DCS550

Exchanging a DCS400 by a DCS550

DCS550 Drive Manuals

All the documents available for the drive system DCS550 are listed below:

		Language						
	Public. number	E	D	I	ES	F	CN	K
Quick Guide	3ADW000395	x	x	x	x	x		
DCS550 Tools & Documentation CD	3ADW000377	x						
DCS550 Modules								
DCS550 Flyer	3ADW000374	x	x	x	x		x	x
DCS550 Technical Catalog	3ADW000378	x						
DCS550 Manual	3ADW000379	x			x			
DCS550 Service Manual	3ADW000399	x						
Installation according to EMC	3ADW000032	x						
Technical Guide	3ADW000163	x						
Extension Modules								
RAIO-01 Analog IO Extension	3AFE64484567	x						
RDIO-01 Digital IO Extension	3AFE64485733	x						
Serial Communication								
RPBA-01 PROFIBUS	3AFE64504215	x						
RCAN-01 CANopen	3AFE64504231	x						
RCNA-01 ControlNet	3AFE64506005	x						
RDNA-01 DeviceNet	3AFE64504223	x						
RMBA-01 MODBUS	3AFE64498851	x						
RETA-01 Ethernet	3AFE64539736	x						
Status 09.2011								

Safety instructions

What this chapter contains

This chapter contains the safety instructions you must follow when installing, operating and servicing the drive. If ignored, physical injury or death may follow, or damage may occur to the drive, the motor or driven equipment. Read the safety instructions before you work on the unit.

To which products this chapter applies

The information is valid for the whole range of the product DCS800, the converter modules DCS800-S0x size D1 to D7, field exciter units DCF80x, etc. like the Rebuild Kit DCS800-R00-9xxx.

Usage of warnings and notes

There are two types of safety instructions throughout this manual: warnings and notes. Warnings caution you about conditions which can result in serious injury or death and/or damage to the equipment, and advise on how to avoid the danger. Notes draw attention to a particular condition or fact, or give information on a subject. The warning symbols are used as follows:

Dangerous voltage warning warns of high voltage which can cause physical injury or death and/or damage to the equipment.

General danger warning warns about conditions, other than those caused by electricity, which can result in physical injury or death and/or damage to the equipment.

Electrostatic sensitive devices warning warns of electrostatic discharge which can damage the equipment.

Installation and maintenance work

These warnings are intended for all who work on the drive, motor cable or motor. Ignoring the instructions can cause physical injury or death and/or damage to the equipment.

WARNING!

- **Only qualified electricians are allowed to install and maintain the drive!**
- Never work on the drive, motor cable or motor when main power is applied.
  Always ensure by measuring with a multimeter (impedance at least 1 Mohm) that:
  1. Voltage between drive input phases U1, V1 and W1 and the frame is close to 0 V.
  2. Voltage between terminals C+ and D- and the frame is close to 0 V.
- Do not work on the control cables when power is applied to the drive or to the external control circuits. Externally supplied control circuits may cause dangerous voltages inside the drive even when the main power on the drive is switched off.
- Do not make any insulation resistance or voltage withstand tests on the drive or drive modules.
- Isolate the motor cables from the drive when testing the insulation resistance or voltage withstand of the cables or the motor.
- When reconnecting the motor cable, always check that the C+ and D- cables are connected with the proper terminal.

Note:

- The motor cable terminals on the drive are at a dangerously high voltage when the main power is on, regardless of whether the motor is running or not.
- Depending on the external wiring, dangerous voltages (115 V, 220 V or 230 V) may be present on the relay outputs of the drive system (e.g. SDCS-IOB-2 and RDIO).
- DCS800 with enclosure extension: Before working on the drive, isolate the whole drive system from the supply.

Grounding

These instructions are intended for all who are responsible for the grounding of the drive. Incorrect grounding can cause physical injury, death and/or equipment malfunction and increase electromagnetic interference.

WARNING!

- Ground the drive, motor and adjoining equipment to ensure personnel safety in all circumstances, and to reduce electromagnetic emission and pick-up.
- Make sure that grounding conductors are adequately sized and marked as required by safety regulations.
- In a multiple-drive installation, connect each drive separately to protective earth (PE ⏚).
- Minimize EMC emission and make a 360° high frequency grounding (e.g. conductive sleeves) of screened cable entries at the cabinet lead-through plate.
- Do not install a drive equipped with an EMC filter to an ungrounded power system or a high resistance-grounded (over 30 ohms) power system.

Note:

- Power cable shields are suitable as equipment grounding conductors only when adequately sized to meet safety regulations.
- As the normal leakage current of the drive is higher than 3.5 mA AC or 10 mA DC (stated by EN 50178, 5.2.11.1), a fixed protective earth connection is required.

Printed circuit boards and fiber optic cables

These instructions are intended for all who handle the circuit boards and fiber optic cables. Ignoring the following instructions can cause damage to the equipment.

WARNING! The printed circuit boards contain components sensitive to electrostatic discharge. Wear a grounding wrist band when handling the boards. Do not touch the boards unnecessarily.

Use grounding strip:

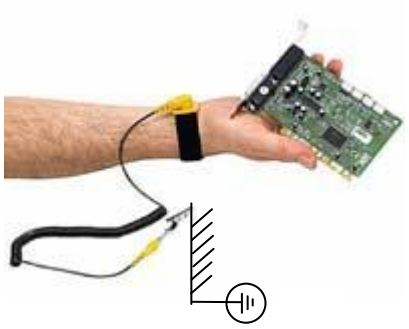


ABB order no.: 3ADV050035P0001

WARNING! Handle the fiber optic cables with care. When unplugging optic cables, always grab the connector, not the cable itself. Do not touch the ends of the fibers with bare hands as the fiber is extremely sensitive to dirt. The minimum allowed bend radius is 35 mm (1.38 in.).

Fiber optic cables

WARNING! Handle the fiber optic cables with care. When unplugging optic cables, always grab the connector, not the cable itself. Do not touch the ends of the fibers with bare hands as the fiber is extremely sensitive to dirt. The minimum allowed bend radius is 35 mm (1.4 in.).

Mechanical installation

These notes are intended for all who install the drive. Handle the unit carefully to avoid damage and injury.

WARNING!

- DCS800 sizes D4 ... D7: The drive is heavy. Do not lift it alone. Do not lift the unit by the front cover. Place units D4 and D5 only on its back.
  DCS800 sizes D5 ... D7: The drive is heavy. Lift the drive by the lifting lugs only. Do not tilt the unit. The unit will overturn from a tilt of about 6 degrees.
- Make sure that dust from drilling does not enter the drive when installing. Electrically conductive dust inside the unit may cause damage or lead to malfunction.
- Ensure sufficient cooling.
- Do not fasten the drive by riveting or welding.

Operation

These warnings are intended for all who plan the operation of the drive or operate the drive. Ignoring the instructions can cause physical injury or death and/or damage to the equipment.

WARNING!

- Before adjusting the drive and putting it into service, make sure that the motor and all driven equipment are suitable for operation throughout the speed range provided by the drive. The drive can be adjusted to operate the motor at speeds above and below the base speed.
- Do not control the motor with the disconnecting device (disconnecting mains); instead, use the control panel keys  and  , or commands via the I/O board of the drive.
- Mains connection
  You can use a disconnect switch (with fuses) to disconnect the electrical components of the drive from the mains for installation and maintenance work. The type of disconnect switch used must be as per EN 60947-3, Class B, so as to comply with EU regulations, or a circuit-breaker type which switches off the load circuit by means of an auxiliary contact causing the breaker's main contacts to open. The mains disconnect must be locked in its "OPEN" position during any installation and maintenance work.
- EMERGENCY STOP buttons must be installed at each control desk and at all other control panels requiring an emergency stop function. Pressing the STOP button on the control panel of the drive will neither cause an emergency stop of the motor, nor will the drive be disconnected from any dangerous potential.
  To avoid unintentional operating states, or to shut the unit down in case of any imminent danger according to the standards in the safety instructions it is not sufficient to merely shut down the drive via signals "RUN", "drive OFF" or "Emergency Stop" respectively "control panel" or "PC tool".
- Intended use
  The operating instructions cannot take into consideration every possible case of configuration, operation or maintenance. Thus, they mainly give such advice only, which is required by qualified personnel for normal operation of the machines and devices in industrial installations.
  If in special cases the electrical machines and devices are intended for use in non-industrial installations - which may require stricter safety regulations (e.g. protection against contact by children or similar) - these additional safety measures for the installation must be provided by the customer during assembly.

Note:

- When the control location is not set to Local (L not shown in the status row of the display), the stop key on the control panel will not stop the drive. To stop the drive using the control panel, press the LOC/REM key and then the stop key  .

Table of contents

Introduction

Precondition

There are machines out in the field or designs / electrical wiring diagrams used, which are based on DCS400 converter. In case (why ever reason) such a machine should be equipped with a DCS550 converter in the future or diagrams should be adapted to that converter this note can be used.

Intention of this note

When doing the engineering of such types of exchange several actions have to be taken into consideration. This note tries to give some hints to shorten the time necessary to do that work. Points to be checked are related to the hardware like the mechanics, terminal allocation and signal definitions and to software like parameter numbers and there definition.
The note focuses on the most important points and is therefore not comprehensive.

Procedure

Selecting a converter:

In case the type code of the used DCS400 is known an equivalent DCS550 converter can be selected. The armature current rating is identical for most of the two types (for some, e.g. the 900 A / 1000 A type it's 5 % less current with the DCS550). Both types have 500 V line voltage rating. In general the field current capability of the DCS550 is much bigger than for the DCS400.
Accessories like line chokes or fuses are identical between these two types.

Selecting converter options:

There are a few options, which have to be taken into consideration when doing an upgrade to DCS550:

- Field bus interface: Nxxx bus modules have been used for the DCS400; they cannot be used together with the DCS550 and have to be exchanged to Rxxx bus modules; equivalent Rxxx modules are available (not for the RS232 / RS485 adapter interface), there are more serial links available for DCS550 as for the DCS400; details given within the DCS550 manual
- AC tacho feedback: when using an AC tacho instead of a DC tacho for speed feedback (the same has to be applied to a tacho with remarkable ripple) the board TFK-400 was added to the tacho input at a DCS400; this is no longer necessary; details see *appendix 2*

Mechanics:

The dimensions of both types are very similar; the foot print for mounting the converter at any wall are identical assuming the same frame size is in use (A1 – F1, A2 – F2 a.s.o.). Location of the power terminals is identical with both types. Field terminal connections are different (lower left corner for DCS400, on the top at DCS550).

Converter's auxiliaries:

The supply voltage levels for the converter's electronics are identical for both types. The supply voltage level for the converter's cooling fan is identical for both types, except for the biggest ones (frame size F4; 610A up to 1000A). These types need 230V AC single phase. Small ones do not need a fan supply at all.

Converter's control terminals:

The control terminals located on the converter's control board (SDCS-CON-x) are quite different. Nevertheless when looking into the details the grouping is very similar which will allow reconnecting the converter quite easily. The *appendix 1* shows both terminal rows including the fan supply terminals for cross reference. Beside the terminals there are jumpers existing on both boards activating some hardware features. The *appendix 2* presents all jumpers present on the control boards.

Converter's functions:

The functions available with both converter types are defined using parameters. Based on the precondition above a parameter list taken from that converter in question will give fast overview which functions are in use. There are a few options to generate such a list:

using the PC tool **DriveWindowLight**

- start the tool and connect to the converter, do an upload of all parameters to the PC and store that file
- take the above file, get a default parameter set and use the tool's feature at *Drive / Parameter & Signals / Compare…* to get a list of parameters, which are presently used by the DCS400 converter; safe the list via screen dump / do a print-out

using the converter's panel **DCS400 PAN**:

- select the panel function Modified Parameters via the Mode button and the UP / DOWN keys
- scroll through the list (UP / DOWN) and take notes (parameter number and value)

Independent, if the PC tool or the converter's panel is used to generate a list of parameters, which are different to default the information needs to be transferred into the list given at appendix 3. This list is sorted by groups as used with the DCS400. It gives the parameter names together with their default values and the units. The next column is prepared to enter the values of the modified parameters.
Hint: both converter types are prepared for the PC tool DriveWindowLight.
Nevertheless the newer version (2.93 or higher) is necessary to be used for the DCS550. It can be used for the DCS400 too, but not vice versa.

Converter exchange:

before the work is begun make sure the list is available showing all modified parameters, make sure

the work is safe

(all voltage levels are switched off, safety rules are applied, etc)

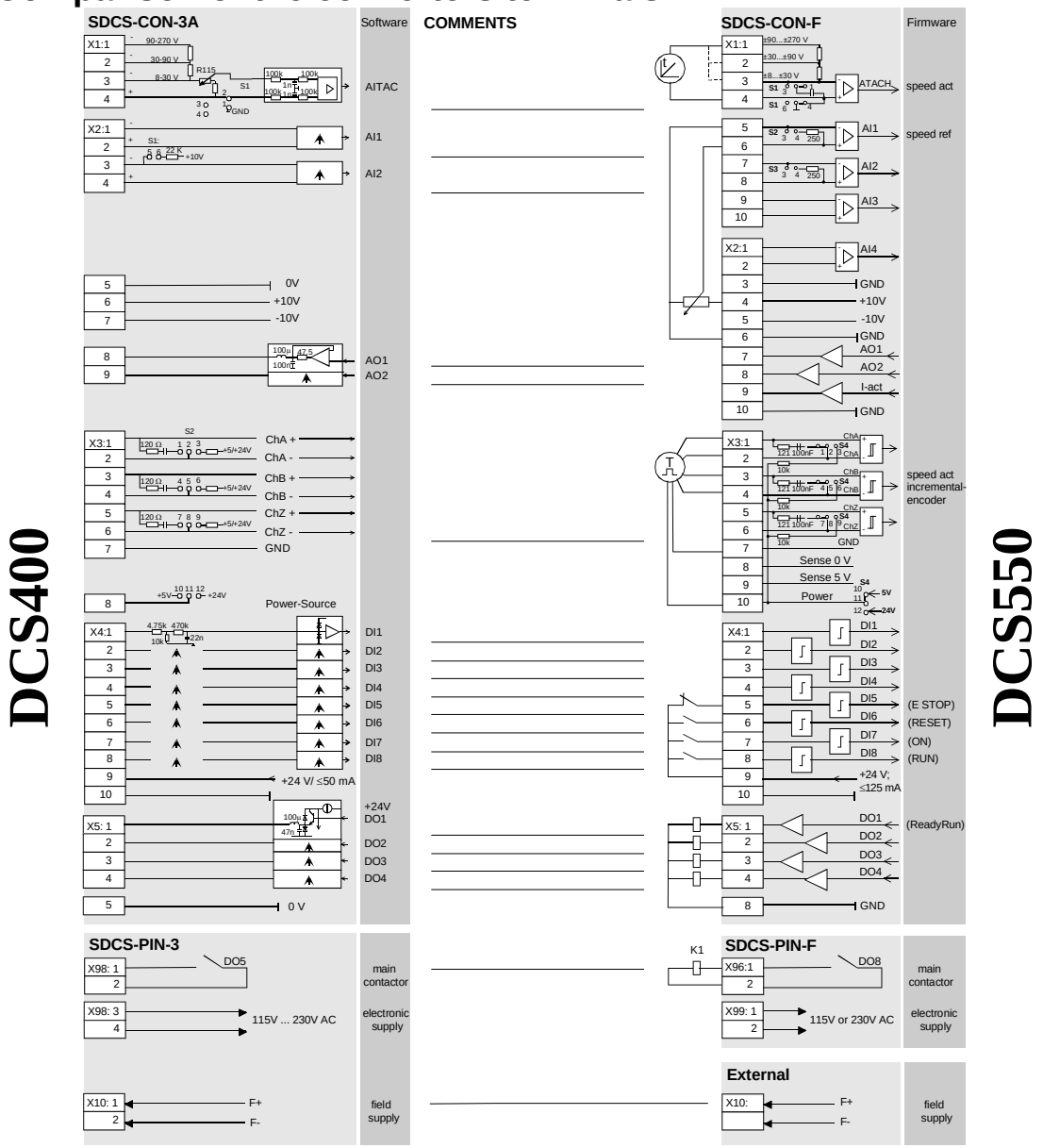
- remove the DCS400 converter
- set the jumpers at the DCS550 as necessary (appendix 2 gives some help)
- mount the DCS550 and reconnect all wires
  (appendix 1 gives some help: SDCS-CON-3A for DCS400
  SDCS-CON-F for DCS550)

Commissioning the converter:

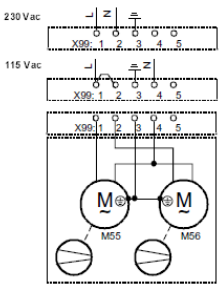
- activate all functions (parameters) necessary to run the machine within the DCS550:
  to do so either
  use the DCS550 Wizzard, perhaps it's manual because of details, or
  set the parameters manually / individually, then use appendix 3 as some help
- in case DCS550 parameters are set manually based on appendix 3:
- always follow the foot note in case there is one (very right column) before a value is set at any DCS550 parameter
- in case a DCS400 parameter is still in default, but the equivalent one with the DCS550 is given with a default value in bold letters, decide, whether the DCS550 default value is kept or not
- set parameter values within the DCS550 as read in the DCS400; this is valid for parameters defining a physical function like a gain, a time, a limit, etc / e.g. parameters with a physical unit; in case it's a selection parameter, make sure the equivalent function is set within the DCS550

- appendix 3 is to be read in this way:
  comments given are based on Standard Macro (201 = Macro Select = Standard)
  it's assumed no options are used like a special tacho interface or any serial link
  the table there presents all parameters of a DCS400 (parameter number, name, default value including it's unit) sorted group by group; the next column gives apce to enter the parameter values actually present at the DCS400; per DCS400 parameter the equivalent one for the DCS550 is given; in case the default values per parameter between the two converters are different the default value for the DCS550 is listed using bold letters; for some parameters additional hints are given using cross-references

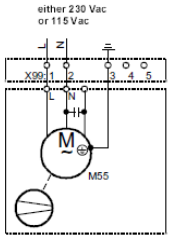
Comparison of the converters terminals:



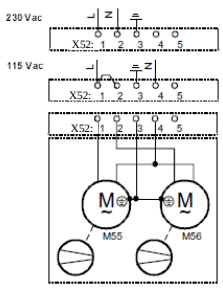
2 or 4 fan configuration:



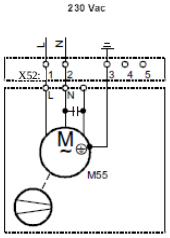
1 fan configuration:



2 or 4 fan configuration:



1 fan configuration:



Comparison of the converters jumpers:

The next two tables show the jumper positions for the DCS400 (on the left) and for the DCS550 (on the right). The jumper naming is slightly different, but identical functions are shown beside each other. Functions available with the DCS550, but not with a DCS400 are not presented.

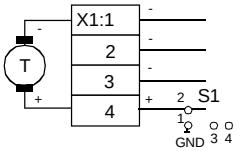
Jumper coding DCS 400

S1 Tacho and PTC

*

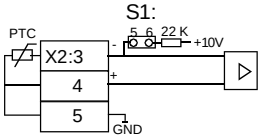
Tacho signal connected to GND

Tacho signal not connected to GND (park position only)

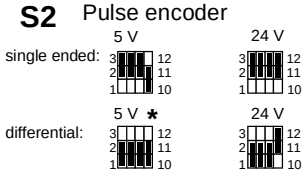


AI2 as ref input

AI2 used for temp. measurement via PTC



S2 Pulse encoder



S4	For more details see manual
S5	For more details see manual
*	default value

Jumper coding DCS 550

S1

* Jumper parking position, normal DC tacho

Reserved; see remark (1)

* AITAC+ (X1:4) connected to GND

Jumper parking position; AITAC+ (X1:4) not grounded

* Jumper parking position; do not change

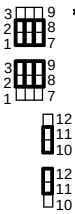
Reserved, do not use

S3

* Jumper parking position; no PTC connected

PTC connected at X1:7-8, 4.75 kΩ pull-up resistor activated

S4



* Encoder mode: **differential**; RC loads activated with R = 121 Ω and C = 100 nF

Encoder mode: **single ended,** 10 kΩ pull-uip resistor activated

* Encoder supply +5 V, sense at X3:8-9 is active

Encoder supply +24 V, no sense available

S2	For more details see manual
S5	For more details see manual
*	default value

Remark 1, use of an AC tacho instead of a DC tacho or a tacho with remarkable ripple

- with a DCS400 the subprint TFK-400 became necessary
- with a DCS550, put jumper S1 in position 2-3 (the lowest input range **X1:3 (8-30V) may not be used !**)

Comparison of the converters parameters:

The next table presents all parameters of a DCS400 with default values sorted group by group. Per DCS400 parameter the equivalent one for the DCS550 is given. With some parameters the equivalent value for the DCS500 is given in brackets and bolted letters, which indicates, that the default value is different to the one used at a DCS400 converter.

1	**Motor Settings**					
	DCS400			DCS550		
101	Arm Cur Nom	4 A		P 99.03:		
102	Arm Volt Nom	50 V		P 99.02:		
103	Field Cur Nom	0.40 A		P 99.11:		
104	Field Volt Nom	310 V		no equivalent		(1)
105	Base Speed	100 RPM		P 99.04:	[1500 RPM]	
106	Max Speed	100 RPM		P 20.02: / P 50.01:		(2)
107	Mains Volt Act			P 1.12:		
108	Mains Freq Act			P 1.38:		
109	Arm Overv Trip	130 %		P 30.08:	[120 %]	
110	Net Underv Trip	0 %		P 30.22:	[80 %]	(3)
				P 30.23:	[60 %]	
111	Net Fail Time	0 s		P 30.21: / P 30.24:		(4)
112	Cur Lim Speed	6500 RPM		no equivalent		(5)

(1) doesn't need to be considered, because function is realized different; DCS550 manual to be consulted
(2) the value of P106 (DCS400) should be copied to P50.01 and P20.02 (DCS550); depending on the max speed for the reverse direction P20.01 (DCS550) needs to be set accordingly; DCS550 manual to be consulted
(3) function is realized different; DCS550 manual to be consulted
(4) function equivalent, but parameter definition different; DCS550 manual to be consulted
(5) function to be realized using DCS550 AP programming; DCS550 manual to be consulted

2	**Operation Mode**					
	DCS400			DCS550		
201	Macro Select	Standard		P 99.08:		(1)
202	Cmd Location	Macro depend		P 10.01:		
203	Stop Mode	Ramp		P 21.03:		
204	Eme Stop Mode	Ramp		P 21.04:	[CoastStop]	
205	Main Ctrl Word			P 7.04:		
206	Main Stat Word			P 8.01:		
207	Comm Fault Mode	Ramp		P 30.28:		
208	Comm Fault Time	5 s		P 30.35:	[100 ms]	
209	Start Mode	Flying Start		no equivalent		(2)
210	DDCS Node Addr	1				(3)
211	DDCS Baud Rate	4 Mbaud				(3)
212	PTC Mode	Disabled		P 31.05:		(4)
				P 31.06:		
				P 31.07:		
213	Fan Delay	0 s		P 21.14:		
214	Fault Stop Mode	Coast		P 30.30:	[RampStop]	(4)
215	Tool Baud Rate	9600 baud				(3)
216	Dyn Brake Time	60 s		P 50.11:	[0 s]	(4)

(1) macros DCS550 are similar to DCS400, but not 100 % identical; DCS550 manual to be consulted
(2) in case 209 is set to “Start From 0”, this interlocking has to be done by external hardwiring
(3) not to be taken into consideration
(4) DCS550 manual to be consulted

3	**Armature**					
	DCS400			DCS550		
301	Arm Cur Ref			P 3.12:		
302	Arm Cur Act			P 1.06:		(1)
303	Arm Volt Act			P 1.13: / P 1.14:		
304	Arm Cur Max	100 %		P 20.12: / P 20.13:		(2)
305	Overload Time	0 s		P 31.11:		
306	Recovery Time	0 s		P 31.12:		
307	Torque Lim Pos	100 %		P 20.05:		
308	Torque Lim Neg	-100 %		P 20.06:		
309	Arm Cur Reg KP	0.1		P 43.06:		(3)
310	Arm Cur Reg TI	50 ms		P 43.07:		(3)
311	Cont Cur Lim	50 %		P 43.08:	[100 %]	(3)
312	Arm Inductance	0 mH		P 43.09:		(3)
313	Arm Resistance	0 mOhm		P 43.10:		(3)
314	Cur Contr Mode	Macro depend		P 26.01:		(4)
315	Torque Ref Sel	Macro depend		P 25.10:		(5)
316	Cur Slope	10 %/ms		P 43.04:		
317	Stall Torque	100 %		P 30.03:	[75 %]	
318	Stall Time	0 s		P 30.01:		
319	Firing Angle			P 3.13:		
320	EMF Act			P 1.17:		(6)
321	Power Act			no equivalent		(7)
322	Fixed Torque	0 %		P 25.01:		(8)
323	Torque Act			P 1.08:		
324	Arm Cur Lim 2	100 %		no equivalent		(2)
325	Arm Cur Lev	0 %		no equivalent		(7)
326	Rev Delay	2 ms		P 43.14:	[5 ms]	
327	Rev Mode	Soft		no equivalent		(9)
328	Arm Cur Tpr	0 %		no equivalent		(7)

(1) DCS550 manual to be consulted
(2) P304 is used for both current directions, the DCS550 uses one parameter per direction; in case the system needs to work with more than 100 % nominal motor current the value of P304 (DCS400) should be copied to P20.12 and P31.10 (DCS550); the value of P324 serves as a second current limitation, which can be activated via a binary command; in case this function is used DCS550 manual to be consulted
(3) the values for these parameters need to be set via the ServiceMode (P99.06) and selection “ArmCurAuto” (armature current controller self tuning)
(4) in case a different function than speed or torque control is selected the DCS550 manual is to be consulted
(5) the options selectable at both converters are slightly different; DCS550 manual to be consulted
(6) scalled in percent, not in volt; see P1.14 DCS550 manual
(7) function to be realized using DCS550 AP programming; DCS550 manual to be consulted
(8) function realized different; DCS550 manual to be consulted

(9) not to be taken into consideration; DCS550 uses “Hard” as setting (output ramp function not manipulated)

4	Field					
	DCS400			DCS550		
401	Field Cur Ref			P 3.30:		
402	Field Cur Act			P 1.29: / P 1.30:		
403	Field Cur KP	0.3		P 44.02:	[0.2]	(1)
404	Field Cur TI	200 ms		P 44.03:		(1)
405	Fld Ov Cur Trip	130 %		P 30.13:	[125 %]	
406	Field Low Trip	30 %		P 30.12:	[50 %]	
407	Field Cur 40%	29 %		P 44.12:	[40 %]	
408	Field Cur 70%	53 %		P 44.13:	[70 %]	
409	Field Cur 90%	79 %		P 44.14:	[90 %]	
410	Field Heat Ref	0 %		P 44.04:	[100 %]	
411	EMF KP	0.55		P 44.09:	[0.5]	(2)
412	EMF TI	160 ms		P 44.10:	[50 ms]	(2)
413	Field Boost	100 %		no equivalent		(3)
414	FIS Volt Ref			no equivalent		
415	Fld Boost Time	60 s		no equivalent		(3)
416	Field Cur Tpr	0 %		no equivalent		(3)

(1) the values for these parameters need to be set via the ServiceMode (P99.06) and selection “FieldCurAuto” (field current controller self tuning)
(2) the values for these parameters need to be set via the ServiceMode (P99.06) and selection “EMF FluxAuto” (EMF controller self tuning and flux linearization)
(3) function to be realized using DCS550 AP programming; DCS550 manual to be consulted

5	Speed Controller					
	DCS400			DCS550		
501	Speed Ref Sel	Macro depend		P 11.03:	[SpeedRef2301]	(1)
502	Speed Meas Mode	EMF		P 50.03:		
503	Encoder Inc	1024		P 50.04:		
504	Speed Ref			P 2.18:		
505	Speed Act			P 1.04:		
506	Tacho Speed Act			P 1.05:		
507	Speed Reg KP	0.2		P 24.03:	[5]	(2, 2a)
508	Speed Reg TI	5000 ms		P 24.09:	[2500 ms]	(2)
509	Accel Ramp	10 s		P 22.01:	[20 s]	
510	Decel Ramp	10 s		P 22.02:	[20 s]	
511	Eme Stop Ramp	10 s		P 22.04:	[20 s]	
512	Ramp Shape	0 s		P 22.05:		
513	Fixed Speed 1	0 RPM		P 23.02:		
514	Fixed Speed 2	0 RPM		P 23.03:		
515	Zero Speed Lev	50 RPM		P 20.03:	[75 rpm]	
516	Speed Level 1	0 RPM		P 50.10:	[1500 rpm]	
517	Speed Level 2	0 RPM		no equivalent		(3)
518	Overspeed Trip	115 %		P 30.16:	[1800 rpm]	
519	Jog Accel Ramp	10 s		P 22.12:	[20 s]	
520	Jog Decel Ramp	10 s		P 22.13:	[20 s]	
521	Alt Par Sel	Macro depend		P 24.29:	[ParSet1]	

522	Alt Speed KP	0.2		P 24.27:	[5]	
523	Alt Speed TI	5000 ms		P 24.28:	[2500]	
524	Alt Accel Ramp	10 s		P 22.09:	[20 s]	
525	Alt Decel Ramp	10 s		P 22.10:	[20 s]	
526	Aux Sp Ref Sel	Macro depend		P 11.06:	[SpeedRef2301]	(1)
527	Drooping	0 %		no equivalent		
528	Ref Filt Time	0 s		no equivalent		
529	Act Filt 1 Time	0.01 s		P 23.06:	[0 ms]	
530	Act Filt 2 Time	0 s		P 23.11:		
531	Speed Lim Fwd	6500 RPM		P 20.02:	[1500 rpm]	
532	Speed Lim Rev	-6500 RPM		P 20.01:	[-1500 rpm]	
533	Ramp In Act			P 2.01:		
534	Tacho Offset	0 RPM		no equivalent		
537	Speed Ref Tune	100 %		P 23.16:		(4)
538	Aux Sp Ref Tune	100 %		P 23.16:		(4)
539	Speed Deviation			P 2.03:		
540	Speed Act Filt			P 1.01:		

(1) macros DCS550 are similar to DCS400, but not 100 % identical; DCS550 manual to be consulted
(2) the values for these parameters need to be set via the ServiceMode (P99.06) and selection "SpdCtrlAuto" (speed controller self tuning)
(2a) in case the speed controller self tuning cannot be used to get the correct values (e.g. mechanical reasons) the value for the proportional gain can be calculated :
P 24.03 [DCS550] = P 5.07 [DCS400] * 0.1 rpm * 20000 divided by P 2.29 [DCS550]
(3) function to be realized using DCS550 AP programming; DCS550 manual to be consulted
(4) function realized different; DCS550 manual to be consulted

6	**Input/Output**					
	DCS400			DCS550		
601	AI1 Scale 100 %	10 V		P 13.01: / 13.02: / 13.03:		(1)
602	AI1 Scale 0 %	0 V		no equivalent		(1)
603	AI2 Scale 100 %	10 V		P 13.05 / 13.06 / 13.07:		(1)
604	AI2 Scale 0 %	0 V		no equivalent		(1)
605	AO1 Assign	Macro depend		P 15.01:		(2)
606	AO1 Mode	bipolar		P 15.03:		
607	AO1 Scale 100 %	10 V		P 15.05:		
608	AO2 Assign	Macro depend		P 15.06:		(2)
609	AO2 Mode	bipolar		P 15.08:		
610	AO2 Scale 100 %	10 V		P 15.10:		
611	DO1 Assign	Macro depend		P 14.01: / P 14.02:	[FansOn]	(2)
612	DO2 Assign	Macro depend		P 14.03: / P 14.04:	[---]	(2)
613	DO3 Assign	Macro depend		P 14.05: / P 14.06:	[MainContactorOn]	(2)
614	DO4 Assign	Macro depend		P 14.07: / P 14.08:	[---]	(2)
615	DO5 Assign	Macro depend		P 14.15: / P 14.16:	[MainContactorOn]	(2)
616	Panel Act 1	Arm Volt Act		P 34.01:		
617	Panel Act 2	Arm Cur Act		P 34.08:		
618	Panel Act 3	Speed Ref		P 34.15:		

619	Panel Act 4	Speed Act		no equivalent		
620	Dataset 2.2 Asn	Speed Act		P 92.02:		
621	Dataset 2.3 Asn	Arm Cur Act		P 92.03:	[TorqRef2]	
622	MSW Bit 11 Asn	Macro depend		no equivalent		(3)
623	MSW Bit 12 Asn	Macro depend		no equivalent		(3)
624	MSW Bit 13 Asn	Macro depend		no equivalent		(3)
625	MSW Bit 14 Asn	Macro depend		no equivalent		(3)
626	AI1 Act			P 5.03:		
627	AI2 Act			P 5.04:		
628	DI Act			P 8.05:		
629	Bus CtrlWord			P 7.01:		
630	DS Monitor Act			no equivalent		
631	DS Monitor Sel	Dataset 1.2		no equivalent		

(1) function realized different; DCS550 manual to be consulted
(2) macros DCS550 are similar to DCS400, but not 100 % identical; DCS550 manual to be consulted
(3) additional information available on the link via DsetXPlus-**y**-val-**z**- and parameters in group 19

7	**Maintenance**					
	DCS400			DCS550		
701	Language	English		P 99.01:		
702	Contr Service	none		P 99.06:		
703	Diagnosis	none		P 9.11:		(1)
704	SW Version	113		P 4.01:		(2)
705	Conv Type	check name plate		P 4.14:		(2)
706	Conv Nom Cur	check name plate		P 4.05:		(2)
707	Conv Nom Volt	check name plate		P 4.04:		(2)
708	Volatile Alarm			no equivalent		
709	Fault Word 1			P 9.01:		
710	Fault Word 2			P 9.02:		
711	Fault Word 3			P 9.03:		
712	Alarm Word 1			P 9.06:		
713	Alarm Word 2			P 9.07:		
714	Alarm Word 3			P 9.08:		
715	Commis Ref 1	0		P 99.15:		
716	Commis Ref 2	0		P 99.16:		
717	Squarewave Per	2 s		P 99.17:		
718	Squarewave Act			P 3.03:		
719	Pan Text Vers			no equivalent		
720	CPU Load			P 4.21:		
721	Con Board	CON-3A		no equivalent		

(1) used for fault tracing
(2) for consistency check only

8	Fieldbus					
	DCS400			DCS550		
801	Fieldbus Par 1	Disable		P 98.02:		(1)
802	Fieldbus Par 2	0		P 51.02:		(1)
803	Fieldbus Par 3	0		P 51.03:		(1)
804	Fieldbus Par 4	0		P 51.04:		(1)
805	Fieldbus Par 5	0		P 51.05:		(1)
806	Fieldbus Par 6	0		P 51.06:		(1)
807	Fieldbus Par 7	0		P 51.07:		(1)
808	Fieldbus Par 8	0		P 51.08:		(1)
809	Fieldbus Par 9	0		P 51.09:		(1)
810	Fieldbus Par 10	0		P 51.10:		(1)
811	Fieldbus Par 11	0		P 51.11:		(1)
812	Fieldbus Par 12	0		P 51.12:		(1)
813	Fieldbus Par 13	0		P 51.13:		(1)
814	Fieldbus Par 14	0		P 51.14:		(1)
815	Fieldbus Par 15	0		P 51.15:		(1)
816	Fieldbus Par 16	0		P 51.16:		(1)

(1) as the definitions for P 801 to P 816 are depending on the serial link used an equivalent parameter at the DCS550 converter cannot be given; DCS550 manual to be consulted

9	MacroAdaption					
	DCS400			DCS550		
901	MacParGrpAction	unchanged		no equivalent		
902	Jog 1	Macro Depend		P 10.17:		
903	Jog 2	Macro Depend		P 10.18:		
904	Coast	Macro Depend		P 10.08:	[DI4]	
905	User Fault	Macro Depend		P 30.31:		
906	User Fault Inv	Macro Depend		P 10.xx:		(1)
907	User Alarm	Macro Depend		P 30.32:		
908	User Alarm Inv	Macro Depend		P 10.xx:		(1)
909	Dir of Rotation	Macro Depend		P 10.02:		
910	MotPot Incr	Macro Depend		P 11.13:		
911	MotPot Decr	Macro Depend		P 11.14:		
912	MotPotMinSpeed	Macro Depend		P 11.15:		
913	Ext Field Rev	Macro Depend		no equivalent		
914	AlternativParam	Macro Depend		P 22.11: / P 24.29:		
915	Ext Speed Lim	Macro Depend		no equivalent		(2)
916	Add AuxSpRef	Macro Depend		P 11.12:		
917	Curr Lim 2 Inv	Macro Depend		no equivalent		(2)
918	Speed/Torque	Macro Depend		P 26.04: / P 26.05:		
919	Disable Bridge1	Macro Depend		P 7.03, B4:		(2)
920	Disable Bridge2	Macro Depend		P 7.03, B5:		(2)
921	Field Boost Sel	Macro Depend		no equivalent		(2)

(1) xx, depending, which input had been selected before
(2) function to be realized using DCS550 AP programming; DCS550 manual to be consulted

10	Signals					
	DCS400			DCS550		
1001	SPEED REF			P 2.18:		
1002	SPEED ACT			P 1.04:		
1003	TACHO SPEED ACT			P 1.05:		
1004	RAMP IN ACT			P 2.01:		
1005	SPEED DEVIATION			P 2.03:		
1006	SPEED ACT FILT			P 1.01:		
1007	ARM CUR REF			P 3.12:		
1008	ARM CUR ACT			P 1.06: / P 1.16:		
1009	ARM VOLT ACT			P 1.13: / P 1.14:		
1010	EMF ACT			P 1.17:		
1011	POWER ACT			no equivalent		(1)
1012	TORQUE ACT			P 1.08:		
1013	FIRING ANGLE			P 3.13:		
1014	FIELD CUR REF			P 3.30:		
1015	FIELD CUR ACT			P 1.29: / P 1.30:		
1016	FIS VOLT REF			no equivalent		
1017	MAINS VOLT ACT			P 1.11: / P 1.12:		
1018	MAINS FREQ ACT			P 1.38:		
1019	MAIN CTRL WORD			P 7.04:		
1020	MAIN STAT WORD			P 8.01:		
1021	BUS CTRLWORD			P 7.01:		
1022	FAULT WORD 1			P 9.01:		
1023	FAULT WORD 2			P 9.02:		
1024	ALARM WORD 1			P 9.06:		
1025	ALARM WORD 2			P 9.07:		
1026	AI1 ACT			P 5.03:		
1027	AI2 ACT			P 5.04:		
1028	DI ACT			P 8.05:		

(1) function to be realized using DCS550 AP programming; DCS550 manual to be consulted

11	Fault Display					
	DCS400			DCS550		
1101	Last Fault			P 9.12:		
1102	2nd Last Fault			P 9.13:		
1103	3rd Last Fault			P 9.14:		
1104	4th Last Fault			no equivalent		(1)
1105	5th Last Fault			no equivalent		(1)
1106	Last Alarm			no equivalent		(1)
1107	2nd Last Alarm			no equivalent		(1)
1108	3rd Last Alarm			no equivalent		(1)
1109	4th Last Alarm			no equivalent		(1)
1110	5th Last Alarm			no equivalent		(1)

(1) see fault logger

DCS family

DCS550-S modules

The compact drive for machinery application

20 ... 1,000 A_{DC}
0 ... 610 V_{DC}
230 ... 525 V_{AC}
IP00

- Compact
- Robust design
- Adaptive and winder program
- High field exciter current

DCS800-S modules

The versatile drive for processindustry

20 ... 5,200 A_{DC}
0 ... 1,160 V_{DC}
230 ... 1,000 V_{AC}
IP00

- Compact
- Highest power ability
- Simple operation
- Comfortable assistants, e.g. for commissioning or fault tracing
- Scalable to all applications
- Free programmable by means of integrated IEC61131-PLC

DCS800-A enclosed converters

Complete drive solutions

20 ... 20,000 A_{DC}
0 ... 1,500 V_{DC}
230 ... 1,200 V_{AC}
IP21 – IP54

- Individually adaptable to customer requirements
- User-defined accessories like external PLC or automation systems can be included
- High power solutions in 6- and 12-pulse up to 20,000 A, 1,500 V
- In accordance to usual standards
- Individually factory load tested
- Detailed documentation

DCS800-E series

Pre-assembled drive-kits

20 ... 2,000 A_{DC}
0 ... 700 V_{DC}
230 ... 600 V_{AC}
IP00

- DCS800 module with all necessary accessories mounted and fully cabled on a panel
- Very fast installation and commissioning
- Squeezes shut-down-times in revamp projects to a minimum
- Fits into Rittal cabinets
- Compact version up to 450 A and Vario version up to 2,000 A

DCS800-R Rebuild Kit

Digital control-kit for existing powerstacks

20 ... 20,000 A_{DC}
0 ... 1,160 V_{DC}
230 ... 1,200 V_{AC}
IP00

- Proven long life components are re-used, such as power stacks, (main) contactors, cabinets and cabling / busbars, cooling systems
- Use of up-to-date communication facilities
- Increase of production and quality
- Very cost-effective solution
- Open Rebuild Kits for nearly all existing DC drives
- tailor-made solutions for...
  - BBC PxD
  - BBC SZxD
  - ASEA TYRAK
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