procedure:-



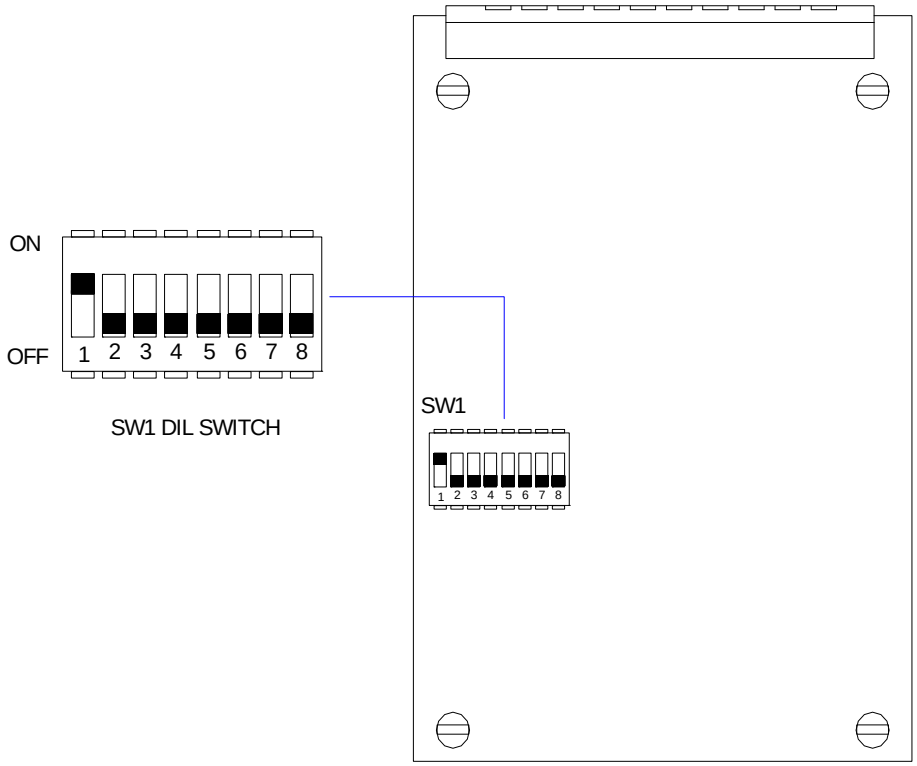
1. Isolate the power to the Annunciator.
2. Undo the locking screws on either side of the terminal block on the rear of the cell.
3. Unplug the terminal block, which can be removed with field wiring still attached.
4. The plastic rear cover can be removed using a flat blade screwdriver to release the locking tabs on either side of the cover.
5. Once the rear cover has been removed the associated card can be withdrawn by pulling on the socket.
6. Please note each card in the system has its own unique address and it is important that the user notes the address if removing multiple cards or replacing a card.
7. Once a card has been replaced the plastic cover can be clipped back into position, the terminal block can be re-connected and the screws tightened to lock it in place.

IMPORTANT

8. If a card has been replaced the user will need to download the original software configuration to the unit to ensure that the features of the new card match the original one.

Card Address Setting

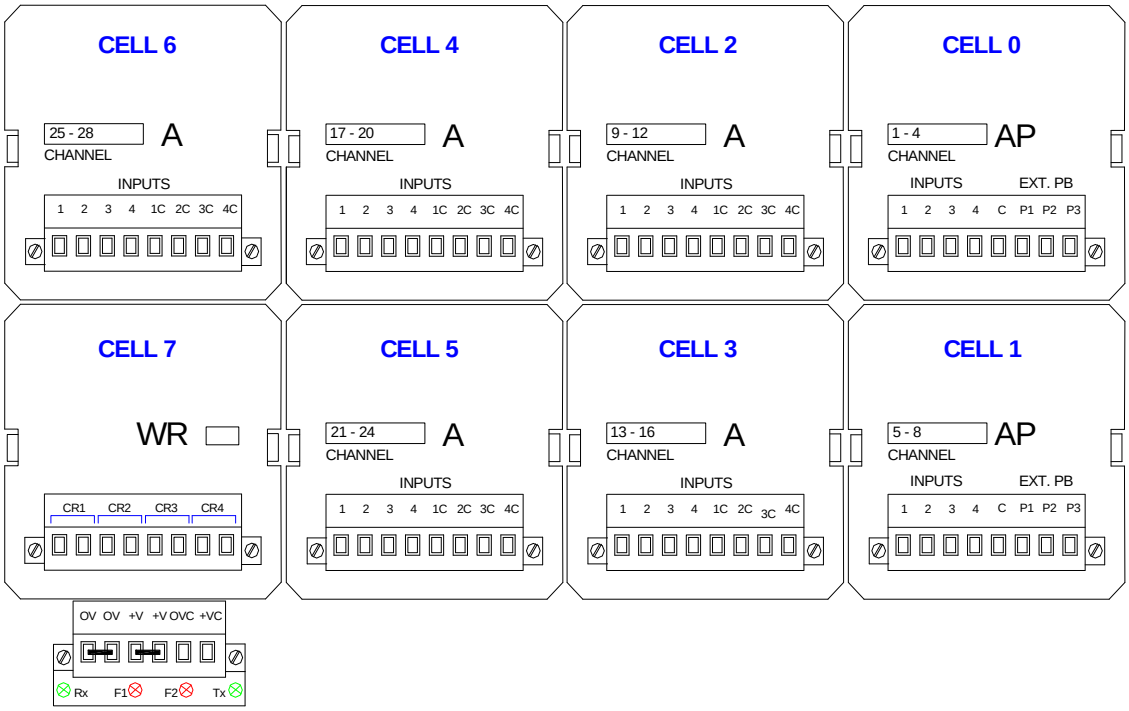
Before each card is placed within the annunciator a unique address number is set using the switches located on DIL switch SW1 as shown on a typical alarm card in the diagram below.



The first card in the system, top right hand corner when viewed from the rear, is factory set to Address 0 and the remaining cards require their own unique address for the system to operate correctly. The factory default regarding addressing varies according to window size.

Small Window versions.

In the example shown 7 x four channel alarm cards plus 1 x common relay card would be fitted in the cell positions indicated below:



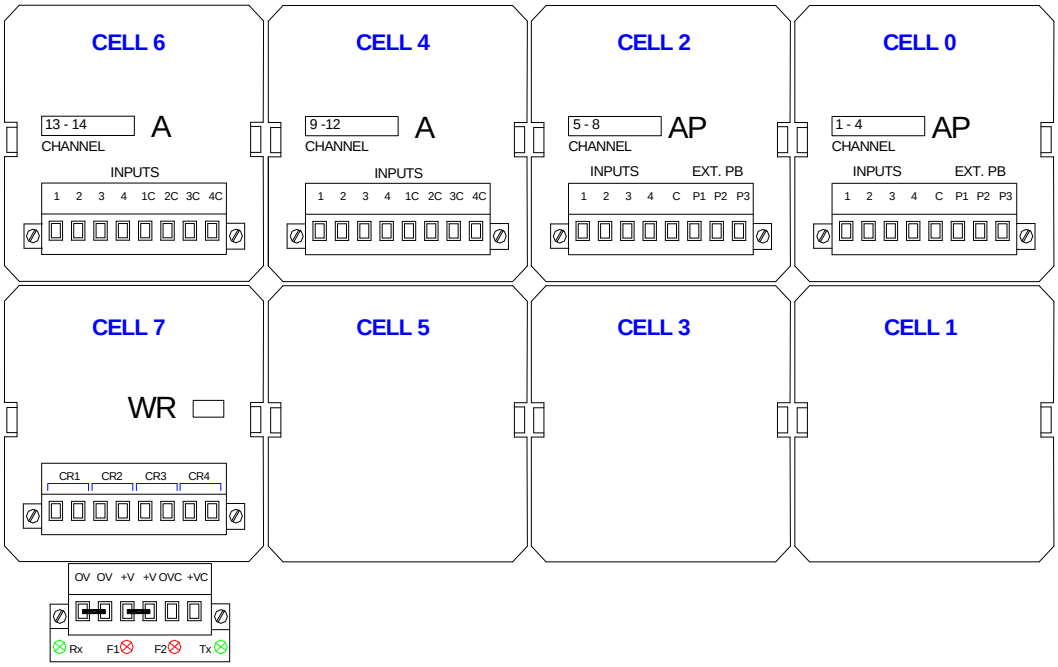
Card	Cell Type	Cell	Address
1	AP	0	0
2	AP	1	1
3	A	2	2
4	A	3	3
5	A	4	4
6	A	5	5
7	A	6	6
8	WR	7	7

DIL switch SW1 on each card in the system should be set to match the Cell number as indicated in the diagram above which shows the rear view of a typical small window 725B Annunciator.

For details on how to set the address please refer to the following page.

Medium Window versions.

In the example shown 4 x four channel alarm cards plus 1 x common relay card would be fitted in the cell positions indicated below:



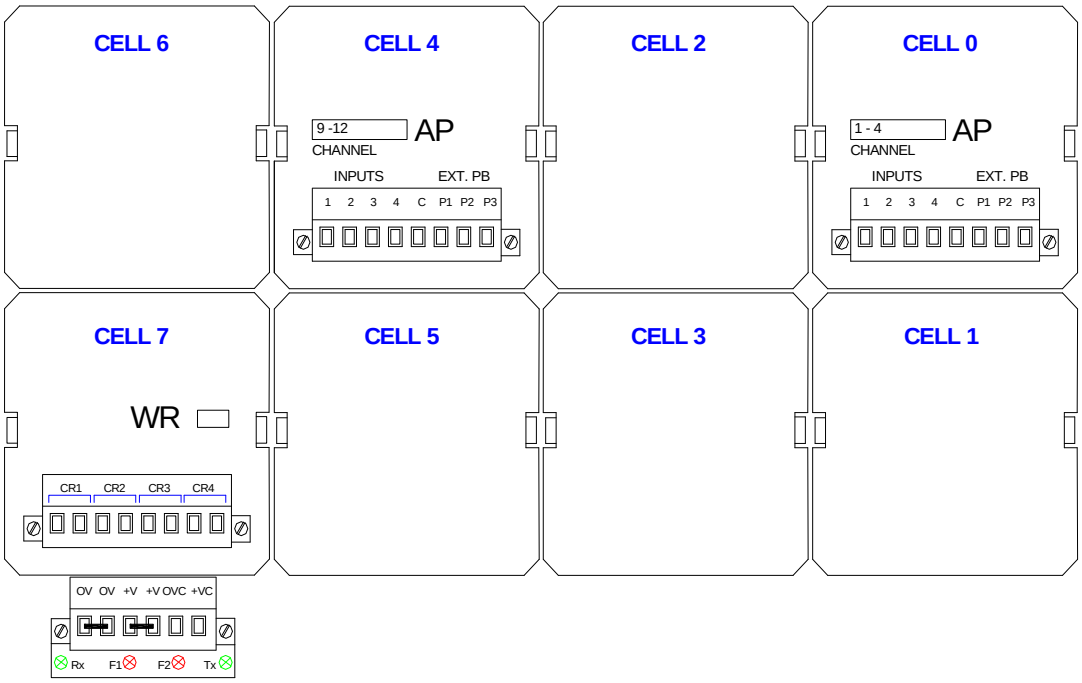
Card	Cell Type	Cell	Address
1	AP	0	0
2	AP	2	2
3	A	4	4
4	A	6	6
5	WR	7	7

DIL switch SW1 on each card in the system should be set to match the Cell number as indicated in the diagram above which shows the rear view of a typical medium window 725B Annunciator.

For details on how to set the address please refer to the following page.

Large Window versions.

In the example shown 2 x four channel alarm cards plus 1 x common relay card would be fitted in the cell positions indicated below:



Card	Cell Type	Cell	Address
1	AP	0	0
2	AP	4	4
3	WR	7	7

DIL switch SW1 on each card in the system should be set to match the Cell number as indicated in the diagram above which shows the rear view of a typical large window 725B Annunciator.

For details on how to set the address please refer to the following page.

Typical Alarm Card DIL Switch SW1 Address Settings

ADDRESS		128	64	32	16	8	4	2	1
NO.	BINARY	SW1-8	SW1-7	SW1-6	SW1-5	SW1-4	SW1-3	SW1-2	SW1-1
0	00000000	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
1	00000001	OFF	OFF	OFF	OFF	OFF	OFF	OFF	ON
2	00000010	OFF	OFF	OFF	OFF	OFF	OFF	ON	OFF
3	00000011	OFF	OFF	OFF	OFF	OFF	OFF	ON	ON
4	00000100	OFF	OFF	OFF	OFF	OFF	ON	OFF	OFF
5	00000101	OFF	OFF	OFF	OFF	OFF	ON	OFF	ON
6	00000110	OFF	OFF	OFF	OFF	OFF	ON	ON	OFF
7	00000111	OFF	OFF	OFF	OFF	OFF	ON	ON	ON
8	00001000	OFF	OFF	OFF	OFF	ON	OFF	OFF	OFF
9	00001001	OFF	OFF	OFF	OFF	ON	OFF	OFF	ON
10	00001010	OFF	OFF	OFF	OFF	ON	OFF	ON	OFF
11	00001011	OFF	OFF	OFF	OFF	ON	OFF	ON	ON
12	00001100	OFF	OFF	OFF	OFF	ON	ON	OFF	OFF
13	00001101	OFF	OFF	OFF	OFF	ON	ON	OFF	ON
14	00001110	OFF	OFF	OFF	OFF	ON	ON	ON	OFF
15	00001111	OFF	OFF	OFF	OFF	ON	ON	ON	ON
16	00010000	OFF	OFF	OFF	ON	OFF	OFF	OFF	OFF
17	00010001	OFF	OFF	OFF	ON	OFF	OFF	OFF	ON
18	00010010	OFF	OFF	OFF	ON	OFF	OFF	ON	OFF
19	00010011	OFF	OFF	OFF	ON	OFF	OFF	ON	ON
20	00010100	OFF	OFF	OFF	ON	OFF	ON	OFF	OFF
21	00010101	OFF	OFF	OFF	ON	OFF	ON	OFF	ON
22	00010110	OFF	OFF	OFF	ON	OFF	ON	ON	OFF
23	00010111	OFF	OFF	OFF	ON	OFF	ON	ON	ON
24	00011000	OFF	OFF	OFF	ON	ON	OFF	OFF	OFF
25	00011001	OFF	OFF	OFF	ON	ON	OFF	OFF	ON
26	00011010	OFF	OFF	OFF	ON	ON	OFF	ON	OFF
27	00011011	OFF	OFF	OFF	ON	ON	OFF	ON	ON
28	00011100	OFF	OFF	OFF	ON	ON	ON	OFF	OFF
29	00011101	OFF	OFF	OFF	ON	ON	ON	OFF	ON
30	00011110	OFF	OFF	OFF	ON	ON	ON	ON	OFF
31	00011111	OFF	OFF	OFF	ON	ON	ON	ON	ON
32	00100000	OFF	OFF	ON	OFF	OFF	OFF	OFF	OFF
33	00100001	OFF	OFF	ON	OFF	OFF	OFF	OFF	ON
34	00100010	OFF	OFF	ON	OFF	OFF	OFF	ON	OFF
35	00100011	OFF	OFF	ON	OFF	OFF	OFF	ON	ON
36	00100100	OFF	OFF	ON	OFF	OFF	ON	OFF	OFF
37	00100101	OFF	OFF	ON	OFF	OFF	ON	OFF	ON
38	00100110	OFF	OFF	ON	OFF	OFF	ON	ON	OFF
39	00100111	OFF	OFF	ON	OFF	OFF	ON	ON	ON
40	00101000	OFF	OFF	ON	OFF	ON	OFF	OFF	OFF

Address 0 To 40 are shown for reference

A max of 64 addresses are available = 64 x 4 channels per card = 256 channels max in a single annunciator.

SECTION 18 – CONTACT / RETURNS

RTK Instruments Limited
St James Business Park
Knaresborough
North Yorkshire
HG5 8PJ

Telephone / Fax Number List

Telephone: 0044 (0) 1423 580500
Fax: 0044 (0) 1423 580501

Procedures for Factory Repair and Return Warranty

Please refer to the RMA Form on the following page which we request is copied to allow the user to complete the details to request a Returns Materials Authorisation Number.

Once the form has been received by RTK an RMA number will be advised and we request that this number is used on any corresponding paperwork / packing lists.

RTK kindly request that all goods are adequately packed and note that we cannot be held responsible for any transit damage caused by inadequate packing.

RMA FORM

RTK Instruments Limited
St James Business Park,
Knaresborough, North Yorkshire,
England. HG5 8PJ

Telephone: +44 (0)1423 580500
Facsimile: +44 (0)1423 580501
Web: www.rtkinstruments.com
Email: enquiry@ rtkinstruments.com

Advance Replacement Tracking No RMA****

To request advance replacements for parts that have been reported faulty during the warranty period please complete the details below.

Customer	
Address	
Contact	
Telephone No	
Fax No	

Items to be Returned

Qty	***Part No.***	***Serial No.***	***Reported Fault***

Note: If the replacement item is different this will be shown on the related sales Order

RTK Commitment

As part of the ongoing service and support to our customers we agree to supply Advance Replacements on the basis that our instruments are used as a critical part of plant control and instrumentation and also in many safety critical applications.

Agreement from the client

As part of the agreement to supply parts as Advance Replacements we also need certain limited commitments from the customer as follows: -

1. The original parts shall be returned, within 30 days of despatch of the advance replacements, to allow our QA / Test department to investigate the reason of failure. If the goods are not received within this period then the user agrees to pay for the advance replacements (and related carriage) in full.
2. If the failure is found to be caused by RTK workmanship or component failure there will be no charge incurred for the materials or the ongoing carriage.
3. If the returned goods are found to have been damaged by incorrect operation or misuse a charge will be incurred to cover the costs of repair, recalibration and carriage costs.
4. If the returned goods are found to have no faults the user agrees to pay a handling, inspection, re-test and carriage charge.

Customer Authorisation Signature:- ……..

Name:- ……

FAX Back to +44 (0)1423 580501

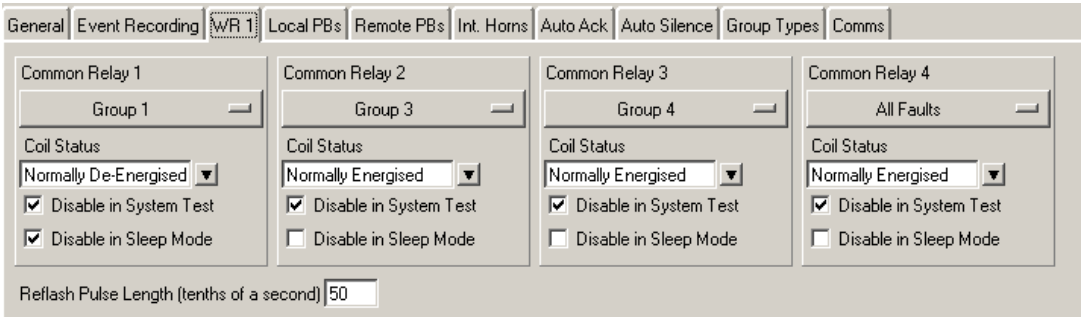
SECTION 19 - FACTORY DEFAULT SETTINGS

Global Systems Setting Default Settings

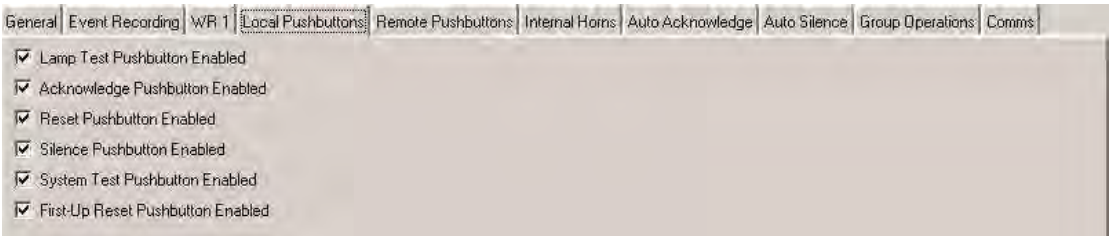
General Tab Default Settings

Event Recording Tab Default Settings

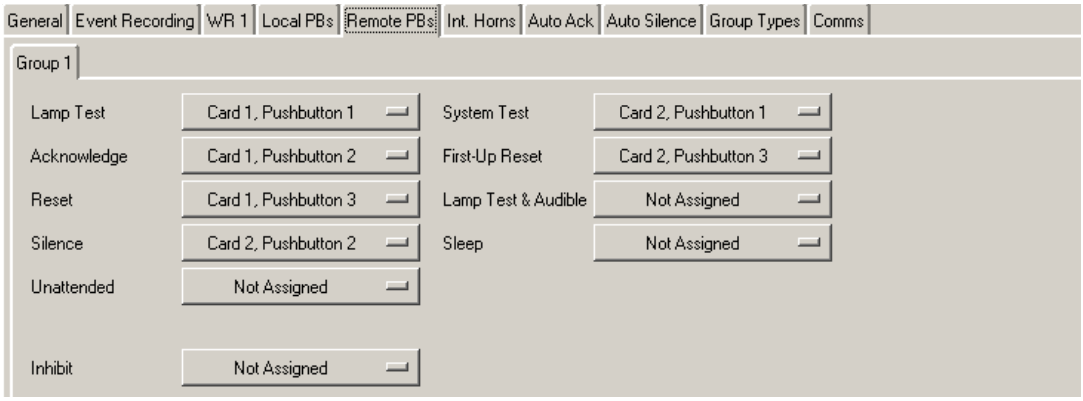
WR1 Tab Default Settings



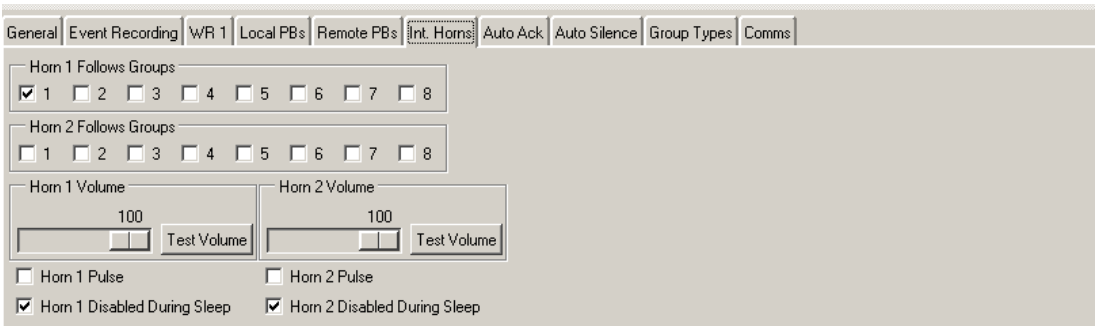
Local Pushbuttons Tab Default Settings



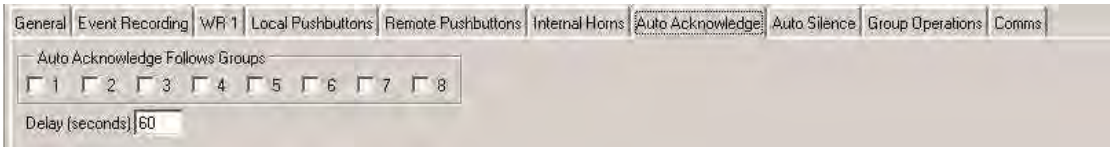
Remote Pushbuttons Tab Default Settings



Internal Horn Tab Default Settings



Auto Ack Tab Default Settings



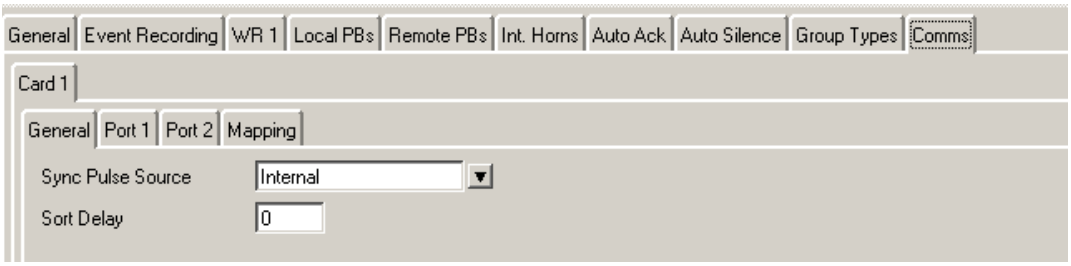
Auto Silence Tab Default Settings

Group Operations Tab Default Settings

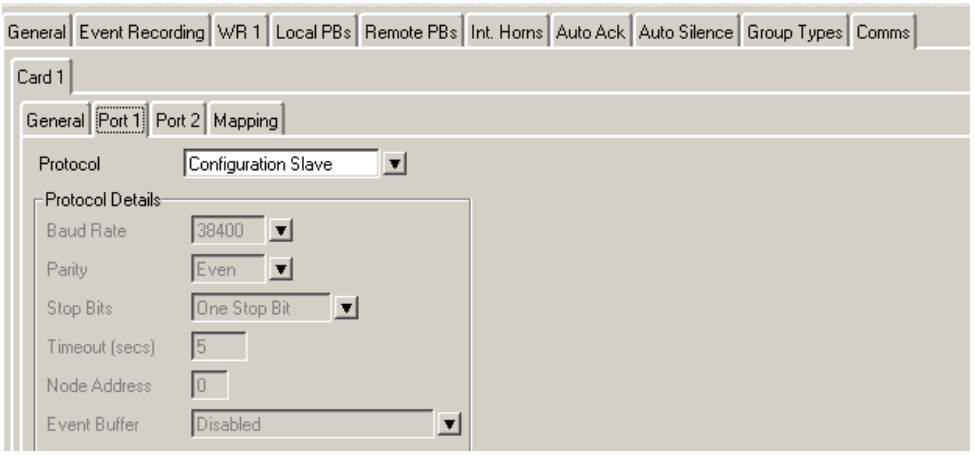
Comm's Tab (Entry Level) Default Settings

Comm's Tab (Standard) Default Settings

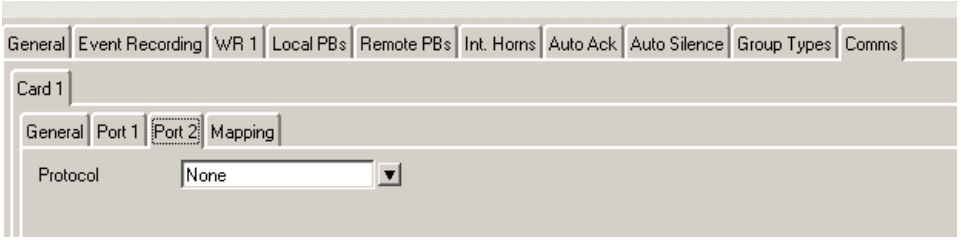
General Tab Default Settings



Port 1 Default Settings



Port 2 Default Settings



Restore System Settings To Default

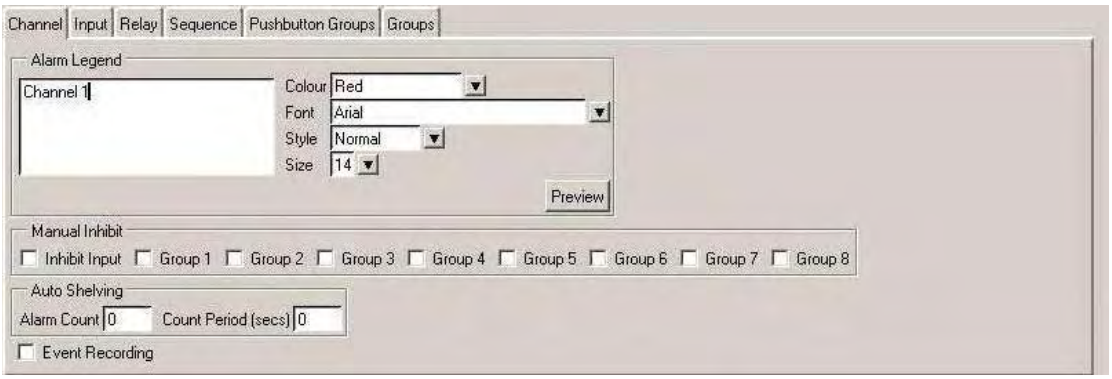
This software provides the user with a host of customer selectable options.

As users are able to select any number of features whilst navigating through the software they are able to return the software to factory default settings using the “Tools” and “Restore System Settings to Default” menu as shown below.

CAUTION
This setting will automatically convert the **Systems Setting** to factory default and therefore it should only be used with caution.

Individual Channel Default Settings

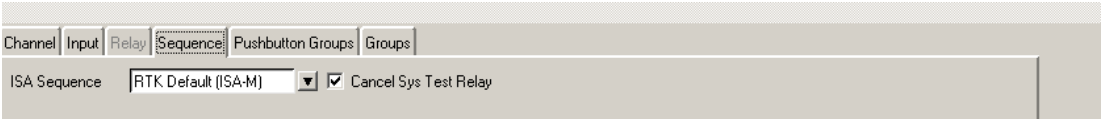
Channel Tab Default Settings



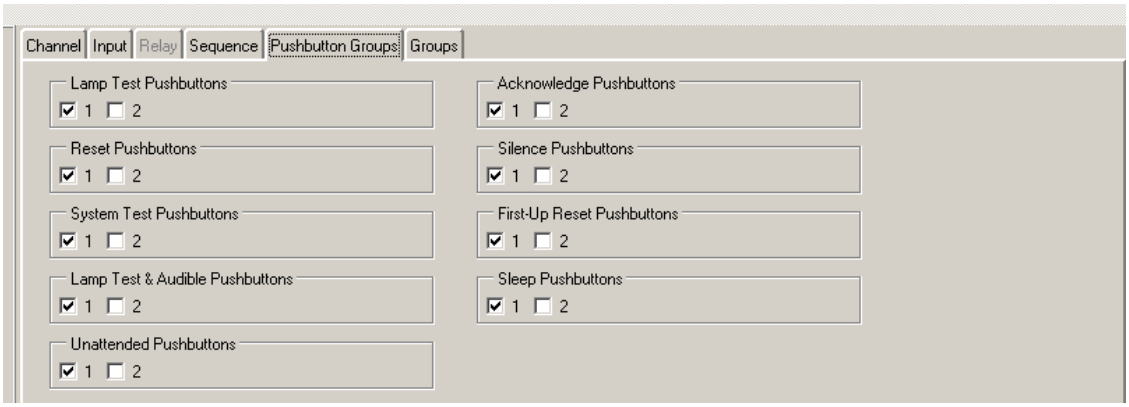
Input Tab Default Settings

Relay Tab Default Settings

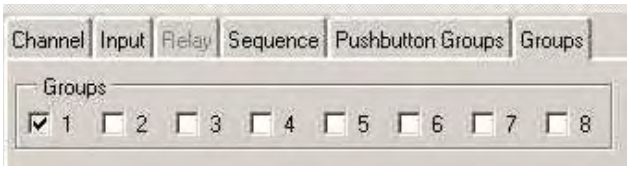
Sequence Tab Default Settings



Pushbutton Group Tab Default Settings

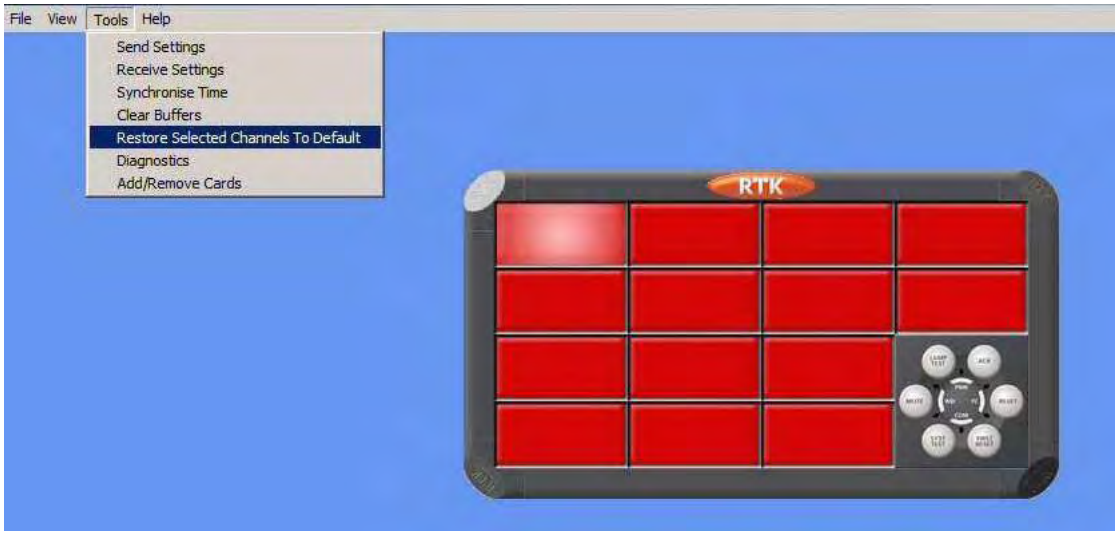


Groups Tab Default Settings



Restore Selected Channel to Default
This software provides the user with a host of customer selectable options.

As users are able to select any number of features whilst navigating through the software they are able to return the software to factory default settings using the “Tools” and “Restore Selective Channels to Default” menu as shown below.



CAUTION
This setting will automatically convert the **selected channel** to factory default settings and therefore it should only be used with caution.

SECTION 20 – COMMUNICATIONS OPTIONS

Entry Level Versions

725B annunciators supplied with Entry Level Comm's are provided with the following basic communications protocols:-

Communications Addresses
Each card in the system requires a unique address therefore the first card in any given system is address 1, the second card address 2 etc.

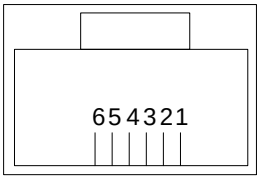
Protocols
- Modbus RTU **-** Modbus Function 01 and Modbus Function 15 only.
- RTK AMS

NOTE: On 725B annunciators supplied with Entry Level Comm's, after 30th September 2009, Modbus will be order specific and will only be available on alarm cards using software version SO9158.

Communication Speed
The user is able to select the baud rate to communicate to 3rd party devices using the drop menu within the configuration software as detailed in Section 13 under the comm's tab. The following baud rates are available as required 38,400, 19,200 or 9,600

Connection Details
An Industry standard RJ11 connector is provided on the XS/FC485 communication card which provides the following connections:-

PG4



1. TXa
2. No Connection
3. OV
4. RXb
5. TXb
6. RXa

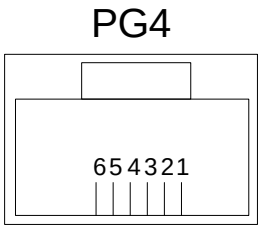
Standard Comm's Version

725B annunciators supplied with standard comm's are provided with the following communications protocols:-

- RTK AMS
- Modbus RTU Slave
- Modbus ASCII Slave
- Wharton Time Sync
- Modbus RTU Master
- Modbus ASCII Master

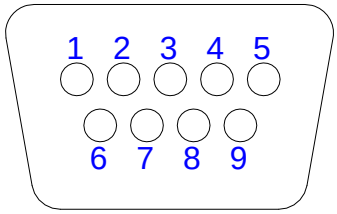
Communications Addresses
Each port available on the comm's card has a selectable node address. This is selectable within the configuration software.

Port 1
Connection Details
An Industry standard RJ11 connector is provided on the XS/FC485 communication card which provides the following connections:-



1. TXa
2. No Connection
3. OV
4. RXb
5. TXb
6. RXa

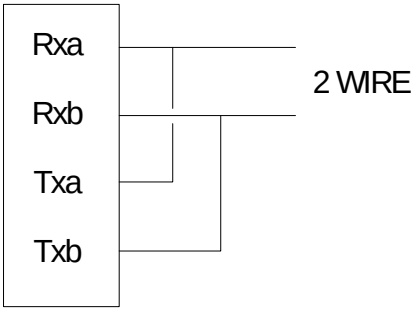
Port 2
Connection Details
An Industry standard 9-way male d-type connector is provided on the rear of the communication card which provides the following connections:-



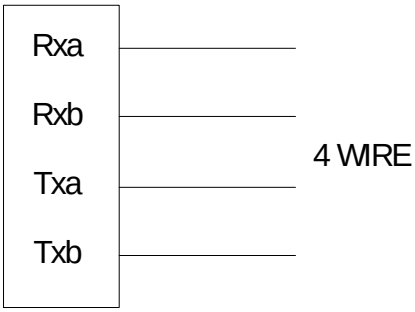
1 – Sync+
2 – RxA
3 – TxB
4 – Spare
5 – GND
6 – Sync -
7 – RxB
8 – TxA
9 - Spare

Typical Connections

725B



725B



Protocols

MODBUS

The tables below show the standard message formats for data interchange, for both ASCII (standard comm's version Only) and RTU protocols.

ASCII tables — Each character represents 7 bit binary data in ASCII format with the exception of the characters in brackets, which should be considered as one character.
X represents a character with more than one possible value.
All characters are framed with 1 start bit, 1 parity bit and 1 stop bit.

RTU tables. — Each character represents 8 bit binary data in hexadecimal format.
Y represents a character with more than one possible value.
All characters are framed with 1 start bit, 1 parity bit and 1 stop bit.

Read Request – Master

ASCII	START	ADDRESS	FUNCTION	REGISTER ADDRESS	NO OF REGISTERS	ERROR CHECK	STOP
	:	XX	XX	XXXX	XXXX	XX	[LF] [CR]

RTU	START	ADDRESS	FUNCTION	REGISTER ADDRESS	NO OF REGISTERS	ERROR CHECK	STOP
	ELAPSED TIME 3 ½ CHARACTERS MIN	Y	Y	YY	YY	YY	ELAPSED TIME 3 ½ CHARACTERS MIN

Read Response - Slave

ASCII	START	ADDRESS	FUNCTION	BYTE COUNT	DATA	ERROR CHECK	STOP
	:	XX	XX	XX	XXXX	XX	[LF] [CR]

RTU	START	ADDRESS	FUNCTION	BYTE COUNT	DATA	ERROR CHECK	STOP
	ELAPSED TIME 3 ½ CHARACTERS MIN	Y	Y	Y	YY	YY	ELAPSED TIME 3 ½ CHARACTERS MIN

Single Write Request/Response

Master write request and slave write response, are the same.

ASCII	START	ADDRESS	FUNCTION	REGISTER ADDRESS	DATA	ERROR CHECK	STOP
	:	XX	XX	XXXX	XXXX	XX	[CR] [LF]

RTU	START	ADDRESS	FUNCTION	REGISTER ADDRESS	DATA	ERROR CHECK	STOP
	ELAPSED TIME 3 ½ CHARACTERS MIN	Y	Y	YY	YY	YY	ELAPSED TIME 3 ½ CHARACTERS MIN

Multiple Write Request

ASCII	START	ADDRESS	FUNCTION	REGISTER ADDRESS	QUANTITY	BYTE COUNT	DATA	ERROR CHECK	STOP
	:	XX	XX	XXXX	XXXX	XX	XXXX	XX	[CR] [LF]

RTU	START	ADDRESS	FUNCTION	REGISTER ADDRESS	QTY	BYTE COUNT	DATA	ERROR CHECK	STOP
	ELAPSED TIME 3 ½ CHARS MIN	Y	Y	YY	YY	Y	YY	YY	ELAPSED TIME 3 ½ CHARS MIN

Multiple Write Response

ASCII	START	ADDRESS	FUNCTION	REGISTER ADDRESS	QUANTITY	ERROR CHECK	STOP
	:	XX	XX	XXXX	XXXX	XX	[CR] [LF]

RTU	START	ADDRESS	FUNCTION	REGISTER ADDRESS	QTY	ERROR CHECK	STOP
	ELAPSED TIME 3 ½ CHARS MIN	Y	Y	YY	YY	YY	ELAPSED TIME 3 ½ CHARS MIN

Address

This defines the Node address of the card in the system, range 0-255. On entry level comm's the first card in the system is address 1 and the following cards are consecutively numbered.

Function

Modbus Function No

Error Check

This defines the error checking format required, for RTU this should be set to CRC (Cyclic Redundancy Check), while with ASCII this should be LRC (Longitudinal Redundancy Check).

Modbus Slave – Entry Level

Function Descriptions

This section describes the process of reading from and writing data to a 725B slave annunciator

Read Coil Status – Function 01 – Request

Register Address
This is used to address the “start” channel to be read for example the first channel in the system “channel 1” would be register address 00 00

To read the input read coils 0-3
To read the remote pushbutton inputs on the card read coils 4-6

Number of Registers
This represents the number of coils, (Inputs), the user wishes to read. This can be 1-7 coils.

Read Coil Status – Function 01 – Response

Byte Count
This represents the number of bytes sent

Data
This represents the status of the requested channel

Input
0 = Input Normal
1 = Input Abnormal

Typical Example of Message Format
To read all of the inputs available on the first alarm card in the system the user would need to read 4 digital and 3 remote pushbutton inputs using the following message format

ADDRESS	FUNCTION	REGISTER ADDRESS	No Of REGISTERS	ERROR CHECK
01	01	00 00	00 07	7D C8

To read channel two on the second alarm card in the system you would need the following message format

ADDRESS	FUNCTION	REGISTER ADDRESS	No Of REGISTERS	ERROR CHECK
02	01	00 01	00 01	AC 39

Write Multiple Coils – Function 15 - Request

Register Address
This is used to address the “start” channel (coil) to be written.

The register addresses field contains the address of data within the 725B Slave.

REGISTER ADDRESS	CHANNEL NUMBER
0	1
1	2
2	3
3	4
4	PB1
5	PB2
6	PB3

Note: Address 4-6 are only valid on 4 channel alarm cards equipped with the optional 3 remote pushbutton inputs.

Quantity
This represents the number of coils (Inputs), the user wishes to write to

Byte Count
This represents the number of data bytes sent

Data
This represents the input status of the inputs to be written
0 = Input Normal
1 = Input Abnormal

Write Multiple Coils – Function 15 – Response

Register Address
Number of coils that have been written

Quantity
This represents the number of coils (Inputs), the user wishes to be written

Typical Example of Message Format – Entry Level Comm's
To write to all of the inputs available on the first alarm card in the system the user would need to send the following message

ADDRESS	FUNCTION	REGISTER ADDRESS	No Of REGISTERS	BYTE COUNT	DATA	ERROR CHECK
01	0F	00 00	00 04	01	0F	7E 92

To write input 3 to the normal state on the second alarm card in the system you would need to send the following message

ADDRESS	FUNCTION	REGISTER ADDRESS	No Of REGISTERS	BYTE COUNT	DATA	ERROR CHECK
02	0F	00 02	00 01	01	00	17 42

To write the third pushbutton input on alarm card 1 to abnormal you would need to send the following message

ADDRESS	FUNCTION	REGISTER ADDRESS	No Of REGISTERS	BYTE COUNT	DATA	ERROR CHECK
01	0F	00 06	00 01	01	01	67 57

To write the third pushbutton input on alarm card 1 to normal you would need to send the following message

ADDRESS	FUNCTION	REGISTER ADDRESS	No Of REGISTERS	BYTE COUNT	DATA	ERROR CHECK
01	0F	00 06	00 01	01	00	A6 97

Note: On systems supplied before 30st July 2010 the input status is OR'd with the actual contact state. If the input is serial only please ensure the contact type is set to Normally Open and no customer wiring is made to the customer terminals located on the rear of the associated cell.

With serial inputs 0 = Input Normal and 1 = Input Abnormal

Modbus Slave – Standard Communications

Function Descriptions

This section describes the process of reading from and writing data to a 725B slave annunciator

Read Coil Status – Function 01 – Request

Register Address
This is used to address the “start” channel to be read for example the first channel in the system “channel 1” would be register address 00 00

To read the port register coil value the port offset is used to define the start address.

To read the current contact or alarm status then the start address is defined by the contact offset.
To read the input status read coils 0- 255
To read the alarm status read coils 300- 555

Number of Registers
This represents the number of coils, the user wishes to read. This can be 1-255 coils.

Read Coil Status – Function 01 – Response

Byte Count
This represents the number of bytes sent

Data
For the port register this will the value stored in the address requested. With Contact status this represents the status of the requested coil for type of status requested.

Input
0 = Input Normal
1 = Input Abnormal

Alarm
0 = Alarm Normal
1 = Channel in alarm

Typical Example of Message Format

To read all of the inputs available on a 100 way annunciator with a node address of 5 using the following message format

RTU

ADDRESS	FUNCTION	REGISTER ADDRESS	No Of REGISTERS	ERROR CHECK
05	01	00 00	00 64	3C 65

ASCII

:	ADDRESS	FUNCTION	REGISTER ADDRESS	No Of REGISTERS	ERROR CHECK	CR	LF
3A	30 35	30 31	30 30 30 30	30 30 36 34	39 36	0D	0A

Read Status – Function 03 – Request

Register Address
This is used to address the “start” channel to be read for example the first channel in the system “channel 1” would be register address 00 00

To read the port register value the port offset is used to define the start address.

To read the contact, alarm or pushbutton status then the start address is defined by the channel status offset.

If an offset has been set then this would offset the default start register.
For input status read register 0-255 with register 0 being Channel 1.

For alarm status read register 300-555 with register 300 being Channel 1.

For PB group status use the following registers:

Pushbutton	Register Address
Lamp Test	256
Acknowledge	257
Reset	258
Mute	259
System Test	260
First Reset	261
Lamp test Audible	262
Sleep	263
Inhibit	264
Unattended	265
Auto Ack Disable	266

Number of Registers
This represents the number of Registers requested(read) this can be up to 125 register at once.

Read Status – Function 03 – Response

Byte Count
This represents the number of bytes sent

Data
This represents the status of the requested register

Port Register
This will the value last written in the register requested, included any masked bits that have been ignored.

Input
0 = Input Normal
1 = Input Abnormal

Alarm

64	Alarm Event return to normal
65	Subsequent Alarm Event activated
66	First-up Alarm Event activated
67	Subsequent Alarm Event Acknowledged
68	First-up Alarm Event Acknowledged
69	Alarm Event Ring-back

Pushbutton
Value represents group status, 0 = PB Deactivate, 1= PB Active

Bit 0	Pushbutton Group 1
Bit 1	Pushbutton Group 2
Bit 2	Pushbutton Group 3
Bit 3	Pushbutton Group 4
Bit 4	Pushbutton Group 5
Bit 5	Pushbutton Group 6
Bit 6	Pushbutton Group 7
Bit 7	Pushbutton Group 8

NOTE: As the register status is polled all none latching pushbutton operations will be latched into the register until the register value is read. i.e. Acknowledge, reset etc

Typical Example of Message Format

To read all of the inputs on a 28 way annunciator on node 9 the user would use the following message format

RTU

ADDRESS	FUNCTION	REGISTER ADDRESS	No Of REGISTERS	ERROR CHECK
09	03	00 00	00 1C	45 4B

ASCII

:	ADDRESS	FUNCTION	REGISTER ADDRESS	No Of REGISTERS	ERROR CHECK	CR	LF
3A	30 39	30 33	30 30 30 30	30 30 31 43	44 38	0D	0A

To read the alarm status of channel 2 on node 255 the user would use the following message format

RTU

ADDRESS	FUNCTION	REGISTER ADDRESS	No Of REGISTERS	ERROR CHECK
FF	03	01 2D	00 01	00 21

ASCII

:	ADDRESS	FUNCTION	REGISTER ADDRESS	No Of REGISTERS	ERROR CHECK	CR	LF
3A	46 46	30 33	30 31 32 44	30 30 30 31	43 46	0D	0A

To read the acknowledge pushbutton status of annunciator node 1 the user would use the following message format

RTU

ADDRESS	FUNCTION	REGISTER ADDRESS	No Of REGISTERS	ERROR CHECK
01	03	01 01	00 01	D4 36

ASCII

:	ADDRESS	FUNCTION	REGISTER ADDRESS	No Of REGISTERS	ERROR CHECK	CR	LF
3A	30 31	30 33	30 31 30 31	30 30 30 31	46 39	0D	0A

Write Single Register – Function 6 - Request

Register Address

This is used to address the “start” register to be written to the port.

If the port register offset has been set then this would offset the default start register.
To write to the input write to registers 0 -255, with register 0 being channel 1 unless mapping has been enabled then this will be defined in the mapping spreadsheet.

For PB group status use the following registers:

Pushbutton	Register Address
Lamp Test	256
Acknowledge	257
Reset	258
Mute	259
System Test	260
First Reset	261
Lamp test Audible	262
Sleep	263
Inhibit	264
Unattended	265
Auto Ack Disable	266

Data

Inputs
This represents the status of the inputs to be written:
Channel set to Normally Open
Value AND’d with register mask is not equal to register mask – Input Normal
Value AND’d with register mask equal to register mask – Input Abnormal
Channel set to Normally Closed
Value AND’d with register mask not equal to register mask – Input Abormal
Value AND’d with register mask equal to register mask – Input Normal

Pushbutton
To write the pushbutton group status, write 0 = PB Deactivate, 1= PB Active

Bit 0	Pushbutton Group 1
Bit 1	Pushbutton Group 2
Bit 2	Pushbutton Group 3
Bit 3	Pushbutton Group 4
Bit 4	Pushbutton Group 5
Bit 5	Pushbutton Group 6
Bit 6	Pushbutton Group 7
Bit 7	Pushbutton Group 8

Write Single Register – Function 6 – Response

Register Address
The address of the register that has been written.

Data
This represents the data that has been written to the register.

Typical Example of Message Format
To write the input abnormal on channel 1 on node 1 the user would use the following message format

RTU

ADDRESS	FUNCTION	REGISTER ADDRESS	DATA	ERROR CHECK
01	06	00 00	00 01	48 0A

ASCII

:	ADDRESS	FUNCTION	REGISTER ADDRESS	DATA	ERROR CHECK	CR	LF
3A	30 31	30 36	30 30 30 30	30 30 30 31	46 38	0D	0A

To write the acknowledge group 1 pushbutton of node 1 the user would use the following message format

RTU

ADDRESS	FUNCTION	REGISTER ADDRESS	DATA	ERROR CHECK
01	06	01 01	00 01	18 36

ASCII

:	ADDRESS	FUNCTION	REGISTER ADDRESS	DATA	ERROR CHECK	CR	LF
3A	30 31	30 36	30 31 30 31	30 30 30 31	46 36	0D	0A

Note: On systems supplied before 30st July 2010 the input status is OR'd with the actual contact state. If the input is serial only please ensure the contact type is set to Normally Open and no customer wiring is made to the customer terminals located on the rear of the associated cell.

With serial inputs 0 = Input Normal and 1 = Input Abnormal

Write Multiple Coils – Function 15 - Request

Register Address
This register is used to address the first coil to be written. If the port register offset has been set then this would offset the default start register. To write the input status write to coils 0 -255 with coil 0 being channel 1 unless mapping has been enabled then this will be defined in the mapping spreadsheet.

Quantity
This represents the number of coils the user wishes to write to

Byte Count
This represents the number of data bytes sent

Data
This represents the status of the coil to be written
0 = Input Normal
1 = Input Abnormal

Write Multiple Coils – Function 15 – Response

Register Address
Number of coils that have been written

Quantity
This represents the number of coils the user wishes to be written

Typical Example of Message Format
To write all the inputs abnormal on a 20 way annunciator at node 1 the user would need to send the following message

RTU

ADDRESS	FUNCTION	REGISTER ADDRESS	No Of REGISTERS	BYTE COUNT	DATA	DATA	DATA	ERROR CHECK
01	0F	00 00	00 14	03	FF	FF	0F	61 B1

ASCII

:	ADD	FUNCTION	REGISTER ADDRESS	No Of REGISTERS	BYTE COUNT	DATA	DATA	DATA	ERROR CHECK	CR	LF
3A	30 31	30 46	30 30 30 30	30 30 31 34	30 33	46 46	46 46	30 46	43 43	0D	0A

Write Multiple Registers – Function 16 - Request

Register Address
This is used to address the “start” register to be written.

If the port register offset has been set then this would offset the default start register.
To write the input status write to registers 0 -255, with register 0 being channel 1 unless mapping has been enabled then this will be defined in the mapping spreadsheet.

For PB group status use the following registers:

Pushbutton	Register Address
Lamp Test	256
Acknowledge	257
Reset	258
Mute	259
System Test	260
First Reset	261
Lamp test Audible	262
Sleep	263
Inhibit	264
Unattended	265
Auto Ack Disable	266

Quantity
This represents the number of registers the user wishes to write to

Byte Count
This represents the number of data bytes sent

Data

Inputs
This represents the status of the inputs to be written:
Channel set to Normally Open
Value AND’d with register mask not equal to register mask – Input Normal
Value AND’d with register mask equal to register mask – Input Abnormal
Channel set to Normally Closed
Value AND’d with register mask not equal to register mask – Input Abormal
Value AND’d with register mask equal to register mask – Input Normal

Pushbutton
To write the pushbutton group status, write 0 = PB Deactivate, 1= PB Active

Bit 0	Pushbutton Group 1
Bit 1	Pushbutton Group 2
Bit 2	Pushbutton Group 3

Bit 3	Pushbutton Group 4
Bit 4	Pushbutton Group 5
Bit 5	Pushbutton Group 6
Bit 6	Pushbutton Group 7
Bit 7	Pushbutton Group 8

Write Multiple Registers – Function 16 – Response

Register Address
Number of coils that have been written

Quantity
This represents the number of registers the user wishes to be written

Typical Example of Message Format
To write channel 10 abnormal on a 20 way annunciator at node 1 the user would need to send the following message

RTU

ADDRESS	FUNCTION	REGISTER ADDRESS	No Of REGISTERS	BYTE COUNT	DATA	ERROR CHECK
01	10	00 0A	00 01	02	00 01	67 3A

ASCII

:	ADD	FUNCTION	REGISTER ADDRESS	No Of REGISTERS	BYTE COUNT	DATA	ERROR CHECK	CR	LF
3A	30 31	31 30	30 30 30 41	30 30 30 31	30 32	30 30 30 31	45 31	0D	0A

To write Reset group 1 PB to the abnormal state on an annuciator at node 2 in the system you would need to send the following message

RTU

ADDRESS	FUNCTION	REGISTER ADDRESS	No Of REGISTERS	BYTE COUNT	DATA	ERROR CHECK
02	10	01 02	00 01	02	00 01	62 42

ASCII

:	ADDRESS	FUNCTION	REGISTER ADDRESS	No Of REGISTERS	BYTE COUNT	DATA	ERROR CHECK	CR	LF
3A	30 32	31 30	30 31 30 32	30 30 30 31	30 32	30 30 30 31	45 37	0D	0A

Note: On systems supplied before 30st July 2010 the input status is OR'd with the actual contact state. If the input is serial only please ensure the contact type is set to Normally Open and no customer wiring is made to the customer terminals located on the rear of the associated cell.

With serial inputs 0 = Input Normal and 1 = Input Abnormal

Modbus Master – Standard Communications

Function Descriptions

This section describes the process of receiving messages from a 725B master annunciator

Read Coil Status – Function 01 – Request

Register Address
This is used to address the “start” coil to be read from the slave device

Number of Registers
This represents the number of slave coils the P725B wishes to read.

Read Coil Status – Function 01 – Response

Byte Count
This represents the number of bytes sent

Data
The data read from the salve device needs to be a valid value to operate the input.
If Channel set to Normally Open
Coil = 0 – Input Normal
Coil = 1 – Input Abnormal
If Channel set to Normally Closed
Coil = 0 – Input Abormal
Coil = 1 – Input Normal

Typical Request Message Format Example
To read 100 coils from a slave with node address of 5 using the following message format

RTU

ADDRESS	FUNCTION	REGISTER ADDRESS	No Of REGISTERS	ERROR CHECK
05	01	00 00	00 64	3C 65

ASCII

:	ADDRESS	FUNCTION	REGISTER ADDRESS	No Of REGISTERS	ERROR CHECK	CR	LF
3A	30 35	30 31	30 30 30 30	30 30 36 34	39 36	0D	0A

Read Status – Function 03 – Request

Register Address
This is used to address the “start” register to be read from the slave device

Number of Registers
This represents the number of registers to be read from the salve device this can be up to 125 register at once.

Read Status – Function 03 – Response

Byte Count
This represents the number of bytes sent

Data
The data read from the salve device needs to be a valid value to operate the input.
If Channel set to Normally Open
Value AND’d with register mask not equal to register mask – Input Normal
Value AND’d with register mask equal to register mask – Input Abnormal
If Channel set to Normally Closed
Value AND’d with register mask not equal to register mask – Input Abormal
Value AND’d with register mask equal to register mask – Input Normal

Typical Request Message Format Example
To read 28 registers on slave with node 9 the user would use the following message format

RTU

ADDRESS	FUNCTION	REGISTER ADDRESS	No Of REGISTERS	ERROR CHECK
09	03	00 00	00 1C	45 4B

ASCII

:	ADDRESS	FUNCTION	REGISTER ADDRESS	No Of REGISTERS	ERROR CHECK	CR	LF
3A	30 39	30 33	30 30 30 30	30 30 31 43	44 38	0D	0A

RTK AMS

When used with the optional Indicium RTK Alarm Management System the user needs to set the protocol to RTK AMS Slave Protocol in the drop down menu for communication to be established between the 725B and the associated PC based Indicium software.

For more details on how to set up Indicium for use with 725B annunciators please refer to the separate Indicium operating & instruction manual.

Wharton Format

The 725B comm's card can be connected to the Wharton 4850 and 4860 time sync unit which can be used to synchronise the clock on the 725B with GPS.

The Wharton unit uses Wharton Format 1 message to send the time to the 725B every second. It then uses the Sync input to synchronise the unit to millisecond accuracy.

For this the comm's card need to be set for sync pulse to external Falling Edge.

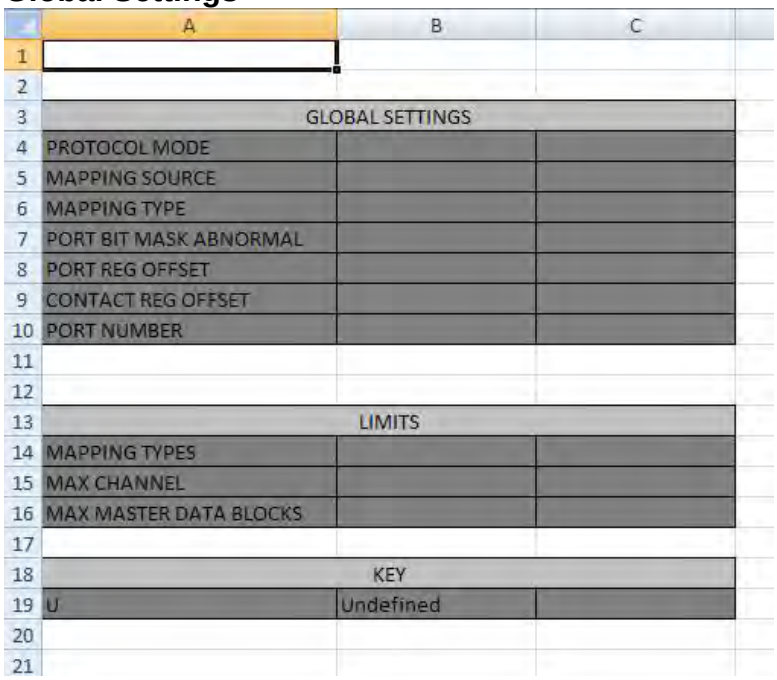
The connections between the Wharton Unit and the 725B are:

Wharton RS485 S1	725B
1(PPS)	+ Sync
5(Gnd)	- Sync
8(A)	TxA, RxA
9(B)	TxB, RxB

Mapping

Mapping is configured using the mapping spreadsheet. The spreadsheet is used to map port data to channels and also to setup the Modbus master block requests.

Global Settings



	A	B	C
1			
2			
3	GLOBAL SETTINGS		
4	PROTOCOL MODE		
5	MAPPING SOURCE		
6	MAPPING TYPE		
7	PORT BIT MASK ABNORMAL		
8	PORT REG OFFSET		
9	CONTACT REG OFFSET		
10	PORT NUMBER		
11			
12			
13	LIMITS		
14	MAPPING TYPES		
15	MAX CHANNEL		
16	MAX MASTER DATA BLOCKS		
17			
18	KEY		
19	U	Undefined	
20			
21			

The Global settings worksheet shows the global setting configured on the unit when the mapping has been exported.

The spreadsheet has 4 additional sheets. Only the sheet related to the port setting requires to be completed.
Master Reg – If the port is set for Master and data source is registers.
Master Coil – If the port is set for Master and data source is coil.
Slave Reg – If the port is set for Slave and data source is registers.
Slave Coil – If the port is set for Slave and data source is coil.

NOTE: Slave protocol only requires the output columns to be completed, the source is for customers reference only.

Setting up master data blocks (Master protocol only)
In columns A and B (Source) the slave device node address and register addresses can be entered. This can be one continuous block or if more than one slave device is used up to 16 devices can be set up.

The P725B expects each block to be continuous, any unused block addresses must be filled in with an unused “u” symbol.
Extensive use of the unused indication is to be avoided since it will consume valuable mapping resource. This can be done by using multiple master blocks within the same node.

Block = Slave node with a range of internal addresses

The example below shows one block with gaps.

	A	B	C	D	E
1	CUSTOMER REMOTE UNITS			RTK Product Type: 725B	
2				Serial No.: 0	
3				Name: Plant Name	
4	SOURCE			OUTPUT	
5	NODE	ADDRESS		CELL / CARD	CHANNEL
6	1	40001		0	0
7	1	40002		0	1
8	1	40003		0	2
9	1	40004		0	3
10	1	40005		2	0
11	1	40006		2	1
12	1	40007		u	u
13	1	40008		u	u
14	1	40009		2	2
15	1	40010		2	3
16					

1st block has node address 1, start register 40001 and 10 registers with registers 40007 and 40008 unused.

This will use 2 mapped points as the final 2 channels are no longer one to one.

The example below shows the same data addresses split over two blocks.

	A	B	C	D	E	F
1	CUSTOMER REMOTE UNITS			RTK Product Type: 725B		
2				Serial No.: 0		
3				Name: Plant Name		
4	SOURCE			OUTPUT		
5	NODE	ADDRESS		CELL / CARD	CHANNEL	
6	1	40001		0	0	
7	1	40002		0	1	
8	1	40003		0	2	
9	1	40004		0	3	
10	1	40005		2	0	
11	1	40006		2	1	
12	1	40009		2	2	
13	1	40010		2	3	
14						

1st block has node address 1, start register 40001 and 6 registers
2nd Block has node address 1, start register 40009 and 2 registers

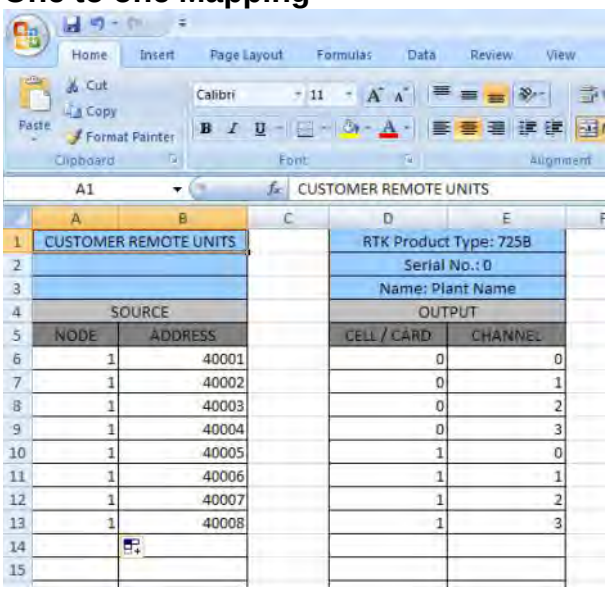
This uses no mapped points.

The example below shows 3 separate blocks with one block with gaps.

	A	B	C	D	E
1	CUSTOMER REMOTE UNITS			RTK Product Type: 725B	
2				Serial No.: 0	
3				Name: Plant Name	
4	SOURCE			OUTPUT	
5	NODE	ADDRESS		CELL / CARD	CHANNEL
6	1	40001		0	0
7	1	40002		0	1
8	1	40003		0	2
9	1	40004		0	3
10	1	40005		1	0
11	1	40006		1	1
12	1	40007		1	2
13	1	40008		1	3
14	2	40001		2	0
15	2	40002		2	1
16	2	40003		2	2
17	2	40004		2	3
18	2	40005		3	0
19	2	40006		3	1
20	2	40007		3	2
21	2	40008		3	3
22	3	40001		4	0
23	3	40002		4	1
24	3	40003		4	2
25	3	40004		4	3
26	3	40005		u	u
27	3	40006		u	u
28	3	40007		5	0
29	3	40008		5	1
30	3	40009		5	2
31	3	40010		5	3
32	3	40011		6	0
33	3	40012		6	1
34	3	40013		u	u
35	3	40014		6	2
36	3	40015		6	3
37					

First block has node address 1, start register 40001 and 8 registers
2nd Block has node address 2, start register 40001 and 8 registers
3rd block has node address 3, start address 40001 and 15 registers with registers 40005, 40006 and 400013 unused.

One to one Mapping



	A	B	C	D	E
1	CUSTOMER REMOTE UNITS			RTK Product Type: 725B	
2				Serial No.: 0	
3				Name: Plant Name	
4	SOURCE			OUTPUT	
5	NODE	ADDRESS		CELL / CARD	CHANNEL
6	1	40001		0	0
7	1	40002		0	1
8	1	40003		0	2
9	1	40004		0	3
10	1	40005		1	0
11	1	40006		1	1
12	1	40007		1	2
13	1	40008		1	3
14					
15					

If one to one mapping is required the spreadsheet is still required to set-up the master node address, Start address and number of registers. The output can then be entered in channel order to configure the one to one mapping.

Alternatively if the user sets mapped port to None in the mapping tab the unit will default to one to one on all ports.

Note: Any gaps in the annunciator cells must be repeated in the spreadsheet, so only valid cells are shown. For example with medium windows every other cell is used. i.e. Cell 0, Cell 2, cell 4 ect.

Many to one Mapping

Many registers/coils can be mapped to the same channel on the annunciator. They will be OR'd together so the channel will show the OR'd sum of all the mapped sources. The Reflash sequence on the channel can be used to reflash the alarm window if any of the source data changes state.

	A	B	C	D	E
1	CUSTOMER REMOTE UNITS			RTK Product Type: 725B	
2				Serial No.: 0	
3				Name: Plant Name	
4	SOURCE			OUTPUT	
5	NODE	ADDRESS		CELL / CARD	CHANNEL
6	1	0		0	0
7	1	1		0	0
8	1	2		0	0
9	1	3		0	0
10	1	4		0	1
11	1	5		0	1
12	1	6		0	1
13	1	7		0	1
14					
15					
16					

In this example addresses 0, 1, 2 and 3 are OR'd to cell 0 channel 0 and addresses 4, 5, 6 and 7 are OR'd to cell 0 channel 1.

One to many Mapping

A register or coil can be mapped to many channels, if the source data changes state all the associated channels will alarm.

	A	B	C	D	E
1	CUSTOMER REMOTE UNITS			RTK Product Type: 725B	
2				Serial No.: 0	
3				Name: Plant Name	
4	SOURCE			OUTPUT	
5	NODE	ADDRESS		CELL / CARD	CHANNEL
6	1	40001		0	0
7	1	40001		0	1
8	1	40001		0	2
9	1	40002		0	3
10	1	40002		1	0
11	1	40003		1	1
12	1	40003		1	2
13	1	40003		1	3
14					

In this example address 40001 is mapped to cell 0 channels 0, 1 and 2. Address 40002 is mapped to cell 0 channel 3 and cell 1 channel 0. Address 40003 is mapped to cell 1 channels 1, 2 and 3.

Slave Mapping

	A	B	C	D	E	F
1	RTK PORT			RTK Product Type: 725B		
2				Serial No.: 0		
3				Name: Plant Name		
4	DATA ADDRESS			OUTPUT		
5				CELL / CARD	CHANNEL	
6	0			0	0	
7	1			0	1	
8	2			0	2	
9	3			0	3	
10	4			1	0	
11	5			1	1	
12						

The slave spreadsheet allow the Port register to be mapped to the required channel. This work in the same way as the Master but columns A and B show the P725B port register addresses.

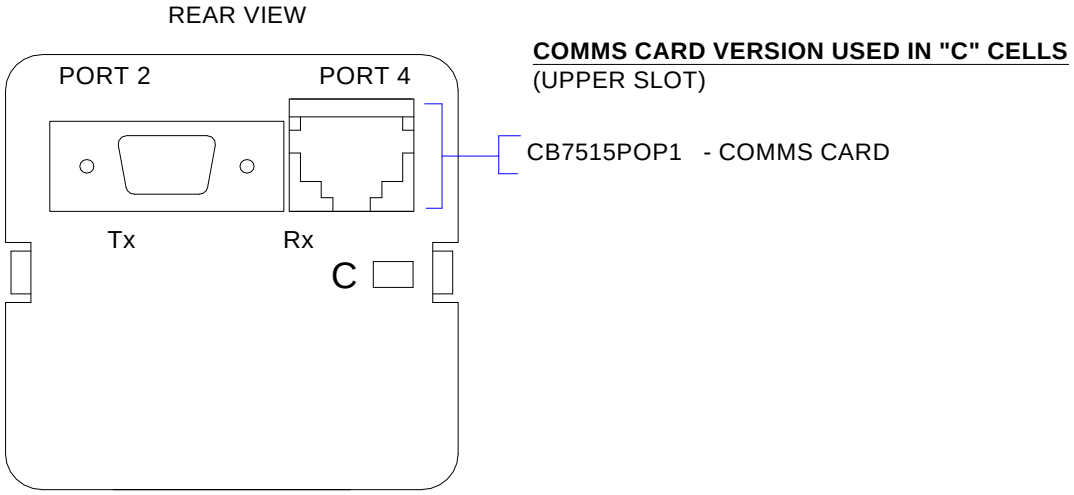
Mapping Limits
On the P725B the number of mapped points is limited to 255, this only includes mapped points, one to one points are not included in the mapping points.

Each master can have up to 16 request blocks.

If more than one address is mapped to a channel they can only be OR'd together. For the reflash this must be enabled on the individual channel in the sequence tab under advanced settings. The reflash pulse will be approx 500mS.

Note: If the configuration file is saved this doesn't include any port mapping data, this must be saved separately using the export mapping.

SECTION 21 – Standard Comm's Card Detail

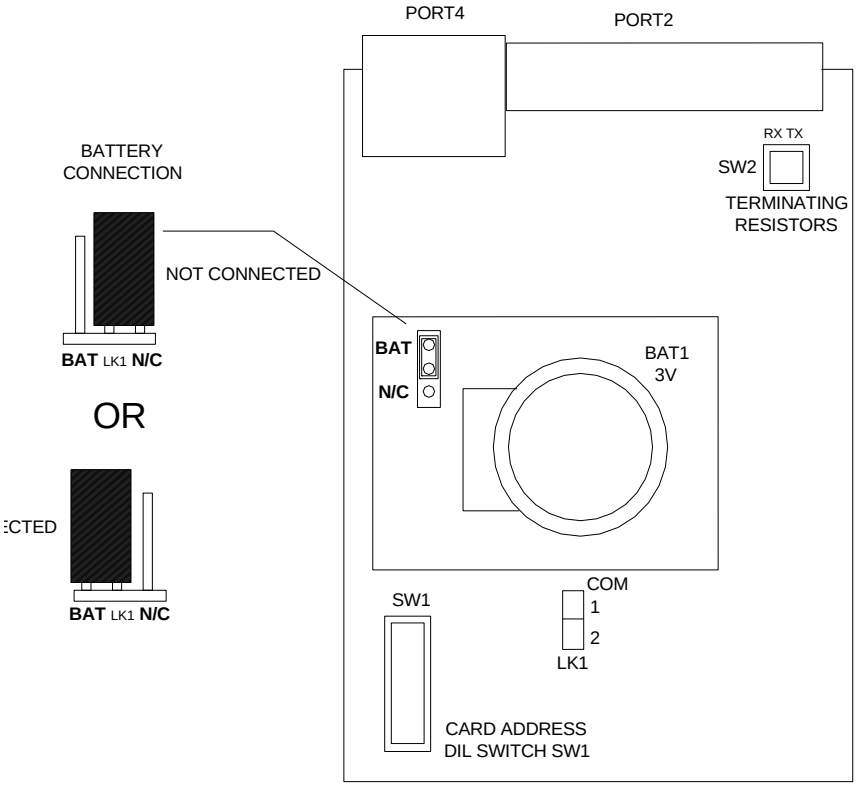


2 ports are located in the C Cell within the Annunciator as shown above.

Port 2 gives an isolated RS485 port with the following pin out:

1 – Sync+
2 – RxA
3 – TxB
5 – GND
6 – Sync -
7 – RxB
8 – TxA

Port 4 is an Ethernet port which allows connection to an Ethernet network via a standard RJ45 connection.



Real Time Clock

The comm's card comes with a battery backed RTC which keeps running even if power is lost to the unit. The Battery also powers the SRAM which is used to store the buffers on power loss. The Battery is only drained while no power is present on the unit. The clock can be set in the configuration software using the synchronise time tool.

Note: Units will be shipped with the jumper link set in the N/C position to stop the Battery from going flat before installation. Before applying power this link should be set to the BAT position.

Event Buffers

Each port has its own buffer which can hold up to 500 events. There is also a sort buffer that can also hold 760 events if the port buffer become full. If the sort buffer becomes full then the events will back up on the alarm cards. Each alarm card can hold 900 events. On power loss the buffers will remain as long as the battery is functioning.

To delete the buffers either remove the battery power (This will only clear the comm's card buffer not the Alarm card buffers) or use the Clear buffer tool in the configuration software.

SAFETY

The communication card is equipped with a lithium coin-cell long life battery.

This battery should be removed by suitably qualified personnel at the end of its life.

If required the replacement model number is CR 2032 Coin cell. (3.0V lithium, 180mAH)

Please dispose of the battery in accordance with local laws and we note it should **not** be placed with normal waste.

BATTERY DISPOSAL