# DS5x séries

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## Programmable drives with

## USB - RS232 - RS485

### interface and

### Modbus-RTU

### communication protocol

The DS5x two phase stepper motor drives series is composed of 27 different models, divided in 9 power sizes and 3 different interface types: DS50→RS485, DS52→RS232, DS54→USB. The communication interface is insulated from the power supply to grant reliability and noise immunity.

The chosen communication protocol is the Modbus-RTU industrial standard which offers good performances at low costs. Through the commands set provided by the protocol, the master device (PC, PLC, etc.) is able to access in real time to the drive registers and to the user's variables, freely declarable during programming, which can represent a data exchange area between the master device and the user's program in execution in the drive.

The programming capability and the flexibility offered by the available programming blocks (which also include mathematical blocks) together with the many I/O resources which the drive is provided with, allow to simply realize applications with decentralized intelligence which relieve the master from the most onerous real-time activities and reduce the data traffic on the communication bus.
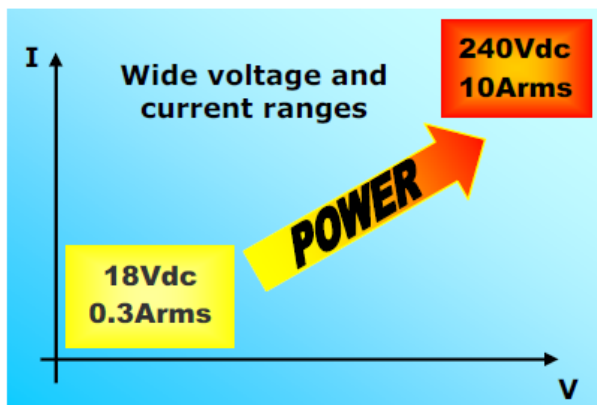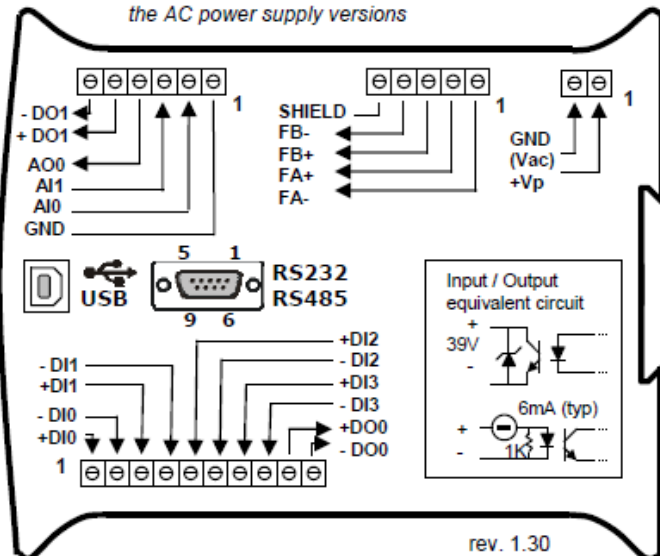
✓ Modbus-RTU communication protocol
✓ Insulated USB, RS232 and RS485 interface
✓ Driver USB for Linux and Windows (98, SE, Me, 2K, XP, VISTA and 7) 32bit and 64bit
✓ Registers and user's program variables accessible through the bus
✓ **Up to 3000rpm at 1/128 step/rev**
✓ Mathematical functions at 32bit
✓ Speed or position control
✓ Independent acceleration and deceleration ramps
✓ Absolute or relative positioning
✓ 4 digital and two +/-10V analog inputs
✓ 2 digital and one 0-10V analog ouputs
✓ 100KHz high speed counter
✓ AC power supply models available
✓ Optocoupled and differential I/O, independently NPN or PNP usable
✓ Inputs from 3Vdc up to 28Vdc
✓ Line driving supported
✓ 11 bit analog inputs resolution
✓ 32bit quote registers from -2,147,483,638 to +2,147,483,647
✓ Resonance damping
✓ Automatic current reduction
✓ High efficiency power mosfet stage
✓ Complete diagnostics with univocal indication for each anomaly
✓ Over/under voltage protection, short circuit protection (cross phase, ground and positive supply)
✓ Overheating protection
✓ Break motor phase diagnostics
✓ Compact size
✓ Easy DIN rail installation
✓ Removable terminal block connector
✓ IP20-compliant construction
✓ Cost-effective

**Wide voltage and current ranges**

**240Vdc 10Arms**

**POWER**

**18Vdc 0.3Arms**

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| Symbol | Description | | Value | | | Unit |
|---|---|---|---|---|---|---|
| | | | Min | Typ | Max | |
| Vp | Power supply voltage (for DC models) | DS5x41(A) | 18 | | 50 | Vdc |
| Vac | Power supply voltage (for AC models) | | 16 | | 36 | Vac |
| If | Motor phase current (rms) | | 0.3 | | 1.4 | Arms |
| Vp | Power supply voltage (for DC models) | DS5x44(A) | 20 | | 50 | Vdc |
| Vac | Power supply voltage (for AC models) | | 18 | | 36 | Vac |
| If | Motor phase current (rms) | | 1 | | 4 | Arms |
| Vp | Power supply voltage (for DC models) | DS5x48(A) | 20 | | 50 | Vdc |
| Vac | Power supply voltage (for AC models) | | 18 | | 36 | Vac |
| If | Phase current (rms) | | 3 | | 8 | Arms |
| Vp | Power supply voltage (for DC models) | DS5x73(A) | 24 | | 90 | Vdc |
| Vac | Power supply voltage (for AC models) | | 20 | | 65 | Vac |
| If | Motor phase current (rms) | | 0.8 | | 3 | Arms |
| Vp | Power supply voltage (for DC models) | DS5x76(A) | 24 | | 90 | Vdc |
| Vac | Power supply voltage (for AC models) | | 20 | | 65 | Vac |
| If | Motor phase current (rms) | | 2 | | 6 | Arms |
| Vp | Power supply voltage (for DC models) | DS5x78(A) | 24 | | 90 | Vdc |
| Vac | Power supply voltage (for AC models) | | 20 | | 65 | Vac |
| If | Motor phase current (rms) | | 4 | | 10 | Arms |
| Vp | Power supply voltage (for DC models) | DS5x84(A) | 45 | | 160 | Vdc |
| Vac | Power supply voltage (for AC models) | | 35 | | 115 | Vac |
| If | Motor phase current (rms) | | 2 | | 4 | Arms |
| Vp | Power supply voltage (for DC models) | DS5x87(A) | 45 | | 160 | Vdc |
| Vac | Power supply voltage (for AC models) | | 35 | | 115 | Vac |
| If | Motor phase current (rms) | | 4 | | 8.5 | Arms |
| Vp | Power supply voltage | DS5x98 | 45 | | 240 | Vdc |
| If | Motor phase current (rms) | | 4 | | 10 | Arms |
| Vdi | Digital input voltage range | | 3 | | 28 | Vdc |
| Idi | Digital input supply current | | 4 | 6 | 8 | mA |
| Vdo | Digital output voltage range | | 1 | | 30 | Vdc |
| Ido | Digital output current range | | | | 60 | mA |
| Vai | Analog input voltage range | | -10 | | 10 | Vdc |
| Rai | Analog input impedance | | | 47 | | KΩ |
| Vao | Analog output voltage range | | 0 | | 10 | Vdc |
| Iao | Analog output current range | | | | 10 | mA |
| Prt | Protections / Diagnostics / Alarms | | Over/Under voltage, Short circuit, Overheating, Break phase | | | |
| Mpr | Quote range (1/128 step) | | -2,147,483,638 / +2,147,483,647 | | | 1/128s |
| Psp | User program memory (functional blocks) | | | 250 | | |
| Clp | Mathematical calculation resolution | | | 32 | | bit |
| Bcr | Communication speed | | 1200 | | 38400 | baud |
| Bf | Data format | | N,8,1 / E,8,1 / O,8,1 | | | bits |
| **Mechanical Specifications** | | | | | | |
| FDh | Height | | | | 100.4 | mm |
| FDI | Depth | | | | 119.0 | mm |
| FDw | Width | DS5x41(A), DS5x44, DS5x73 | | | 22.7 | mm |
| | | DS4x44A, DS5x73A, DS5x48(A), DS5x76(A), DS5x78(A), DS5x84(A), DS5x87(A), DS5x98 | | | 35.0 | |
| FDnw | Weight | DS5x41(A), DS5x44(A), DS5x73(A) | | | 200 (250) | g |
| | | DS5x48(A), DS5x76(A), DS5x78(A), DS5x84(A), DS5x87(A), DS5x98 | | | 320 (400) | |



Note: The A suffix (ex. DS5x76A) identifies the AC power supply versions

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