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. This beamline was rebuilt and restarted along with two experimental hutches (EH1 and EH2) in FY2018. Thereafter, BL32B2 has undergone the following updates: the replacement of the counter/timer module and the pulse motor-driving system (FY2019) and the installation of the flight tube-retracting mechanism in EH1 to facilitate the handling of the huge tube (FY2019).

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 coating, 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. EH1 is dedicated to R&D studies and has dimensions of 5.0 m (W) × 3.0 m (D) × 3.3 m (H). An optical bench is placed inside this hutch. It accommodates six XY carriers and five Y carriers, which can load user test benches. An 8-channel counter/timer module (CT08-01E) 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. A 16-channel pulse motor controller (PM16C-16) can operate all subordinate motors simultaneously. The default setting is 16 Type-II pulse motor driver units. Four Type-I pulse motor driver units can be used if necessary. Motor cables are wired into the hutch and have a TRIM TRIO connector (8P socket plug type) on the motor side. EH2 is now devoted to the RISING2 Project of NEDO and Kyoto University. The beam path in EH1 should be bridged by a wide-bore vacuum flight tube during experiments at EH2, which means that the long-term installation of any equipment in EH1 is prohibited.

2. Recent activities

In 2020, SPEC, a software program for instrument control and data acquisition, was introduced for the convenience of beamline users who intend to assemble automatic stages and detectors kept in stock at BL32B2. Its character-based user interface (see Fig. 1) allows the flexible and instantaneous automation of measurement routines by accepting a

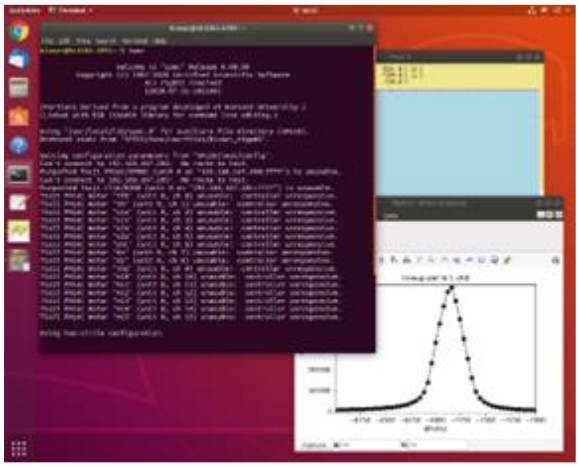

Fig. 1. Appearance of user interface of the software program for instrument control and data display.

batch of step-by-step operation commands. Additionally, cooperation with external devices is also possible through socket connection; one can easily measure the dependence of X-ray intensity on various conditions, such as photon energy and/or temperature. Figure 2 shows a GPIB instrument control device (GPIB-ENET/1000) that was introduced together with SPEC to utilize legacy instrument components.

Fig. 2. Photograph of GPIB instrument control device (GPIB-ENET/1000).

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