

# ACS 800

Supplement  
Traverse Control Application Program 7.x





# Traverse Control Application Program 7.x

## **Supplement**

ACS 800

Code: 3AFE 64618334 Rev B  
EN

EFFECTIVE: 27.07.2002

FIDRNEIF200  
PDM code: 00191176.zip



# Table of contents

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<b>Table of contents</b> .....	<b>5</b>
<b>Introduction to the manual</b> .....	<b>7</b>
Chapter overview.....	7
Safety instructions .....	7
Compatibility .....	7
Reader.....	7
Contents.....	7
Related documents.....	8
<b>Start-up and control</b> .....	<b>9</b>
Checklist for a Quick Start-up .....	9
Controlling the traverse drive .....	9
<b>Program features</b> .....	<b>11</b>
Chapter overview.....	11
Few programming details .....	11
Overview of the traverse control .....	11
How the traverse control operates .....	12
<b>Parameters</b> .....	<b>13</b>
Chapter overview.....	13
Terms and abbreviations .....	13
Group 46 Traverse Control .....	14



# Introduction to the manual

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## Chapter overview

This chapter instructs where to read the safety instructions and gives general information on the manual.

## Safety instructions

Follow all safety instructions delivered with the drive.

- Read the complete safety instructions before you install, commission, or use the drive. The complete safety instructions are given at the beginning of the Hardware Manual.
- Read the software function specific warnings and notes before changing the default settings of the function. For each function, the warnings and notes are given in the subsection describing the related user-adjustable parameters.

## Compatibility

The manual is compatible with ACS800 Traverse Control Application Program 7.x.

## Reader

The reader of the manual is expected to know the standard electrical wiring practices, electronic components, and electrical schematic symbols.

## Contents

This supplement describes the operation and the settings of the Traverse Control Function of the Traverse Control Application Program. The rest of the program is equal to the ACS800 Template Application Program which is documented in the *Firmware Manual for ACS800 Template Application Program* (3AFE 64616340 [English]).

The supplement contains the following chapters:

- *Start-up and control* points out the items to remember at the drive start up. It also refers to the related documents for further information.
- *Program features* describes the operation of the Traverse Control Function, the core of the Traverse Control Application Program.
- *Parameters* describes the user adjustable settings for tuning the operation of the Traverse Control Function.

## Related documents

Firmware Manual for ACS800 Template Application Program (3AFE 64616340 [English]).

Hardware Manual (appropriate Hardware Manual is delivered with the drive).

Option manuals (appropriate option manual is delivered with the option device).

# Start-up and control

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## Checklist for a Quick Start-up

Step	Instruction	Additional Information
1.	Install the drive and wire the power and control cables.	See the Hardware Manual delivered with the unit. For the default control connections (I/O), see the Firmware Manual.
2.	Set-up the drive application program. <b>Note:</b> The ID Run must be performed.	See the Firmware Manual delivered with the unit.
3.	Activate the Traverse Control Function by defining the Base Speed reference.	Parameter <a href="#">46.01</a> .
4.	Adjust the rest of the Traverse Control Function settings.	See <a href="#">Group 46 Traverse Control</a> .
5.	Perform a test run with the motors still decoupled from the driven machinery.	

## Controlling the traverse drive

The drive can be controlled by the panel (local control) or through the external control signal interface (remote control). Switch between local and external control modes with the LOC/REM key of the panel.

For the local control using the panel, see the control panel instructions in the Firmware Manual.

For the external control through the digital and analogue inputs, see the default control connection diagram in the Firmware Manual.

**Note:** When starting the motor from standstill, the drive follows the external speed reference until the speed reaches the Base Speed of the Traverse Control Function. At the Base Speed, the drive starts following the speed reference given by the Traverse Control Function. The other speed references become inactive. See the chapter [Program features](#).



# Program features

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## Chapter overview

This chapter describes the operation of the Traverse Control Function.

## Few programming details

The application has been programmed using the FCB (Function Chart Builder) tool for the Motor and IO Control Board (RMIO).

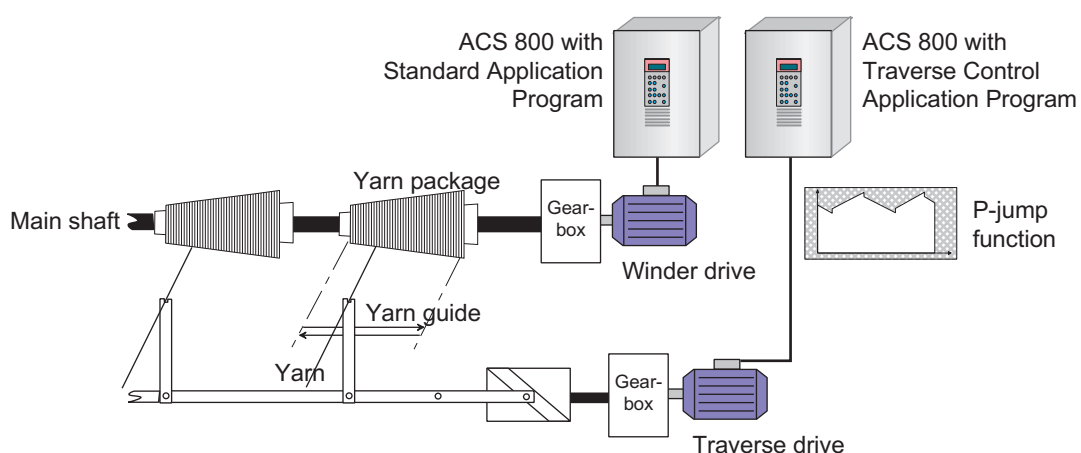
The program is based on the ACS800 Application Program Template. The application has been put together in one Type Circuit.

## Overview of the traverse control

The traverse drives are used in textile machines to guide yarn into a yarn package.

- To get even winding for the yarn, the drive decreases/increases the speed smoothly depending on the package form and the movement direction of the yarn guide.
- To avoid layering at the reversal points of the yarn guide, the drive performs an instantaneous speed change i.e. "P-jump".

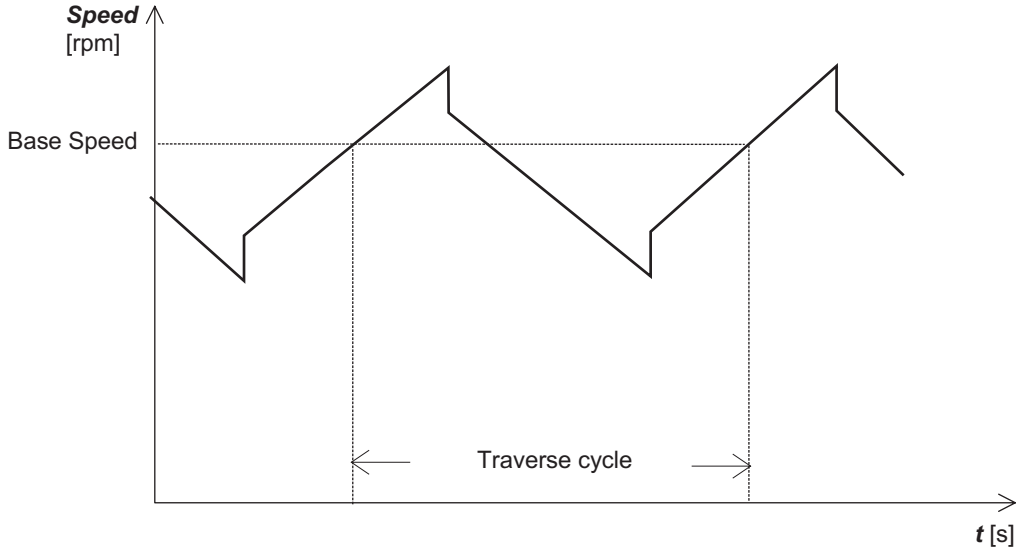
The figure below is an overall view of the system.



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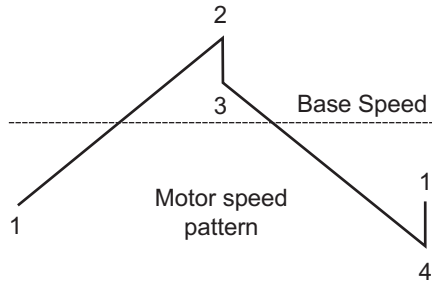
## How the traverse control operates

The traverse drive repeats "the saw tooth" speed pattern until the yarn package is built up. The figure below shows the speed pattern.



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The figure and table below describe the operation further.



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Phase	Action	See parameters
1-2	Drive accelerates along the traverse acceleration ramp to the maximum traverse speed.	<a href="#">46.01</a> , <a href="#">46.02</a> , <a href="#">46.04</a>
2-3	Drive stops the acceleration and drops the speed reference by an instantaneous step.	<a href="#">46.06</a>
3-4	Drive decelerates along the traverse deceleration ramp towards the minimum traverse speed.	<a href="#">46.03</a> , <a href="#">46.01</a> , <a href="#">46.05</a>
4-1	Drive stops the deceleration and increases the speed by an instantaneous step.	<a href="#">46.07</a>

# Parameters

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## Chapter overview

This chapter describes the user-adjustable parameters of the Traverse Control Function.

Note: If the traverse control is inactive, the operation is defined by the ACS800 Application Program Template.

## Terms and abbreviations

Term	Definition
FbEq	Fieldbus equivalent. Shows how the value on control panel is converted to a integer value when communicated over a serial communication link (fieldbus interface).
Def	Default value
Type	Data type
B	Data type boolean
I	Data type integer
Pb	Data type packed boolean
R	Data type real

## Group 46 Traverse Control

Index	Name/Selection	Description	FbEq/Def/Type
46	TRAVERSE CONTROL	<p>The block diagram below illustrates the Traverse Control Function.</p> <p>Note: If the motor control mode is Scalar (parameter 99.04), the output of the Traverse Control Function is a frequency reference (parameter 29.01) instead of the speed reference (parameter 23.01). Then also all speed settings (rpm) of the function change to frequency values (Hz) automatically.</p>	

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46.01	BASE SPEED SEL	Activates the Traverse Control Function and defines the Base Speed.	1
	NOT SELECTED	Traverse control is inactive.	1 (Def)
	60%	Base Speed is 60% of the motor nominal speed (parameter 99.05).	2
	AI1	Base Speed is the value of analogue input AI1. The analogue signal maximum (parameter 13.01 AI1 HIGH VALUE) corresponds to the maximum speed limit (parameter 20.02).	3
	CONST SP2	Base Speed is the value of parameter 23.03 CONSTANT SPEED 2.	4

Index	Name/Selection	Description	FbEq/Def/Type
	DI1	<p>Traverse is enabled when digital input DI1 is on (1).</p> <p>Base Speed = AI1 + constant speed 2 + fieldbus reference REF1</p> <p>Typically only one of the variables (AI1, constant speed 2, REF1) is in use at the time the other two being zero.</p> <p><b>Note:</b> When starting the traversing, switch on the digital input before controlling the drive speed up to the traverse starting speed (= Base Speed). The execution cycle of the digital inputs are slower than the cycle of the Traverse Control Function.</p>	5
	DI2	See DI1.	6
	DI4	See DI1.	7
	DI6	See DI1.	8
	FIELDBUS	Base Speed is the fieldbus reference REF1 read through the serial communication interface of the drive. 20000 == Nominal motor speed (parameter 99.05).	9
	KEYPAD	Base Speed is the reference value given by the control panel. The panel indicates this status by letter L (Local Mode) on the display. The selection is useful when testing.	10
46.02	SLOW ACC TIME	Defines the acceleration time for the Traverse Control Function. See the block diagram above.	10 s (Def); R
	1 ... 30000 s	Time	1... 30000
46.03	SLOW DEC TIME	Defines the deceleration time for the Traverse Control Function. See the block diagram above.	10 s (Def); R
	1 ... 30000 s	Time	1... 30000
46.04	SLOW STEP UP	<p>Defines the maximum traverse speed as follows:</p> <p>Maximum speed = Value of parameter 46.01+ value of parameter 46.04.</p> <p><b>Note:</b> The value must not exceed the maximum speed limit of the drive (parameter 20.02).</p> <p><b>Note:</b> Unit depends on the control mode and parameter 46.08.</p>	300 rpm (Def); R
	0 ... 18000 rpm (Hz,%)	Speed	1 ... 18000
46.05	SLOW STEP DOWN	<p>Defines the minimum traverse speed as follows:</p> <p>Minimum speed = Value of parameter 46.01- value of parameter 46.05</p> <p><b>Note:</b> The value may not be negative.</p> <p><b>Note:</b> Unit depends on the control mode and parameter 46.08.</p>	300 rpm (Def); R
	0 ... 18000 rpm (Hz,%)	Speed	0 ... 18000
46.06	QUICK STEP HIGH	<p>Defines the speed step that the traverse function takes downwards after reaching the maximum traverse speed.</p> <p><b>Note:</b> Unit depends on the control mode and parameter 46.08.</p>	50 rpm (Def); R
	0 ... 7200 rpm (Hz,%)	Speed	0 ... 7200
46.07	QUICK STEP LOW	<p>Defines the speed step that the traverse function takes upwards after reaching the minimum traverse speed.</p> <p><b>Note:</b> Unit depends on the control mode and parameter 46.08.</p>	50 rpm (Def); R
	0 ... 7200 rpm (Hz,%)	Speed	0 ... 7200
46.08	PROPORTIONAL STEPS	Switches the unit of parameters 46.04 to 46.07 to percent. The values of parameter 46.04 and 46.05 are given in percent of the Base Speed (see parameter 46.01). The values of parameter 46.06 and 46.07 are given in percent of the values of parameters 46.04 and 46.05.	B
	NOT SELECTED	Inactive (rpm in use)	0 (Def)
	SELECTED	Active (% in use)	1







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3AFE 64618334 Rev B / EN  
EFFECTIVE: 27.07.2002