

# OP7000V2 Adding or Replacing Boards

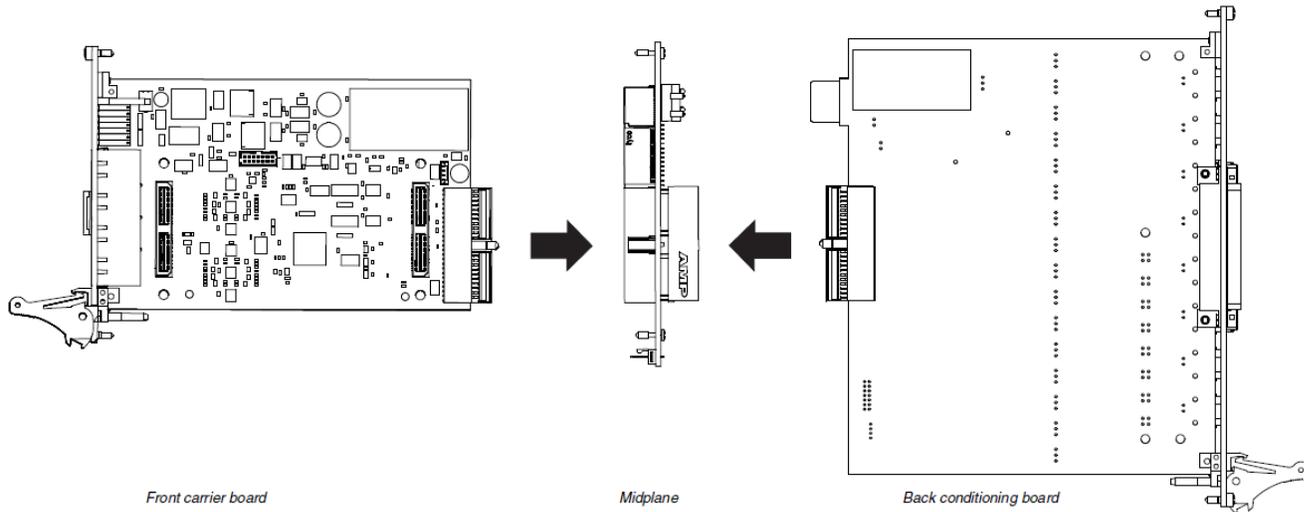
- Preparation
- Analog I/Os
- Digital I/Os
- Installing the New Board

Although the OP7000V2 comes pre-installed with all purchased I/O boards, in the course of your project, you may need to install additional conditioning I/O or FPGA boards in the OP7000V2 chassis.

Before installing the board, please read carefully the instructions below.

## Preparation

- Special attention must be paid to the types of boards that are installed in each of the slots at the front and the rear of the unit. For example, if an analog board is installed in slot 1 at the front of the unit, then an analog conditioning board **MUST** be installed in slot 1 at the rear of the unit.

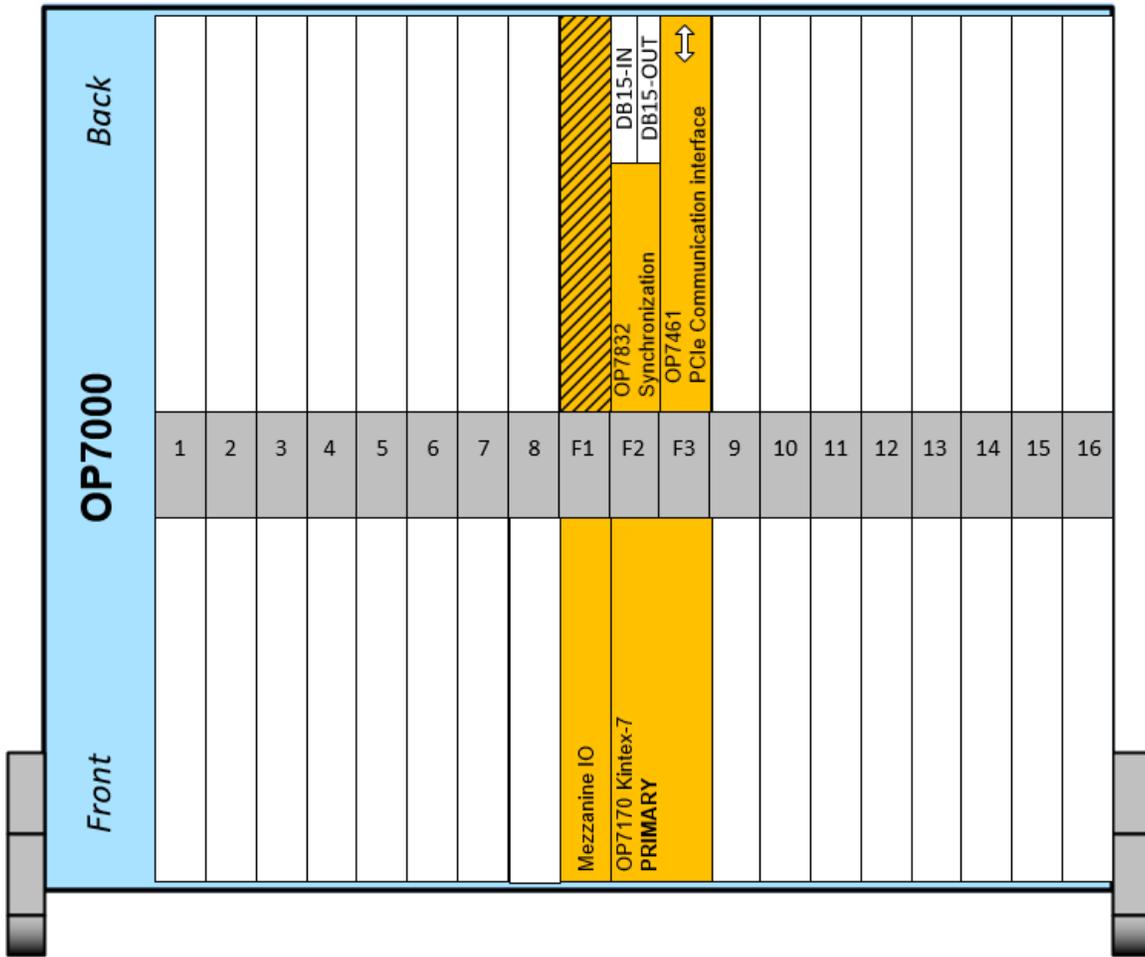


- Each slot has a track that guides the board into exact connector alignment. Slot track guides in the back and front of the chassis are color-coded to indicate which type of board can be installed

<b>Yellow</b>	Odd-numbered slots can accept OP7220 carrier boards, OP7353 digital monitoring boards and FPGA boards (to a maximum of eight boards).  When OP7220 or FPGA boards are used, the next (even-numbered) slot on the right cannot be used.
<b>Black</b>	Even-numbered slots. Only OP7353 digital monitoring boards can be installed for a maximum of eight boards.
<b>Red</b>	Three central slots. Reserved for the Primary card and its piggy-back mezzanine card in the front, and the OP7461 PCIe communication and OP7832 synchronization cards in the back.

The position of the cards in the three central slots, in the front and in the back, is fixed and must be strictly followed. Refer to the schematic below to install the cards in the proper slots.

Do NOT install I/O cards in these slots.



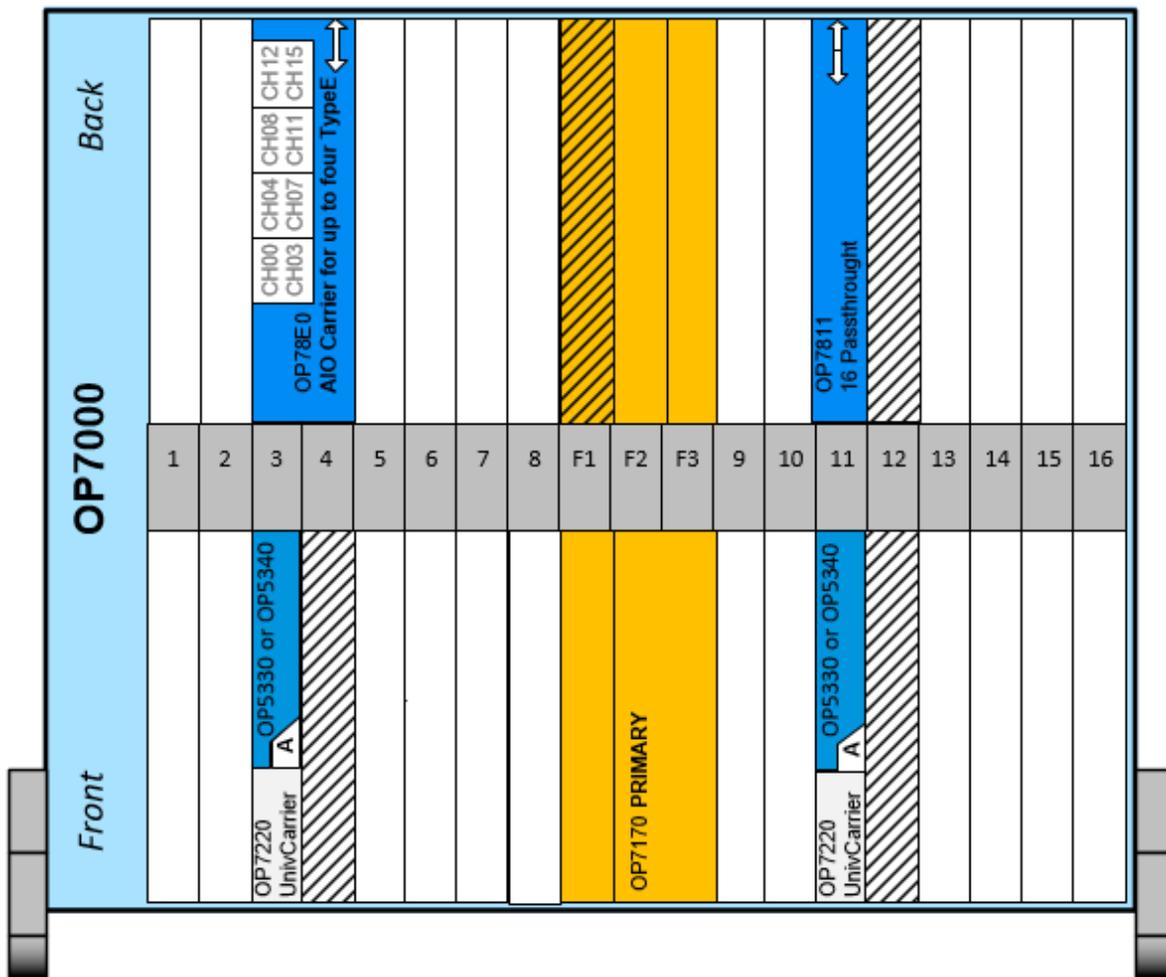
For analog or digital I/Os, the guidelines below will help you select the proper combination of cards and slots:

## Analog I/Os

In order to drive I/O lines in analog input or analog output mode:

- Install an OP5330 analog output or an OP5340 analog input mezzanine on an OP7220 carrier card
- Install the OP7220 carrier card in one odd-numbered front slot
- Do NOT install any card in the next even-numbered slot
- In the corresponding back slot, **install one of these cards:**
  - OP7811 Passthrough rear interface
  - OP78E0 AIO carrier for [OP8E00 conditioning modules \(Type E\)](#)
- **If using an OP78E0 carrier:**
  - If an OP5330 is installed on the OP7220, install **only** input modules on the OP78E0 carrier
  - If an OP5340 is installed on the OP7220, install **only** output modules on the OP78E0 carrier
  - Do **NOT** install a mix of input and output conditioning modules

The figure below gives a schematic representation of typical analog I/O configurations, as seen from the top of the OP7000V2 chassis



Note: The previous OP7000 chassis supported some other conditioning modules for analog input and output, such as the OP7818, OP7819, etc. Please contact your sales or support representative to check for compatibility or replacement cards before using such modules in the OP7000V2.

## Digital I/Os

In order to drive I/O lines in digital input or digital output mode,

- Select the digital card

<b>OP7816 - 2</b>	OP7000 Rear Opto-Isolated Digital Input: 16-Din DB37 connector
<b>OP7817 - 2</b>	OP7000 Rear Opto-Isolated 16-Dout, Push-Pull 5V to 30V, DB37 connector
<b>OP7820</b>	OP7000 Rear 8TX and 8RX DC to 50 MBd Fiber Optic link, 650nm
<b>OP7821</b>	OP7000_Rear_16Dout_SSR_250V_200mA (Normally Open Relay)
<b>OP7822</b>	OP7000_Back_6TX_6RX_Fiber_Optic_link_820nm
<b>OP7823</b>	OP7000 Rear 16RX DC to 50 MBd Fiber Optic link, 650nm
<b>OP7824</b>	OP7000 Rear_16TX_DC_to_50_MBd_Fiber_Optic_link_650nm

- Install the card in an available back slot of the chassis.

**NOTE:**

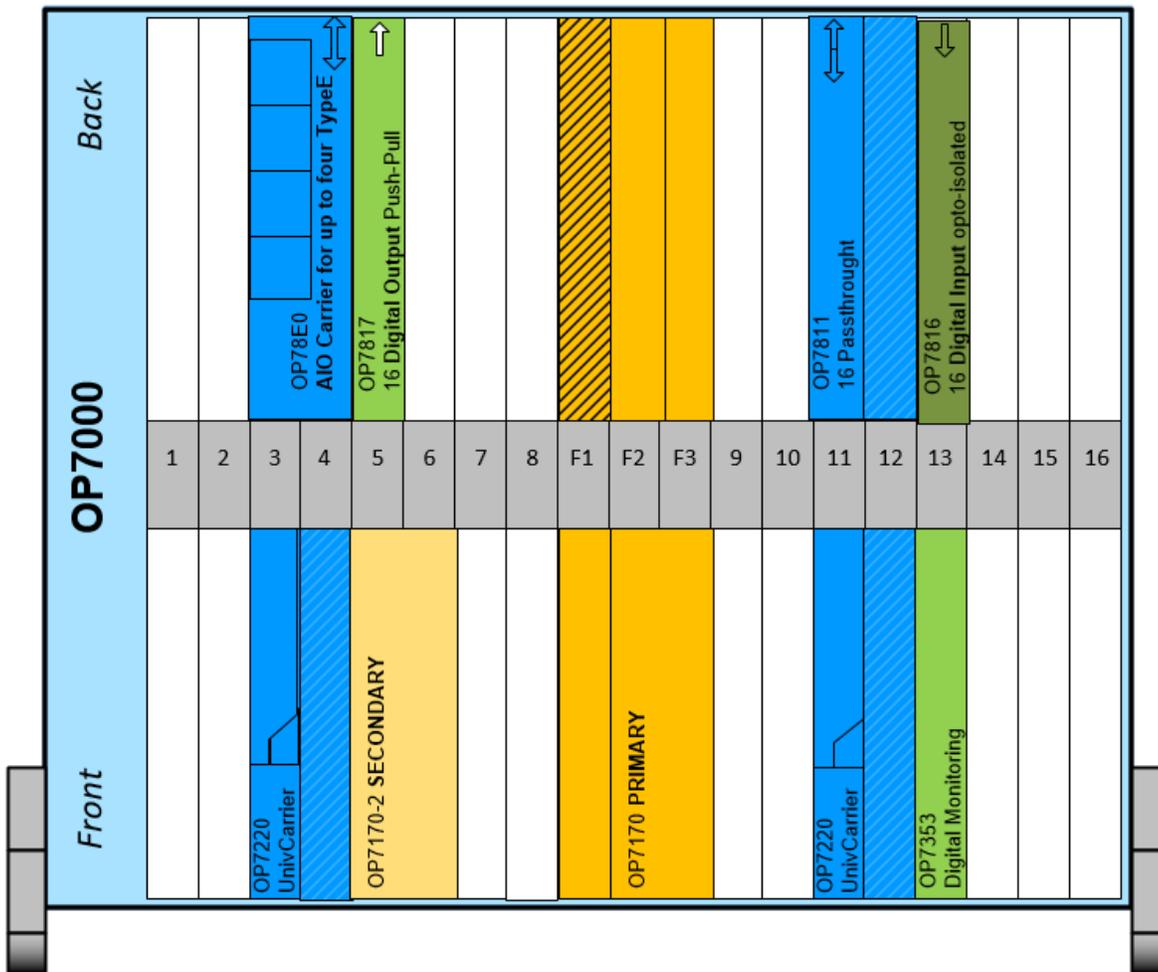
If the slot is an even-numbered slot, verify that there is no analog card in the odd-numbered slot next to it.

This verification needs to be done for the slot with the lower number, since the following two scenarios produce two different outcomes:

- Slot 2 = Digital, Slot 3 = Analog: **OK**.
- Slot 4 = Digital, Slot 3 = Analog: **ERROR**.

- In the corresponding front slot, install an optional OP7353
- It is also permitted to have a secondary OP7170-2 in the corresponding front slot

The figure below gives a schematic representation of these typical constraints for digital I/O configurations, as seen from the top of the OP7000V2 chassis



Some other digital I/O cards with BNC connectors have been obsoleted. Please contact your sales or support representative to check for compatibility or replacement cards before using such modules in the OP7000V2.

# Installing the New Board



The system must be powered down before changing boards. Failure to do so may damage the equipment.

Use anti-static wrist straps whenever handling any electronic device provided by OPAL-RT. Damage resulting from electrostatic charges is not covered by the manufacturer's warranty.

- Switch off both back and front ON/OFF switches of the chassis, as well as any device or other chassis to which it is connected
- Disconnect the chassis power cable
- **Installing a front card:**
  - Identify the front slot and verify the type of card installed in the corresponding back slot is compatible with the card to be installed in the front
  - Unscrew the blank plate or I/O card front plate present in the desired slot
  - If installing an OP7220 I/O carrier board, install the desired analog I/O mezzanine board on the carrier board by aligning the polarized connectors and pressing the module firmly onto the board, then secure the connection by installing the four screws on the mezzanine
  - Gently slide the new board into the slot into the track guides, until the handle reaches the chassis front face, and the connector slides snugly into the mid-plane connector.
  - Press firmly on the handle until it connects to the rail and rises to align horizontally with the other handles.
- **Installing a back card:**
  - Identify the back slot and make sure the type of card installed in the corresponding front slot is compatible with the card to be installed in the back
  - Unscrew the blank plate or I/O card plate present in the desired slot
  - If installing an OP78E0 I/O conditioning board, install the desired I/O conditioning modules on the carrier board by aligning the polarized connectors and pressing the modules firmly onto the board
  - Gently slide the new board into the slot into the track guides, until the handle reaches the chassis back face, and the connector slides snugly into the mid-plane connector.
  - Press firmly on the handle until it connects to the chassis rail and rises to align horizontally with the other handles.
- Reconnect the power cable
- Power ON the chassis and devices, by following the Power On sequence

The following image illustrates how to insert hardware components into the OP7000 chassis.

