

# 4100ESi BTO Panels

*The 4100ESi is available in a range of standard off-the-shelf panels, which are suitable for being extended with additional hardware at installation time. These are described in bulletin PBS0066.*

*4100ESi is also available in a wider range of customized build-to-order (BTO) formats. This bulletin describes the range of options available, and any limitations where these might apply.*

*The use of the ordering tool 4100COST to specify BTO panels is also covered.*

## Types and Sizes of 4100ESi Panels

The BTO range is structured into four types of panel:

- FIP - a normal panel with an InfoAlarm+ user display for use with detection devices, output devices, etc.
- NDU - a FIP plus an additional CPU with no detectors or output devices of its own, plus two network cards and 2 x wired media cards for internal communications, used to annunciate alarms and other information about devices connected to other panels connected to it via a network.
- DGP - a data-gathering panel, essentially a FIP without a display of any kind, relying on another panel on the same network to do the alarm annunciation. A DGP would normally have detection and output devices connected to it, and would be able to operate autonomously in the event of a network failure.
- RTU - a remote transponder unit, connected to a FIP or DGP using the RUI communication loop and dependent on that panel to control it. RTUs do not operate autonomously. It can have detection or output devices connected, depending on what internal hardware is selected.

Expansion cabinets are available in various sizes to be used to augment any of these base panels.

For each type of panel there is a range of up to four sizes of cabinet available:

- 40U cabinet - 1.87m tall and 0.4m deep, capable of containing a good deal of equipment and batteries or many displays.
- 28U - 1.33m tall and 0.4m deep, a smaller version of the 40U cabinet, with about 70% of the equipment capacity, but much the same display capacity (due to AS 1670.1 display requirements).
- 15U - 0.75m tall and 0.2m deep, a compact cabinet with a more restricted capacity.
- 8U - 0.45m tall and 0.2m deep, for very compact panels, or extensions to other cabinets.

All of these cabinets are 0.55m in width.

**Table 1 - Availability of Panel Types and Cabinet Sizes**

Panel type	Cabinet size			
	40U	28U	15U	8U
FIP	SZ9041	SZ9029	SZ9015 <sup>(2)</sup>	n/a
NDU	SZ9043	SZ9031		
DGP	SZ9044	SZ9032	SZ9016	
RTU	SZ9042	SZ9030	n/a	SZ9010
Expansion cabinet (windowed door)	SZ9045	SZ9033	4100-FP1088	4100-FP1046
Expansion cabinet (blank door)	SZ9046	SZ9034	4100-FP1087	4100-FP1086

NOTE 1: The SZ parts shown in this table are not directly orderable parts. These are the part codes used in 4100COST to select the basic set of hardware for that type and size of panel. The other necessary parts are added to the order to give a final list of necessary parts. Each BTO panel will receive a unique SZ ordering number, as happens at the moment.

NOTE 2: SZ9015 can be the basis of a FIP or a compact NDU depending on the configuration loaded into it.

NOTE 3: The FIP and NDU cabinets have windowed outer doors. The DGP and RTU cabinets have blank outer doors, since there are no displays.

## Common Internal Layouts

### Large Cabinets

The 40U cabinets are supplied with four bays fitted - drawing 1976-329 shows the detail. The 28U cabinets are supplied with three bays fitted - drawing 1976-328 shows the detail for this.

The top bay will always have an APS power supply in it, with a mains power outlet mounted in the bay directly below it. This applies to the expansion cabinets as well.

The bay below the top bay will contain the CPU card (for FIP and DGP), or two CPU cards (for NDU). An RTU does not have a CPU card - it has a TIC card in the top bay with the APS, instead.

In general, PDI cards can be fitted into any of the bays. However, there are some restrictions on where legacy cards should be fitted. Refer to the Legacy Card - Considerations section later in the bulletin.

## Small Cabinets

The 8U cabinet is practically the same as a single 4100ESi bay. The 8U RTU consists of an APS and TIC in a blank door cabinet. There is some room for small batteries. Up to four PDI or legacy cards could be added to it, but then there would be no space for batteries. Drawings 1976-303 and 1976-305 show the detail for the windowed and blank door 8U expansion cabinets.

The 15U cabinet also has the card capacity of a single bay, but effectively some positions are dedicated to CPU/network cards and power supply. The remaining card positions are suitable for only PDI cards. Even when fully equipped, the 15U cabinet can accommodate batteries up to 33Ah. Drawings 1976-308 and 1976-310 show the detail for the windowed and blank door 15U expansion cabinets.

## Display Doors

The 4100ESi has two types of display door:

- InfoAlarm+ colour touchscreen user interface, in a 7U door.
- LED/switch or fan control display door, also in a 7U door.

There are no options available with the InfoAlarm+ door. The FIP and NDU panels will have one of these fitted as standard. The DGP and RTU panels will not have one.

The other 7U display doors can be fitted with up to eight display modules of various kinds, or with brigade interface doors for Centaur II or Cube/WA ASE equipment, with a microphone recess.

Drawing 1976-319 shows a range of possibilities for fitting these doors on the large cabinets.

## NDU

The base 28U or 40U NDU cabinet will be fitted with two CPU cards in the second bay down. Both these CPU motherboards will also be fitted with a network card, and wired media card to join them together.

Either CPU can be assigned as the NDU processor, and the other as the associated auxiliary processor.

There is a single APS power supply which supplies power to both of the CPU cards, but is controlled and managed by the auxiliary processor.

The InfoAlarm+ touchscreen is connected to the NDU processor.

If there are LED/switch zone displays below the InfoAlarm+, these would normally also be connected to the NDU processor.

If there are AS1668 fan control doors below the InfoAlarm+ door, these would normally be connected to the auxiliary processor, since this will be managing the smoke control system.

## Power Supplies

Almost all base 4100ESi BTO panels will be supplied with the APS or LPS 10A power supply. The APS is suitable for mounting in 4100ES bays in large cabinets. The LPS is suitable for mounting in the smaller shallow cabinets with display doors. Both these power supplies are AS7240.4 listed, and have the same capacities and features.

Both can supply up to 4A of Card Power and up to 10A of Signal Power and up to 3.6A of battery charge current (but not all at the same time). Refer to the APS/LPS product datasheet for details of the power supply facilities and options.

## Additional Power Supplies

The APS/LPS can supply 4A of Card Power. This is twice the capacity of the SPS. It would be sufficient to power a typical cabinet's worth of relay or signal or display cards.

However, if additional power is required, perhaps for more than five MX Loop Cards, or for additional ancillary loads such as T-Gen2, T-Gen 50, or strobes, additional APS or LPS supplies can be fitted.

The additional power supply cannot be located in the same bay as the first one. The standard factory build will take care of connecting together the bays, drawing Card Power from the first power supply and the bays drawing power from the additional power supplies. The APS will provide Signal Power to the bay that it is located in, and to the bay below that, if there is one, for powering MX Loop Cards.

Several APS/LPS units can share a common system battery, when configured correctly. The listed maximum capacity for the battery is up to 80Ah. If the required system backup battery capacity is larger than this, then separate batteries on separate power supplies must be used.

If "smart" power is not required, e.g., for door holders, the less expensive 4100-ME0470 5A PSU can be fitted. This is approved as an AS 4428.5 power supply, but not as an AS 7240.4 power supply. The current revision of AS 1670.1 (2015) allows the use of such power supplies in AS 7240.2 panels, but this may not be so in future revisions of the standard.

## MX Loop Cards

The 4100-6077AU MX Loop Card requires both Card Power and Signal Power to operate.

The APS power supply in a 4100ESi bay will supply Signal Power to cards in the same bay or in the bay below that, if the 734-301 linking loom is fitted between the bays. This loom is fitted as standard in the 28U and 40U cabinets.

Each APS can power up to five MX Loop Cards with full MX loop loading (up to 0.5A each), depending on other loads on the APS. These can be organized as up to three cards in the same bay as the APS and the remainder in the bay below.

In the small shallow cabinets, there are alternative looms available to distribute the Signal Power from an LPS to where it may be needed to power MX Loop Cards. These will be fitted or supplied as standard.

## Legacy Cards – Considerations

In the following sections legacy cards are those with a combination motherboard and plug-in daughter card.

### Large Cabinets

To meet the formal requirements of the AS7240.2 listing for 4100ESi, legacy cards in 4100ES bays must be secured more firmly than for earlier versions of 4100U and 4100ES. In 41000ESi, this is achieved by fitting an additional restraining bar to the bays which contain legacy cards. In the 28U and 40U cabinets, this will at least include the second bay from the top where the CPU card (and possibly network card) is located.

Any bay containing an APS power supply cannot be fitted with two restraining bars, due to mechanical interference. Therefore, in a new 4100ESi panel legacy cards cannot be located in a bay with an APS, since the listing requirement for card restraint cannot be met.

There is no such restriction on locating PDI cards in a bay with an APS.

Legacy style mounting brackets such as the ME0516 dual PDI bracket and the 4100-PA0766K T-Gen 50 bracket are not affected by this restriction, and can be fitted in a bay with an APS without any problems.

### Small Cabinets

#### 8U

In an 8U cabinet, up to eight legacy cards can be fitted in the blank door version, depending on what power supply and PDI cards are also fitted.

Legacy cards cannot be fitted in a windowed shallow 8U cabinet.

#### 15U

The only legacy cards that can be fitted in a 15U cabinet are the CPU and network cards. All other cards must be PDI type.

## Mounting T-Gen2

The 8U and 15U cabinets suit only a Grade 3 T-Gen2 as Grade 2 will require an additional PSU that cannot be mounted in these cabinets. A separate BOWS or EWS is recommended.

The gearplate used in the 15U cabinets has specific mounting for one T-Gen 60 on the right hand side plate and one 100V Switching or Splitter Module or HLI board to the right of the LPS. The T-Gen 120 is not directly supported in the 15U cabinets.

The 8U cabinet with a new gear plate can support one T-Gen 60 or T-Gen 120 on an FP1119 mounting bracket and two 100V Switching or Splitter Modules or HLI board on an FP1120 bracket, as long as there is nothing mounted in front of them on the inner door, if present.

In 28U and 40U cabinets the T-Gen2 (60W and 120W) units, 100V Switching Modules and 100V Splitter Modules and HLI board can be mounted in PDI backplanes using two mounting brackets:

FP1119 FP,4100ESi,T-GEN 60/120 BRKT,C/W POWER LOOM & LIT  
FP1120 FP,4100ESi,2 X 100V SWT MODULE BRKT,C/W LIT & MTG

Each PDI backplane can accommodate up to two T-Gen2 units (each on a FP1119 bracket) and two 100V Switching/Splitter Modules or HLI (both on one FP1120 bracket). For Grade 3 systems the APS power supply can be mounted in the bay (it will provide sufficient current for about 200W of T-Gen2 load). The T-Gen2 units are powered from the PDI Signal Power output of the APS using a loom included with the FP1119 bracket.

For a Grade 3 T-Gen2 user interface the FP1123 3U door (black) provides control and indication for a single zone, plus the microphone for paging/emergency speech announcements.

For a Grade 2 T-Gen2 system a separate PSU must be used - in this case the FP1139 14A PSE can be mounted in the PDI by using bracket FP1142. The 14A PSE wires directly to the T-Gen2 (not via the PDI).

For Grade 2 T-Gen2 user interface:

- FP1125 3U door, control and indicators, and MIC - black finish
- FP1127 16Z EWS Extender 3U door - black finish
- FP1128 8Z Expansion board

can be added.

Alternatively, the separate T-Gen2 BOWS and EWS products can be mounted adjacent to the 4100ESi.

## Mounting T-Gen 50

The gearplate used in the 15U cabinet has a specific mounting position for one T-Gen 50, on the right hand side plate.

In the other cabinets (40U, 28U, 8U), T-Gen 50 units can be installed in bays using the 4100-PA0766K legacy style bracket, with each one occupying the space of two legacy card slots.

Each T-Gen 50 can be powered from one of the three VAUX outputs on an APS or LPS power supply. Each VAUX output has the capacity to drive one fully loaded T-Gen 50.

There is no particular restriction on where these T-Gen 50 units are located in the cabinet.

## Using 4100COST to Specify BTO Panels

The 4100ESi pricing program, 4100COST, needs to be used to specify the BTO panel. On the BTO Panel tab, select the appropriate starting panel type (FIP, NDU, DGP, or RTU) and the cabinet size, and then select the required additional front panel or internal modules.

4100COST will check the selected items fit into the base panel and show the amount of front panel space available and used.

The 4100COST spreadsheet should be submitted with the purchase order to provide the details to the factory to build the panel.

## References

### Drawings

These drawings are referred to in this bulletin:

- 1976-303 4100ESi, 8U Windowed Expansion Cabinet
- 1976-305 4100ESi, 8U Blank Door Expansion Cabinet
- 1976-308 4100ESi, 15U Windowed Expansion Cabinet
- 1976-310 4100ESi, 15U Blank Door Expansion Cabinet
- 1976-319 4100ESi Generalised Front Panel Layout Drawing
- 1976-328 4100ESi, CPU Bay, 1 x Expansion Bay, 28U x 310 Deep 19" Rack Cabinet
- 1976-329 4100ESi, CPU Bay, 2 x Expansion Bay, 40U x 310 Deep 19" Rack Cabinet
- 1976-330 4100ESi, 2 x Expansion Bay, 28U x 310 Deep 19" Rack Cabinet
- 1976-331 4100ESi, 3 x Expansion Bay, 40U x 310 Deep 19" Rack Cabinet

### Collateral

- S4100-0031-32AU 4100ESi BTO panel data sheet
- 4100ESi Brochure
- 4100ESi System Presentation
- 4100ESi Sales Presentation

Available on the Fireplace website at <http://vigilant-fire.com.au>

## Further Product Information

For ordering, please contact Johnson Controls' Customer Service in Melbourne on 1300 725 688 or [tfppcustservice.au@tycofp.com](mailto:tfppcustservice.au@tycofp.com).

For technical support, contact Johnson Controls' Australian Technical Support Centre on 1300 552 559.

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