

Customer:

Customer No.:

Plant:

Last saved:

Project: Project1

Author:

1. Open-loop/closed loop control / 24 V

1.1. Compact drive systems, S120 AC/AC

1.1.1. Technical data

Compact drive systems, S120 AC/AC

(1) - Control Unit CU320-2 PN	
Order designation	6SL3040-1MA01-0AA0
Specified max. total utilization	100.0 %
Total utilization	62 %
CompactFlash Card	6SL3054-0FC01-1BA0
CFC type	Performance extension 1
Externally via DRIVE-CLiQ / Drive system (3) / Supply system (1)	
Closed-loop control	SINAMICS S120 AC/AC - servo
Performance	Medium
Control Unit Adapter (CUA31)	6SL3040-0PA00-0AA1
Externally via DRIVE-CLiQ / Drive system (2) / Supply system (1)	
Closed-loop control	SINAMICS S120 AC/AC - servo
Performance	Medium
Control Unit Adapter (CUA31)	6SL3040-0PA00-0AA1
Externally via DRIVE-CLiQ / Drive system (1) / Supply system (1)	
Closed-loop control	SINAMICS S120 AC/AC - servo
Performance	Medium
Control Unit Adapter (CUA31)	6SL3040-0PA00-0AA1
Externally via DRIVE-CLiQ / Drive system / Supply system (1)	
Closed-loop control	SINAMICS S120 AC/AC - servo
Performance	Medium
Control Unit Adapter (CUA31)	6SL3040-0PA00-0AA1
Signal cables	
Order designation	6FX2002-1DC00-1AB0
Quantity	4
Cable type	DRIVE-CLiQ cable (by the meter) IP20/IP20 (fixed mounting)
Cable length	1.00 m
Order designation	6FX5002-2DC10-1BA0
Quantity	3
Cable type	DRIVE-CLiQ cable MOTION-CONNECT 500 IP20/IP67 (fixed mounting)
Cable length	10.00 m
Order designation	6FX5002-2DC10-1AB0
Quantity	1

Cable type	DRIVE-CLiQ cable MOTION-CONNECT 500 IP20/IP67 (fixed mounting)
Cable length	1.00 m
Basic Operator Panel	6SL3055-0AA0-4BA0

24 V supply

SITOP modular 5.00 A	6EP1333-3BA10
Quantity	1
Total current requirement	1.02 A

1.1.2. Installation

Installation arrangement Compact drive systems, S120 AC/AC

The required ventilation distances must be considered.

Depending on the line choke and the associated cable cross-section, a cabling space may be required.

Note that the current-carrying capacity of the DC busbar is not checked. The current carrying capacity of the DC busbar of 50 mm C/D type motor modules—as stated in the design—presupposes the installation of reinforced DC busbars, if necessary. The EMC specifications must be taken into account when installing filter and choke.

Topology (1) - -

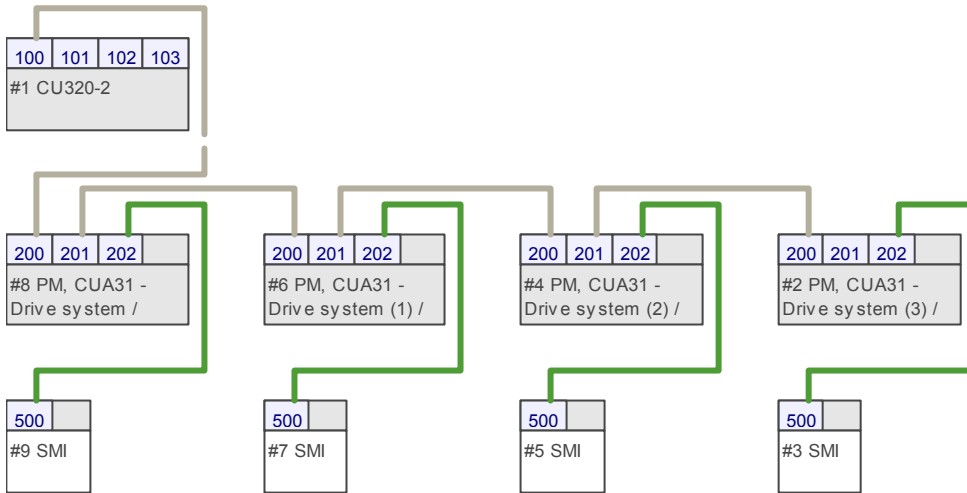
#ID	Type component	Version	Name	MLFB	Width [mm]	Height [mm]	Depth [mm]
#1	Closed-loop control	Booksize	(1) - Control Unit CU320-2 PN	6SL3040-1MA01-0AA0	50	300	226
#2	PM	Blocksize	Drive system / Supply system (1)	6SL3210-1PE12-3AL1	73	196	165
#3	PM	Blocksize	Drive system (1) / Supply system (1)	6SL3210-1PE12-3AL1	73	196	165
#4	PM	Blocksize	Drive system (2) / Supply system (1)	6SL3210-1PE12-3AL1	73	196	165
#5	PM	Blocksize	Drive system (3) / Supply system (1)	6SL3210-1PE12-3AL1	73	196	165
#6	Group				342	300	226

#ID	I-rated [A]	I-DC link [A]	Max. I-DC link busbar [A]	DC-link adapter (for booksize)	DC link rectifier adapter	I-24 V [A]	24 V supply	24 V terminal adapter
#1	-	-	-			1.00	Terminals	No
#2	2.20	-	-			-		No
#3	2.20	-	-			-		No
#4	2.20	-	-			-		No
#5	2.20	-	-			-		No
#6								

#ID	Continuous motor current [A]	Maximum motor current [A]	Comment
#2	2.10	12.00	
#3	2.10	12.00	
#4	2.10	12.00	
#5	2.10	12.00	

1.1.3. DRIVE-CLiQ

(1) - Control Unit CU320-2 PN



DRIVE-CLiQ node

No.	Type	Name	Type of construction	Control method	Sampling time	Performance
#1	CU320-2					
#2	PM, CUA31	Drive system (3) / Supply system (1)	LV Blocksize	Servo	125 祢	Medium
#3	SMI	Drive system (3) / Supply system (1), Motor encoder				
#4	PM, CUA31	Drive system (2) / Supply system (1)	LV Blocksize	Servo	125 祢	Medium
#5	SMI	Drive system (2) / Supply system (1), Motor encoder				
#6	PM, CUA31	Drive system (1) / Supply system (1)	LV Blocksize	Servo	125 祢	Medium
#7	SMI	Drive system (1) / Supply system (1), Motor encoder				
#8	PM, CUA31	Drive system / Supply system (1)	LV Blocksize	Servo	125 祢	Medium
#9	SMI	Drive system / Supply system (1), Motor encoder				

DRIVE-CLiQ cables

From	To	Connection type	Cable type	Length [m]	Order designation
X201, #4 PM, CUA31	X200, #2 PM, CUA31		DRIVE-CLiQ cable (by the meter) IP20/IP20 (fixed mounting)	1.00	6FX2002-1DC00-1AB0
X202, #2 PM, CUA31	X500, #3 SMI	Continuous	DRIVE-CLiQ cable MOTION-CONNECT 500 IP20/IP67 (fixed mounting)	10.00	6FX5002-2DC10-1BA0
X201, #6 PM, CUA31	X200, #4 PM, CUA31		DRIVE-CLiQ cable (by the meter) IP20/IP20 (fixed mounting)	1.00	6FX2002-1DC00-1AB0
X202, #4 PM, CUA31	X500, #5 SMI	Continuous	DRIVE-CLiQ cable MOTION-CONNECT 500 IP20/IP67 (fixed mounting)	10.00	6FX5002-2DC10-1BA0
X201, #8 PM, CUA31	X200, #6 PM, CUA31		DRIVE-CLiQ cable (by the meter) IP20/IP20 (fixed mounting)	1.00	6FX2002-1DC00-1AB0
X202, #6 PM, CUA31	X500, #7 SMI	Continuous	DRIVE-CLiQ cable MOTION-CONNECT 500 IP20/IP67 (fixed mounting)	1.00	6FX5002-2DC10-1BA0
X100, #1 CU320-2	X200, #8 PM, CUA31		DRIVE-CLiQ cable (by the meter) IP20/IP20 (fixed mounting)	1.00	6FX2002-1DC00-1AB0
X202, #8 PM, CUA31	X500, #9 SMI	Continuous	DRIVE-CLiQ cable MOTION-CONNECT 500 IP20/IP67 (fixed mounting)	10.00	6FX5002-2DC10-1BA0

1.1.4. 24 V supply

24 V supply: "Compact drive systems, S120 AC/AC"

Topology (1)

SITOP modular 5.00 A, 6EP1333-3BA10

Consumers	Current	Infeed type

	demand	
(1) - Control Unit CU320-2 PN	1.00 A	Terminals
1 Basic Operator Panel (BOP20)	0.02 A	Internal of (1) - Control Unit CU320-2 PN
Total	1.02 A	

1.1.5. Cabinet power loss

Load-dependent power loss of the cabinet components without passive power elements

Open-loop/closed-loop control / 24 V components	
~ Control Units	0.04 kW
~ Operator Panels	0.00 kW
~ SITOPs / Control Supply Module incl. additional modules	0.02 kW
Drive system / Supply system (1) (load-related)	
~ Power unit	0.03 kW
Input components	
System components	
Other system components	
Drive system (1) / Supply system (1) (load-related)	
~ Power unit	0.03 kW
Input components	
System components	
Other system components	
Drive system (2) / Supply system (1) (load-related)	
~ Power unit	0.03 kW
Input components	
System components	
Other system components	
Drive system (3) / Supply system (1) (load-related)	
~ Power unit	0.03 kW
Input components	
System components	
Other system components	
Total power loss	0.19 kW

Liability for the correctness of the energy requirement data is excluded. The energy consumption of a drive system depends on the operation and ambient conditions and contains physical power losses that cannot be fully determined.

2. Supply system Supply system (1)

2.1. Technical data

Line data

Voltage	400 V
Frequency	50 Hz
Number of phases	3
Allowance for differing supply voltage	No
Allowance for short term supply fluctuations	Yes
Maximum temporary undervoltage to the rated voltage	15 %
Undervoltage	340 V

2.2. Drive system "Drive system"

2.2.1. Partial load efficiencies

Motor data: 1FT7	
n-rated	6000.00 rpm
P-rated	0.88 kW
M-rated	1.40 Nm

Converter data: SINAMICS S120 AC/AC - servo	
I-rated	2.20 A
I-max	3.40 A

Typical average motor power loss [kW]

Share of permissible constant torque	40%	60%	80%	100%
Speed [rpm]				
1200.00	0.02	0.03	0.05	0.07
1500.00	0.02	0.03	0.05	0.07
1980.00	0.02	0.03	0.05	0.08
3000.00	0.03	0.04	0.06	0.08
4020.00	0.04	0.06	0.07	0.09
6000.00	0.08	0.09	0.10	0.12

Typical average converter power loss [kW]

Share of permissible constant torque	40%	60%	80%	100%
Speed [rpm]				
1200.00	0.02	0.03	0.03	0.03
1500.00	0.02	0.03	0.03	0.03
1980.00	0.02	0.03	0.03	0.03
3000.00	0.02	0.02	0.03	0.03
4020.00	0.02	0.02	0.03	
6000.00	0.02	0.02		

Drive system efficiency (converter and motor)

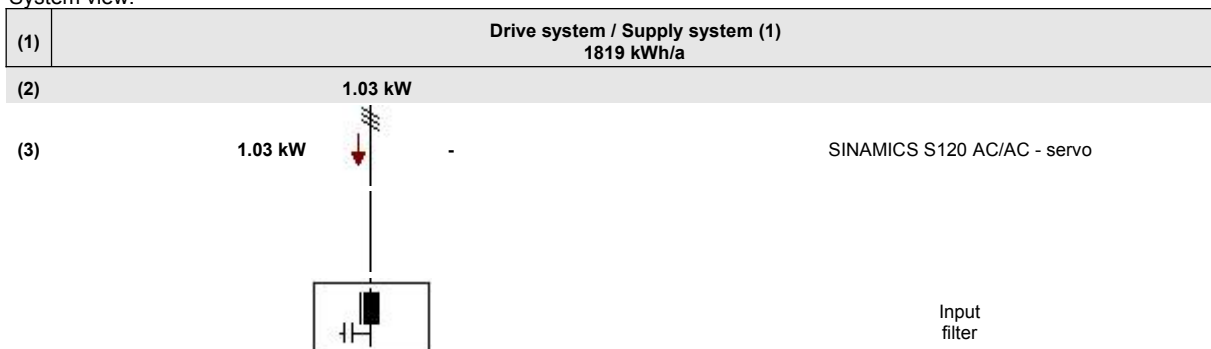
Share of permissible constant torque	40%	60%	80%	100%
Speed [rpm]				
1200.00	0.717	0.726	0.713	0.695
1500.00	0.749	0.761	0.752	0.736
1980.00	0.780	0.796	0.791	0.779
3000.00	0.804	0.829	0.832	0.827
4020.00	0.803	0.837	0.846	
6000.00	0.767	0.821		

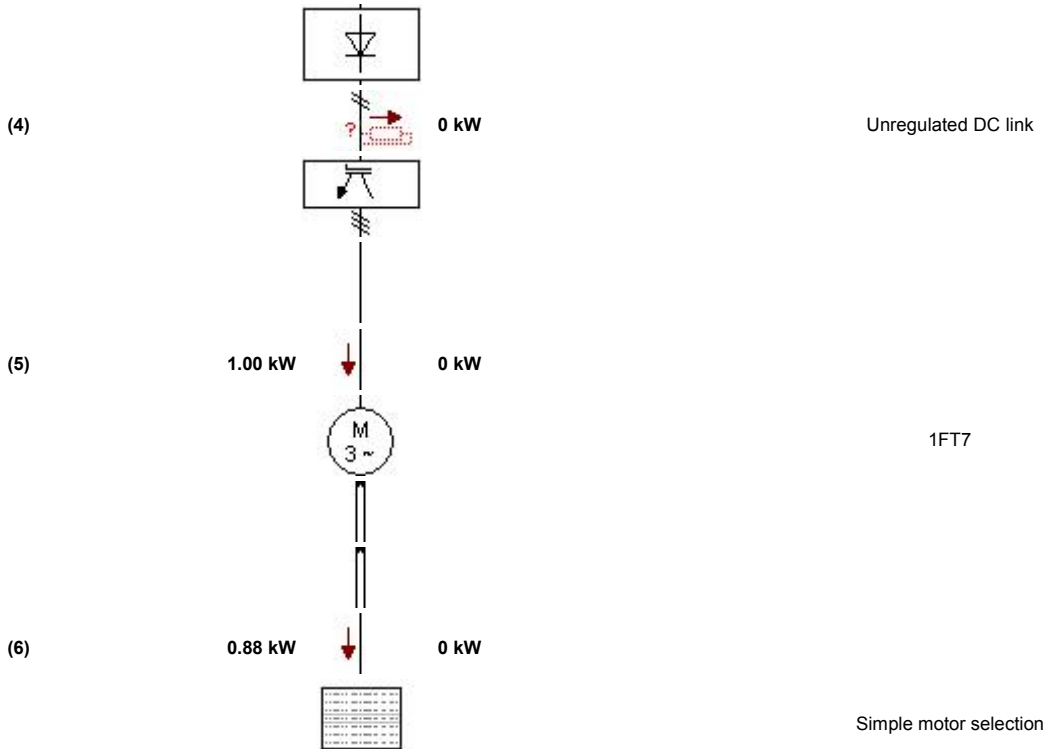
Liability for the correctness of the energy requirement data is excluded. The energy consumption of a drive system depends on the operation and ambient conditions and contains physical power losses that cannot be fully determined.

2.2.2. Energy requirements of the power electronics

Only the energy requirements of the power electronic components are taken into account. Further electronic components are not considered (e.g. Sensor Modules, control electronic components, controllers, 24 V supply).

System view:





Operating hours / a: 1760.0

Explanation of the values

		Total energy requirement
(1)	Total energy requirement	The resulting drive power extrapolated from the project settings for the specified number of operating hours per annum.
		Powers on the drive line
(2)	Resulting drive power	Corresponds to the motoring/generating drive power.
(3)	Drive power	This value is calculated from the motoring/generating components of the load specification and is always positive. In regenerative systems, this is the power that can be fed back to the infeed.
(4)	Braking power	When dimensioning with mechanical systems, this is the power that is lost at the braking resistor in the DC link.
(5)	Motor power	This is the required electrical power of the motor. Speed dependencies on the efficiency of the mounted gearbox and additional gearbox are not taken into account.
(6)	Load power	This is the power on the load required/produced by the specification (motor shaft power).

Refer to the online help for details.

Liability for the correctness of the energy requirement data is excluded. The energy consumption of a drive system depends on the operation and ambient conditions and contains physical power losses that cannot be fully determined.

2.2.3. Technical data

SINAMICS S120 AC/AC - servo

Power unit

Order designation	6SL3210-1PE12-3AL1
SINAMICS Safety Integrated	No Safety Integrated functionality
Cooling method	Internal air cooling
Ambient conditions	
Installation altitude	1000 m
Ambient temperature	40 °C
Power unit / catalog data	
Type rating	0.75 kW
Rated current	2.20 A
Frame size	A
Degree of protection	IP20

Pulse frequency factory setting	4.00 kHz
Energy efficiency class	-
Internal filter	Category C2
Power unit / load-specific data	
Available base-load current	2.20 A
Motor supply cable	
Cable type	MOTION-CONNECT 500 without brake cable, quick connection (fixed mounting)
Laying method	DIN EN 60204-1
Cable cross-section	1 * 4x1.5 mm ²
Order designation	6FX5002-5CG10-1BA0
Cable length	10.0 m

2.2.4. Motor

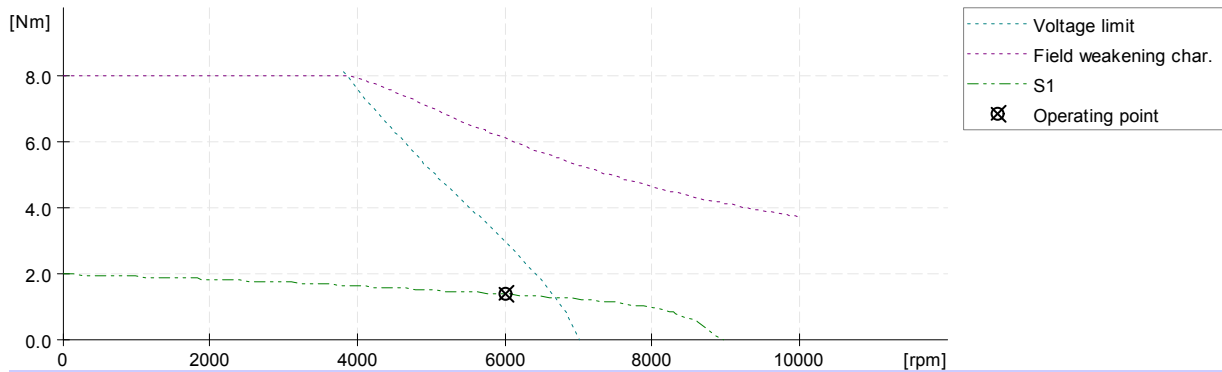
2.2.4.1. Technical data

Motor

Order designation	1FT7034-5AK70-1BG0
Motor / ambient conditions	
Installation altitude	1000 m
Ambient temperature	40 °C
Temperature rise class	F/100K
Motor / catalog data (100K values)	
Motor type	1FT7
Static torque	2.00 Nm
Stall current	2.70 A
Rated speed	6000.00 rpm
Rated current	2.10 A
Rated torque	1.40 Nm
Type of construction	IM B5, flange 0
Direction of connection	270 degree rotatable
Shaft height	36 mm
Efficiency	0.880
Encoder	AS24DQI - absolute encoder singleturn 24-bit
Encoder evaluation	Motor integrated
Cooling method	Self-cooling
Holding brake	Without holding brake
Shaft extension	Plain
Radial eccentricity tolerance	N
Vibration severity grade	A
Degree of protection	IP 64
Paint finish	Pearl dark gray (RAL9023)
Version	Standard type Compact
Load data on the motor shaft	
Speed at the operating point	6000.00 rpm
Torque at the operating point	1.40 Nm
Current at the operating point	2.10 A

Power at the operating point	0.88 kW
Actual stall current	2.70 A
Actual static torque	2.00 Nm

2.2.4.2. Characteristic



2.3. Drive system "Drive system (1)"

2.3.1. Partial load efficiencies

Motor data: 1FT7	
n-rated	6000.00 rpm
P-rated	0.88 kW
M-rated	1.40 Nm

Converter data: SINAMICS S120 AC/AC - servo	
I-rated	2.20 A
I-max	3.40 A

Typical average motor power loss [kW]

Share of permissible constant torque	40%	60%	80%	100%
Speed [rpm]				
1200.00	0.02	0.03	0.05	0.07
1500.00	0.02	0.03	0.05	0.07
1980.00	0.02	0.03	0.05	0.08
3000.00	0.03	0.04	0.06	0.08
4020.00	0.04	0.06	0.07	0.09
6000.00	0.08	0.09	0.10	0.12

Typical average converter power loss [kW]

Share of permissible constant torque	40%	60%	80%	100%
Speed [rpm]				
1200.00	0.02	0.03	0.03	0.03
1500.00	0.02	0.03	0.03	0.03
1980.00	0.02	0.03	0.03	0.03
3000.00	0.02	0.02	0.03	0.03
4020.00	0.02	0.02	0.03	
6000.00	0.02	0.02		

Drive system efficiency (converter and motor)

Share of permissible constant torque	40%	60%	80%	100%
Speed [rpm]				
1200.00	0.717	0.726	0.713	0.695
1500.00	0.749	0.761	0.752	0.736

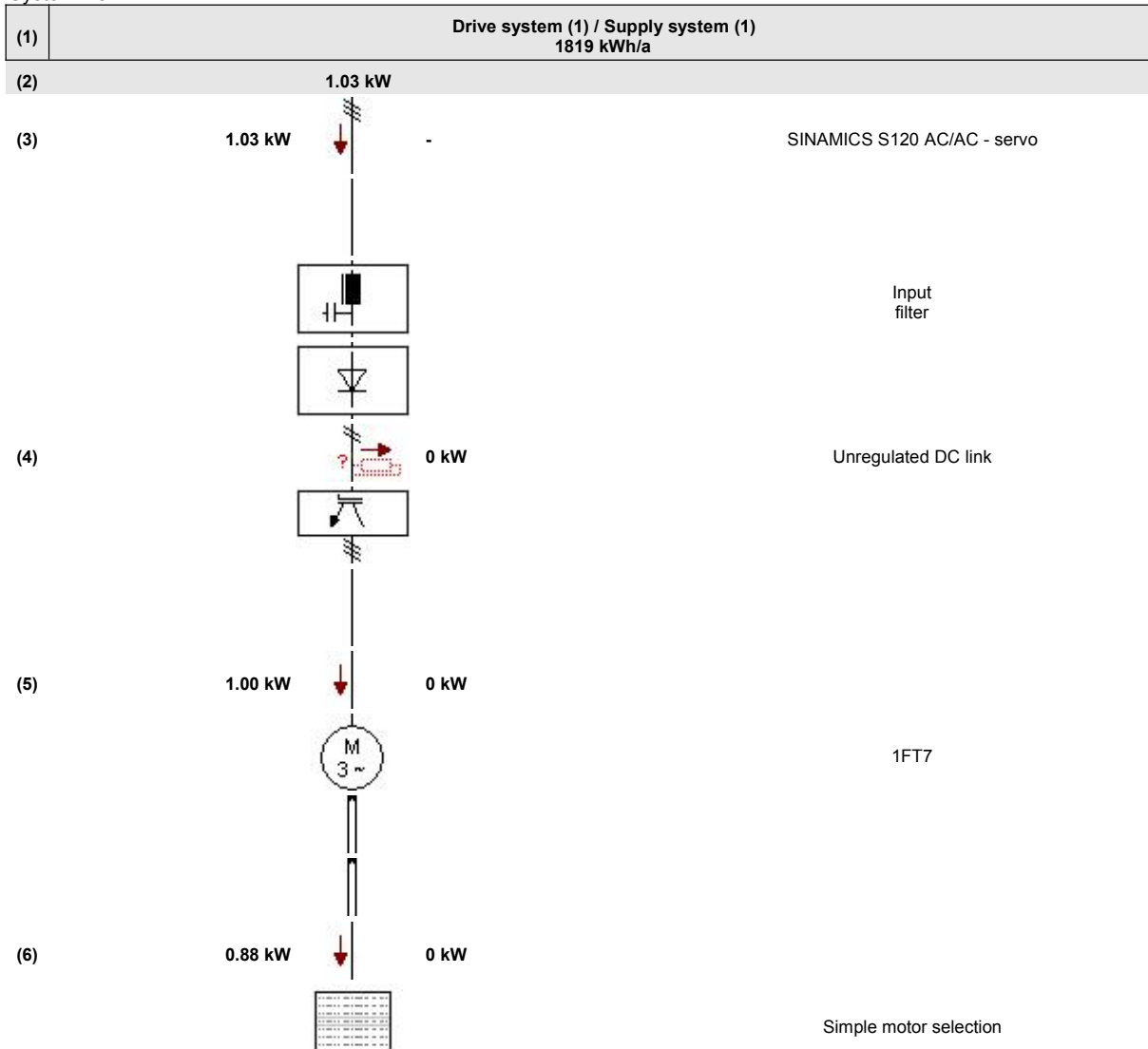
1980.00	0.780	0.796	0.791	0.779
3000.00	0.804	0.829	0.832	0.827
4020.00	0.803	0.837	0.846	
6000.00	0.767	0.821		

Liability for the correctness of the energy requirement data is excluded. The energy consumption of a drive system depends on the operation and ambient conditions and contains physical power losses that cannot be fully determined.

2.3.2. Energy requirements of the power electronics

Only the energy requirements of the power electronic components are taken into account. Further electronic components are not considered (e.g. Sensor Modules, control electronic components, controllers, 24 V supply).

System view:



Operating hours / a: 1760.0

Explanation of the values

		Total energy requirement
(1)	Total energy requirement	The resulting drive power extrapolated from the project settings for the specified number of operating hours per annum.
		Powers on the drive line
(2)	Resulting drive power	Corresponds to the motoring/generating drive power.
(3)	Drive power	This value is calculated from the motoring/generating components of the load specification and is always positive. In regenerative systems, this is the power that can be fed back to the infeed.
(4)	Braking power	When dimensioning with mechanical systems, this is the power that is lost at the braking resistor in the DC link.
(5)	Motor power	This is the required electrical power of the motor. Speed dependencies on the efficiency of the mounted gearbox

		and additional gearbox are not taken into account.
(6)	Load power	This is the power on the load required/produced by the specification (motor shaft power).

Refer to the online help for details.

Liability for the correctness of the energy requirement data is excluded. The energy consumption of a drive system depends on the operation and ambient conditions and contains physical power losses that cannot be fully determined.

2.3.3. Technical data

SINAMICS S120 AC/AC - servo

Power unit

Order designation	6SL3210-1PE12-3AL1
SINAMICS Safety Integrated	No Safety Integrated functionality
Cooling method	Internal air cooling
Ambient conditions	
Installation altitude	1000 m
Ambient temperature	40 °C
Power unit / catalog data	
Type rating	0.75 kW
Rated current	2.20 A
Frame size	A
Degree of protection	IP20
Pulse frequency factory setting	4.00 kHz
Energy efficiency class	-
Internal filter	Category C2
Power unit / load-specific data	
Available base-load current	2.20 A

Motor supply cable

Cable type	MOTION-CONNECT 500 without brake cable, quick connection (fixed mounting)
Laying method	DIN EN 60204-1
Cable cross-section	1 * 4x1.5 mm ²
Order designation	6FX5002-5CG10-1BA0
Cable length	10.0 m

2.3.4. Motor

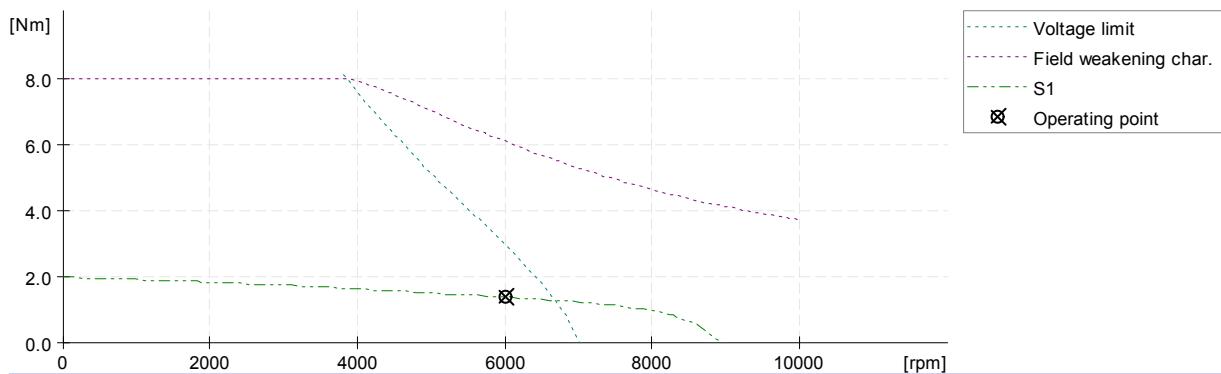
2.3.4.1. Technical data

Motor

Order designation	1FT7034-5AK70-1BG0
Motor / ambient conditions	
Installation altitude	1000 m
Ambient temperature	40 °C
Temperature rise class	F/100K
Motor / catalog data (100K values)	
Motor type	1FT7
Static torque	2.00 Nm
Stall current	2.70 A
Rated speed	6000.00 rpm
Rated current	2.10 A
Rated torque	1.40 Nm

Type of construction	IM B5, flange 0
Direction of connection	270 degree rotatable
Shaft height	36 mm
Efficiency	0.880
Encoder	AS24DQI - absolute encoder singleturn 24-bit
Encoder evaluation	Motor integrated
Cooling method	Self-cooling
Holding brake	Without holding brake
Shaft extension	Plain
Radial eccentricity tolerance	N
Vibration severity grade	A
Degree of protection	IP 64
Paint finish	Pearl dark gray (RAL9023)
Version	Standard type Compact
Load data on the motor shaft	
Speed at the operating point	6000.00 rpm
Torque at the operating point	1.40 Nm
Current at the operating point	2.10 A
Power at the operating point	0.88 kW
Actual stall current	2.70 A
Actual static torque	2.00 Nm

2.3.4.2. Characteristic



2.4. Drive system "Drive system (2)"

2.4.1. Partial load efficiencies

Motor data: 1FT7	
n-rated	6000.00 rpm
P-rated	0.88 kW
M-rated	1.40 Nm

Converter data: SINAMICS S120 AC/AC - servo	
I-rated	2.20 A
I-max	3.40 A

Typical average motor power loss [kW]

Share of permissible constant torque	40%	60%	80%	100%
Speed [rpm]				
1200.00	0.02	0.03	0.05	0.07
1500.00	0.02	0.03	0.05	0.07
1980.00	0.02	0.03	0.05	0.08

3000.00	0.03	0.04	0.06	0.08
4020.00	0.04	0.06	0.07	0.09
6000.00	0.08	0.09	0.10	0.12

Typical average converter power loss [kW]

Share of permissible constant torque	40%	60%	80%	100%
Speed [rpm]				
1200.00	0.02	0.03	0.03	0.03
1500.00	0.02	0.03	0.03	0.03
1980.00	0.02	0.03	0.03	0.03
3000.00	0.02	0.02	0.03	0.03
4020.00	0.02	0.02	0.03	
6000.00	0.02	0.02		

Drive system efficiency (converter and motor)

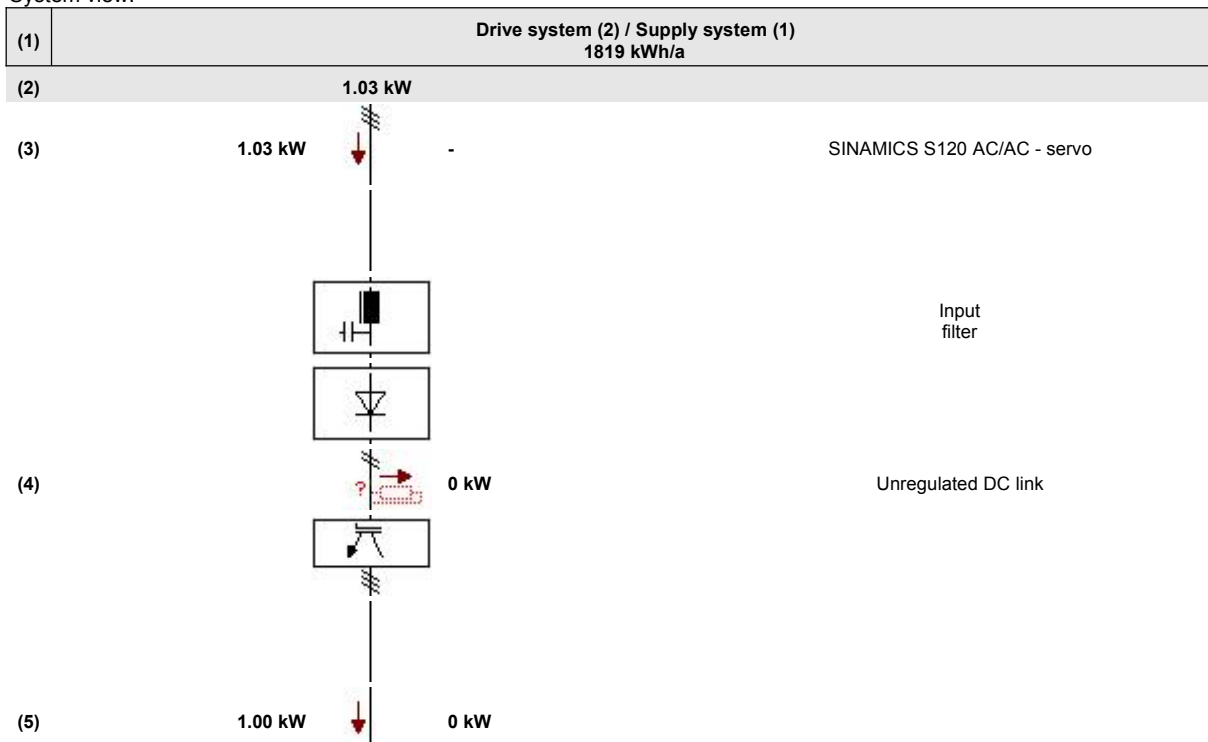
Share of permissible constant torque	40%	60%	80%	100%
Speed [rpm]				
1200.00	0.717	0.726	0.713	0.695
1500.00	0.749	0.761	0.752	0.736
1980.00	0.780	0.796	0.791	0.779
3000.00	0.804	0.829	0.832	0.827
4020.00	0.803	0.837	0.846	
6000.00	0.767	0.821		

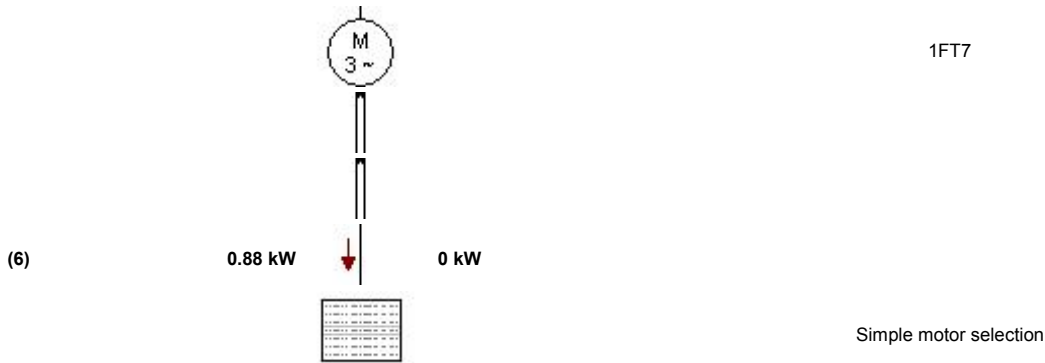
Liability for the correctness of the energy requirement data is excluded. The energy consumption of a drive system depends on the operation and ambient conditions and contains physical power losses that cannot be fully determined.

2.4.2. Energy requirements of the power electronics

Only the energy requirements of the power electronic components are taken into account. Further electronic components are not considered (e.g. Sensor Modules, control electronic components, controllers, 24 V supply).

System view:





Operating hours / a: 1760.0

Explanation of the values

Total energy requirement		
(1)	Total energy requirement	The resulting drive power extrapolated from the project settings for the specified number of operating hours per annum.
Powers on the drive line		
(2)	Resulting drive power	Corresponds to the motoring/generating drive power.
(3)	Drive power	This value is calculated from the motoring/generating components of the load specification and is always positive. In regenerative systems, this is the power that can be fed back to the infeed.
(4)	Braking power	When dimensioning with mechanical systems, this is the power that is lost at the braking resistor in the DC link.
(5)	Motor power	This is the required electrical power of the motor. Speed dependencies on the efficiency of the mounted gearbox and additional gearbox are not taken into account.
(6)	Load power	This is the power on the load required/produced by the specification (motor shaft power).

Refer to the online help for details.

Liability for the correctness of the energy requirement data is excluded. The energy consumption of a drive system depends on the operation and ambient conditions and contains physical power losses that cannot be fully determined.

2.4.3. Technical data

SINAMICS S120 AC/AC - servo

Power unit

Order designation	6SL3210-1PE12-3AL1
SINAMICS Safety Integrated	No Safety Integrated functionality
Cooling method	Internal air cooling
Ambient conditions	
Installation altitude	1000 m
Ambient temperature	40 °C
Power unit / catalog data	
Type rating	0.75 kW
Rated current	2.20 A
Frame size	A
Degree of protection	IP20
Pulse frequency factory setting	4.00 kHz
Energy efficiency class	-
Internal filter	Category C2
Power unit / load-specific data	
Available base-load current	2.20 A

Motor supply cable

Cable type	MOTION-CONNECT 500 without brake cable, quick connection (fixed mounting)
Laying method	DIN EN 60204-1
Cable cross-section	1 * 4x1.5 mm ²

Order designation	6FX5002-5CG10-1BA0
Cable length	10.0 m

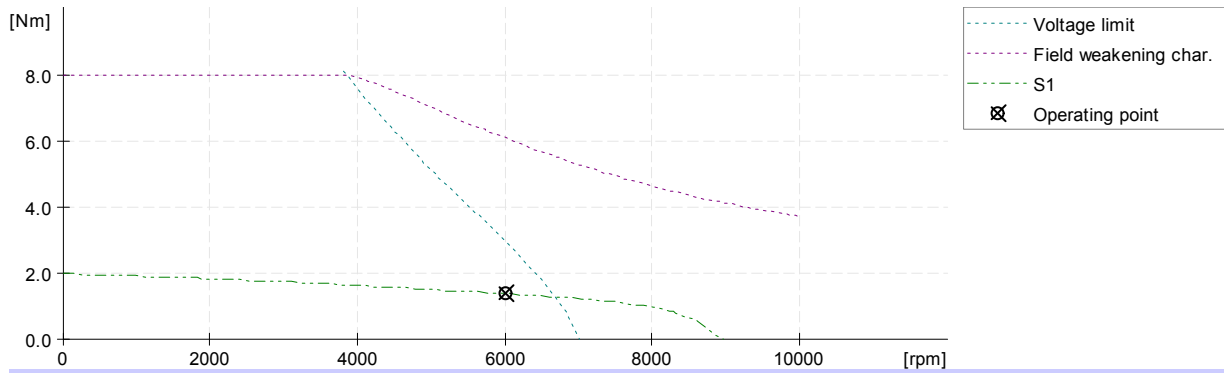
2.4.4. Motor

2.4.4.1. Technical data

Motor

Order designation	1FT7034-5AK70-1BG0
Motor / ambient conditions	
Installation altitude	1000 m
Ambient temperature	40 °C
Temperature rise class	F/100K
Motor / catalog data (100K values)	
Motor type	1FT7
Static torque	2.00 Nm
Stall current	2.70 A
Rated speed	6000.00 rpm
Rated current	2.10 A
Rated torque	1.40 Nm
Type of construction	IM B5, flange 0
Direction of connection	270 degree rotatable
Shaft height	36 mm
Efficiency	0.880
Encoder	AS24DQI - absolute encoder singleturn 24-bit
Encoder evaluation	Motor integrated
Cooling method	Self-cooling
Holding brake	Without holding brake
Shaft extension	Plain
Radial eccentricity tolerance	N
Vibration severity grade	A
Degree of protection	IP 64
Paint finish	Pearl dark gray (RAL9023)
Version	Standard type Compact
Load data on the motor shaft	
Speed at the operating point	6000.00 rpm
Torque at the operating point	1.40 Nm
Current at the operating point	2.10 A
Power at the operating point	0.88 kW
Actual stall current	2.70 A
Actual static torque	2.00 Nm

2.4.4.2. Characteristic



2.5. Drive system "Drive system (3)"

2.5.1. Partial load efficiencies

Motor data: 1FT7	
n-rated	6000.00 rpm
P-rated	0.88 kW
M-rated	1.40 Nm

Converter data: SINAMICS S120 AC/AC - servo	
I-rated	2.20 A
I-max	3.40 A

Typical average motor power loss [kW]

Share of permissible constant torque	40%	60%	80%	100%
Speed [rpm]				
1200.00	0.02	0.03	0.05	0.07
1500.00	0.02	0.03	0.05	0.07
1980.00	0.02	0.03	0.05	0.08
3000.00	0.03	0.04	0.06	0.08
4020.00	0.04	0.06	0.07	0.09
6000.00	0.08	0.09	0.10	0.12

Typical average converter power loss [kW]

Share of permissible constant torque	40%	60%	80%	100%
Speed [rpm]				
1200.00	0.02	0.03	0.03	0.03
1500.00	0.02	0.03	0.03	0.03
1980.00	0.02	0.03	0.03	0.03
3000.00	0.02	0.02	0.03	0.03
4020.00	0.02	0.02	0.03	
6000.00	0.02	0.02		

Drive system efficiency (converter and motor)

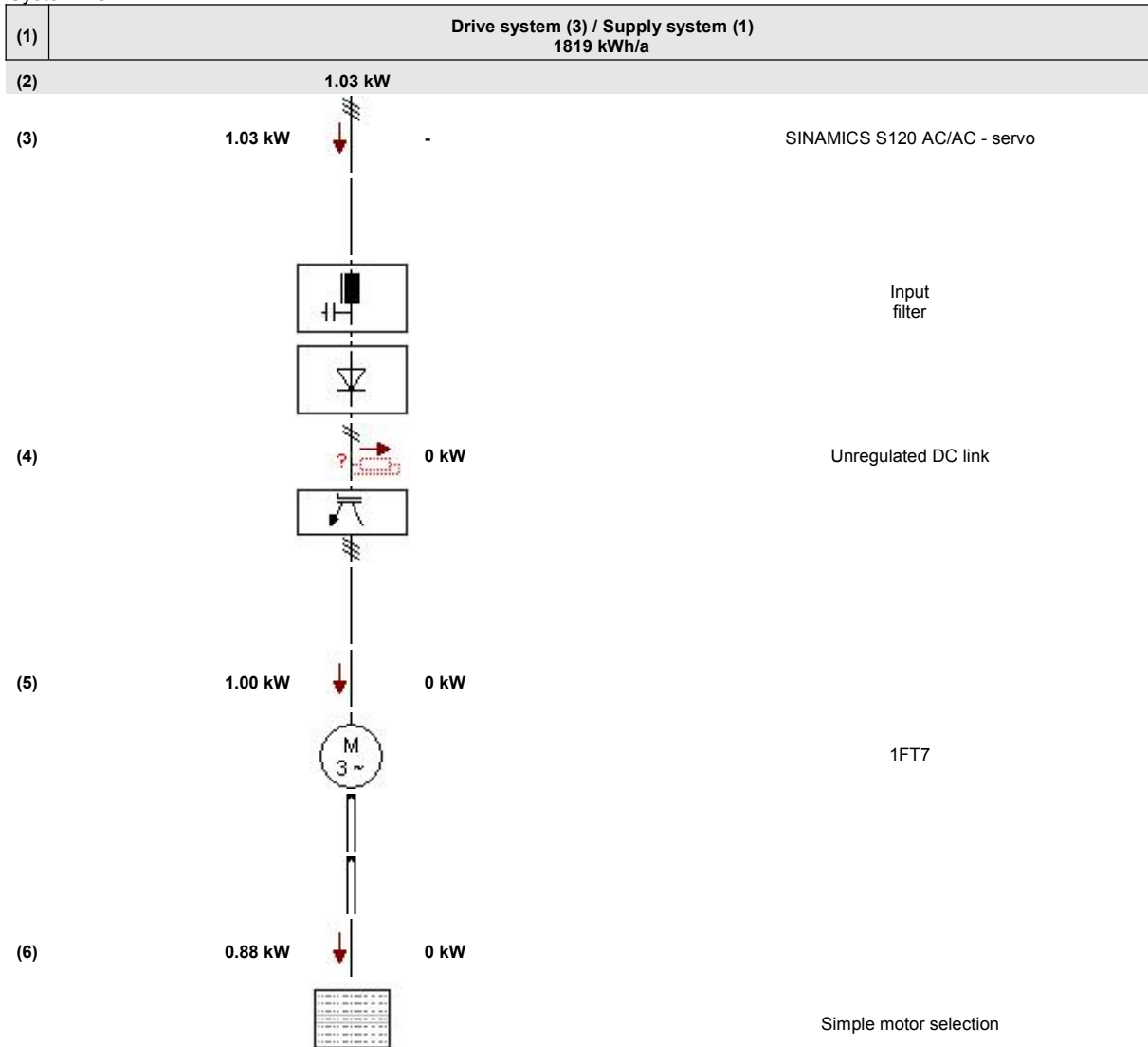
Share of permissible constant torque	40%	60%	80%	100%
Speed [rpm]				
1200.00	0.717	0.726	0.713	0.695
1500.00	0.749	0.761	0.752	0.736
1980.00	0.780	0.796	0.791	0.779
3000.00	0.804	0.829	0.832	0.827
4020.00	0.803	0.837	0.846	
6000.00	0.767	0.821		

Liability for the correctness of the energy requirement data is excluded. The energy consumption of a drive system depends on the operation and ambient conditions and contains physical power losses that cannot be fully determined.

2.5.2. Energy requirements of the power electronics

Only the energy requirements of the power electronic components are taken into account. Further electronic components are not considered (e.g. Sensor Modules, control electronic components, controllers, 24 V supply).

System view:



Operating hours / a: 1760.0

Explanation of the values

		Total energy requirement
(1)	Total energy requirement	The resulting drive power extrapolated from the project settings for the specified number of operating hours per annum.
		Powers on the drive line
(2)	Resulting drive power	Corresponds to the motoring/generating drive power.
(3)	Drive power	This value is calculated from the motoring/generating components of the load specification and is always positive. In regenerative systems, this is the power that can be fed back to the infeed.
(4)	Braking power	When dimensioning with mechanical systems, this is the power that is lost at the braking resistor in the DC link.
(5)	Motor power	This is the required electrical power of the motor. Speed dependencies on the efficiency of the mounted gearbox and additional gearbox are not taken into account.
(6)	Load power	This is the power on the load required/produced by the specification (motor shaft power).

Refer to the online help for details.

Liability for the correctness of the energy requirement data is excluded. The energy consumption of a drive system depends on the operation and ambient conditions and contains physical power losses that cannot be fully determined.

2.5.3. Technical data

SINAMICS S120 AC/AC - servo

Power unit

Order designation	6SL3210-1PE12-3AL1
SINAMICS Safety Integrated	No Safety Integrated functionality
Cooling method	Internal air cooling
Ambient conditions	
Installation altitude	1000 m
Ambient temperature	40 °C
Power unit / catalog data	
Type rating	0.75 kW
Rated current	2.20 A
Frame size	A
Degree of protection	IP20
Pulse frequency factory setting	4.00 kHz
Energy efficiency class	-
Internal filter	Category C2
Power unit / load-specific data	
Available base-load current	2.20 A

Motor supply cable

Cable type	MOTION-CONNECT 500 without brake cable, quick connection (fixed mounting)
Laying method	DIN EN 60204-1
Cable cross-section	1 * 4x1.5 mm ²
Order designation	6FX5002-5CG10-1BA0
Cable length	10.0 m

2.5.4. Motor

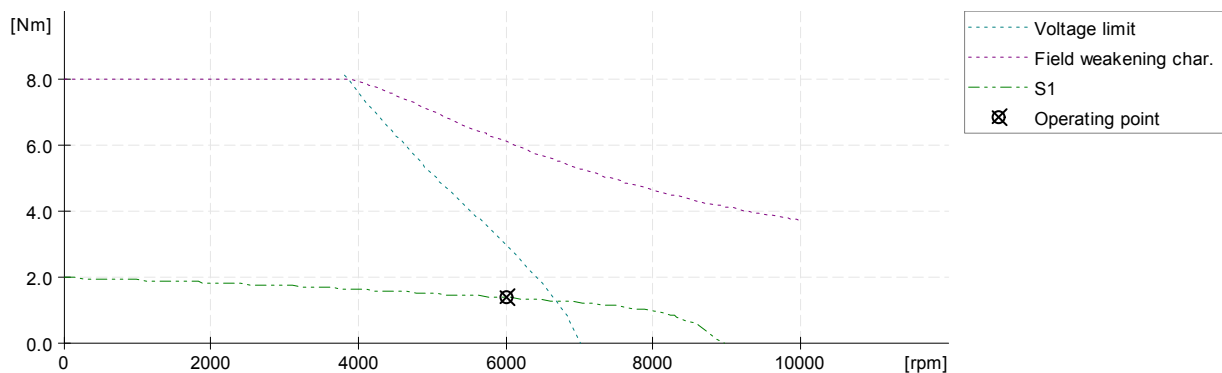
2.5.4.1. Technical data

Motor

Order designation	1FT7034-5AK70-1BG0
Motor / ambient conditions	
Installation altitude	1000 m
Ambient temperature	40 °C
Temperature rise class	F/100K
Motor / catalog data (100K values)	
Motor type	1FT7
Static torque	2.00 Nm
Stall current	2.70 A
Rated speed	6000.00 rpm
Rated current	2.10 A
Rated torque	1.40 Nm
Type of construction	IM B5, flange 0
Direction of connection	270 degree rotatable
Shaft height	36 mm
Efficiency	0.880
Encoder	AS24DQI - absolute encoder singleturn 24-bit
Encoder evaluation	Motor integrated

Cooling method	Self-cooling
Holding brake	Without holding brake
Shaft extension	Plain
Radial eccentricity tolerance	N
Vibration severity grade	A
Degree of protection	IP 64
Paint finish	Pearl dark gray (RAL9023)
Version	Standard type Compact
Load data on the motor shaft	
Speed at the operating point	6000.00 rpm
Torque at the operating point	1.40 Nm
Current at the operating point	2.10 A
Power at the operating point	0.88 kW
Actual stall current	2.70 A
Actual static torque	2.00 Nm

2.5.4.2. Characteristic



3. User comments - Mechanical systems

3.1. Mechanics

3.1.1. Axis

4. User comments - Additional components

5. Parts list

Pos.	Quantity	Order designation	Product
• Compact drive systems, S120 AC/AC			
10	1	6SL3040-1MA01-0AA0	Control Unit CU320-2 PN
20	1	6SL3054-0FC01-1BA0	Performance extension 1
30	4	6SL3040-0PA00-0AA1	Control Unit Adapter (CUA31)
40	4	6FX2002-1DC00-1AB0	Signal cable; DRIVE-CLiQ cable (by the meter) IP20/IP20 (fixed mounting); 1.00 m
50	1	6SL3055-0AA00-4BA0	Basic Operator Panel
60	1	6EP1333-3BA10	SITOP modular 5.00 A

• Drive system / Supply system (1)

70	1	6SL3210-1PE12-3AL1	Power unit; PM240-2; 0.75 kW; 2.20 A; -
80	1	6FX5002-5CG10-1BA0	Motor supply cable; MOTION-CONNECT 500 without brake cable, quick connection (fixed mounting); 10.0 m
90	1	6FX5002-2DC10-1BA0	Signal cable; DRIVE-CLiQ cable MOTION-CONNECT 500 IP20/IP67 (fixed mounting); 10.00 m
100	1	1FT7034-5AK70-1BG0	Synchronous servo motor (feed motor) 1FT/1FK; 0.88 kW; Shaft height 36 mm

• Drive system (1) / Supply system (1)

110	1	6SL3210-1PE12-3AL1	Power unit; PM240-2; 0.75 kW; 2.20 A; -
120	1	6FX5002-5CG10-1BA0	Motor supply cable; MOTION-CONNECT 500 without brake cable, quick connection (fixed mounting); 10.0 m
130	1	6FX5002-2DC10-1AB0	Signal cable; DRIVE-CLiQ cable MOTION-CONNECT 500 IP20/IP67 (fixed mounting); 1.00 m
140	1	1FT7034-5AK70-1BG0	Synchronous servo motor (feed motor) 1FT/1FK; 0.88 kW; Shaft height 36 mm

• Drive system (2) / Supply system (1)

150	1	6SL3210-1PE12-3AL1	Power unit; PM240-2; 0.75 kW; 2.20 A; -
160	1	6FX5002-5CG10-1BA0	Motor supply cable; MOTION-CONNECT 500 without brake cable, quick connection (fixed mounting); 10.0 m
170	1	6FX5002-2DC10-1BA0	Signal cable; DRIVE-CLiQ cable MOTION-CONNECT 500 IP20/IP67 (fixed mounting); 10.00 m
180	1	1FT7034-5AK70-1BG0	Synchronous servo motor (feed motor) 1FT/1FK; 0.88 kW; Shaft height 36 mm

• Drive system (3) / Supply system (1)

190	1	6SL3210-1PE12-3AL1	Power unit; PM240-2; 0.75 kW; 2.20 A; -
200	1	6FX5002-5CG10-1BA0	Motor supply cable; MOTION-CONNECT 500 without brake cable, quick connection (fixed mounting); 10.0 m
210	1	6FX5002-2DC10-1BA0	Signal cable; DRIVE-CLiQ cable MOTION-CONNECT 500 IP20/IP67 (fixed mounting); 10.00 m
220	1	1FT7034-5AK70-1BG0	Synchronous servo motor (feed motor) 1FT/1FK; 0.88 kW; Shaft height 36 mm

Legend

► /! NOTICE

The selection of a brake does not result in the calculation of the physical suitability or the suitability for the application! Please check the suitability of the selected brake. Please observe the warning and safety notes of the associated product documentation. If you have any questions with regard to the dimensioning, please contact your local Siemens support.

► Please note:

With full control performance, the rated motor current for the SINAMICS S120 may not be less than:

- 1/12 * rated converter current - V/f or FCC
- 1/4 * rated converter current - vector
- 1/4 * rated converter current - servo

During cyclic operation with limitations with regard to the torque accuracy and smooth running characteristics, the rated motor current of the SINAMICS S120 should not be less than:

- 1/8 * rated converter current - vector
- 1/8 * rated converter current - servo

The overload capability for dimensioning according to load characteristic (e.g. load cycle with constant ON duration) refers to a temporarily required overload on the motor. With longer or cyclic overloads, a configuration via the application is required.

With "Simple motor selection without load configuration", the rated data based on 400/460 V will not be attained depending on the selected drive and version (DC link, control method and control factor). Please take this into account when selecting/using the motor.

The configuration of the CU320-2 is based on FW version V5.2.

Please check the correct DRIVE-CLiQ topology for the configured SINAMICS S120 drive systems.

6. General notes

The configuration of the CU320-2 is based on FW version V5.2.

Please check the correct DRIVE-CLiQ topology for the configured SINAMICS S120 drive systems.

The selection of a brake does not result in the calculation of the physical suitability or the suitability for the application!

Please check the suitability of the selected brake. Please observe the warning and safety notes of the associated product documentation. If you have any questions with regard to the dimensioning, please contact your local Siemens support.

Please note:

The overload capability for dimensioning according to load characteristic (e.g. load cycle with constant ON duration) refers to a temporarily required overload on the motor. With longer or cyclic overloads, a configuration via the application is required.

With "Simple motor selection without load configuration", the rated data based on 400/460 V will not be attained depending on the selected drive and version (DC link, control method and control factor). Please take this into account when selecting/using the motor.