

Beam Position Monitor Blocks Type SMA Coaxial Feedthrough Connectors

Provides accurate measurements of particle beam position and allows operators to precisely monitor the accelerated beam.

The Challenge

Beam position monitor blocks are critical components used for **maintaining the electron beam at an intended position** as the particles run at near-light speed inside a synchrotron. In fact, they are an essential element in many particle accelerators, because they provide accurate measurement of the particle beam positions and allow operators to accurately **monitor and control the accelerated beam**.

Inside a synchrotron, the accelerating particle beam travels in a circular motion, and around a **fixed closed-loop path**, which makes the determination of its accurate position a high challenge. The particle bunch traveling at high speed generates an electromagnetic field, which is then picked up to determine the beam position.



**SMA Feedthrough Button
for ESRF Grenoble**

Type SMA Feedthrough Connectors

Type SMA feedthroughs are the most essential element in a BPM button, and our standard model has a diameter of 14.8 mm and an **impedance of 50Ω**. The materials used are stainless steel for the shell and high density alumina in the insulator. It is available for direct welding or flange mounting. Moreover, there are **several types of SMA feedthroughs**: some are male, female, with or without a button electrode, which consists of an alumina disk.



**Type SMA
Feedthrough Connector**

Our technical & engineering teams at PMB are able to help our clients **design** the right BPM and/or SMA feedthroughs for their specific needs, manufacture these components with **high accuracy** and ensure a **long and qualitative life span**.

Industry: Science, Research, Industry
Technology: Ultra High Vacuum / Metal-Ceramic & Metal-Metal Brazing
Product & Services: Cavity Beam Position Monitor Blocks / 50Ω Type SMA Feedthroughs / BPM-Button-UHV-Feedthroughs



A PMB Success: the ESRF Grenoble

We have designed and manufactured more than 1500 type SMA feedthroughs for the new storage ring at the ESRF (European Synchrotron Radiation Facility) in Grenoble.

Located in Grenoble, France, the European Synchrotron Radiation Facility (ESRF) is a unique research facility, a source which produces the **brightest light in the world**, allowing scientists and researchers to unlock the secrets of matter. The facility produces X-rays **100 billion times brighter than the X-rays used in hospitals**, granting scientists from all over the world the opportunity to conduct extraordinary experiments at any time.



THE ESRF TRUSTED US WITH THE MANUFACTURE OF NEW BPM-BUTTON-UHV-FEEDTHROUGHS REQUIRED FOR THE NEW FACILITY'S STORAGE RING.

« The new vacuum chambers are smaller in cross-section, which required a *much smaller BPM button diameter*. PMB had manufactured our previous BPM-Button-UHV-Feedthroughs and we had a *good and long-term experience* with these components. Their technical and business teams understood our needs and were able to meet our requirements. »

Dr. Kees-Bertus SCHEIDT, Head of ESRF Diagnostics Group



About PMB: As part of the industrial company ALCEN, PMB's expertise is mainly focused on all technologies relating to particle acceleration (ultra high vacuum, electromagnetic simulation, particle matter interaction). We are capable of providing customized components and systems for a variety of industries, as well as preventive and corrective qualified maintenance of all machines.

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