Getting Started · Edition 04/2007



SIEMENS

SIEMENS

SINAMICS

SINAMICS G120D Control Units CU240D

Getting Started

Warnings and Cautions	1
Mechanical Installation	2
Electrical Installation	3
Check List	4
Commissioning	5
Factory reset	6
	Α
Diagnostics	

Issue 1.0

2007-04-25 A5E01074777A

Safety Guidelines

This manual contains notices you have to observe in order to ensure your personal safety, as well as to prevent damage to property. The notices referring to your personal safety are highlighted in the manual by a safety alert symbol, notices referring only to property damage have no safety alert symbol. These notices shown below are graded according to the degree of danger.

indicates that death or severe personal injury will result if proper precautions are not taken.

indicates that death or severe personal injury may result if proper precautions are not taken.

with a safety alert symbol, indicates that minor personal injury can result if proper precautions are not taken.

CAUTION

without a safety alert symbol, indicates that property damage can result if proper precautions are not taken.

NOTICE

indicates that an unintended result or situation can occur if the corresponding information is not taken into account.

If more than one degree of danger is present, the warning notice representing the highest degree of danger will be used. A notice warning of injury to persons with a safety alert symbol may also include a warning relating to property damage.

Qualified Personnel

The device/system may only be set up and used in conjunction with this documentation. Commissioning and operation of a device/system may only be performed by **qualified personnel**. Within the context of the safety notes in this documentation qualified persons are defined as persons who are authorized to commission, ground and label devices, systems and circuits in accordance with established safety practices and standards.

Prescribed Usage

Note the following:

This device may only be used for the applications described in the catalog or the technical description and only in connection with devices or components from other manufacturers which have been approved or recommended by Siemens. Correct, reliable operation of the product requires proper transport, storage, positioning and assembly as well as careful operation and maintenance.

Trademarks

All names identified by ® are registered trademarks of the Siemens AG. The remaining trademarks in this publication may be trademarks whose use by third parties for their own purposes could violate the rights of the owner.

Disclaimer of Liability

We have reviewed the contents of this publication to ensure consistency with the hardware and software described. Since variance cannot be precluded entirely, we cannot guarantee full consistency. However, the information in this publication is reviewed regularly and any necessary corrections are included in subsequent editions.

Siemens AG Automation and Drives Postfach 48 48 90437 NÜRNBERG GERMANY Ordernumber: A5E01074777A @ 05/2007 Copyright © Siemens AG 2007. Technical data subject to change

Table of contents

1	Warnings and Cautions					
2	Mechanical Installation					
3	Electr	rical Installation				
	3.1	Settings PROFIBUS DP address with DIP switches				
4	Chec	k List				
5	Comr	nissioning				
	5.1	Commissioning the application				
6	Facto	ory reset				
Α	Diagnostics					
	•					

Warnings and Cautions

General

WARNING
This equipment contains dangerous voltages and controls potentially dangerous rotating mechanical parts. Non-compliance with the Warnings or failure to follow the instructions contained in this manual can result in loss of life, severe personal injury or serious damage to property.
Only suitable qualified personnel should work on this equipment, and only after becoming familiar with all safety notices, installation, operation and maintenance procedures contained in this instruction. The successful and safe operation of this equipment is dependent upon its proper handling, installation, operation and maintenance.
The power supply, DC and motor terminals, the brake and thermistor cables can carry dangerous voltages even if the inverter is inoperative. Wait at least five minutes to allow the unit to discharge after switching off the line supply before carrying out any installation work.
As the earth leakage for this product can be greater than 3.5mA a.c., a fixed earth connection is required and the minimum size of the protective earth conductor shall comply with the local safety regulations for high leakage current equipment.
It is strictly prohibited for any mains disconnection to be performed on the motor-side of the system; any disconnection of the mains must be performed on the mains-side of the Inverter.
When connecting the line supply to the Inverter, make sure that the terminal case of the motor is closed.
When changing from the ON to OFF-state of an operation if an LED or other similar display is not lit or active; this does not indicate that the unit is switched-off or powered-down.
The inverter must always be grounded.
Isolate the line supply before making or changing connections to the unit.
Ensure that the inverter is configured for the correct supply voltage. The inverter must not be connected to a higher voltage supply.
Take particular notice of the general and regional installation and safety regulations regarding work on dangerous voltage installation (e.g. EN 50178) as well as the relevant regulations regarding the correct use of tools and personal protective equipment (PPE).

CAUTION T

Children and the general public must be prevented from accessing or approaching the equipment!

This equipment may only be used for the purpose specified by the manufacturer. Unauthorized modifications and the use of spare parts and accessories that are not sold or recommended by the manufacturer of the equipment can cause fires, electric shocks and injuries.

NOTICE

Keep these instructions within easy reach of the equipment and make them available to all users.

Whenever measuring or testing has to be performed on live equipment, the regulations of Safety Code BGV A2 must be observed, in particular § 8 "Permissible Deviations when Working on Live Parts". Suitable electronic tools should be used.

Before installing and commissioning, please read the safety instructions and warnings carefully and all the warning labels attached to the equipment. Make sure that the warning labels are kept in a legible condition and replace missing or damaged labels.

Ensure that the appropriate circuit-breakers/fuses with the specified current rating are connected between the power supply and the inverter.

These instructions assume that the user is fully conversant with the use of the following technologies:

- PLCs

- The commissioning software STARTER

- PROFIBUS profiles and protocols.

The commissioning procedure outlined in this manual is for Standard Inverters only - Failsafe commissioning is covered in the Operating Instructions.

2

Mechanical Installation

General layout of SINAMICS G120D



Front view



Rear view



Power Module

- 11. PM to CU interface
 - 12. Motor, brake and temperature sensor connection
 - 13. Mains supply connection

Note: Should an MMC be required, it should be inserted before the CU is fitted to the PM.

Figure 2-1 SINAMICS G120D Inverter

5. PROFIBUS IN and OUT

6. Digital outputs

Fitting the Control Unit to the Power Module

The inverter is delivered as two separate components - the Power Module (PM) and the Control Unit (CU). The CU must be fitted to the PM prior to any further commissioning taking place.



Seals fitted correctly

It is important that when assembling the Power Module and the Control Unit that all the seals are fitted correctly to ensure IP65 rating.

The CU is fitted to the PM as shown in the diagram below.



Figure 2-2 Fitting the Control Unit to the Power Module

Drill pattern for the SINAMICS G120 D inverter

The inverter has an identical drill pattern for all frame sizes. The drill pattern, depth and tightening torques are shown in the diagram below.



Figure 2-3 Drill pattern SINAMICS G120 D

Mounting orientation

The inverter has been designed to be table-mounted or side-mounted, it cannot be mounted upside-down. The minimum clearance distances are as follows:

- Side-by-side no clearance distance is required
- Above and below the inverter 150 mm (5.9 inches).



Table 3-1

Power Module specifications - 3AC 380 V ... 480 V \pm 10 %

Product	Frame size	e size rated output		НО		fuse	
				rated output current	rated input current		3NA3
6SL3525		kW	hp	А	А	Α	Туре
0PE17-5AA0	A	0.75	1	2.2	2.1	10	803 -
0PE21-5AA0	A	1.5	1	4.1	3.8	10	803 -
0PE23-0AA0	В	3	4	7.7	7.2	16	805 -
0PE24-0AA0	С	4	5	10.2	9.5	20	807 -
0PE25-5AA0	С	5.5	7.5	13.2	12.2	20	807 -
0PE27-5AA0	С	7.5	10	19	17.7	32	812

Rated Output, Input and Fuses

For further technical information, please refer to the Operating Instructions.

Connections and cables

WARNING

Temperature sensor and brake module connections

The temperature sensor and brake module connections are at DC link negative potential. Appropriate precautions against touching these connections and appropriate insulation on the cables must be used. The motor terminal box must be kept closed whenever the mains is applied to the Inverter.

The following block diagram and tables describe the details and limitations of the connections of the inverter.

Cable lengths

All inverters will operate at full specification with motor cable lengths as follows:

- Screened 15 m (49 ft)
- Unscreened 30 m (98 ft)

3.1 Settings PROFIBUS DP address with DIP switches

Block diagram



Figure 3-1 Block diagram SINAMICS G120D

Cable, connectors and tools specifications

The detailed specifications for the cables, connectors and tools required to manufacture the necessary cables for the SINAMICS G120D are listed in the following tables.

Table 3-2 Tools

		Harting part number				
Crimp tool (Q8/0 and Q4/2)	0999-000-0001					
Crimp tool inserts 0.75 - 1mm ² (18 - 17 AWG)		0999-000-0007				
	1.5 - 2.5 mm ² (15 - 13 AWG)	0999-000-0008				
	4 mm ² (11 AWG)	0999-000-0006				
Removal tool (Q8/0)		0999-000-0319				
Removal tool (Q4/2)	0999-000-0305					
No special tools are required for the Control Unit connectors						

3.1 Settings PROFIBUS DP address with DIP switches

Connector	Binder part numbers				
	Straight connector	Right-angle connector			
Power input (7/8")	99-2444-12-05	99-2444-52-05			
Power Output (7/8")	99-2445-12-05	99-2445-52-05			
PROFIBUS In (M12)	99-1436-810-05	99-1436-820-05			
PROFIBUS Out (M12)	99-1437-810-05	99-1437-820-05			
Encoder (M12)	99-1487-812-08	99-1487-822-08			
Digital input and output (M12)	99-0437-14-05	99-0437-24-05			

Table 3-3Control Unit connectors

Table 3-4 Mains supply connector

Power	cable	cable type	All connector parts are Harting Q4/2						
rating	size		Shell	Crimp size	Crimp number	Hood	Gland/Seal		
0.75 kW	1.5 mm2	(3+E) YY	Harting Q4/2	1.5 mm2	0932 000 6204	1912 008 0527	0900 000 5058		
1.50 kW	15 AWG	Unscreened	0912 006 3141	15 AWG					
3.00 kW	2.5 mm2	(3+E) YY		2.5 mm2	0932 000 6205	1912 008 0526	1900 000 5190		
4.00 kW	13 AWG	Unscreened	13 AWG						
5.50 kW	4 mm2	(3+E) YY		4 mm2	0932 000 6207				
7.50 kW	11 AWG	Unscreened		11 AWG					
4 x crimps	are require	d for each invert	er						

Table 3-5 Motor connector

Power	cable	Belcom "DESINA" Cable No.	All connector parts are Harting Q8/0					
rating	size		Shell	Crimp size	Crimp number	Hood	Gland/Seal	
0.75 kW	1 mm2	13EBN17Z08P	Harting Q8/0	1 mm2	0933 000 6105	1912 008 0502	1912 000 5057	
1.50 kW	17 AWG		0912 008	17 AWG				
3.00 kW	2.5 mm2	13EBN13Z08P	3001	1 2.5 mm2	0933 000 6102	1912 0080528	LUTZE 600173	
4.00 kW	13 AWG		13 AWG				(NOT Harting)	
5.50 kW	4 mm2	13EBN11Z08P		4 mm2	0933 000 6107			
7.50 kW	11 AWG			11 AWG				
4 x crimps	are require	d for each inverter	for the motor co	nnections				

3.1 Settings PROFIBUS DP address with DIP switches

Power rating	cable	Belcom "DESINA" Cable No.	Temperature s	ensor pair	EM Brake pair				
	size		Crimp size	Crimp number	Crimp size	Crimp number			
0.75 kW	1 mm2	13EBN17Z08P	0.75 mm2	0933 000 6114	0.75 mm2	0933 000 6114			
1.50 kW	17 AWG		18 AWG		18 AWG				
3.00 kW	2.5 mm2	13EBN13Z08P	08P 1 mm2 17 AWG	0933 000 6105	1 mm2	0933 000 6105			
4.00 kW	13 AWG				17 AWG				
5.50 kW	4 mm2	13EBN11Z08P	1 mm2	0933 000 6105	1.5 mm2	0933 000 6104			
7.50 kW	11 AWG		17 AWG		15 AWG				
2 x crimps ar	2 x crimps are required for each auxiliary signal pair								

Table 3-6 Temperature sensor and EM brake

Connection specifications

	Mains s	upply			Moto	or output
000	Pin	Function			Pin	Function
	1	L1] p	000	<u>р</u> 1	U
	2	L2] 8 8	@FE@	2	Not connected
	3	L3			3	W
	4	-) 4	EM Brake (-)
	11	-)		5	Temperature sensor (+)
	12	-			6	EM Brake (+)
	PE	Protective Earth			7	V
					8	Temperature sensor (-)
					PE	Protective Earth
	Туре	HAN Q4/2 (Male)			Туре	HAN Q8 (Female)
	Spec.	3AC 380V480V ± 10%			Spec). -

 Table 3-7
 Mains supply and motor output specifications

3.1 Settings PROFIBUS DP address with DIP switches

	Logical	24 V supply (IN)		Logical	24 V supply (OUT)		
	Pin	Function		Pin	Function		
	1	Switched 0 V (2M)		1	Switched 0 V (2M)		
	2	Unswitched 0 V (1M)		2	Unswitched 0 V (1M)		
	3	Functional Earth		3	Functional Earth		
4		Unswtiched +24 V (1L+)				4	Unswtiched +24 V (1L+)
	5	Switched +24 V (2L+)		5	Switched +24 V (2L+)		
	Туре	7/8" - 16UN (Male)		Туре	7/8" - 16UN (Female)		
	Note	The CU metalwork is separated from high voltage circuits by reinforced insulation and so protective earth is not required.					

Table 3-8 Logical 24 V supply specifications

Table 3-9 PROFIBUS connectors specifications

	PROFIE	BUS (IN)	\sim	PROFIE	BUS (OUT)
	Pin	Function		Pin	Function
	1	Not connected		1	Not connected
	2	Data A (N)		2	Data A (N)
	3	Not connected		3	Not connected
	4	Data B (P)		4	Data B (P)
	5	Functional Earth		5	Functional Earth
	Shield	Functional Earth		Shield	Functional Earth
	Туре	M12 - 5 pole (Male)		Туре	M12 - 5 pole (Female)

Table 3-10 Digital input and output specifications

Digital input (4 sockets, 6 DIs)			Digital o	output (2 outputs)
Pin	Function		Pin	Function
1	Unswitched +24 V		1	Not connected
2	DI1,DI3 or NC		2	DO1
3	Unswitched 0 V		3	Switched 0 V
4	DI0,DI2,DI4 or DI5		4	DO0
5	Functional Earth		5	Functional Earth
Shield	Functional Earth		Shield	Functional Earth
Туре	M12 - 5 pole (Female)		Туре	M12 - 5 pole (Female)
Spec	PNP, SIMATIC- compatible, low < 5 V, high > 10 V, max. input voltage 30 V		-	

3.1 Settings PROFIBUS DP address with DIP switches

Encoder connections				
Pin	Function			
1	Channel A			
2	Channel A'			
3	Channel B			
4	Channel B'			
5	Channel Z			
6	Channel Z'			
7	Unswitched 24 V			
8	Unswitched 0 V			
Shield	Functional Earth			
Туре	M12 - 8 pole (Female)			

Table 3-11 Encoder connection specifications

3.1 Settings PROFIBUS DP address with DIP switches

Setting the PROFIBUS DP address

Prior to using the PROFIBUS DP interface, the address of the node (inverter) must be set.

There are two methods for setting the PROFIBUS DP address:

- Using the seven PROFIBUS DP address DIP switches on the Control Unit
- Using parameter "P0918".

The PROFIBUS DP address can be set between 1 and 125.

Note

The address is taken from P0918 if all PROFIBUS DP address DIP switches are in the OFF position, otherwise the DIP switch setting is valid.

CAUTION

The external 24 V power supply must be switched off before the DIP switch settings are changed. DIP switch setting changes do not take effect until the Control Unit has been powered-up again.

Setting the PROFIBUS DP address via DIP switches

The PROFIBUS DP address can be set via DIP switch, as shown in the table below.

3.1 Settings PROFIBUS DP address with DIP switches

DIP switch	1	2	3	4	5	6	7
Add to address	1	2	4	8	16	32	64
Example 1: Address = 3 = 1 + 2							
Example 2: Address = 88 = 8 + 16 + 64							

Table 3-12 Example address for the PROFIBUS DP interface

Check List

Installation check list

Before power is applied to the inverter/motor system, the following checks should be performed:

	Check that:	1
1.	The environmental conditions conform to the inverter/motor specifications	
2.	The inverter and the motor are securely mounted	
3.	The inverter and motor are correctly installed with adequate cooling provision	
4.	The motor and the application/equipment are ready to start, i.e. safe state - motor can rotate	
5.	The inverter is correctly earthed/grounded	
6.	The input power (supply) voltage matches the inverter's nominal input voltage	
7.	The input power (mains) fuses are the correct type and installed correctly	
8.	The motor connections are connected to ensure the correct direction of rotation of the motor at start-up	
9.	The motor and mains connections are connected and tightened to the required specification	
10.	The motor connections are not reversed - the motor will start but serious damage may occur to the connected equipment	
11.	The motor cable is routed away from other cables	
12.	The control connections are connected and tightened to the required specification	
13.	No tools or other objects that can cause damage to the system are present	
14.	The inverter is the only power source to the motor	

Commissioning the Inverter

The STARTER software uses a series of wizards and masks to guide the user through the commissioning procedures for the inverter.

What do you need?

The following items are required to commission the Inverter with STARTER:

- The PC connection cable order number: 3RK1922-2BP00
- STARTER software installed on your PC.

Note

PC connection cable 3RK1922-2BP00

Version E02 or higher of the PC connection cable should be used with the SINAMICS G120 D Control Unit.

Commissioning procedure

Once STARTER is running it will present the first wizard which will allow hardware to be configured, such as CU type, PM type etc. This is shown in the figure below.



Figure 5-1 STARTER - start-up wizard.

Once a project has been created, the configuration of the inverter and its commissioning is accomplish by clicking on "Device configuration" in the "Drive Navigator" mask, as shown in the figure below.

W	nat do you want to do?		
	Device configuration	Commissioning	Diagnostics/optimization

Figure 5-2 STARTER - Drive configuration

3.1 Settings PROFIBUS DP address with DIP switches

On completion of the commissioning process the data can be transferred to the Inverter memory.

Brake module

If a brake module is fitted to the motor, it can be configured by using the Brake Module mask. This can be selected by using the project tree on the left-hand side of the screen. See figure below.



Figure 5-3 STARTER - Brake control mask

Temperature sensors

If a KTY or PTC temperature sensor is fitted to the motor, it can be configured by using the Temperature sensor mask. The sensor mask be selected by using the project tree on the left-hand side of the screen. See figure below.

3.1 Settings PROFIBUS DP address with DIP switches

M STARTER - SINAMICS G120 FAIL SAFE - [Drive	_unit_0 - Motor temperature]
🙍 Project Edit Target system View Options W	/indow Help
SINAMICS G120 FAIL SAFE Insert single drive unit Configure drive unit Gonfigure drive unit G	Motor temperature Thermistor selection PTC thermistor (1) Response with overtemperature Warning and trip (F0011) (2) Enc. module Enc. module Fault message Enc. module Enc. mo
	Ambient temperature 20.0 °C
	Motor model temperature 0 °C

Figure 5-4 STARTER - Temperature sensor mask

Expert list

There may be a requirement for some specific parameters to be modified that do not appear in various wizards and masks. These parameters can be accessed using the "Expert List" mode within STARTER. The expert list mode is selected by right-clicking on the required device in the project as shown in the figure below.



Figure 5-5 STARTER - Expert list selection

5.1 Commissioning the application

Once the expert list mode has been selected, all parameters available for the installed Inverter are presented. See figure below. In this mode, any parameter can be modified directly on-screen.

Expert list					
Parameter	+	+	Parameter text	Value Drive_unit_0	Unit
r2			Drive state	Commissioning mode (P0010 != 0) (0)	-
p3			User access level	Standard: Allows access into most frequently used paramet 💌	-
p4			Parameter filter	All parameters (0)	-
p5[0]	+		Display selection, Drive Dataset 0 (DDS0)	21	-
p6			Display mode	In Ready state alternate between P0005 value and r0020 val 💌	-
p7			Backlight delay time	0	-
p10			Commissioning parameter	Ready (0)	-
p11			Lock for user defined parameter	0	-
p12			Key for user defined parameter	0	-
p13[0]	+		User defined parameter, 1st user parameter	0	-
p14[0]	+		Store mode, USS on RS485	Volatile (RAM) (0)	-
r18			Firmware version	0.00	-
r19		+	CO/BO: BOP control word	OH	-
r20			CO: Freq. setpoint before RFG	0.00	Hz
r21			CO: Act. frequency	0.00	Hz
r22			Act. filtered rotor speed	0	rpm
r24			CO: Act. output frequency	0.00	Hz
r25			CO: Act. output voltage	0	V

Figure 5-6 STARTER - Expert list screen

5.1 Commissioning the application

Commissioning the applications

The following information is provided to allow a simple conveyor application to be setup. The logic and control mechanism is provided by a PLC.

The conveyor section consists of three sensors:

- A: This sensor detects the arrival of an item on the conveyor.
- B: This sensor detects the item and signals the next section to start and be ready to receive an item. This requires two speeds, one for the normal movement of the load and a faster speed for the transfer between conveyor sections.
- C: This sensor detects the load leaving the conveyor section.

The sensors are directly connected to the Inverter to allow their individual status to be sent to the controlling PLC.

5.1 Commissioning the application



Inverter connections



Figure 5-7 Conveyor application 1 direction - 2 speeds

Application parameters

Using the "Expert List" mode in STARTER (as previously described) the following parameters should be modified as shown in the table below. Before setting the parameters listed below, you must wait until P3900 = 0.

5.1 Commissioning the application

Parameter	Setting	Description
P0701 [0]	99	Digital input DI0 set to BiCo allowing status to be read by PLC
P0703 [0]	99	Digital input DI2 set to BiCo allowing status to be read by PLC
P0705 [0]	99	Digital input DI4 set to BiCo allowing status to be read by PLC
P0922	999	Sets communication board PZD telegram to "Free BiCo"
P2051 [2]	722.0	Maps state of digital inputs to PZD word 3 (= index 2)
P2051 [3]	2131.0	Maps error number to PZD word 4 (= index 3)

 Table 5-1
 Conveyor application parameters

Example S7 script and ladder logic

The following is an example S7 script which the PLC will use to communicate with the Inverter.

//=====				
	L	PEW	256	
	Т	MW	10	// -> ZSW 1
	L	PEW	258	
	Т	MW	12	// -> actual frequency
				· · · · · · ·
	L	PEW	260	
	Т	MW	14	// -> status digital inputs
				5 1
	L	PEW	262	
	Т	MW	16	// -> actual error number
//=====				
	L	W#16#4	7E	
	Т	MW	20	
	U	Ε	0.0	// Start / stop drive
	=	М	21.0	
	U	Ε	0.1	// Reverse
	=	М	20.3	
	U	Ε	0.2	// Error ACK
	=	М	21.7	
	L	MW	20	
	Т	PAW	256	// <- STW 1
	L	W#16#4	000	// 4000 hex = 100% (2000 hex = 50%)
	Т	PAW	258	// <- frequency setpoint
//=====				

Figure 5-8 Example S7 script

The following is an example ladder logic diagram

5.1 Commissioning the application

FC1 : Title:				
Network 1: retrieving status	word 1 and actual	frequency	/	
MOVE			MO	VE
EN ENO			EN	ENO
PEW256-IN OUT-	"Status"	PEW258 -	IN	OUT - "act. Speed"
Notwork 2: rotrioving status	of Dia and actual	orror pur	hor	
i litetwork 2. retrieving status	or Dis and actual	enor nun	IDEI	
MOVE			MO	VE
LIN ENO				ENO
PEW260-IN OUT-	"StatusDI"	PEW262-	IN	OUT - "ErrorNo"
Network 3: enabling drive a	nd gain control			
	na gain control			
EN ENO				
	"Control"			
	Control			
Network 4: starts / stops dri	Ve			
		'Start"		
		-()		
Network 5: reverses direction	on			
E0.1	"R	leverse"		
		-()		
Network 6: acknowledges e	arrore			
	,1013	"Ack"		
		-()		
Network 6: sending control	word and new set	point		
MOVE			MO	VE
EN ENO			EN	ENO
"Control" – IN OUT –	PAW256 "F	requency"-	IN	OUT - PAW258



Factory reset

Overview

With a factory reset a defined initial state of all of the inverter parameters is established.

There are two methods which can be used to accomplish a factory reset:

- Clicking on the icon on the STARTER toolbar (the device must first be selected in the Project tree).
- Using the expert list in STARTER to set P0970 = 1.

The factory setting values are designated as "Factory setting" in the parameter list.

After a factory reset, the inverters have the following basic settings:

Factory settings for PROFIBUS

- For the PROFIBUS variants the command source and setpoint source will be set to PROFIBUS communication.
- The basic V/f characteristic is the control mode (P1300 = 0)
- Asynchronous motor (P0300 = 1).

Note

When resetting the parameters to the factory setting, the communications memory is reinitialized. This means that communications are interrupted for the time it takes to perform the reset.

Fail-safe parameters

When using Standard CUs, only the factory reset with P0970 = 1 must be taken into account.

When using CUs with fail-safe functions two reset methods are available:

 P0970 = 1 resets only non fail-safe function relating parameters (application parameters).

If a factory reset with P0970 =1 is performed on a Control Unit with fail-safe functions all application parameters will be reset, previous parameters settings regarding fail-safe functions remain unchanged. This means, no acceptance test has to be performed.

 P0970 = 10 (password protected) resets only fail-safe function relating parameters If parameters regarding fail-safe functions must be changed, an acceptance test has to be performed.

Diagnostics

Α

Fault codes

The inverter has the capability to identify internal and external fault conditions, the most common faults are shown in the following tables. More detailed information on faults can be found in the Parameter List.

Table A-1	Fault codes description
-----------	-------------------------

Fault Number	Meaning	
F00001	Cause	Overcurrent - Motor power does not correspond to the inverter power
	Remedy	Check that the motor and inverter power ratings are the same.
F00002	Cause	Overvoltage - mains supply voltage too high or motor is in regenerative mode.
	Remedy	Check the mains supply voltage
F00003	Cause	Undervoltage - mains supply has failed
	Remedy	Check mains supply
F00004	Cause	Inverter over temperature - the inverter has exceeded the temperature limits
	Remedy	Check motor loading, pulse frequency setting, ambient temperature or if fitted the fan is working correctly.
F00041	Cause	Motor data identification failure
	Remedy	check that the motor is connected to the inverter correctly and that the motor data entered is correct.
F00052	Cause	Power stack failure
	Remedy	Check the connections between the CU and PM.
F00062	Cause	MMC contents invalid
	Remedy	Recopy data to MMC and ensure that the process is completed.
F00070	Cause	PLC setpoint fault
	Rememdy	Check the value of P2040 and ensure it is correct
F00071	Cause	USS setpoint fault
	Remedy	Check and improve monitoring timing using STARTER
F00072	Cause	USS setpoint fault
	Remedy	Check USS master
F00090	Cause	Encoder feedback loss
	Remedy	Check that the encoder is installed and commissioned correctly.
F0395	Cause	The fault occurs after a CU/PM swap or startup clone. It can also be cause by a faulty read from the EEPROM.
	Remedy	On safety units it is necessary to do an acceptance test. On standard units the current parameter set needs to be checked and confirmed by clearing the fault or setting P7844 = 0.

LED description

The Inverter, depending upon the variant, has a number of LEDs which are used to indicate the state of the Inverter. This is shown in the figure below.



Figure A-1 SINAMICS G120 D LEDs



Siemens AG

Automation and Drives Standard Drives Postfach 32 69 91050 Erlangen Deutschland

www.siemens.de/sinamics-g120d