DS10 series

Microstepping drives 18Vdc(16Vac)...240Vdc(120Vac) 0.3Arms...10Arms (14.1Apk)

- ✓ Compact size
- ✓ Easy DIN rail installation
- ✓ AC power supply models available
- ✓ Built-in oscillator for start/stop mode
- ✓ Gate function
- ✓ Decimal and binary resolution up to 25,600 step/rev
- ✓ STEP frequency over 300KHz
- ✓ Resonance damping
- ✓ Automatic current reduction
- ✓ Accurate current control with chopper frequency over 20KHz
- ✓ High efficiency power mosfet stage
- ✓ AC power supply models available
- ✓ Optocoupled and differential I/O, independently NPN or PNP usable
- ✓ Inputs from 3Vdc up to 28Vdc
- ✓ Line driving supported
- ✓ Digital signal conditioning for each I/O
- ✓ 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
- ✓ Connections on removable terminal block
- ✓ IP20-compliant construction
- ✓ Cost-effective

High reliability and performance, compact size and low cost have been the guidelines followed to develop the drives of DS10 series suitable for DIN rail mounting.

Using the last electronic components generation and the SMT technology it has been possible to produce an high power drive in a compact and smart case easy and quick to install.
The connection to the motor, with the logical signals and to the power supply is through three different colored terminal blocks, each one of them is removable, numbered and suitable for 2.5mm^2 wire size.

The many setting options available allow to use the drives with any kind of motor and application. The phase motor current can be tuned fine in a wide range of value as the step resolution, the current reduction, etc.

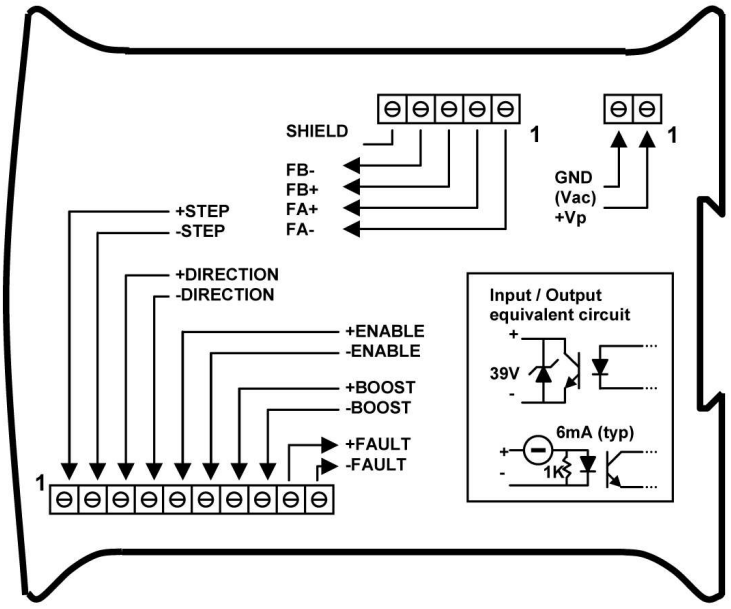
Each logic signal can be set independently from the other to PNP or NPN logic, each input can also be driven using line-driver technology.

The drive is fully protected to preserve its integrity from the most common problems.
The diagnostics is complete and univocally signals whenever one or more protections occur. Furthermore a break motor phase diagnostics is also available, very useful to determine wiring problems or motor failures.

The drive has also a built-in oscillator that can be used for simple start/stop operations. The *gate* functionality allows to connect many drives to a single STEP pulse generator.
The drive setting and diagnostics is very easy with the free *UDP Commander* Windows software.
The connection to the programming DUP port of the drive is obtained through the UDP30 interface (see below), which is connected to the PC by the USB port. The interface ensures also the electrical insulation between the PC and the drive.

Symbol	Description		Value			Unit
			Min	Typ	Max	
Vp	Power supply voltage (for DC models)	**DS1041(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)	**DS1044(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)	**DS1048(A)**	20		50	**Vdc**
Vac	Power supply voltage (for AC models)		18		36	**Vac**
If	Motor phase current (**rms**)		3		8	**Arms**
Vp	Power supply voltage (for DC models)	**DS1073(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)	**DS1076(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)	**DS1078(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)	**DS1084(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)	**DS1087(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	**DS1098**	45		240	**Vdc**
If	Motor phase current (**rms**)		4		10	**Arms**
Res	Step resolution available		200, 400, 800, 1000, 1600, 2000, 3200, 4000, 5000, 6400, 10000, 12800, 25000, 25600			**Step / Rev.**
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				50	**mA**
Prt	Protections / Diagnostics / Alarms	Over/Under voltage, Short circuit, Overheating, Break phase				
Fch	Chopper frequency			20		**KHz**
Mechanical Specifications						
FDh	Height		100.4			**mm**
FDl	Depth		119.0			**mm**
FDw	Width	**DS1041(A), DS1044, DS1073**	17.5 (22.7)			**mm**
		DS1044A, DS1073A, DS1048(A), DS1076(A), DS1078(A), DS1084(A), DS1087(A), DS1098	35.0			
FDnw	Weight	**DS1041(A), DS1044(A), DS1073(A)**	160 (190)			**g**
		DS1048(A), DS1076(A), DS1078(A), DS1084(A), DS1087(A), DS1098	270 (330)			

*Note: The A suffix (ex. DS1076**A**) identifies the AC power supply versions*



DS30 series

Programmable Drives
18Vdc(16Vac)...240Vdc(120Vac) 0.3Arms...10Arms (14.1Apk)

The DS30 series drives have a built-in flexible motion controller able to perform accurate motor control in speed and position.

The programming is quick and simple through the development software tool. The program is built using functional blocks as variable assignment blocks, timing block, conditional jump blocks, etc. Particularly powerful is the mathematical block able to execute additions, subtractions, multiplications and divisions and which allows to realize even complex applications.

The connection with the external devices is through 4 inputs and 2 digital outputs each one optocoupled, independently PNP or NPN or line driver usable. Two +/-10V analog inputs and one 0-10Vdc analog output complete the available interface signals.

To assure the maximum flexibility, the I/O are not specialized and through the programming it is possible to use them as per application requirements. For example, it is possible to use the digital inputs to command the start and the stop of a cycle, the execution of the homing procedure, the selection of the target position, of the speed, etc. The digital outputs can be used to indicate the reaching of a position, the intervention of a protection, etc. The analog inputs, for example, can be used to change dynamically the speed, to execute a position adjustment, to change the timing, etc. The analog output can be used instead to command proportional actuators, to supply a speed reference to an inverter, to command an analog instrument, proportional valve, etc.

- ✓ **Up to 3000rpm at 1/128 step/rev**
- ✓ Mathematical functions at 32bit
- ✓ Speed or position control
- ✓ Independent acceleration and deceleration ramps
- ✓ Absolute and 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

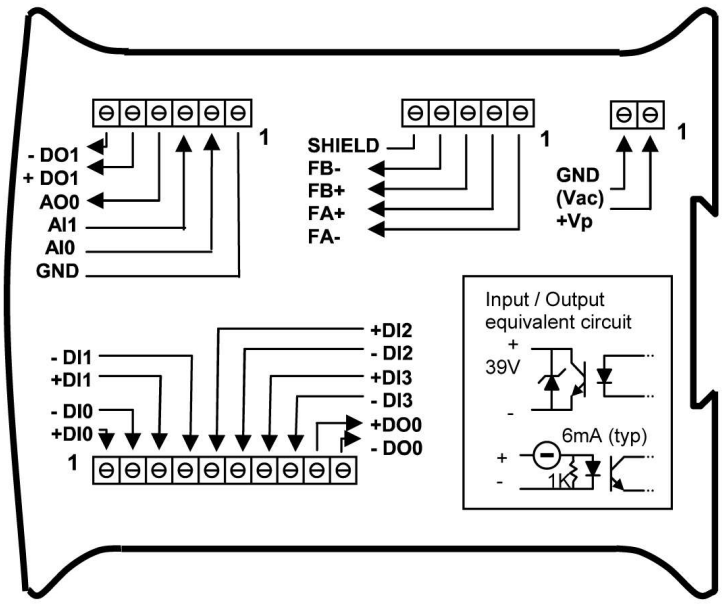
The drive is designed to be quickly and easily installed on DIN rail. The connection to the motor, with the control signal and the power supply is through colored and removable terminal blocks.

The connection to the programming and diagnostic port of the drive is through the UDP30 interface (see below), which is connected to the PC by the USB port. The interface ensures also the electrical insulation between the PC and the drive.

DS30 series

Symbol	Description		Value			Unit
			Min	Typ	Max	
Vp	Power supply voltage (for DC models)	**DS3041(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)	**DS3044(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)	**DS3048(A)**	20		50	**Vdc**
Vac	Power supply voltage (for AC models)		18		36	**Vac**
If	Motor phase current (**rms**)		3		8	**Arms**
Vp	Power supply voltage (for DC models)	**DS3073(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)	**DS3076(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)	**DS3078(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)	**DS3084(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)	**DS3087(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	**DS3098**	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				50	**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**
Mechanical Specifications						
FDh	Height			100.4		**mm**
FDl	Depth			119.0		**mm**
FDw	Width	**DS3041(A), DS3044, DS3073**		17.5 (22.7)		**mm**
		DS3044A, DS3073A, DS3048(A), DS3076(A), DS3078(A), DS3084(A), DS3087(A), DS3098		35.0		
FDnw	Weight	**DS3041(A), DS3044(A), DS3073(A)**		185 (220)		**g**
		DS3048(A), DS3076(A), DS3078(A), DS3084(A), DS3087(A), DS3098		295 (350)		

*Note: The A suffix (ex. DS3076**A**) identifies the AC power supply versions*



DS5x series

Programmable drives with

USB - RS232 - RS485

interface and

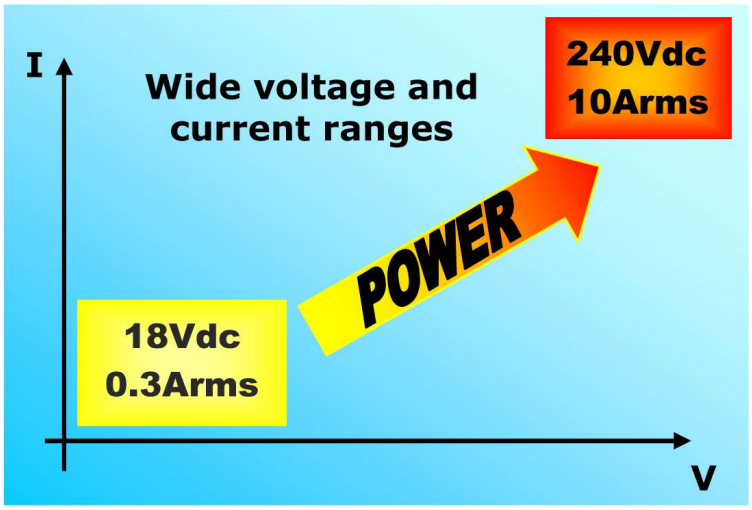
Modbus-RTU

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

DS5x series

Symbol	Description		Value Min	Value Typ	Value Max	Unit
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**
FDl	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. DS5x76**A**) identifies the AC power supply versions*

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