SIEMENS

14.04.2015

Customer:
Plant:

Customer No.:
Last saved: 14.04.2015 - 17:20
Project: SNMR2
Author: Michal Zlotek
Comment:

1. Parts list

Pos.	Quantity	Order designation	Product
• Drive system / Supply system			
10	1	3RV1021-1EA10	Circuit breaker
20	3	3NA3801	Fuse
30	1	6SL3246-0BA22-1FA0	CU; CU250S-2 PN
40	1	6SL3255-0AA00-4JA1	Intelligent Operator Panel
50	1	6SL3255-0AA00-2CA0	PC connection kit (USB)
60	1	6SL3054-4AG00-2AA0-Z E01	SD card, with firmware and required licenses
70	1	6SL3210-1PE12-3AL1	Power unit; PM240-2; 0,75 kW; 2,20 A; IE2
80	1	6SL3201-0BE14-3AA0	Braking resistor; 0,07 kW; 1,50 kW
90	1	6SL3202-0AE16-1CA0	Output choke
100	1	6FX5008-1BB11-1FA0	Motor supply cable; MOTION CONNECT 500 without brake cable, by the meter (fixed mounting); 50,0 m
110	1	1LE1003-0EC00-2AA4-Z G02 + M01	Induction motor (1LA/1LG/1PQ/1MJ/1LE1); 0,79 kW; 400 V; Star; 90 S; IM B3; Without flange

Legend

► 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.

► Induction motor 1LE1
G02: Mounting of rotary pulse encoder 1XP8 012-20 (TTL)
M01: Star

► SINAMICS G120
E01: License for extended functions (EPOS)

2. Technical data

• Supply system

- 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

• Drive system / Supply system

- SINAMICS G120 (PM240-2) - vector

- Input options

Circuit breaker	3RV1021-1EA10
Fuse	3NA3801

- CU250S-2 PN

Order designation	6SL3246-0BA22-1FA0
Fail-safe version	Yes
Communications system	PROFINET IO
Required encoder evaluation	HTL/TTL
Digital inputs	11
Digital outputs	3
PTC/KTY inputs	1
Analog inputs	2
Analog outputs	2
Intelligent Operator Panel	6SL3255-0AA00-4JA1
PC connection kit (USB)	6SL3255-0AA00-2CA0
SD card, with firmware and required licenses	6SL3054-4AG00-2AA0
License for extended functions (EPOS)	E01

- Power unit

Order designation	6SL3210-1PE12-3AL1
Degree of protection	IP20
Internal filter	A
Power unit / ambient conditions	
Installation altitude	1000 m
Ambient temperature	40 °C
Power unit / catalog data	
Rated power	0,75 kW
Rated current	2,20 A
Frame size	A
Pulse frequency factory setting	4000 Hz
Energy efficiency class	IE2
Power loss according to prEN 50598-2 CD	0,01 kW
Power unit / load-specific data	
Available current	2,20 A
Available maximum current	3,40 A

- Braking components

Braking resistor	6SL3201-0BE14-3AA0
Constant power	0,07 kW
Peak power	1,50 kW
Load duration	12,0 s
Cycle time	240,0 s
Check of the required braking power	
Configured constant power	0,07 kW
Configured peak power	1,50 kW
Mean regenerative power	0,00 kW
Maximum regenerative power	0,00 kW

- Output options

Output choke	6SL3202-0AE16-1CA0

- Motor encoder

Encoder	Rotary pulse encoder 1XP8 (TTL)

- Motor supply cable

Cable type	MOTION CONNECT 500 without brake cable, by the meter (fixed mounting)
Laying method	DIN EN 60204-1
Cable cross-section	1 * 4x1.5 mm²
Order designation	6FX5008-1BB11-1FA0
Cable length	50,0 m
used cable length	10,0 m

- Motor

Order designation	1LE1003-0EC00-2AA4
Mounting of rotary pulse encoder 1XP8 012-20 (TTL)	G02
Star	M01
Motor / ambient conditions	
ATEX zone	no EX-Zone (1LA/1LG/1PQ/1LE1)
Installation altitude	1000 m
Ambient temperature	40 °C
Temperature rise class	F/105K
Motor / catalog data in relation to line operation	
Rated power	0,75 kW
Rated torque	7,60 Nm
Rated current	1,96 A
Rated speed	945,00 rpm
Rated voltage	400 V
Frame size	90 S
Type of construction	IM B3
Number of poles	6
Winding systems	1
Housing material	Aluminum
Version	IE3
Efficiency according to standard	IEC 60034-2-1 (2007)
Efficiency	0,789
Power factor cos phi at 50 Hz	0,70
Star/delta	Star
Motor protection	No additional winding protection
Terminal box	Top
Seawater-proof	No
Motor data / in relation to specified drive conditions	
Interface	Star
Motor frequency	50 Hz
Rated power	0,75 kW
Rated torque	7,98 Nm
Rated current	2,06 A
Rated speed	895,14 rpm
Rated voltage	380 V
Motor data / calculated data	
RMS motor current	1,84 A
Maximum motor current	2,26 A
Thermal utilization	91,6 %
Utilization of the max. possible torque	60,5 %
External moment of inertia / motor moment of inertia	59,82
Load speed / rated speed	0,583
Load data on the motor shaft	
Load type	Travel drive / hoist drive / conveyor
Version	Travel drive
Relevant load torque at RMS current	6,58 Nm
Mean speed	549,48 rpm

Peak torque	9,20 Nm
Speed at peak torque	870,01 rpm
Max. speed	870,01 rpm
Load data on the additional gearbox	
Maximum output torque	15,09 Nm
Maximum output speed	514,19 rpm

Legend

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.

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3. Characteristics

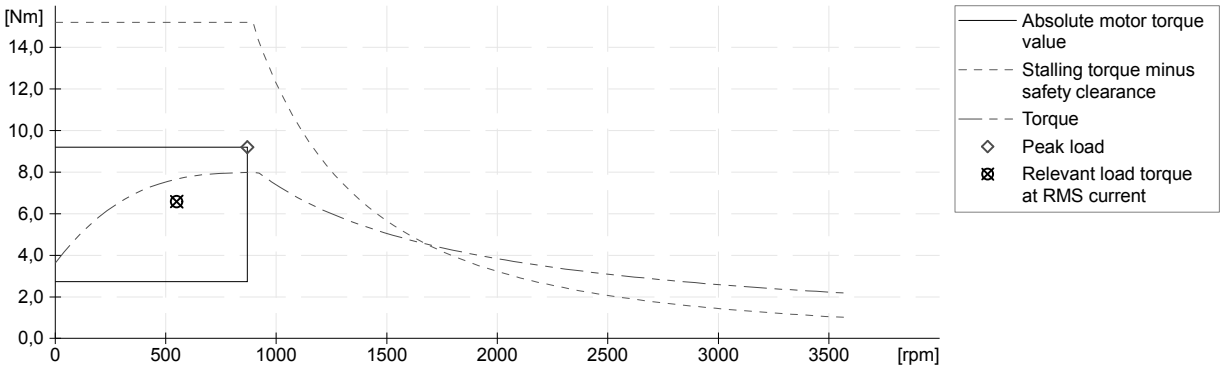
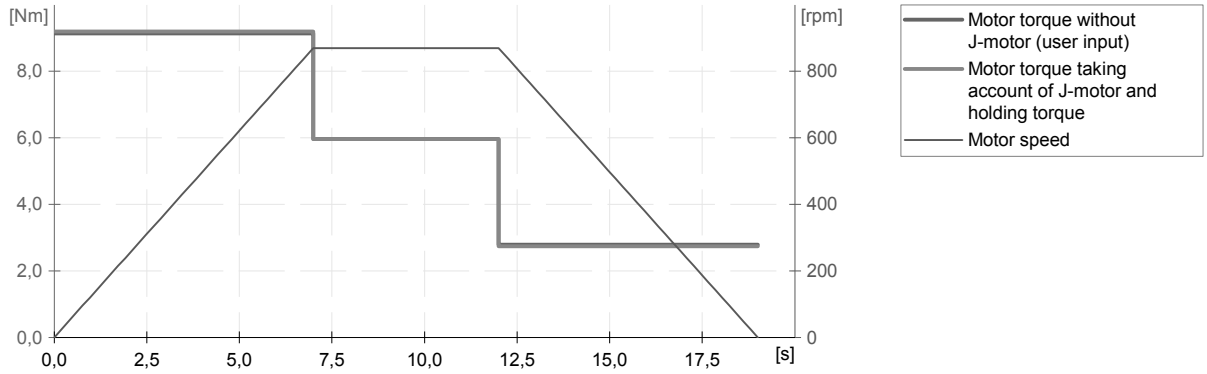


Fig. 3.1: Drive system / Supply system / 1LE1003-0EC00-2AA4 [Travel drive / hoist drive / conveyor]

4. Load curve on the motor shaft

4.1. Drive system / Supply system / 1LE1003-0EC00-2AA4 [Travel drive / hoist drive / conveyor]

Load cycle data:



The data in the table does not take any rounding into account.

Traversing profile data as individual trav. sections:

Type	*Duration [s]*	*n-start [rpm]*	*n-end [rpm]*	*M-start [Nm] without J-motor*	*M-end [Nm] without J-motor*	*M-start [Nm] with J-motor*	*M-end [Nm] with J-motor*	*Holding brake*
-	7,00000	0,00	870,01	9,14	9,14	9,20	9,20	No
-	5,00000	870,01	870,01	5,97	5,97	5,97	5,97	No
-	7,00000	870,01	0,00	2,79	2,79	2,74	2,74	No

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5. Application data

5.1. Drive system / Supply system / 1LE1003-0EC00-2AA4 [Travel drive / hoist drive / conveyor]

Mechanical data:

Travel drive / hoist drive / conveyor	
Version	Travel drive
Steady payload	150,000 kg
Internal mass	5,200 kg
Driving wheel diameter	130,000 mm
Weight compensation	0,000 N
Counterweight	0,000 kg
Type of travel resistance	Specific coefficient of friction
-- Specific coefficient of friction	0,1000
Friction torque	0,00 Nm
Angle of inclination	0,0 deg
Efficiency	1,000
Additional inertia (load)	0,020280 kg m²
Additional inertia (motor)	0,000000 kg m²

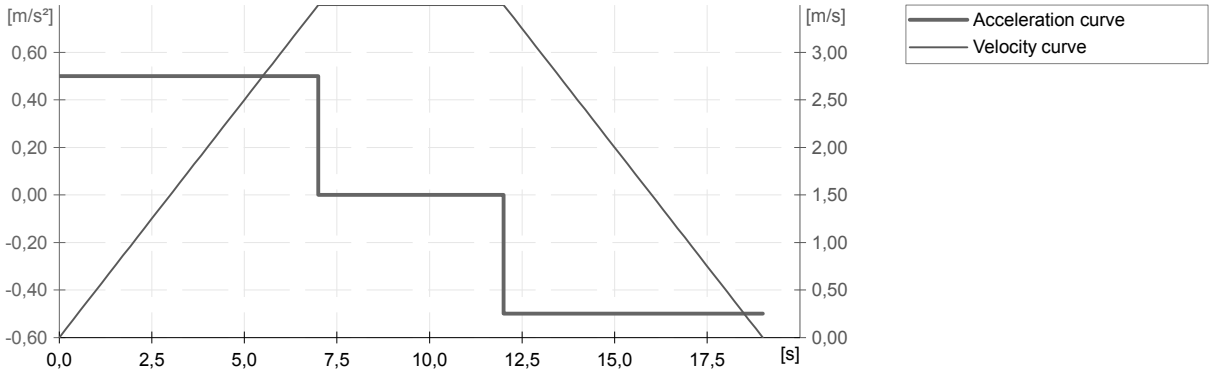
Gearbox	
Gear ratio	1,692
Moment of inertia	0,003143 kg m²
Efficiency	0,980

Properties:

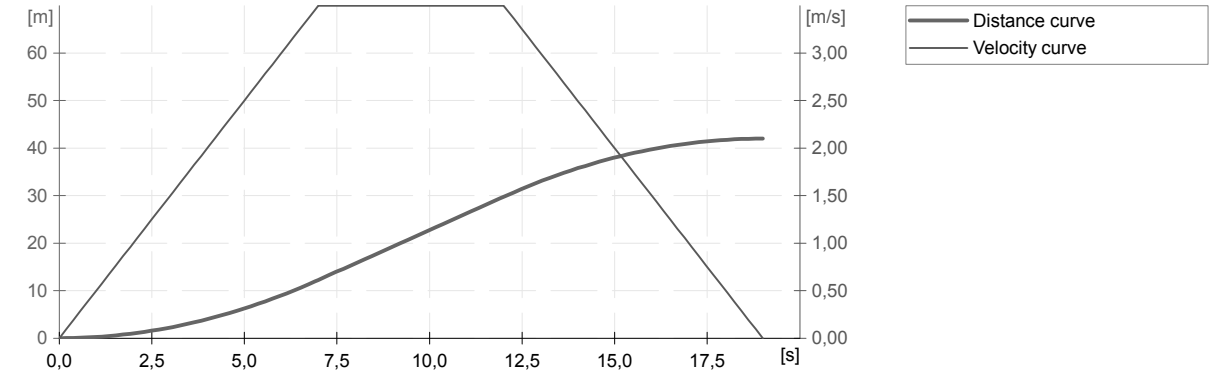
Allow for friction by means of control at standstill	Yes
Allow for mechanical limit values	No
Allow for rounding	No
-Jerk limitation	No
--Use mech. limit values as default values	No
-Rounding time	No

Cycle: 19,00000 s

Acceleration/velocity - time diagram:



Distance/velocity - time diagram:



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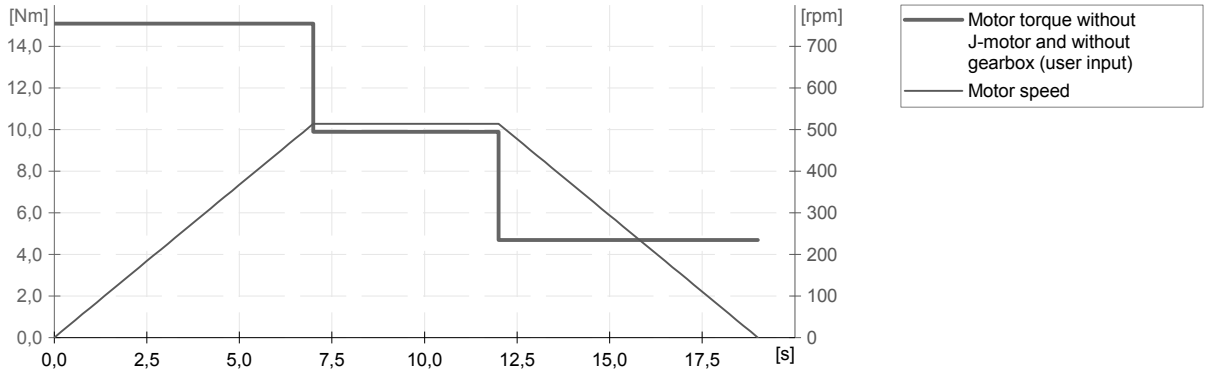
Load/speed - time diagram:



Traversing profile data as individual trav. sections:

Type	*Duration [s]*	*v-end [m/s]*	*s-end [m]*	*Additional force [N]*	*Additional mass [kg]*	*Holding brake*
acc	7,00000	3,500	12,25	-	-	No
const	5,00000	3,500	29,75	-	-	No
dec	7,00000	0,000	42,00	-	-	No

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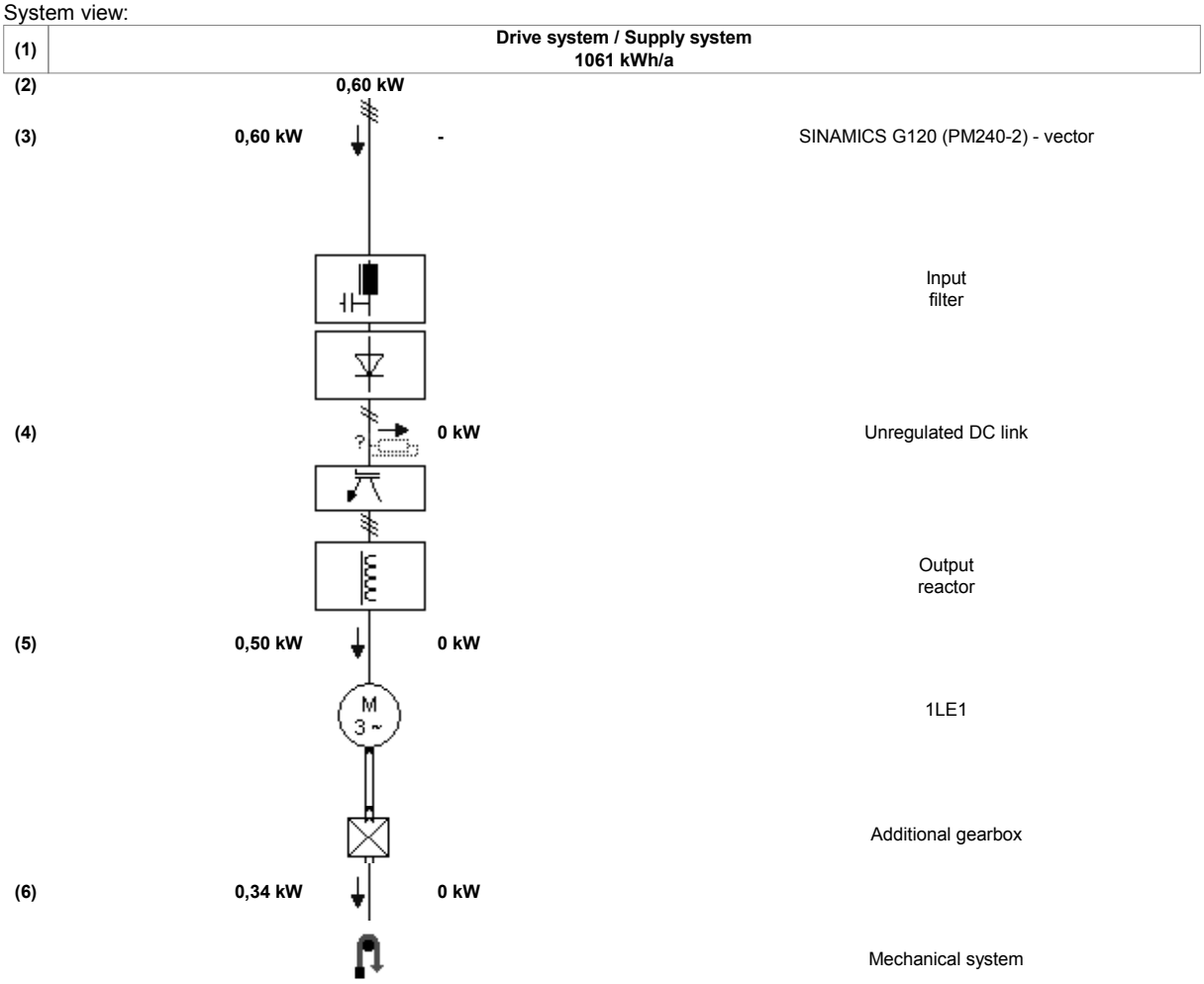
6. Energy requirements of the power electronics

6.1. Drive system / Supply system, SINAMICS G120 (PM240-2) - vector

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.

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7. Cabinet power loss

7.1. Drive system / Supply system, SINAMICS G120 (PM240-2) - vector

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

Drive system / Supply system (load-related)	
~ Power unit	0,02 kW
~ Motor reactor	0,08 kW
Input components	
System components	
Other system components	
Total power loss	**0,10 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.