TROLLEY WINCH 18.5 kW AC

18.5 kW - AC-MOTOR

Manufactorer:	Lenze
Type:	MDXRA2M 180 – 12
Power:	18.5 kW
U_{rated}:	3 x 400 Vac
I_{rated}:	32 A
n_{rated}:	1470 rpm
f_{rated}:	50 Hz
cos φ:	0.90
Isolation class:	F, IP65

Brake

Manufactorer:	Lenze
Type:	BFK458
Supply:	180 – 205 Vdc

Ventilation

Power	218 W
Supply	3 x 400 Vac / 50 Hz (star)
I_{rated}:	0.4 A
n_{rated}:	2740 rpm

FREQUENCY INVERTER SPECIFICATION - P/N 13.20480935

Manufacturer	:	SIEMENS
Type	:	6SE6440-2UD32-2DA0
Supply	:	3 x 380 V to 480 V ±10%
Stator output	:	0 to 400 V - 45 A - 3 Hz to 50 Hz

CODE SETTINGS OF THE FREQUENCY INVERTER

Quick commissioning parameters		
Code Level	**Parameter level**	**Krøll setting**
P03 Access level	2 – Extended access	2
P10 Quick commissioning	0 - Ready to run 1 - Quick commissioning 30 - Reset to factory setting (followed by P970 = 1)	1
P304 Nominal motor voltage	Motor voltage from motor rating plate, 400 V	400
P305 Nominal motor current	Motor current from motor rating plate, 32 A	32
P307 Nominal motor power	Motor power from motor rating plate, 18.5 kW	18.5
P308 Nominal motor cos Phi	Motor cos Phi from motor rating plate, 0.90	0.90
P310 Nominal motor frequency	Motor frequency from motor rating plate, 50 hz	50
P311 Nominal motor speed	Motor speed from motor rating plate, 1470 rpm	1470
P640 Motor current limit	Motor current limit as percents of P304, 150%	150
P1080 Min. frequency	Min. motor frequency, 3 hz	3.0
P1082 Max. frequency	Max. motor frequency, 50 hz	100.0
P1120 Ramp up time	Ramp up time, 1.0 sec.	1.0
P1121 Ramp down time	Ramp down time, 1.5 sec.	1.5
P1300 Control mode	1 - FCC (Flux Current Control)	1
P3900 End of quick commissioning	1 - End of quick commissioning, performs automatic calculation *	1

* **Note, all other parameters than set under quick commissioning are reset to factory setting including the I/O setting.**

I/O setting parameters		
Code Level	**Parameter level**	**Krøll setting**
P03 Access level	3 – Expert access	3
P04 Parameter filter	0 – All parameters	0
P701 Digital input 1	Terminal 5 = ON/OFF	1
P702 Digital input 2	Terminal 6 = Reverse	12
P703 Digital input 3	Terminal 7 = 50% load (>50% 50Hz, <50% 100Hz)	99
P704 Digital input 4	Terminal 8 = 10% speed (jog)	10
P705 Digital input 5	Terminal 15 = External fault (thermo switch)	29
P732 Relay output 2	Relay output = Brake control	52.C
P1000 Selection of setpoint	23 – Analog & fixed setpoint Digital input 4: High = Fixed setpoint (10%) Low = Analog setpoint (additional)	23
P1003 Fixed setpoint	10 – Fixed setpoint 10 Hz	10
P1058 Jog frequency right	Speed 10Hz	10
P1059 Jog frequency left	Speed 10Hz	10
P1060 Jog ramp-up time	Acceleration 2 sec.	2
P1061 Jog ramp-down time	Decceleration 2 sec.	2
P1074 Disable additional setpoint	Digital input 3	722.2
P1075 Additional setpoint	Analog input 1	755

P1130 Rounding time	Ramp-up initial rounding time, 0.3 sec.	0.3
P1131 Rounding time	Ramp-up final rounding time, 0.3 sec.	0.3
P1132 Rounding time	Ramp-down initial rounding time, 0.3 sec.	0.3
P1133 Rounding time	Ramp-down final rounding time, 0.3 sec.	0.3
P1215 Holding brake	Enable holding brake function	1
P1216 Brake release delay	Brake release delay after power on motor, 0.2 sec.	0.2
P1217 Brake engage	Delay of power OFF motor after brake engage, 1.0 sec.	1.0
P1237 Dynamic braking	Brake resistor enabled (5% duty cycle)	1
P1240 Vdc controller	Vdc controller disabled	0
P2000 Reference frequency	Full scale frequency set-point	100.0

ADJUSTMENT OF INVERTER FOR TROLLEY WINCH

PRINCIPLE OF OPERATION

The trolley winch is powered by a delta connected squirrel cage motor fitted with a brake. From inverter U3 the motor is supplied with a variable stator voltage from 0 - 400 Vac with a frequency ranging from 0 – 50 Hz with a load above 50% and 0 – 100 Hz with a load under 50%.

The speed is steeples controlled by a potentiometer from the operator joystick.

PUTTING THE TROLLEY INVERTER INTO SERVICE

When putting a new frequency inverter into service carry out the following:

1. Enter the Krøll code set according to the code setting table for the trolley winch, page 4-5.

   Enter the quick commissioning parameters before the I/O setting parameters are entered. Under the quick commissioning all other parameters will be reset to factory setting of the converter.

2. Checking motor control & direction of rotation, page 6.

3. Checking of max. speed, page 6.

CHECKING MOTOR CONTROL & DIRECTION OF ROTATION

Start up the crane.

Move the joystick approx. 1/3 out from the central position in either of the two directions and check if the rotation of the motor is correct in relation to the joystick.
If this is not the case reverse the stator leads in the motor terminal box. **Before opening the motor terminal box stop the crane on the emergency stop in order to switch off the main trolley contactor C31.**

CHECKING OF MAX. SPEED

Move the joystick slowly out to max. speed (out or in).

In the inverter display check that the output frequency is 50 Hz (>50% load) and 100 Hz (<50% load).

If this is not the case check that the set point signal from the joystick is ranging from 0 - 10 Vdc on the inverter terminals 3 and 4. And check the code setting in the inverter is set according to the KRØLL code setting table page 4-5.

SERVICE INFORMATION

Press down the emergency switch in the drivers cabin before entering the electrical panel when trouble shooting.

TROUBLESHOOTING

If there is a fault in the converter a fault number will be shown in the display (e.g. F011). Write down the fault number and find the fault cause in the fault and alarm list for the converter. If fault F085 appears then the trolley motor has overheated and the NC thermo contact is open.