

## ASC HSSI SERIES, CONTROLLER FOR ALL ARGES SUBSYSTEMS

# LASER SYSTEM CONTROLLER FOR CENTRAL DEVICE MANAGEMENT

Novanta develops photonics solutions through our globally recognized brands, ARGES, Cambridge Technology, Laser Quantum and Synrad, specializing in cutting-edge components and sub-systems for laser-based diagnostic, analytical, micromachining and fine material processing applications. Powerful lasers, coupled with advanced beam steering and intelligent sub-systems incorporating software and controls, deliver extreme precision and performance, tailored to our customers' demanding applications.



## SUB-SYSTEM CONTROLLER

The ARGES System Controller HSSI series comes with different solutions managing scan heads, lasers, sensors, actuators, and other peripherals. These controllers all feature a high-performance microcontroller, a DSP and a combination of highly configurable interfaces and processing units. That way the controller of the ASC HSSI series handles optimized synchronization of all critical devices and signals necessary in modern laser systems.

The ASC HSSI series has full stand-alone functionality. No host is necessary to operate it. However, the ASC provides remote diagnosis, management, and parametrization via Ethernet TCP/IP.

The ARGES control environment includes the InScript® software, which is supplied with the ASC, as well as other software-based connectivity solutions, for example the ARGES ControllerLib (C-API). These alternative control options provide a high degree of flexibility for precisely configuring the system to your requirements.

## FLEXIBLE CONTROLLER OPTIONS

- High performance microcontroller and DSP subunit for efficient real-time job execution
- Embedded enhanced Linux operating system with real-time extensions for real-time processing and synchronization
- For a complete solution, controller works seamlessly with ARGES' InScript® software
- Controller can be updated and administered via web-browser-interface
- 24-bit position resolution and mathematics for scan Control
- Up to 2 scan head interfaces
- Flexible configurable laser interfaces
- Advanced machine interfaces and protocol connectivity

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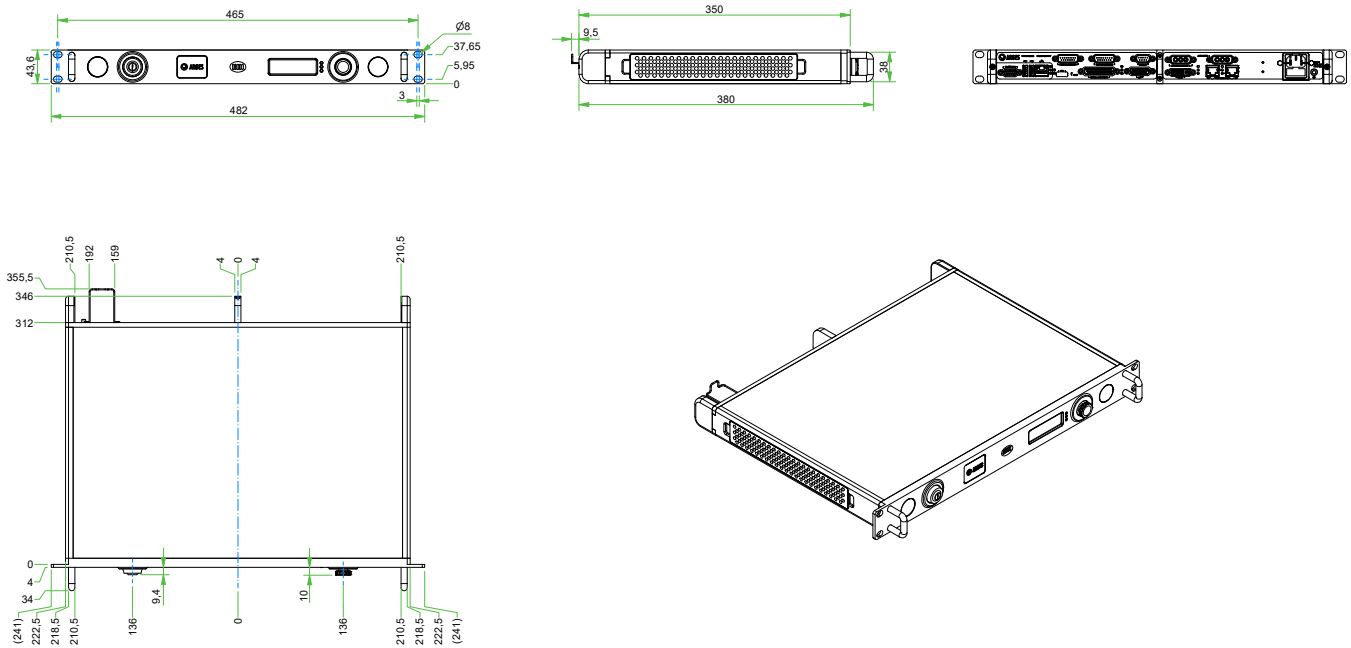
| Specifications                         | ASC-1                                                                                                                                                                                                         | ASC-2                                                                                                                                                                          | ASC-6                                                                                         |
|----------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|
| Supply Voltage                         | 90–264 V AC; 47–63 Hz                                                                                                                                                                                         |                                                                                                                                                                                |                                                                                               |
| Max. power consumption @230 V AC       | 600 W (peak: 1080 W)                                                                                                                                                                                          | 600 W (peak: 900 W @less than 5 s, 50 % duty cycle)                                                                                                                            | 2616 W (peak: 3420 W)                                                                         |
| Max. supply input current @230 V AC    | 2.6 A (peak: 4.7 A)                                                                                                                                                                                           | 2.6 A (peak: 3.9 A)                                                                                                                                                            | 11.4 A (peak: 14.9 A)                                                                         |
| Typical power consumption @230 V AC    | 120 W (1 scan head connected)                                                                                                                                                                                 | 140 W (1 scan head connected)                                                                                                                                                  | 1260 W (2 scan heads connected)                                                               |
| Typical supply input current @230 V AC | 0.5 A (1 scan head connected)                                                                                                                                                                                 | 0.6 A (1 scan head connected)                                                                                                                                                  | 5.5 A (2 scan heads connected)                                                                |
| Input voltage derating                 | no derating from 90 to 264 V AC                                                                                                                                                                               | 0.83 %/V AC below 120 V AC, 450 W at 90 V AC, 600 W at 120 V AC                                                                                                                | 0.23 %/V AC below 180 V AC, 0.82 %/V AC below 120 V AC, 2338 W at 120 V AC, 1760 W at 90 V AC |
| Temperature derating                   | over 60 °C amb. T.                                                                                                                                                                                            | over 50 °C ambient temperature                                                                                                                                                 |                                                                                               |
| Operating temperature                  | 10–40 °C                                                                                                                                                                                                      |                                                                                                                                                                                |                                                                                               |
| Storage temperature                    | 0–50 °C                                                                                                                                                                                                       |                                                                                                                                                                                |                                                                                               |
| Non-condensing humidity                | 10–80 %RH                                                                                                                                                                                                     |                                                                                                                                                                                |                                                                                               |
| Controller CPU                         | NXP Semiconductors, MPC5200 Serie, 1 Core 603e, 32 bit, 400 MHz, 256 MB SDRAM, 16 kb L1-cache, CAN, Ethernet, I2C, SPI, UART, USB, watchdog timer                                                             |                                                                                                                                                                                |                                                                                               |
| Digital Signal Processor DSP           | NXP Semiconductors, DSP56321 Serie, DSP, 275 MHz, 480 kB RAM, program memory size 96 kB, 24-bit, fixed point                                                                                                  |                                                                                                                                                                                |                                                                                               |
| Controller main FPGA                   | Xilinx Spartan-III, XC3S2000 Serie, 280 MHz, 320 kbit RAM, 720 kbit embedded RAM                                                                                                                              |                                                                                                                                                                                |                                                                                               |
| Weight                                 | 5 kg                                                                                                                                                                                                          | 10 kg                                                                                                                                                                          | 47 kg                                                                                         |
| Dimensions (L × W × H)                 | 389.5 mm × 482 mm × 43.6 mm; (19"-rack, 1 U)                                                                                                                                                                  | 541.4 mm × 482 mm × 88.1 mm; (19"-rack, 2 U)                                                                                                                                   | 580 mm × 482 mm × 265.9 mm; (19"-rack, 6 U)                                                   |
| External Interfaces                    |                                                                                                                                                                                                               |                                                                                                                                                                                |                                                                                               |
| Scan head power output (2×)            | ±24 V DC nom.; ±2 %; max. current at nom. voltage ±8.33 A; max. rated output power 400 W; peak output power 720 W (over current ±180 % I <sub>max</sub> )                                                     | ±24 V DC nom.; ±0.5 % –OR– ±20 V DC nom.; ±0.5 %; max. current at nom. voltage ±6.25 A; max. rated output power 300 W; peak output power 450 W @less than 5 s, 50 % duty cycle |                                                                                               |
| HSSI (2×)                              | For all ARGES scan heads with AC2 and IDB (High Speed Serial Interface)                                                                                                                                       |                                                                                                                                                                                |                                                                                               |
| Ethernet (1×)                          | 10/100 Mbit/s                                                                                                                                                                                                 |                                                                                                                                                                                |                                                                                               |
| USB (2×)                               | Type A; USB 1.1; 1 Mbps                                                                                                                                                                                       |                                                                                                                                                                                |                                                                                               |
| RS-232/-485 / CAN (1×)                 | RS-232/-485, CANopen, native CAN, PROFIBUS, INTERBUS; for RS-232: Baud rate 115200; data bits 8; stop bits 1; parity none; flow control none                                                                  |                                                                                                                                                                                |                                                                                               |
| PLC (1×)                               | External supply voltage input Vext: 12–24 V DC; 1 A max.; digital inputs: 24 V DC tolerant; LOW < 0.66 % Vext; HIGH > 0.82 % Vext; sampling rate up to 50 kHz; PLC in serial mode (on request: parallel mode) |                                                                                                                                                                                |                                                                                               |
| PLC AUX (1×)                           | External supply voltage input: 12–24 V DC; 1 A max.; digital inputs: 24 V DC tolerant; LOW < 0.66 % Vext; HIGH > 0.82 % Vext; sampling rate up to 100 kHz; PLC in serial mode (on request: parallel mode)     |                                                                                                                                                                                |                                                                                               |
| UserIO / General Purpose I/O (1×)      | External supply voltage input: 5–24 V DC; 1 A max.; digital inputs: 24 V DC tolerant                                                                                                                          |                                                                                                                                                                                |                                                                                               |
| Position encoder (2×)                  | Compatible to TTL and SSI, signal frequency < 30 MHz; differential line drivers and receivers; 3.3 V DC operation voltage level, TTL; inputs 5 V DC tolerant; supply for rotary encoder: 5 V DC; 0.5 A max.   |                                                                                                                                                                                |                                                                                               |

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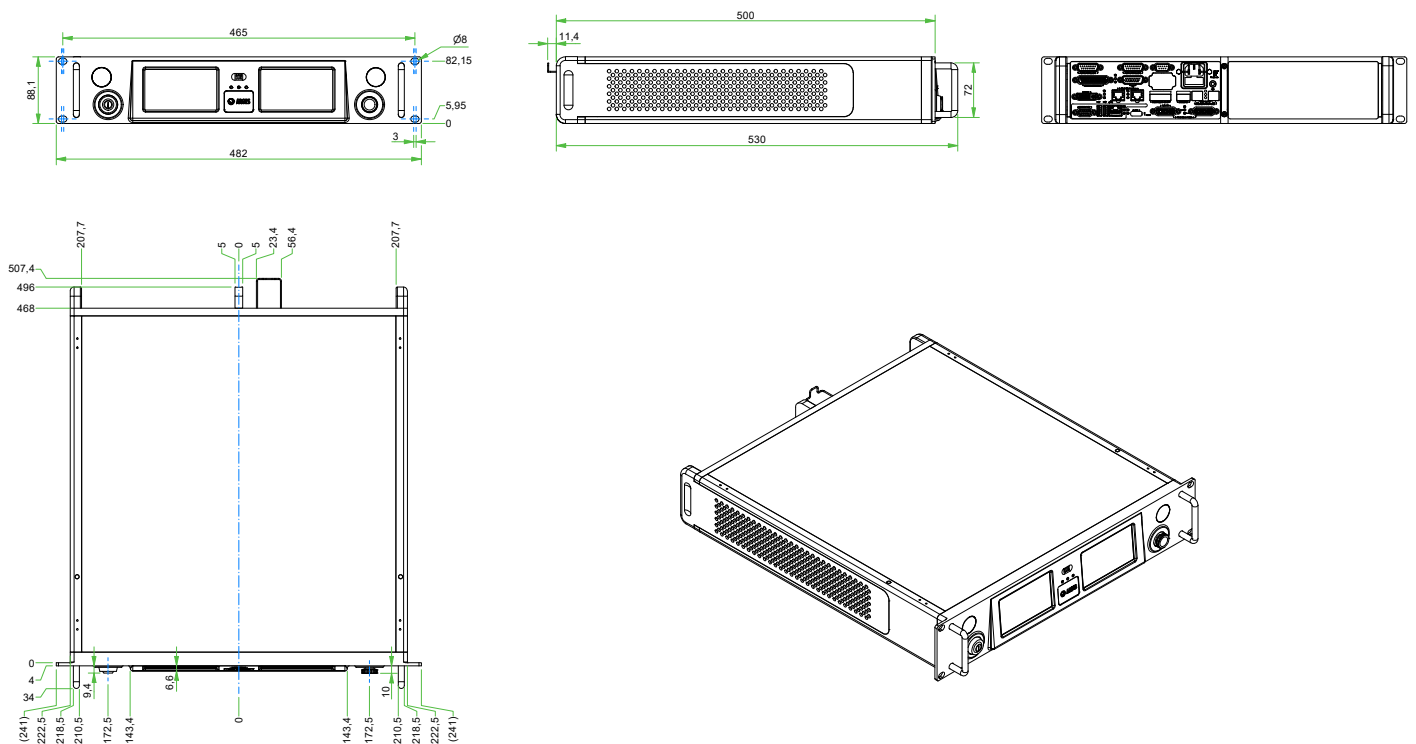
| Specifications                    | ASC-1                                                                                                                                                                                                                                                   | ASC-2    | ASC-6                                                    |
|-----------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|----------------------------------------------------------|
| <b>External Interfaces</b>        |                                                                                                                                                                                                                                                         |          |                                                          |
| PROFIBUS (1×)                     | Optional (excludes EtherCAT)                                                                                                                                                                                                                            | Optional |                                                          |
| EtherCAT (1×)                     | Optional (excludes PROFIBUS)                                                                                                                                                                                                                            | Optional |                                                          |
| SAFETY (1×)                       | None                                                                                                                                                                                                                                                    | Optional | Yes                                                      |
| Laser (1×)                        | HSSI IOs: 5 V DC (24 V DC tolerant), resolution 10 ns, outputs 0.025 A max., inputs terminated with 2.2 kΩ; RS-232 interface; LVDS IOs: 1.2 V DC; DAC: ±10 V DC, 10 mA max., resolution 16 bit, sampling rate 100 kHz; Power output: 5 V DC; 0.5 A max. |          |                                                          |
| <b>Laser</b>                      |                                                                                                                                                                                                                                                         |          |                                                          |
| Embedded laser                    | None                                                                                                                                                                                                                                                    |          | 150 W -OR- 300 W -OR- 400 W CW Fiber Laser, 1050-1070 nm |
| <b>Software Integration</b>       |                                                                                                                                                                                                                                                         |          |                                                          |
| Application Programming Interface | ARGES ControllerLib C-API<br>ARGES InScript® 3.1.0 (Windows 10)<br>ARGES InScript® 2.10.2 (Windows 7)<br>ARGES InScript® 2.10.1 (Windows XP, Windows 2000)                                                                                              |          |                                                          |
| Operating Systems                 | Windows 10 / 7 / XP/ 2000 (32bit or 64bit)                                                                                                                                                                                                              |          |                                                          |

# ASC HSSI SERIES, CONTROLLER FOR ALL ARGES SUBSYSTEMS

## ASC-1

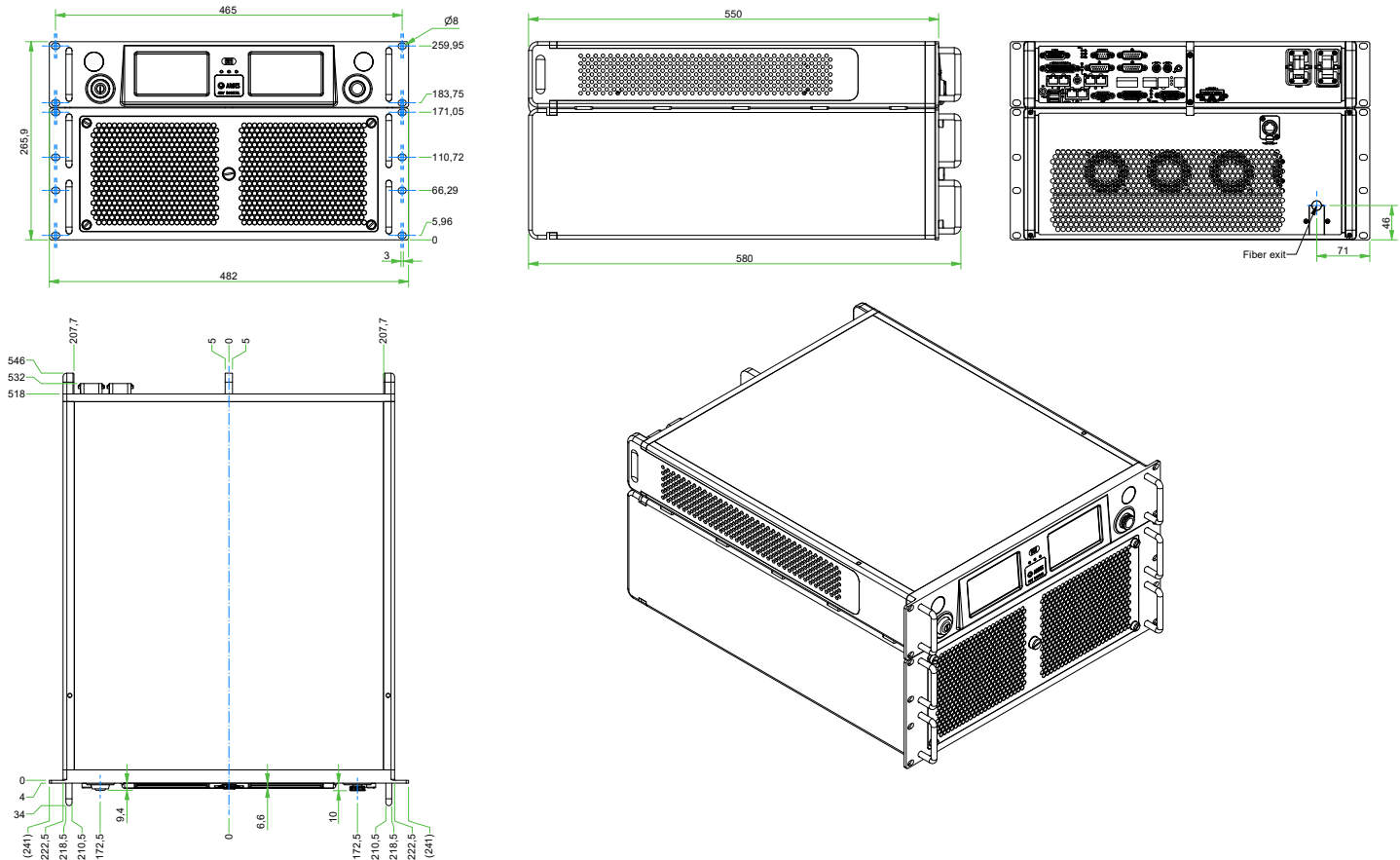


## ASC-2



# ASC HSSI SERIES, CONTROLLER FOR ALL ARGES SUBSYSTEMS

## ASC-6



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