BL32B2
R&D-BM

1. Introduction

BL32B2 is allocated to the R&D beamline for facility-related problems and challenges, which are relevant to a bending-magnet beamline. The optics consists of two transport-channel slits: a SPring-8 standard double-crystal monochromator and a pair of total-reflection mirrors. To utilize high-energy X-rays, a net plane of a silicon-crystal pair can be switched from Si(111) to Si(311). Two types of mirror coatings, platinum and rhodium, are available to eliminate higher-order harmonics. In addition to a mirror-bending mechanism for vertical focusing, the cylindrical shunt can be selected on the second mirror for horizontal focusing.

This beamline was rebuilt and restarted along with two experimental hutches (EH1 and EH2) in FY2018; EH1 is dedicated to R&D studies, while EH2 is devoted to the RISING2 Project by NEDO and Kyoto University.

2. Recent activities

EH1 has dimensions of 5.0 m (W) × 3.0 m (D) × 3.3 m (H). An optical bench is placed inside the hutch. It accommodates six XY carriers and five Y carriers, which can load user test benches. The former counter/timer module and pulse motor–driving system were replaced due to deterioration associated with aging. Figure 1 shows its successor counter/timer module (CT08-01E), which has eight channels and can count at rates up to 300 MHz for FAST NIM and 100 MHz for TTL. Ionization chambers, high-speed transimpedance amplifiers, voltage-to-frequency converters, and high-voltage power supplies are also provided to users. Figure 2 is a photograph of a pulse motor–driving system. A controller (PM16C-16) can realize 16-channel operation simultaneously. The default setting is 16 Type-II pulse motor driver units. Four Type-I pulse motor driver units can be

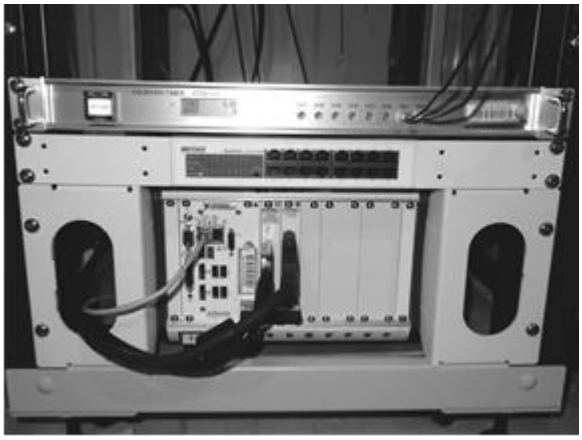

Fig. 1. Counter/timer module (CT08-01E). Ethernet or USB connection can be used for remote control.

Fig. 2. Photograph of the pulse motor–driving system. Controller (PM16C-16) can be controlled through an Ethernet or USB connection.

used if necessary. Motor cables are wired into the hutch and have a TRIM TRIO connector (8P socket plug type) on the motor side.

For experiments at EH2, a long beam path in EH1 should be bridged by a vacuum flight tube. A wide-bore flight tube is desirable since the total reflection mirrors cause a large variation in beam height. To reduce the workload due to switching between EH1 and EH2, we installed a flight tube–retracting mechanism, which facilitates the handling of the huge heavy tube (Fig. 3). Conversion adapters from ICF to ISO-KF were also prepared and placed at the end flanges of the up- and downstream transport channels. These improvements in efficiency minimized the overhead time required for switching EHs, increasing the uptime for investigations on battery science by NEDO and Kyoto University.

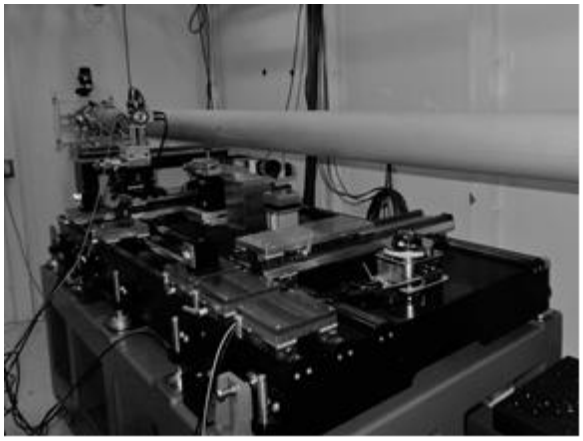

Fig. 3. Vacuum flight tube and its retracting mechanism installed in EH1.

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