AGD200

Dual Axis Controller with Integrated Drives

Datasheet

Rev.2.1

agito

www.agito-akribis.com

Member of Akribis Systems group

Product Description

AGD200 is a series of dual-axis, standalone, high performance motion controllers with integrated servo amplifiers.

It is equipped with Ethernet, USB, CAN bus, RS232, and RS485 communication ports to interface with host devices such as PCs, PLCs, and HMIs. It can control any external driver via analog or digital command.

At 16 kHz sampling (profiler, position and velocity control loops) frequency, AGD200 controllers are ideal for any tightly coordinated motion systems.

AGD200 has two integrated amplifiers, enabling it to drive two motors directly. It can also control a third axis through an external driver. It can drive all types of motors, such as steppers, voice coils, brushed or brushless motors, and including direct-drive linear and rotary motors. Part Numbering.

Agito PCSuite software and IDE is used for AGD301 programing, configuration, tuning and operation. Agito PCSuite provides configuration wizard, time domain tuning and analysis, frequency domain identification and design, auto tuning and easy to use GUI for all the features of Agito controllers.

Product Description	Part Number Format
Standalone Integrated Drive	AGD200-ET-2Dxx[-CCC]

ET: Ethernet

2D: 12-90VDC

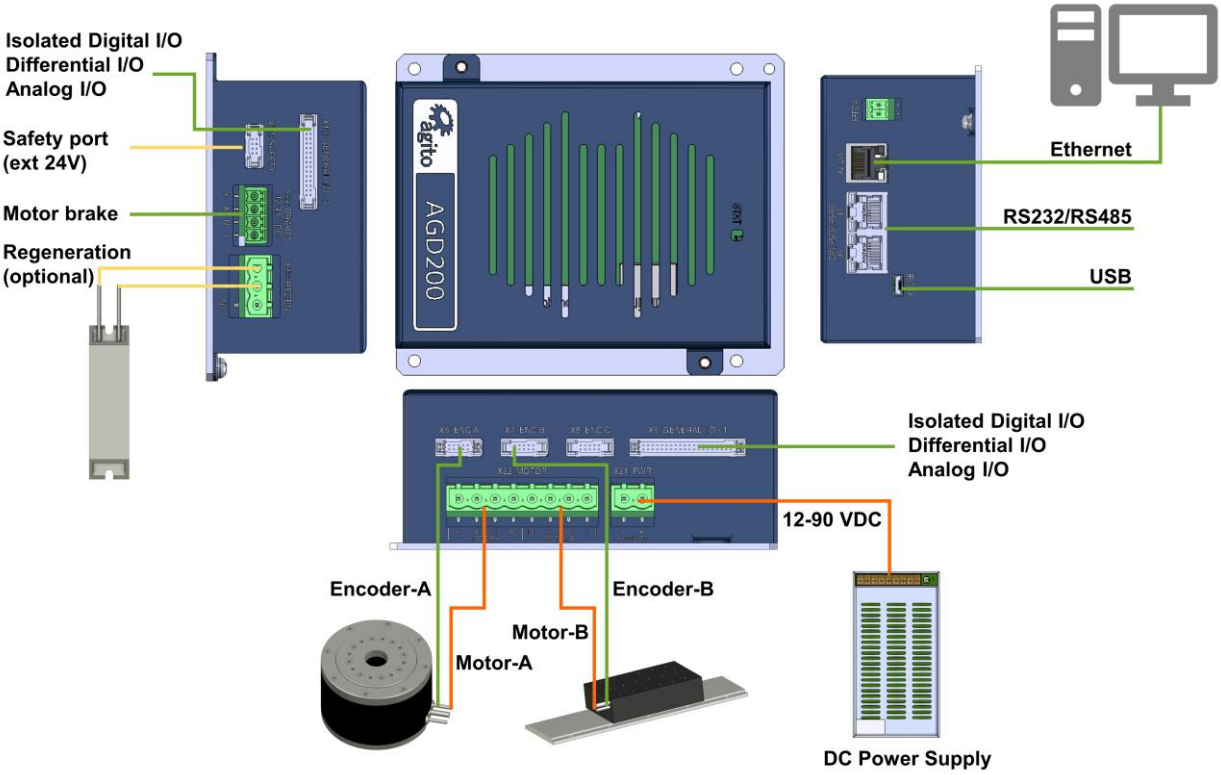
xx: Continuous current rating

- 01: 1.4 Arms continuous, 2.8 Arms peak
- 02: 2.8 Arms continuous, 5.6 Arms peak
- 05: 5.6 Arms continuous, 11.2 Arms peak

CCC: Optional customization number

Example: AGD200-ET-2D02 is a standard variant for 2.8 A_{rms} continuous current, 5.6 A_{rms} peak.

System Design



Technical Specifications

Electrical/Mechanical Specifications

Feature	AGD200-ET-2D01	AGD200-ET-2D02	AGD200-ET-2D05
Number of axes	2 (3rd axis with external amplifier)		
Nominal supply voltage	12–90 VDC		
Minimum supply voltage	11 VDC		
Maximum supply voltage	95 VDC		
Logic power supply (optional) *	12–36 VDC		
Continuous output current (internally limited by firmware)	1.4 A_{rms}	2.8 A_{rms}	5.6 A_{rms}
Peak output current (internally limited by firmware)	2.8 A_{rms}	5.6 A_{rms}	11.2 A_{rms}
Output power @ 90 VDC	0.12 kVA	0.24 kVA	0.48 kVA
Peak current time	2 sec		
Output frequency	0–599 Hz		
Isolated digital inputs	12		
Isolated digital outputs	4		
Differential inputs	8		
Differential outputs	4		
Analog inputs	4		
Analog outputs	4		
Brake outputs	2		
Encoder ports	3		
Motor types	Voice coil, brushed or brushless linear or rotary motor. 2-phase steppers (open and closed loop, micro-stepping)		
Communication	Ethernet, CAN RS232, RS485, USB		
PWM frequency	16 kHz		
Power supply to external devices	Voltage: 5V Overall max. current: 1.5A		

Encoder Ports Specifications

Feature	Specification
Encoder types	Ports 1,2: Incremental AqB, Sin/Cos, Absolute EnDat 2.2, Absolute BiSS-C Port 3: Incremental AqB, Absolute EnDat 2.2, Absolute BiSS-C
Power supply to encoder	0.5 A per encoder port
Max. cable length	40 m
Incremental encoder	Hardware: Differential RS422/RS485 Max. input frequency: 6.25 MHz Termination: 120 Ω Commutation: Auto-phasing, Hall sensors
Sin/Cos encoder (on Main Encoder port only)	Hardware: Differential RS422/RS485, 1V pkp @2.5V Max. input frequency: 250 kHz Termination: 120 Ω Max interpolation: 13 bits (x 8192) Commutation: Auto-phasing, Hall sensors
Absolute BiSS-C	Hardware: Differential RS422/RS485, clock (MA), data (SLO) Clock frequency: 2 MHz Max. position bits: 32 bits Commutation: Auto-phasing, by absolute offset
Absolute EnDat 2.2 *	Hardware: Differential RS422/RS485, clock, data Clock frequency: 2 MHz Max. position bits: 32 bits Commutation: Auto-phasing, by absolute offset
Hall sensors	Opto-isolated 5V with internal or external power supply

* EnDat 2.2 is not supported in the standard FPGA version due to space constraints. The default production FPGA supports BiSS-C only. If you are interested in a FPGA version that supports EnDat 2.2, contact Agito.

I/O Specifications

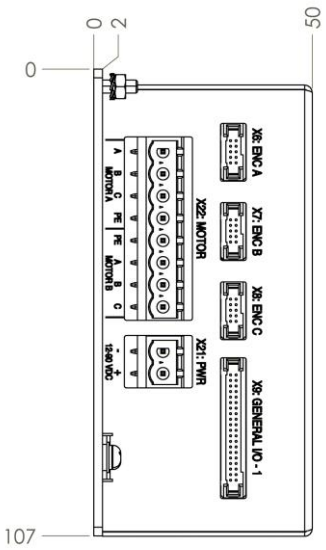
Feature	Specification
Power supply for optically isolated I/Os	Voltage: 5–28 VDC
Optically isolated digital inputs	Type: PNP/NPN Propagation delay: 10 µs Max. frequency: 100 kHz Functionality: limit switches, home, captures, start motion, gain scheduling, and others
Optically isolated digital outputs	Type: Sink/Source Max current: 0.5A (for sink type), 0.3A (for source type) Propagation delay: 10 µs Max. frequency: 100 kHz Functionality: alarm, in-position, event (PEG), and others
Differential inputs	Hardware: Differential RS422 Termination: 120 Ω Propagation delay: 100 ns Max. frequency: 5 MHz Functionality: Position lock (capture), pulse and direction, AqB encoder following
Differential outputs	Hardware: Differential RS422 Termination: NA Propagation delay: 100 ns Max. frequency: 5 MHz Functionality: Position event, encoder emulation, alarm, statuses, and others. Differential output voltage: 3.3 VDC
Analog inputs	Operational voltage: ±12V Resolution: 12 bit (16 bit with extension board)
Analog outputs	Operational voltage: ±12V Resolution: 16 bit
Safety inputs	2 independent inputs Voltage: 5–28 VDC
Static brake output	Operational voltage: 24V Maximum current: 3A

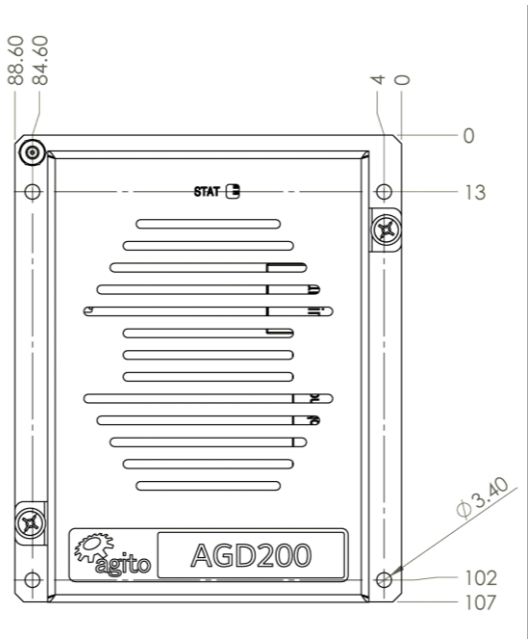
Dimensions and Weight

Feature	Specification
Unit dimensions (max)	H=107mm, W=50mm, D=88mm
Package dimensions	H=150mm, W=120mm, D=120mm
Unit weight	0.2 kg
Shipping weight	0.24

Environmental Specifications

Feature	Specification
Operating temperature	0°C to 50°C
Storage temperature	-20°C to 70°C
Operating humidity	< 90%
Storage humidity	< 40%
Pollution degree	2
Vibration	1G @ 150 Hz according to IEC 60068-2-6
Operating conditions	Protection class: IP20





Motion Control Specifications

Feature	Specification
Key Features	Encoder error mapping: 1D, 2D or 3D Auto-loop shaping (auto-tuning) Frequency domain system identification and modeling Flexible gain scheduling based on motion conditions Position lock and event Advanced Auto-tuning algorithm in frequency domain Force control and mode switching
Advanced Features	UltraPrecision mode (UPM) Input-shaping Profile-shaping Machine vibration control with external sensor Spring and friction compensation Active-yaw gantry control
Control Sampling Rate	16 kHz (profiler, position, velocity, optional force, current)
Motion Modes	Point-to-point Repetitive CNC sequential contour (G-codes) Vector and tracking motion modes Jog ECAM Gearing Joystick Handwheel Pulse and direction
Operational Modes	Position Velocity Force Current (torque) modes
Motion Modes Switching	Motion parameters, such as speed, acceleration, deceleration, and target position can be all modified on-the-fly
Programming Interfaces	Standalone user programs Multi-threaded with priority setting environment, up to 8 threads Execution time: 50 low script commands in 1 millisecond High level C-language-like script programming language integrated in Agito PCSuite
IDE and Host Interfaces	Windows PC Suite IDE and configuration software Windows .NET API available in NuGet package manager Linux .NET API The API can also be used in MATLAB, LabVIEW and other environments compatible with Windows .NET Standard TCP/IP communication ASCII string commands or binary CAN format