**RTK**
**INSTRUMENTS**

# 725B Series ALARM ANNUNCIATOR

# INSTRUCTION MANUAL



*725B Series Alarm Annunciator*

| REV | DATED | DESCRIPTION | AUTHOR | APPROVED |
|-----|-------|-------------|--------|----------|
| 17 | 06-12-11 | Added Additional functionality | D.Adams | P.Cartmell |
| 18 | 12-01-12 | Added Enhanced Comms Option | D.Adams | P.Cartmell |
| 19 | 25-05-12 | Added more detail on IEC61850 | D.Adams | P.Cartmell |
| 20 | 16-09-13 | Advice on lifting and external PSU type | A Ibbetson | P.Cartmell |
| 21 | 13-10-14 | Update to safe operating instructions | J. Cooke | D. Fishkin |

The following methods are used in this manual to alert the user to important information:-

| ⚠ | **WARNING!**<br>Warnings are provided for safety and **MUST** be followed |
|---|---|

| **CAUTION** |
|---|
| Cautions are provided to prevent damage to the instrument. |

| **NOTE** |
|---|
| These are used to give general information to ensure correct operation. |

## 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*
*R*    *Remote TAR*

*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 300VDC*
*S*    *Universal Input Power Supply with SMR (Supply Monitor Relays)*
*D*    *Redundant Universal Input Power Supplies - 85 to 264VAC OR 88 to 300VDC*
*M*    *Dual Redundant with SMR(Supply Monitor Relays)*

*Signal Input Type*
*A*    *24v standard FCV*
*B*    *48v standard FCV*
*C*    *125v standard FCV*
*D*    *n/a*
*E*    *24v diff inputs FCV*
*F*    *48v diff inputs FCV*
*G*    *125v diff inputs FCV*

*H*    *n/a*
*I*    *Intermixed cards*


*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 IRIG B Signal*


*Communication Hardware*
*X*    *Not Fitted*
*E*    *Entry Level – Addressing each alarm card individually*
*S*    *Standard – RS485 and Ethernet (SNTP only)*
*A*    *Enhanced – RS485, Ethernet, Additional Ethernet Port*


*Protocol Options*
*X*    *Not Fitted*
*1*    *RTK AMS (Entry Level),  Serial Modbus and AMS(Standard)*
*2*    *Serial Modbus RTU (Entry Level)*
*3*    *DNP3 Unarmed (Enhanced)*
*4*    *IEC61850 Unarmed (Enhanced)*
*5*    *IEC61850 (Enhanced)*


*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.



725B CELL

POLARITY
MARKING

RTK
CB7028-0

FRONT VIEW

PINS

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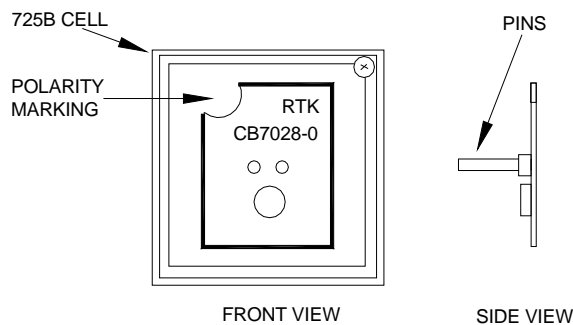
Please note the CB7028POP1 white LED assembly is factory fitted with the half circle in the top left hand corner as shown above.

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.

| | **WARNING!** |
|---|---|
| ⚠ | Installation, configuration and maintenance of this annunciator must only be performed by competent service personnel |

| | **WARNING!** |
|---|---|
| ⚠ | Hazardous voltages may exist on the LED assembly connections accessed via the front bezel. Take care and use insulated tools to remove and replace LED assemblies. |

To remove the LED assembly a pair of insulated 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

| | WARNING! |
|---|---|
| ⚠️ | Installation, configuration and maintenance of this annunciator must only be performed by competent service personnel |

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.
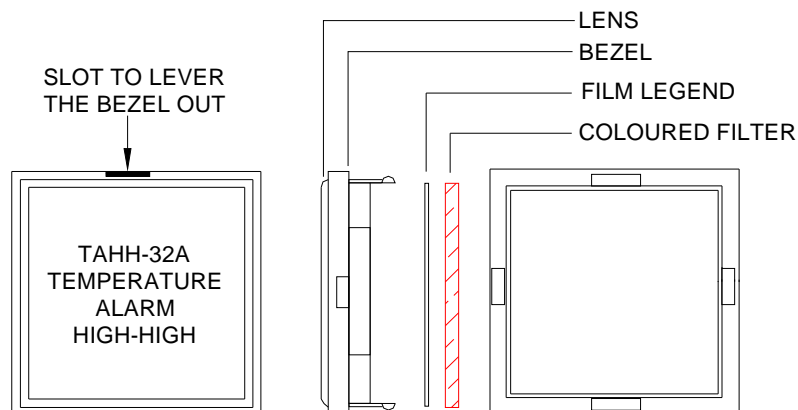
**Filter & Bezel Spare Parts Numbers**

| 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
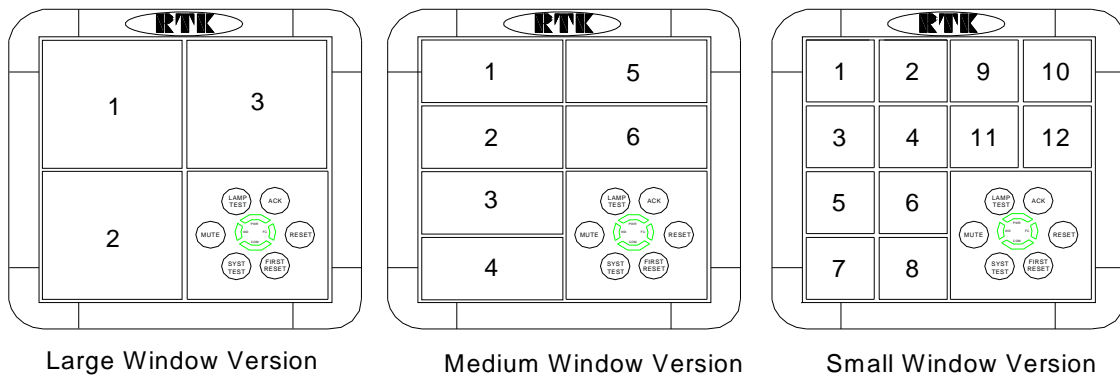
**Integral Pushbutton Module**

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**

| | WARNING! |
|---|---|
| ⚠️ | Installation, configuration and maintenance of this annunciator must only be performed by competent service personnel |

| | WARNING! |
|---|---|
| ⚠️ | Hazardous voltages may be present when pushbutton panel is removed. Take care not to touch any exposed parts on pushbutton panel or annunciator beyond those specified in the instructions 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:-

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



**Rx Status LED**                                                **Tx Status LED**

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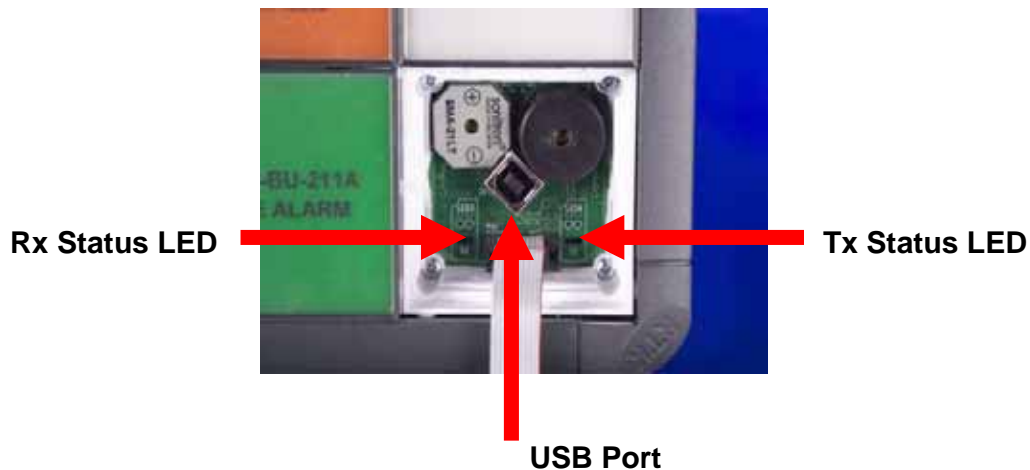
Once the user connects the supplied cable between a PC and the USB programming port the four green LED bars on the front of the pushbutton module will flash in unison to indicate that the port is being used.

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

| ⚠ | **WARNING!**<br><br>Installation, configuration and maintenance of this annunciator must only be performed by competent service personnel |
|---|---|

| ⚠ | **WARNING!**<br><br>Hazardous voltages may be present when pushbutton panel is removed. Take care not to touch any exposed parts on pushbutton panel or annunciator beyond those specified in the instructions below. |
|---|---|

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).
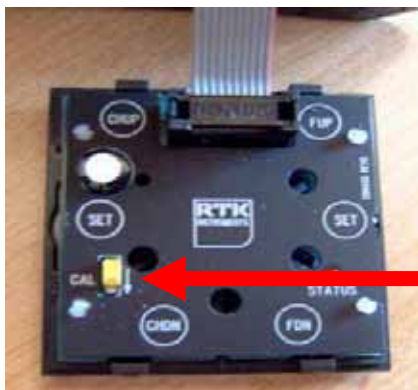


**Push Down For CAL Mode**

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.

Channel Up — Function Up

Set — Set

Channel Down — Function Down
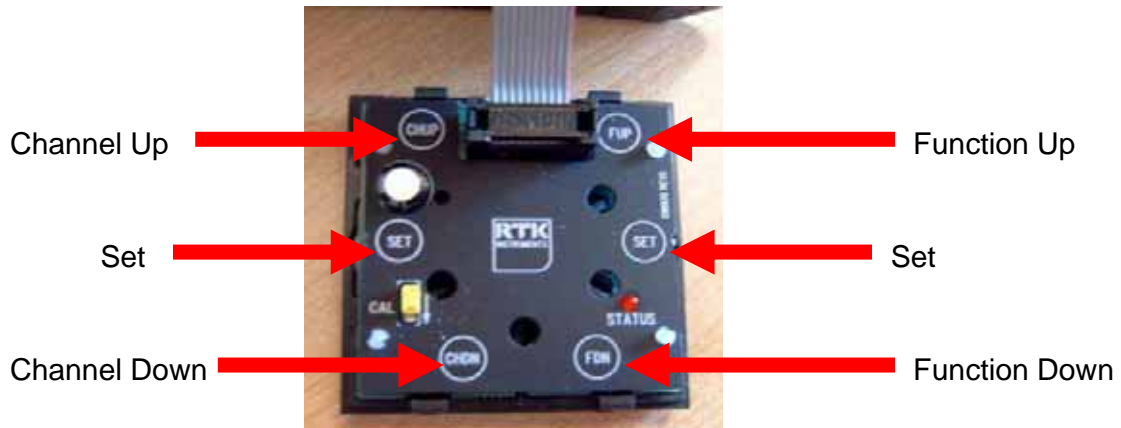
**Function Up / Down**
The integral pushbutton module has two functions.

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.

| | **WARNING!** |
|---|---|
| ⚠️ | Hazardous voltages may be present on the rear panel connections when module connectors are removed. Take care not to touch any exposed parts. |

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)
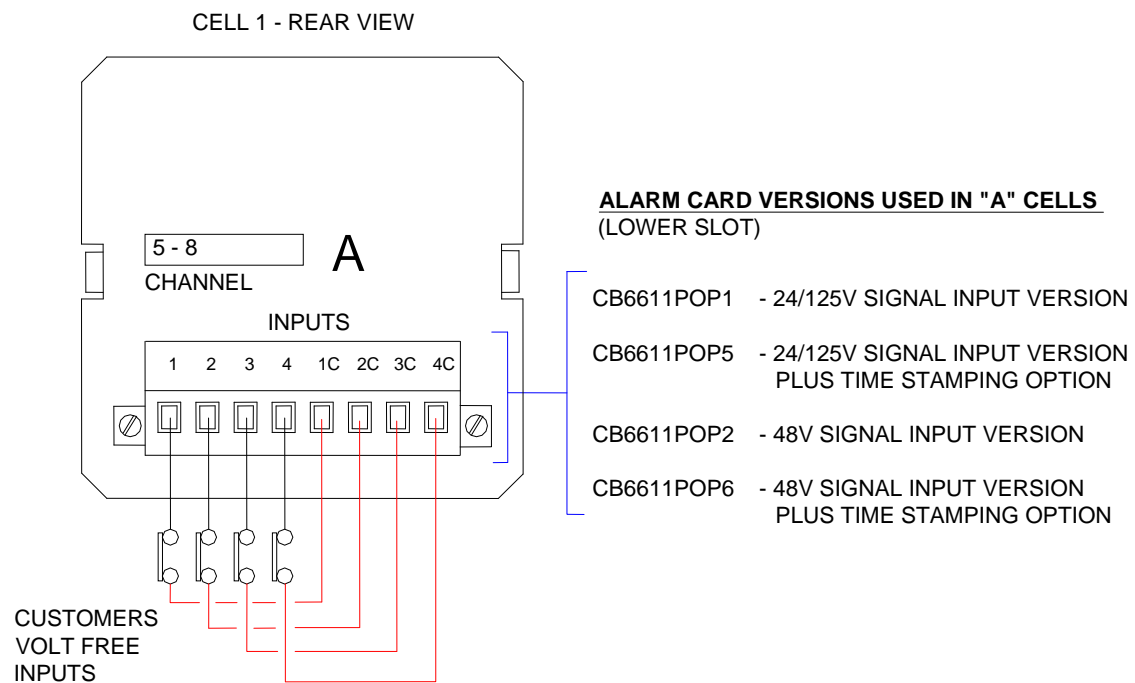
CELL 1 - REAR VIEW



**ALARM CARD VERSIONS USED IN "A" CELLS**
(LOWER SLOT)

CB6611POP1   - 24/125V SIGNAL INPUT VERSION

CB6611POP5   - 24/125V SIGNAL INPUT VERSION
                        PLUS TIME STAMPING OPTION

CB6611POP2   - 48V SIGNAL INPUT VERSION

CB6611POP6   - 48V SIGNAL INPUT VERSION
                        PLUS TIME STAMPING OPTION

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)
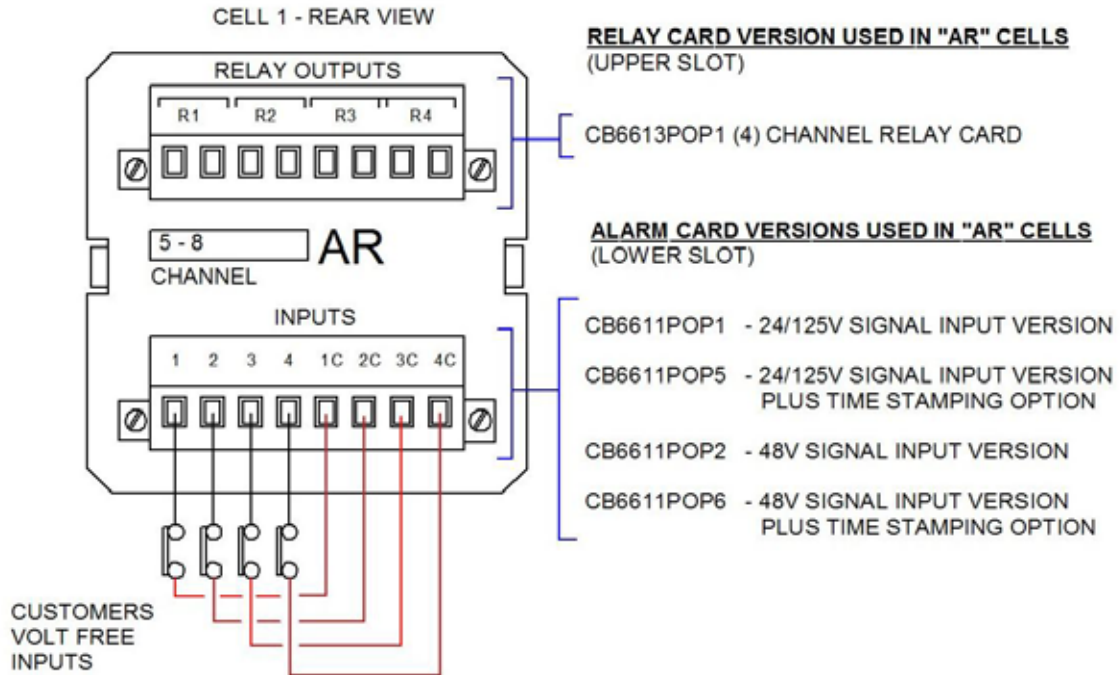


Cell type **AR** is used to provide:-

- 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
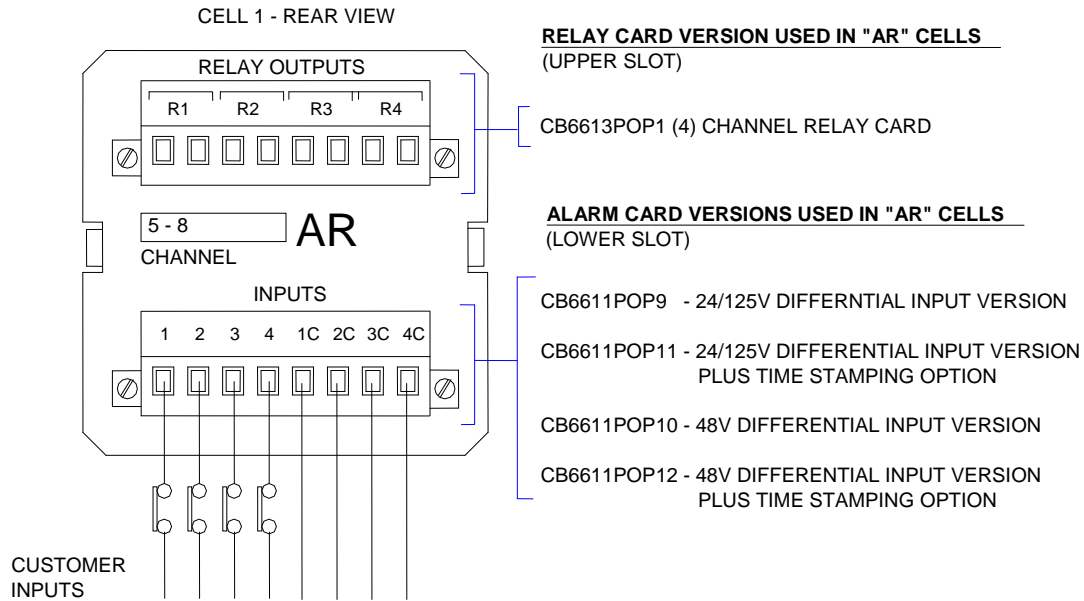
CELL 1 - REAR VIEW

RELAY OUTPUTS

R1    R2    R3    R4

5 - 8        AR
CHANNEL

INPUTS

1    2    3    4    1C  2C  3C  4C

CUSTOMER
INPUTS

**RELAY CARD VERSION USED IN "AR" CELLS**
(UPPER SLOT)

CB6613POP1 (4) CHANNEL RELAY CARD

**ALARM CARD VERSIONS USED IN "AR" CELLS**
(LOWER SLOT)

CB6611POP9   - 24/125V DIFFERNTIAL INPUT VERSION

CB6611POP11 - 24/125V DIFFERENTIAL INPUT VERSION
                      PLUS TIME STAMPING OPTION

CB6611POP10 - 48V DIFFERENTIAL INPUT VERSION

CB6611POP12 - 48V DIFFERENTIAL INPUT VERSION
                      PLUS TIME STAMPING OPTION

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 0 - REAR VIEW

**ALARM CARD VERSIONS USED IN "AP" CELLS**
(LOWER SLOT)

CB6611POP3 - 24/125V SIGNAL INPUT VERSION
PLUS 3 x PUSHBUTTON INPUTS

CB6611POP7 - 24/125V SIGNAL INPUT VERSION
PLUS 3 x PUSHBUTTON INPUTS
AND TIME STAMPING OPTION

CB6611POP4 - 48V SIGNAL INPUT VERSION
PLUS 3 x PUSHBUTTON INPUTS

CB6611POP8 - 48V SIGNAL INPUT VERSION
PLUS 3 x PUSHBUTTON INPUTS
AND TIME STAMPING OPTION

1 - 4 CHANNEL AP

INPUTS

1  2  3  4  C  P1  P2  P3

CUSTOMERS VOLT FREE INPUTS

EXTERNAL PUSHBUTTON INPUTS

+V

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

| | **WARNING!** |
|---|---|
| ⚠️ | If remote pushbuttons are used they must be installed in the same enclosure as the 725B/C annunciator. |

APR Cell Detail (Alarm / Pushbutton – Relay Cell)
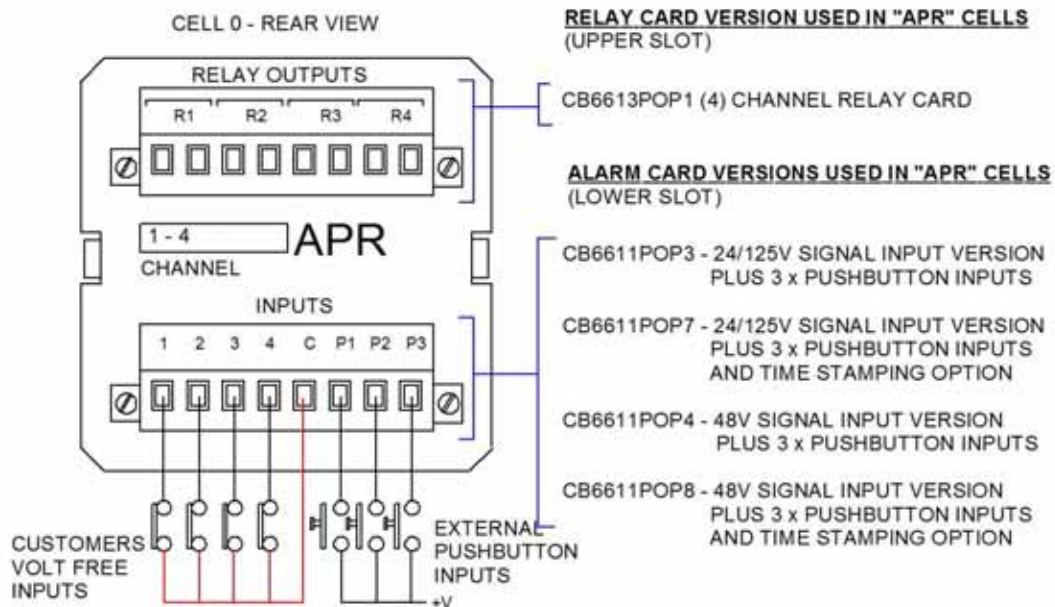


Cell type **APR** is used to provide:-

- 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.

| | WARNING! |
|---|---|
| ⚠ | If remote pushbuttons are used they must be installed in the same enclosure as the 725B/C annunciator. |

### AP6 Cell Detail (Alarm Card - Remote Pushbutton)

REAR VIEW

PUSHBUTTONS

P1  P2  P3      P4  P5  P6

CHANNEL   INPUTS                    AP6

1    2    3    4   1C   2C   3C   4C

CUSTOMERS
VOLT FREE
INPUTS

**REMOTE PB CARD VERSIONS USED IN "AP6" CELLS**
(UPPER SLOT)

CB9427POP1 – REMOTE PUSHBUTTON CARD

**ALARM CARD VERSIONS USED IN "AP6" CELLS**
(LOWER SLOT)

CB6611POP1 - 24/125V SIGNAL INPUT VERSION

CB6611POP5 - 24/125V SIGNAL INPUT VERSION
                        PLUS TIME STAMPING OPTION

CB6611POP2 - 48V SIGNAL INPUT VERSION

CB6611POP6 - 48V SIGNAL INPUT VERSION
                        PLUS TIME STAMPING OPTION

Cell type **AP6** is used to provide:-

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

- Six 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, 1$^{st}$ 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 AP6.

- Multiple AP6 cells may be used in applications that require more than 6 x pushbutton inputs or in systems using multiple pushbutton groups to control selective channels

| | **WARNING!** |
|---|---|
| ⚠ | If remote pushbuttons are used they must be installed in the same enclosure as the 725B/C annunciator. |

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



CELL 1 - REAR VIEW

RELAY OUTPUTS

CR1    CR2    CR3    CR4

5 - 8    AWR*
CHANNEL

INPUTS

1    2    3    4    1C    2C    3C    4C

CUSTOMERS
VOLT FREE
INPUTS

**RELAY CARD VERSION USED IN "AWR" CELLS**
(UPPER SLOT)

CB6641POP1 (4) CHANNEL RELAY CARD

**ALARM CARD VERSIONS USED IN "AWR" CELLS**
(LOWER SLOT)

CB6611POP1  - 24/125V SIGNAL INPUT VERSION

CB6611POP5  - 24/125V SIGNAL INPUT VERSION
                   PLUS TIME STAMPING OPTION

CB6611POP2  - 48V SIGNAL INPUT VERSION

CB6611POP6  - 48V SIGNAL INPUT VERSION
                   PLUS TIME STAMPING OPTION

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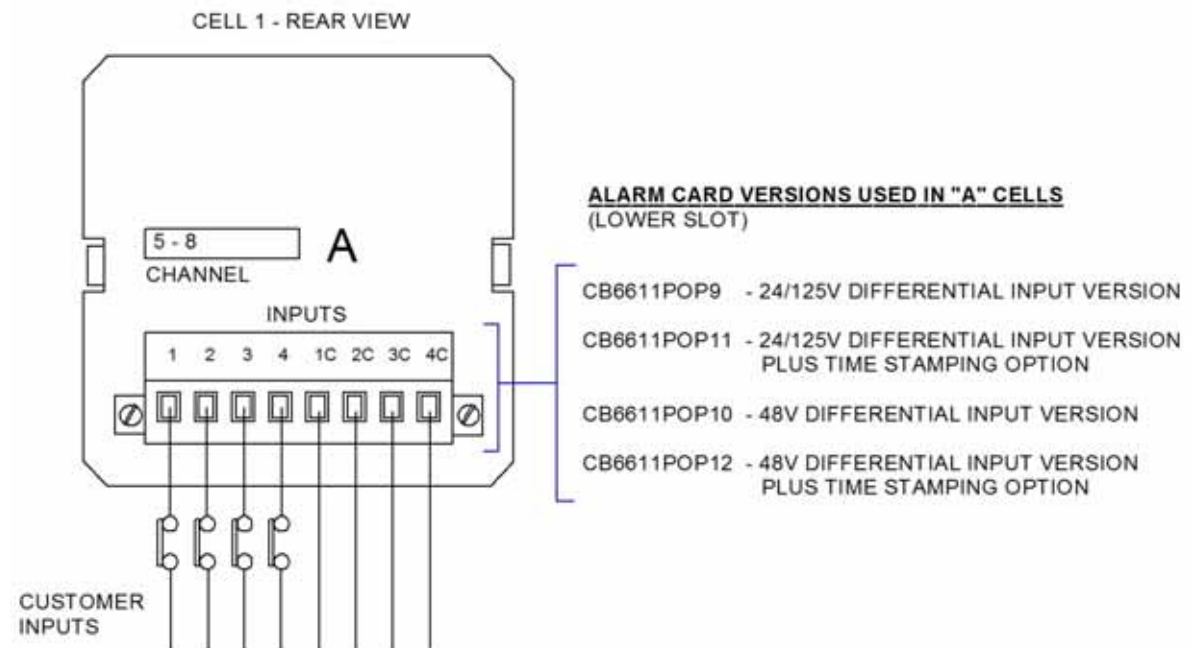
### AS Cell Detail (**A**larm – **S**upply Cell)



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 88-300VDC
- 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-05, (5 x 20 mm), 2A-T Fuse is used to protect the primary supply for voltages less than or equal to 150V AC/DC.
- Fuse FU-0.5A-05, (5 x 20mm) 0.5A-T Fuse is used to protect the primary supply for voltages greater than 150V AC/DC

| ⚠ | **WARNING!** |
|---|---|
| | The unit is fitted with a 0.5A primary input fuse as standard. This fuse should only be changed for lower supply voltages in accordance with the details above. |

### AS Cell - Differential Input Version

CELL 1 - REAR VIEW

PSU

N      L      88-158VACDC     T2A
              151-265VACDC    T0.5A
              50/60Hz

5 - 8    AS
CHANNEL

INPUTS

1   2   3   4   1C  2C  3C  4C

CUSTOMER
INPUTS

POWER CARD VERSION USED IN "AS" CELLS
(UPPER SLOT)

CB6617POP1 POWER CARD 85-264VAC or 88-300VDC

ALARM CARD VERSIONS USED IN "AS" CELLS
(LOWER SLOT)

CB6611POP9  - 24/125V DIFFERENTIAL INPUT VERSION

CB6611POP11 - 24/125V DIFFERENTIAL INPUT VERSION
                        PLUS TIME STAMPING OPTION

CB6611POP10 - 48V DIFFERENTIAL INPUT VERSION

CB6611POP12 - 48V DIFFERENTIAL INPUT VERSION
                        PLUS TIME STAMPING OPTION

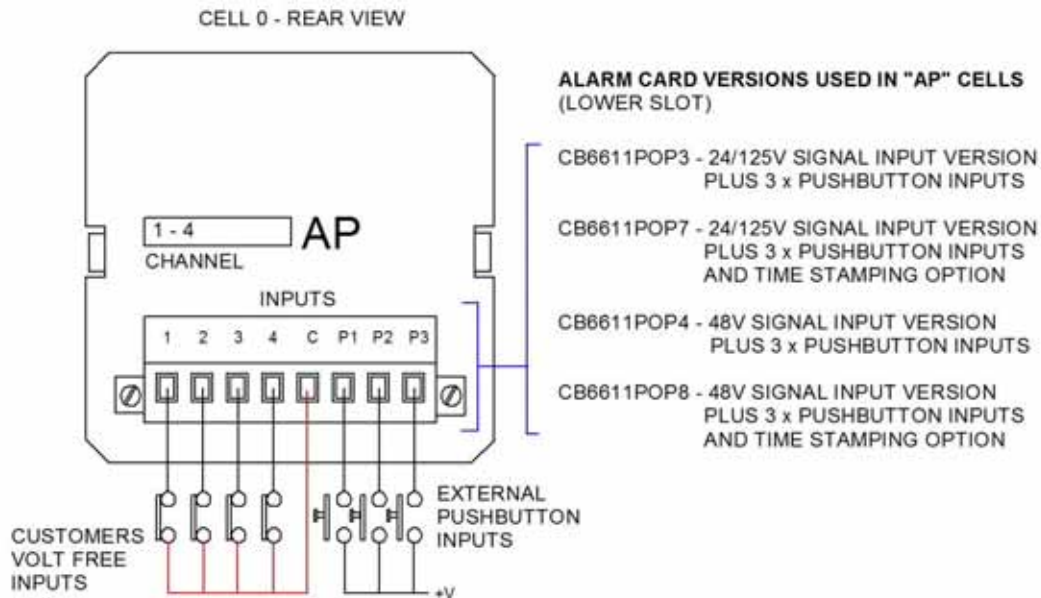Cell type **AS** is used to provide:-

- 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 88-300VDC
- 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-05, (5 x 20 mm), 2A-T Fuse is used to protect the primary supply for voltages less than or equal to 150V AC/DC.
- Fuse FU-0.5A-05, (5 x 20mm) 0.5A-T Fuse is used to protect the primary supply for voltages greater than 150V AC/DC

| ⚠ | **WARNING!**<br><br>The unit is fitted with a 0.5A primary input fuse as standard. This fuse should only be changed for lower supply voltages in accordance with the details above. |
|---|---|

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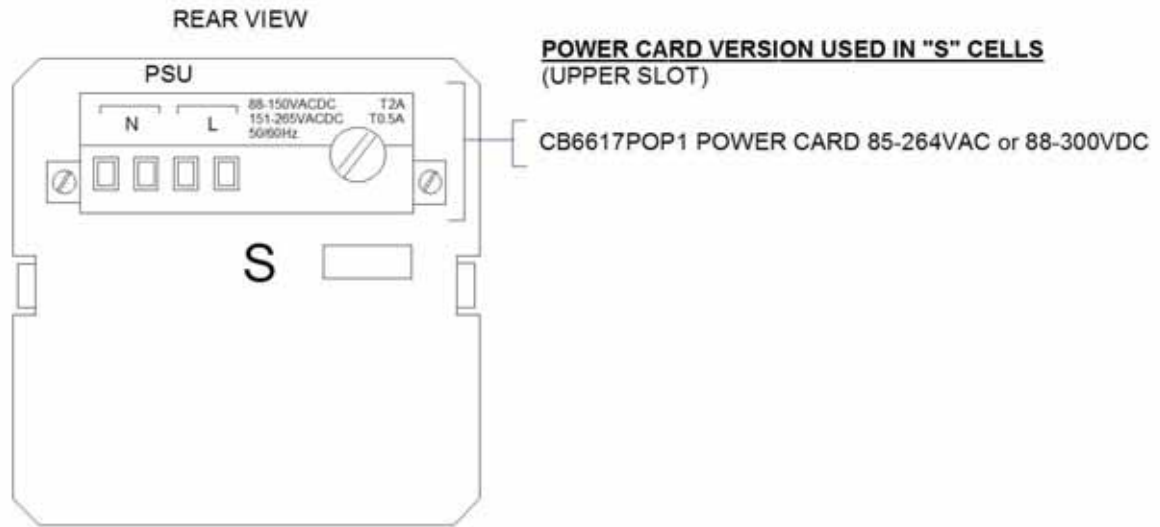


Cell type **S** is used to provide:-

- Universal Input Power Supply capable of accepting either:-
- AC voltages in the range 85-264VAC or
- DC voltages in the range 88-300VDC
- 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-05, (5 x 20 mm), 2A-T Fuse is used to protect the primary supply for voltages less than or equal to 150V AC/DC.
- Fuse FU-0.5A-05, (5 x 20mm) 0.5A-T Fuse is used to protect the primary supply for voltages greater than 150V AC/DC

| | **WARNING!** |
|---|---|
| ⚠️ | The unit is fitted with a 0.5A primary input fuse as standard. This fuse should only be changed for lower supply voltages in accordance with the details above. |

**SS Cell Detail**

(Supply - Supply Cell)

REAR VIEW

**POWER CARD VERSION USED IN "SS" CELLS** (UPPER SLOT)

CB6617POP1 POWER CARD 85-264VAC or 88-300VDC

SS

**POWER CARD VERSION USED IN "SS" CELLS** (LOWER SLOT)

CB6617POP1 POWER CARD 85-264VAC or 88-300VDC

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 88-300VDC
- 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-05, (5 x 20 mm), 2A-T Fuse is used to protect the primary supply for voltages less than or equal to 150V AC/DC.
- Fuse FU-0.5A-05, (5 x 20mm) 0.5A-T Fuse is used to protect the primary supply for voltages greater than 150V AC/DC

| | **WARNING!** |
|---|---|
| ⚠️ | The unit is fitted with a 0.5A primary input fuse as standard. This fuse should only be changed for lower supply voltages in accordance with the details above. |

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

REAR VIEW



WR

**RELAY CARD VERSION USED IN "WR" CELLS**
(LOWER SLOT)

CB6641POP1   - WATCHDOG / RELAY CARD

CR1     CR2     CR3     CR4

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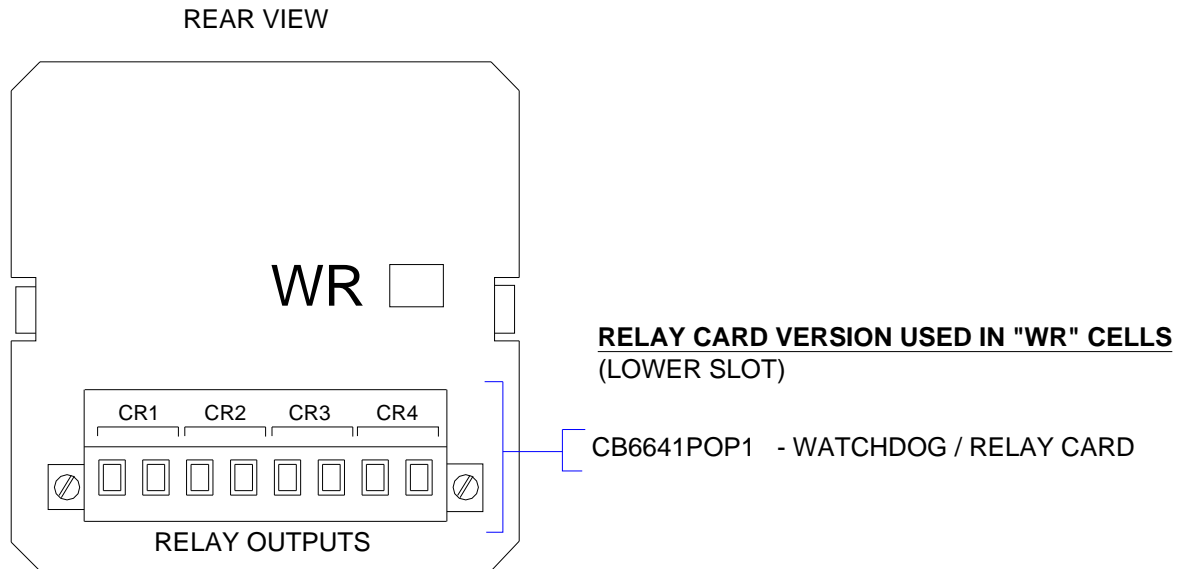
Cell type **WR** is used to provide:-

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)
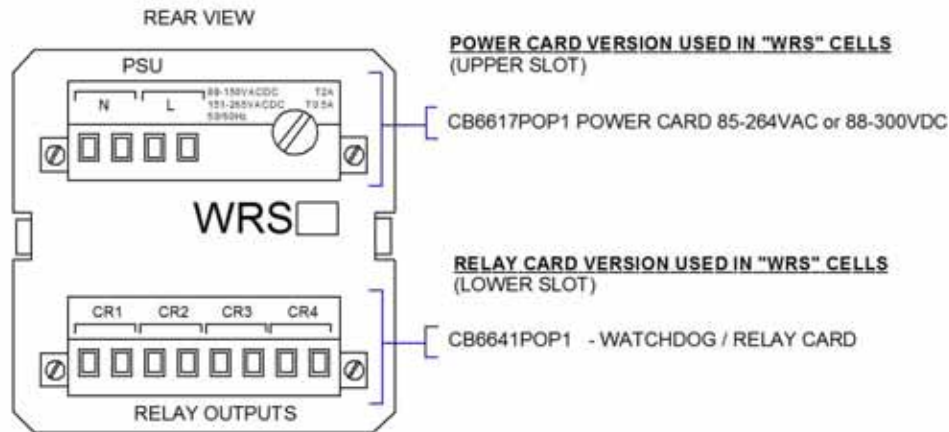


Cell type **WRS** is used to provide:-

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 88-300VDC
- 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-05, (5 x 20 mm), 2A-T Fuse is used to protect the primary supply for voltages less than or equal to 150V AC/DC.
- Fuse FU-0.5A-05, (5 x 20mm) 0.5A-T Fuse is used to protect the primary supply for voltages greater than 150V AC/DC

| ⚠ | **WARNING!**<br><br>The unit is fitted with a 0.5A primary input fuse as standard. This fuse should only be changed for lower supply voltages in accordance with the details above. |
|---|---|

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

REAR VIEW

RELAY OUTPUTS

CR5     CR6     CR7     CR8

WRR☐

CR1     CR2     CR3     CR4

RELAY OUTPUTS

**RELAY CARD VERSION USED IN "WRR" CELLS**
(UPPER SLOT)

CB6613POP1   - (4) CHANNEL RELAY CARD

**RELAY CARD VERSION USED IN "WRR" CELLS**
(LOWER SLOT)

CB6641POP1   - WATCHDOG / RELAY CARD
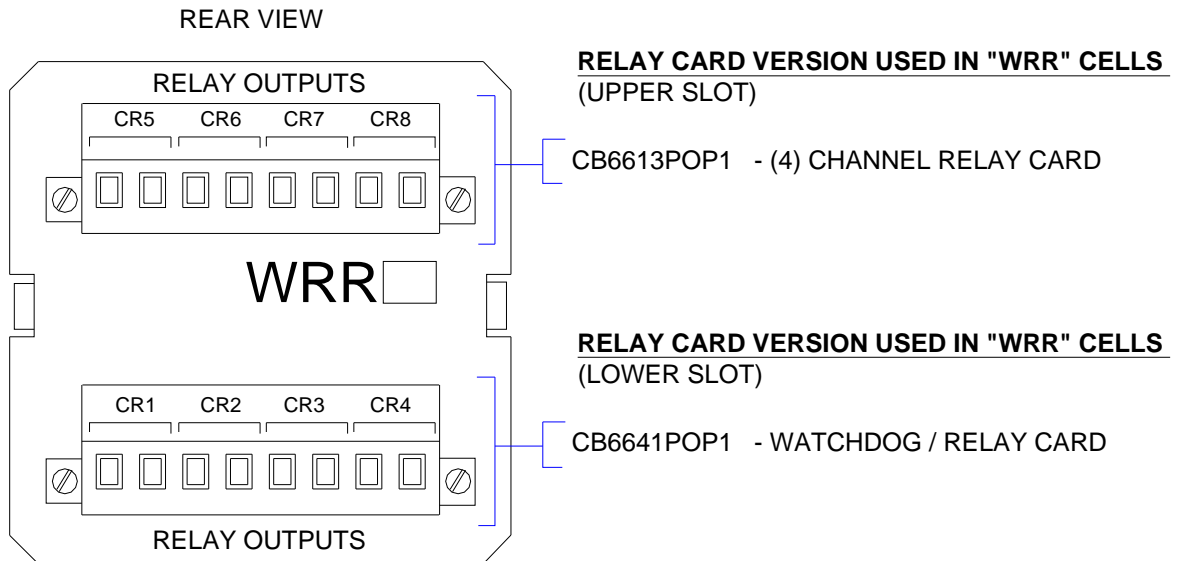
Cell type **WRR** is used to provide:-

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

REAR VIEW

WR

**RELAY CARD VERSION USED IN "WR" CELLS**
(LOWER SLOT)

CR1    CR2    CR3    CR4

CB6641POP2   - WATCHDOG / RELAY CARD
FOR USE WITH SYSTEMS NOT EQUIPPED
WITH INTEGARL PUSHBUTTONS

RELAY OUTPUTS

CELL 1 - REAR VIEW

5 - 8    A
CHANNEL

INPUTS

1   2   3   4   1C  2C  3C  4C

**ALARM CARD VERSIONS USED IN "A" CELLS**
(LOWER SLOT)

CB6611POP9    - 24/125V DIFFERENTIAL INPUT VERSION

CB6611POP11  - 24/125V DIFFERENTIAL INPUT VERSION
                     PLUS TIME STAMPING OPTION

CB6611POP10  - 48V DIFFERENTIAL INPUT VERSION

CB6611POP12  - 48V DIFFERENTIAL INPUT VERSION
                     PLUS TIME STAMPING OPTION

CUSTOMER
INPUTS

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.

**WRP Cell Detail** (**W**atchdog **R**elay Card - Remote **P**ushbutton)

REAR VIEW

PUSHBUTTONS

P1  P2  P3      P4  P5  P6

WRP

CR1    CR2    CR3    CR4

COMMON RELAYS

**REMOTE PB CARD VERSIONS USED IN "WRP" CELLS**
(UPPER SLOT)

CB9427POP1 – REMOTE PUSHBUTTON CARD

**RELAY CARD VERSION USED IN "WRP" CELLS**
(LOWER SLOT)

CB6641POP1   - WATCHDOG / RELAY CARD
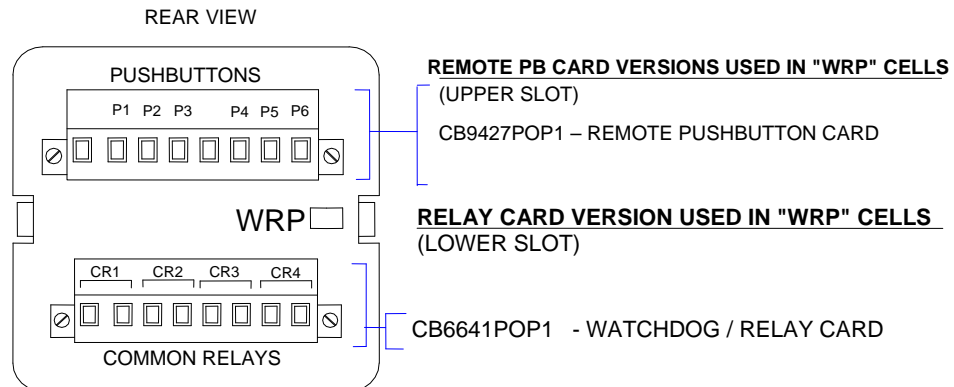
Cell type **WRP** is used to provide:-

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

Remote Pushbutton Card that provides:

- Six 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)

| | **WARNING!**<br><br>Remote pushbuttons must be installed in<br>the same enclosure as the 725B/C annunciator. |
|---|---|

**AC Cell Detail** (**A**larm – **C**omms Cell)
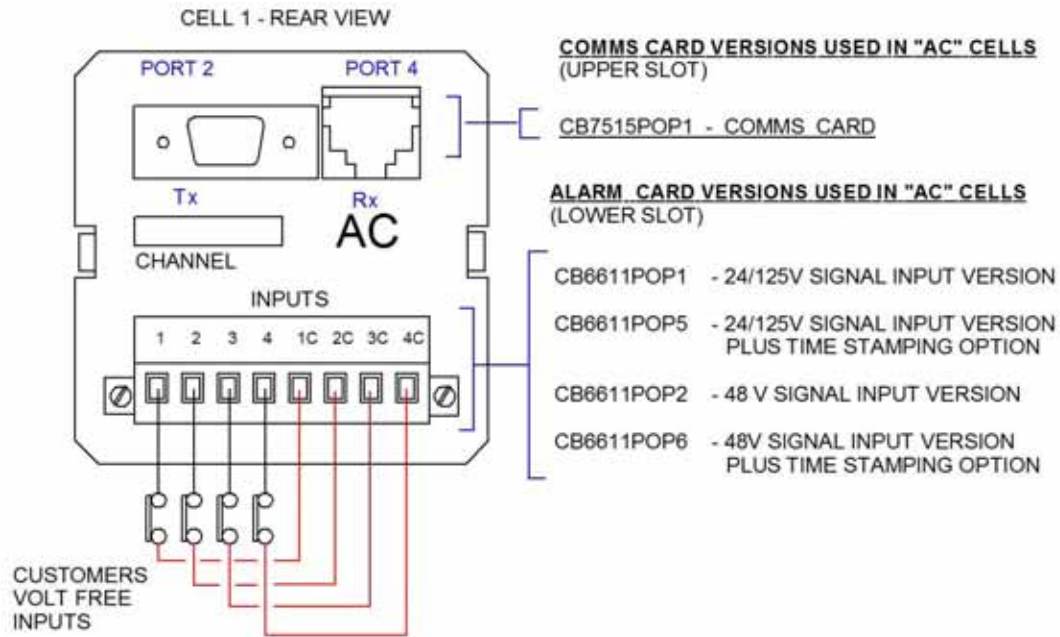


Cell type **AC** is used to provide:-

- 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 8P8C (RJ45) connector.

- Rx and TX LED's  on both ports for diagnostic purposes.

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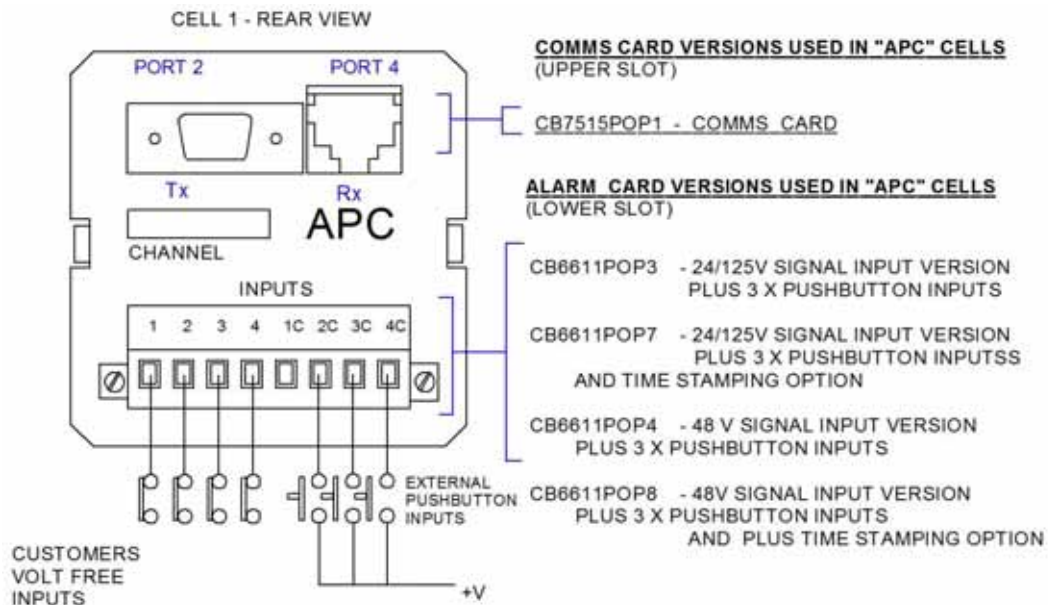


Cell type **APC** is used to provide:-
- Four digital inputs for use with volt-free or powered contacts
- Three external pushbutton inputs for use with optional remote mounting pushbuttons as required.
- Each of the external pushbutton inputs can be programmed to operate as either:- Lamp Test, Silence, 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.

| ⚠️ | **WARNING!**<br><br>Remote pushbuttons must be installed in<br>the same enclosure as the 725B/C annunciator. |
|---|---|

Comm's Card that provides:
- One Isolated RS485 Port via a standard 9-way D-type connector.
- One Isolated 10/100Mb/s Ethernet port via a standard 8P8C (RJ45) connector.
- Rx and TX LED's on both ports for diagnostic purposes.
- The Comms card contains a CR2032 coin cell (3.0V lithium, 180mAH)

The battery in this comms card can be replaced it reaches the end of its life. In order to replace the battery, power down the annunciator, remove the comms card, replace the battery and refit the comms card. Refer to page 123 for instructions on the disposal of the spent battery.

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

REAR VIEW

PORT 2          PORT 4

**COMMS CARD VERSION USED IN "C" CELLS**
(UPPER SLOT)

CB7515POP1   - COMMS CARD

Tx              Rx

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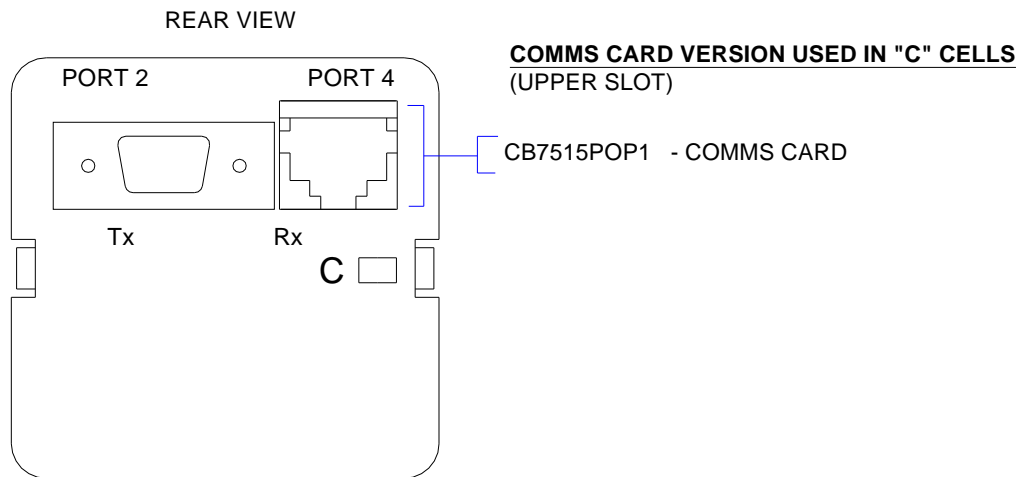
Cell type **C** is used to provide:-

Comm's Card that provides:

- One Isolated  RS485 Port via a standard 9-way D-type connector.

- One Isolated 10/100Mb/s  Ethernet port via a standard RJ45 connector.

- Rx and TX LED's  on both ports for diagnostic purposes.

- The Comms card contains a CR2032 coin cell (3.0V lithium, 180mAH)

The battery in this comms card can be replaced it reaches the end of its life. In order to replace the battery, power down the annunciator, remove the comms card, replace the battery and refit the comms card. Refer to page 123 for instructions on the disposal of the spent battery.

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

REAR VIEW

PORT 2                    PORT 4

Tx                        Rx

WRC

CR1      CR2      CR3      CR4

RELAY OUTPUTS

**COMMS CARD VERSION USED IN "WRC" CELLS**
(UPPER SLOT)

CB7515POP1   - COMMS CARD

**RELAY CARD VERSION USED IN "WRC" CELLS**
(LOWER SLOT)

CB6641POP1   - WATCHDOG / RELAY CARD

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 10/100Mb/s  Ethernet port via a standard 8P8C (RJ45) connector.

- Rx and TX LED's on both ports for diagnostic purposes.

- The Comms card contains a CR2032 coin cell (3.0V lithium, 180mAH)

The battery in this comms card can be replaced it reaches the end of its life. In order to replace the battery, power down the annunciator, remove the comms card, replace the battery and refit the comms card. Refer to page 123 for instructions on the disposal of the spent battery.

**CE Cell Detail** (**C**omms **E**nhanced Cell)

REAR VIEW

PORT 3

**COMMS CARD VERSION USED IN "CE" CELLS**
(UPPER SLOT)

CB10257POP1   - ENHANCED COMMS CARD WITH IEC61850

CB10257POP2 - ENHANCED COMMS CARD WITH DNP3

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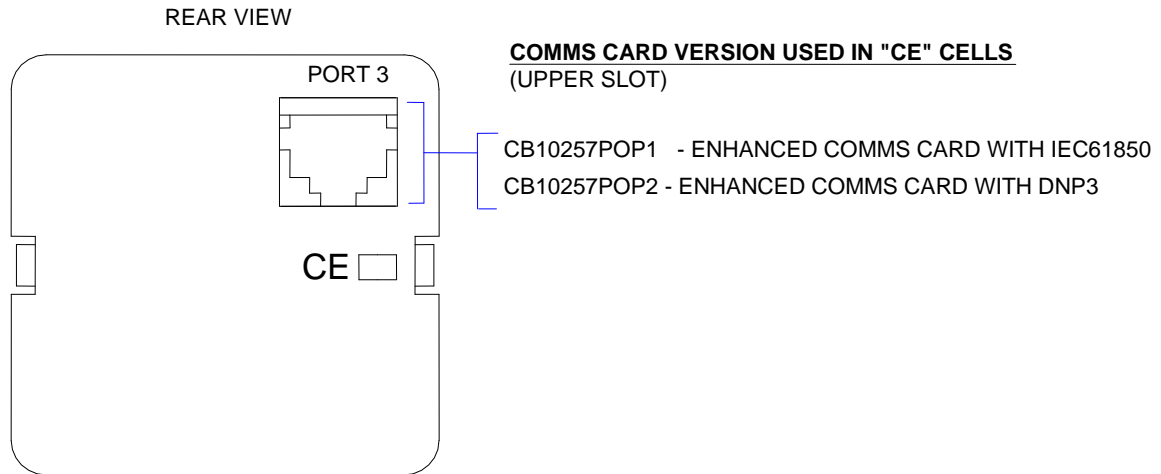
Cell type **CE** is used to provide:-

Enhanced Comm's Card that provides:

- One Isolated 10/100Mb/s  Ethernet port via a standard 8P8C (RJ45) connector.

- The Enhanced Comms card contains a BR1225 coin cell (3.0V lithium, 48mAH)

The battery in this comms card can be replaced it reaches the end of its life. In order to replace the battery, power down the annunciator, remove the comms card, replace the battery and refit the comms card. Refer to page 123 for instructions on the disposal of the spent battery.

## ACE Cell Detail (**A**larm – **C**omm's **E**nhanced Cell)

REAR VIEW

PORT 3

ACE

CHANNEL   INPUTS

1   2   3   4   1C  2C  3C  4C

CUSTOMERS
VOLT FREE
INPUTS

**COMMS CARD VERSION USED IN "ACE" CELLS**
(UPPER SLOT)

CB10257POP1   - ENHANCED COMMS CARD WITH IEC61850

CB10257POP2   - ENHANCED COMMS CARD WITH DNP3

**ALARM CARD VERSIONS USED IN "ACE" CELLS**
(LOWER SLOT)

CB6611POP1 - 24/125V SIGNAL INPUT VERSION

CB6611POP5 - 24/125V SIGNAL INPUT VERSION
              PLUS TIME STAMPING OPTION

CB6611POP2 - 48V SIGNAL INPUT VERSION

CB6611POP6 - 48V SIGNAL INPUT VERSION
              PLUS TIME STAMPING OPTION

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

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

Enhanced Comms Card that provides:

- One Isolated 10/100Mb/s  Ethernet port via a standard 8P8C (RJ45) connector.

- The Enhanced Comms card contains a BR1225 coin cell (3.0V lithium, 48mAH)

The battery in this comms card can be replaced it reaches the end of its life. In order to replace the battery, power down the annunciator, remove the comms card, replace the battery and refit the comms card. Refer to page 123 for instructions on the disposal of the spent battery.

**WRCE Cell Detail** (**W**atchdog / **R**elay - **C**omm's **E**nhanced Cell)

REAR VIEW

PORT 3

**COMMS CARD VERSION USED IN "WRCE" CELLS**
(UPPER SLOT)

CB10257POP1   - ENHANCED COMMS CARD WITH IEC61850
CB10257POP2   - ENHANCED COMMS CARD WITH DNP3

WRCE

**RELAY CARD VERSION USED IN "WRCE" CELLS**
(LOWER SLOT)

CR1      CR2      CR3      CR4

CB6641POP1   - WATCHDOG / RELAY CARD

RELAY OUTPUTS
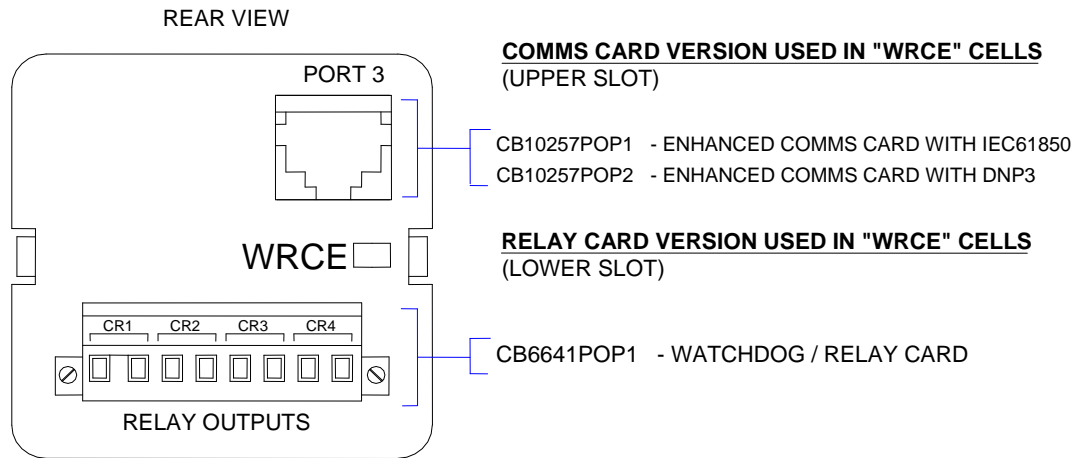
Cell type **WRCE** is used to provide:-

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

Enhanced Comm's Card that provides:

- One Isolated 10/100Mb/s  Ethernet port via a standard 8P8C (RJ45) connector.

- The Enhanced Comms card contains a BR1225 coin cell (3.0V lithium, 48mAH)

The battery in this comms card can be replaced it reaches the end of its life. In order to replace the battery, power down the annunciator, remove the comms card, replace the battery and refit the comms card. Refer to page 123 for instructions on the disposal of the spent battery.

### CEC Cell Detail (**C**omm's **E**nhanced – **C**omm's Cell)

REAR VIEW

**COMMS CARD VERSION USED IN "CEC" CELLS**
(UPPER SLOT)

CB7515POP1   - COMMS CARD

**ENHANCED COMMS CARD VERSION USED IN "CEC" CELLS**
(LOWER SLOT)

CB10257POP1 – ENHANCED COMMS WITH IEC61850
CB10257POP2 – ENHANCED COMMS WITH DNP3

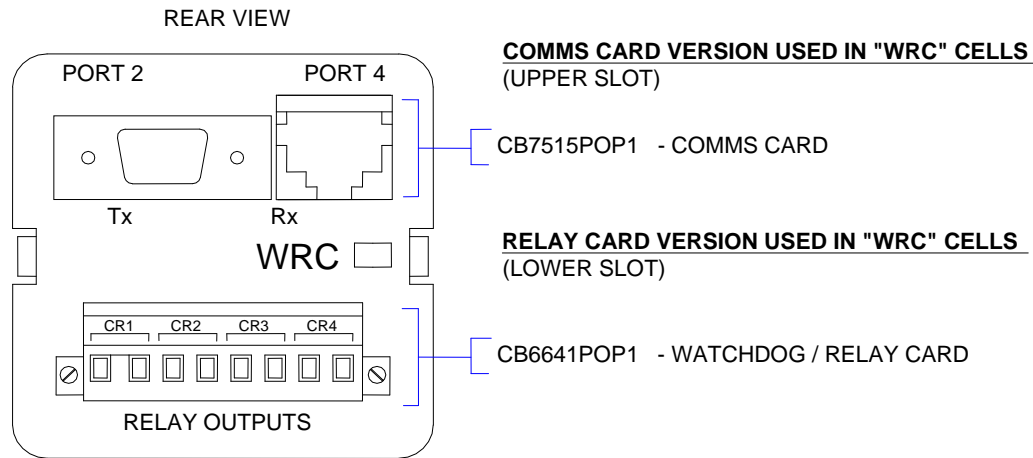PORT 2   PORT 4   Tx   Rx   CEC   PORT 3
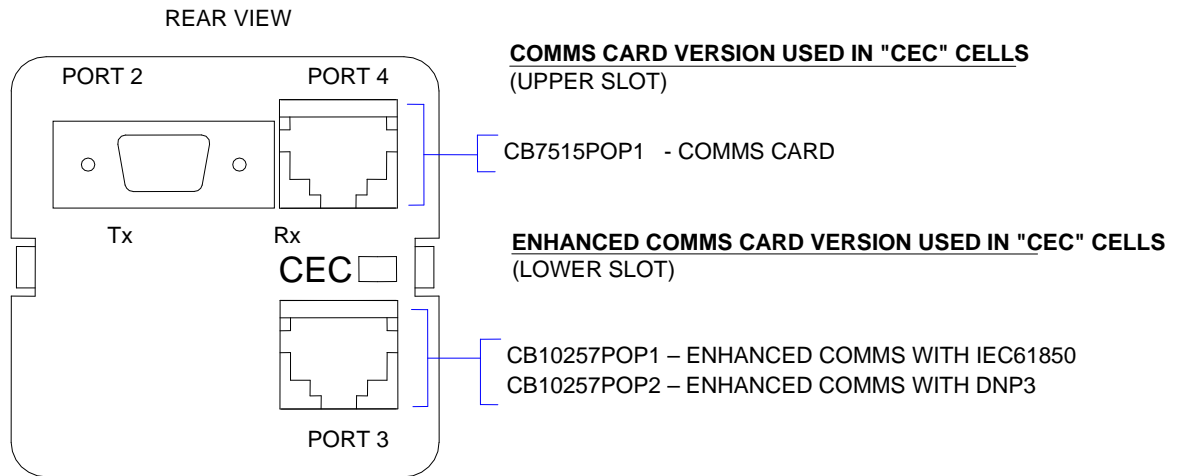
Cell type **CEC** is used to provide:-

Comms Card that provides:

- One Isolated  RS485 Port via a standard 9-way D-type connector.

- One Isolated 10/100Mb/s Ethernet port via a standard 8P8C (RJ45) connector.

- Rx and TX LED's  on both ports for diagnostic purposes.

- The Comms card contains a CR2032 coin cell (3.0V lithium, 180mAH)

Enhanced Comm's Card that provides:

- One Isolated 10/100Mb/s Ethernet port via a standard 8P8C (RJ45) connector.

- The Enhanced Comms card contains a BR1225 coin cell (3.0V lithium, 48mAH)

Batteries these comms cards can be replaced if they reach the end of their life. In order to replace the batteries, power down the annunciator, remove the comms card, replace the battery and refit the comms card. Refer to page 123 for instructions on the disposal of the spent battery.

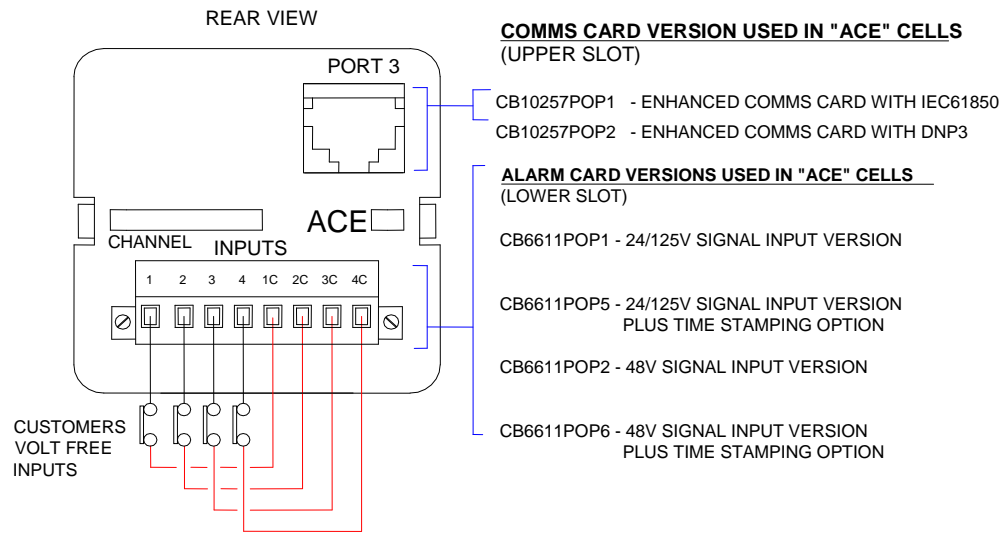**PCE Cell Detail** (Remote **P**ushbutton - **C**omm's Cell)

REAR VIEW

PORT 3

COMMS CARD VERSION USED IN "PCE" CELLS
(UPPER SLOT)
CB10257POP1   - ENHANCED COMMS CARD WITH IEC61850
CB10257POP2   - ENHANCED COMMS CARD WITH DNP3

PCE
PUSHBUTTONS

P1  P2  P3    P4  P5  P6

ALARM CARD VERSIONS USED IN "PCE" CELLS
(LOWER SLOT)
CB9427POP1 – REMOTE PUSHBUTTON CARD

EXTERNAL
PUSHBUTTON
INPUTS
+V
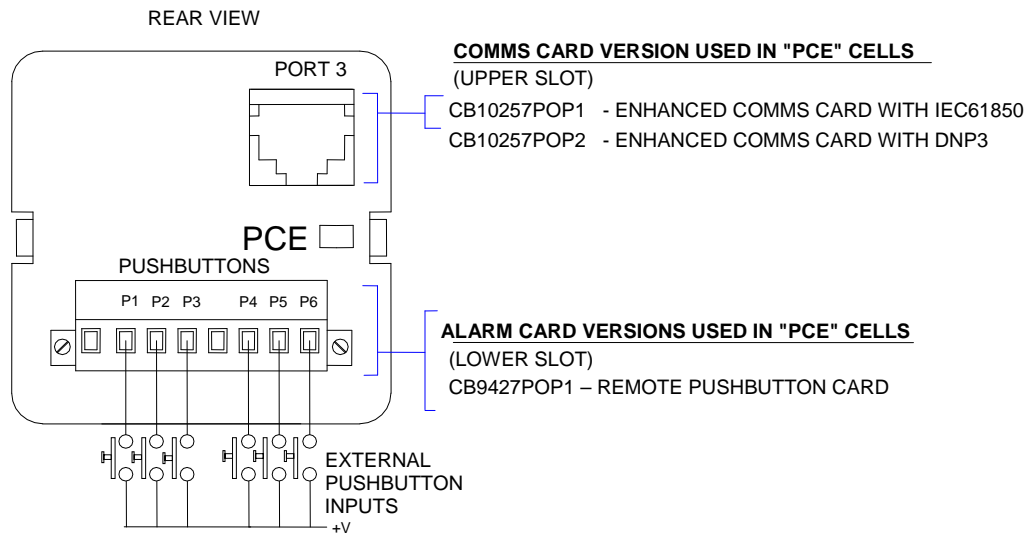
Cell type **PCE** is used to provide:-

- Six 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)

| | **WARNING!** |
|---|---|
| ⚠️ | Remote pushbuttons must be installed in the same enclosure as the 725B/C annunciator. |

Enhanced Comm's Card that provides:

- One Isolated 10/100Mb/s Ethernet port via a standard 8P8C (RJ45) connector.

- The Enhanced Comms card contains a BR1225 coin cell (3.0V lithium, 48mAH)

The battery in this comms card can be replaced it reaches the end of its life. In order to replace the battery, power down the annunciator, remove the comms card, replace the battery and refit the comms card. Refer to page 123 for instructions on the disposal of the spent battery.

## USB Programming Port Location

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

REAR VIEW

**RELAY CARD VERSION USED IN "WR" CELLS**
(LOWER SLOT)

CR1   CR2   CR3   CR4

CB6641POP2   - WATCHDOG / RELAY CARD
FOR USE WITH SYSTEMS NOT EQUIPPED
WITH INTEGARL PUSHBUTTONS

RELAY OUTPUTS

PROGRAMMING
PORT LOCATED
ON UNDERSIDE
OF WR CELL

TX          RX

USB PORT
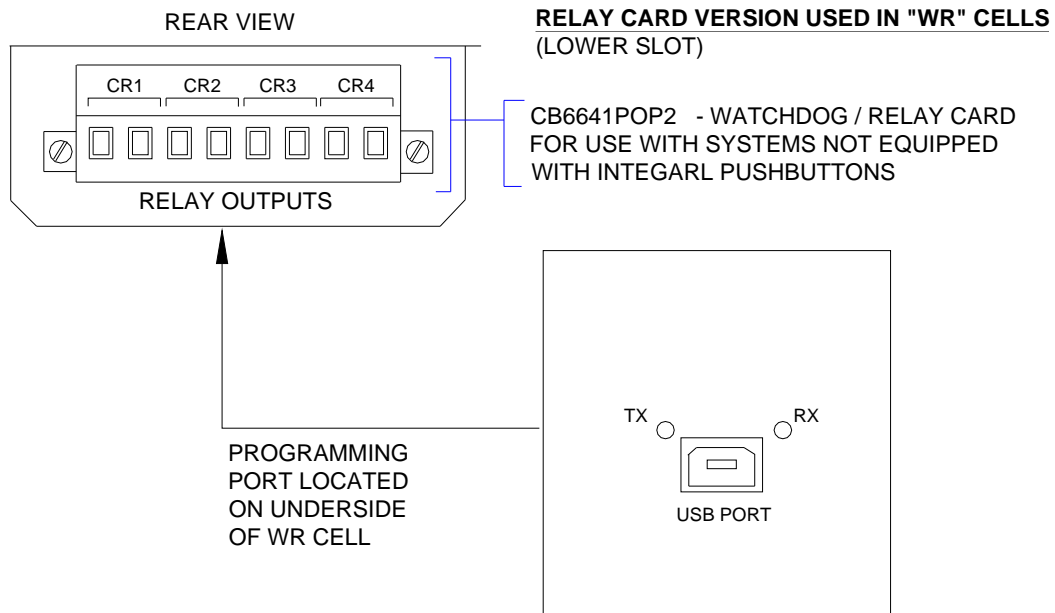
## *SECTION 3 – LOGIC SUPPLY & FUSING*

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

Any external power supply connected to the annunciator must be compliant to UL60950 or EN60950 or suitable equivalent standards.

**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.

REAR VIEW

OV  OV  +V  +V  0VC  +VC

Rx    F1    F2    Tx

(+)

FROM EXTERNAL
24VDC SUPPLY

(OV)

5A / T    1A / F

F1          F2

1A / F

LOGIC        SIGNAL
SUPPLY      SUPPLY
FUSE         FUSE

UNDERSIDE VIEW OF
POWER INPUT CARD
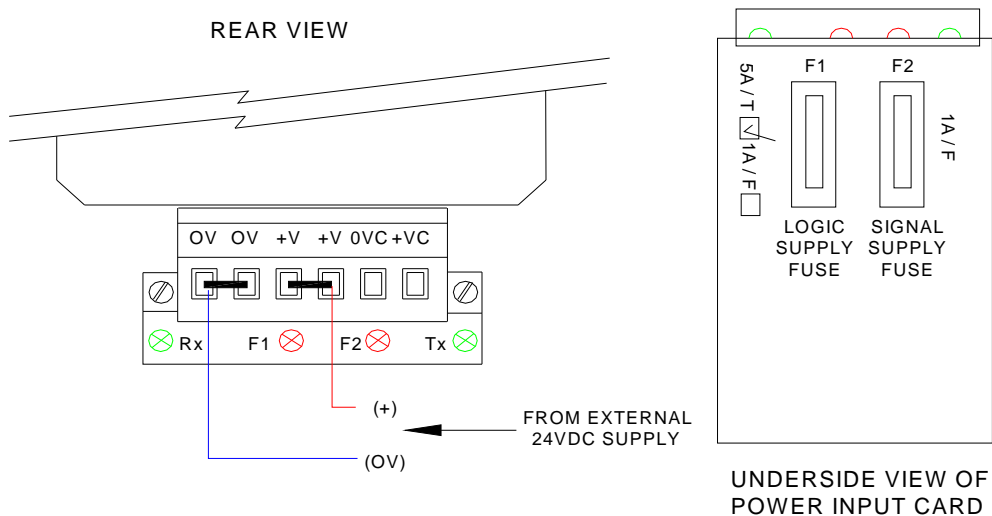
**Fuses**
FU-1A-002 - 5 x 20mm 1A signal supply fuse
FU-5A-003 - 5 x 20mm 5A logic supply fuse

**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.

| | |
|---|---|
| ⚠️ | **WARNING!**<br><br>Any connected equipment powered by the 24Vdc output (e.g. remote pushbuttons, sounders, etc.) MUST be located in the same enclosure as the 725B/C annunciator.<br><br>The annunciator must be powered down before working on any connected equipment. |

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



REAR VIEW

UNDERSIDE VIEW OF POWER INPUT CARD
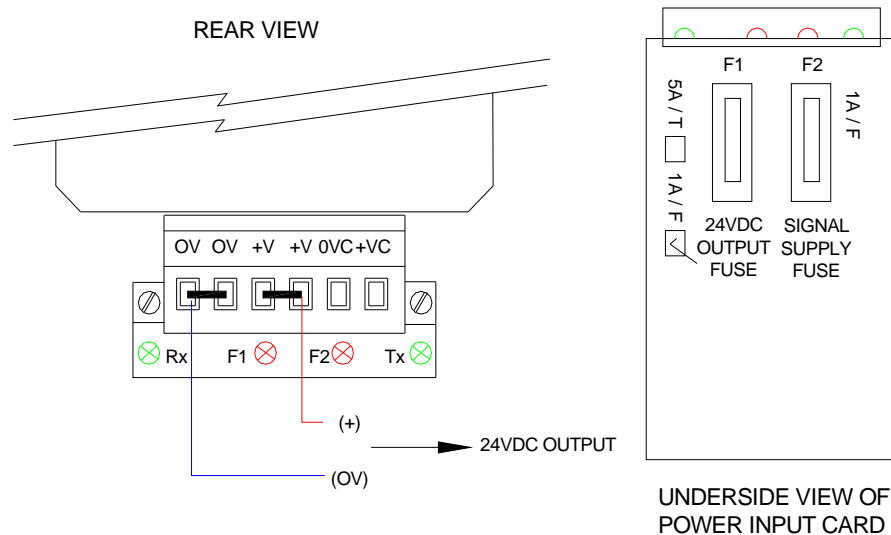
### Fuses
FU-1A-002 - 5 x 20mm 1A signal supply fuse
FU-1A-002 - 5 x 20mm 1A – 24vdc output protection fuse

### 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 – POWER SUPPLY MONITORING

### Power Monitor Relays

On units with integral PSUs each annunciator can be equipped with two integral power monitor relays which provide volt-free contacts for use with 3$^{rd}$ party devices to indicate loss of primary or aux supplies. Both relays provide volt-free changeover contacts for customer use. The power monitor relays are provided on a separate plug-in card in the lower section of the annunciator.

The power monitor relays can be configured as either normally energised or normally de-energised, the factory default setting is energised.  For instructions on how to change this setting, please refer to the 725B Configuration Software manual.

### Power Monitor LED's

2 x Green LED's are provided just below the customer terminals to indicate if the power is present on the primary aux supplies.

- The left-hand LED,(PSU1 LED1), is ON when the aux supply is present and will flash when the aux supply is lost (as long as the primary supply is available to power the LED)

- The right-hand LED,(PSU2 LED2), is ON when the primary supply is present and will flash when the primary supply is lost (as long as the aux supply is available to power the LED)



PRIMARY          AUX

**POWER MONITOR RELAYS**

NO1  R1  NC1  NO2  R2  NC2

CB9413POP1   - SMR CARD

PSU1              PSU2
LED1              LED2
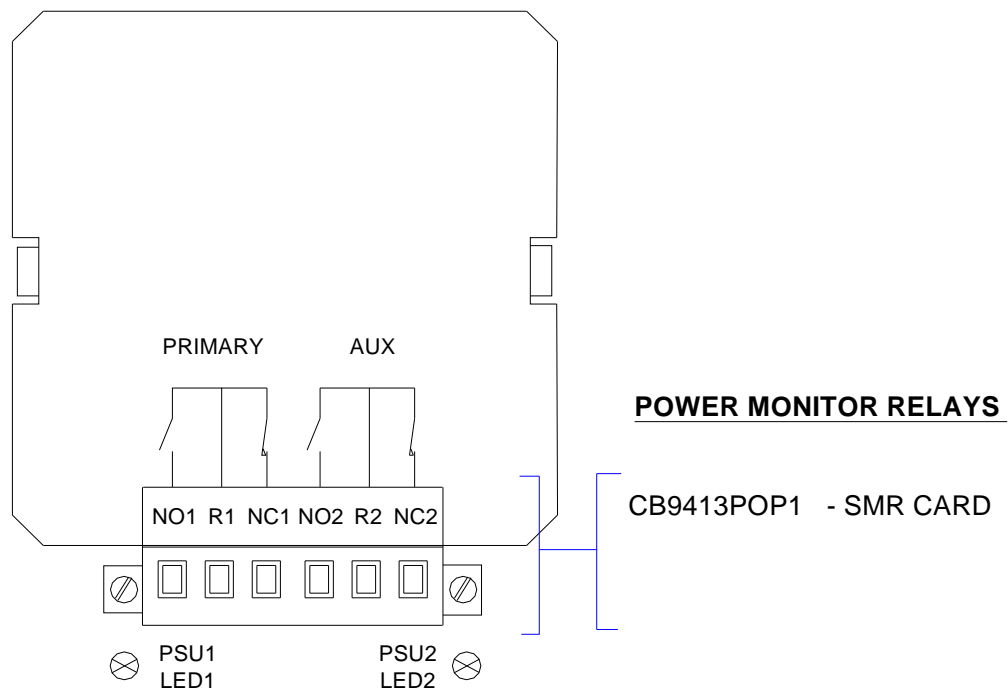
## *SECTION 5 - SIGNAL VOLTAGE SETTING / WIRING*

**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)

| | |
|---|---|
| ⚠️ | **WARNING!**<br>Remove **ALL** power from the unit and fully remove the card before changing any jumpers |

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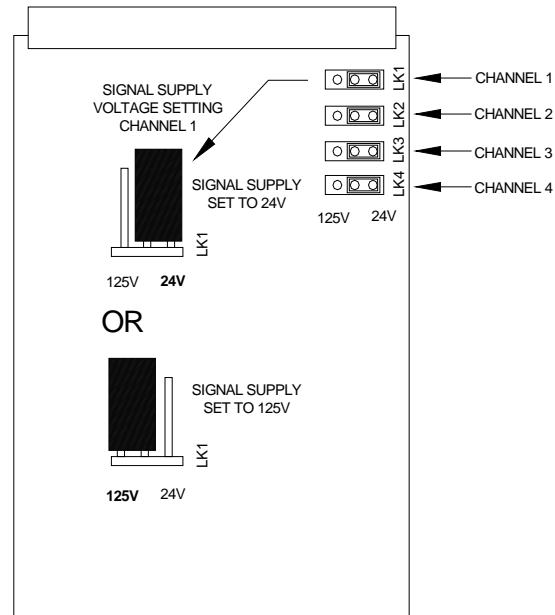
The settings are available on the following (4) channel alarm cards

**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**

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

**Setting Inputs for use with 48VAC**

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

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 or 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)"

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

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

**Differential Input Versions**

*Card Type*          *Features*
*CB6611POP10*        *48V Differential Signal Inputs*
*CB6611POP12*        *48V 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
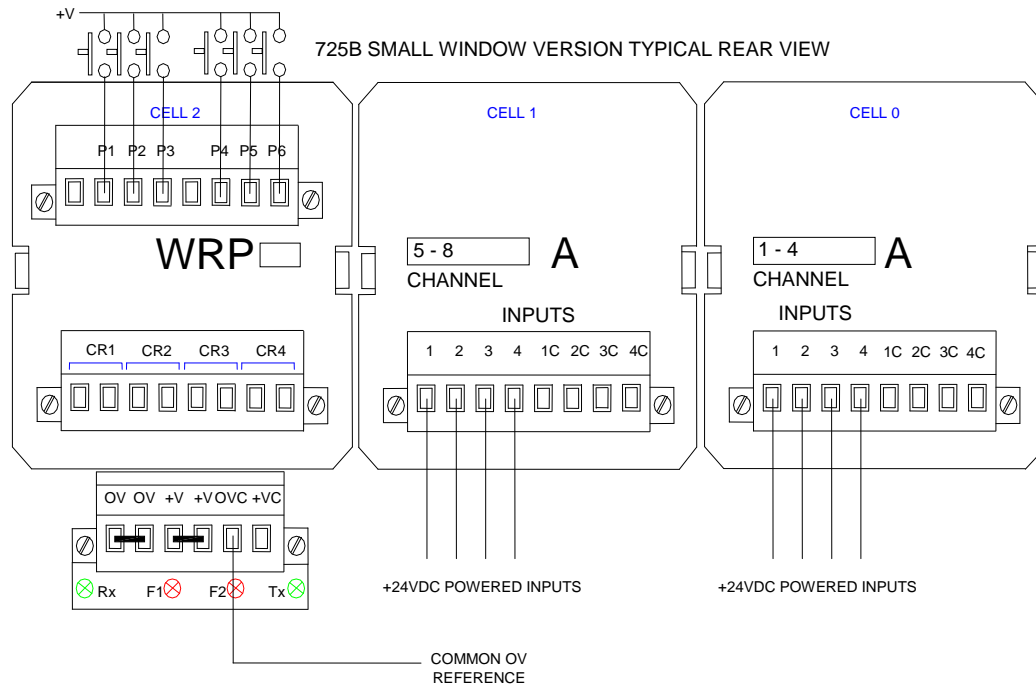


Each channel on the alarm card is provided with a 3 pin header and 2 way shorting bar which allows the user to select the inputs to operate on 24V

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

In these applications the user needs to connect the OV of the 3$^{rd}$ 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
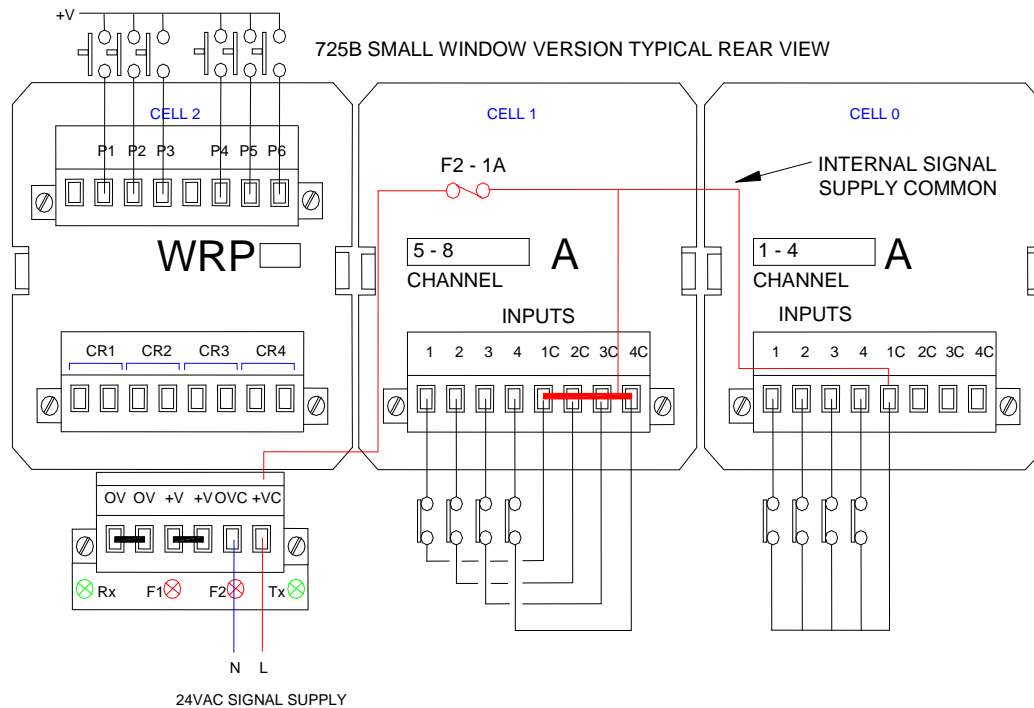


Each channel on the alarm card is provided with a 3 pin header and 2 way shorting bar which allows the user to select the inputs to operate on 24V

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
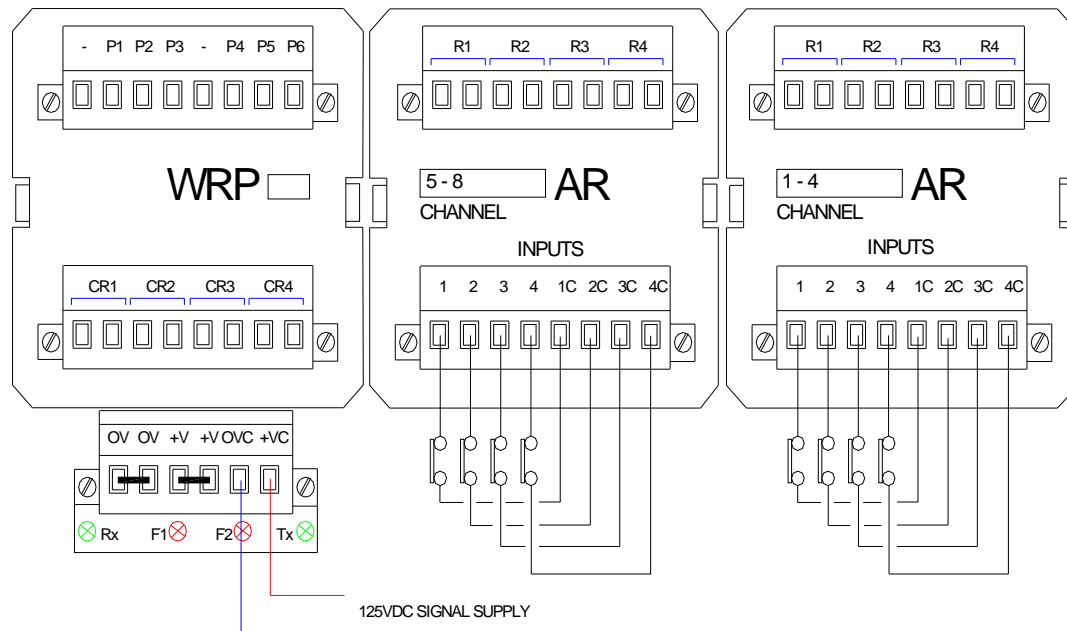


Each channel on the alarm card is provided with a 3 pin header and 2 way shorting bar which allows the user to select the inputs to operate on 125V.

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)"
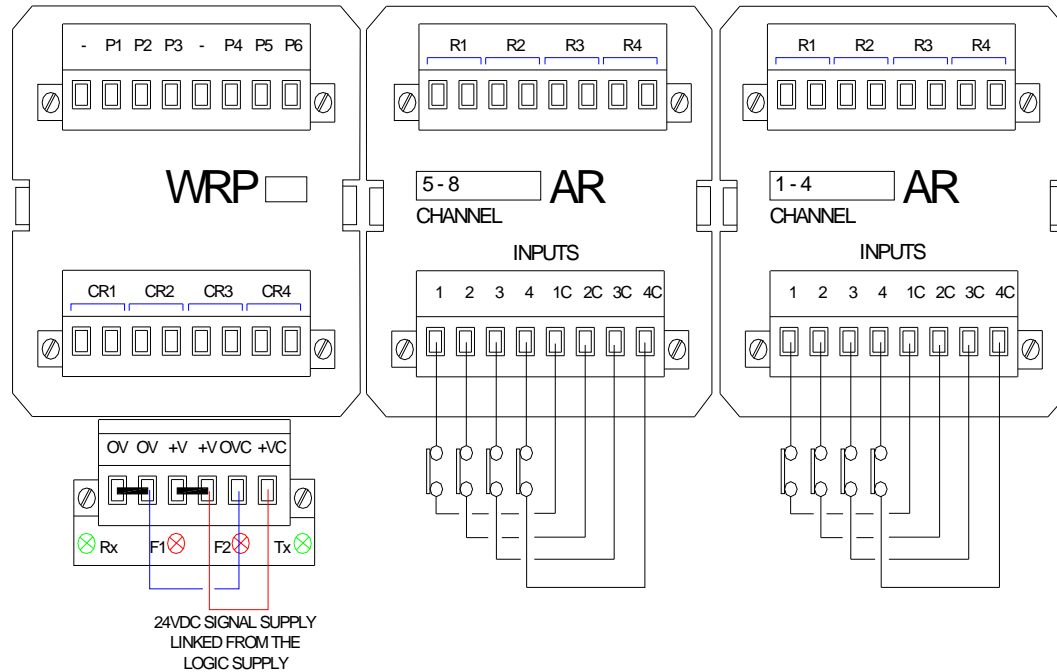
## Optional 125VAC Signal Input Wiring
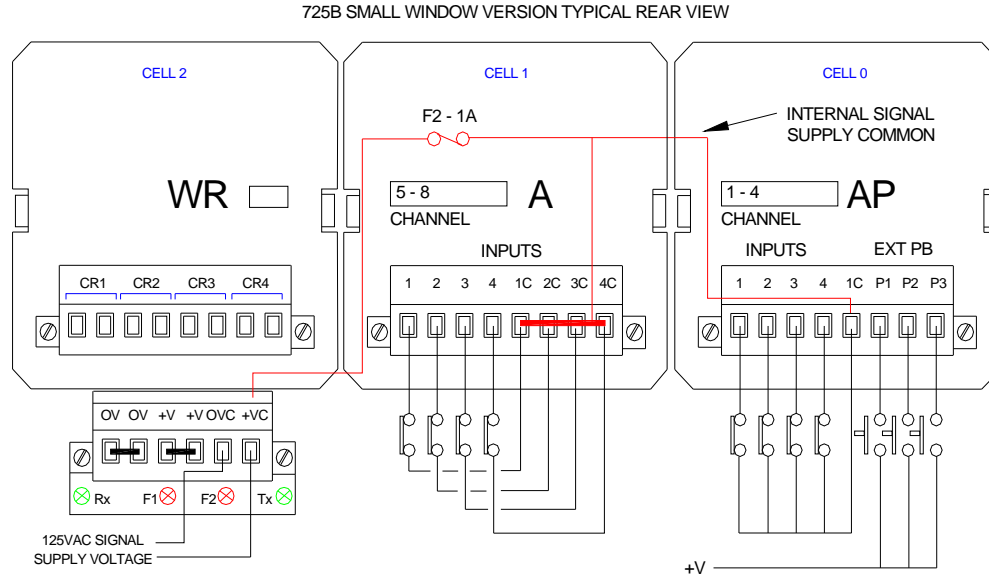
725B SMALL WINDOW VERSION TYPICAL REAR VIEW



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

725B SMALL WINDOW VERSION TYPICAL REAR VIEW
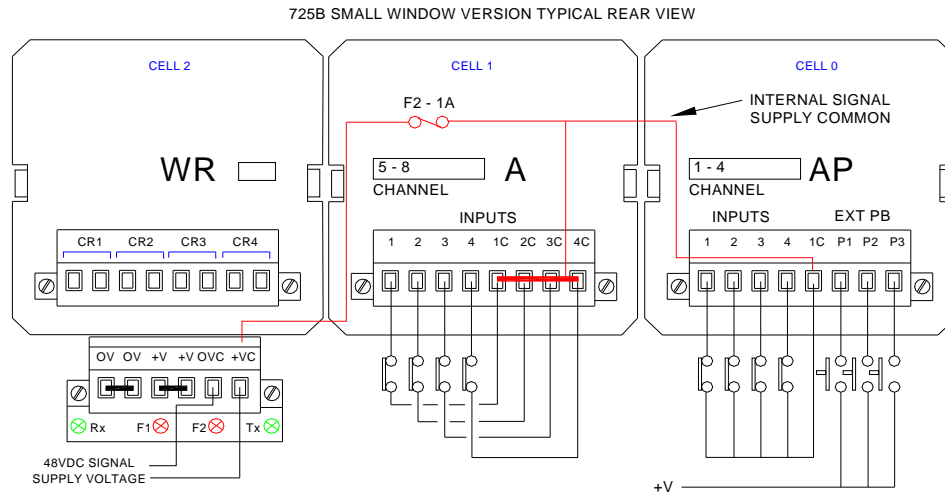


Note:- In applications that require 48VDC signal inputs RTK supply optional 4 channel alarm cards in place of the standard version

### 48VDC Signal Supply
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

725B SMALL WINDOW VERSION TYPICAL REAR VIEW
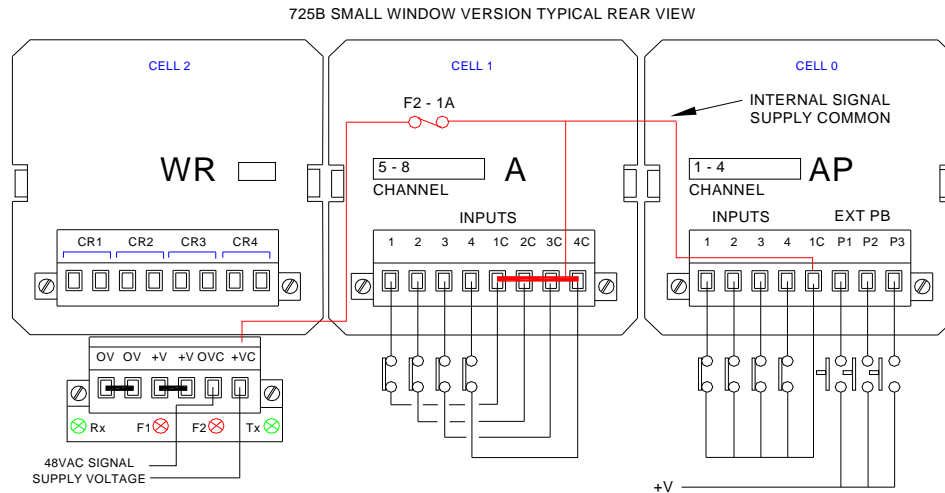


Note:- In applications that require 48VAC signal inputs RTK supply optional 4 channel alarm cards in place of the standard version

### 48VAC Signal Supply
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 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.

725B SMALL WINDOW VERSION TYPICAL REAR VIEW
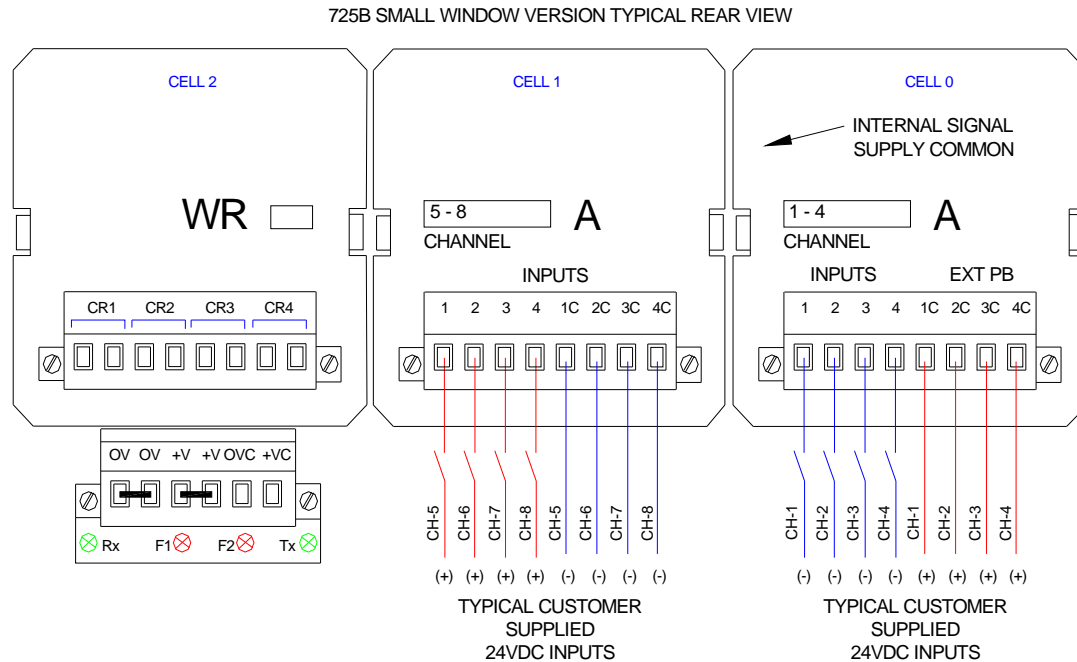


In the above typical example cell 0 is shown with OV switched inputs and cell 1 is shown with +24V switched inputs

## 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 Version
Each (4) channel alarm card is set for use with 48V.

**Note**: When differential inputs are used OV to OVC and +V to +VC must be linked otherwise a permanent FC fault will appear.

## SECTION 6 – COMMON RELAYS

REAR VIEW

WR

**RELAY CARD VERSION USED IN "WR" CELLS**
(LOWER SLOT)

CR1     CR2     CR3     CR4

CB6641POP1   - WATCHDOG / RELAY CARD

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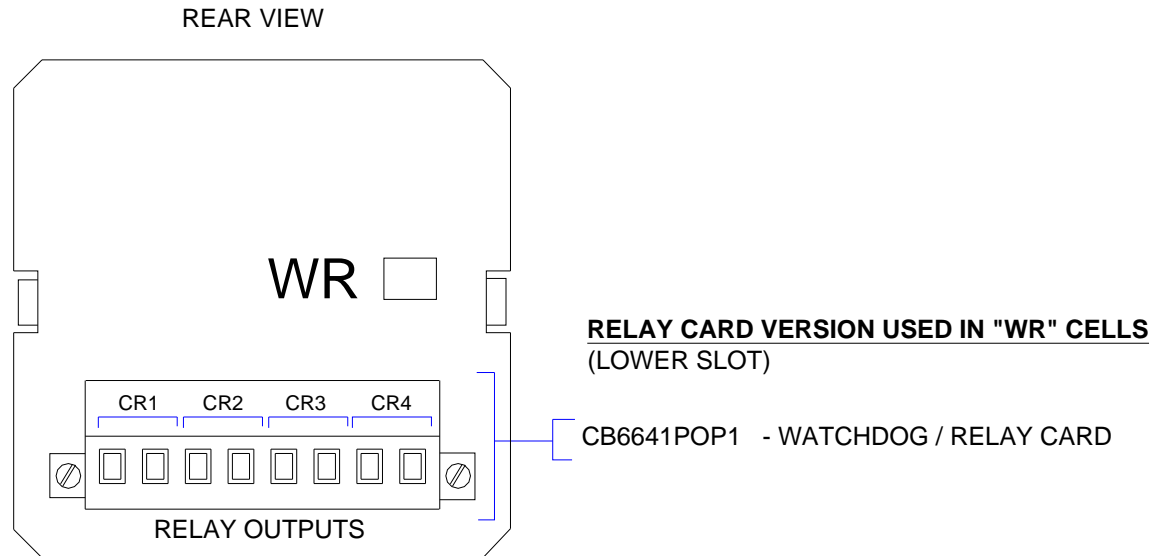
Four common relays are located in the WR Cell within the Annunciator as shown above.

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.

| | **WARNING!** |
|---|---|
| ⚠ | Remove **ALL** power from the unit and fully remove the card before changing any jumpers |

RELAY
CONTACT
STATE

NORMALLY
CLOSED

**NO** LK4 **NC**

OR

NORMALLY
OPEN

**NO** LK4 **NC**

**NO** LK4 **NC**    **NO** LK3 **NC**    **NO** LK2 **NC**    **NO** LK1 **NC**

RL4        RL3        RL2        RL1

SW1

CARD ADDRESS
DIL SWITCH SW1

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 3$^{rd}$ 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 7– 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 3<sup>rd</sup> 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

| ⚠ | **WARNING!** |
|---|---|
| | Remove **ALL** power from the unit and fully remove the card before changing any jumpers |



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 1$^{st}$ 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.



**Dual Repeat Relays**

If Dual Repeat Relay outputs are required two channel alarm cards are used with the optional four channel relay card and the card defaults to:-

- Channel 1 providing outputs on relay R1 and relay R2
- Channel 2 providing outputs on relay R3 and relay R4

**Last Card in the System**

If the number of alarms in the annunciator means the last alarm card is not fully utilised the spare relays are automatically assigned as follows

On systems which use two channels, the card defaults to:-

- Channel 1 providing outputs on relay R1 and relay R2
- Channel 2 providing outputs on relay R3 and relay R4

On systems which use 1 channel, the card defaults to:

- Channel providing outputs on relay, R1, R2, R3 and R4

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 relay card.

## SECTION 8 - 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)
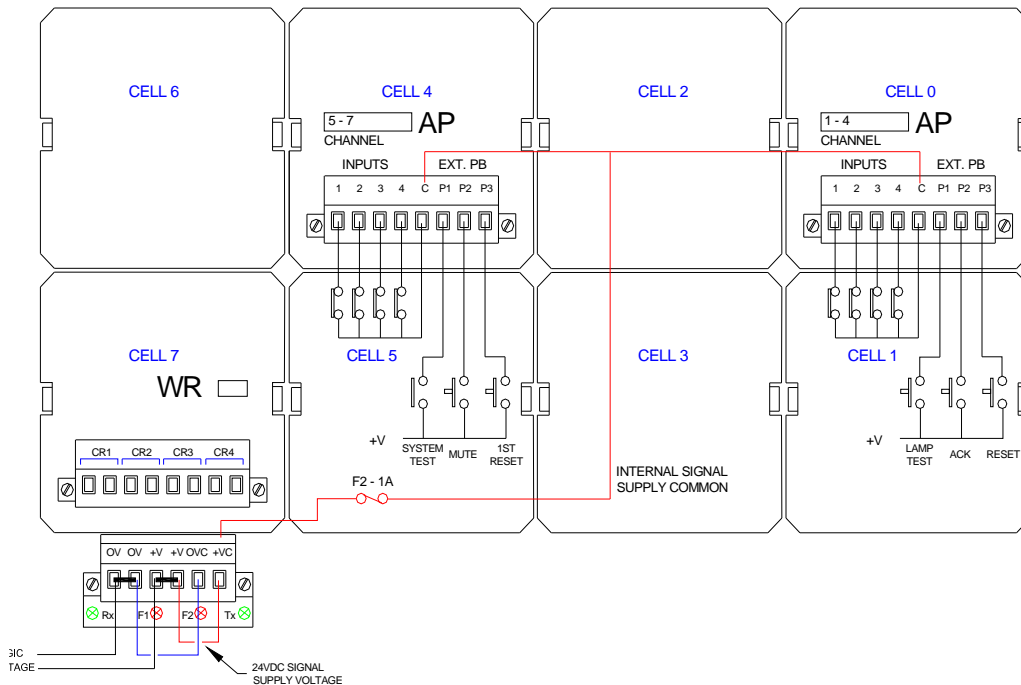


The above rear view shows a typical large window 725B annunciator 4 cells wide x 2 cells high with seven active alarms, common relay card and an integral pushbutton module.

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),
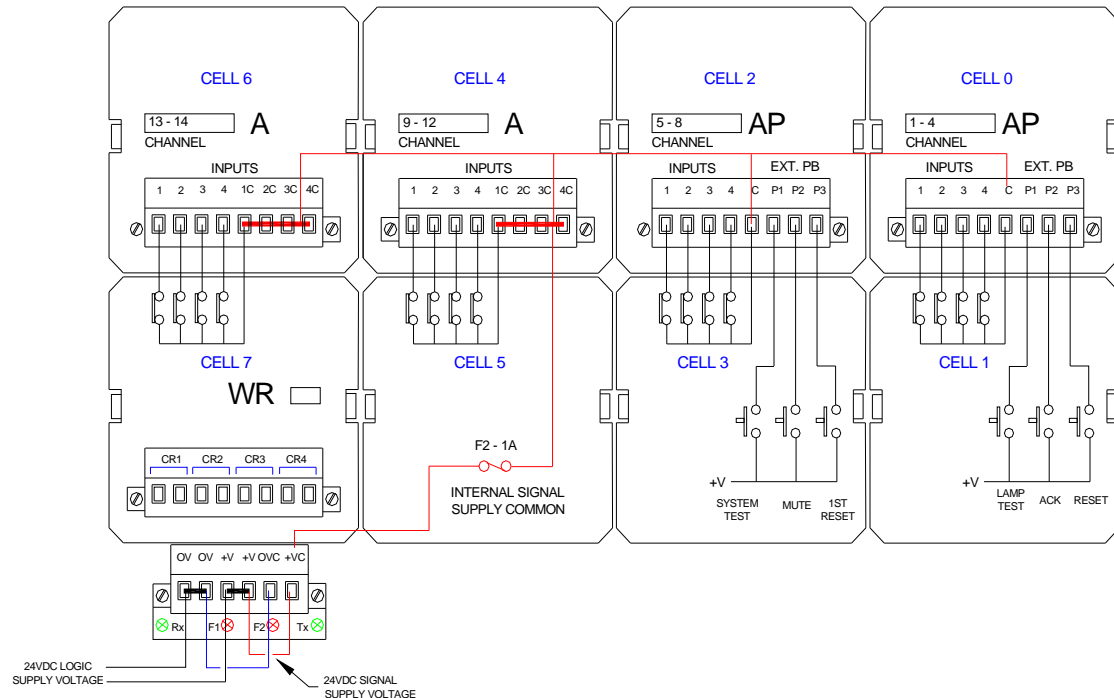


The above rear view shows a typical medium window 725B configured 4 cells wide x 2 cells high with fourteen active alarms, common relay card and an integral pushbutton module.

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** = 1$^{st}$ 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),
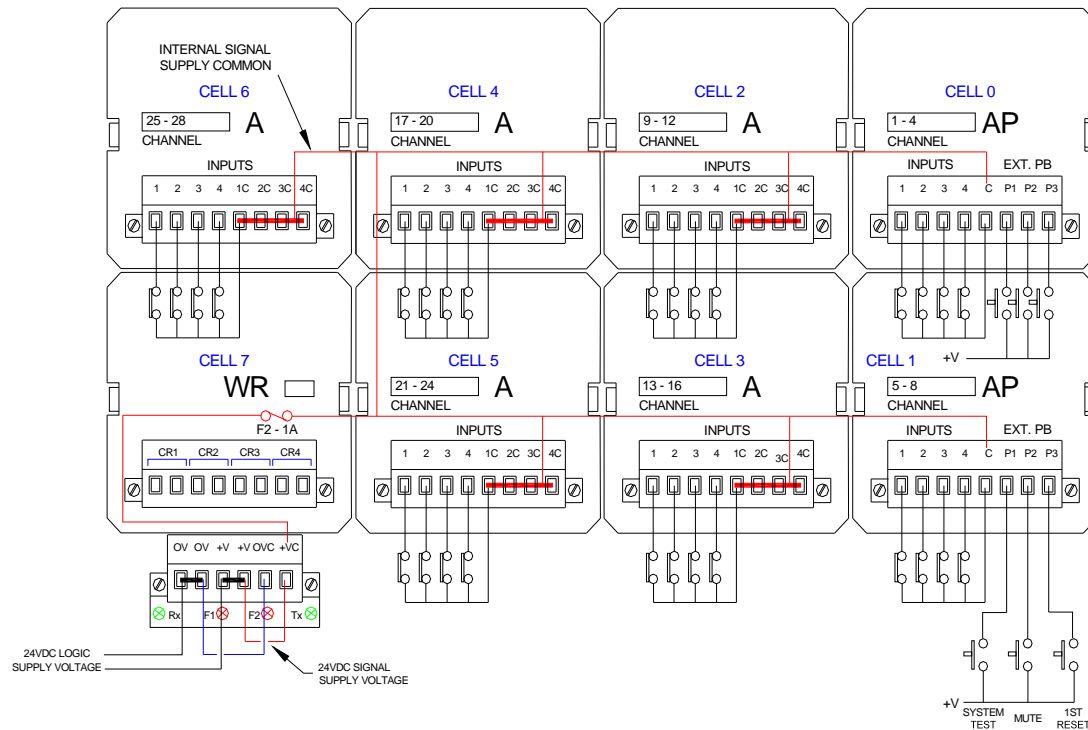


The above rear view shows a typical small window 725B configured 4 cells wide x 2 cells high with twenty eight active alarms, common relay card and an integral pushbutton module.

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 9 - 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 auxiliary 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.

### Basic principles of handling

There are some basic principles that everyone should observe prior to carrying / lifting a large annunciator:

- Ensure that the object is light enough to lift, is stable and unlikely to shift or move.
- If the object is two heavy or awkward for one person to safely lift ask for help or use a handling aid.
- Make sure the route is clear of obstructions.
- Make sure there is somewhere to put the load down wherever it is to be moved to.
- Stand as close to the load as possible, and spread your feet to shoulder width.
- Bend your knees and try and keep the back's natural, upright posture.
- Grasp the load firmly as close to the body as you can.
- Use the legs to lift the load in a smooth motion as this offers more leverage reducing the strain on your back.
- Carry the load close to the body with the elbows tucked into the body.
- Avoid twisting the body as much as possible by turning your feet to position yourself with the load.

| | **WARNING!** |
|---|---|
| ⚠ | Installation, configuration and maintenance of this annunciator must only be performed by competent service personnel |

### 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**

| | WARNING! |
|---|---|
| ⚠️ | This annunciator is designed for panel mounting. The rear portion of the annunciator must be protected by an enclosure that is at least IP30 and can only be accessed using a key or tool. Access to the rear enclosure must be limited to service personnel only. |

| 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 dependent 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 10- SPECIFICATIONS*

**Logic power**
24VDC (19 – 28VDC)

**Power Supplies**

1. **Integral power supplies**
   Universal Input Type capable of accepting
   85 – 264VAC OR
   88 – 300VDC

   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 or 125V 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

**Surge Withstand – Oscillatory**
> ANSI C37.90.1

**Electrical Fast Transient/Burst Immunity**
> IEC 61000-4-4

**Surge Immunity**
> IEC 61000-4-5

**Low Voltage Directive**
> EN 61010-1:2010
> IEC61010-2-201

**Approvals**

> N/A

## SECTION 11 - 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 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 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 |

**Remote Pushbutton Card**

| Part No | Description |
|---|---|
| CB9427POP1 | Remote Pushbutton Card |

**SMR Card**

| Part No | Description |
|---|---|
| CB9413POP1 | SMR Card |

**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 |
| CB6617POP2 | Integral Universal Input Power Supply Card MOD1 |

**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 |
| CB10257POP1 | Enhanced Comm's Card with IEC61850 |

**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-5A-004 | Logic   Supply Fuse 5 x 20 mm 5A |

**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-T |
| FU-0.5A-001 | Primary Supply Fuse 5 x 20mm 0.5A-T |

## *SECTION 12- SERVICING*

**Module Removal**

| | **WARNING!** |
|---|---|
| ⚠️ | Installation, configuration and maintenance of this annunciator must only be performed by competent service personnel |

| | **WARNING!** |
|---|---|
| ⚠️ | The 725B & 725C systems described herein operate 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 ensure that the annunciator is powered down before working on the unit or any connected apparatus. |

| | **WARNING!** |
|---|---|
| ⚠️ | Hazardous voltages may exist on the rear connections of the annunciator. Remove all power before removing any cover or connector. Ensure all covers and connectors are fully secured before restoring power. |

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

To remove a card we recommend the following procedure:-

REAR VIEW

LOCKING TABS

5 - 8
CHANNEL          A

INPUTS

1   2   3   4   1C  2C  3C  4C

TERMINAL
BLOCK
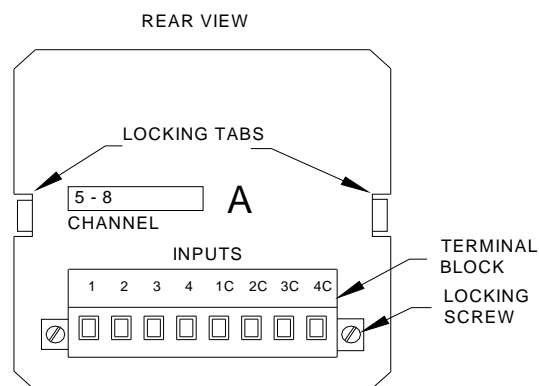
LOCKING
SCREW

1.  Isolate all of 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.

### Connected Equipment

Equipment such as remote push buttons or sounders may be connected to the 24V power output of the annunciator.

| | **WARNING!** |
|---|---|
|  | The 725B & 725C systems described herein operate on a logic voltage of 24VDC and as standard 24VDC is used for the field contact supply voltage.<br><br>Internal or External power supplies using higher voltage AC/DC primary sources and optional high voltage field contact voltages may be present.<br><br>If this is the case ensure that the annunciator is powered down before working on any connected equipment. |

## 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.

| ⚠ | **WARNING!**<br>Remove **ALL** power from the unit and fully remove<br>the card before changing any switches |
|---|---|
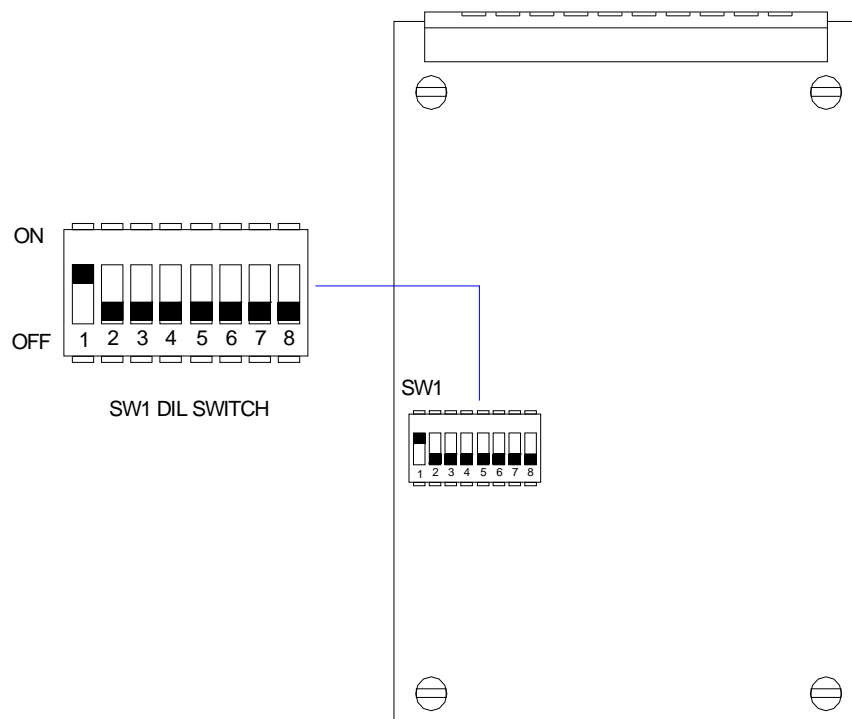


The first card in the system, top right hand corner when viewed from the rear, is factory set to Address 0 and the remaining cards require their own unique address for the system to operate correctly. The factory default regarding addressing varies according to window size.

**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:

| CELL 6 | CELL 4 | CELL 2 | CELL 0 |
|---|---|---|---|

25 - 28  A    17 - 20  A    9 - 12  A    1 - 4  AP
CHANNEL      CHANNEL      CHANNEL      CHANNEL        EXT. PB
INPUTS       INPUTS       INPUTS       INPUTS
1 2 3 4 1C 2C 3C 4C   1 2 3 4 1C 2C 3C 4C   1 2 3 4 1C 2C 3C 4C   1 2 3 4 C P1 P2 P3

| CELL 7 | CELL 5 | CELL 3 | CELL 1 |
|---|---|---|---|

WR           21 - 24  A    13 - 16  A    5 - 8  AP
             CHANNEL      CHANNEL      CHANNEL        EXT. PB
                          INPUTS       INPUTS       INPUTS
CR1 CR2 CR3 CR4   1 2 3 4 1C 2C 3C 4C   1 2 3 4 1C 2C 3C 4C   1 2 3 4 C P1 P2 P3

OV OV +V +V OVC +VC

Rx    F1    F2    Tx
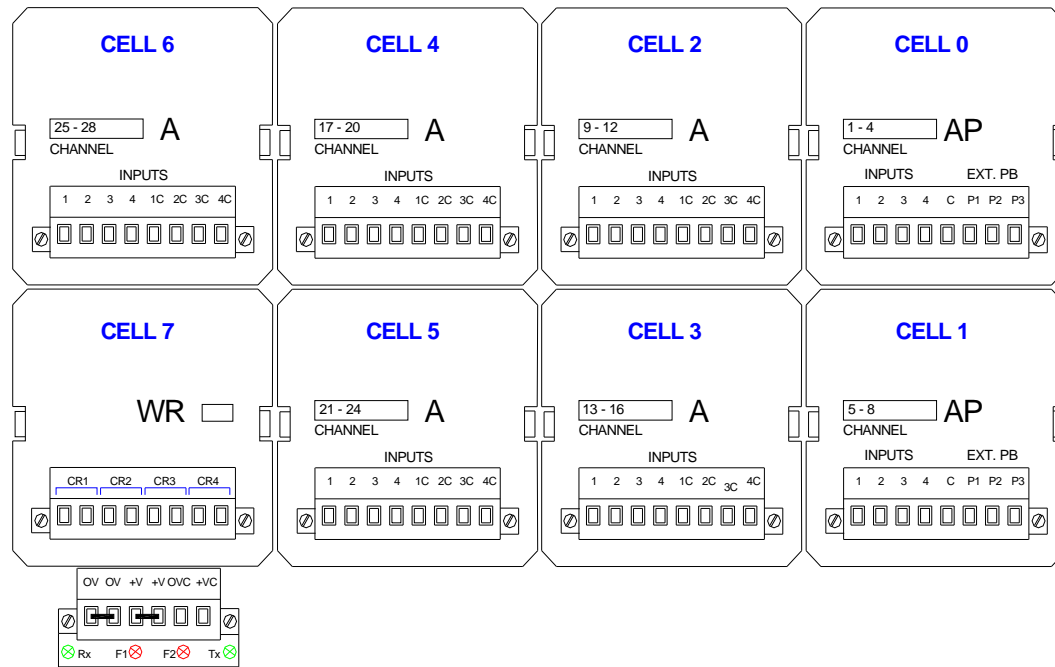
| Card | Cell Type | Cell | Address |
|------|-----------|------|---------|
| 1 | AP | 0 | 0 |
| 2 | AP | 1 | 1 |
| 3 | A | 2 | 2 |
| 4 | A | 3 | 3 |
| 5 | A | 4 | 4 |
| 6 | A | 5 | 5 |
| 7 | A | 6 | 6 |
| 8 | WR | 7 | 7 |

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:
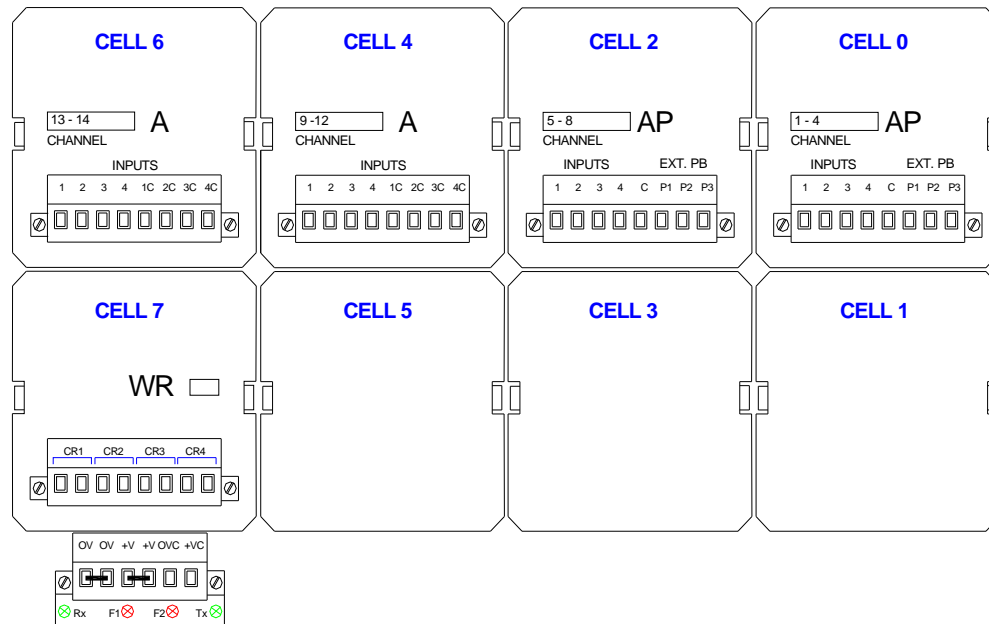
| | CELL 6 | | CELL 4 | | CELL 2 | | CELL 0 |
|---|---|---|---|---|---|---|---|
| | 13 - 14   A | | 9 -12   A | | 5 - 8   AP | | 1 - 4   AP |
| | CHANNEL | | CHANNEL | | CHANNEL | | CHANNEL |
| | INPUTS | | INPUTS | | INPUTS      EXT. PB | | INPUTS      EXT. PB |
| | 1  2  3  4  1C 2C 3C 4C | | 1  2  3  4  1C 2C 3C 4C | | 1  2  3  4  C  P1 P2 P3 | | 1  2  3  4  C  P1 P2 P3 |

| | CELL 7 | CELL 5 | CELL 3 | CELL 1 |
|---|---|---|---|---|
| | WR | | | |
| | CR1  CR2  CR3  CR4 | | | |
| | OV OV +V +V OVC +VC | | | |
| | Rx    F1    F2    Tx | | | |

| 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:

| CELL 6 | CELL 4 | CELL 2 | CELL 0 |
|---|---|---|---|

CELL 4: 9 -12 CHANNEL AP
INPUTS        EXT. PB
1  2  3  4  C  P1 P2 P3

CELL 0: 1 - 4 CHANNEL AP
INPUTS        EXT. PB
1  2  3  4  C  P1 P2 P3

| CELL 7 | CELL 5 | CELL 3 | CELL 1 |
|---|---|---|---|

CELL 7: WR
CR1   CR2   CR3   CR4
OV  OV  +V  +V OVC +VC
Rx     F1     F2     Tx
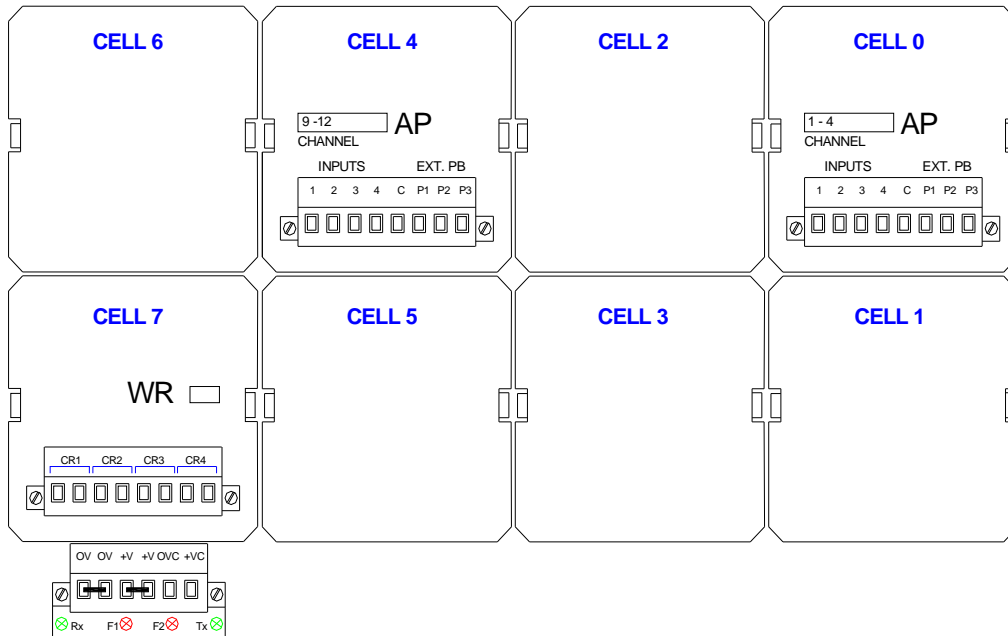
| Card | Cell Type | Cell | Address |
|---|---|---|---|
| 1 | AP | 0 | 0 |
| 2 | AP | 4 | 4 |
| 3 | WR | 7 | 7 |

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 13 – CONTACT / RETURNS*

Measurement Technology Limited
Great Marlings
Butterfield
Luton
LU2 8DL
United Kingdom

### Telephone / Fax Number List

Telephone: 0044 (0) 1582 723633
        Fax: 0044 (0) 1582 422283

### Procedures for Factory Repair and Return Warranty

Should you require to return an annunciator, please contact MTL for details.

## *SECTION 14 – 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 $3^{rd}$ 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

654321
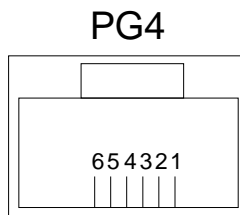
1. TXa
2. No Connection
3. OV
4. RXb
5. TXb
6. RXa

**Standard Comms Version**

725B annunciators supplied with standard comms are provided with 2 ports:

- Port-2 provides an isolated RS485 Port
- Port-4 provides a standard 8P8C (RJ45) Ethernet connection

**Serial Ports**
725B annunciators supplied with standard comms are provided with the following communications protocols via Port-1 and Port-2

- RTK AMS
- Modbus RTU
- Modbus ASCII
- Wharton Time Sync

**Communications Addresses**
Each port within the comms card is provided with a software configurable node address.

**Port 1**
**Connection Details**

An Industry standard RJ11 connector is provided on the XS/FC485 communication card which provides the following connections:-

PG4

6 5 4 3 2 1
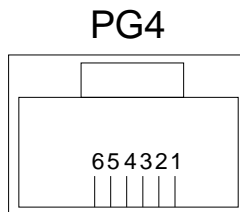
1. TXa
2. No Connection
3. OV
4. RXb
5. TXb
6. RXa

**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   2   3   4   5
  ○   ○   ○   ○   ○
      ○   ○   ○   ○
      6   7   8   9
```
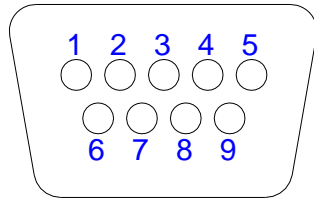
1 – Sync+
2 – RxA
3 – TxB
4 – Spare
5 – GND
6 – Sync -
7 – RxB
8 – TxA
9 - Spare

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 an10/100Mb/s Ethernet port which allows connection to an Ethernet network via a standard 8P8C (RJ45) connection.

## Typical Connections

**725B**



2 WIRE

**725B**



4 WIRE
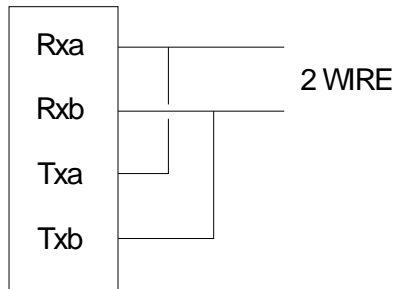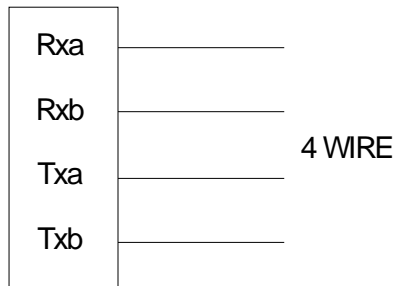
### Ethernet Ports
725B annunciators supplied with standard comm's are provided with the following communications protocols via Port 4:-

- SNTP (Simple Network Time Protocol) Client

### Port 4 Connection Details
Port 4 is an Ethernet port which allows connection to an Ethernet network via a standard 8P8C (RJ45) connection.

### Network Address
The IP address, Subnet mask and gateway address are configurable in the configuration software.

For the SNTP protocol the server IP address is configurable in the configuration software.

**Enhanced Comm's Version**

725B annunciators supplied with Enhanced comm's are provided with an additional Ethernet port with the following Protocols:

- IEC61850 Server

**Port 3 Connection Details**

Port 3 is an Ethernet port which allows connection to an Ethernet network via a standard 8P8C (RJ45) connection.

**Network Address**

The IP address, Subnet mask and gateway address are configurable in the configuration software.

## *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] |

| | START | ADDRESS | FUNCTION | REGISTER ADDRESS | NO OF REGISTERS | ERROR CHECK | STOP |
|---|---|---|---|---|---|---|---|
| RTU | 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] |

| | START | ADDRESS | FUNCTION | BYTE COUNT | DATA | ERROR CHECK | STOP |
|---|---|---|---|---|---|---|---|
| RTU | 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 Abnormal
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 1st Jan 2012 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 Abnormal
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 Abnormal
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 Abnormal
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 | 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 | 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.

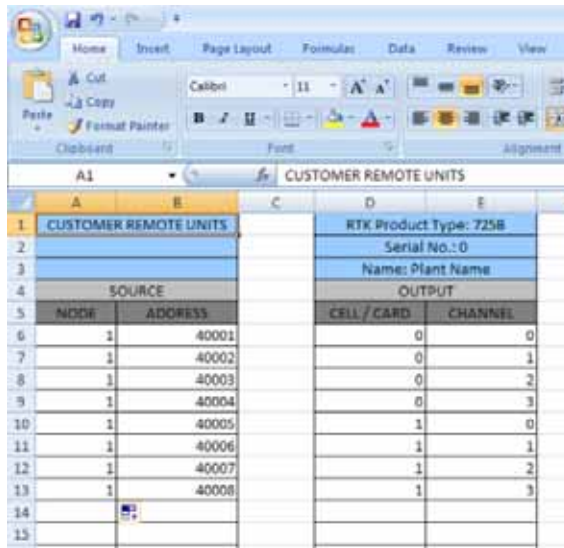The example below shows 3 separate blocks with one block with gaps.

| | SOURCE | | | OUTPUT | |
|---|---|---|---|---|---|
| | NODE | ADDRESS | | CELL / CARD | CHANNEL |
| CUSTOMER REMOTE UNITS | | | | RTK Product Type: 725B | |
| | | | | Serial No.: 0 | |
| | | | | Name: Plant Name | |
| 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 |

First block has node address 1, start register 40001 and 8 registers
2$^{nd}$ Block has node address 2, start register 40001 and 8 registers
3$^{rd}$ block has node address 3, start address 40001 and 15 registers with registers 40005, 40006 and 400013 unused.

**One to one Mapping**



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 656, 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.**

**IEC61850 Server**

The IEC61850 is available on Port 3 and can provide the following data onto the network:

- Input Status
- Alarm Status
- Pushbutton status
- Internal Status
- Disable Status

This data will be time stamped to 1ms and will be available via polling or buffered reporting (RCB's).

**NOTE: Each event type must be enabled via the configuration software to make it available on the IEC61850 network.**

The P725B can also be configured to allow for the following to be controlled on the annunciator via IEC61850 using Single point control (SPC):

- Inputs
- Pushbuttons

**NOTE: Inputs and pushbuttons must be configured as Remote to be controlled via IEC61850**

As default the device is loaded a Generic SCL file, which is taken from the ICD file for the device.  The default IED name will be P725B.
As default the following configuration will be provided:

**BRCB's**
- Rep1 - reporting data and quality change of Input dataset
- Rep2 - reporting data and quality change of Internal dataset
- Rep3 - reporting data and quality change of pushbutton dataset
- Rep4 - reporting data and quality change of card_status dataset
- Rep5 - reporting data and quality change of alarm dataset

**NOTE: Event type must be enabled in RTK configuration software otherwise no data change will be reported**

**Datasets**
- Internal - All internal status inc quality and timestamp
- Card_Status - All alarm card status inc quality and timestamp
- Pushbuttons - All pushbutton inc quality and timestamp
- Input_Status - All input channels status only
- Inputs - All input status inc quality and timestamp
- Alarms - All alarm status inc quality and timestamp
- Disable - All disable status inc quality and timestamp

**Note:  if device has more than 100 inputs then these will be spilt across 2 data sets.**

**GOOSE**
Not enabled as default, as inputs are set to be provided via reporting.
To enable GOOSE add a GCB to the SCL configuration, but note a data object/attribute can only be reported via GOOSE or Reporting.

For full details of the IEC61850 protocol implementation refer to the PICS, MICS, TICS and PIXIT provided with the device.

IP address, subnet mask and gateway can be configured via the RTK configuration software.

The following application notes are available:

- **Updating SCL file in device** - detailing how to update the SCL file on the device and updated the IED reference name.

- **GOOSE subscriber setup** - detailing how to configure the IEC61850 as a GOOSE subscriber, which can be used to control the inputs from an external IED's GOOSE messages.  (Binary output data only)

**SNTP Client**

The SNTP client is available on Port 4 and can be used to synchronise the annunciator with network time.

The IP address, of the Server that will provide the time to the device, can be configured via the configuration software.

When a valid time message is received it can take up to 30 seconds for the device to fully synchronise all the cards in the unit.

To determine the SNTP message is valid the client checks the following fields in the SNTP data:

Server IP address – Checks the message is sent from the configured server
Mode – Checks the message is from a Server type
Stratum – Checks the stratum is not 0 (kiss of death packet)
Originate Timestamp – Checks the timestamp of the request matches the originate time in the response back from the Server.
Transmit timestamp – Checks the transmit timestamp from the server is not 0.

If the client receives an invalid response or no response it will double its poll time after every request it sends.  A comm's error will also be shown on the device.
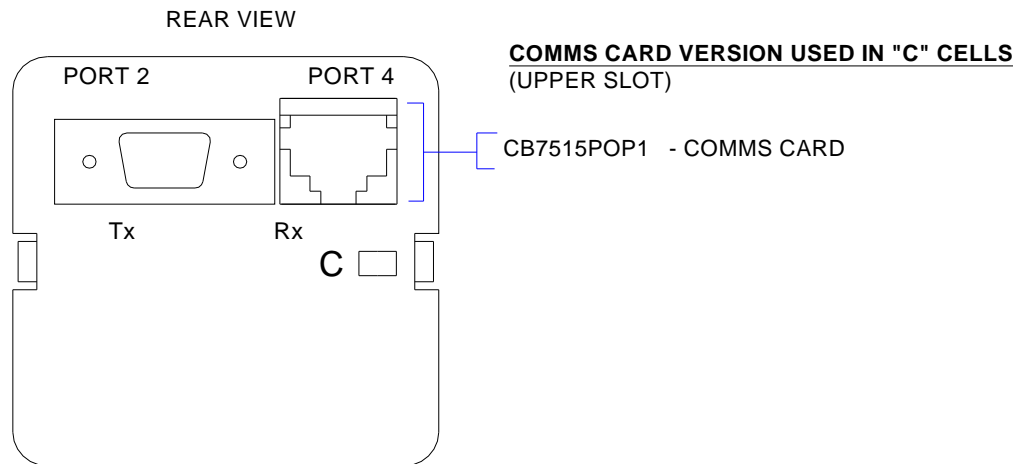
So if for example the poll time is set to 60 seconds in the configuration software, the first poll will happen after 60 seconds if no valid response, the next message will be sent after 120 secs, then 240 etc.

This will continue until the maximum poll time of 3600 seconds is reached.

Once a valid response is received this will be reset to the configured poll time.

## *SECTION 15– Standard Comms Card Detail*

REAR VIEW

PORT 2          PORT 4

**COMMS CARD VERSION USED IN "C" CELLS**
(UPPER SLOT)

CB7515POP1   - COMMS CARD

Tx              Rx

C

2 ports are located in the C Cell within the Annunciator as shown above.

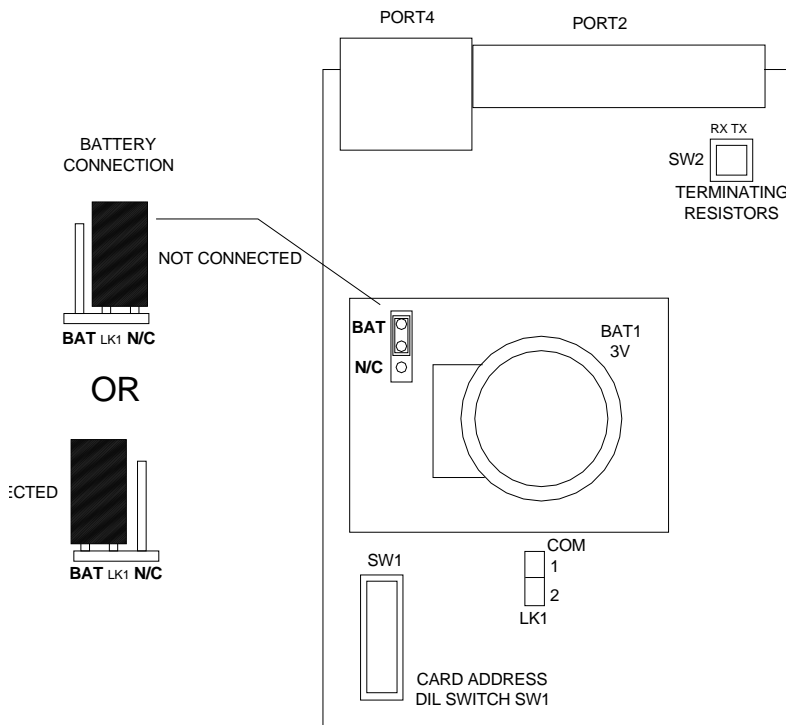Port 2 gives an isolated RS485 port with the following pin out:

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 8P8C (RJ45) connection.

| | **WARNING!** |
|---|---|
| ⚠ | Remove **ALL** power from the unit and fully remove the card before changing any jumpers |

### 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.

## SECTION 16 – Enhanced Comms Card Details

Enhanced comms provides an additional Ethernet port.
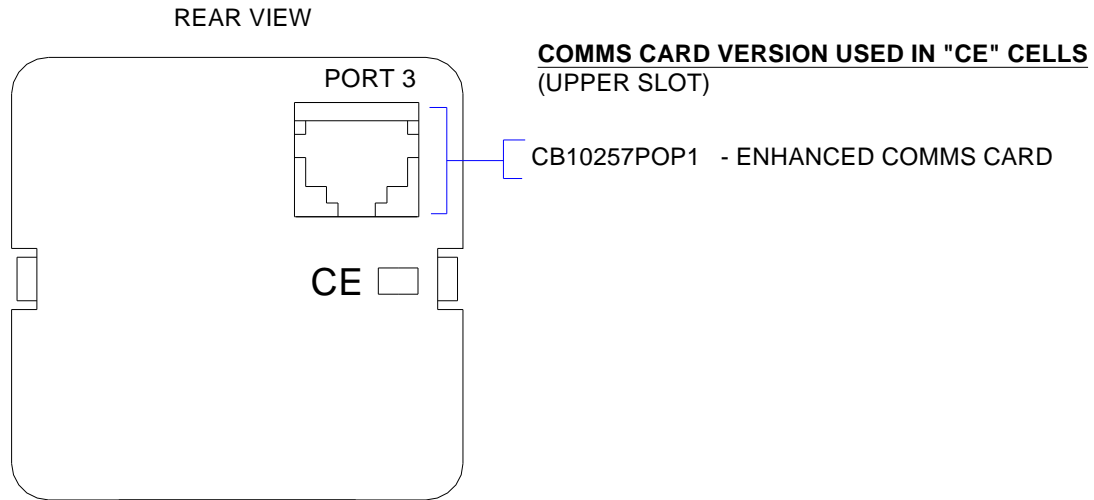
REAR VIEW

PORT 3

**COMMS CARD VERSION USED IN "CE" CELLS**
(UPPER SLOT)

CB10257POP1   - ENHANCED COMMS CARD

CE

Port 3 is an Ethernet port which allows connection to an Ethernet network via a standard 8P8C (RJ45) connection.

**Real Time Clock**

The Enhanced comms card comes with a battery backed RTC which keeps running even if power is lost to the unit.  The Battery is only drained while no power is present on the unit.

# <u>SAFETY</u>

The Standard Comms card and Enhanced Comms cards are 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 numbers are:

> Comms card                    CR 2032 Coin cell. (3.0V lithium, 180mAH)
> Enhanced  Comms card    BR1225 Coin cell. (3.0V lithium, 48mAH)

Please dispose of the battery in accordance with local laws and we note it should **not** be placed with normal waste.

BATTERY DISPOSAL