ABB DC drive technology - Innovation driven by tradition

A DC drive from ABB is no ordinary drive

Thanks to:

- our advanced technology
- our extensive experience in every imaginable application
- the highest quality and reliability of our products
- ABB's worldwide support

You need to be more competitive in today's global marketplace. DCS800 will help you do that. We designed this drive with innovations that save you money and functions that make DC technology easier than ever before.

The latest technology on a proven power platform

We have designed the most advanced digital controller of any DC drive for our proven power platform. What does that mean for you? It means 16-bit analog I/O; 5 msec response time to a step input; 2 msec response time for overriding control; and integrated speed, torque, PID, and voltage controls as standard. It also means automatic tuning to simplify commissioning, macros to simplify setup, and Adaptive Programming feature that allows you to easily customize to your needs. The latest digital technology on a proven power platform – that is the DCS800.

DCS800

Decision makers ask themselves:

- Which DC drive manufacturer today invests millions of dollars in a new DC product series?
- Which DC drive manufacturer still offers complete support for old DC installations as well as for new customer requirements?
- Which DC drive manufacturer delivers DC drives with the latest state of the art technology?
- Which DC drive manufacturer has made the commitment to remain the world leader in DC drive technology?

ABB – The reliable partner

Save money with DCS800

- Highest reliability and capability
- Fast installation and commissioning
- Less components = less spare parts
- Programming tools included with every drive
- PLC included in the drive without additional hardware
- Pulse encoder and tachometer interfaces always included as standard
- Reduced installation work because the field supply is internal up to 900 HP

DCS800 Dimensional Data

Unit Size	Non-Regenerative Rating*	Regenerative Rating*	500	600	690	800	990	1200	Weight (lbs)	Dimensions h x w x d (in)	Dimensions h x w x d (mm)
D1	20	25	□								
	45	50	□								
	65	75	□						24	12.5 x 10.8 x 8.0	310 x 270 x 200
	90	100	□								
	125	140	□								
D2	180	200	□						35	13.8 x 10.8 x 10.8	310 x 270 x 270
	230	260	□								
D3	290	320		□							
	315	350	□						55	15.8 x 10.8 x 12.5	400 x 270 x 310
	405	450	□								
	500	550	□								
D4	590	650		□							
	610	680	□						84	23.0 x 10.8 x 13.8	580 x 270 x 345
	740	820	□								
	900	1000	□								
D5	900	900		□	□						
	1200	1200	□						242	41.5 x 20.3 x 16.3	1050 x 510 x 410
	1500	1500	□	□	□						
	2000	2000	□	◆	◆						
D6	1900	1900				□					
	2050	2050	□	□	□				396	69.0 x 18.3 x 16.3	1750 x 460 x 410
	2500	2500	□	□	□	□					
	3000	3000	□	□	□	□					
D7	2050	2050					□	●			
	2600	2600					□	●			
	3300	3300	□	□	□	□	□		693	69.0 x 30.0 x 22.5	1750 x 760 x 570
	4000	4000	□	□	□	□	□				
	4800	4800		□	□	□					
	5000	5200	□								

* As used in the product type code DCS800-S01/2 xxxx

Notes:
□ Standard
◆ Only available as non-regenerative drives
● On request

D1   D2   D3   D4   D5   D6   D7

ABB DC Drives

DCS800
The Next Generation

Sales Bulletin

10 to 3000 Hp @ 500 Vdc
200 to 3250 Hp @ 600 Vdc
700 to 4000 Hp @ 690 Vdc
Available up to 1190 Vdc

BUSINESS PROFILE

INDUSTRIES

PRODUCTS

APPLICATIONS

EXPERTISE

PARTNERS

SERVICES

ABB

DCS800 - The Next Generation

The solution is DCS800

The practical requirements of a modern DC drive are extremely diverse. A drive should be full of features *and* easy to use – not a simple task. The challenge is to find an innovative solution which excels in both – the solution is DCS800.

The DCS800's simple interface and rich feature set allow you to commission your drive quickly and adapt it easily to your specific application. The DCS800 has the widest power range in the industry, all the way up to 2500 hp in a single module package. Let the DCS800 drive profits for you.

DCS800 – The key advantages

- Widest available power range: 20 A to 20,000 A
- Wide supply voltage range: 230 to 1200 V_{AC} (up to 1500 V_{DC})
- Numerous optional features, to adapt the drive to your needs
- Adaptive Programming, to customize application software
- Integrated PLC functionality
- Same plug-in modules as used in our AC drives
- Compact design, highest power-to-size ratio in its class
- Logical, common-sense programming, simplifies start-up
- Same foot-print as DCS400 and most DCS500/600, makes upgrading easy

DCS800 - Flexibility and Compatibility

Adaptive Programming adds Flexibility

Adaptive Programming gives you the ability to customize the drive to your needs without adding more hardware. Change how a digital output works, add a PI controller, or filter an analog input – all these things are possible. You program the drive with the control panel or your PC using DriveWindow Light (included with every drive). Adaptive Programming gives you the flexibility you need to make the drive work to your specifications.

Fully compatible with other ABB drives

- ACS800 Hardware compatibility – uses same I/O extension and field bus modules
- Same macros, parameter sets, command words as ACS800
- Same control panel as ACS550
- Same drive and programming tools, including Adaptive Programming, DriveWindow and DriveWindow Light
- Same high-speed DDCSLink to network with ABB AC drives, DC drives and PLC's

One world - one drive

- Standard supply voltage up to 525 V
- Applicable for 50/60 Hz networks
- Multi-lingual control panel and PC tool
- User Manuals available in 8 languages, even Russian and Chinese
- Support by ABB's worldwide drive network in more than 140 countries
- Approvals: ᵤₗ CE C

DCS800 - Commissioning made easy

Starting up your DCS800 is made easy with these important features:
- Startup Assistant gives step-by-step guidance
- Pre-defined macros for multiple applications
- Plain language user guide and help functions
- Simplified fault diagnostics
- Optimized automatic tuning
- Automatic phase sequence detection
- Automatic encoder adjustment
- High resolution control panel
- Easy to customize with Adaptive Programming

DCS800 - Adaptability second to none

The DCS800 increases its functionality according to the requirements of the user. You have the ability to include plug-in options like field bus modules, I/O extension modules, and fiber-optic communication modules. ABB's field bus alternatives give you full access to drive control and status words and to system diagnostics. This makes your choice of automation system completely independent from your decision to use first-class ABB drives.

The DCS800 also offers the adaptability of Control Builder, the tool that puts a fully programmable PLC inside your drive. Control Builder can modify the drive operation, interface, or create whole new functions for your machine. Based on IEC61131, it is easy to program in any one of six programming languages. Adaptability second to none – that is what DCS800 brings to you.

FieldBus - Your gateway to the world

ABB offers a wide range of high-speed serial modules to link the DCS800 to other controllers. These options include:

- Profibus –DP
- CANopen
- Modbus
- DeviceNet
- ControlNet
- Ethernet

DCS800 - PLC inside

- Programming environment Control Builder, based on the common standard tool CoDeSys
- Support for all IEC 61131 programming languages
- Numerous preconfigured functions like:
  - PID controller
  - Winder for diverse applications
  - Ramp and function generator
- Direct configuration in the drive without needing to add another processor module
- Compact flash memory card stores your program in the drive
- Expanded library of function blocks available or create your own applications

DCS800 - Accessibility through your PC

ABB offers a wide range of software for your PC to make accessing, programming, and diagnostics easier than ever before. DriveWindow Light, included with every drive, gives you a powerful tool to start up and interface with your ABB drive. More complex systems use the original high-speed DriveWindow tool. Its host of features, high speed data, and clear graphical presentation of the operation make it a valuable addition to your system. For Control Builder users, CoDeSys gives you all the tools you need to create and modify your applications. If that's not enough, we can even give your drive its own Web page with full internet access.

DCS800 – powerful PC tools

DriveWindow Light
- Included with every drive
- Standard connection to PC and laptop
- Assistants for fast commissioning, diagnostics and maintenance
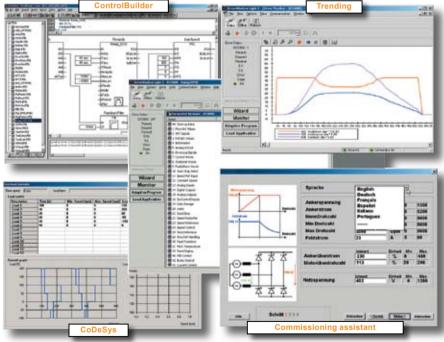- Adaptive Programming

DriveWindow
- Fast optical connection with up to 2000 drives at the same time
- Real time diagnostic monitoring

CoDeSys
- For programming your Control Builder Application
- User friendly; no special programming skills required

ControlBuilder

Trending

CoDeSys

Commissioning assistant

Technical Data

Technical data DCS800

Mains supply voltage	230...1,200 V +/–10 %, 3~
Frequency	50...60 Hz +/–5 Hz
Electronics supply	115...230 V
	–15 % / +10 %, 1~
DC Output current	20...5,200 A
Overload capability	200 %

Ambient conditions

Ambient temperature	0° ... +40° C
	40° ... 55°C derating (1%/1°C)
Storage temperature	–40° ... +55° C
Transport temperature	–40° ... +70° C
Relative humidity	5 ... 95 %, not condensing (max. 50 % betw. 0°...5° C)
Pollution degree	Class 2
Protection class	IP 00 finger protection I_{nom} < 1,000 A
Altitude	< 1,000 m height above sea level: nominal Current
	> 1,000 m height above sea level: with derating
	(1%/200m)

Field current

Up to 25A integrated (except D6 / D7)
Up to 60 A, external 1-phase
Up to 520 A, external 3-phase

I/O

Digital inputs	8 standard
	up to 11 optional
Digital outputs	8 standard
	up to 10 optional
Analog inputs	4 standard
+/–10 V; 0/2…10 V	up to 7 optional
+/–2 mA; 0/4…20 mA	
Analog outputs	3 standard (1x I_{act})
+/-10 V; 0/2…10 V	up to 5 optional
(+/–20 mA; 0/4…20 mA)	

Accuracy

Speed resolution	with encoder 0.005 %, of nominal Speed
	with analog tacho 0.1 % (16 Bit)
Cycle time speed controller	3.3 / 2.77 ms (50 / 60 Hz),
	synchronous with mains frequency
Step response curr. contr.	5 ms
Cycle time curr. contr.	3.3 / 2.77 ms (50 / 60 Hz), synchr. with
	mains frequency
Analog inputs	16 Bit

PC-Tools

DriveWindow Light	free of charge with every converter
	Standard RS232 PC-connection
DriveWindow	Real-time optical connection
Control Builder	IEC61131 programming tool
DriveSize	Converter and motor dimensioning

Maintenance / Diagnostics

Remote diagnostics with any Internet-PC worldwide
• with internet browser / internet explorer
• with DriveWindow full drive control via OPC

Approvals

Adaptive Programming

Pre-defined drive-specific function blocks, e.g.
• Free process controller (PI-Controller)
• I/O- and digital Operations
With control panel or PC-Tool, no need for additional hardware

Speed Feedback

EMF (Voltage Feedback)
Analogue tach
Pulse Encoder
2nd Encoder possible (RTAC)

Communication

Serial communication
• Ethernet	• CS31 (Procontic)
• Profibus	• CANopen
• Masterpiece (Asea)	• Selma2 (Strömberg)
• DeviceNet	• DDCS (AC800 M)
• ControlNet	• Modbus

DCSLink Peer-to-Peer

• up to 800 kBaud, < 2.5 ms
• Master-Follower
• Armature-field converter
• Free selectable data

High Current Solutions

• 12-pulse up to 20,000 A, serial and parallel
• Hard parallel and sequential
• up to 1200 V

Protections

Temperature	Over speed	Overload
Motor stalled	Motor over current	Field over current
Motor over voltage	Field over voltage	Minimum field current
Armature current ripple	Zero speed	Speed feedback monitoring
Mains over- and under-voltage		

Integrated IEC 61131-PLC

• Open standard programming tool ControlBuilder
• Support of all five IEC-programming languages
• Drive-specific function blocks
• Saving of program and source code in Memory Card
• Online debugging and forcing