

IGBT controlled high power fiber laser safety system

Drawings: HP LASER CONSTRUCTION GUIDE FLSCU16 / FLHPS16E
TRIPLE LASER CONSTRUCTION GUIDE HP-6 KW
FLSCU16 / FLHPS16E CONNECTIONS HP-VERSION

Descripton: FLSCU16/FLHPS16E DIN rail safety controller

Abstract:

A dual channel Ple / KAT3 safety system is implemented to control and survey the secondary output of a laser main power supply. In case of F-Stop (emergency-off), and malfunctions the primary of the laser main supply is switched off. During normal operations the interlock (opening of doors) causes a switch-off only of the secondary voltage of the laser main supply by means of a dual IGBT. A dual channel control system monitors continuously this action. One part of the IGBT cuts supply voltage and the other part connects a bleeder resistor to the positive input of the laser in order to rapidly discharge a C-bank. In case of switch failures, the primary of the main supply is shut down.

Safety system consists of:

DIN-rail unit (45mm wide) FLSCU16 / FLHPS16E with following functions:

FLSCU16: control of F-Stop, interlock, monitoring of primary circuit breakers, keyswitch and fault reset / power on function.

FLHPS16E: on / off control of IGBT and on /off control of primary circuit breakers. Dual channel monitoring of secondary main power with emergency switch off.

Watercooled IGBT power switch with FLIGBT16 (located on top of power switch) used as IGBT driver control and monitoring with led indicators.

PLC (SPS) control: 24VDC control lines for:

1. asynchronous IGBT switch off from PLC (individual laser selection in combiner mode)
2. system fault signal to PLC (from FLSCU16)
3. Interlock status to PLC (from FLSCU16)
4. IGBT fault signal to PLC
5. overtemp condition (IGBT > 100 degree C) to PLC

APEX LASER UG
Hauptstr. 25
D-82386 HUGLFING
Fon: +49 (0) 8802 605
www.apex-laser.de