

Section 8.52

[Encoder configuration]

[Encoder configuration] , E n - Menu

Access

[Complete settings] → [Encoder configuration]

About This Menu

This menu can be accessed if an encoder module (VW3A3420, VW3A3422, or VW3A3423) has been inserted, and the available selections depend on the type of encoder module used.

Encoder Check Procedure

This procedure applies to all types of encoder.

Step	Action
1	Configure the parameters of the encoder used
2	Set [Motor control type] C E E to a value other than [FVC] F V C even if it is the required configuration. For example, use [SVC V] V V C for an asynchronous motor and [Sync. mot.] S Y n for a synchronous motor.
3	Configure the motor parameters in accordance with the specifications on the rating plate. - Asynchronous motor: [Nominal motor power] n P r, [Nom Motor Voltage] u n S, [Nom Motor Current] n C r, [Nominal Motor Freq] F r S, [Nominal Motor Speed] n S P. - Synchronous motor: [Sync Nominal I] n C r S, [Nom SyncMotor Speed] n S P S, [Pole pairs] P P n S, [Syn. EMF constant] P H S, [Autotune L d-axis] L d S, [Autotune L q-axis] L q S, [SyncMotor Stator R] r S R S. [Current Limitation] C L, must not exceed the maximum motor current, otherwise demagnetization may occur.
4	Set [Encoder usage] E n u to [No] n o .
5	Perform auto-tuning
6	Set [Encoder check] E n C to [Yes] Y E S
7	Set the motor rotating at stabilized speed around 15% of the rated speed for at least 3 seconds, and use the [Display] P o n menu to monitor its behavior
8	If it trips on an [Encoder] E n F , [Encoder check] E n C returns to [No] n o . - Check the parameter settings (see steps 1 to 5 above). - Check that the mechanical and electrical operation of the encoder, its power supply, and connections are all OK. - Reverse the direction of rotation of the motor ([Output Ph Rotation] P H r parameter) or the encoder signals
9	Repeat the operations from step 6 onwards until [Encoder check] E n C changes to [Done] d o n e
10	If necessary, change [Motor control type] C E E to [FVC] F V C or [Sync.CL] F S Y . In the case of [Sync.CL] F S Y .

[Encoder Type] μECP

Encoder type.

The list of choice depends on the encoder module inserted.

Setting	Code / Value	Description
[Undefined]	μnd	Unknow / No encoder type selected Factory setting
[Hiperface]	$5CP$	SinCos Hiperface encoder
[SinCos]	$5C$	SinCos encoder
[SSI]	$55i$	SSI encoder
[RS422]	AB	AB encoder
[Resolver]	rES	Resolver encoder
[Biss]	$biss$	BISS encoder
[EnDat 2.2]	$Endat22$	Endat 2.2 encoder

[Encoder supply volt.] μEV ★

Encoder supply voltage.

Rated voltage of encoder used. The list of choice depends on the encoder module inserted.

This parameter can be accessed if **[Encoder Type] μECP** is not set to:

- **[Undefined] μnd** , or
- **[Resolver] rES** .

Setting	Code / Value	Description
[Undefined]	μnd	Not defined Factory setting
[5 Vdc]	$5V$	5 Volts
[12 Vdc]	$12V$	12 Volts
[24 Vdc]	$24V$	24 Volts

[Number of pulses] PG , ★

Number of pulses per encoder revolution.

The parameter can be accessed if an encoder module VW3A3420 has been inserted and if **[Encoder Type] μECP** is set to **[RS422] AB**

Setting	Description
100...10,000	Factory setting: 1024

[Encoder check] ENC

Encoder check activation.

Setting	Code / Value	Description
[Not done]	no	Check not performed
[Yes]	YES	Activates monitoring of the encoder.
[Done]	$done$	Check performed successfully. The check procedure checks: • The direction of rotation of the encoder/motor • The presence of signals (wiring continuity) • The number of pulses/revolution. If an error is detected, the drive locks in [Encoder] ENF.

[Encoder usage] E n u

Setting	Code / Value	Description
[No]	n o	Function inactive
[Speed Monitoring]	5 E L	The encoder provides speed feedback for monitoring only.
[Speed Regulation]	r E G	The encoder provides speed feedback for regulation and monitoring. This configuration is automatic if the drive is configured for closed-loop operation ([Motor control type] L t t = [FVC] F v L. If [Motor control type] L t t = [SVC V] v v L the encoder operates in speed feedback mode and enables static correction of the speed to be performed. This configuration is not accessible for other [Motor control type] L t t values.

[Encoder rotation inv.] E n r i

Inversion of encoder rotation direction.

Setting	Code / Value	Description
[No]	n o	Inversion of the encoder deactivated Factory setting
[Yes]	y E 5	Inversion of the encoder activated

[Resolver Exct. Freq.] r E F 9 ★

Resolver excitation frequency.

This parameter can be accessed if [Encoder Type] u E L P is set to [Resolver] r E 5.

Setting	Code / Value	Description
[3 kHz]	3	3 kHz
[4 kHz]	4	4 kHz
[5 kHz]	5	5 kHz
[6 kHz]	6	6 kHz
[7 kHz]	7	7 kHz
[8 kHz]	8	8 kHz Factory setting
[9 kHz]	9	9 kHz
[10 kHz]	10	10 kHz
[11 kHz]	11	11 kHz
[12 kHz]	12	12 kHz

[Transformation ratio] t r E 5 ★

Resolver transformation ratio.

This parameter can be accessed if [Encoder Type] u E L P is set to [Resolver] r E 5.

Setting	Code / Value	Description
[0.3]	0 3	0.3
[0.5]	0 5	0.5 Factory setting
[0.8]	0 8	0.8
[1.0]	1 0	1.0

[Resolver poles nbr] $r P P n$ ★

Resolver poles pair number.

This parameter can be accessed if **[Encoder Type] $\mu E C P$** is set to **[Resolver] $r E 5$** .

Setting	Code / Value	Description
[2 poles]	$2 P$	2 poles Factory setting
[4 poles]	$4 P$	4 poles
[6 poles]	$6 P$	6 poles
[8 poles]	$8 P$	8 poles

[Sincos lines count] $\mu E L C$ ★

SinCos lines count.

This parameter can be accessed if **[Encoder Type] $\mu E C P$** is set to **[SinCos] $5 C$** .

Setting	Code / Value	Description
[Undefined]	$\mu n d$	Undefined Factory setting
[1...1000]		Setting range

[SSI parity] $5 5 C P$ ★

SSI Parity

This parameter can be accessed if **[Encoder Type] $\mu E C P$** is set to **[SSI]? $5 5$** .

Setting	Code / Value	Description
[Undefined]	$\mu n d$	Undefined Factory setting
[No parity]	$n o$	No parity
[Even parity]	$E V E n$	Even parity

[SSI frame size] $5 5 F 5$ ★

SSI frame size (in number of bits).

The parameter can be accessed if **[Encoder Type] $\mu E C P$** is set to **[SSI] $5 5$** .

Setting	Description
[Auto] $R u t o \dots 31$	Setting range Factory setting: [Auto] $R u t o$

[Nbr of revolutions] $E n \Pi r$ ★

Number of revolutions.

Format of the number of revolutions (in number of bits).

The parameter can be accessed if **[Encoder Type] $\mu E C P$** is set to **[SSI] $5 5$** .

Setting	Description
[Undefined] $\mu n d \dots 25$	Setting range Factory setting: [Undefined] $\mu n d$

[Turn bit resolution] *E n t r* ★

Turn bit resolution.

Resolution per revolution (in number of bits).

The parameter can be accessed if **[Encoder Type] *u E C P*** is set to **[SSI] *5 5*** ,

Setting	Description
[Undefined] <i>u n d</i> ...25	Setting range Factory setting: [Undefined] <i>u n d</i>

[SSI code type] *5 5 C d* ★

SSI code type.

The parameter can be accessed if **[Encoder Type] *u E C P*** is set to **[SSI] *5 5*** ,

Setting	Code / Value	Description
[Undefined]	<i>u n d</i>	Undefined Factory setting
[Binary code]	<i>b i n</i>	Binary code
[Gray code]	<i>G r A y</i>	Gray code

[Clock frequency] *E n S P* ★

Clock frequency.

The parameter can be accessed if **[Encoder Type] *u E C P*** is set to **[SSI] *5 5*** ,

Setting	Code / Value	Description
[200 kHz]	<i>2 0 0</i>	200 kHz Factory setting
[1 Mhz]	<i>1 0</i>	1 MHz

[AB Encoder Max Freq] *A b M F* ★

AB encoder maximum frequency.

This parameter can be accessed if **[Encoder Type] *u E C P*** is set to **[RS422] *A b*** and, **[Access Level] *L A C*** is set to **[Expert] *E P r*** .

Setting	Code / Value	Description
[150 kHz]	<i>1 5 0</i>	150 kHz Factory setting
[300 kHz]	<i>3 0 0</i>	150 kHz Factory setting
[500 kHz]	<i>5 0 0</i>	500 kHz Factory setting
[1000 kHz]	<i>1 0 0 0</i>	1000 kHz Factory setting

[Encoder filter activ.] *F F A* ★

Encoder feedback filter activation.

This parameter can be accessed if **[Encoder usage] *E n u*** is not set to **[No] *n o*** .

Setting	Code / Value	Description
[No]	<i>n o</i>	Filter deactivated Factory setting
[Yes]	<i>y e s</i>	Filter activated

[Encoder filter value] F F r ★

Encoder feedback filter value.

This parameter can be accessed if:

- **[Access Level] L H C** is set to **[Expert] E P r**, and
- **[Encoder filter activ.] F F A** is set to **[Yes] Y E S**.

Setting	Description
0.0...40.0 ms	Setting range Factory setting: according to encoder rating

[Stop on top Z] t o S t ★

Stop on next top Z detection.

This parameter can be used for homing. If the approach speed is set to high an **[DC Bus Overvoltage] o b F** error will be triggered.

This parameter can be accessed if:

- A VW3A3420 Digital encoder module has been inserted, and
- **[Encoder type] u E C P** is set to **[RS422] H b**.

Setting	Code / Value	Description
[Not Assigned]	n o	Not assigned Factory setting
[DI1]...[DI8]	L , I ... L , B	Digital input DI1...DI8
[DI11]...[DI16]	L , I I ... L , I B	Digital input DI11...DI16 if VW3A3203 I/O extension module has been inserted
[CD00]...[CD10]	C d 0 0 ... C d 1 0	Virtual digital input CMD.0...CMD.10 in [I/O profile] , o configuration
[CD11]...[CD15]	C d 1 1 ... C d 1 5	Virtual digital input CMD.11...CMD.15 regardless of configuration
[C101]...[C110]	C 1 0 1 ... C 1 1 0	Virtual digital input CMD1.01...CMD1.10 with integrated Modbus Serial in [I/O profile] , o configuration
[C111]...[C115]	C 1 1 1 ... C 1 1 5	Virtual digital input CMD1.11...CMD1.15 with integrated Modbus Serial regardless of configuration
[C201]...[C210]	C 2 0 1 ... C 2 1 0	Virtual digital input CMD2.01...CMD2.10 with CANopen® fieldbus module in [I/O profile] , o configuration
[C211]...[C215]	C 2 1 1 ... C 2 1 5	Virtual digital input CMD2.11...CMD2.15 with CANopen® fieldbus module regardless of configuration
[C301]...[C310]	C 3 0 1 ... C 3 1 0	Virtual digital input CMD3.01...CMD3.10 with a fieldbus module in [I/O profile] , o configuration
[C311]...[C315]	C 3 1 1 ... C 3 1 5	Virtual digital input CMD3.11...CMD3.15 with a fieldbus module regardless of configuration
[C501]...[C510]	C 5 0 1 ... C 5 1 0	Virtual digital input CMD5.01...CMD5.10 with integrated Ethernet in [I/O profile] , o configuration
[C511]...[C515]	C 5 1 1 ... C 5 1 5	Virtual digital input CMD5.11...CMD5.15 with integrated Ethernet regardless of configuration

[Reset Position Assign] r P o S

Reset position assignment.

This parameter resets the value of **[PLC Encoder Pulse] P u C** parameter.

This parameter can be accessed if **[Access Level] L H C** is set to **[Expert] E P r**

Identical to **[Stop on top Z] t o S t**.