

ABB INDUSTRIAL DRIVES

ACS380 crane antisway control program supplement



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ACS380 crane antisway control program

supplement

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1

Introduction to the guide

What this chapter contains

This chapter contains general information on the manual. It also contains information on the compatibility, safety and intended audience.

Applicability

This document is a supplement to *ACS380 machinery control program firmware manual* (3AXD50000029275 [English]). This manual is applicable to ACS380 antisway application.

This supplement contains only information relevant to the ACS380 antisway application. For information on general firmware-related issues (parameters, faults, warnings etc.) concerning the ACS380 control program, see *ACS380 machinery control program firmware manual* (3AXD50000029275 [English]).

Safety instructions

Obey all safety instructions delivered with the drive.

- Read the **complete safety instructions** before you install, commission, or use the drive.
- Read the **firmware function-specific warnings and notes** before changing parameter values. These warnings and notes are included in the parameter descriptions presented in chapter Parameters.

Target audience

This manual is intended for people who design, commission, or operate the drive system.

Related manuals

Name	Code
Drive hardware manuals	
<i>ACS380 drives hardware manual</i>	3AXD50000029274
Drive firmware manuals	
<i>ACS380 machinery control program firmware manual</i>	3AXD50000029275

Terms and abbreviations

See *ACS380 machinery control program firmware manual* (3AXD50000029275 [English]).

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Program features

Note: Adaptive programming and the user lock function are not available when the antisway application is installed.

The antisway application is designed to prevent unnecessary sway of a crane load. It gives the crane operator a better control of the crane.

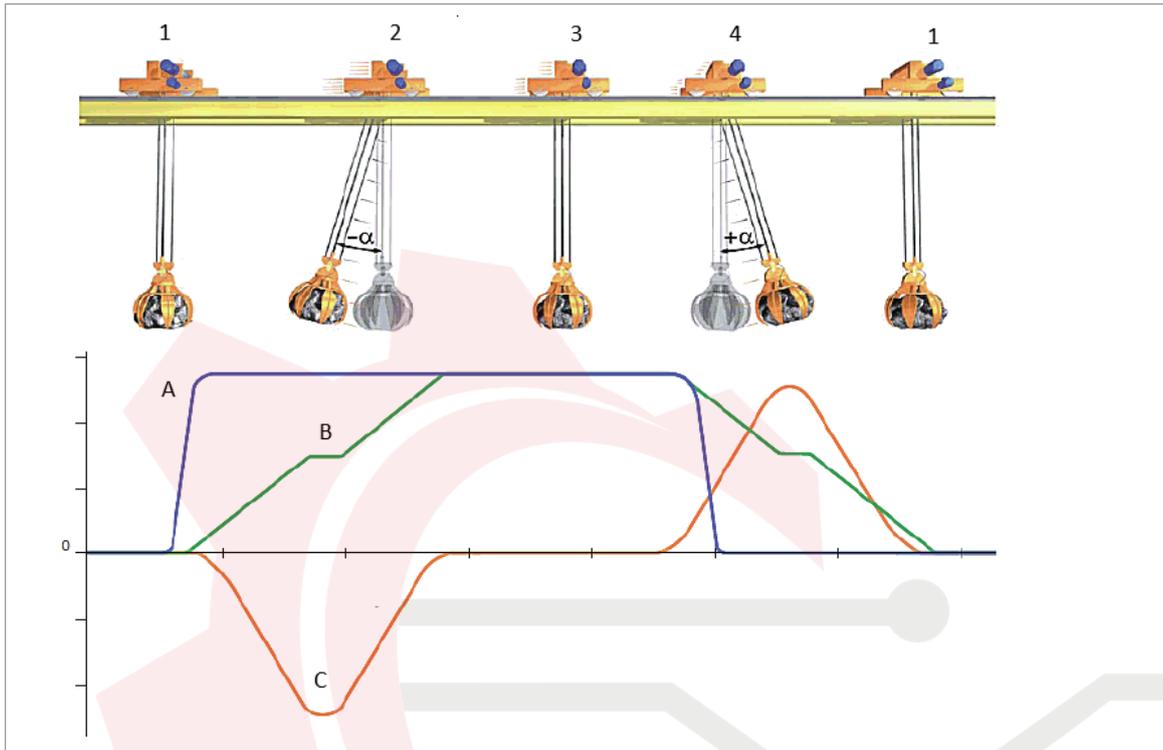
The antisway application works without any additional antisway sensors. The function needs to know the total pendulum arm length to define the time constant of the sway that can control the trolley and long travel accelerations and decelerations.

Constant acceleration

A simple way to prevent load swing is to choose an acceleration time that is equal to the pendulum's time constant. The acceleration or deceleration time will be set based on the rope length. The figure below shows the speed profile during acceleration.

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10 Program features



1 - Stationary

2 - Accelerating

3 - Constant speed

4 - Decelerating

A - Given speed reference

B - Antisway-modified reference to the drive

C - Calculated sway

Antisway offset

The offset value is added with the actual rope length received from the hoist drive. The final offset is added to the pendulum arm length (from the hoist drive) and this result is used by the antisway application.

Pendulum Arm length

The pendulum arm length is the sum of the hook position and the offset value. The Tau value is displayed by parameter 47.08 (Antisway Tau value).

Antisway Ramp time

The acceleration/deceleration time 2 value is used when the antisway feature is enabled. Acceleration/ Declaration is calculated from the Tau value.

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Commissioning

This section describes the parameters that you need to define to operate the drive with the antisway function. For more information on the antisway function parameters, see chapter Program features. For information on how to set parameters, please see *ACS380 machinery control program firmware manual (3AXD50000029275)*.

Installation

First install the application software package in the drive. When the package has been installed, check that the control and signal wirings of the drive are correct for the intended purpose (hoist or travel).

When the wirings are correct for the Hoist option or the Travel option, set the value of parameter 96.04 (Macro select) to match the macro you want to use: *1 (Hoist)* or *2 (Travel CT/LT)*.

Then follow the appropriate instructions below, based on your selection.

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Hoist macro

If you want to use the Hoist functionality, make sure that the *Hoist* macro is selected and the drive wirings are correct for that macro. Then follow these steps:

1. Enter the correct motor data values in parameter group 99 (Motor data).

99. Motor data						
3	Motor type	Asynchronous motor	NoUnit			Asynchronous...
4	Motor control mode	Vector	NoUnit			Scalar
6	Motor nominal current	1.20	A	0.67	8.00	3.00
7	Motor nominal voltage	230.0	V	69.2	830.0	400.0
8	Motor nominal frequency	50.00	Hz	0.00	500.00	50.00
9	Motor nominal speed	1360	rpm	0	30000	1435
10	Motor nominal power	0.18	kW	0.00	10000.00	1.10
11	Motor nominal cos ϕ	0.71	NoUnit	0.00	1.00	0.00
12	Motor nominal torque	0.000	Nm	0.000	400000...	0.000
13	ID run requested	Normal	NoUnit			None
14	Last ID run performed	None	NoUnit			None
15	Motor polepairs calculated	2	NoUnit	0	1000	0
16	Motor phase order	U V W	NoUnit			U V W

2. Do a normal or advanced ID run in vector control mode. For instructions on how to do the ID run, see *ACS380 machinery control program Firmware manual* (3AXD50000029275).
3. Define the minimum speed and maximum speed values in parameter group 30 (Limits).

30. Limits						
1	Limit word 1	0b0000	NoUnit	0b0000	0b1111...	0b0000
2	Torque limit status	0b0000	NoUnit	0b0000	0b1111...	0b0000
11	Minimum speed	-1500.00	rpm	-30000.00	30000.00	-1500.00
12	Maximum speed	1500.00	rpm	-30000.00	30000.00	1500.00
13	Minimum frequency	-50.00	Hz	-500.00	500.00	-50.00
14	Maximum frequency	50.00	Hz	-500.00	500.00	50.00
17	Maximum current	5.35	A	0.00	5.94	5.35

4. Set the start/stop mode parameters in parameter group 20 (Start/stop/direction).

20. Start/stop/direction				
1	Ext1 commands	In1 Start; In2 Dir	NoUnit	In1 Start; In2 Dir
2	Ext1 start trigger type	Level	NoUnit	Level
3	Ext1 in1 source	DI1	NoUnit	DI1
4	Ext1 in2 source	DI2	NoUnit	DI2
5	Ext1 in3 source	Always off	NoUnit	Always off
6	Ext2 commands	Not selected	NoUnit	Not selected
7	Ext2 start trigger type	Level	NoUnit	Level
8	Ext2 in1 source	Always off	NoUnit	Always off
9	Ext2 in2 source	Always off	NoUnit	Always off
10	Ext2 in3 source	Always off	NoUnit	Always off

5. Set the speed reference parameters in parameter group 22 (Speed reference selection).

22. Speed reference selection				
1	Speed ref unlimited	0.00	rpm	-30000.00 30000.00 0.00
11	Ext1 speed ref1	AI1 scaled	NoUnit	AI1 scaled
12	Ext1 speed ref2	Zero	NoUnit	Zero
13	Ext1 speed function	Ref1	NoUnit	Ref1
18	Ext2 speed ref1	Zero	NoUnit	Zero
19	Ext2 speed ref2	Zero	NoUnit	Zero
20	Ext2 speed function	Ref1	NoUnit	Ref1
21	Constant speed function	0b0001	NoUnit	0b0000 0b1111... 0b0001
22	Constant speed sel1	Always off	NoUnit	DI3
23	Constant speed sel2	Always off	NoUnit	DI4
24	Constant speed sel3	Always off	NoUnit	Always off

6. Set the AI1 scale minimum and maximum values (parameters 12.19 and 12.20).

After the above steps, set the hoist parameters (group 47) to their correct values, as described in section *Hoist drive parameters*.

■ Hoist macro commission final steps

After you have performed the steps described above, do the following:

1. Check the AO1 value. The AO1 value can be defined either as voltage or as current output. Make sure it matches the Travel drive AI1 input setting.

13. Standard AO						
2	AO force selection	0b0000	NoUnit	0b0000	0b1111...	0b0000
11	AO1 actual value	0.000	mA	0.000	22.000	0.000
12	AO1 source	Adaptive program	NoUnit			Output frequency
13	AO1 forced value	0.000	mA	0.000	22.000	0.000
15	AO1 unit selection	mA	NoUnit			mA
16	AO1 filter time	0.100	s	0.000	30.000	0.100
17	AO1 source min	0.0	NoUnit	-32768.0	32767.0	0.0
18	AO1 source max	20.0	NoUnit	-32768.0	32767.0	50.0
19	AO1 out at AO1 src min	0.000	mA	0.000	22.000	0.000
20	AO1 out at AO1 src max	20.000	mA	0.000	22.000	20.000
91	AO1 data storage	0.00	NoUnit	-327.68	327.67	0.00
14	Maximum Pendulum Length	20	NoUnit	-21474...	214748...	0

2. Set parameter 13.18 (AO1 source max) to match parameter 47.14, which is the maximum pendulum length (in meters). The value of parameter 13.19 should be 4 mA to match with Travel drive AI1 setting.

Note: If you use the Travel drive in Profinet Control mode, make sure that the Hoist drive parameter 47.03 (page 24) (Rope Final Length) matches the Profinet Travel drive parameter 47.03.

Travel CL/LT macro

To use the Travel functionality, make sure that the *Travel CL/LT* macro is selected and the drive wirings are correct for that macro. Then follow these steps:

■ DI Mode

If you use the *Travel CL/LT* macro in DI Mode, i.e. the value of parameter 47.18 (DI or Profinet control) is 0, follow these steps:

1. Enter the correct motor data values in parameter group 99 (Motor data).

99. Motor data						
3	Motor type	Asynchronous motor	NoUnit			Asynchronous...
4	Motor control mode	Vector	NoUnit			Scalar
6	Motor nominal current	1.20	A	0.67	8.00	3.00
7	Motor nominal voltage	230.0	V	69.2	830.0	400.0
8	Motor nominal frequency	50.00	Hz	0.00	500.00	50.00
9	Motor nominal speed	1360	rpm	0	30000	1435
10	Motor nominal power	0.18	kW	0.00	10000.00	1.10
11	Motor nominal cos ϕ	0.71	NoUnit	0.00	1.00	0.00
12	Motor nominal torque	0.000	Nm	0.000	400000...	0.000
13	ID run requested	Normal	NoUnit			None
14	Last ID run performed	None	NoUnit			None
15	Motor polepairs calculated	2	NoUnit	0	1000	0
16	Motor phase order	U V W	NoUnit			U V W

2. Do a normal or advanced ID run in vector control mode. For instructions on how to do the ID run, see *ACS380 machinery control program Firmware manual (3AXD50000029275)*.
3. Define the minimum speed and maximum speed values in parameter group 30 (Limits).

30. Limits						
1	Limit word 1	0b0000	NoUnit	0b0000	0b1111...	0b0000
2	Torque limit status	0b0000	NoUnit	0b0000	0b1111...	0b0000
11	Minimum speed	-1500.00	rpm	-30000.00	30000.00	-1500.00
12	Maximum speed	1500.00	rpm	-30000.00	30000.00	1500.00
13	Minimum frequency	-50.00	Hz	-500.00	500.00	-50.00
14	Maximum frequency	50.00	Hz	-500.00	500.00	50.00
17	Maximum current	5.35	A	0.00	5.94	5.35

4. Check parameter 7.35 (Drive configuration) to ensure that the drive detects the module correctly.

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Binary parameter editor Drive configuration {1}{1}

Old value [bin] 0b0100 [hex] 0x0004 [dec] 4

New value [bin] 0b100 [hex] 0x0004 [dec] 4

Bit	Name	Value
0	0	0
1	1 = Base unit	0
2	2 = BMIO-01	1
3	3 = FENA-21	0
4	4 = FECA-01	0
5	5 = FPBA-01	0
6	6 = FCAN-01	0
7	7 = BCAN-11	0
8	8 = BIO-01	0
9	9 = RIIO-01	0
10	10 = FSCA-01	0
11	11 = FEIP-21	0
12	12 = FMBT-21	0
13	13	0
14	14 = FPNO-21	0
15	15 = FEPL-02	0

Buttons: Refresh, Ok, Cancel

- Make sure that the drive hardware has been set up correctly: The Hoist drive analog output must be connected to the Travel drive analog input.
- Copy the rope length value from the Hoist drive (AO1) to the Travel drive (AI1).

12. Standard AI						
2	AI force selection	0b0000	NoUnit	0b0000	0b1111...	0b0000
3	AI supervision function	No action	NoUnit			No action
4	AI supervision selection	0b0000	NoUnit	0b0000	0b1111...	0b0000
5	AI supervision force	0b0111 0111	NoUnit	0b0000	0b1111...	0b0111 0111
11	AI1 actual value	0.000	V	0.000	11.000	0.000
12	AI1 scaled value	0.000	NoUnit	-32768....	32767.0...	0.000
13	AI1 forced value	0.000	V	0.000	11.000	0.000
15	AI1 unit selection	V	NoUnit			V
16	AI1 filter time	0.100	s	0.000	30.000	0.100
17	AI1 min	0.000	V	0.000	11.000	0.000
18	AI1 max	10.000	V	0.000	11.000	10.000
19	AI1 scaled at AI1 min	0.000	NoUnit	-32768....	32767.0...	0.000
20	AI1 scaled at AI1 max	10.000	NoUnit	-32768....	32767.0...	50.000
21	AI2 actual value	0.000	mA	0.000	22.000	0.000
22	AI2 scaled value	0.000	NoUnit	-32768....	32767.0...	0.000
23	AI2 forced value	0.000	mA	0.000	22.000	0.000
25	AI2 unit selection	mA	NoUnit			mA
26	AI2 filter time	0.100	s	0.000	30.000	0.100
27	AI2 min	4.000	mA	0.000	22.000	4.000
28	AI2 max	20.000	mA	0.000	22.000	20.000
29	AI2 scaled at AI2 min	0.000	NoUnit	-32768....	32767.0...	0.000
30	AI2 scaled at AI2 max	50.000	NoUnit	-32768....	32767.0...	50.000
101	AI1 percent value	0.00	%	0.00	100.00	0.00
102	AI2 percent value	0.00	%	0.00	100.00	0.00
110	AI dead band	0.40	%	0.00	100.00	0.40

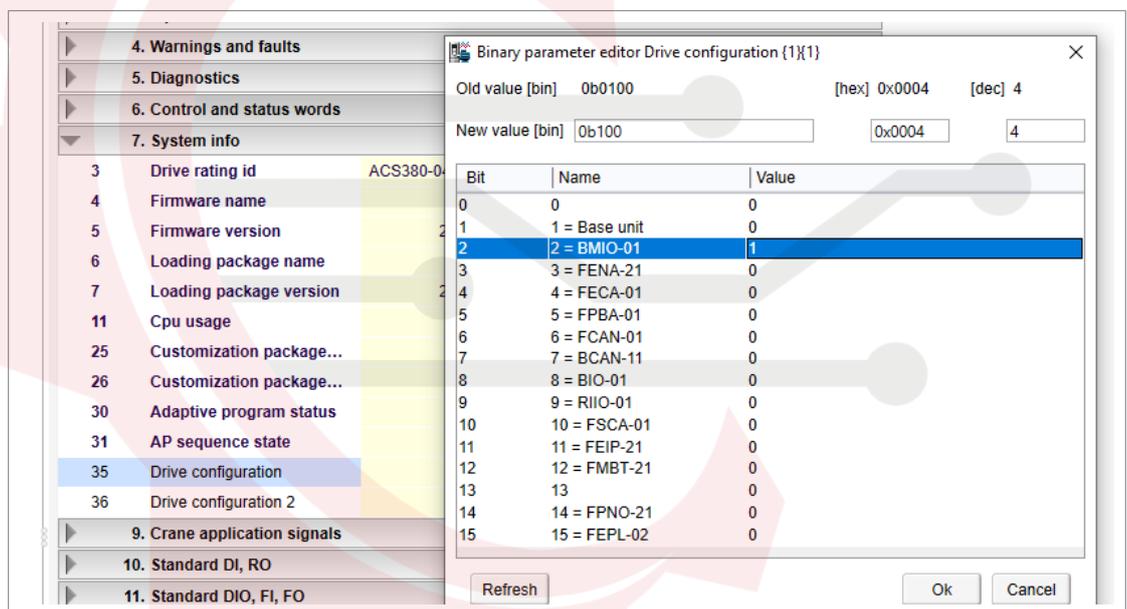
Check that the value of parameter 12.20 (AI1 scaled at AI1 max) matches the value of parameter 47.14 (Maximum pendulum length).

7. Configure the Antisway parameters in Group 47 as described in section [Travel drive parameters](#).

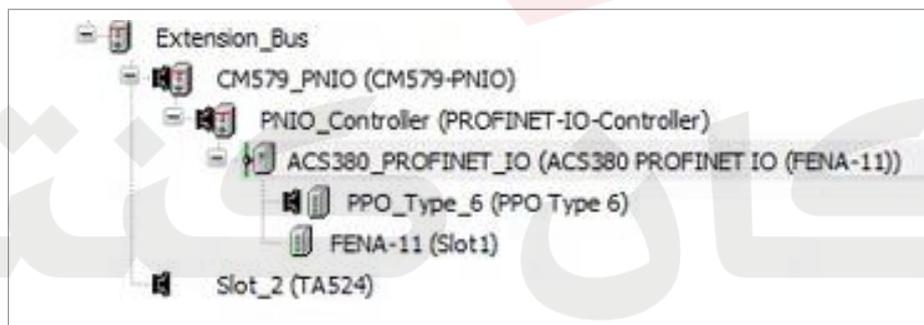
■ Profinet mode

If you use the *Travel CL/LT* macro in Profinet mode, i.e. the value of parameter 47.18 (DI or Profinet control) is 1, follow these steps:

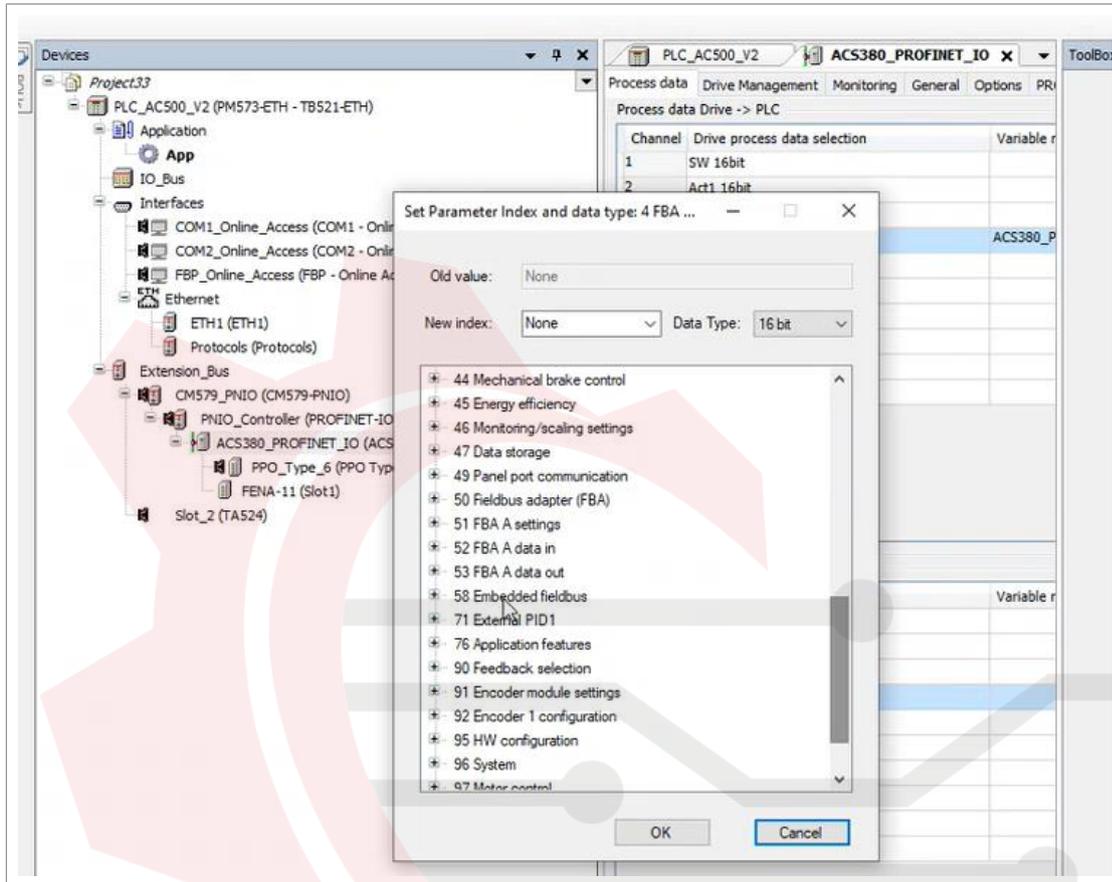
1. Check parameter 7.35 (Drive configuration) to ensure that the drive detects the module correctly. One of the following values should be detected:
 - 3 = FENA-21
 - 14 = FPNO-21



2. Set the Profinet communication settings. In Profinet communication settings, the standard PLC configuration has been made:



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Parameter	Input/Output	Address	Data Type
SW	Input0	%IW1.0	WORD
ACT1	Word0	%IW1.0	WORD
Hoist_Length_From_Hoist_Drive_High_Word	Word1	%IW1.1	WORD
Hoist_Length_From_Hoist_Drive_Low_Word	Word2	%IW1.2	WORD
	Word3	%IW1.3	WORD

- Configure the Hoist Drive To PLC data as follows:

Parameter	Input/Output	Address	Data Type
CW	Output0	%QW1.0	WORD
REF1	Word0	%QW1.0	WORD
Hoist_Length_To_Travel_Drive_High_Word	Word1	%QW1.1	WORD
Hoist_Length_To_Travel_Drive_Low_Word	Word2	%QW1.2	WORD
	Word3	%QW1.3	WORD

- Configure the PLC To Travel Drive Data:
When sending and receiving the hoisted length, float values are more accurate than 16-bit Integer values. They will also consume two words of memory: one for the high word and the other for the low word.
The Profinet communication loss function can be either a warning or a fault, depending on usage. Every time you make a change in the FBA settings, you have to refresh the settings.

3. Enter the correct motor data values in parameter group 99 (Motor data).

99. Motor data						
3	Motor type	Asynchronous motor	NoUnit			Asynchronous...
4	Motor control mode	Vector	NoUnit			Scalar
6	Motor nominal current	1.20	A	0.67	8.00	3.00
7	Motor nominal voltage	230.0	V	69.2	830.0	400.0
8	Motor nominal frequency	50.00	Hz	0.00	500.00	50.00
9	Motor nominal speed	1360	rpm	0	30000	1435
10	Motor nominal power	0.18	kW	0.00	10000.00	1.10
11	Motor nominal cos φ	0.71	NoUnit	0.00	1.00	0.00
12	Motor nominal torque	0.000	Nm	0.000	400000...	0.000
13	ID run requested	Normal	NoUnit			None
14	Last ID run performed	None	NoUnit			None
15	Motor polepairs calculated	2	NoUnit	0	1000	0
16	Motor phase order	U V W	NoUnit			U V W

4. Do a normal or advanced ID run in vector control mode. For instructions on how to do the ID run, see *ACS380 machinery control program Firmware manual (3AXD50000029275)*.
5. Define the minimum speed and maximum speed values in parameter group 30 (Limits).

30. Limits						
1	Limit word 1	0b0000	NoUnit	0b0000	0b1111...	0b0000
2	Torque limit status	0b0000	NoUnit	0b0000	0b1111...	0b0000
11	Minimum speed	-1500.00	rpm	-30000.00	30000.00	-1500.00
12	Maximum speed	1500.00	rpm	-30000.00	30000.00	1500.00
13	Minimum frequency	-50.00	Hz	-500.00	500.00	-50.00
14	Maximum frequency	50.00	Hz	-500.00	500.00	50.00
17	Maximum current	5.35	A	0.00	5.94	5.35

6. Configure the Antisway parameters in Group 47 as described in section *Travel drive parameters*.

4	Gear Box Ratio	1.000	NoUnit	-21474...	214748...	0.000
5	Antisway Offset 1	0.020	NoUnit	-21474...	214748...	0.000
6	Antisway Offset 2	0.030	NoUnit	-21474...	214748...	0.000
7	Antisway Friction Trim	1.000	NoUnit	-21474...	214748...	0.000
8	Tau Value	0.000	NoUnit	-21474...	214748...	0.000
11	Number Of Ropes	0	NoUnit	-21474...	214748...	0
12	Antisway Enable	1	NoUnit	-21474...	214748...	0
13	Antisway Minimum Speed	100	NoUnit	-21474...	214748...	0
14	Maximum Pendulum Length	20	NoUnit	-21474...	214748...	0
15	Vector/Scalar Mode (Read...	1	NoUnit	-21474...	214748...	0
16	Antisway Timeout Time	5	NoUnit	-21474...	214748...	0
17	Ramp Selected (Read Only)	0	NoUnit	-21474...	214748...	0
18	DI Or Profinet Control	1	NoUnit	-21474...	214748...	0

If the Antisway functionality is needed, make sure that the values of parameters 47.12 (Antisway enable) and 47.15 (Vector/Scalar Mode) are both 1.

From the Hoist drive, the value of parameter 47.3 (Rope Final Length) is passed to the fieldbus.

In the Travel drive, the hoisted length value received from the fieldbus is copied into parameter 47.3 (Rope Final Length).

7. Make sure that the drive functions correctly with the Profinet Control Word, Reference 1 Speed Setpoint, and hoisted length values:

- Control Word (CW):
 - CW.12 = Offset Selection Bit
 - CW.13 = Antisway Enable Bit
- Status Word (SW):
 - Ref1 = Reference 1 Speed Setpoint

The hoisted length value is stored in parameter 47.3 (Rope Final Length).

8. Make sure that the values of parameters 47.12 (Antisway enable) and 47.15 (Vector/Scalar Mode) are both 1.

The values that must be entered in the drive Control Word are as follows:

Bit	Name
0	Off1 control
1	Off2 control
2	Off3 control
3	Run
4	Ramp out zero
5	Ramp hold
6	Ramp in zero
7	Reset
8	Inching 1
9	Inching 2
10	Remote cmd
11	Ext ctrl loc
12...15	not used

Use the following Control Word integer value sequences:

- **Antisway-enabled run with offset 1:**
1142 → 1143 → 9342 (Stop & Antisway Enabled) → 9343 (Run With Antisway) → 1150 (Stop & Antisway Disabled) → 9342 (Stop & Antisway Enabled) → 9343 (Run With Antisway).
- **Antisway-enabled run with offset 2:**
1142 → 1143 → 13438 (Stop & Antisway Enabled) → 13439 → (Run With Antisway) → 1150 (Stop & Antisway Disabled) → 13438 (Stop & Antisway Enabled) → 13439 → (Run With Antisway).

- **Other antisway-enabled run:**
Set the CW.13 bit (Antisway Bit) & CW.12 into either 0 or 1 depending on the offset required. Then use the normal CW sequence:
1142 → 1143 → 1151 → 1150 → 1151 → ...
- **Normal run without antisway:**
1142 → 1143 → 1151 → 1150 → 1151 → ...

Note: The antisway & offset values should be selected before the drive run. Also do not specify the next setpoint without reaching the previous setpoint.

■ Travel macro commission final steps

1. Check the *Start/Stop/Direction* and *Speed Selection* configurations.
The Start/Stop/Direction configuration is same for both control modes. Either DI mode or Profinet mode will be active, based on the Ext1/Ext2 selection. Set the value of parameter 22.21.1 (Direction Enable Constant Speed) as 1.
In **DI mode**, set the values as follows:
 - parameter 22.22 = DIO1
 - parameter 22.23 = DIO2
 In **Profinet mode**, set the values as follows:
 - parameter 22.22 = Always Off
 - parameter 22.23 = Always Off
 Also set the constant speed values as 0.
2. Check that the drive functions correctly with the following IOs:
 - DI1 : start/stop drive
 - DI2 : direction change, if required
 - DIO1: constant speed 1 selection
 - DIO2: constant speed 2 selection
 - DI3 : offset selection
 - DI4 : antisway enable

Note: Enable antisway before you start the drive.

 - AI1 scaled value: hoisted rope length

Note: AI1 is used for receiving the hoisted rope length for the Travel drive. Therefore it cannot be used for speed or frequency reference input.



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4

Parameters

Contents of this chapter

This chapter describes the service level parameters of the ACS380 crane antisway program application.

Parameter listing

This section lists only the parameters that are relevant to the ACS380 antisway control program. Parameters for the *Hoist* and *Travel* macros are listed separately.

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■ 47 Antisway parameters

Hoist drive parameters

47. Hoist / Travel Data						
1	Hoist Drum Radius	0.050	NoUnit	-21474...	214748...	0.000
2	Rope Length Stored	0.000	NoUnit	-21474...	214748...	0.000
3	Rope Final Length	0.000	NoUnit	-21474...	214748...	0.000
4	Gear Box Ratio	1.000	NoUnit	-21474...	214748...	0.000
5	Antisway Offset 1	0.020	NoUnit	-21474...	214748...	0.000
6	Antisway Offset 2	0.030	NoUnit	-21474...	214748...	0.000
7	Antisway Friction Trim	1.000	NoUnit	-21474...	214748...	0.000
8	Tau Value	0.000	NoUnit	-21474...	214748...	0.000
11	Number Of Ropes	1	NoUnit	-21474...	214748...	0
12	Antisway Enable	0	NoUnit	-21474...	214748...	0
13	Antisway Minimum Speed	0	NoUnit	-21474...	214748...	0
14	Maximum Pendulum Length	20	NoUnit	-21474...	214748...	0

The following drive parameters are used for the Hoist macro. Set the parameters so that they match the operating environment.

No.	Name	Description	Default
47.01	Hoist Drum Radius	The value of the hoist drum radius (in meters).	0.000
47.02	Roped Length Stored	The final value of the hoist rope length (in meters) before power off.	0.000
47.03	Rope Final Length	The final value of the hoist rope length (in meters) after all calculations.	0.000
47.04	Gear Box Ratio	The gear box ratio value.	0.000
47.11	Number Of Ropes	The number of ropes used for hoist.	0
47.14	Maximum Pendulum Length	The maximum pendulum arm length (in meters) from hoist drum to floor level.	0

Travel drive parameters

47. Hoist / Travel Data						
1	Hoist Drum Radius	0.050	NoUnit	-21474...	214748...	0.000
2	Rope Length Stored	0.000	NoUnit	-21474...	214748...	0.000
3	Rope Final Length	0.000	NoUnit	-21474...	214748...	0.000
4	Gear Box Ratio	1.000	NoUnit	-21474...	214748...	0.000
5	Antisway Offset 1	0.020	NoUnit	-21474...	214748...	0.000
6	Antisway Offset 2	0.030	NoUnit	-21474...	214748...	0.000
7	Antisway Friction Trim	1.000	NoUnit	-21474...	214748...	0.000
8	Tau Value	0.347	NoUnit	-21474...	214748...	0.000
11	Number Of Ropes	1	NoUnit	-21474...	214748...	0
12	Antisway Enable	1	NoUnit	-21474...	214748...	0
13	Antisway Minimum Speed	100	NoUnit	-21474...	214748...	0
14	Maximum Pendulum Length	10	NoUnit	-21474...	214748...	0
15	Vector/Scalar Mode (Read...	0	NoUnit	-21474...	214748...	0
16	Antisway Timeout Time	5	NoUnit	-21474...	214748...	0
17	Ramp Selected (Read Only)	0	NoUnit	-21474...	214748...	0
18	DI Or Profinet Control	0	NoUnit	-21474...	214748...	0

The following drive parameters are used for the Travel macro. Set the parameters so that they match the operating environment.

No.	Name	Description	Default
47.03	Rope Final Length	The final value of the hoist rope length (in meters) after all calculations. When using the Travel macro in Profinet mode, the data from the hoist drive will be moved to this parameter only.	0.000
47.05	Antisway Offset 1	This offset value (in meters) is added with the actual rope length received from Hoist drive via analog input or via Profinet data. Offset value selection is based on DI3 or control word bit 12: 0 = Offset 1 is selected. 1 = Offset 2 is selected.	0.000
47.06	Antisway Offset 2	See parameter 47.05.	0.000
47.07	Antisway Friction Trim	The final Tau calculation can be adjusted by using a trim factor to overcome the mechanical friction. Supported values are 0.75...1.25.	0.000
47.08	Tau Value	The value of this parameter shows the calculated Tau value to verify the acceleration/deceleration time. Note: This parameter value is read-only.	0.000

26 Parameters

No.	Name	Description	Default						
47.12	Antisway Enable	<p>Enable or disable the antisway feature. If if this parameter is on, the software can enable the antisway feature as required.</p> <table border="1"> <thead> <tr> <th>Value</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>The antisway feature is disabled.</td> </tr> <tr> <td>1</td> <td>The antisway feature is enabled.</td> </tr> </tbody> </table>	Value	Description	0	The antisway feature is disabled.	1	The antisway feature is enabled.	0
Value	Description								
0	The antisway feature is disabled.								
1	The antisway feature is enabled.								
47.13	Antisway Minimum Speed	<p>The antisway feature will be automatically disabled if the speed reference is below the value of this parameter. Normally given as 100 rpm.</p>	0						
47.14	Maximum Pendulum Length	<p>The maximum pendulum arm length (in meters) from the hoist drum to floor level.</p>	0						
47.15	Vector/Scalar Mode (read only)	<p>This parameter is 0 for vector and 1 for scalar mode.</p> <p>Note: Only available with the Travel macro.</p>	0						
47.16	Antisway Timeout Time	<p>Enter the time to make antisway timeout, usually given as 5seconds</p> <p>Note: Only available with the Travel macro.</p>	0						
47.17	Ramp Selected (Read Only)	<p>This read-only parameter displays the ramp set used for the Travel macro.</p> <table border="1"> <thead> <tr> <th>Value</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>Acc1/Dec1</td> </tr> <tr> <td>1</td> <td>Acc2/Dec2</td> </tr> </tbody> </table> <p>Note: Only available with the Travel macro.</p>	Value	Description	0	Acc1/Dec1	1	Acc2/Dec2	0
Value	Description								
0	Acc1/Dec1								
1	Acc2/Dec2								
47.18	DI or Profinet Control	<p>Select between DI and Profinet control mode.</p> <table border="1"> <thead> <tr> <th>Value</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>DI control</td> </tr> <tr> <td>1</td> <td>Profinet control</td> </tr> </tbody> </table> <p>0 = DI control 1 = Profinet control</p> <p>Note: Only available with the Travel macro.</p>	Value	Description	0	DI control	1	Profinet control	0
Value	Description								
0	DI control								
1	Profinet control								

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Fault tracing

Contents of this chapter

This section lists warning and fault messages including possible causes and corrective actions. This section contains the faults and warnings that are specific only for the ACS380 crane antisway control program. See *ACS380 machinery control program firmware manual* (3AXD50000029275 [English]) for the other warnings and faults.

Warning messages

Code (hex)	Warning	Cause	What to do
A981	Antisway timeout	Antisway timeout (Tau value calculated from the maximum pendulum length + 5 seconds).	If the speed ramp time is more than the timeout value, an antisway timeout warning will be triggered. In this case the drive follows the acceleration/deceleration time 1.



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Further information

Product and service inquiries

Address any inquiries about the product to your local ABB representative, quoting the type designation and serial number of the unit in question. A listing of ABB sales, support and service contacts can be found by navigating to www.abb.com/contact-centers.

Product training

For information on ABB product training, navigate to new.abb.com/service/training.

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