Basic Guide to Communications ODVA

ControlNet™
DeviceNet™
EtherNet I/P™

ABB

Contents

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Basic Guide to Communications Overview
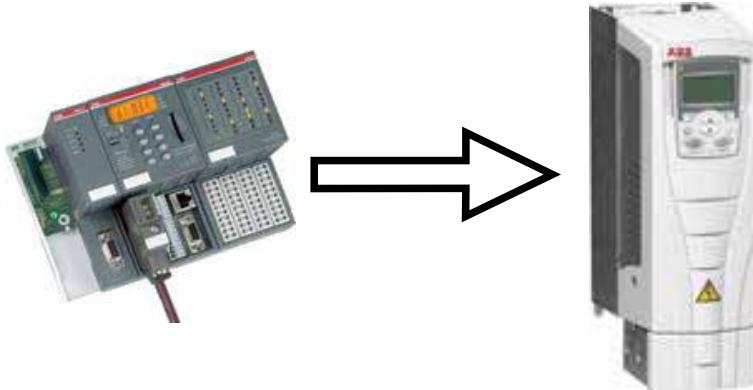
Overview

This document contains an overview on how fieldbus communications are handled in ABB Drive Products. Please reference the documents below for additional information about fieldbus communications.

Fieldbus adapters for ABB drives

There are three series of fieldbus adapters. The F-series fieldbus adapters are for ACS350, ACS355, ACS850, ACH550 with E-Clipse Bypass, ACSM1 and ACS880. The R-series fieldbus adapters are for ACS800, DCS800 and ACS550, ACH550 and ACQ550. Both the F-series and R-series install under the cover of the product. The N-series fieldbus adapters are for the ACS800 and DCS800 with the fiber optic option installed on the drive. The N-series are DIN-rail mountable and require 24V DC power.

F-series for ACS350, ACS355, ACS850, ACH550 with E-Clipse Bypass, ACSM1 and ACS880

- Plugs on the drive under the cover
- Electrical interface with drive

R-series for ACS550, ACH550, ACQ550, ACS800, DCS800

- Plugs on the drive under the cover
- Electrical interface with drive

N-series for ACS800, DCS800

- DIN-rail mountable
- Optical interface with drive
- Requires DDCS option

Available fieldbus options for ABB drives

Select the correct fieldbus module for the drive product and protocol.

	Protocol	ACS800	ACS880	ACS350/ACS355	ACS550 ACQ550	ACS850	ACSM1	DCS800
Industrial	CANopen	RCAN-01	FCAN-01	FCAN-01	RCAN-01	FCAN-01	FCAN-01	RCAN-01
	DeviceNet	RDNA-01	FDNA-01	FDNA-01	RDNA-01	FDNA-01	FDNA-01	RDNA-01
	ControlNet	RCNA-01	FCNA-01	FCNA-01*	RCNA-01	FCNA-01	FCNA-01	RCNA-01
	EtherNet/IP	RETA-01	FENA-11	FENA-01	RETA-01	FENA-11	FENA-11	RETA-01
	Modbus® RTU	RMBA-01	FSCA-01	FMBA-01, FRSA-00, panel port	internal	FSCA-01	FSCA-01	RMBA-01
	Modbus TCP/IP	RETA-01, NETA-01	FENA-11	FENA-01	RETA-01	FENA-11	FENA-11	RETA-01, NETA-01
	PROFIBUS DP®	RBPA-01	FPBA-01	FPBA-01	RBPA-01	FPBA-01	FPBA-01	RBPA-01
	PROFINET I/O®	RETA-02	FENA-11	FENA-01	RETA-02	FENA-11	FENA-11	RETA-02
	EtherCAT	RECA-01	FECA-01	FECA-01	RECA-01	FECA-01	FECA-01	RECA-01

	Protocol	ACH550	Eclipse
Commercial HVAC	CANopen	RCAN-01	N/A
	DeviceNet	RDNA-01	FDNA-01
	ControlNet	RCNA-01	N/A
	EtherNet/IP	RETA-01	FENA-01
	InterBus	NIBA-01	N/A
	Modbus® RTU	internal	internal
	Modbus TCP/IP	RETA-01	FENA-01
	PROFIBUS DP®	RBPA-01	FPBA-01
	PROFINET I/O®	RETA-02	N/A
	EtherCAT	N/A	N/A

* Only Supported on the ACS355 drive

Please see web link below for a updated list of supported product and protocols.

http://www.abb.com/product/ap/seitp322/fbf3b38213690727c12579410069f2d5.aspx?productLanguage=us&country=US

Fieldbus control interface

The basic fieldbus control will communicate the following information:

The basic control interface between the fieldbus system and the drive consists of the following:

The **Control Word (CW)** is the principle means of controlling the drive from a fieldbus system. The Control Word is sent by the fieldbus controller to the drive. The drive switches between its states according to the bit-coded instructions of the Control Word.

The **Status Word (SW)** is a word containing status information, sent by the drive to the fieldbus controller.

References (REF) are 16 or 32 bit signed integers. A negative reference (indicating reversed direction of rotation) is formed by calculating the two.s complement from the correspoinding positive reference value. The contents of each reference word can be used, as speed or frequency reference or as set-point for PID controller.

Actual Values (ACT) are 16/32 bit words containing information on selected operations of the drive.

Most fieldbus interfaces support controlling of the drive and reading and writing drive parameters.

Control is usually done via **fast cyclic communication** or so called I/O connection.

Parameter read and write can be done with the **fast cyclic communication**, by programming the fast data to point to parameters or with **slower acyclic communication**.

Mapping of the information is fieldbus specific and may be specified by a device profile.

Device profiles are commonly specified by manufacturer organizations, who support certain fieldbus network.

ABB drives communication profile state diagram

The state diagram below describes the start-stop function of the CONTROL WORD (CW) and STATUS WORD (SW) bits. The ABB Drives profile operates on a state machine. The flow chart shows the steps required by the state machine to operate the drive.
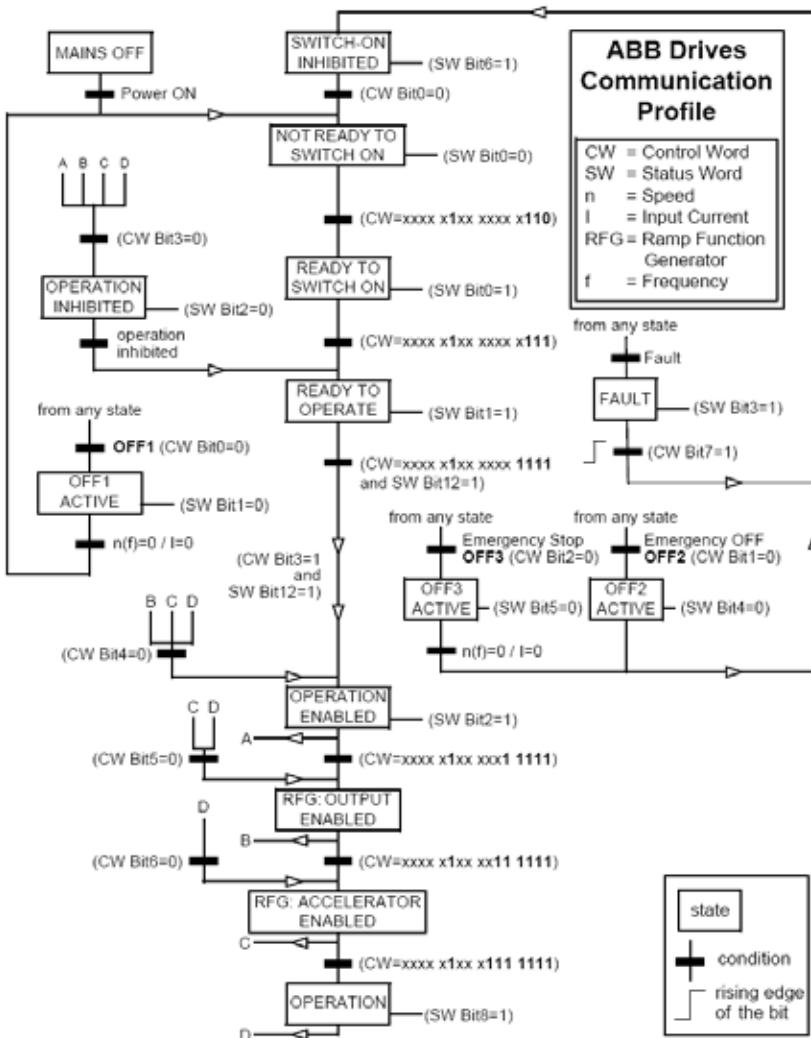

ABB State Transition Diagram

ABB drives communication profile state diagram

To control the ABB profile state machine is to transmit a value of 1150 in decimal format (Binary:0000 0100 1111 1110), this gets the drive ready to operate.

Then transmit 1151 decimal (Binary:0000 0100 1111 1111) to drive, this will command a start and the drive will ramp up to commanded speed.

The drive will stop when 1150 decimal (Binary:0000 0100 1111 1110) is transmitted to the drives main control word.

Different ways of stopping the drive are available when utilizing the ABB drives profile.

Coast Stop - Once running, simply reset Bit 1 (0000 0100 1111 1101). Once this is done, to restart the drive Bit 1 must be set "1", then cycle Bit) to "0", then back to a "1". The drive will start.

Ramp Stop - Once running, simply reset Bit 0 (0000 0100 1111 1110) and drive will Decelerate to zero speed following the active Decal Rate (Parameter 22.03 or 22.05). To restart the drive, simply set Bit 0 to "1".

E-Stop (Faststop) - Once running, reset Bit 2 (0000 0100 1111 1011) and drive will Decelerate to zero speed following the Rate in Parameter 22.07.

Association Specific Profiles

There are multiple fieldbus association network specific profiles. The association network controls the way the profile operates for a given product type. ABB Low Voltage Drives comply with most of the association networks. The ODVA AC/DC drive profile is used with ControlNet™, DeviceNet™ and EtherNet/IP™. The PROFIdrive Profile is used with PROFIBUS DP and PROFINET I/O. The LonMark Variable Speed Motor Drive functional profile is used with LonWorks. More information on these association profiles can be located in the protocol user manual.

ABB drives communication profile Control Word

This is the ABB drives profile main control word. The main control uses 12 of the 16 bits. The ABB drives profile has three different stop types within the main control word. Example bit 2 of the main control word is the emergency stop control for the drive.

Bit	Name	Value	STATE/Description
0	OFF1 CONTROL	1	Enter READY TO OPERATE.
		0	Stop along currently active deceleration ramp (22.03/22.05). Enter OFF1 ACTIVE; proceed to READY TO SWITCH ON unless other interlocks (OFF2, OFF3) are active.
1	OFF2 CONTROL	1	Continue operation (OFF2 inactive)
		0	Emergency OFF, coast to stop. Enter OFF2 ACTIVE; proceed to SWITCH-ON INHIBITED.
2	OFF3 CONTROL	1	Continue operation)OFF3 inactive)
		0	Emergency stop, stop within time defined by par. 22.07. Enter OFF3 ACTIVE; proceed to SWITCH-ON INHIBITED.
			Warning: Ensure motor and driven machine can be stopped using this stop mode.
3	INHIBIT_ OPERATION	1	Enter OPERATION ENABLED. (Note: The Run Enable signal must be active; see parameter 16.01. If par. 16.01 is set to COMM. CW, this bit also activates the Run Enable signal.)
		0	Inhibit operation. Enter OPERATION INHIBITED.
4	RAMP_OUT_ ZERO	1	Normal operation. Enter RAMP FUNCTION GENERATOR: OUTPUT ENABLED.
		0	Force Ramp Function Generator output to zero. Drive ramps to stop (current and DC voltage limits in force).
5	RAMP_HOLD	1	Enable ramp function. Enter RAMP FUNCTION GENERATOR: ACCELERATOR ENABLED.
		0	Halt ramping (Ramp Function Generator output held).
6	RAMP_IN_ZERO	1	Normal operation. Enter OPERATING.
		0	Force Ramp Function Generator input to zero.
7	RESET	0 - 1	Fault reset if an active fault exists. Enter SWITCH-ON INHIBITED.
		0	Continue normal operation.
8	INCHING_1	1	Not in use.
		1 - 0	Not in use.
9	INCHING_2	1	Not in use.
		1 - 0	Not in use.
10	REMOTE_CMD	1	Fieldbus control enabled.
		0	Control Word <> 0 or Reference <> 0: Retain last Control Word and Reference. Control Word = 0 and Reference = 0: Filedbus control enabled. Reference and deceleration/acceleratikon ramp are locked.
11	EXT CTRL LOC	1	Select External Control Location EXT2. Effective if par. 11.02 is set to COMM.CW.
		0	Select External Control Location EXT1. Effective if par. 11.02 is set to COMM.CW.
12 ... 15	Reserved		

ABB drives communication profile Status Word

This is the ABB drives profile main status word. The main status word uses 13 of the 16 bits except in the ACS800 drive. Bits 13 & 14 in the ACS800 are programmable by parameters 92.08 and 92.09. Example bit 8 will be active when the drive is at speed or bit 3 will be active when the drive is faulted.

Bit	Name	Value	STATE/Description
0	RDY_ON	1	READY TO SWITCH ON.
		0	NOT READY TO SWITCH ON.
1	RDY_RUN	1	READY TO OPERATE.
		0	OFF1 ACTIVE
2	RDY_REF	1	OPERATION ENABLED.
		0	OPERATION INHIBITED
3	TRIPPED	1	FAULT.
		0	No fault.
4	OFF_2_STA	1	OFF2 inactive.
		0	OFF2 ACTIVE.
5	OFF_3_STA	1	OFF3 inactive.
		0	OFF3 ACTIVE.
6	SWC_ON_INHIB	1	SWITCH-ON INHIBITED.
		0	
7	ALARM	1	Warning/Alarm.
		0	No Warning/Alarm.
8	AT_SETPOINT	1	OPERATING. Actual value equals reference value(=is within tolerance limits i.e. in speed control the speed error is less than or equal to 10% of the nominal motor speed).
		0	Actual value differs from reference value (= is outside tolerance limits).
9	REMOTE	1	Drive control location: REMOT (EXT1 or EXT2).
		0	Drive control location: LOCAL
10	ABOVE_LIMIT	1	Bit is read from the address defined by parameter 92.07 MSW B10 PTR. The default value is signal 03.14 bit 9 ABOVE_LIMIT: Actual frequency or speed value equals or exceeds the supervision limit (par. 32.02).
		0	Actual frequency or speed value is within supervision limit.
11	EXT CTRL LOC	1	External Control Location EXT2 selected.
		0	External Control Location EXT1 selected.
12	EXT RUN ENABLE	1	External Run Enable signal received.
		0	No External Run Enable signal received
13*			Bit is read from the address defined by parameter 92.08 MSW B13 PTR. By default no address has been selected.
14*			Bit is read from the address defined by parameter 92.09 MSW B14 PTR. By default no address has been selected.
15*		1	Communication error detected by fieldbus adapter module (on fiber optic channel CH0).
		0	Fieldbus adapter (CH0) communication OK.

* For ACS800 only

DCS800 - Main Control Word

This is the main control word for the DCS800 drive. The DCS800 drive operates on a state machine. The fieldbus will have to transmit 1142 decimals to the DCS800 drive to get the drive ready to run. Then the fieldbus will have to transmit 1143 decimals to activate the main contact for the DCS800 drive. Once the fieldbus transmits 1151 decimals to the DCS800, the drive will start. To stop the DCS800 follow the reverse order from 1151 to 1143 to 1142 decimals

Bit	15 ... 11	RemoteCmd 10	Inching2 09	Inching1 08	Reset 07	RampInZero 06	RampHold 05	RampOutZero 04	Run 03	Off2N 02	Off2N 01	On 00	Dec.	Hex.
Reset		1	x	x	1	x	x	x	x	x	x	x	1270	04F6
Off (before On)		1	0	0	0	x	x	x	0	1	1	0	1142	0476
On (main cont. On)		1	0	0	0	x	x	x	0	1	1	1	1143	0477
Run (with reference)		1	0	0	0	1	1	1	1	1	1	1	1151	047F
E-Stop		1	x	x	x	1	1	1	1	0	1	1	1147	047B
Start inhibit		1	x	x	x	x	x	x	x	x	0	x	1140	0474

Examples for the MainCtrlWord (7.01)

DCS800 - Main Status Word

This is the main status word for the DCS800 drive. The main status word provides information about the status of the drive. Example bit 3 will indicate if the drive is faulted or if bit 5 is active, it will indicate that the drive was stopped by OFF type 3.

8.01 MainStatWord (main status word, MSW)

Bit	Name	Value	Comment
B0	RDY_ON	1	Ready to switch on
		0	Not ready to switch on
B1	RDY_RUN	1	Ready to generate torque
		0	Not ready to generate torque
B2	RDY_REF	1	Operation released (Running)
		0	Operation blocked
B3	TRIPPED	1	Fault indication
		0	No fault
B4	OFF2NSTATUS	1	OFF2 not active
		0	OFF2 (OnInhibit state) active
B5	OFF3NSTATUS	1	OFF3 not active
		0	OFF3 (OnInhibit state) active
B6	ONINHIBITED	1	OnInhibited state is active after a: - fault - Emergency Off/Coast Stop (OFF3) - E-stop (OFF2) - OnInhibited via digital input OFF2 (10.08) or E Stop (10.09)
		0	OnInhibit state not active
B7	ALARM	1	Alarm indication
		0	No alarm
B8	AT_SETPOINT	1	Setpoint/actual value monitoring in the tolerance zone
		0	Setpoint/actual value monitoring out of the tolerance zone
B9	REMOTE	1	Remote control
		0	Local control
B10	ABOVE_LIMIT	1	Speed greater than defined in SpeedLev (50.10)
		0	Speed lower or equal than defined SpeedLev (50.10)
B11 TO B15	RESERVED		

ABB drives profile reference scaling

ACS800

Ref. No.	Application Macro Used (par.99.02)	Range	Reference Type	Scaling	Notes
REF1	(any)	-32768 ... 32767	Speed or Frequency (not with FAST COMM)	-20000 = -[par.11.05] -1 = -[par.11.04] 0 = [par.11.04] 20000 = [par. 11.05]	Final reference limited by 20.01/20.02 (speed) or 20.07/20.08 (frequency)
			Speed or Frequency with FAST COMM	-20000 = -[par. 11.05] 0 = 0 20000 = [par. 11.05]	Final reference limited by 20.01/20.02 (speed) or 20.07/20.08 (frequency)
REF2	FACTORY, HAND/AUTO, or SEQ CTRL	-32768 ... 32767	Speed or Freq. (not with FAST COMM)	-20000 = -[par. 11.08] -1 = -[par. 11.07] 0 = [par. 11.07] 20000 = [par. 11.08]	Final reference limited by 20.01/20.02 (speed) or 20.07/20.08 (frequency)
			Speed or Freq. with FAST COMM	-20000 = -[par. 11.08] 0 = 0 20000 = [par. 11.08]	Final reference limited by 20.01/20.02 (speed) or 20.07/20.08 (frequency)
	T CTRL or M/F (optional)	-32768 ... 32767	Torque (not with FAST COMM)	-10000 = -[par. 11.08] -1 = -[par. 11.07] 0 = [par. 11.07] 10000 = [par. 11.08]	Final reference limited by par. 20.04.
			Torque with FAST COMM	-10000 = -[par. 11.08] 0 = 0 10000 = [par. 11.08]	Final reference limited by par. 20.04.
	PID CTRL	-32768 ... 32767	PID Reference (not with FAST COMM)	-10000 = -[par. 11.08] -1 = -[par. 11.07] 0 = [par. 11.08] 10000 = [par. 11.08]	
			PID Reference with FAST COMM	-10000 = -[par. 11.08] 0 = 0 10000 = [par. 11.08]	

The table above is the reference scaling for the fieldbus control. the maximum speed/frequency for reference 1 scaling is +/- 20,000. The drive will run in reverse when a negative speed is command- ed. The maximum reference for reference 2 will be based on the setting of 99.02 Application Macro. Example: when the ACS800 is programmed for factory macro the maximum reference 2 is +/- 20,000; but when it is programmed for Torque control the maximum reference 2 is +/- 10,000.

DCS800

Reference	Range	Scaling	Notes
SpeedRef(23.01)	-32768 ... 32767	-20000 = -[par. 50.01] 20000 = [par. 50.01]	Final reference limited by 20.01/20.02 (RPM)
TorqRefA(25.01)	-32768 ... 32767	-10000 = -[par. 50.01] 10000 = [par. 50.01]	Final reference limited by par. 20.05

The table above is the reference scaling for the fieldbus control. The maximum speed/frequency for reference 1 scaling is +/- 20,000. The drive will run in reverse when a negative speed is com- manded. The maximum speed/frequency for reference 2 scaling is +/- 10,000.

ABB drives profile reference scaling (continued)

ACS550, ACQ550, ACS350, ACS355 and ACH550 with E-Clipse Bypass

Ref. No.	Range	Reference Type	Scaling	Notes
			ABB Drives Profile (FBA)	
REF1	-32768 ... +32767	Speed or Frequency	-20000 = -[par.1105] 0 = 0 +20000 = [par. 1105] (20000 corresponds to 100%)	Final reference limited by 1104/1105. Actual motor speed limited by 2001/2002 (speed) or 2007/2008 (frequency)
REF2	-32768 ... +32767	Speed or Frequency	-10000 = -[par.1108] 0 = 0 +10000 = [par. 1108] (10000 corresponds to 100%)	Final reference limited by 1107/1108. Actual motor speed limited by 2001/2002 (speed) or 2007/2008 (frequency)
		Torque	--10000 = -[par. 1108] 0 = 0 +10000 = [par. 1108] (10000 corresponds to 100%)	Final reference limited by 2015/2017 (torque1) or 2016/2018 (torque2).
		PID Reference	-10000 = -[par. 1108] 0 = 0 +10000 = [par. 1108] (10000 corresponds to 100%)	Final reference limited by 4012/4013 (PID set1) or 4112/4113 (PID set2).

The table above is the reference scaling for the fieldbus control. The maximum speed/frequency for reference 1 scaling is +/- 20,000. The drive will run in reverse when a negative speed is commanded. The maximum speed/frequency for reference 2 scaling is +/- 10,000.

ACS850

When torque or speed reference scaling is selected (by parameter 50.04 FBA REF1 MODESEL / 50.05 FBA REF2 MODESEL), the fieldbus references are 32 bit integers. The value consists of a 16 bit integer value and a 16 bit fractional value. The speed/torque reference scaling is as follows:

Reference	Scaling	Notes
Speed reference	FBA REF / 65536 (value in rpm)	Final reference limited by parameters 20.01 Maximum speed, 20.02 Minimum speed and 21.09 SpeedRef min abs.
Torque reference	FBA REF / 65536 (value in %)	Final reference is limited by torque limit parameters. 20.06...20.10.

## ABB drives profile reference scaling (continued)

ACSM1

When torque or speed reference scaling is selected (by parameter 50.04 FBA REF1 MODESEL / 50.05 FBA REF2 MODESEL), the fieldbus references are 32 bit integers. The value consists of a 16 bit integer value and a 16 bit fractional value. The speed/torque reference scaling is as follows:

Reference	Scaling	Notes
Speed reference	FBA REF / 65536 (value in rpm)	Final reference limited by parameters 20.01 Maximum speed, 20.02 Minimum speed and 24.12 SpeedRef min abs.
Torque reference	FBA REF / 65536 (value in %)	Final reference is limited by parameters 20.06 Maximum torque and 20.07 Minimum torque.

ACS880

The references are scaled as defined by parameters 46.01…46.04; which scaling is in use depends on the setting of 50.04 FBA A ref1 type and 50.05 FBA A ref2 type.

Fieldbus ⟶ **Drive**

Fieldbus	Drive
20000	*46.01* (with speed reference) *46.02* (with frequency reference)
10000	*46.03* (with torque reference) *46.04* (with power reference)
0	*0*
-10000	*-(46.03)* (with torque reference) *-(46.04)* (with power reference)
-20000	*-(46.01)* (with speed reference) *-(46.02)* (with frequency reference)
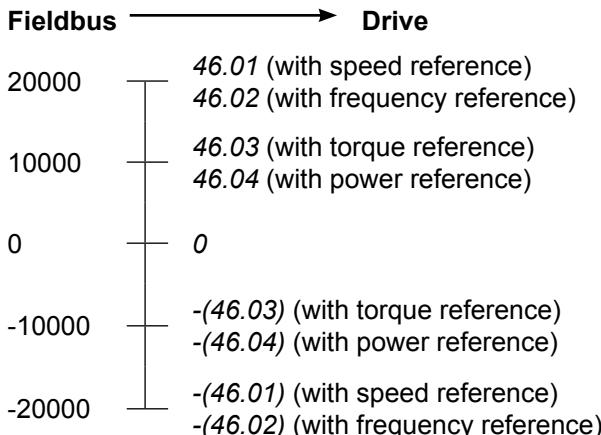
The scaled references are shown by parameters 03.05 FB A reference 1 and 03.06 FB A reference 2.

32 bit Parameters

The ACS850, ACSM1 and ACS880 use 16 bit and 32 bit parameter information.

Example: Par. Range   Scale   Max Value

Maximum value for Acc Time 1 is 1800.000 x 1000 = 1,800,000

Example:

Name / Value	Description	FbEq*
22.02 Acc time 1	Defines acceleration time 1 as the time required for the speed to change from zero to the speed value defined by parameter 19.01 Speed scaling. If the speed reference increases faster than the set acceleration rate, the motor speed will follow the acceleration rate. If the speed reference increases slower than the set acceleration rate, the motor speed will follow the reference signal. If the acceleration time is set too short, the drive will automatically prolong the acceleration in order not to exceed the drive torque limits.	
0.000 ... 1800.000 s	Acceleration time 1.	1000 = 1 s

22.02	Acc time 1	REAL	32	0 ... 1800	s	20.000 s

*FbEq = Fieldbus equivalent. The scaling between the value shown on the panel and the integer used in serial communication.

When mapping a parameter, check the firmware manual to find if the parameter transmitted or received will use 16 or 32 bits. If the parameter is a 32 bit it will be split into two 16 bit parameter. The first 16 bits will be the most significant word (MSW) and the second will be the least significant word (LSW).

MSW = most significant word
LSW = least significant word

| OUTPUT1 - Main Control Word |
| OUTPUT2 - Speed Ref 1 |
| OUTPUT3 - Acc Time 1 (MSW) |
| OUTPUT4 - Acc Time 1 (LSW) |
| OUTPUT5 |

31 MSW	15 LSW 0
0000 0000 0001 0110	1110 0011 0110 0000

1,800,000 converted to a Binary number

32 bit Parameters (continued)

Converting a 32 bit word into two 16 bit words

The maximum value for a 16 bit signed integer is +/- 32767. The maximum value for Acc Time 1 is 1,800,000. The value of 1,800,000 will not fit into a 16 bit integer.

Convert 1,800,000 to a Hex number

MSW	LSW
1B (Hex)	7740 (Hex)

Maximum value for the 16 bit LSW word convert to binary

LSW	
7740 (Hex)	= 30,528 (Binary)
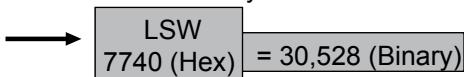
Maximum value for the 16 bit MSW word convert to binary

MSW	
1B (Hex)	= 27 (Binary)
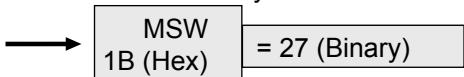
MSW = most significant word
LSW = least significant word

What is a data set?

One data set consists of three 16 bit words called data words. The data set will be transmitted and received by the fieldbus controller. The example below is displaying the data set from the fieldbus controller to the drive.

		Data from fieldbus controller to drive		
	Word	Contents	Selector	
Index	Main Reference data set DS1			
1	1st word	Control Word	(Fixed)	← Word One
2	2nd word	Reference 1	(Fixed)	⇦ Word Two
3	3rd word	Reference 2	(Fixed)	← Word Three

A drive product can have multiple data sets. The table below shows four data sets. The two data sets on the left (data sets 1 and 3) are from the fieldbus controller to the drive. The two on the right (data sets 2 and 4) are from the drive to the fieldbus controller.
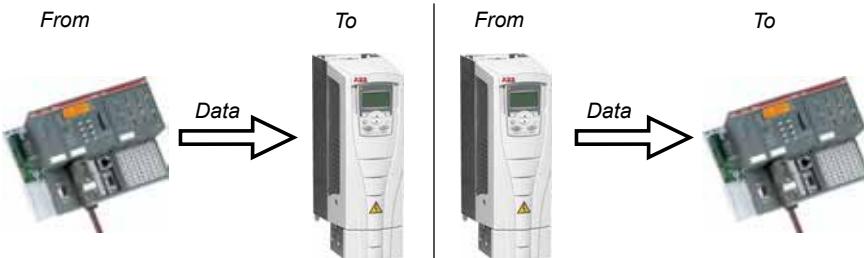
Data from fieldbus controller to drive

Word	Contents	Selector

Data Set 1 Example

Index	Main Reference data set DS1		
1	1st word	Control Word	(Fixed)
2	2nd word	Reference 1	(Fixed)
3	3rd word	Reference 2	(Fixed)

Data Set 3 Example

Index	Auxiliary Reference data set DS3		
7	1st word	Reference 3	Par. 90.01
8	2nd word	Reference 4	Par. 90.02
9	3rd word	Reference 5	Par. 90.03

Data from drive to fieldbus controller

Word	Contents	Selector

Data Set 2 Example

Index	Main Actual Signal data set DS2		
4	1st word	Status Word	(Fixed)
5	2nd word	Actual 1	**Par. 92.02
6	3rd word	Actual 2	Par. 92.03

Data Set 4 Example

Index	Aux. Actual Signal data set DS4		
10	1st word	Actual 3	Par. 92.04
11	2nd word	Actual 4	Par. 92.05
12	3rd word	Actual 5	Par. 92.06

Data set questions

Question #1   How many words will be transmitted and received if the drive is programmed for **two** data sets?

Answer: 6 words (three Input and three Output words).

Data from fieldbus controller to drive		
Word	Contents	Selector

Data set 1

Index	Main Reference data set DS1		
1	1st word	Control Word	(Fixed)
2	2nd word	Reference 1	(Fixed)
3	3rd word	Reference 2	(Fixed)

Data from drive to fieldbus controller		
Word	Contents	Selector

Data set 2

Index	Main Actual Signal data set DS2		
4	1st word	Status Word	(Fixed)
5	2nd word	Actual 1	Par. 92.02
6	3rd word	Actual 2	Par. 92.03

Question #2   How many words will be transmitted and received if the drive is programed for **four** data sets?

Answer: 12 words (six Input and six Output words).

Data from fieldbus controller to drive		
Word	Contents	Selector

Data set 1

Index	Main Reference data set DS1		
1	1st word	Control Word	(Fixed)
2	2nd word	Reference 1	(Fixed)
3	3rd word	Reference 2	(Fixed)

Data set 3

Index	Auxiliary Reference data set DS3		
7	1st word	Reference 3	Par. 90.01
8	2nd word	Reference 4	Par. 90.02
9	3rd word	Reference 5	Par. 90.03

Data from drive to fieldbus controller		
Word	Contents	Selector

Data set 2

Index	Main Actual Signal data set DS2		
4	1st word	Status Word	(Fixed)
5	2nd word	Actual 1	Par. 92.02
6	3rd word	Actual 2	Par. 92.03

Data set 4

Index	Aux. Actual Signal data set DS4		
10	1st word	Actual 3	Par. 92.04
11	2nd word	Actual 4	Par. 92.05
12	3rd word	Actual 5	Par. 92.06

Index numbers - Indirect pointers

The index number is the value used to map fieldbus parameters into the drive.

Index numbers utilize indirect pointers.

Data from fieldbus controller to drive		
Word	Contents	Selector

Index	Main Reference data set DS1		
1	1st word	Control Word	(Fixed)
2	2nd word	Reference 1	(Fixed)
3	3rd word	Reference 2	(Fixed)

Data from drive to fieldbus controller		
Word	Contents	Selector

Index	Main Actual Signal data set DS2		
4	1st word	Status Word	(Fixed)
5	2nd word	Actual 1	wPar. 92.02
6	3rd word	Actual 2	Par. 92.03

Index	Auxiliary Reference data set DS3		
7	1st word	Reference 3	Par. 90.01
8	2nd word	Reference 4	Par. 90.02
9	3rd word	Reference 5	Par. 90.03

| Index	Aux. Actual Signal data set DS4		
10	1st word	Actual 3	Par. 92.04
11	2nd word	Actual 4	Par. 92.05
12	3rd word	Actual 5	Par. 92.06

Programming the drive parameter to index number 1, the first word from the PLC will write Control Word. Programming the drive to index number 2, the second word from the PLC will write Reference 1. Programming the drive parameter to index 3, the third word from the PLC will write Reference 2.

Using index numbers.

Programming the drive to index number:

The PLC will write the:

Data from fieldbus controller to drive		
Word	Contents	Selector

Index	Main Reference data set DS1		
1	1st word	Control Word	(Fixed)
2	2nd word	Reference 1	(Fixed)
3	3rd word	Reference 2	(Fixed)

1 → Main Control Word
2 → Reference 1
3 → Reference 2
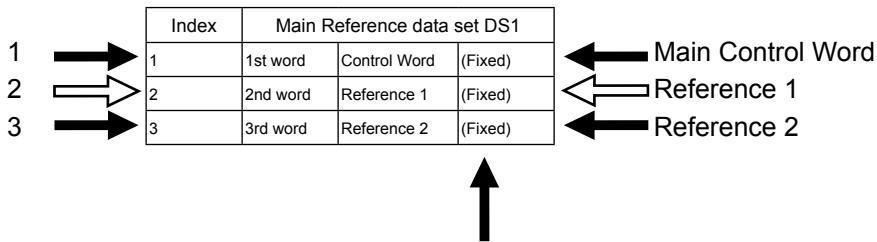
All indirect pointers are fixed and can not be changed!

Index numbers - Indirect pointers (continued)

Programming the drive parameter to index number 4, the first word to the PLC will be Status Word. Programming the drive to index number 5, the second word to the PLC will be Actual 1, the setting of parameter 92.02. Parameter 92.02 is the indirect pointer parameter for index 5. What every indirect parameter 92.02 is programmed to is the information that will be transmitted to the PLC.

Programming the drive to index number:

The PLC will read the:

Data from drive to fieldbus controller		
Word	Contents	Selector

Index	Main Actual Signal data set DS2		
4	1st word	Status Word	(Fixed)
5	2nd word	Actual 1	**Par. 92.02
6	3rd word	Actual 2	Par. 92.03

4 → Status Word
5 → Actual 1 Speed (default)
6 → Actual 2 Torque (default)
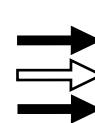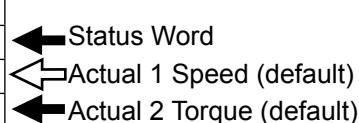
Remapping the indirect pointer

Remapping the indirect pointers can only be done in the ACS800 and DCS800 drive products. In the ACS350, ACS355 and ACx550 products all indirect pointers are fixed. In Table 1 below, the parameter 92.02 is programmed to parameter 1.02 and the drive is transmitting motor speed. In Table 2, the indirect parameter 92.02 is now programmed to parameter 1.06 and the drive now will transmit Output Power to the PLC. Programming the drive parameter to index 6 the third word from the PLC will be Actual 2.

Table 1

Index	Indirect parameter pointer	Indirect parameter setting (Par.92.02)	Parameter actual value 1.02
5	92.02	1.02 Speed	1200 rpm

Table 2

Index	Indirect parameter pointer	Indirect parameter setting (Par.92.02)	Parameter actual value 1.06
5	92.02	1.06 Power	100 Kw

Using index numbers in Group 51 - Output

The example below shows the setup of group 51 (fieldbus parameters). The drive has been programmed to use the index number. The first output word will write Main Control Word. The second PLC word will write Reference 1; the third PLC word will write Reference 2 and the fourth PLC word will write Reference 3.

The fourth PLC word is using the indirect pointer parameter 90.01. The indirect parameter 90.01 is programmed to 22.03 (Decel Time 1). The fourth word from the PLC will write parameter 22.03 (Decel Time 1).

*From*   *To*

Data

Drive Parameter	Parameter Name	Parameter Setting	Indirect Parameter and Setting	Value
51.19	Output 1	1 - (Main Control Word)	Fixed	1150
51.20	Output 2	2 - (Reference 1)	Fixed	20,000
51.21	Output 3	3 - (Reference 2)	Fixed	10,000
51.22	Output 4	7 - (Reference 3)	90.01 is programmed to 22.03 (Decel Time 1)	100
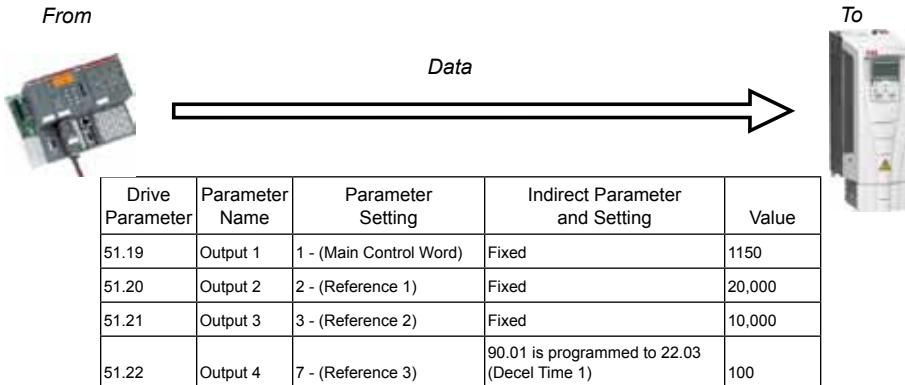
Using index numbers in Group 51 - Input

The example below shows the setup of group 51 (fieldbus parameters). The drive has been programmed to use the index number. The first input word will read Main Status Word. The second PLC word will read the Speed; the third PLC word will read Torque and the fourth PLC word will read Actual 3 or DC Bus Voltage.

The fourth PLC word is using the indirect pointer parameter 92.04. The indirect parameter 92.04 is programmed to 1.07 (DC Bus Voltage). The fourth word from the PLC will read parameter 1.07 (DC Bus Voltage).

To   *From*

Data

Drive Parameter	Parameter Name	Parameter Setting	Indirect Parameter and Setting	Value
51.23	Input 1	4 - (Main Status Word)	Fixed	1231
51.24	Input 2	5 - (Actual 1)	92.02 is programmed to 1.02 (Speed)	15,321
51.25	Input 3	6 - (Actual 2)	92.03 is programmed to 1.05 (Torque)	5231
51.26	Input 4	10 - (Actual 3)	92.04 is programmed to 1.07 (DC Bus Voltage)	653
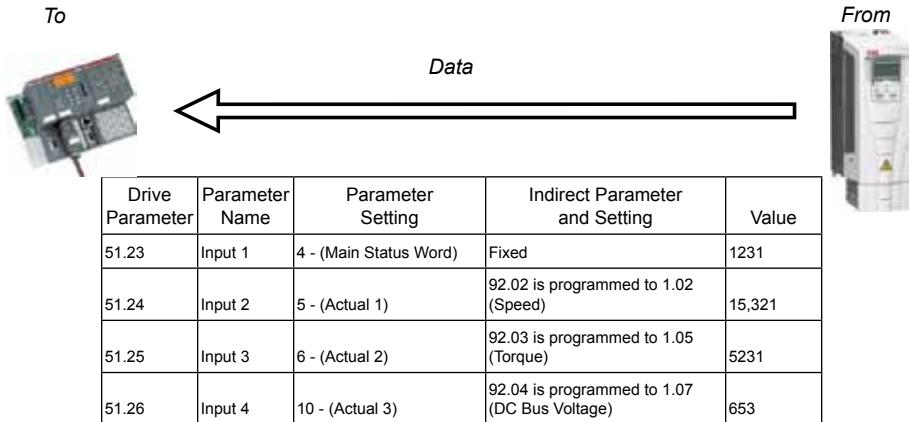
Programming Group 51, Parameter Direct - Output

The example below shows the setup of group 51 (fieldbus parameters). The drive has been programmed to use parameter direct numbers. The first output word will write Main Control Word. The second PLC word will write Ext Reference 1; third PLC word will write Ext Reference 2 and the fourth PLC word will write Decel Time 1.

The PLC write output 1 - 3 will error because parameters 3.01, 1.11 and 1.12 are read only parameters. The PLC will not error on output word 4, because parameter 22.03 (Decel Time 1) is a read/write parameter.

From   *To*

Data

Drive Parameter	Parameter Name	Parameter Setting	Status
51.19	Output 1	3.01 (Main Conrtol Word)	ERROR - Read only parameter
51.20	Output 2	1.11 - (Ext Reference 1)	ERROR - Read only parameter
51.21	Output 3	1.12 - (Ext Reference 2)	ERROR - Read only parameter
51.22	Output 4	22.03 - (Decel Time 1)	OK - Read/Write parameter
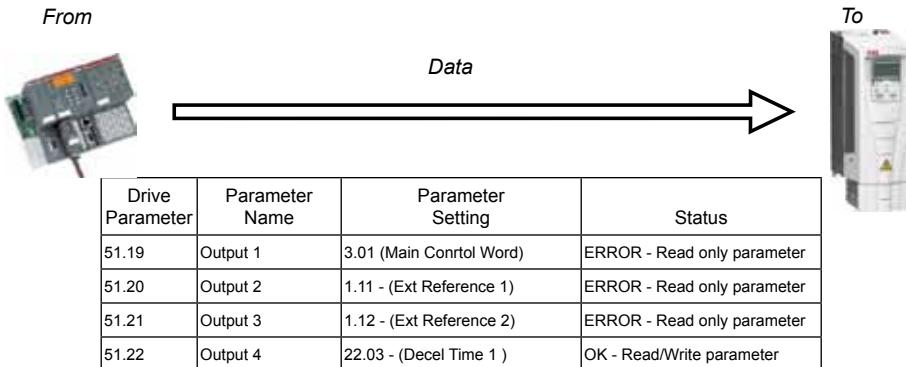
Using index numbers in Group 51 - Output

Parameters in group 51 are now reprogrammed to use the index numbering. Parameter 51.19 is programmed to 1, 51.20 is programmed to 2 and 51.21 is programmed to 3. The PLC can write Main Control Word, Reference 1, and Reference 2 without errors.

*From*   *To*

Data

Drive Parameter	Parameter Name	Parameter Setting	Value
51.19	Output 1	1 - (Main Conrtol Word)	1150
51.20	Output 2	2 - (Reference 1)	20,000
51.21	Output 3	3 - (Reference 2)	10,000
51.22	Output 4	22.03 - (Decel Time 1)	100
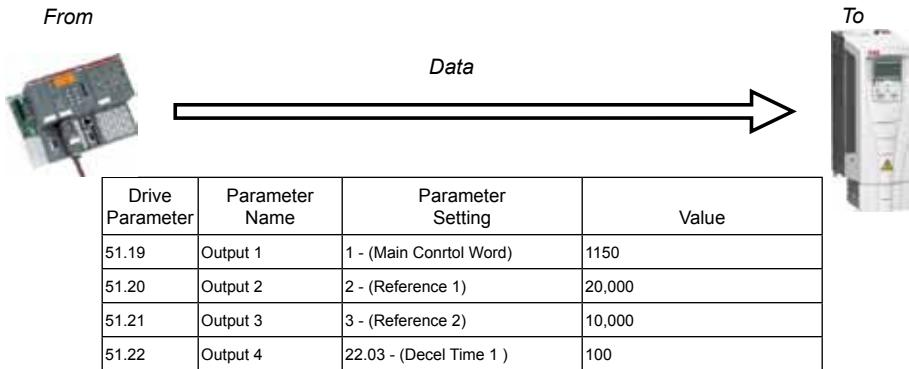
Programming Group 51, Parameter Direct - Input

The example below shows the setup of group 51 (fieldbus parameters). The drive has been programmed to use the parameter number direct. The first input word will read Main Status Word; the second PLC word will read Speed; the third PLC word will read Torque and the fourth PLC word will read Actual 3 or DC Bus Voltage.

To   *From*

Data

Drive Parameter	Parameter Name	Parameter Setting	Value
51.23	Input 1	302 - (Main Status Word)	1231
51.24	Input 2	102 - (Speed)	15,321
51.25	Input 3	105 - (Torque)	5231
51.26	Input 4	107 - (DC Bus Voltage)	0
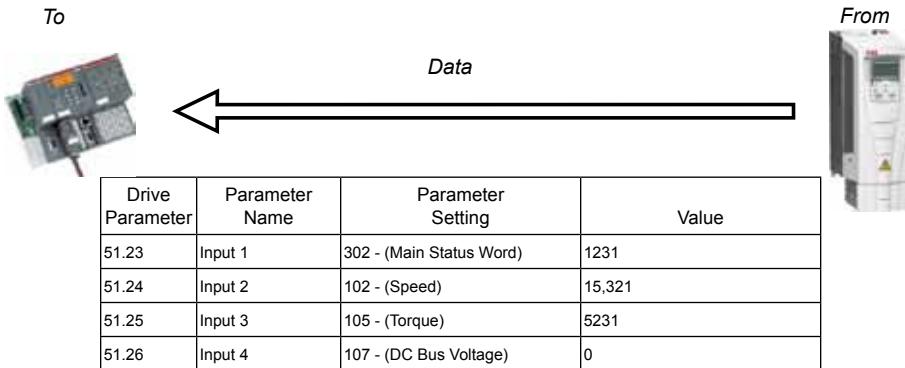
ACS800 Data sets - How many?

The ACS800 standard drive software has 4 data sets. The table below displays the 4 data sets and their corresponding indirect pointer parameter numbers.

Data from fieldbus controller to drive		
Word	Contents	Selector

Data set 1

Index	Main Reference data set DS1		
1	1st word	Control Word	(Fixed)
2	2nd word	Reference 1	(Fixed)
3	3rd word	Reference 2	(Fixed)

Data set 3

Index	Auxiliary Reference data set DS3		
7	1st word	Reference 3	Par. 90.01
8	2nd word	Reference 4	Par. 90.02
9	3rd word	Reference 5	Par. 90.03

Data from drive to fieldbus controller		
Word	Contents	Selector

Data set 2

Index	Main Actual Signal data set DS2		
4	1st word	Status Word	(Fixed)
5	2nd word	Actual 1	**Par. 92.02
6	3rd word	Actual 2	Par. 92.03

Data set 4

Index	Aux. Actual Signal data set DS4		
10	1st word	Actual 3	Par. 92.04
11	2nd word	Actual 4	Par. 92.05
12	3rd word	Actual 5	Par. 92.06

DCS800 Data sets - How many?

The DCS800 standard drive software has 8 data sets. The table below displays the 8 data sets and their corresponding indirect pointer parameter numbers.

Data from fieldbus controller to drive		
Word	Contents	Selector

Data set 1

Index	Main Reference data set DS1		
1	1st word	Control Word	Par. 90.01
2	2nd word	Reference 1	Par. 90.02
3	3rd word	Reference 2	Par. 90.03

Data set 3

Index	Auxiliary Reference data set DS3		
7	1st word	Reference 3	Par. 90.04
8	2nd word	Reference 4	Par. 90.05
9	3rd word	Reference 5	Par. 90.06

Data set 5

Index	Main Reference data set DS5		
13	1st word	Reference 6	Par. 90.07
14	2nd word	Reference 7	Par. 90.08
15	3rd word	Reference 8	Par. 90.09

Data set 7

Index	Auxiliary Reference data set DS7		
19	1st word	Reference 9	Par. 90.10
20	2nd word	Reference 10	Par. 90.11
21	3rd word	Reference 11	Par. 90.12

Data from drive to fieldbus controller		
Word	Contents	Selector

Data set 2

Index	Main Actual Signal data set DS2		
4	1st word	Status Word	Par. 92.01
5	2nd word	Actual 1	Par. 92.02
6	3rd word	Actual 2	Par. 92.03

Data set 4

Index	Aux. Actual Signal data set DS4		
10	1st word	Actual 3	Par. 92.04
11	2nd word	Actual 4	Par. 92.05
12	3rd word	Actual 5	Par. 92.06

Data set 6

Index	Main Actual Signal data set DS6		
16	1st word	Actual 6	Par. 92.07
17	2nd word	Actual 7	Par. 92.08
18	3rd word	Actual 8	Par. 92.09

Data set 8

Index	Aux. Actual Signal data set DS8		
22	1st word	Actual 9	Par. 92.10
23	2nd word	Actual 10	Par. 92.11
24	3rd word	Actual 11	Par. 92.12

ACS550, ACQ550 and ACH550 Data sets - How many?

The ACS550 and ACH550 standard drive software has 2 data sets. The table below displays both data sets and their corresponding indirect pointer parameter numbers.

Data from fieldbus controller to drive		
Word	Contents	Selector

Data set 1

Index	Main Reference data set DS1		
1	1st word	Control Word	(Fixed)
2	2nd word	Reference 1	(Fixed)
3	3rd word	Reference 2	(Fixed)

Data from drive to fieldbus controller		
Word	Contents	Selector

Data set 2

Index	Main Actual Signal data set DS2		
4	1st word	Status Word	(Fixed)
5	2nd word	Actual 1	(Fixed)
6	3rd word	Actual 2	(Fixed)

ACS350, ACS355, and ACH550 with E-Clipse Bypass Data sets - How many?

The ACS350, ACS355 and ACH550 with E-Clipse Bypass standard drive software has no data sets and uses parameter direct mapping. The ACS350, ACS355 and ACH550 with E-Clipse Bypass will always receive the Main Control Word, Reference 1 and sometimes Reference 2 (Profile Dependent). The ACS350, ACS355 and ACH550 with E-Clipse Bypass will always transmit a Main Status Word, actual Speed and sometimes the actual Torque (Profile Dependent).

ACS850 & ACSM1 Data sets - How many?

The ACS850 & ACSM1 have a 16 bit data set and a 32 bit data set. Within the standard drive software are 2 data sets. The table below displays both data sets and their corresponding indirect pointer parameter numbers.

Data from fieldbus controller to drive		
Word	Contents	Selector

Data from drive to fieldbus controller		
Word	Contents	Selector

Data set 1

Index	Main Reference data set DS1			Size
1	1st word	Control Word	(Fixed)	16 bits
2	2nd word	Reference 1	(Fixed)	16 bits
3	3rd word	Reference 2	(Fixed)	16 bits

Data set 2

Index	Main Actual Signal data set DS2			Size
4	1st word	Status Word	(Fixed)	16 bits
5	2nd word	Actual value 1	(Fixed)	16 bits
6	3rd word	Actual value 2	(Fixed)	16 bits

Data set 1

Index	Main Reference data set DS1			Size
11	1st word	Control Word	(Fixed)	32 bits
12	2nd word	Reference 1	(Fixed)	32 bits
13	3rd word	Reference 2	(Fixed)	32 bits

Data set 2

Index	Main Actual Signal data set DS2			Size
14	1st word	Status Word	(Fixed)	32 bits
15	2nd word	Actual value 1	(Fixed)	32 bits
16	3rd word	Actual value 2	(Fixed)	32 bits

Note! If the selected data is 32 bits long, two parameters are reserved for the transmission.

Protocol Information

Communication profiles are ways of conveying control commands (Control word, Status word, references and actual values) between the master station and the drive.

The ABB Drive may employ either the ODVA AC/DC (generic profile) Drive profile or the ABB Drives profile. In addition, two Transperant modes for 16 and 32 bit words respectively are available. With the Transparent modes, no data conversion takes place in the Fieldbus module.

ODVA Profile is a standard profile controlled by the ODVA. The assemblies below are one example of an ODVA profile. The speed Reference and Speed Actual will be displayed in RPM.

Assembly Objects

I/O Assembly objects may also be referred to as Block Transfer of data. Intelligent devices realizing a Functional Profile, such as the ABB Fieldbus modules, have several objects. Since it is not possible to transmit more than one object data through a single connection, it is practical and more efficient to group attributes from different objects into a single I/O connection using the Assembly object. The Assembly object acts as a tool for grouping these attributes.

ODVA - Output Assembly

Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
0		Net Ref	Net Ctrl			Fault Reset	Run Reverse	Run Forward
1								
2	Speed Reference (Low Byte)							
3	Speed Reference (High Byte)							

ODVA - Input Assembly

Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
0	At Reference	Ref from Net	Ctrl from Net	Ready	Running Reverse	Running Forward	Warning	Faulted
1	Drive State							
2	Speed Actual (Low Byte)							
3	Speed Actual (High Byte)							

Understanding the Data/Profile Conversion

Understanding the profile conversion between the Fieldbus controller and the ABB drive. All of ABB Drives have an internal profile used by the drive for its Main Control word, Main Status word, Speed Reference and Actual Speed. The information below will explain what happens to the communications between the Fieldbus Controller and the ABB drive.

The drive operates on a given profile in the drive. The drive block below will show what the internal drive profile is for a given product. For example the ABB ACS800 drive operates on ABB Drives profile.

Drive Block		Data 1		Data 2	
Drive	Internal Drive Profile				
ACS800 ACS880 DCS800	ABB Drives Profile ABB Drives Profile		Fieldbus Option Rxxx-0x Fxxx-0x		Fieldbus Controller
ACx550 ACS350/355 E-Clipse Bypass	DCU Drives Profile DCU Drives Profile				
ACS850 ACSM1	M1 Drives Profile M1 Drives Profile				
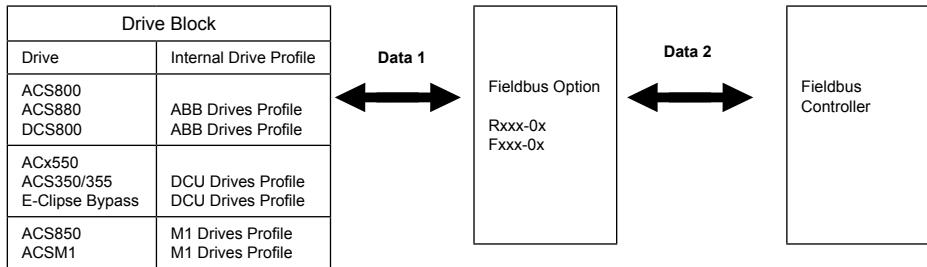
In the example below the Fieldbus controller is programmed for ABB Drives Profile and the RETA-01 is installed on an ACS550 drive. The information from the Fieldbus controller to the RETA-01, or data 2 path the communications will be in ABB Drives profile. The RETA-01 with convert the ABB Drives profile to DCU Drive profile. The information from the RETA-01 to the ACS550, or data 1 path the communications will be in DCU Drives profile. This means the Main Control word in the Fieldbus Controller will not match the Main Control word parameter in the ACS550 drive bit for bit.

Drive Block		Data 1 In DCU Drives profile		Data 2 In ABB Drives profile	
Drive	Internal Drive Profile				
ACS800 ACS880 DCS800	ABB Drives Profile ABB Drives Profile		Fieldbus Option The RETA-01 converts the ABB Drives profile to DCU Drive profile		Fieldbus Controller Program for ABB Drives profile
ACx550 ACS350/355 E-Clipse Bypass	DCU Drives Profile DCU Drives Profile				
ACS850 ACSM1	M1 Drives Profile M1 Drives Profile				

Note: Information about the DCU Drives profile can be found in the ACS350, ACS355, ACH550, ACQ550 and ACS550 User Manual.

RCNA-01 ControlNet™ Adapter Module

Overview

This chapter contains the basic start-up procedure of the ACH550/ACS550/ACQ550/ACS800 and DCS800 drives with the RCNA-01 ControlNet Adapter module. The RCNA-01 ControlNet adapter module is an optional device for ABB ACH550, ACS550, ACS800 and DCS800 drives which enables the connection of the drive to a ControlNet network. Reference the specific drive user manual and RCNA-01 user manual for additional product information.

With the RCNA-01 module, the ControlNet network may employ either the ODVA AC/DC Drive profile or the ABB Drives profile. The ACS800 and DCS800 drive product converts the ODVA profile to the ABB Profile (detailed in the drive documentation) by the RCNA-01 module. The DCS800 drive employs ABB Drives profiles and ODVA profile. With the ACS550, ACQ550 and ACH550 both the ODVA and ABB Profiles are converted to the DCU profile (detailed in the drive documentation) by the RCNA-01 module.

Assembly objects

I/O Assembly Instances may also be referred to as Block Transfer of data. Intelligent devices realizing a Functional Profile, such as the RCNA-01 have several objects. Since it is not possible to transmit more than one object data through a single connection, it is practical and more efficient to group attributes from different objects into a single I/O connection (for example a Polled Connection) using the Assembly object. The Assembly object acts as a tool for grouping these attributes.

The Assembly selections described above are, in fact, instances of the Assembly object class. The RCNA-01 uses dynamic assemblies that are configured by VSA I/O size.

RCNA-01 Installation, drive protocol & profile configuration

Mechanical installation

1. Insert the RCNA-01 into its specified slot in the drive (SLOT2 for ACS550, ACQ550 and ACH550, SLOT1 for ACS800 and the DCS800)

2. Using the two mounting screws included in the module kit fasten the module to the drive.

Electrical installation

3. Arrange the bus cables as far away from the motor cables as possible. Avoid parallel runs. See the RCNA-01 User's Manual for connection and bus termination details.

4. The bus cable is connected to the BNC connectors A and/or B on the RCNA-01. If redundant operation is desired, both connectors are used, otherwise connector A or B is used.

Drive protocol & profile configuration

The detailed procedure of activating the drive for communication with the module is dependent on the drive type. Parameter(s) must be adjusted to activate the desired communication port.

Refer to the Users/Firmware Manual of the drive for additional protocol and profile settings.

5. Power up the drive.

6. Set Parameters as follows:

Table 1: ACH550/ACQ550/ACS550 Parameter Settings

Par. no.	Parameter Name	Setting
98.02	COMM PROT SEL	(4) EXT FBA

NOTE!   With ACH550/ACS550/ACQ550 the profile selection is automatic.

RCNA-01 I/O assembly instances

Table 2: ACS800 Parameter Settings

Par. No.	Parameter Name	Setting
98.02	COMM MODULE LINK	FIELDBUS
98.07*	COMM PROFILE	ABB DRIVE, GENERIC, CSA 2.8/3.0

* This parameter is only used in ACS800. For new drives system installations select either ABB DRIVE profile or Generic Drive profile. If replacing drives with application program 2.8 and 3.0 select CSA 2.8/3.0 profile for backward compatibility.

The communication profile setting in the table below is parameter 98.07 in the ACS800 drive product. The ACS800 is the only drive product that this drive parameter will need to be programmed. Example: the drive is programmed to use assembly instances 21 and 71, parameter 98.07 needs to be programmed to "Generic Drive Profile."

Table 3: Possible combinations of Input & Output Assembly Instances

Output Instance	Input Instance	Communication Profile To Be Used
20	70	Generic Drive Profile
	71	Generic Drive Profile
	171	Generic Drive Profile
21	70	Generic Drive Profile
	71	Generic Drive Profile
	171	Generic Drive Profile
121	70	Generic Drive Profile
	71	Generic Drive Profile
	171	Generic Drive Profile
100	101	ABB Drive Profile
	103	ABB Drive Profile
102	101	ABB Drive Profile
	103	ABB Drive Profile

NOTE!   Assembly instance 103 can be used with AC/DC drive profile if it contains only drive parameters and not data sets.

Table 4: DCS800 Parameter Settings

Par. No.	Parameter Name	Setting
98.02	COMM MODULE	FIELDBUS

NOTE!   The "MODULE STATUS" LED should be green. The "MODULE OWNED" LED should be blinking green. If the network cable is connected to an active network, the green "CHANNEL A or B " LED should also be lit or blinking. If the configuration is correct, drive parameter group 51 should appear in the parameter list of the drive and show the status of the RCNA-01 configuration parameters.

ControlNet - Drive Setup

RCNA-01 Network configuration

To enable communication through the ControlNet network, the module must be configured for the network. There are two ways of setting the module mac address (rotary switch settings, parameter settings); reference RCNA-01 users manual section "Electrical Installation" for more information.

NOTE!   Input and Output assemblies connection sizes must match parameter 51.26 VSA I/O. The Input and Output assemblies will always equal eachother. ex: parameter 51.26 is programmed to 5, Input assembly size will be 5 words and Output assembly size will be 5 words.

Table 4: Network configuration with drive parameters

Par. No.	Parameter Name	Setting Range	Default Setting
51. 01	MODULE TYPE	(read-only)	ControlNet
51. 02	MODULE MACID	0...99	99
51. 03	MODULE BAUD RATE	5 = 5MBit/s	5
51. 04	HW/SW OPTION	(0) Hardware (1) Software	0
51. 05	STOP FUNCTION	(0) Ramp Stop (1) Coast Stop	0
51. 06	OUTPUT INSTANCE	20...121	20
51. 07	INPUT INSTANCE	70...171	70
51. 08	OUTPUT I/O PAR 1	0...32767	0
51. 09	OUTPUT I/O PAR 2	0...32767	0
51. 10	OUTPUT I/O PAR 3	0...32767	0
51. 11	OUTPUT I/O PAR 4	0...32767	0
51. 12	INPUT I/O PAR 1	0...32767	0
51. 13	INPUT I/O PAR 2	0...32767	0
51. 14	INPUT I/O PAR 3	0...32767	0
51. 15	INPUT I/O PAR 4	0...32767	0
51. 16	OUTPUT I/O PAR 5	0...32767	0
51. 17	OUTPUT I/O PAR 6	0...32767	0
51. 18	OUTPUT I/O PAR 7	0...32767	0
51. 19	OUTPUT I/O PAR 8	0...32767	0
51. 20	OUTPUT I/O PAR 9	0...32767	0
51. 21	INPUT I/O PAR 5	0...32767	0
51. 22	INPUT I/O PAR 6	0...32767	0
51. 23	INPUT I/O PAR 7	0...32767	0
51. 24	INPUT I/O PAR 8	0...32767	0
51. 25	INPUT I/O PAR 9	0...32767	0
51. 26	VSA I/O SIZE	1...32	2
51.27*	FBA Par Refresh	(0) DONE (1) REFRESH	(0) DONE

* New settings take effect only when the module power is cycled or when the module receives a Fieldbus Adapter parameter refresh by setting parameter 51.27 to REFRESH

RCNA-01 Examples: **ACS800/DCS800/ACS550/ACH550/ACQ550** - ABB Drives Profile (9 Data words In/Out)

The drive is programmed to use data sets to write Main control word, reference 1, reference 2 and six additional parameters. The drive is programmed to read main status word, actual 1 and actual 2 and six additional parameters. Information on how a data set works can be found in the Overview section of this publication.

NOTE! *ABB recommends using the data sets and index pointers when available in the drive product. Mapping parameters directly may result in slower update times or drive faults and should be used only after all data sets are occupied.*

Table 5: I/O Assembly Instance 102 & 103

Drive Parameter	Example setting for ACS800	Example setting for DCS800	Example setting for ACx550
10.01 EXT1 COMMANDS	COMM.CW	MainCtrlWord	COMM
10.03 DIRECTION	REQUEST	N/A	REQUEST
11.03 REF1 SELECT	COMM.REF	SpeedRef2301	COMM
16.04 FAULT RESET SEL	COMM.CW	N/A	COMM
98.02 COMM. PROT SEL	FIELDBUS	Fieldbus	EXT FBA
98.07 COMM PROFILE	ABB DRIVES*	N/A	N/A
51.01 MODULE TYPE	CONTROLNET	CONTROLNET	CONTROLNET
51.02 MODULE MACID	2	3	4
51.03 MODULE BAUD RATE	(5) = 5 MBit/s	(5) = 5 MBit/s	(5) = 5 MBit/s
51.04 HW/SW OPTION	(1) Software	(1) Software	(1) Software
51.05 STOP FUNCTION	(1) Coast Stop	(1) Coast Stop	(1) Coast Stop
51.06 OUTPUT INSTANCE	102	102	102
51.07 INPUT INSTANCE	103	103	103
51.08 OUTPUT I/O PAR 1	(1) Main Control Word	(1) Main Control Word	(1) Main Control Word
51.09 OUTPUT I/O PAR 2	(2) Reference 1	(2) Speed Ref	(2) Reference 1
51.10 OUTPUT I/O PAR 3	(3) Reference 2	(3) Torq Ref A	(3) Reference 2
51.11 OUTPUT I/O PAR 4	(7) AUX DS REF3	(7) DsetXplus3Val1 (702 AuxCtrlWord)	(2208) EMERG DEC TIME
51.12 INPUT I/O PAR 1	(4) Status Word	(4) Status Word	(4) Status Word
51.13 INPUT I/O PAR 2	(5) Actual Ref 1 (Speed)	(5) Actual Motor (Speed)	(5) Actual Ref 1 (Speed)
51.14 INPUT I/O PAR 3	(6) Actual Ref 2 (Torque)	(6) Actual Torque	(6) Actual Ref 2 (Torque)
51.15 INPUT I/O PAR 4	(10) Actual Ref 3 (305 FAULT WORD 1)	(10) DsetXplus-3Val1 (802 Auxiliary Status Word)	(106) POWER
51.16 OUTPUT I/O PAR 5	(8) AUX DS REF4	(8) DsetXplus2Val2 (703 AuxCtrlWord2)	(2204) ACCEL TIME 2

RCNA-01 Examples: **ACS800/DCS800/ACS550/ACH550/ACQ550** - ABB Drives Profile (9 Data words In/Out) (continued)

Table 5: I/O Assembly Instance 102 & 103 (continued)

Drive Parameter	Example setting for ACS800	Example setting for DCS800	Example setting for ACx550
51.17 OUTPUT I/O PAR 6	(9) AUX DS REF5	(9) DsetXplus2Val3	(2205) DECEL TIME 2
51.18 OUTPUT I/O PAR 7	(1203) CONST SPEED 2	(13) DsetXplus-4Val1	(1202) CONST SPEED 1
51.19 OUTPUT I/O PAR 8	(1204) CONST SPEED 3	(14) DsetXplus-4Val2	(1203) CONST SPEED 2
51.20 OUTPUT I/O PAR 9	(1205) CONST SPEED 4	(15) DsetXplus-4Val3	(1204) CONST SPEED 3
51.21 INPUT I/O PAR 5	(11) Actual 4 (308 ALARM WORD 1)	(11) DsetXplus3Val2 (101 MotSpeedFilt)	(104) CURRENT
51.22 INPUT I/O PAR 6	(12) Actual 5 (306 FAULT WORD 2)	(12) DsetXplus-3Val3 (108 MotTorq)	(105) TORQUE
51.23 INPUT I/O PAR 7	(114) OP HOUR COUNTER	(16) DsetXplus-5Val1 (901 FaultWord1)	(109) OUTPUT VOLTAGE
51.24 INPUT I/O PAR 8	(117) DI 6-1 STATUS	(17) DsetXplus-5Val2 (902 FaultWord2)	(115) KWH COUN-TER
51.25 INPUT I/O PAR 9	(121) RO 3-1 STATUS	(18) DsetXplus-5Val3 (903 FaultWord3)	(128) PID 1 SETPNT
51.26 VSA I/O SIZE	9	9	9
51.27 FBA PAR REFRESH **	(1) REFRESH**	(1) REFRESH**	(1) REFRESH**
90.01 AUX DS REF3 or DsetXVal1	(2204) ACCELTIME 2	(701) MainCtrlWord	N/A
90.02 AUX DS REF4 or DsetXVal2	(2205) DECELTIME 2	(2301) SpeedRef	N/A
90.03 AUX DS REF5 or DsetXVal3	(1202) CONST SPEED 1	(2501) TorqRefA	N/A
90.04 DsetXplus2Val1	N/A	(702) AuxCtrlWord	N/A
90.05 DsetXplus2Val2	N/A	(703) AuxCtrlWord2	N/A
90.06 DsetXplus2Val3	N/A	(1202) Const-Speed1	N/A
90.07 DsetXplus4Val1	N/A	(1203) Const-Speed2	N/A
90.08 DsetXplus4Val2	N/A	(1204) Const-Speed3	N/A
90.09 DsetXplus4Val3	N/A	(1205) Const-Speed4	N/A
92.01 DsetXplus1Val1	N/A	(801) MainStatWord	N/A
92.02 MAIN DS ACT1 or DsetXplus1Val2	(102) SPEED	(104) MotSpeed	N/A

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RCNA-01 Examples: **ACS800/DCS800/ACS550/ACH550/ACQ550** - ABB Drives Profile (9 Data words In/Out) (continued)

Table 5: I/O Assembly Instance 102 & 103 (continued)

Drive Parameter	Example setting for ACS800	Example setting for DCS800	Example setting for ACx550
92.03 MAIN DS ACT2 or DsetXplus1Val3	(105) TORQUE	(209) TorqRef2	N/A
92.04 AUX DS ACT3 or DsetXplus3Val1	(305) FAULT WORD 1	(802) AuxStatWord	N/A
92.05 AUX DS ACT4 or DsetXplus3Val2	(308) ALARM WORD 1	(101) MotSpeedFilt	N/A
92.06 AUX DS ACT5 or DsetXplus3Val3	(306) FAULT WORD 2	(108) Mot-Torq	N/A
92.07 DsetXplus5Val1	N/A	(901) FaultWord1	N/A
92.08 DsetXplus5Val2	N/A	(902) FaultWord2	N/A
92.09 DsetXplus5Val3	N/A	(903) FaultWord3	N/A

** New settings take effect only when the module power is cycled or when the module receives a Fieldbus Adapter parameter refresh by setting parameter 51.27 to REFRESH.

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RCNA-01 Examples: **ACS800/ACS550/ACH550/ACQ550** - Generic Drive Profile (2 Data words In/Out)

Table 6: I/O Assembly Instance 21 & 71

Do not use Index numbers (1) Main Control,(2) Speed Ref, (4) Main status word and (5) Actual speed when ODVA Profile Assemblys.

Drive Parameter	Example settings for ACS800, ACx550	DCS800
10.01 EXT1 COMMANDS	COMM.CW	MainCtrlWord
10.03 DIRECTION	REQUEST	N/A
11.03 REF1 SELECT	COMM.REF	SpeedRef2301
16.04 FAULT RESET SEL	COMM.CW	N/A
98.02 COMM PROT SEL	FIELDBUS	Fieldbus
98.07 COMM PROFILE*	GENERIC*	N/A
51.01 MODULE TYPE	CONTROLNET	CONTROLNET
51.02 MODULE MACID	2	4
51.03 MODULE BAUD RATE	(5) = 5 MBit/s	(5) = 5 MBit/s
51.04 HW/SW OPTION	(1) Software	(1) Software
51.05 STOP FUNCTION	(1) Coast Stop	(1) Coast Stop
51.06 OUTPUT INSTANCE	21	121
51.07 INPUT INSTANCE	71	171
51.08 OUTPUT I/O PAR 1	(0)**	(0)**
51.09 OUTPUT I/O PAR 2	(0)**	(0)**
51.10 OUTPUT I/O PAR 3	(0)**	(0)**
51.11 OUTPUT I/O PAR 4	(0)**	(0)**
51.12 INPUT I/O PAR 1	(0)**	(0)**
51.13 INPUT I/O PAR 2	(0)**	(0)**
51.14 INPUT I/O PAR 3	(0)**	(0)**
51.15 INPUT I/O PAR 4	(0)**	(0)**
51.16 OUTPUT I/O PAR 5	(0)**	(0)**
51.17 OUTPUT I/O PAR 6	(0)**	(0)**
51.18 OUTPUT I/O PAR 7	(0)**	(0)**
51.19 OUTPUT I/O PAR 8	(0)**	(0)**
51.20 OUTPUT I/O PAR 9	(0)**	(0)**
51.21 INPUT I/O PAR 5	(0)**	(0)**
51.22 INPUT I/O PAR 6	(0)**	(0)**
51.23 INPUT I/O PAR 7	(0)**	(0)**
51.24 INPUT I/O PAR 8	(0)**	(0)**
51.25 INPUT I/O PAR 9	(0)**	(0)**
51.26 VSA I/O SIZE	2	2
51.27 FBA PAR REFRESH	(1) REFRESH***	(1) REFRESH***
90.01 AUX DS REF3 or DsetXVal1	N/A	(701) MainCtrlWord
90.02 AUX DS REF4 or DsetXVal2	N/A	(2301) SpeedRef
92.01 DsetXplus1Val1	N/A	(801) MainStatWord
92.02 MAIN DS ACT1 or DsetXplus1Val2	N/A	(104) MotSpeed

* This parameter is only in the ACS800 product.
** When output instance 20 or 21 and input instance 70 or 71 are selected the Input & Output I/O Parameters 51.08 - 51.25 MUST be set to the default value of (0)
*** New settings take effect only when the module power is cycled or when the module receives a Fieldbus Adapter parameter refresh by setting parameter 51.27 to REFRESH.

RCNA-01 Examples: **ACS800/ACS550/ACH550/ACQ550** - ODVA Profile (11 total Data words In/Out). Nine of the In/Out Data words are user configured by parameters in group 51.

The example will write the Main Control Word, Speed Ref, and nine user configured parameters. It will read Main status word, Actual speed, and nine user configured parameters. The Assembly Instance 121 &171, the Main Control, Speed Ref, Main status word, Actual speed do not have to be programmed in group 51 Input/Output I/O parameters. Do not use Index numbers (1) Main Control, (2) Speed Ref, (4) Main status word and (5) Actual speed when ODVA Profile Assemblies.

NOTE!   *ABB recommends using the data sets and index pointers when available in the drive product. Mapping parameters directly may result in slower update times or drive faults and should be used only after all data sets are occupied.*

Table 7: I/O Assembly Instance 121 & 171

Drive Parameter	ACS800	ACx550	DCS800
10.01 EXT1 COMMANDS	COMM.CW	COMM	MainCtrlWord
10.03 DIRECTION	REQUEST	REQUEST	N/A
11.03 REF1 SELECT	COMM.REF	COMM	SpeedRef2301
16.04 FAULT RESET SEL	COMM.CW	COMM	N/A
98.02 COMM PROT SEL	FIELDBUS	EXT FBA	Fieldbus
98.07 COMM PROFILE	GENERIC*	N/A	N/A
51.01 MODULE TYPE	CONTROLNET	CONTROLNET	CONTROLNET
51.02 MODULE MACID	2	4	5
51.03 MODULE BAUD RATE	(5) = 5 MBit/s	(5) = 5 MBit/s	(5) = 5 MBit/s
51.04 HW/SW OPTION	(1) Software	(1) Software	(1) Software
51.05 STOP FUNCTION	(1) Coast Stop	(1) Coast Stop	(1) Coast Stop
51.06 OUTPUT INSTANCE	121	121	121
51.07 INPUT INSTANCE	171	171	171
51.08 OUTPUT I/O PAR 1	(3) Reference 2	(3) Reference 2	(3) Torq Ref A
51.09 OUTPUT I/O PAR 2	(7) AUX DS REF3	(2204) ACCEL TIME 2	(7) DsetXplus3Val1 (702 AuxCtrlWord)
51.10 OUTPUT I/O PAR 3	(8) AUX DS REF4	(2205) DECEL TIME 2	(8) DsetXplus2Val2 (703 AuxCtrlWord2)
51.11 OUTPUT I/O PAR 4	(9) AUX DS REF5	(1202) CONST SPEED 1	(9) DsetXplus2Val3
51.12 INPUT I/O PAR 1	(6) Actual Ref 2 (Torque)	(6) Actual Ref 2 (Torque)	(6) TorqRef2
51.13 INPUT I/O PAR 2	(10) Actual Ref 3 (305 FAULT WORD 1)	(106) POWER	(10) DsetXplus3Val1 (802 Auxiliary Status Word)
51.14 INPUT I/O PAR 3	(11) Actual 4 (308 ALARM WORD 1)	(104) CURRENT	(11) DsetXplus3Val2 (101 MotSpeedFilt)
51.15 INPUT I/O PAR 4	(12) Actual 5 (306 FAULT WORD 2)	(105) TORQUE	(12) DsetXplus3Val3 (108 MotTorq)
51.16 OUTPUT I/O PAR 5	(1203) CONST SPEED 2	(1203) CONST SPEED 2	(13) DsetXplus4Val1
51.17 OUTPUT I/O PAR 6	(1204) CONST SPEED 3	(1204) CONST SPEED 3	(14) DsetXplus4Val2

ControlNet - Drive Setup

RCNA-01 Examples: **ACS800/ACS550/ACH550/ACQ550** - ODVA Profile (11 total Data words In/Out). Nine of the In/Out Data words are user configured by parameters in group 51. (continued)

Table 7: I/O Assembly Instance 121 & 171 (continued)

Drive Parameter	ACS800	ACx550	DCS800
51.18 OUTPUT I/O PAR 7	(1205) CONST SPEED 4	(1205) CONST SPEED 4	(15) DsetXplus4Val3
51.19 OUTPUT I/O PAR 8	(1206) CONST SPEED 5	(1206) CONST SPEED 5	(19) DsetXplus6Val1
51.20 OUTPUT I/O PAR 9	(1207) CONST SPEED 6	(1207) CONST SPEED 6	(20) DsetXplus6Val1
51.21 INPUT I/O PAR 5	(114) OP HOURCOUNTER	(109) OUTPUT VOLTAGE	(16) DsetXplus5Val1 (901 FaultWord1)
51.22 INPUT I/O PAR 6	(117) DI 6-1 STATUS	(115) KWH COUNTER	(17) DsetXplus5Val2 (902 FaultWord2)
51.23 INPUT I/O PAR 7	(121) RO 3-1 STATUS	(128) PID 1 SETPNT	(18) DsetXplus5Val3 (903 FaultWord3)
51.24 INPUT I/O PAR 8	(135) MOTOR 1 TEMP	(141) MWH COUNTER	(22) DsetXplus7Val1 (904 FaultWord4)
51.25 INPUT I/O PAR 9	(143) MOTOR RUN TIME	(145) MOTOR TEMP	(23) DsetXplus7Val2 (906 AlarmWord1)
51.26 VSA I/O SIZE	9**	9**	9**
51.27 FBA PAR REFRESH	(1) REFRESH***	(1) REFRESH***	(1) REFRESH***
90.01 AUX DS REF3 or DsetXVal1	(2204) ACCELTIME 2	N/A	(701) MainCtrlWord
90.02 AUX DS REF4 or DsetXVal2	(2205) DECELTIME 2	N/A	(2301) SpeedRef
90.03 AUX DS REF5 or DsetXVal3	(1202) CONST SPEED 1	N/A	(2501) TorqRefA
90.04 DsetXplus2Val1	N/A	N/A	(702) AuxCtrlWord
90.05 DsetXplus2Val2	N/A	N/A	(703) AuxCtrlWord2
90.06 DsetXplus2Val3	N/A	N/A	0
90.07 DsetXplus4Val1	N/A	N/A	0
90.08 DsetXplus4Val2	N/A	N/A	0
90.09 DsetXplus4Val3	N/A	N/A	0
90.10 DsetXplus6Val1	N/A	N/A	0
90.11 DsetXplus6Val2	N/A	N/A	0
92.01 DsetXplus1Val1	N/A	N/A	(801) MainStatWord
92.02 MAIN DS ACT1 or DsetXplus1Val2	(102) SPEED	N/A	(104) MotSpeed
92.03 MAIN DS ACT2 or DsetXplus1Val3	(105) TORQUE	N/A	(209) TorqRef2
92.04 AUX DS ACT3 or DsetXplus3Val1	(305) FAULT WORD 1	N/A	(802) Auxiliary Status Word

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RCNA-01 Examples: **ACS800/ACS550/ACH550/ACQ550** - ODVA Profile (11 total Data words In/Out). Nine of the In/Out Data words are user configured by parameters in group 51. (continued)

Table 7: I/O Assembly Instance 121 & 171 (continued)

Drive Parameter	ACS800	ACx550	DCS800
92.05 AUX DS ACT4 or DsetXplus3Val2	(308) ALARM WORD 1	N/A	(101) MotSpeedFilt
92.06 AUX DS ACT5 or DsetXplus3Val3	(306) FAULT WORD 2	N/A	(108) MotTorq
92.07 DsetXplus5Val1	N/A	N/A	(901) FaultWord1
92.08 DsetXplus5Val2	N/A	N/A	(902) FaultWord2
92.09 DsetXplus5Val3	N/A	N/A	(903) FaultWord3
92.10 DsetXplus7Val1	N/A	N/A	(904) FaultWord4
92.11 DsetXplus7Val2	N/A	N/A	(906) AlarmWord1

* This parameter is only in the ACS800 product.

** The value of this parameter should not include Main Control, Speed Ref, Main status word, Actual speed for Assembly 121 & 171.

*** New settings take effect only when the module power is cycled or when the module receives a Fieldbus Adapter parameter refresh by setting parameter 51.27 to REFRESH.

ControlNet - Drive Setup

FCNA-01 ControlNet™ Adapter Module

Overview

This document contains the basic start-up procedure of the ACS355, ACS850, ACSM1 and ACS880 drives with the FCNA-01 ControlNet Adapter Module. The FCNA-01 ControlNet Adapter Module is an optional device for the ABB ACS355, ACS850, ACSM1 and ACS880 drive which enables the connection of the drive to an ControlNet network. Reference the specific drive user manual and FCNA-01 user's manuals for additional product information.

With the FCNA-01 module, the ControlNet network may employ either the ODVA AC/DC Drive profile or the ABB Drives profile. The two profiles are converted to the DCU profile or ACS850/ACSM1 profile (detailed in the drive documentation) by the FCNA-01 module. In addition, two Transparent modes for 16 and 32 bit words respectively are available. With the Transparent modes, no data conversion takes place.

Assembly objects

I/O Assembly Instances may also be referred to as Block Transfer of data. Intelligent devices realizing a Functional Profile, such as the FCNA-01, have several objects. Since it is not possible to transmit more than one object data through a single connection, it is practical and more efficient to group attributes from different objects into a single I/O connection (for example a Polled Connection) using the Assembly object. The Assembly object acts as a tool for grouping these attributes.

The Assembly selections described above are, in fact, instances of the Assembly object class. The FCNA-01 uses Static assemblies (in other words, fixed groupings of different object data only).

FCNA-01 Installation, Protocol & Profile Configuration

Mechanical installation

1. Install clamping plate and fieldbus option ground plate, clamps and screws.

2. Insert the FCNA-01 into its specified slot in the drive. The FCNA-01 must be only installed in Slot 3 in the ACS850 or ACSM1 drive. The FCNA-01 can be installed into any slot on the ACS880 drive.

3. Using the encapsulated mounting screw in the module kit and fasten the module to the drive.

Electrical installation

4. Connect the coax cable (BNC connector) to the FCNA-01 module. Use both connectors in redundant operation, otherwise use either connector A or B. Arrange the bus cables as far away from the motor cables as possible. Avoid parallel runs.

Drive protocol & profile configuration

The detailed procedure of activating the drive for communication with the module is dependent on the drive type. Parameter(s) must be adjusted to activate the desired communication port. Refer to the User/Firmware Manual of the drive for additional protocol and profile settings.

5. Power up the drive.

6. Set Parameters as follows:

Table 1: ACS355 Parameter Settings

Par. no.	Parameter Name	Setting
98.02	COMM PROT SEL	(4) EXT FBA

Table 2: ACS850 and ACSM1 Parameter Settings

Par. no.	Parameter Name	Setting
50.01	FBA ENABLE	(1) ENABLE

Table 3: ACS880 Parameter Settings

Par. no.	Parameter Name	Setting
50.01	FBA A enable	(3) Option slot 3

FCNA-01 I/O assembly instances

I/O assembly instances

The table below highlights the amount of data that will be transmitted and received from the fieldbus controller for a given profile. The size column will need to be programmed in the fieldbus controller. The column labeled Profile states the profile (Main Control, Status Word) the drive will be using for control.

Table 4: Input & Output Assembly Instances

Name	Output Instance	Input Instance	Size (bytes)	Profile
Basic Speed Control	20	70	4	ODVA AC/DC Drive
Enhanced Speed Control	21	71	4	ODVA AC/DC Drive
Basic Speed and Torque Control	22	72	6	ODVA AC/DC Drive
Enhanced Speed and Torque Control	23	73	6	ODVA AC/DC Drive
Basic Speed Control plus Drive Parameters	120	170	24	ODVA AC/DC Drive
Enhanced Speed Control plus Drive Parameters	121	171	24	ODVA AC/DC Drive
Basic Speed and Torque Control plus Drive Parameters	122	172	26	ODVA AC/DC Drive
Enhanced Speed and Torque Control plus Drive Parameters	123	173	26	ODVA AC/DC Drive
ABB Drives Profile w/Set Speed	1	51	4	ABB Drives Profile
ABB Drives Profile w/Set Speed and Set Torque	2	52	6	ABB Drives Profile
ABB Drives Profile w/Set Speed plus Drive Parameters	101	151	24	ABB Drives Profile
ABB Drives Profile w/Set Speed and Set Torque plus Drive Parameters	102	152	26	ABB Drives Profile
Transparent16 w/One	11	61	4	Trasparent16 Profile
Transparent16 w/Two	12	62	6	Trasparent16 Profile
Transparent16 w/One plus Drive Parameters	111	161	24	Trasparent16 Profile
Transparent16 w/Two plus Drive Parameters	112	162	26	Trasparent16 Profile
Transparent32 w/One	21	71	8	Transparent32 Profile
Transparent32 w/Two	22	72	12	Transparent32 Profile
Transparent32 w/One plus Drive Parameters	121	171	28	Transparent32 Profile
Transparent32 w/Two plus Drive Parameters	122	172	32	Transparent32 Profile

FCNA-01 Network configuration

ControlNet provides a variety of connection methods to communicate between devices. Not all methods are supported by all devices. Refer to the client documentation to determine which method(s) are supported by the client.

NOTE!   *The choice of the connection method has a significant impact on the time-out behavior. Refer to configuration parameters 10 CONTROL TIMEOUT and 11 IDLE ACTION for more information.*

Table 5: Network configuration with drive parameters

Par. No.	Parameter Name	Setting Range	Default Setting
51.01	FBA TYPE	(Read-only)	CONTROLNET
51.02	PROTOCOL/ PROFILE	(0) ODVA (1) ABB Drives profile (2) Transparent 16 (3) Transparent 32	(0) ODVA
51.03	MODULE MACID	2	2
51.04	MODULE BAUD RATE	Read-only. Fixed to 5 Mbit/s.	(5) 5M bit/s
51.05	HW/SW OPTION	(0) HW option selected (1) SW option selected	(0) HW
51.06	ODVA STOP FUNC-TION	(0) RAMP (1) COAST	(0) RAMP
51.07	ODVA SPEED SCALE	0...255	128
51.08	ODVA TORQUE SCALE	0...255	128
51.09	T16 SCALE	0…65535	99
51.10	CONTROL TIMEOUT	0…65535	N/A
51.11	IDLE ACTION	(0) OFFLINE (1) ONLINE	N/A
51.12	T-> O Real Time Format	(0) = No Run/Idle notification included (1) = 32 bit Run/Idle header	(0) No Run/Idle notification included
51.26	RESTORE FACTORY SETTINGS		
51.27*	FBA Par Refresh	(0) DONE (1) REFRESH	N/A

* New settings take effect only when the module power is cycled or when the module receives a Fieldbus Adapter parameter refresh by setting parameter 51.27 to REFRESH

Table 6: ODVA Speed Scaling

ODVA Speed Scale Value[1]	Drive Parameter Speed Scale Value[2]	Speed Unit
-5	123	32 RPM
-4	124	16 RPM
-3	125	8 RPM
-2	126	4 RPM
-1	127	2 RPM
0 (default)	128	1 RPM
1	129	0.5 RPM
2	130	0.25 RPM
3	131	0.125 RPM
4	132	0.0625 RPM
5	133	0.03125 RPM

Table 7: ODVA Torque Scaling

ODVA Speed Scale Value[1]	Drive Parameter Speed Scale Value[2]	Speed Unit
-5	123	32 NM
-4	124	16 NM
-3	125	8 NM
-2	126	4 NM
-1	127	2 NM
0 (default)	128	1 NM
1	129	0.5 NM
2	130	0.25 NM
3	131	0.125 NM
4	132	0.0625 NM
5	133	0.03125 NM

1 Use ODVA Speed/Torque Scale Value when reading/writing ODVA Speed or Torque scale via the AC/DC Drive Object (2Ah). When written via AC/DC Drive Object, the new value takes effect immediately.

2 Use Drive Parameter Speed/Torque Scale Value when reading/writing ODVA Speed or Torque Scale via the drive panel, drive parameter object (90h) and drive configuration object (91h). When written via these methods, the new value takes effect after the drive is repowered or a "Fieldbus Adapter Parameter Refresh" is given.

ControlNet - Drive Setup

FCNA-01 Example: **ACS355** - ABB Drives Profile - (13 Data Words In/Out)

The example will write the Main Control Word, Speed Ref, Torque Ref, Acceler Time 2 and Deceler Time 2. It will read Main status word, Actual speed, Actual Torque, Current and DC Bus Voltage.

Table 7: I/O Assembly Instance 102 & 152

Drive Parameter	Example setting for ACS355
10.01 EXT 1 COMMANDS	COMM
10.03 REF DIRECTION	REQUEST
11.03 REF1 SELECT	COMM
16.04 FAULT RESET SEL	COMM
98.02 COMM PROT SEL	Enable
51.01 MODULE TYPE	CONTROLNET (READ ONLY)
51.02 PROTOCOL/PROFILE	(1) ABB Drives profile
51.03 MODULE MACID	2
51.04 MODULE BAUD RATE	(5) 5M bit/s
51.05 HW/SW OPTION	(1) SW option selected
51.06 ODVA STOP FUNCTION	(0) RAMP
51.07 ODVA SPEED SCALE	128
51.08 ODVA TORQUE SCALE	128
51.09 T16 SCALE	99
51.10 CONTROL TIMEOUT	0
51.11 IDLE ACTION	0
51.12 T-> O Real Time Format	(0) = No Run/Idle notification included
51.20 CONTROL TIMEOUT	0
54.01 FB DATA INPUT 1	(104) CURRENT
54.02 FB DATA INPUT 2	(107) DC BUS VOLTAGE
54.03 FB DATA INPUT 3	0
54.04 ... 54.10 FB DATA INPUT	0
55.01 FB DATA OUTPUT 1	(2205) ACCELER TIME 2
55.02 FB DATA OUTPUT 2	(2206) DECELER TIME 2
55.03 ... 55.10 FB DATA OUTPUT	0
51.27* FBA PAR REFRESH	(1) REFRESH

* New settings take effect only when the module power is cycled or when the module receives a Fieldbus Adapter parameter refresh by setting parameter 51.27 to REFRESH.

FCNA-01 Example: **ACS850, ACSM1 and ACS880** - ABB Drives Profile - (13 Data Words In/Out)

The example will write the Main Control Word, Speed Ref, Torque Ref, Const Speed 1 - 3, Acc Time 2 and Dec Time 2. It will read Main status word, Actual speed, Actual Torque, Motor Temp, Motor Current, DC Bus Voltage and Encoder 1 speed.

Every parameter in the ACS880 when mapped as a dataword is user selectable via parameter group 52, 53, 55 and 56 as 16 bit or 32 bit format

Table 8: I/O Assembly Instance 102 & 152

Drive Parameter	Example setting for ACS850	Example setting for ACSM1	Example setting for ACS880
16.15 Menu set sel	Load long	n/a	n/a
10.01 Ext1 start func	FBA	FBA	n/a
20.01 Ext1 commands	n/a	n/a	Fieldbus A
21.01 Speed ref1 sel	FBA ref1	n/a	n/a
22.11 Speed ref1 source	n/a	n/a	FB A ref1
24.01 SPEED REF1 SEL	n/a	FBA REF1	n/a
50.01 Fba enable	Enable	Enable	Option slot 3
51.01 MODULE TYPE	CONTROLNET (READ ONLY)	CONTROLNET (READ ONLY)	CONTROLNET (READ ONLY)
51.02 PROTOCOL/PRO-FILE	(1) ABB Drives profile	(1) ABB Drives profile	(1) ABB Drives profile
51.03 MODULE MACID	3	4	5
51.04 MODULE BAUD RATE	(5) 5M bit/s	(5) 5M bit/s	(5) 5M bit/s
51.05 HW/SW OPTION	(1) SW option selected	(1) SW option selected	(1) SW option selected
51.06 ODVA STOP FUNC-TION	(0) RAMP	(0) RAMP	(0) RAMP
51.07 ODVA SPEED SCALE	128	128	128
51.08 ODVA TORQUE SCALE	128	128	128
51.09 T16 SCALE	99	99	99
51.10 CONTROL TIMEOUT	0	0	0
51.11 IDLE ACTION	0	0	0
51.12 T-> O Real Time Format	(0) = No Run/Idle notification included	(0) = No Run/Idle notification included	(0) = No Run/Idle notification included
51.20 CONTROL TIMEOUT	0	0	0
52.01 DATA IN 1	(105) MOTOR CURRENT	(117) MOTOR TEMP	(3501) 16bit - Motor estimated temperature
52.02 DATA IN 2	(123) MOTOR POWER - MSW	(104) MOTOR CURRENT - MSW	(107) 32bit - MOTOR CURRENT - MSW

ControlNet - Drive Setup

FCNA-01 Example: **ACS850, ACSM1 and ACS880** - ABB Drives Profile - (13 Data Words In/Out)

Table 8: I/O Assembly Instance 102 & 152 (continued)

Drive Parameter	Example setting for ACS850	Example setting for ACSM1	Example setting for ACS880
52.03 DATA IN 3	(0) MOTOR POWER - LSW	(0) MOTOR CURRENT - LSW	(0) MOTOR CURRENT - LSW
52.04 DATA IN 4	(107) DC-VOLTAGE - MSW	(107) DC-VOLTAGE - MSW	(111) 16bit - DC-VOLTAGE - MSW
52.05 DATA IN 5	(0) DC-VOLTAGE - LSW	(0) DC-VOLTAGE - LSW	(104) 16bit - Encoder 1 speed filtered
52.06 DATA IN 6	(108) ENCODER1 SPEED - MSW	(108) ENCODER1 SPEED - MSW	0
52.07 DATA IN 7	(0) ENCODER1 SPEED - LSW	(0) ENCODER1 SPEED - LSW	0
52.08 DATA IN 8	0	0	0
52.09 DATA IN 9	0	0	0
52.10 DATA IN 10	0	0	0
53.01 DATA OUT 1	(2606) Const speed sel1	(2606) Const speed sel1	(2226) 16bit - Constant speed 1
53.02 DATA OUT 2	(2607) Const speed sel2	(2607) Const speed sel2	(2227) 16bit - Constant speed 2
53.03 DATA OUT 3	(2608) Const speed sel3	(2608) Const speed sel3	(2228) 16bit - Constant speed 3
53.04 DATA OUT 4	(2204) Acc time2 - MSW	(2204) Acc time2 - MSW	(2314) 32bit - Acceleration time 2 - MSW
53.05 DATA OUT 5	(0) Acc time2 - LSW	(0) Acc time2 - LSW	(0) Acceleration time 2 - LSW
53.06 DATA OUT 6	(2205) Dec time2 - MSW	(2205) Dec time2 - MSW	(2315) 32bit - Deceleration time 2 - MSW
53.07 DATA OUT 7	(0) Dec time2 - LSW	(0) Dec time2 - LSW	(0) Deceleration time 2 - LSW
53.08 DATA OUT 8	0	0	0
53.09 DATA OUT 9	0	0	0
53.10 DATA OUT 10	0	0	0
51.27* FBA PAR REFRESH	(1) REFRESH	(1) REFRESH	(1) REFRESH

* New settings take effect only when the module power is cycled or when the module receives a Fieldbus Adapter parameter refresh by setting parameter 51.27 to REFRESH.

MSW = Most Significant Word
LSW = Less Significant Word

FCNA-01 Example: **ACS355** - ODVA AC/DC Drives Profile (3 Data words In/Out)

The example will write the ODVA Main Control Word, Speed Ref and Torque Ref. It will read ODVA Main status word, Actual speed, Actual Torque.

Table 9: I/O Assembly Instance 23 & 73

Drive Parameter	Example settings for ACS355
10.01 EXT 1 COMMANDS	COMM
10.03 REF DIRECTION	REQUEST
11.03 REF1 SELECT	COMM
16.04 FAULT RESET SEL	COMM
98.02 COMM PROT SEL	Enable
51.01 MODULE TYPE	CONTROLNET (READ ONLY)
51.02 PROTOCOL/PROFILE	(0) ODVA AC/DC drive profile
51.03 MODULE MACID	2
51.04 MODULE BAUD RATE	(5) 5M bit/s
51.05 HW/SW OPTION	(1) SW option selected
51.06 ODVA STOP FUNCTION	(0) RAMP
51.07 ODVA SPEED SCALE	128
51.08 ODVA TORQUE SCALE	128
51.09 T16 SCALE	99
51.10 CONTROL TIMEOUT	0
51.11 IDLE ACTION	0
51.12 T-> O Real Time Format	(0) = No Run/Idle notification included
51.20 CONTROL TIMEOUT	0
51.27* FBA PAR REFRESH	(1) REFRESH

* New settings take effect only when the module power is cycled or when the module receives a Fieldbus Adapter parameter refresh by setting parameter 51.27 to REFRESH.

ControlNet - Drive Setup

FCNA-01 Example: **ACS850, ACSM1 and ACS880** - ODVA AC/DC Drives Profile (3 Data words In/Out)

The example will write the ODVA Main Control Word, Speed Ref and Torque Ref. It will read ODVA Main status word, Actual speed, Actual Torque.

Table 10: I/O Assembly Instance 23 & 73

Drive Parameter	ACS850	ACSM1	ACS880
16.15 Menu set sel	Load long	n/a	n/a
10.01 Ext1 start func	FBA	FBA	n/a
20.01 Ext1 commands	n/a	n/a	Fieldbus A
21.01 Speed ref1 sel	FBA ref1	n/a	n/a
22.11 Speed ref1 source	n/a	n/a	FB A ref1
24.01 SPEED REF1 SEL	n/a	FBA REF1	n/a
50.01 Fba enable	Enable	Enable	Option slot 3
51.01 MODULE TYPE	CONTROLNET (READ ONLY)	CONTROLNET (READ ONLY)	CONTROLNET (READ ONLY)
51.02 PROTOCOL/PROFILE	(0) ODVA AC/DC drive profile	(0) ODVA AC/DC drive profile	(0) ODVA AC/DC drive profile
51.03 MODULE MACID	3	4	5
51.04 MODULE BAUD RATE	(5) 5M bit/s	(5) 5M bit/s	(5) 5M bit/s
51.05 HW/SW OPTION	(1) SW option selected	(1) SW option selected	(1) SW option selected
51.06 ODVA STOP FUNCTION	(0) RAMP	(0) RAMP	(0) RAMP
51.07 ODVA SPEED SCALE	128	128	128
51.08 ODVA TORQUE SCALE	128	128	128
51.09 T16 SCALE	99	99	99
51.10 CONTROL TIMEOUT	0	0	0
51.11 IDLE ACTION	0	0	0
51.12 T-> O Real Time Format	(0) = No Run/Idle notification included	(0) = No Run/Idle notification included	(0) = No Run/Idle notification included
51.20 CONTROL TIMEOUT	0	0	0
51.27* FBA PAR REFRESH	(1) REFRESH	(1) REFRESH	(1) REFRESH

* New settings take effect only when the module power is cycled or when the module receives a Fieldbus Adapter parameter refresh by setting parameter 51.27 to REFRESH.

FCNA-01 Example: **ACS355** - ODVA AC/DC Drives Profile (13 Data words In/Out)

The example will write the Main Control Word, Speed Ref, Torque Ref, Acceler Time 2 and Deceler Time 2. It will read Main status word, Actual speed, Actual Torque, Current and DC Bus Voltage.

ControlNet - Drive Setup

Table 11: I/O Assembly Instance 123 & 173

Drive Parameter	Example settings for ACS355
10.01 EXT 1 COMMANDS	COMM
10.03 REF DIRECTION	REQUEST
11.03 REF1 SELECT	COMM
16.04 FAULT RESET SEL	COMM
98.02 COMM PROT SEL	Enable
51.01 MODULE TYPE	CONTROLNET (READ ONLY)
51.02 PROTOCOL/PROFILE	(0) ODVA AC/DC drive profile
51.03 MODULE MACID	2
51.04 MODULE BAUD RATE	(5) 5M bit/s
51.05 HW/SW OPTION	(1) SW option selected
51.06 ODVA STOP FUNCTION	(0) RAMP
51.07 ODVA SPEED SCALE	128
51.08 ODVA TORQUE SCALE	128
51.09 T16 SCALE	99
51.10 CONTROL TIMEOUT	0
51.11 IDLE ACTION	0
51.12 T-> O Real Time Format	(0) = No Run/Idle notification included
51.20 CONTROL TIMEOUT	0
54.01 FB DATA INPUT 1	(104) CURRENT
54.02 FB DATA INPUT 2	(107) DC BUS VOLTAGE
54.03 FB DATA INPUT 3	0
54.04 ... 54.10 FB DATA INPUT	0
55.01 FB DATA OUTPUT 1	(2205) ACCELER TIME 2
55.02 FB DATA OUTPUT 2	(2206) DECELER TIME 2
55.03 ... 55.10 FB DATA OUTPUT	0
51.27* FBA PAR REFRESH	(1) REFRESH

* New settings take effect only when the module power is cycled or when the module receives a Fieldbus Adapter parameter refresh by setting parameter 51.27 to REFRESH.

FCNA-01 Example: **ACS850, ACSM1 and ACS880** – ODVA AC/DC Drives Profile - (13 Data Words In/Out)

The example will write the Main Control Word, Speed Ref, Torque Ref, Const Speed 1 - 3, Acc Time 2 and Dec Time 2. It will read Main status word, Actual speed, Actual Torque, Motor Temp, Motor Current, DC Bus Voltage and Encoder 1 speed.

Every parameter in the ACS880 when mapped as a dataword is user selectable via parameter group 52, 53, 55 and 56 as 16 bit or 32 bit format

Table 12: I/O Assembly Instance 23 & 73

Drive Parameter	ACS850	ACSM1	ACS880
16.15 Menu set sel	Load long	n/a	n/a
10.01 Ext1 start func	FBA	FBA	n/a
20.01 Ext1 commands	n/a	n/a	Fieldbus A
21.01 Speed ref1 sel	FBA ref1	n/a	n/a
22.11 Speed ref1 source	n/a	n/a	FB A ref1
24.01 SPEED REF1 SEL	n/a	FBA REF1	n/a
50.01 Fba enable	Enable	Enable	Option slot 3
51.01 MODULE TYPE	CONTROLNET (READ ONLY)	CONTROLNET (READ ONLY)	CONTROLNET (READ ONLY)
51.02 PROTOCOL/PROFILE	(0) ODVA AC/DC drive profile	(0) ODVA AC/DC drive profile	(0) ODVA AC/DC drive profile
51.03 MODULE MACID	3	4	5
51.04 MODULE BAUD RATE	(5) 5M bit/s	(5) 5M bit/s	(5) 5M bit/s
51.05 HW/SW OPTION	(1) SW option selected	(1) SW option selected	(1) SW option selected
51.06 ODVA STOP FUNCTION	(0) RAMP	(0) RAMP	(0) RAMP
51.07 ODVA SPEED SCALE	128	128	128
51.08 ODVA TORQUE SCALE	128	128	128
51.09 T16 SCALE	99	99	99
51.10 CONTROL TIMEOUT	0	0	0
51.11 IDLE ACTION	0	0	0
51.12 T-> O Real Time Format	(0) = No Run/Idle notification included	(0) = No Run/Idle notification included	(0) = No Run/Idle notification included
51.20 CONTROL TIMEOUT	0	0	0
52.01 DATA IN 1	(105) MOTOR CURRENT	(117) MOTOR TEMP	(3501) 16bit - Motor estimated temperature
52.02 DATA IN 2	(123) MOTOR POWER - MSW	(104) MOTOR CURRENT - MSW	(107) 32bit - MOTOR CURRENT - MSW
52.03 DATA IN 3	(0) MOTOR POWER - LSW	(0) MOTOR CURRENT - LSW	(0) MOTOR CURRENT - LSW
52.04 DATA IN 4	(107) DC-VOLTAGE - MSW	(107) DC-VOLTAGE - MSW	(111) 16bit - DC-VOLTAGE - MSW

FCNA-01 Example: **ACS850, ACSM1 and ACS880** – ODVA AC/DC Drives Profile - (13 Data Words In/Out)

Table 12: I/O Assembly Instance 23 & 73

Drive Parameter	ACS850	ACSM1	ACS880
52.05 DATA IN 5	(0) DC-VOLTAGE - LSW	(0) DC-VOLTAGE - LSW	(104) 16bit - Encoder 1 speed filtered
52.06 DATA IN 6	(108) ENCODER1 SPEED - MSW	(108) ENCODER1 SPEED - MSW	0
52.07 DATA IN 7	(0) ENCODER1 SPEED - LSW	(0) ENCODER1 SPEED - LSW	0
52.08 DATA IN 8	0	0	0
52.09 DATA IN 9	0	0	0
52.10 DATA IN 10	0	0	0
53.01 DATA OUT 1	(2606) Const speed sel1	(2606) Const speed sel1	(2226) 16bit - Constant speed 1
53.02 DATA OUT 2	(2607) Const speed sel2	(2607) Const speed sel2	(2227) 16bit - Constant speed 2
53.03 DATA OUT 3	(2608) Const speed sel3	(2608) Const speed sel3	(2228) 16bit - Constant speed 3
53.04 DATA OUT 4	(2204) Acc time2 - MSW	(2204) Acc time2 - MSW	(2314) 32bit - Acceleration time 2 - MSW
53.05 DATA OUT 5	(0) Acc time2 - LSW	(0) Acc time2 - LSW	(0) Acceleration time 2 - LSW
53.06 DATA OUT 6	(2205) Dec time2 - MSW	(2205) Dec time2 - MSW	(2315) 32bit - Deceleration time 2 - MSW
53.07 DATA OUT 7	(0) Dec time2 - LSW	(0) Dec time2 - LSW	(0) Deceleration time 2 - LSW
53.08 DATA OUT 8	0	0	0
53.09 DATA OUT 9	0	0	0
53.10 DATA OUT 10	0	0	0
51.27* FBA PAR REFRESH	(1) REFRESH	(1) REFRESH	(1) REFRESH

* New settings take effect only when the module power is cycled or when the module receives a Fieldbus Adapter parameter refresh by setting parameter 51.27 to REFRESH.

MSW *= Most Significant Word*
LSW *= Less Significant Word*

ControlNet - Drive Setup

Standard ABB Drive on ControlNet™ (RCNA-01) with RSLogix™ 5000 and RSNetWorx™

Overview

This section contains an overview on how to setup a standard ABB drive with a RCNA-01 ControlNet option card in RSLogix 5000 and RSNetWorx. The drive can be configured to vendor specific assembly (ABB Profile) or ODVA specific assembly (AC/DC Profile). The RCNA-01 and the PLC will transmit/receive up to nine words.

ControlNet - PLC Setup

RCNA-01 Installation

1. Open RSLogix 5000 and open or create a RSLogix 5000 program. Right click on the 1756-CNB ControlNet Module.
Then, select New Module.
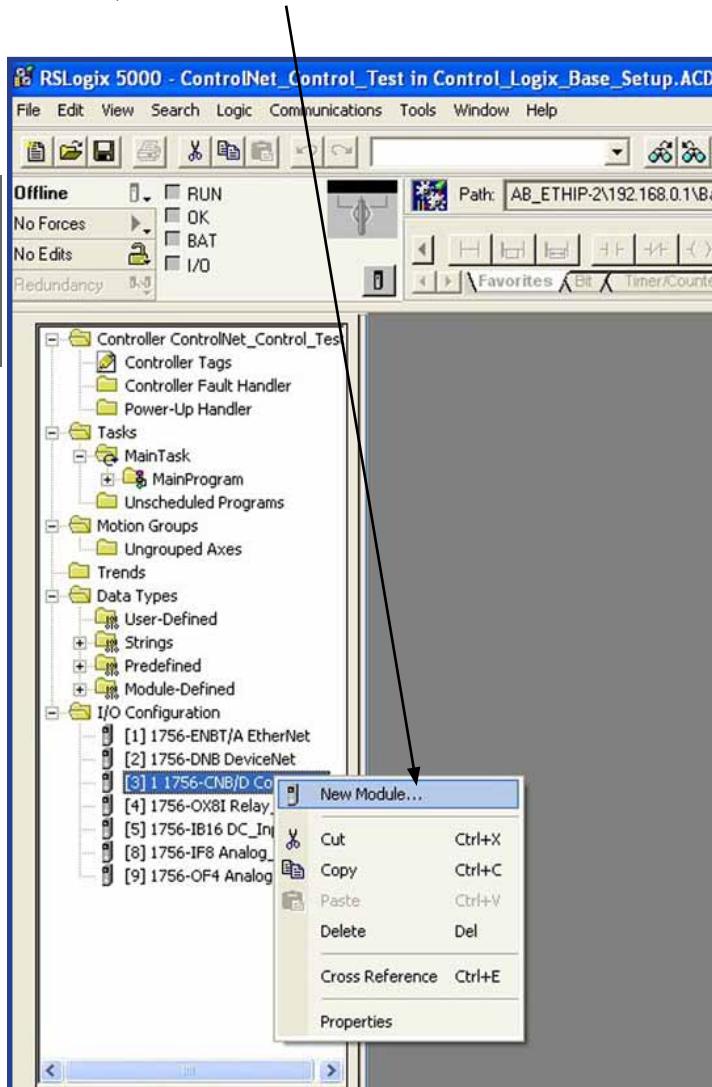
RCNA-01 Installation (continued)
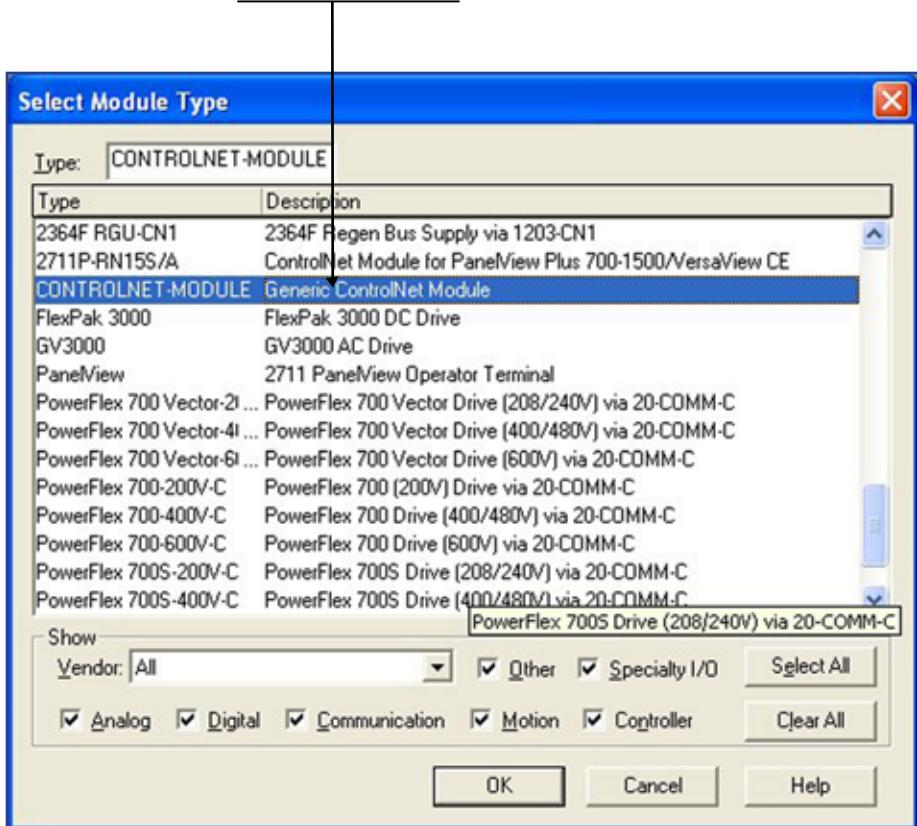
2.   Select Generic ControlNet Module.

RCNA-01 Installation (continued)

3. Program the following information. The example below is using the ABB Profile 102 and 103.

Enter the name that will be given to the RCNA-01.

ABB RCNA-01 uses 16 Bit words, change Comm Format to Data-INT (16 Bits).

Enter the Input/Output Assembly Instances.

Module Properties - ControNet (CONTROLNET-MODULE 1.1)

Type: CONTROLNET-MODULE Generic ControlNet Module
Parent: ControNet

Connection Parameters

	Assembly Instance:	Size:	
Name: RCNA_01_QSG	Input: 103	11	(16-bit)
Description:	Output: 102	9	(16-bit)
	Configuration: 1	0	(8-bit)
Comm Format: Data - INT	Status Input:		
Node: 2	Status Output:		

Cancel   < Back   Next>   Finish >>   Help

Enter the Node address of the RCNA-01.

Configuration needs to be programmed to 1 and size to 0.

*See next page for information on these settings.*

The following table will display Input and Output Assembly Instances and I/O memory size. Reference User Manual for the RCNA-01 Module for more information on Input/Output Assembly Instances.

Input Assembly Instances	Output Assembly Instances	Drive Parameter 51.26 Value	PLC Input Word Size	PLC Output Word Size
70	20	2	4	2
71	21	2	4	2
171	121	9	13	11
101	100	2	4	2
103	102	9	11	9

RCNA-01 Installation (continued)

3. (continued)

Sets the size of the Input/Output words for the RCNA-01.

The value of Input Assembly size, needs to equal drive parameter 51.26 plus two additional words.

The value of Output Assembly size, needs to be equal to drive parameter 51.26.

IF Input Assembly is 171, the value of Input Assembly size, needs to equal drive parameter 51.26 plus four additional words.

IF Output Assembly is 121, the value of Output Assembly size, needs to equal drive parameter 51.26 plus two additional words.

ControlNet - PLC Setup
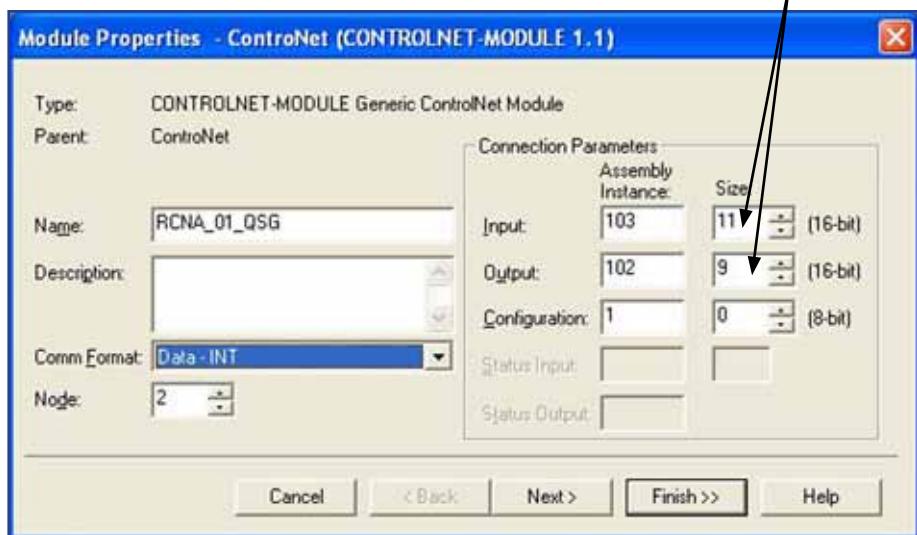
RCNA-01 Installation (continued)

4. The RCNA-01 is now added to the 1756-CNB ConrtolNet Scanner. Download the program to the PLC and make sure the PLC is in program mode after download.

RCNA-01 Installation (continued)

5. Open RSNetWorx for ControlNet. Go online and scan the ControlNet network that needs to be configured.

ControlNet - PLC Setup
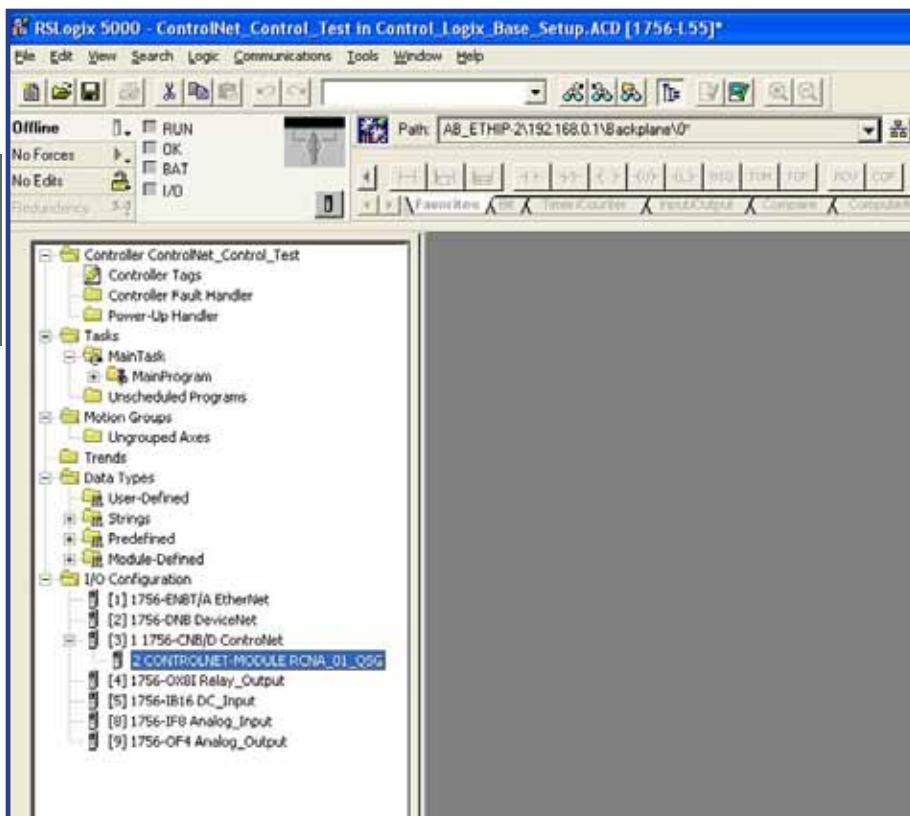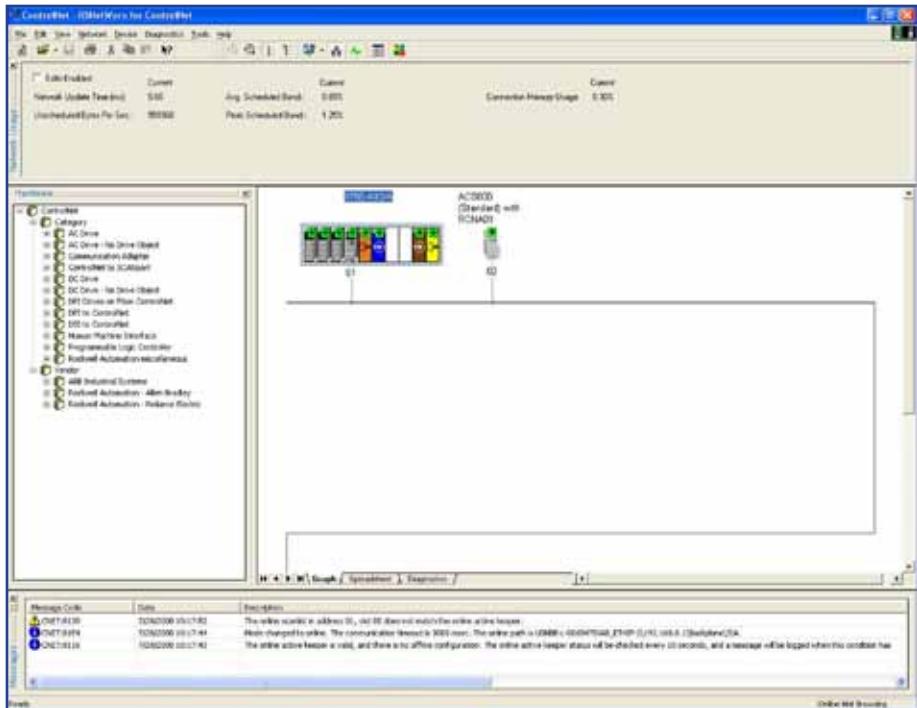
RCNA-01 Installation (continued)

6. Click on the 1756-xxxx.
   Then click Edits Enabled.
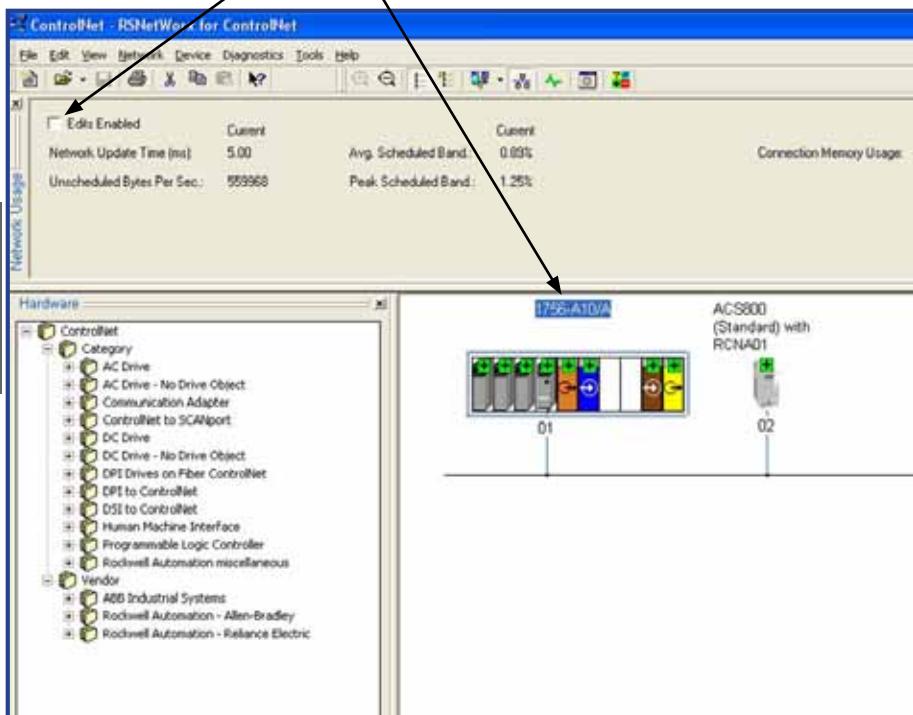

7. Click OK.

RCNA-01 Installation (continued)

8. Click <u>Network</u> on the menu bar. Then select <u>Properties</u>.

RCNA-01 Installation (continued)

9. The Max Scheduled Address should be equal to or greater then the last address node on the ControlNet network. Click OK.

_default	? X

Network Parameters | Media Configuration | General |

|	Current	Pending
Network Update Time (ms):	5.00	5.00
Max Scheduled Address:	01	01
Max Unscheduled Address:	99	99
Media Redundancy:	A Only	A Only
Network Name:	_default	_default

| OK | Cancel | Apply | Help |
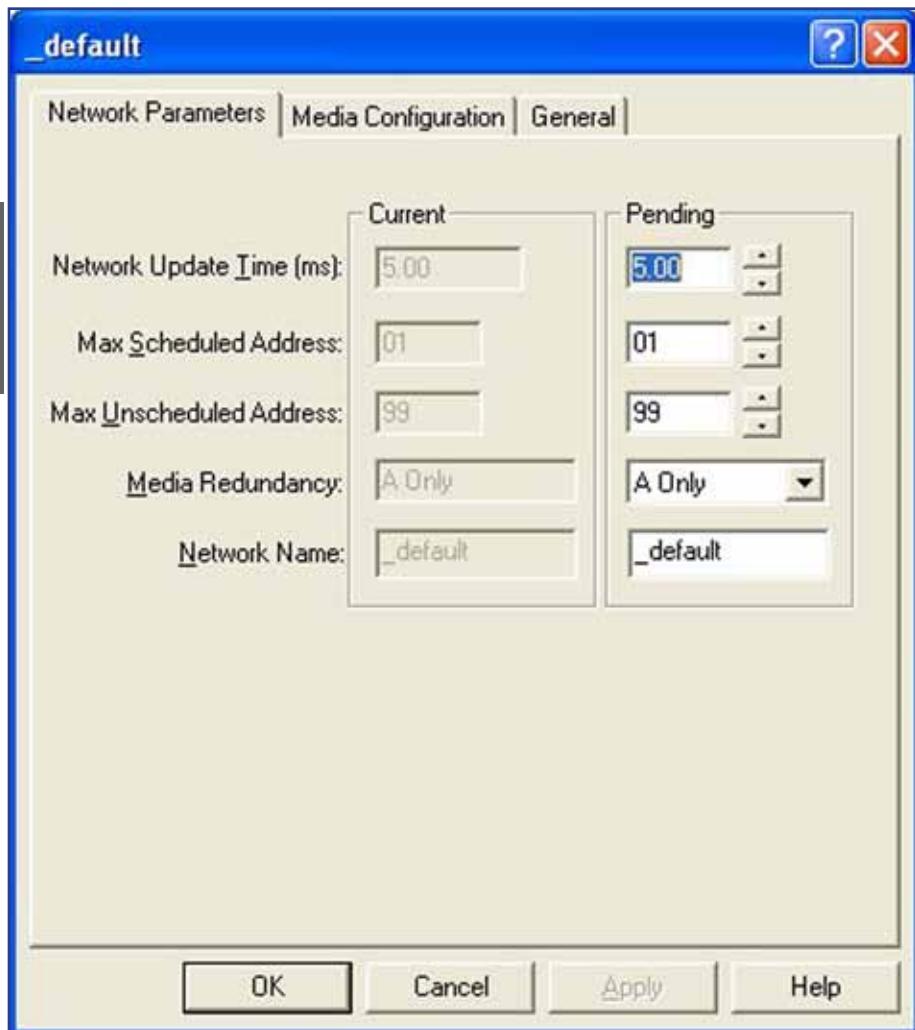
RCNA-01 Installation (continued)

10. Click file and select Save As and name the file. RSNetWorx will then ask if the changes should be downloaded to the keeper.
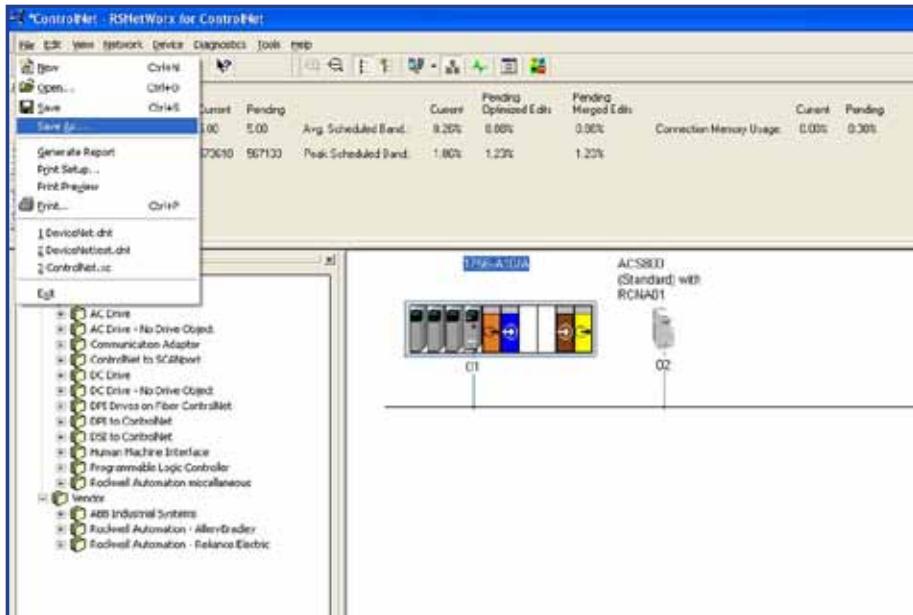
11. Select OK.
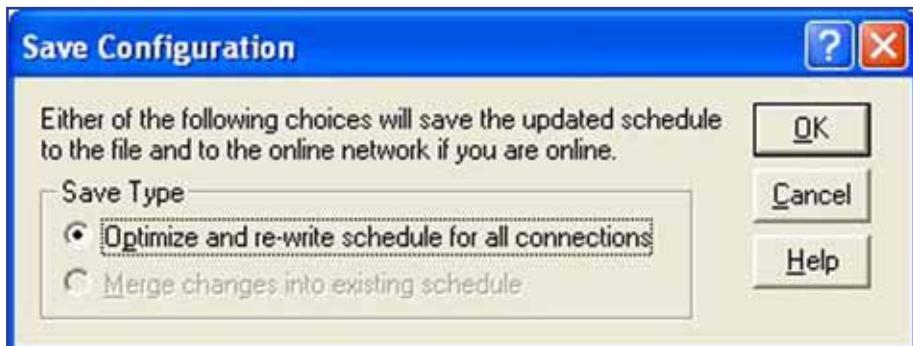
12. The RCNA-01 is now a scheduled connection in the ControlNet network.

Notes:

Standard ABB Drive on ControlNet™ (FCNA-01) with RSLogix™ 5000 and RSNetWorx™

Overview

This section contains an overview on how to setup a standard ABB drive with a FCNA-01 ControlNet option card in RSLogix 5000 and RSNetWorx. The drive can be configured to vendor specific assembly (ABB Profile) or ODVA specific assembly (AC/DC Profile). The FCNA-01 and the PLC will transmit/receive up to thirteen words.

ControlNet - PLC Setup

FCNA-01 Installation

1. Open RSLogix 5000 and open or create a RSLogix 5000 program. Right click on the 1756-CNB ControlNet Module. Then, select New Module.

ControlNet - PLC Setup
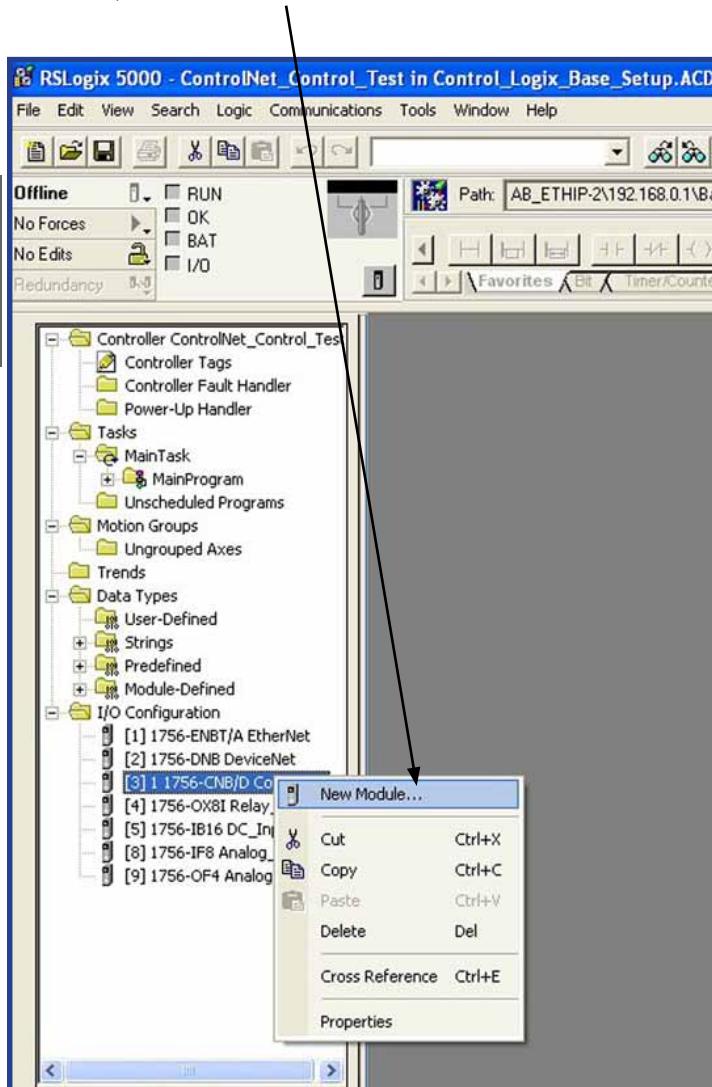
FCNA-01 Installation (continued)

2. Select Generic <u>ControlNet Module</u>.

FCNA-01 Installation (continued)
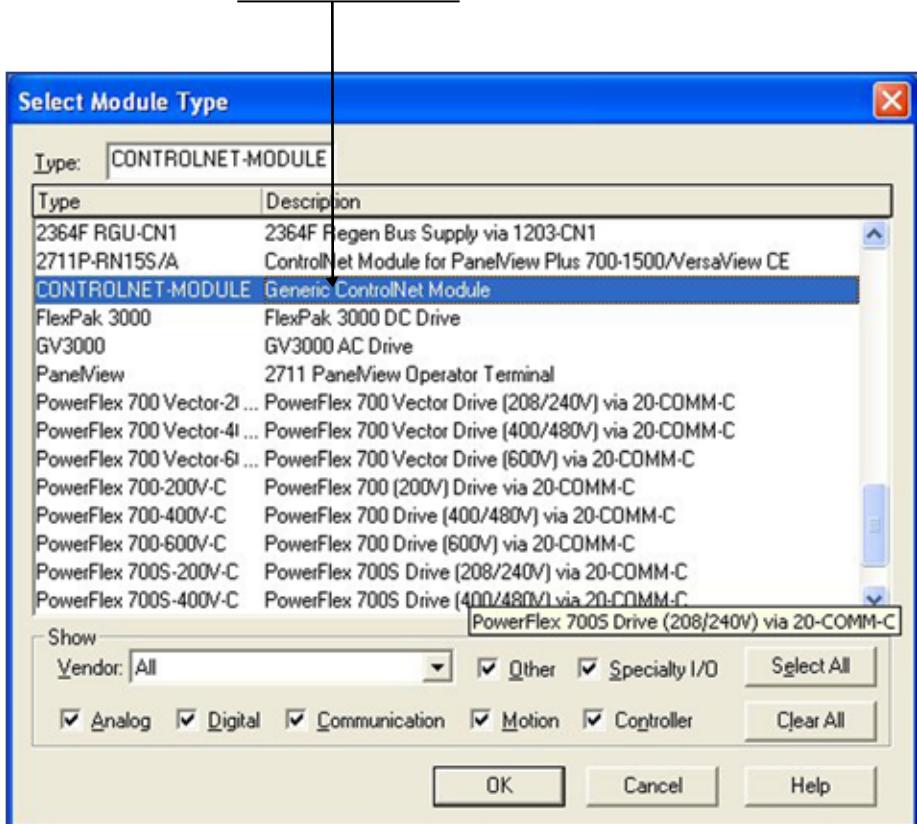
3. Program the following information. The example below is using the ABB Profile 102 and 152.

Enter the name that will be given to the FCNA-01.

ABB FCNA-01 uses 16 Bit words, change Comm Format to Data-INT (16 Bits).

Enter the Input/Output Assembly Instances.

New Module

Type:	CONTROLNET-MODULE Generic ControlNet Module
Parent:	LocalCNB

Connection Parameters

	Assembly Instance:	Size:	
Name:	FCNA_01	Input: 152	12	(16-bit)
Description:		Output: 102	12	(16-bit)
		Configuration: 1	0	(8-bit)
Comm Format:	Data - INT	Status Input:		
Node:	2	Status Output:		

☐ Open Module Properties

OK   Cancel   Help

Enter the Node address of the FCNA-01.

Configuration needs to be programmed to 1 and size to 0.

See next page for information on these settings.

FCNA-01 Installation (continued)

The following table will display Input and Output Assembly Instances and I/O memory size. Reference User Manual for the RCNA-01 Module for more information on Input/Output Assembly Instances.

Table 1 - FCNA-01 - Input and Output Assembly Instances and PLC I/O Memory size

Input Assembly Instances	Output Assembly Instances	PLC Input Word Size	PLC Output Word Size
70	20	2	2
71	21	2	2
72	22	3	3
73	23	3	3
170	120	12	12
171	121	12	12
172	122	13	13
173	123	13	13
51	1	2	2
52	2	3	3
151	101	12	12
152	102	13	13
61	11	2	2
62	12	3	3
161	111	12	12
162	112	13	13

Reference FCNA-01 EtherNet ControlNet Module User's Manual ????? section Communication for more information on Input/Output Assembly Instances.

4. The FCNA-01 is now added to the 1756-CNB ConrtolNet Scanner. Download the program to the PLC and make sure the PLC is in program mode after download.

ControlNet - PLC Setup
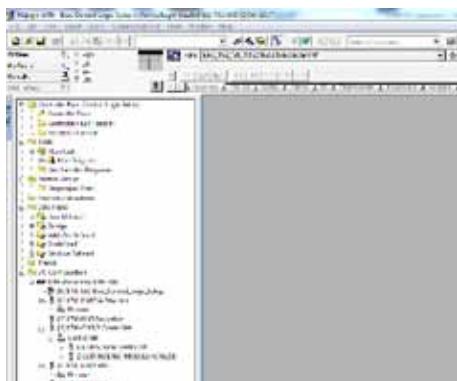
FCNA-01 Installation (continued)

5. Open RSNetWorx for ControlNet. Go online and scan the ControlNet network that needs to be configured.
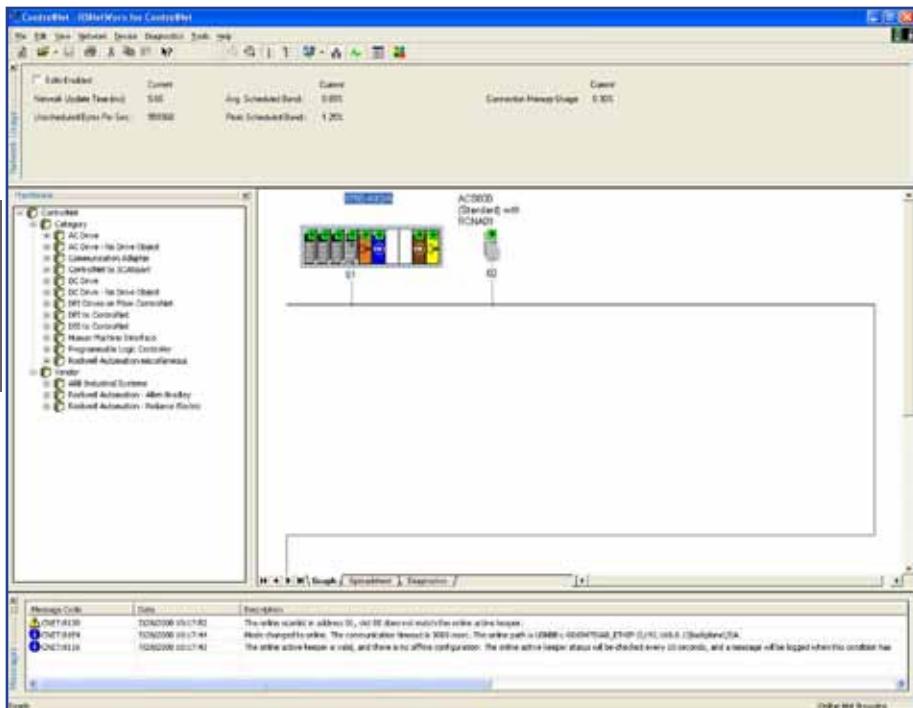
FCNA-01 Installation (continued)

6. Click on the 1756-xxxx.
   Then click Edits Enabled.
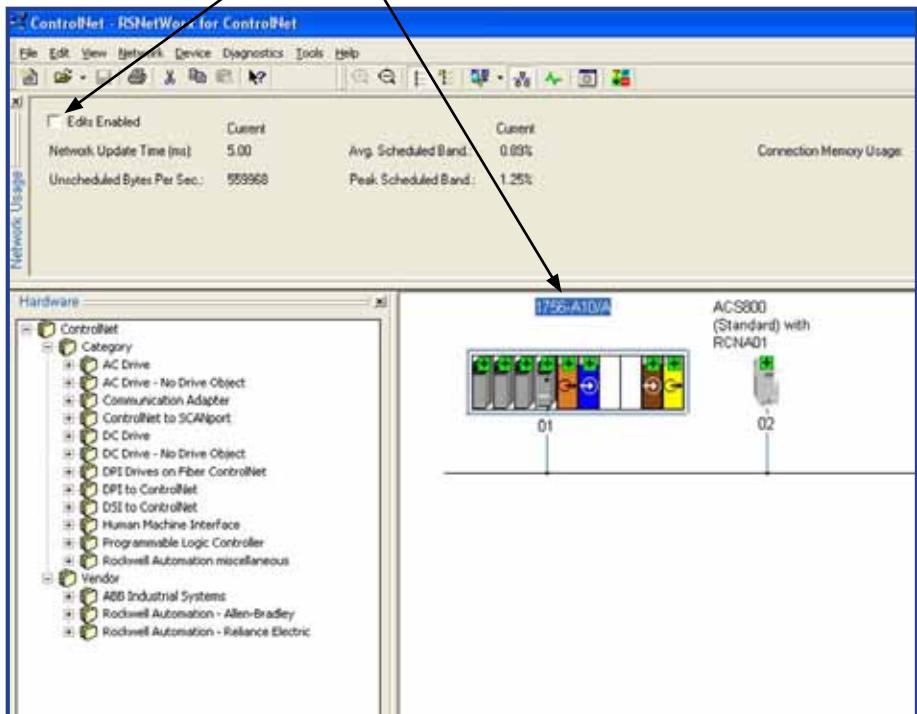
7. Click OK.

FCNA-01 Installation (continued)

8.   Click Network on the menu bar. Then select Properties.
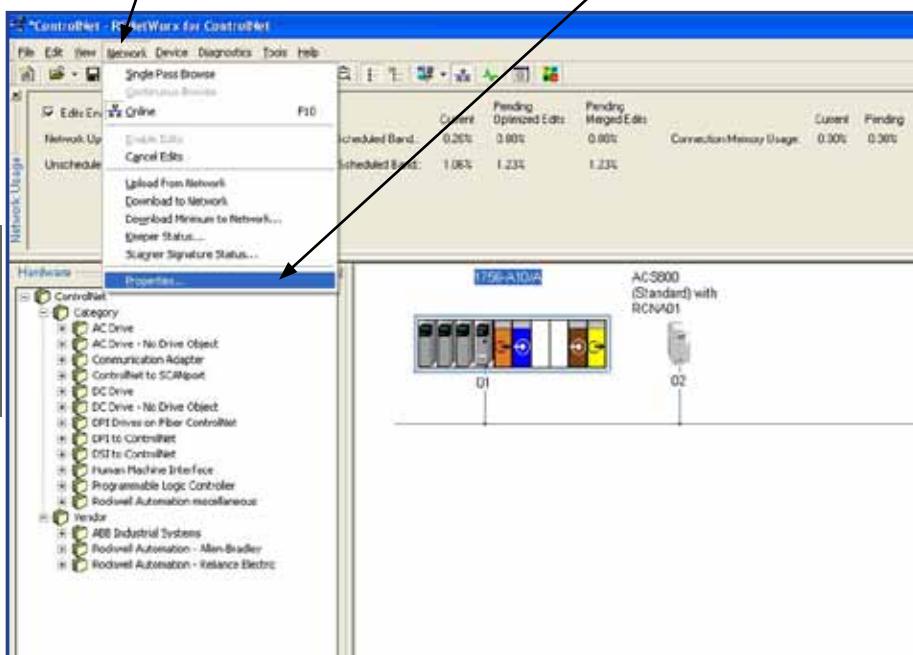
FCNA-01 Installation (continued)

9. The Max Scheduled Address should be equal to or greater then the last address node on the ControlNet network. Click OK.

FCNA-01 Installation (continued)

10. Click file and select Save As and name the file. RSNetWorx will then ask if the changes should be downloaded to the keeper.

11. Select OK.

Save Configuration

Either of the following choices will save the updated schedule to the file and to the online network if you are online.

Save Type

⦿ Optimize and re-write schedule for all connections

○ Merge changes into existing schedule

OK

Cancel

Help
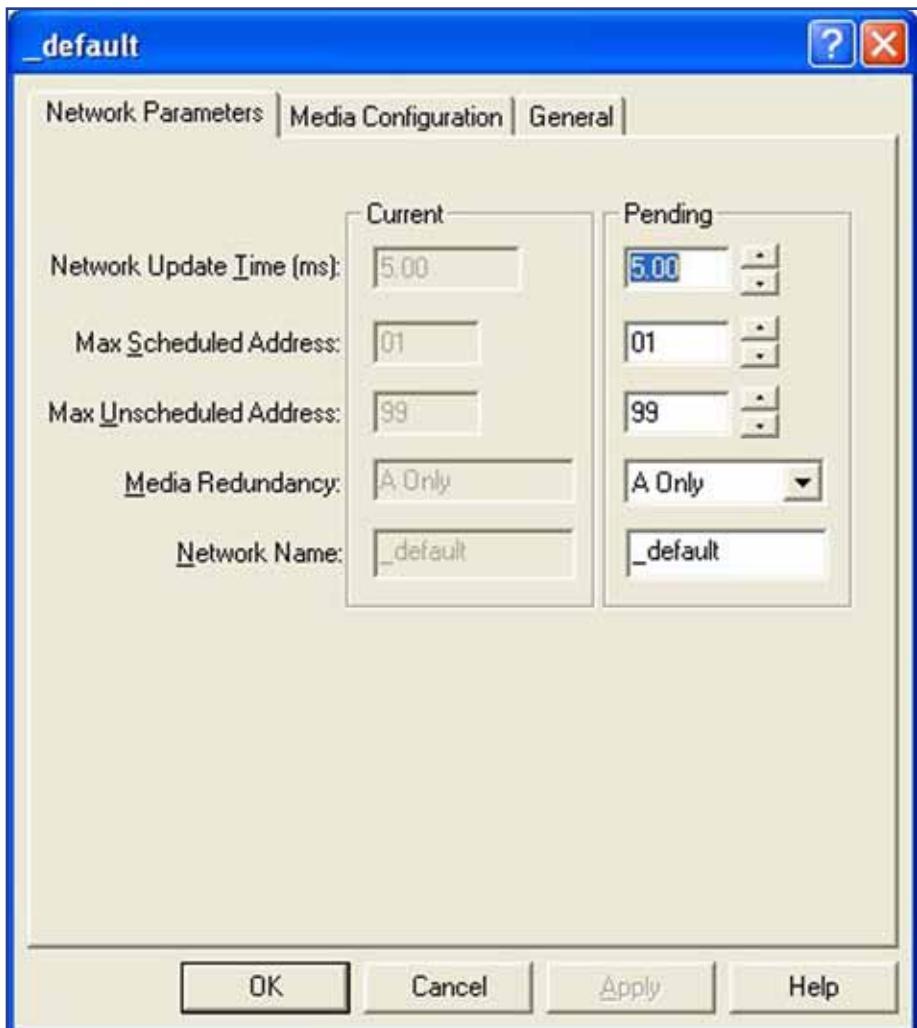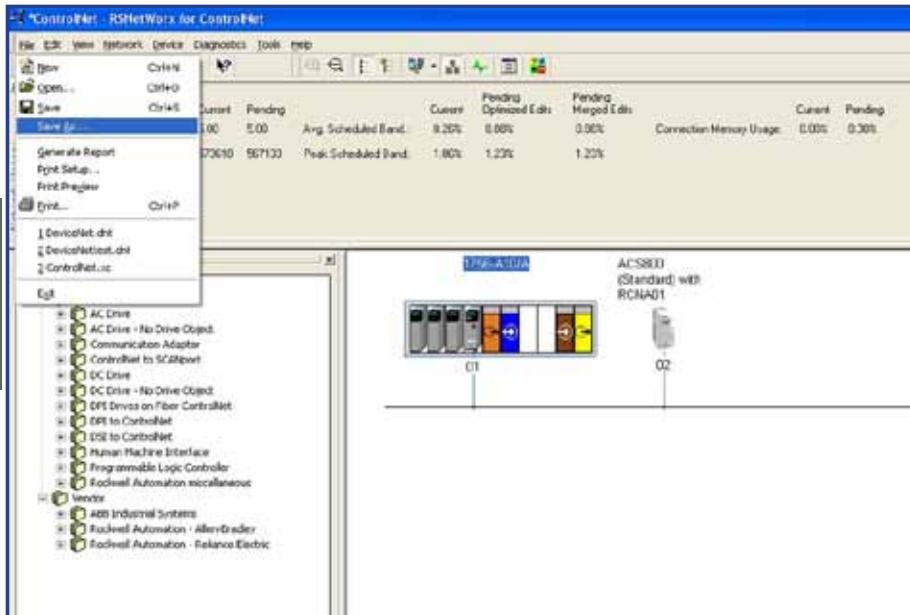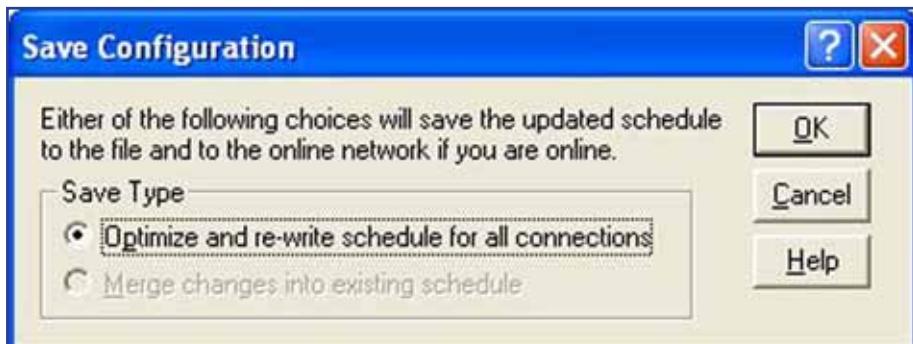
12. The RCNA-01 is now a scheduled connection in the ControlNet network.

Notes:

RDNA-01 DeviceNet™ Adapter Module

Overview

This chapter contains the basic start-up procedure of the ACH550/ACS550/ACQ550/ACS800 and the DCS800 drives with the RDNA-01 DeviceNet Adapter module. The RDNA-01 DeviceNet adapter module is a optional device for ABB ACH550, ACS550, ACQ550, ACS800 and DCS800 drives which enables the connection of the drive to an DeviceNet network. Reference the specific drive user manual and RDNA-01 user manual for additional product information.

With the RDNA-01 module, the DeviceNet network may employ either the ODVA AC/DC Drive profile or the ABB Drives profile. The ACS800 and DCS800 drive product converts the ODVA profile to ABB Profile (detailed in the drive documentation) by the RDNA-01 module. The DCS800 drive employs ABB Drives profiles and ODVA profile. With the ACS550, ACQ550 and ACH550 both the ODVA and ABB Profiles are converted , to the DCU profile (detailed in drive documentation) by the RDNA-01 module.

Assembly objects

I/O Assembly Instances may also be referred to as Block Transfer of data. Intelligent devices realizing a Functional Profile, such as the RDNA-01, have several objects. Since it is not possible to transmit more than one object data through a single connection, it is practical and more efficient to group attributes from different objects into a single I/O connection (for example a Polled Connection) using the Assembly object. The Assembly object acts as a tool for grouping these attributes.

The Assembly selections described above are, in fact, instances of the Assembly object class. The RDNA-01 uses dynamic assemblies that are configured by VSA I/O size.

DeviceNet - Drive Setup

RDNA-01 Installation, drive protocol & profile configuration

Mechanical installation

1. Insert the RDNA-01 into its specified slot in the drive (SLOT2 for ACS550, ACQ550 and ACH550, SLOT1 for ACS800 and DCS800 only)

2. Using the two mounting screws included in the module kit fasten the module to the drive.

Electrical installation

3. The bus cable is connected to terminal block X1 on the RDNA-01. The terminal block is described in table 1 below.

Table 1: Terminal Block Connections

X1		Description	Color
1	V-	Isolated ground	Black
2	CAN_L	CAN_L bus line	Blue
3	SHLD	Network cable shield	Bare
4	CAN_H	CAN_H bus line	White
5	V+	Isolated 24V DC voltage supply	Red

Drive protocol & profile configuration

The detailed procedure of activating the drive for communication with the module is dependent on the drive type. Parameter(s) must be adjusted to activate the desired communication port.

Refer to the User/Firmware Manual of the drive for additional protocol and profile settings.

4. Power up the drive.

5. Set Parameters as follows:

Table 2: ACH550/ACS550/ACQ550 Parameter Settings

Par. no.	Parameter Name	Setting
98.02	COMM PROT SEL	(4) EXT FBA

NOTE!   With ACH550/ACS550/ACQ550 the profile selection is automatic.

RDNA-01 I/O assembly instances

Table 3: ACS800 Parameter Settings

Par. No.	Parameter Name	Setting
98.02	COMM MODULE LINK	FIELDBUS
98.07*	COMM PROFILE	ABB DRIVE, GENERIC, CSA 2.8/3.0

*This parameter is only used in ACS800. For new drives system installations select either ABB DRIVE profile or Generic Drive profile. If replacing drives with application program 2.8 and 3.0 select CSA 2.8/3.0 profile for backward compatibility.

The communication profile setting in the table below is parameter 98.07 in the ACS800 drive product. The ACS800 is the only drive product that this drive parameter will need to be programmed. Example: the drive is programmed to use assembly instances 21 and 71, parameter 98.07 needs to be programmed to Generic Drive Profile.

Table 4: Possible combinations of Input & Output Assembly Instances

Output Instance	Input Instance	Communication Profile To Be Used
20	70	Generic Drive Profile
	71	Generic Drive Profile
	171	Generic Drive Profile
21	70	Generic Drive Profile
	71	Generic Drive Profile
	171	Generic Drive Profile
121	70	Generic Drive Profile
	71	Generic Drive Profile
	171	Generic Drive Profile
100	101	ABB Drive Profile
	103	ABB Drive Profile
102	101	ABB Drive Profile
	103	ABB Drive Profile

NOTE!   Assembly instance 103 can be used with AC/DC drive profile if it contains only drive parameters and not data sets.

Table 5: DCS800 Parameter Settings

Par. No.	Parameter Name	Setting
98.02	COMM MODULE	FIELDBUS

NOTE!   The MODULE STATUS and HOST INDICATION LED should be green. If the network cable is connected to an active network, the green NETWORK STATUS LED should also be lit or blinking. If the configuration is correct, drive parameter group 51 should appear in the parameter list of the drive and show the status of the RDNA-01 configuration parameters.

DeviceNet - Drive Setup

RDNA-01 Network configuration

To enable communication through the DeviceNet network, the module must be configured for the network. There are two ways of setting the module mac address (DIP switch settings, parameter settings); reference RDNA-01 user manual's section Electrical Installation for more information.

NOTE!   Input and Output assemblies connection sizes must match parameter 51.26 VSA I/O. The Input and Output assemblies will always equal eachother. ex: parameter 51.26 is programmed to 5, Input assembly size will be 5 words and Output assembly size will be 5 words.

Table 6: Network configuration with drive parameters

Par. No.	Parameter Name	Setting Range	Default Setting
51.01	MODULE TYPE	(read-only)	DEVICENET
51.02	MODULE MACID	0...63	63
51.03	MODULE BAUD RATE	(0) 125 kBits (1) 250 kBits (2) 500 kBits	0
51.04	HW/SW OPTION	(0) Hardware (1) Software	0
51.05	STOP FUNCTION	(0) Ramp Stop (1) Coast Stop	0
51.06	OUTPUT INSTANCE	20...102	20
51.07	INPUT INSTANCE	70...103	70
51.08	OUTPUT I/O PAR 1	0...32767	0
51.09	OUTPUT I/O PAR 2	0...32767	0
51.10	OUTPUT I/O PAR 3	0...32767	0
51.11	OUTPUT I/O PAR 4	0...32767	0
51.12	INPUT I/O PAR 1	0...32767	0
51.13	INPUT I/O PAR 2	0...32767	0
51.14	INPUT I/O PAR 3	0...32767	0
51.15	INPUT I/O PAR 4	0...32767	0
51.16	OUTPUT I/O PAR 5	0...32767	0
51.17	OUTPUT I/O PAR 6	0...32767	0
51.18	OUTPUT I/O PAR 7	0...32767	0
51.19	OUTPUT I/O PAR 8	0...32767	0
51.20	OUTPUT I/O PAR 9	0...32767	0
51.21	INPUT I/O PAR 5	0...32767	0
51.22	INPUT I/O PAR 6	0...32767	0
51.23	INPUT I/O PAR 7	0...32767	0
51.24	INPUT I/O PAR 8	0...32767	0
51.25	INPUT I/O PAR 9	0...32767	0
51.26	VSA I/O SIZE	1...9	4
51.27*	FBA Par Refresh	(0) DONE (1) REFRESH	(0) DONE

* New settings take effect only when the module power is cycled or when the module receives a Fieldbus Adapter parameter refresh by setting parameter 51.27 to REFRESH

RDNA-01 Examples: **ACS800/DCS800/ACS550/ACQ550/ACH550** - ABB Drives Profile (9 Data words In/Out)

The drive is programmed to use data sets to write Main control word, reference 1, reference 2 and six additional parameters. The drive is programmed to read main status word, actual 1 and actual 2 and six additional parameters. Information on how a data set works can be found in the Overview section of this publication.

NOTE!   ABB recommends using the data sets and index pointers when available in the drive product. Mapping parameters directly may result in slower update times or drive faults and should be used only after all data sets are occupied.

Table 7: I/O Assembly Instance 102 & 103

Drive Parameter	Example setting for ACS800	Example setting for DCS800	Example setting for ACx550
10.01 EXT1 COMMANDS	COMM.CW	MainCtrlWord	COMM
10.03 DIRECTION	REQUEST	N/A	REQUEST
11.03 REF1 SELECT	COMM.REF	SpeedRef2301	COMM
16.04 FAULT RESET SEL	COMM.CW	N/A	COMM
98.02 COMM. PROT SEL	FIELDBUS	Fieldbus	EXT FBA
98.07 COMM PROFILE	ABB DRIVES*	N/A	N/A
51.01 MODULE TYPE	DEVICENET	DEVICENET	DEVICENET
51.02 MODULE MACID	2	3	4
51.03 MODULE BAUD RATE	(5) = 5 MBit/s	(5) = 5 MBit/s	(5) = 5 MBit/s
51.04 HW/SW OPTION	(1) Software	(1) Software	(1) Software
51.05 STOP FUNCTION	(1) Coast Stop	(1) Coast Stop	(1) Coast Stop
51.06 OUTPUT INSTANCE	102	102	102
51.07 INPUT INSTANCE	103	103	103
51.08 OUTPUT I/O PAR 1	(1) Main Control Word	(1) Main Control Word	(1) Main Control Word
51.09 OUTPUT I/O PAR 2	(2) Reference 1	(2) Speed Ref	(2) Reference 1
51.10 OUTPUT I/O PAR 3	(3) Reference 2	(3) Torq Ref A	(3) Reference 2
51.11 OUTPUT I/O PAR 4	(7) AUX DS REF3	(7) DsetXplus3Val1 (702) AuxCtrlWord	(2208) EMERG DEC TIME
51.12 INPUT I/O PAR 1	(4) Status Word	(4) Status Word	(4) Status Word
51.13 INPUT I/O PAR 2	(5) Actual Ref 1 (Speed)	(5) Actual Motor (Speed)	(5) Actual Ref 1 (Speed)
51.14 INPUT I/O PAR 3	(6) Actual Ref 2 (Torque)	(6) Actual Torque	(6) Actual Ref 2 (Torque)
51.15 INPUT I/O PAR 4	(10) Actual Ref 3 (305 FAULT WORD 1)	(10) DsetXplus-3Val1 (802 Auxiliary Status Word)	(106) POWER
51.16 OUTPUT I/O PAR 5	(8) AUX DS REF4	(8) DsetXplus2Val2 (703 AuxCtrlWord2)	(2204) ACCEL TIME 2

RDNA-01 Examples: **ACS800/DCS800/ACS550/ACQ550/ACH550** - ABB Drives Profile (9 Data words In/Out) (continued)

Table 7: I/O Assembly Instance 102 & 103 (continued)

Drive Parameter	Example setting for ACS800	Example setting for DCS800	Example setting for ACx550
51.17 OUTPUT I/O PAR 6	(9) AUX DS REF5	(9) DsetXplus2Val3	(2205) DECEL TIME 2
51.18 OUTPUT I/O PAR 7	(1203) CONST SPEED 2	(13) DsetXplus-4Val1	(1202) CONST SPEED 1
51.19 OUTPUT I/O PAR 8	(1204) CONST SPEED 3	(14) DsetXplus-4Val2	(1203) CONST SPEED 2
51.20 OUTPUT I/O PAR 9	(1205) CONST SPEED 4	(15) DsetXplus-4Val3	(1204) CONST SPEED 3
51.21 INPUT I/O PAR 5	(11) Actual 4 (308 ALARM WORD 1)	(11) DsetXplus3Val2 (101 MotSpeedFilt)	(104) CURRENT
51.22 INPUT I/O PAR 6	(12) Actual 5 (306 FAULT WORD 2)	(12) DsetXplus-3Val3 (108 MotTorq)	(105) TORQUE
51.23 INPUT I/O PAR 7	(114) OP HOUR COUNTER	(16) DsetXplus-5Val1 (901 FaultWord1)	(109) OUTPUT VOLT-AGE
51.24 INPUT I/O PAR 8	(117) DI 6-1 STATUS	(17) DsetXplus-5Val2 (902 FaultWord2)	(115) KWH COUN-TER
51.25 INPUT I/O PAR 9	(121) RO 3-1 STATUS	(18) DsetXplus-5Val3 (903 FaultWord3)	(128) PID 1 SETPNT
51.26 VSA I/O SIZE	9	9	9
51.27 FBA PAR REFRESH **	(1) REFRESH**	(1) REFRESH**	(1) REFRESH**
90.01 AUX DS REF3 or DsetXVal1	(2204) ACCELTIME 2	(701) MainCtrlWord	N/A
90.02 AUX DS REF4 or DsetXVal2	(2205) DECELTIME 2	(2301) SpeedRef	N/A
90.03 AUX DS REF5 or DsetXVal3	(1202) CONST SPEED 1	(2501) TorqRefA	N/A
90.04 DsetXplus2Val1	N/A	(702) AuxCtrlWord	N/A
90.05 DsetXplus2Val2	N/A	(703) AuxCtrlWord2	N/A
90.06 DsetXplus2Val3	N/A	(1202) Const-Speed1	N/A
90.07 DsetXplus4Val1	N/A	(1203) Const-Speed2	N/A
90.08 DsetXplus4Val2	N/A	(1204) Const-Speed3	N/A
90.09 DsetXplus4Val3	N/A	(1205) Const-Speed4	N/A
92.01 DsetXplus1Val1	N/A	(801) MainStatWord	N/A
92.02 MAIN DS ACT1 or DsetXplus1Val2	(102) SPEED	(104) MotSpeed	N/A

RDNA-01 Examples: **ACS800/DCS800/ACS550/ACQ550/ ACH550** - ABB Drives Profile (9 Data words In/Out) (continued)

Table 7: I/O Assembly Instance 102 & 103 (continued)

Drive Parameter	Example setting for ACS800	Example setting for DCS800	Example setting for ACx550
92.03 MAIN DS ACT2 or DsetXplus1Val3	(105) TORQUE	(209) TorqRef2	N/A
92.04 AUX DS ACT3 or DsetXplus3Val1	(305 FAULT WORD 1)	(802) AuxStatWord	N/A
92.05 AUX DS ACT4 or DsetXplus3Val2	(308 ALARM WORD 1)	(101) MotSpeedFilt	N/A
92.06 AUX DS ACT5 or DsetXplus3Val3	(306 FAULT WORD 2)	(108) Mot-Torq	N/A
92.07 DsetXplus5Val1	N/A	(901) FaultWord1	N/A
92.08 DsetXplus5Val2	N/A	(902) FaultWord2	N/A
92.09 DsetXplus5Val3	N/A	(903) FaultWord3	N/A

* This parameter is only in the ACS800 product.

** New settings take effect only when the module power is cycled or when the module receives a Fieldbus Adapter parameter refresh by setting parameter 51.27 to REFRESH.

DeviceNet - Drive Setup

RDNA-01 Examples: **ACS800/ACS550/ACQ550/ACH550** - Generic Drive Profile (2 Data words In/Out)

Do not use Index numbers (1) Main Control, (2) Speed Ref, (4) Main status word and (5) Actual speed when ODVA Profile Assemblies.

Table 8: I/O Assembly Instance 21 & 71

Drive Parameter	Example setting for ACS800, ACx550	Example setting for DCS800
10.01 EXT1 COMMANDS	COMM.CW	MainCtrlWord
10.03 DIRECTION	REQUEST	N/A
11.03 REF1 SELECT	COMM.REF	SpeedRef2301
16.04 FAULT RESET SEL	COMM.CW	N/A
98.02 COMM PROT SEL	FIELDBUS	Fieldbus
98.07 COMM PROFILE	GENERIC*	N/A
51.01 MODULE TYPE	DEVICENET	DEVICENET
51.02 MODULE MACID	2	4
51.03 MODULE BAUD RATE	(0) 125 Kbits	(0) 125 Kbits
51.04 HW/SW OPTION	(1) Software	(1) Software
51.05 STOP FUNCTION	(1) Coast Stop	(1) Coast Stop
51.06 OUTPUT INSTANCE	21	21
51.07 INPUT INSTANCE	71	71
51.08 OUTPUT I/O PAR 1	(0)**	(0)**
51.09 OUTPUT I/O PAR 2	(0)**	(0)**
51.10 OUTPUT I/O PAR 3	(0)**	(0)**
51.11 OUTPUT I/O PAR 4	(0)**	(0)**
51.12 INPUT I/O PAR 1	(0)**	(0)**
51.13 INPUT I/O PAR 2	(0)**	(0)**
51.14 INPUT I/O PAR 3	(0)**	(0)**
51.15 INPUT I/O PAR 4	(0)**	(0)**
51.16 OUTPUT I/O PAR 5	(0)**	(0)**
51.17 OUTPUT I/O PAR 6	(0)**	(0)**
51.18 OUTPUT I/O PAR 7	(0)**	(0)**
51.19 OUTPUT I/O PAR 8	(0)**	(0)**
51.20 OUTPUT I/O PAR 9	(0)**	(0)**
51.21 INPUT I/O PAR 5	(0)**	(0)**
51.22 INPUT I/O PAR 6	(0)**	(0)**
51.23 INPUT I/O PAR 7	(0)**	(0)**
51.24 INPUT I/O PAR 8	(0)**	(0)**
51.25 INPUT I/O PAR 9	(0)**	(0)**
51.26 VSA I/O SIZE	2	2
51.27 FBA PAR REFRESH	(1) REFRESH***	(1) REFRESH***

* This parameter is only in the ACS800 product.
** When output instance 20 or 21 and input instance 70 or 71 are selected the Input & Output I/O Parameters 51.08 - 51.25 MUST be set to the default value of (0)
*** New settings take effect only when the module power is cycled or when the module receives a Fieldbus Adapter parameter refresh by setting parameter 51.27 to REFRESH.

RDNA-01 Examples: **ACS800/ACS550/ACS550/ACQ550/ ACH550** - ODVA Profile (11 total Data words In/Out). Nine of the In/Out Data words are user configured by parameters in group 51.

The example will write the Main Control Word, Speed Ref, and nine user configured parameters. It will read Main status word, Actual speed, and nine user configured parameters. The Assembly Instance 121 & 171 the Main Control, Speed Ref, Main status word, Actual speed do not have to be programmed in group 51 Input/Output I/O parameters.

Do not use Index numbers (1) Main Control, (2) Speed Ref, (4) Main status word and (5) Actual speed when ODVA Profile Assemblies.

Table 9: I/O Assembly Instance 121 & 171

Drive Parameter	ACS800	ACx550	DCS800
10.01 EXT1 COMMANDS	COMM.CW	COMM	MainCtrlWord
10.03 DIRECTION	REQUEST	REQUEST	N/A
11.03 REF1 SELECT	COMM.REF	COMM	SpeedRef2301
16.04 FAULT RESET SEL	COMM.CW	COMM	N/A
98.02 COMM PROT SEL	FIELDBUS	EXT FBA	Fieldbus
98.07 COMM PROFILE	GENERIC*	N/A	N/A
51.01 MODULE TYPE	DEVICENET	DEVICENET	DEVICENET
51.02 MODULE MACID	2	4	5
51.03 MODULE BAUD RATE	(0) 125 Kbits	(0) 125 Kbits	(0) 125 Kbits
51.04 HW/SW OPTION	(1) Software	(1) Software	(1) Software
51.05 STOP FUNCTION	(1) Coast Stop	(1) Coast Stop	(1) Coast Stop
51.06 OUTPUT INSTANCE	121	121	121
51.07 INPUT INSTANCE	171	171	171
51.08 OUTPUT I/O PAR 1	(3) Reference 2	(3) Reference 2	(3) Torq Ref A
51.09 OUTPUT I/O PAR 2	(7) AUX DS REF3	(2204) ACCEL TIME 2	(7) DsetXplus3Val1 (702 AuxCtrlWord)
51.10 OUTPUT I/O PAR 3	(8) AUX DS REF4	(2205) DECEL TIME 2	(8) DsetXplus2Val2 (703 AuxCtrlWord2)
51.11 OUTPUT I/O PAR 4	(9) AUX DS REF5	(1202) CONST SPEED 1	(9) DsetXplus2Val3
51.12 INPUT I/O PAR 1	(6) Actual Ref 2 (Torque)	(6) Actual Ref 2 (Torque)	(6) TorqRef2
51.13 INPUT I/O PAR 2	(10) Actual Ref 3 (305 FAULT WORD 1)	(106) POWER	(10) DsetXplus3Val1 (802 Auxiliary Status Word)
51.14 INPUT I/O PAR 3	(11) Actual 4 (308 ALARM WORD 1)	(104) CURRENT	(11) DsetXplus3Val2 (101 MotSpeedFilt)
51.15 INPUT I/O PAR 4	(12) Actual 5 (306 FAULT WORD 2)	(105) TORQUE	(12) DsetXplus3Val3 (108 MotTorq)
51.16 OUTPUT I/O PAR 5	(1203) CONST SPEED 2	(1203) CONST SPEED 2	(13) DsetXplus4Val1
51.17 OUTPUT I/O PAR 6	(1204) CONST SPEED 3	(1204) CONST SPEED 3	(14) DsetXplus4Val2
51.18 OUTPUT I/O PAR 7	(1205) CONST SPEED 4	(1205) CONST SPEED 4	(15) DsetXplus4Val3
51.19 OUTPUT I/O PAR 8	(1206) CONST SPEED 5	(1206) CONST SPEED 5	(19) DsetXplus6Val1
51.20 OUTPUT I/O PAR 9	(1207) CONST SPEED 6	(1207) CONST SPEED 6	(20) DsetXplus6Val1
51.21 INPUT I/O PAR 5	(114) OP HOUR-COUNTER	(109) OUTPUT VOLT-AGE	(16) DsetXplus5Val1 (901 FaultWord1)

RDNA-01 Examples: **ACS800/ACS550/ACQ550/ACH550** - (continued)
ODVA Profile (11 total Data words In/Out). Nine of the In/Out Data words are user configured by parameters in group 51.

Table 9: I/O Assembly Instance 121 & 171 (continued)

Drive Parameter	ACS800	ACx550	DCS800
51.22 INPUT I/O PAR 6	(117) DI 6-1 STATUS	(115) KWH COUNTER	(17) DsetXplus5Val2 (902 FaultWord2)
51.23 INPUT I/O PAR 7	(121) RO 3-1 STATUS	(128) PID 1 SETPNT	(18) DsetXplus5Val3 (903 FaultWord3)
51.24 INPUT I/O PAR 8	(135) MOTOR 1 TEMP	(141) MWH COUNTER	(22) DsetXplus7Val1 (904 FaultWord4)
51.25 INPUT I/O PAR 9	(143) MOTOR RUN TIME	(145) MOTOR TEMP	(23) DsetXplus7Val2 (906 AlarmWord1)
51.26 VSA I/O SIZE	9**	9**	9**
51.27 FBA PAR REFRESH	(1) REFRESH***	(1) REFRESH***	(1) REFRESH***
90.01 AUX DS REF3 or DsetXVal1	(2204) ACCELTIME 2	N/A	(701) MainCtrlWord
90.02 AUX DS REF4 or DsetXVal2	(2205) DECELTIME 2	N/A	(2301) SpeedRef
90.03 AUX DS REF5 or DsetXVal3	(1202) CONST SPEED 1	N/A	(2501) TorqRefA
90.04 DsetXplus2Val1	N/A	N/A	(702) AuxCtrlWord
90.05 DsetXplus2Val2	N/A	N/A	(703) AuxCtrlWord2
90.06 DsetXplus2Val3	N/A	N/A	0
90.07 DsetXplus4Val1	N/A	N/A	0
90.08 DsetXplus4Val2	N/A	N/A	0
90.09 DsetXplus4Val3	N/A	N/A	0
90.10 DsetXplus6Val1	N/A	N/A	0
90.11 DsetXplus6Val2	N/A	N/A	0
92.01 DsetXplus1Val1	N/A	N/A	(801) MainStatWord
92.02 MAIN DS ACT1 or DsetXplus1Val2	(102) SPEED	N/A	(104) MotSpeed
92.03 MAIN DS ACT2 or DsetXplus1Val3	(105) TORQUE	N/A	(209) TorqRef2
92.04 AUX DS ACT3 or DsetXplus3Val1	(305) FAULT WORD 1	N/A	(802) Auxiliary Status Word
92.05 AUX DS ACT4 or DsetXplus3Val2	(308) ALARM WORD 1	N/A	(101) MotSpeedFilt
92.06 AUX DS ACT5 or DsetXplus3Val3	(306) FAULT WORD 2	N/A	(108) MotTorq
92.07 DsetXplus5Val1	N/A	N/A	(901) FaultWord1
92.08 DsetXplus5Val2	N/A	N/A	(902) FaultWord2
92.09 DsetXplus5Val3	N/A	N/A	(903) FaultWord3
92.10 DsetXplus7Val1	N/A	N/A	(904) FaultWord4
92.11 DsetXplus7Val2	N/A	N/A	(906) AlarmWord1

* This parameter is only in the ACS800 product.

** The value of this parameter should not include Main Control, Speed Ref, Main status word, Actual speed for Assembly 121 & 171.

*** New settings take effect only when the module power is cycled or when the module receives a Fieldbus Adapter parameter refresh by setting parameter 51.27 to REFRESH.

DeviceNet - Drive Setup

FDNA-01 DeviceNet™Adapter Module

Overview

This document contains the basic start-up procedure of the ACS350, ACS355, ACS850, ACH550 with E-Clipse Bypass, ACSM1 and ACS880 drives with the FDNA-01 DeviceNet Adapter Module. The FDNA-01 DeviceNet Adapter Module is an optional device for the ABB ACS350, ACS355, ACS850, ACH550 with E-Clipse Bypass, ACSM1, and ACS880 drive which enables the connection of the drive to a DeviceNet network. Reference the specific drive user manual and FDNA-01 user's manuals for additional product information.

With the FDNA-01 module, the DeviceNet network may employ either the ODVA AC/DC Drive profile or the ABB Drives profile. The two profiles are converted to the DCU profile for the ACS350, ACS355 (detailed in the drive documentation) by the FDNA-01 module. In addition, two Transparent modes for 16 and 32 bit words respectively are available. With the Transparent modes, no data conversion takes place.

Assembly objects

I/O Assembly Instances may also be referred to as Block Transfer of data. Intelligent devices realizing a Functional Profile, such as the FDNA-01, have several objects. Since it is not possible to transmit more than one object data through a single connection, it is practical and more efficient to group attributes from different objects into a single I/O connection (for example a Polled Connection) using the Assembly object. The Assembly object acts as a tool for grouping these attributes.

The Assembly selections described above are, in fact, instances of the Assembly object class. The FDNA-01 uses Static assemblies (in other words, fixed groupings of different object data only).

DeviceNet - Drive Setup

FDNA-01 Installation

Mechanical installation

1. Install clamping plate and fieldbus option ground plate, clamps and screws.

2. Insert the FDNA-01 into its specified slot in the drive. The FDNA-01 must be only installed in Slot 3 in the ACS850 or ACSM1 drive. The FDNA-01 can be installed into any slot on the ACS880 drive.

3. Using the encapsulated mounting screw included in the module kit and fasten the module to the drive.

Electrical installation

4. Arrange the bus cables as far away from the motor cables as possible. Avoid parallel runs. See the FDNA-01 User's Manual for connection and bus termination details.

5. The DeviceNet bus cable is connected to terminal block X1 on the FDNA-01.

Table 1: Terminal Block Connections

X1		Description	Color
1	V-	Network power supply ground (0V DC)	Black
2	CAN_L	CAN_L bus line	Blue
3	SHLD	Network cable shield	Bare
4	CAN_H	CAN_H bus line	White
5	V+	Isolated 24V DC voltage supply	Red

FDNA-01 Drive protocol & profile configuration

Drive protocol & profile configuration

The detailed procedure of activating the drive for communication with the module is dependent on the drive type. Parameter(s) must be adjusted to activate the desired communication port. Refer to the User/Firmware Manual of the drive for additional protocol and profile settings.

6. Power up the drive.

7. Set Parameters as follows:

Table 2: ACS350, ACS355 and ACH550 E-Clipse Bypass Parameter Settings

Par. no.	Parameter Name	Setting
98.02	COMM PROT SEL	(4) EXT FBA

Table 3: ACS850, ACSM1 Parameter Settings

Par. no.	Parameter Name	Setting
50.01	FBA ENABLE	(1) ENABLE

Table 4: ACS880 Parameter Settings

Par. no.	Parameter Name	Setting
50.01	FBA A ENABLE	(3) OPTION SLOT 3

NOTE! *The HOST LED should be green. If the network cable is connected to an active network, the MODULE and NETWORK LEDs should also be lit or blinking green. If the configuration is correct, drive parameter group 51 should appear in the parameter list of the drive and show the status of the FDNA-01 configuration parameters.*

DeviceNet - Drive Setup

FDNA-01 I/O assembly instances

The table below highlights the amount of data that will be transmitted and received from the fieldbus controller for a given profile. The column labeled Size will need to be programmed in the fieldbus controller. The Profile column states the profile (Main Control, Status Word) the drive will be using for control.

Table 5: Input & Output Assembly Instances

Name	Output Instance	Input Instance	Size (bytes)	Profile
Basic Speed Control	20	70	4	ODVA AC/DC Drive
Enhanced Speed Control	21	71	4	ODVA AC/DC Drive
Basic Speed and Torque Control	22	72	6	ODVA AC/DC Drive
Enhanced Speed and Torque Control	23	73	6	ODVA AC/DC Drive
Basic Speed Control plus Drive Parameters	120	170	24	ODVA AC/DC Drive
Enhanced Speed Control plus Drive Parameters	121	171	24	ODVA AC/DC Drive
Basic Speed and Torque Control plus Drive Parameters	122	172	26	ODVA AC/DC Drive
Enhanced Speed and Torqued Control plus Drive Parameters	123	173	26	ODVA AC/DC Drive
ABB Drives Profile with Set Speed	801	851	4	ABB Drives Profile
ABB Drives Profile with Set Speed and Set Torque	802	852	6	ABB Drives Profile
ABB Drives Profile with Set Speed plus Drive Parameters	901	951	24	ABB Drives Profile
ABB Drives Profile with Set Speed and Set Torque plus Drive Parameters	902	952	26	ABB Drives Profile
Transparent16 w/One	811	861	4	Transparent16 Profile
Transparent16 w/Two	812	862	6	Transparent16 Profile
Transparent16 w/One plus Drive Parameters	911	961	24	Transparent16 Profile
Transparent16 w/Two plus Drive Parameters	912	962	26	Transparent16 Profile
Transparent32 w/One	821	871	8	Transparent32 Profile
Transparent32 w/Two	822	872	12	Transparent32 Profile
Transparent32 w/One plus Drive Parameters	921	971	28	Transparent32 Profile
Transparent32 w/Two plus Drive Parameters	922	972	32	Transparent32 Profile

FDNA-01 Network configuration

To enable communication through the DeviceNet network, the module must be configured for the network. The following parameters will need to be set according to the configuration of the DeviceNet network.

Table 6: Network configuration with drive parameters

Par. No.	Parameter Name	Setting Range	Default Setting
51.01	MODULE TYPE	(read-only)	DEVICENET
51.02	MAC ID	0 TO 63	63
51.03	BAUD RATE	(0) 125 kbit/s (1) 250 kbit/s (2) 500 kbit/s	(0) 125 kbit/s
51.04	RESERVED	0	0
51.05	ODVA STOP FUNCTION	(0) Ramp Stop (1) Coast Stop	(0) Ramp Stop
51.06	OUTPUT INSTANCE	See table 3	20
51.07	OUTPUT NUM PARS	1 TO 10[1]	10
51.08	INPUT INSTANCE	See table 3	70
51.09	INPUT NUM PARS	1 TO 10[2]	10
51.10	ODVA SPEED SCALE	See table 5	128
51.11	ODVA TORQUE SCALE	See table 6	128
51.12 ... 51.26	RESERVED	0	0
51.27*	FBA Par Refresh	(0) DONE (1) REFRESH	(0) DONE

[1] *This parameter is only used when the Output Assembly Instance is 120, 121, 122, 123, 901 or 902. It should always be set to the default, 10, except as described in the appendix of FDANA-01 User's Manual.*

[2] *This parameter is only used when the Input Assembly Instance is 170, 171, 172, 173, 951, or 952. It should always be set to the default, 10, except as described in the appendix of the FDNA-01 User's Manual.*

* New settings take effect only when the module power is cycled or when the module receives a Fieldbus Adapter parameter refresh by setting parameters 51.27 to REFRESH.

FDNA-01 Network configuration (continued)

Table 7: ODVA Speed Scaling

ODVA Speed Scale Value[1]	Drive Parameter Speed Scale Value[2]	Speed Unit
-5	123	32 RPM
-4	124	16 RPM
-3	125	8 RPM
-2	126	4 RPM
-1	127	2 RPM
0 (default)	128	1 RPM
1	129	0.5 RPM
2	130	0.25 RPM
3	131	0.125 RPM
4	132	0.0625 RPM
5	133	0.03125 RPM

Table 8: ODVA Torque Scaling

ODVA Torque Scale Value[1]	Drive Parameter Torque Scale Value[2]	Torque Unit
-5	123	32 NM
-4	124	16 NM
-3	125	8 NM
-2	126	4 NM
-1	127	2 NM
0 (default)	128	1 NM
1	129	0.5 NM
2	130	0.25 NM
3	131	0.125 NM
4	132	0.0625 NM
5	133	0.03125 NM

[1] *Use ODVA Speed/Torque Scale Value when reading/writing ODVA Speed or Torque scale via the AC/DC Drive Object (2Ah). When written via AC/DC Drive Object, the new value takes effect immediately.*

[2] *Use Drive Parameter Speed/Torque Scale Value when reading/writing ODVA Speed or Torque Scale via the drive panel, drive parameter object (90h) and drive configuration object (91h). When written via these methods, the new value takes effect after the drive is repowered or a Fieldbus Adapter Parameter Refresh is given.*

FDNA-01 Examples: **ACS350, ACS355 and ACH550 with E-Clipse Bypass** - ABB Drives Profile (13 total Data words In/ Out). Ten of the In/Out Data words are user configured by parameters in group 54 and 55.

The example will write the Main Control Word, Speed Ref, Torque Ref, Acceler Time 2 and Deceler Time 2. It will read Main status word, Actual speed, Actual Torque, Current and DC Bus Voltage and KW Hours from the E-Clipse Bypass unit.

Table 9: I/O Assembly Instance 902 & 952

Drive Parameter	Example setting for ACS350	Example setting for E-Clipse Bypass
10.01 EXT 1 COMMANDS	COMM	n/a
10.03 REF DIRECTION	REQUEST	n/a
11.03 REF1 SELECT	COMM	n/a
16.01 START/STOP	n/a	2 = COMM
16.04 FAULT RESET SEL	COMM	n/a
16.07 RESET SRC	n/a	2 = COMM
98.02 COMM PROT SEL	Enable	Enable
51.01 MODULE TYPE	DEVICENET	DEVICENET
51.02 MAC ID	5	6
51.03 BAUD RATE	(0) 125 kbit/s	(0) 125 kbit/s
51.05 ODVA STOP FUNCTION	(0) Ramp	(0) Ramp
51.06 OUTPUT INSTANCE	902	902
51.07 OUTPUT NUM PARS	10	10
51.08 INPUT INSTANCE	952	952
51.09 INPUT NUM PARS	10	10
51.10 ODVA SPEED SCALE	128	128
51.11 ODVA TORQUE SCALE	128	128
54.01 FB DATA INPUT 1	(104) CURRENT	(104) CURRENT**
54.02 FB DATA INPUT 2	(107) DC BUS VOLTAGE	(107) DC BUS VOLTAGE**
54.03 FB DATA INPUT 3	0	(10106) KW HOURS from Eclipse unit***
54.04 ... 54.10 FB DATA INPUT	0	0
55.01 FB DATA OUTPUT 1	(2205) ACCELER TIME 2	(2205) ACCELER TIME 2**
55.02 FB DATA OUTPUT 2	(2206) DECELER TIME 2	(2206) DECELER TIME 2**
55.03 ... 55.10 FB DATA OUTPUT	0	0
51.27 FBA PAR REFRESH	(1) REFRESH*	(1) REFRESH*

* New settings take effect only when the module power is cycled or when the module receives a Fieldbus Adapter parameter refresh by setting parameter 51.27 to REFRESH.

** To map ACH550 parameters in groups 54 or 55, program parameters 5401...5410 or 5501...5510 with the acutal ACH550 parameter value. For example to read ACH550 parameter 0106 (Power), program parameter 5401 to 0106.

*** To map E-Clipse Bypass parameters in groups 54 or 55, program parameters 5401...5410 or 5501...5510 and add 10,000 to the E-Clipse Bypass parameter value. For example to read E-Clipse Bypass parameter 0106 (KW Hours), program parameter 5401 to 10106.

DeviceNet - Drive Setup

FDNA-01 Examples: **ACS350, ACS355 and ACH550 with E-Clipse Bypass** - ODVA AC/DC Drives Profile (3 Data words In/Out)

The example will write the ODVA Main Control Word, Speed Ref and Torque Ref. It will read ODVA Main status word, Actual speed, Actual Torque.

Table 10: I/O Assembly Instance 23 & 73

Drive Parameter	Example setting for ACS350, ACS355	Example setting for E-Clipse Bypass
10.01 EXT 1 COMMANDS	COMM	n/a
10.03 REF DIRECTION	REQUEST	n/a
11.03 REF1 SELECT	COMM	n/a
16.01 START/STOP	n/a	2 = COMM
16.04 FAULT RESET SEL	COMM	n/a
16.07 RESET SRC	n/a	2 = COMM
98.02 COMM PROT SEL	Enable	Enable
51.01 MODULE TYPE	DEVICENET (READ ONLY)	DEVICENET (READ ONLY)
51.02 MAC ID	(101) ABB DRIVES PROFILE	(101) ABB DRIVES PROFILE
51.03 BAUD RATE	(0) 125 kbit/s	(0) 125 kbit/s
51.06 OUTPUT INSTANCE	23	23
51.08 INPUT INSTANCE	73	73
51.10 ODVA SPEED SCALE	128	128
51.11 ODVA TORQUE SCALE	128	128
51.27* FBA PAR REFRESH	(1) REFRESH	(1) REFRESH

* New settings take effect only when the module power is cycled or when the module receives a Fieldbus Adapter parameter refresh by setting parameter 51.27 to REFRESH.

FDNA-01 Examples: **ACS850, ACSM1** - ABB Drives Profile (13 Data words In/Out). Ten of the In/Out Data words are user configured by parameter group 52 and 53.

The example will write the Main Control Word, Speed Ref, Torque Ref, Acceler Time 2 and Deceler Time 2, and Constant Speed 1-3. It will read Main status word, Actual speed, Actual Torque, Motor Current, DC Bus Voltage and Encoder speed.

Every parameter in the ACS880 when mapped as a dataword is user selectable via parameter group 52, 53, 55 and 56 as 16 bit or 32 bit format.

Table 11: I/O Assembly Instance 902 & 952

Drive Parameter	Example setting for ACS850	Example setting for ACSM1	Example setting for DCS800
16.15 Menu set sel	Load long	n/a	n/a
10.01 Ext1 start func	FBA	FBA	n/a
20.01 Ext1 commands	n/a	n/a	Fieldbus A
21.01 Speed ref1 sel	FBA ref1	n/a	n/a
22.11 Speed ref1 source	n/a	n/a	FB A ref1
24.01 SPEED REF1 SEL	n/a	FBA REF1	n/a
50.01 Fba enable	Enable	Enable	Option slot 3
51.01 MODULE TYPE	DEVICENET (READ ONLY)	DEVICENET (READ ONLY)	DEVICENET (READ ONLY)
51.02 MAC ID	5	6	7
51.03 BAUD RATE	(0) 125 kbit/s	(0) 125 kbit/s	(0) 125 kbit/s
51.04 DRIVE PROFILE	0	0	0
51.06 OUTPUT INSTANCE	902	902	902
51.07 OUTPUT NUM PARS	10	10	10
51.08 INPUT INSTANCE	952	952	952
51.09 INPUT NUM PARS	10	10	10
52.01 DATA IN 1	123 (MOTOR POWER) - MSW	1.17 (MOTOR TEMP)	(3501) 16bit - Motor estimated temperature
52.02 DATA IN 2	0 (MOTOR POWER) - LSW	1.04 (MOTOR CURRENT) - MSW	(107) 32bit - MOTOR CURRENT - MSW
52.03 DATA IN 3	105 (MOTOR CURRENT)	0 (MOTOR CURRENT) - LSW	(0) MOTOR CURRENT - LSW
52.04 DATA IN 4	107 (DC-VOLTAGE) - MSW	107 (DC-VOLTAGE) - MSW	(111) 16bit - DC-VOLTAGE - MSW
52.05 DATA IN 5	0 (DC-VOLTAGE) - LSW	0 (DC-VOLTAGE) - LSW	(104) 16bit - Encoder 1 speed filtered
52.06 DATA IN 6	108 (ENCODER1 SPEED) - MSW	108 (ENCODER1 SPEED) - MSW	0

FDNA-01 Examples: **ACS850, ACSM1** - (continued)
ABB Drives Profile (13 Data words In/Out). Ten of the In/Out Data words are user configured by parameter group 52 and 53.

Table 11: I/O Assembly Instance 902 & 952 (continued)

Drive Parameter	Example setting for ACS850	Example setting for ACSM1	Example setting for DCS800
52.07 DATA IN 7	0 (ENCODER1 SPEED) - LSW	0 (ENCODER1 SPEED) - LSW	0
52.08 DATA IN 8	0	0	0
52.09 DATA IN 9	0	0	0
52.10 DATA IN 10	0	0	0
53.01 DATA OUT 1	2204 (Acc time2) - MSW	2503 (Acc time) - MSW	(2226) 16bit - Constant speed 1
53.02 DATA OUT 2	0 (Acc time2) - LSW	0 (Acc time2) - LSW	(2227) 16bit - Constant speed 2
53.03 DATA OUT 3	2205 (Dec time2) - MSW	2504 (Dec time) - MSW	(2228) 16bit - Constant speed 3
53.04 DATA OUT 4	0 (Dec time2) - LSW	0 (Dec time) - LSW	(2314) 32bit - Acceleration time 2 - MSW
53.05 DATA OUT 5	2606 (Const speed sel1)	2408 (CONST SPEED)	(0) Acceleration time 2 - LSW
53.06 DATA OUT 6	2607 (Const speed sel2)	2410 (SPEED REF JOG1)	(2315) 32bit - Deceleration time 2 - MSW
53.07 DATA OUT 7	2608 (Const speed sel3)	2411 (SPEED REF JOG2)	(0) Deceleration time 2 - LSW
53.08 DATA OUT 8	0	0	0
53.09 DATA OUT 9	0	0	0
53.10 DATA OUT 10	0	0	0
51.27 FBA PAR REFRESH	(1) REFRESH**	(1) REFRESH**	(1) REFRESH**

** New settings take effect only when the module power is cycled or when the module receives a Fieldbus Adapter parameter refresh by setting parameter 51.27 to REFRESH.

MSW = *Most Significant Word*
LSW = *Less Significant Word*

DeviceNet - Drive Setup

FDNA-01 Examples: **ACS850, ACSM1** - ODVA AC/DC Drives Profile (3 Data words In/Out).

The example will write the ODVA Control Word, Speed Ref sndTorque Ref. It will read ODVA Main status word, Actual speed, Actual Torque.

Table 12: I/O Assembly Instance 23 & 73

Drive Parameter	Example setting for ACS850	Example setting for ACSM1	Example setting for DCS800
16.15 Menu set sel	Load long	n/a	n/a
10.01 Ext1 start func	FBA	FBA	n/a
20.01 Ext1 commands	n/a	n/a	Fieldbus A
21.01 Speed ref1 sel	FBA ref1	n/a	n/a
22.11 Speed ref1 source	n/a	n/a	FB A ref1
24.01 SPEED REF1 SEL	n/a	FBA REF1	n/a
50.01 Fba enable	Enable	Enable	Option slot 3
51.01 MODULE TYPE	DEVICENET (READ ONLY)	DEVICENET (READ ONLY)	DEVICENET (READ ONLY)
51.02 MAC ID	4	5	6
51.03 BAUD RATE	(0) 125 kbit/s	(0) 125 kbit/s	(0) 125 kbit/s
51.06 OUTPUT INSTANCE	23	23	23
51.08 INPUT INSTANCE	73	73	73
51.10 ODVA SPEED SCALE	128	128	128
51.11 ODVA TORQUE SCALE	128	128	128
51.27* FBA PAR REFRESH	(1) REFRESH	(1) REFRESH	(1) REFRESH

New settings take effect only when the module power is cycled or when the module receives a Fieldbus Adapter parameter refresh by setting parameter 51.27 to REFRESH.

DeviceNet - Drive Setup

Notes:

Standard ABB Drive on DeviceNet (RDNA-01) with 1769-SDN DeviceNet™ Scanner

Overview

This document contains an overview on how to add the ABB Drive (RDNA-01) that is programmed to nine input words and nine output words to the DeviceNet Scan List with RSNetWorx for DeviceNet. The document also contains information on how to convert 16 bit words (INT) to 32 bit words (DINT) and how to switch DINT to INT with RSLogix 5000.

RDNA-01 Installation

1. Go online and scan the DeviceNet network that needs to be configured. The following instructions will setup the drive to send nine words and receive nine words of information.
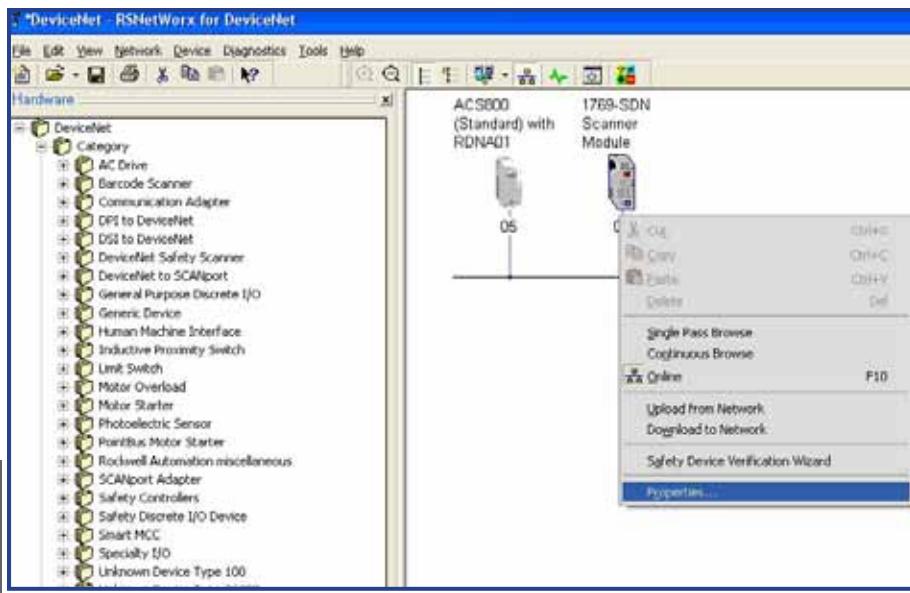
2. Right Click on the 1769-SDN Scanner Module and select properties.

RDNA-01 Installation (continued)

3. The following screen will open. Click the <u>Module</u> tab.
   Select upload the configuration from the scanner.

| 1769-SDN Scanner Module | ? × |

General | Module | Scanlist | Input | Output | ADR | Summary |

1769-SDN Scanner Module

<u>N</u>ame: [1769-SDN Scanner Module]

<u>D</u>escription: [   ]

Add<u>r</u>ess: [3] ▲▼

Device Identity [Primary]

Vendor:	Rockwell Automation - Allen-Bradley [1]
Type:	Communication Adapter [12]
Device:	1769-SDN Scanner Module [105]
Catalog:	1769-SDN
Revision:	2.002

← →

OK | Cancel | Apply | Help

4. Make sure the following information below is correct.

1769-SDN Scanner Module

General | **Module** | **Scanlist** | **Input** | **Output** | **ADR** | **Summary**

Interscan Delay: `10` msec

Foreground to Background Poll Ratio: `1`

Upload from Scanner

Download to Scanner

Module Defaults

Slave Mode...

Advanced...

The PLC used is a CompactLogix

1769-SDN:

Platform: `CompactLogix`

Slot: `3`

The slot the 1769-SDN is installed

OK | Cancel | Apply | Help

5. Click the <u>Scanlist</u> tab.

This window displays all devices available to be added to the DeviceNet Scanner

This window displays all devices in the DeviceNet Scan List

RDNA-01 Installation (continued)

6. Select a device from the available device list and click the $\boxed{>}$ button.
    This will move the selected device into the scan list.

7. Select a device under the Scan List.
    Click Edit I/O Parameters.

Electronic Keying is active by default.

Electronic Keying has been disabled for this example.

RDNA-01 Installation (continued)

8. The default I/O size is 4 bytes (2 words). This setting informs the DeviceNet scanner to the amount of data that will be sent and received. Click OK.

The drive parameter 51.26 (VSA I/O Size) will set the amount of data that will be transmitted and received by the DeviceNet scanner. The Input and Output size will need to match drive parameter 51.26 (VSA I/O Size). The example below shows the drive parameter 51.26 (VSA I/O Size) programmed to 9 words IN/OUT from the RDNA-01. The DeviceNet scanner will transmit nine words and receive nine words every scan.

NOTE!   *If the Input Assembly is 171, the value of Input Assembly size, needs to equal drive parameter 51.26 plus two additional words. If the Output Assembly is 121, the value of Output Assembly size, needs to equal drive parameter 51.26 plus two additional words.*
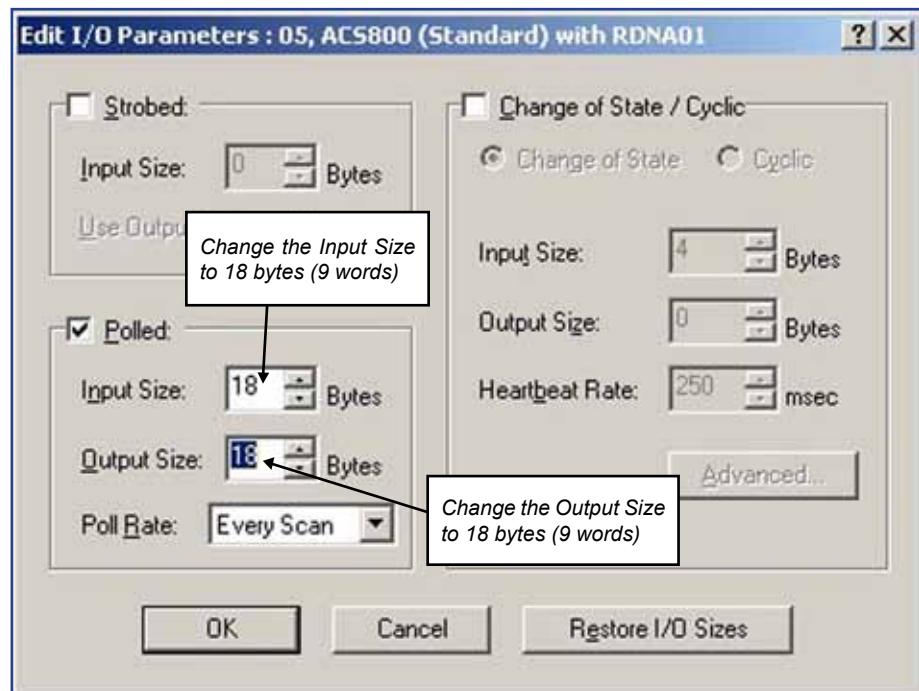
RDNA-01 Installation (continued)

9.   Select Yes from the scanner configuration pop-up messages.

The DeviceNet scanner mapped all nine input words into five 32 bit (DINT) and word five is only using 16 bits of the 32 bit word. The DeviceNet scanner did the same for the output data. The I/O data will be remapped in the PLC into 16 bit words. (INT's).
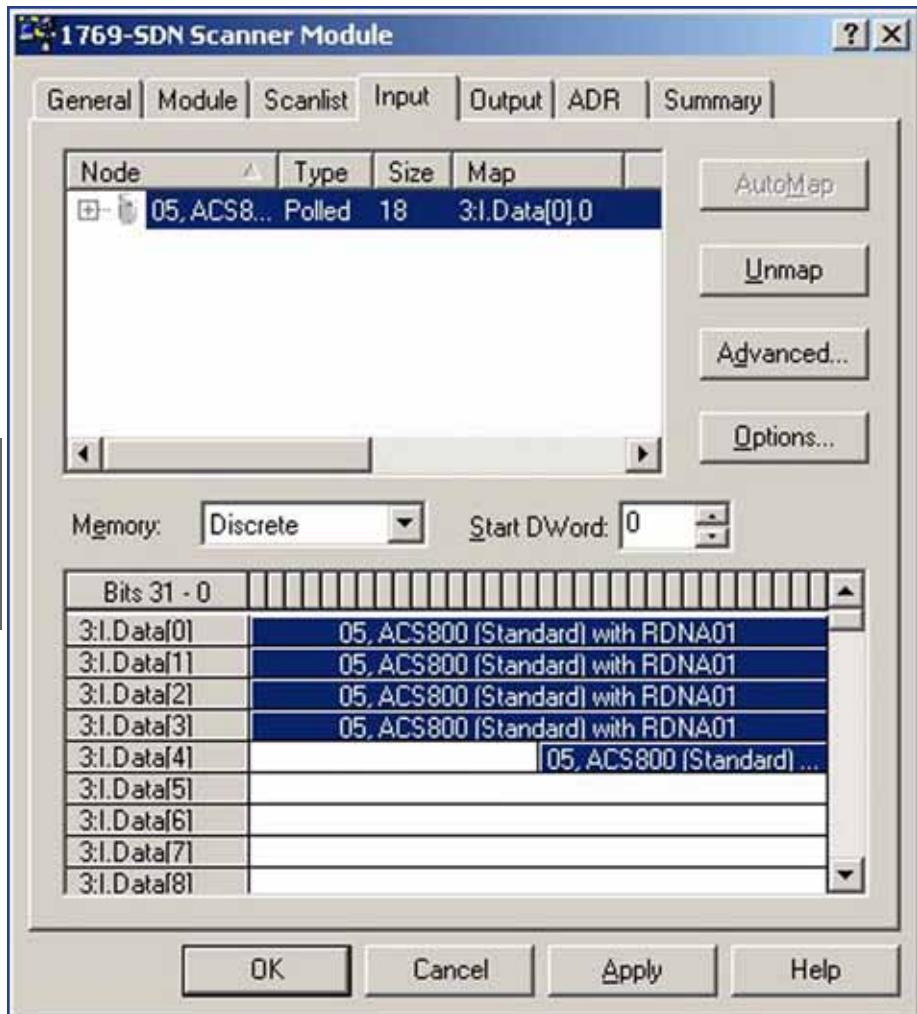
RDNA-01 Installation (continued)

10. Click Apply. Make sure the PLC is in Program Mode.
    Then Click <u>Yes</u>.

Scanner Configuration Applet

Do you want to download these changes to the device?

| Yes | No | Cancel |
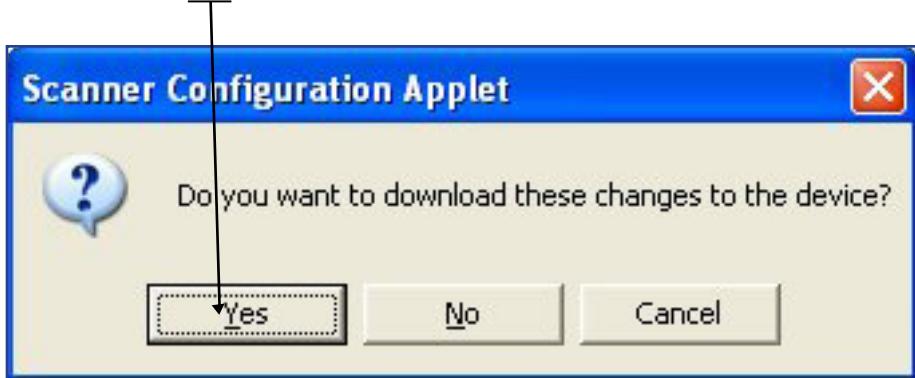
11. Enter a rung with a COPY FILE instruction in RSLogix 5000. Create a
    PLC tag array of ten (INT) named INPUT_INT_ARRAY. This COPY FILE
    instruction will remap five (DINT) 32 bit words to ten (INT) 16 bit words.

Source (32 Bit Words)	Destination (16 Bit Words)	
LOCAL:3.I.DATA[0]	INPUT_INT_ARRAY[0]	INPUT_INT_ARRAY[1]
LOCAL:3.I.DATA[1]	INPUT_INT_ARRAY[2]	INPUT_INT_ARRAY[3]
LOCAL:3.I.DATA[2]	INPUT_INT_ARRAY[4]	INPUT_INT_ARRAY[5]
LOCAL:3.I.DATA[3]	INPUT_INT_ARRAY[6]	INPUT_INT_ARRAY[7]
LOCAL:3.I.DATA[4]	INPUT_INT_ARRAY[8]	INPUT_INT_ARRAY[9]

The length in the <u>COPY FILE</u> instruction refers to the Destination length
(10 - INT's)
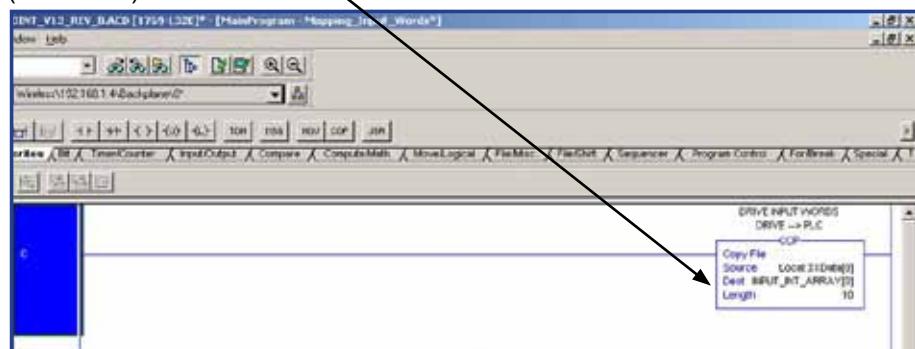
DeviceNet - PLC Setup

RDNA-01 Installation (continued)

12. Enter a rung with a COPY FILE instruction in RSLogix 5000. Create a PLC tag array of ten (INT) named OUTPUT_INT_ARRAY. This COPY FILE instruction will remap ten (INT) 16 bit words to five (DINT) 32 bit words.

Source (16 Bit Words)		Destination (32 Bit Words)
OUTPUT_INT_ARRAY[0]	OUTPUT_INT_ARRAY[1]	LOCAL:3.O.DATA[0]
OUTPUT_INT_ARRAY[2]	OUTPUT_INT_ARRAY[3]	LOCAL:3.O.DATA[1]
OUTPUT_INT_ARRAY[4]	OUTPUT_INT_ARRAY[5]	LOCAL:3.O.DATA[2]
OUTPUT_INT_ARRAY[6]	OUTPUT_INT_ARRAY[7]	LOCAL:3.O.DATA[3]
OUTPUT_INT_ARRAY[8]	OUTPUT_INT_ARRAY[9]	LOCAL:3.O.DATA[4]

The length in the <u>COPY FILE</u> instruction refers to the Destination length (5 - DINT's)
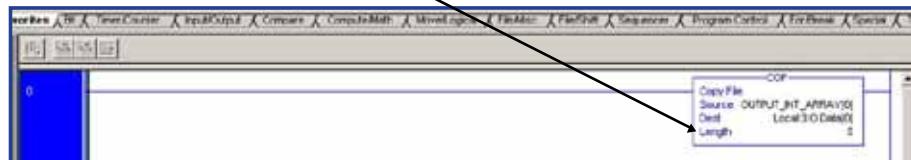
A sample INT to DINT RSLogix 5000 PLC program can be found at:
http://www.abb.com/product/ap/seitp322/6eca4f6b6e92e987c1257941006a3f70.aspx

Standard ABB Drive on DeviceNet (FDNA-01) with 1769-SDN DeviceNet™ Scanner

Overview

This document contains an overview on how to add the ABB Drive (FDNA-01) that is programmed to three input words and three output words to the DeviceNet Scan List with RSNetWorx for DeviceNet. The document will assist in remapping the 16 bit words to 32 bit words.

FDNA-01 Installation

1. Go online and scan the DeviceNet network that needs to be configured. The following instructions will setup the drive to send 13 words and receive 13 words of information.
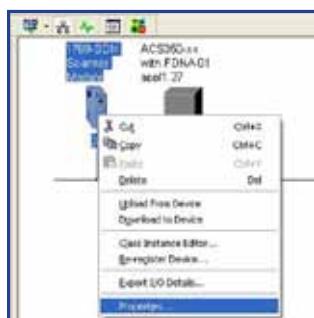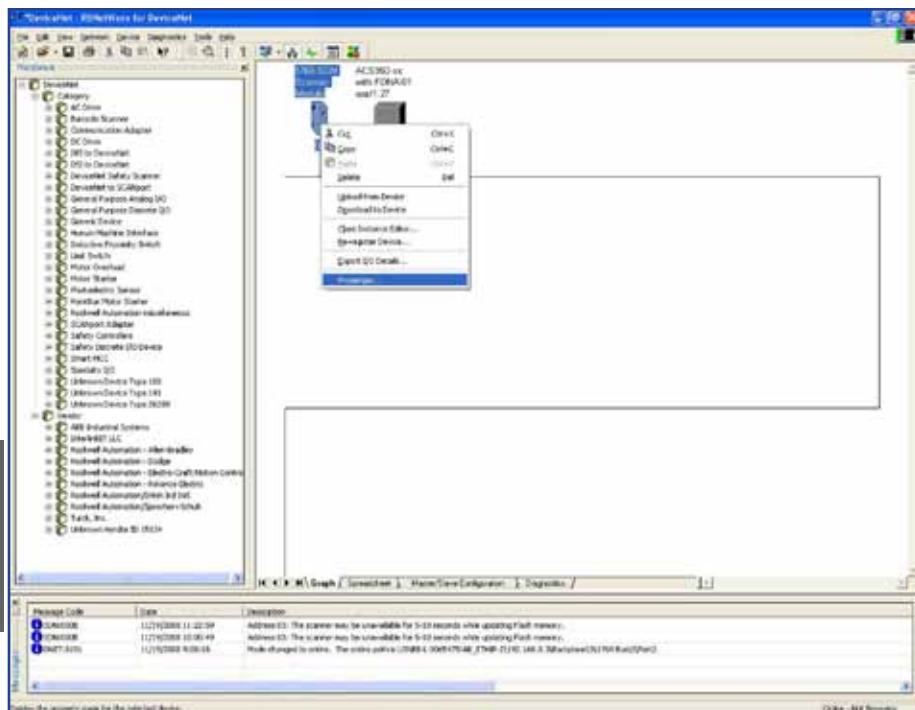
2. Right Click on the 1769-SDN Scanner Module and select properties.

DeviceNet - PLC Setup

FDNA-01 Installation (continued)

3. The following screen will open. Click the <u>Module</u> tab.
    Select upload the configuration for the scanner.
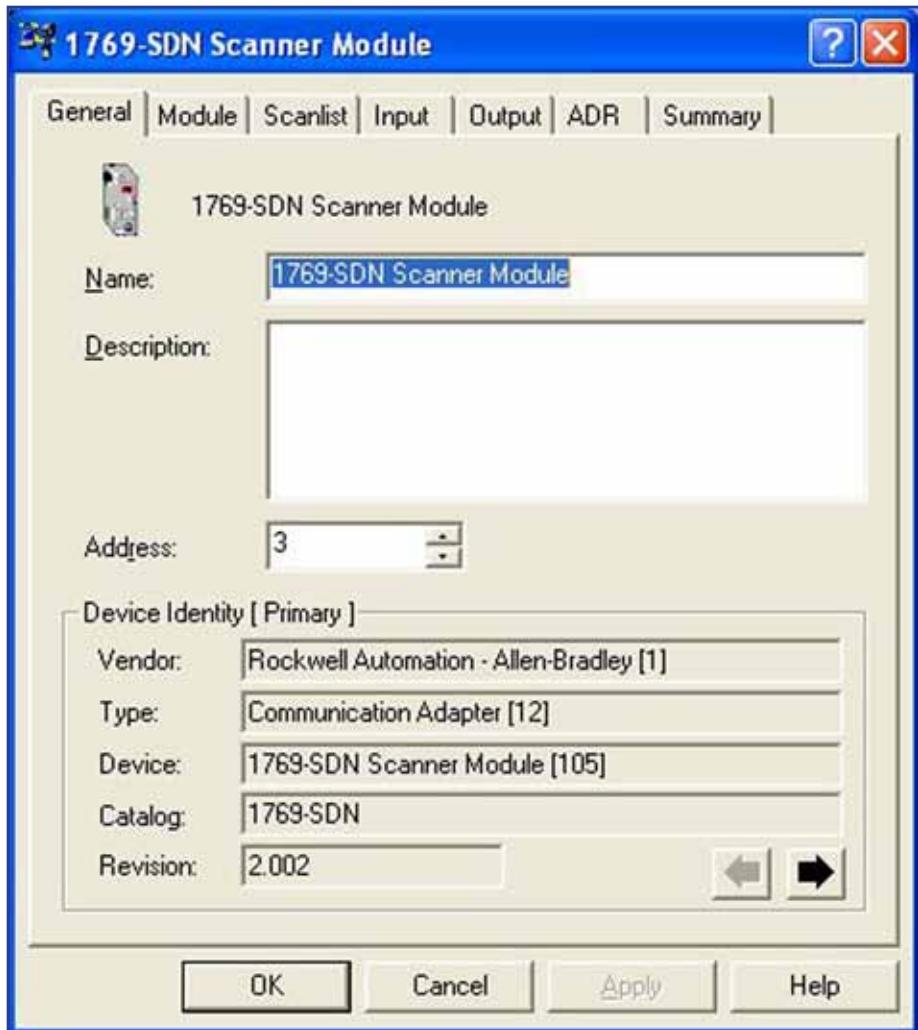
FDNA-01 Installation (continued)

4. Make sure the following information below is correct.
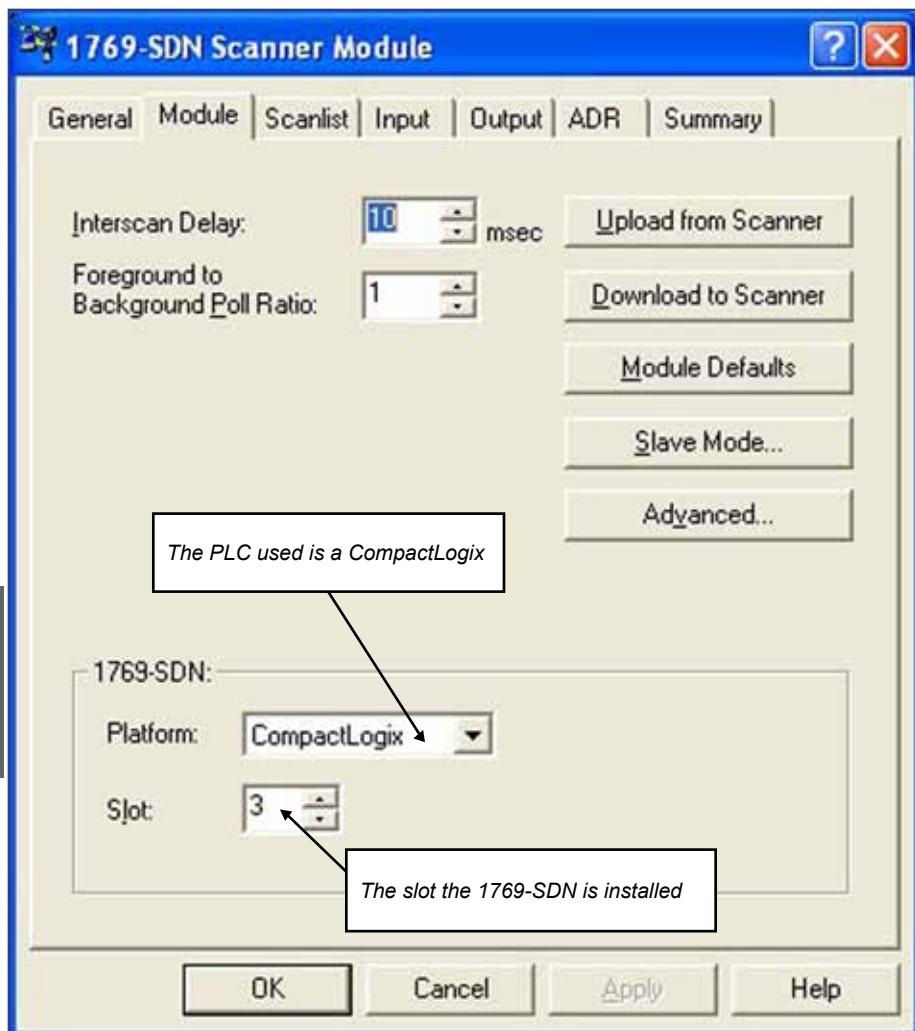
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FDNA-01 Installation (continued)

5. Click the Scanlist tab.

This window displays all devices available to be added to the DeviceNet Scanner

This window displays all devices in the DeviceNet Scan List

FDNA-01 Installation (continued)

6. Select a device from the available device list and click the ☐ button. This will move the selected device into the scan list.

7. Select a device under the Scan List. Click Edit I/O Parameters.

1769-SDN Scanner Module

General | Module | Scanlist | Input | Output | ADR | Summary

Available Devices:

Scanlist:

☐ 05, ACS350-xx with FDN...

☑ Automap on Add

Upload from Scanner...

Download to Scanner...

Edit I/O Parameters...

☑ Node Active

Electronic Key:
☐ Device Type
☐ Vendor
☐ Product Code
☐ Major Revision
☐ Minor ☐ or higher

OK

Help

Electronic Keying is active by default.

Electronic Keying has been disabled for this example.

DeviceNet - PLC Setup
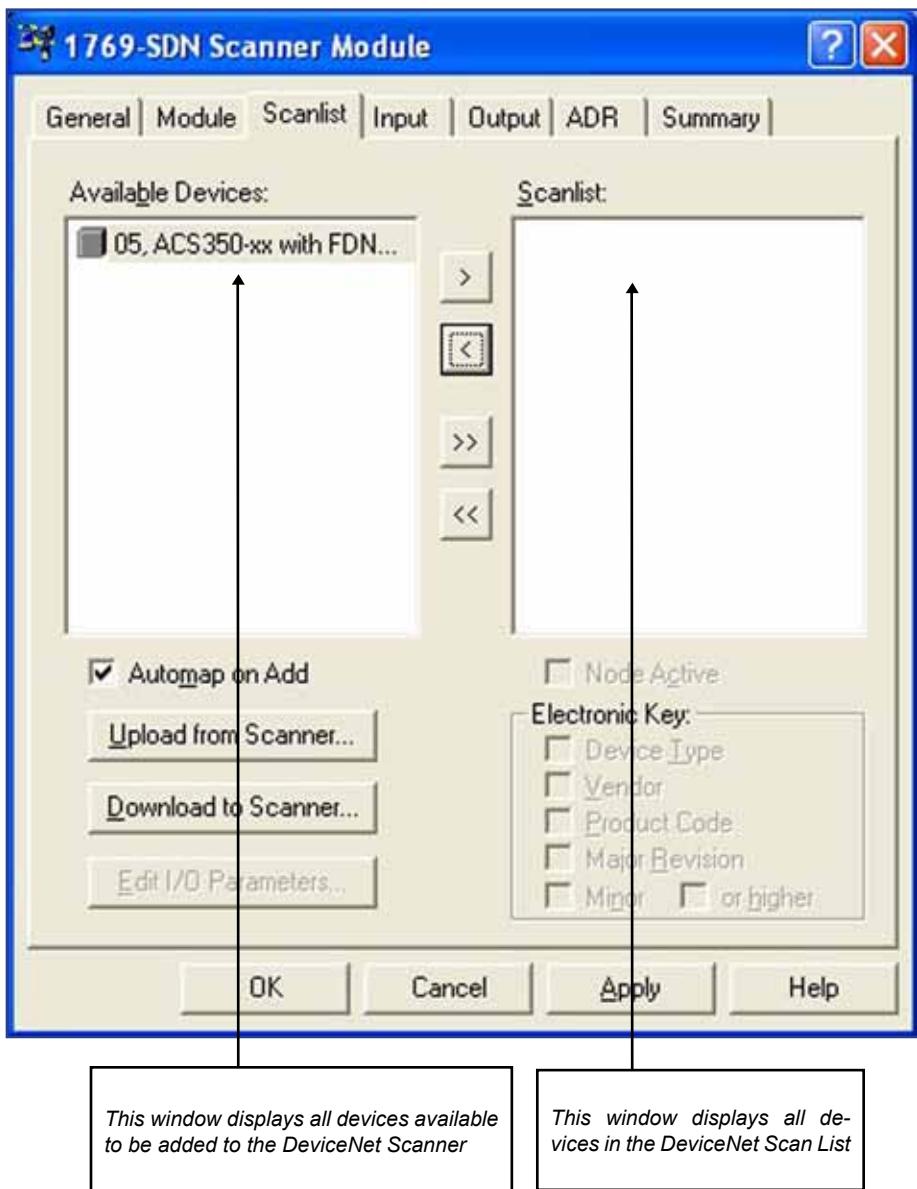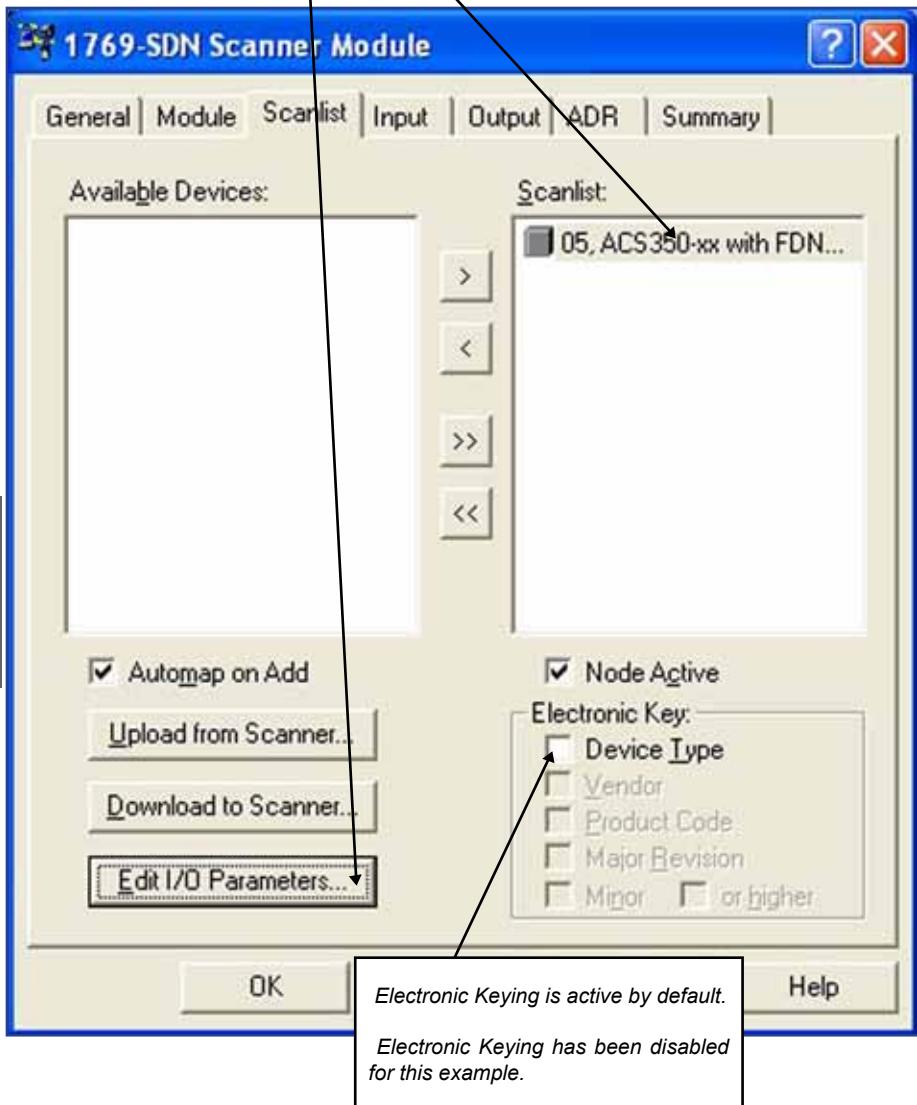
FDNA-01 Installation (continued)

The table below highlights the amount of data that will be transmitted and received from the fieldbus controller for a given profile. The column labeled Size will need to be programmed in the fieldbus controller. The Profile column states the profile (Main Control, Status Word) the drive will be using for control.

Table 1: Input & Output Assembly Instances

Name	Output Instance	Input Instance	Size (bytes)	Profile
Basic Speed Control	20	70	4	ODVA AC/DC Drive
Enhanced Speed Control	21	71	4	ODVA AC/DC Drive
Basic Speed and Torque Control	22	72	6	ODVA AC/DC Drive
Enhanced Speed and Torque Control	23	73	6	ODVA AC/DC Drive
Basic Speed Control plus Drive Parameters	120	170	24	ODVA AC/DC Drive
Enhanced Speed Control plus Drive Parameters	121	171	24	ODVA AC/DC Drive
Basic Speed and Torque Control plus Drive Parameters	122	172	26	ODVA AC/DC Drive
Enhanced Speed and Torqued Control plus Drive Parameters	123	173	26	ODVA AC/DC Drive
ABB Drives Profile with Set Speed	801	851	4	ABB Drives Profile
ABB Drives Profile with Set Speed and Set Torque	802	852	6	ABB Drives Profile
ABB Drives Profile with Set Speed plus Drive Parameters	901	951	24	ABB Drives Profile
ABB Drives Profile with Set Speed and Set Torque plus Drive Parameters	902	952	26	ABB Drives Profile
Transparent16 w/One	811	861	4	Transparent16 Profile
Transparent16 w/Two	812	862	6	Transparent16 Profile
Transparent16 w/One plus Drive Parameters	911	961	24	Transparent16 Profile
Transparent16 w/Two plus Drive Parameters	912	962	26	Transparent16 Profile
Transparent32 w/One	821	871	8	Transparent32 Profile
Transparent32 w/Two	822	872	12	Transparent32 Profile
Transparent32 w/One plus Drive Parameters	921	971	28	Transparent32 Profile
Transparent32 w/Two plus Drive Parameters	922	972	32	Transparent32 Profile

DeviceNet - PLC Setup

FDNA-01 Installation (continued)

8. The default I/O size is 4 bytes (2 words). This setting informs the DeviceNet scanner to the amount of data that will be sent and received. Click OK.

The example below uses input assembly instance 952 and output assembly instance of 902. The input size will be programmed to 26 bytes and the output size will be programmed to 26 bytes.
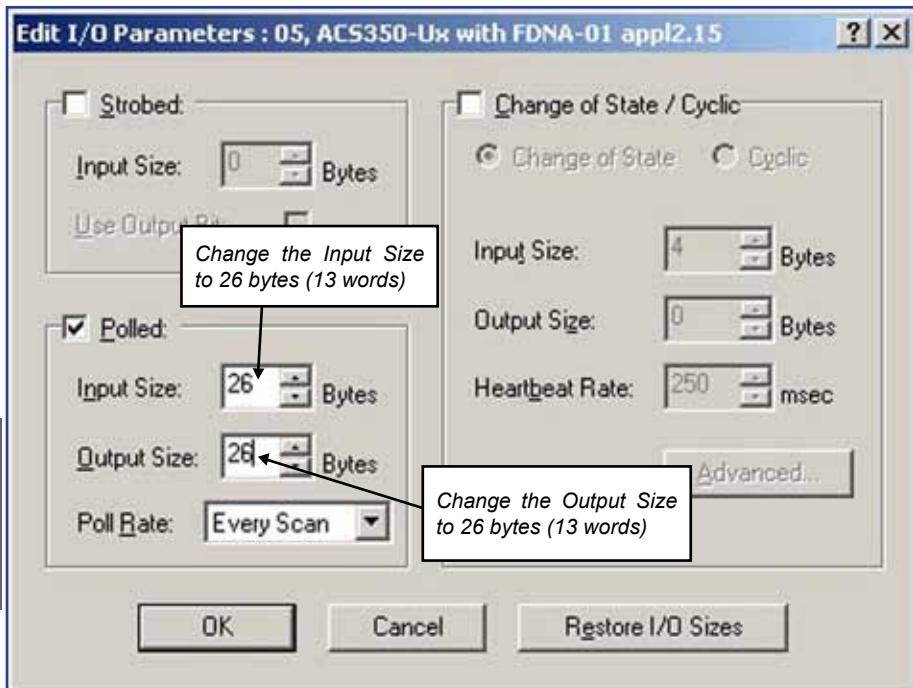
FDNA-01 Installation (continued)

9.   Select Yes from the scanner configuration pop-up messages.

The DeviceNet scanner mapped all 13 input words into seven 32 bit (DINT) and word seven is only using 16 bits of the 32 bit word. The DeviceNet scanner did the same thing for the output data. The I/O data will be remapped in the PLC into 16 bit words (INT's).
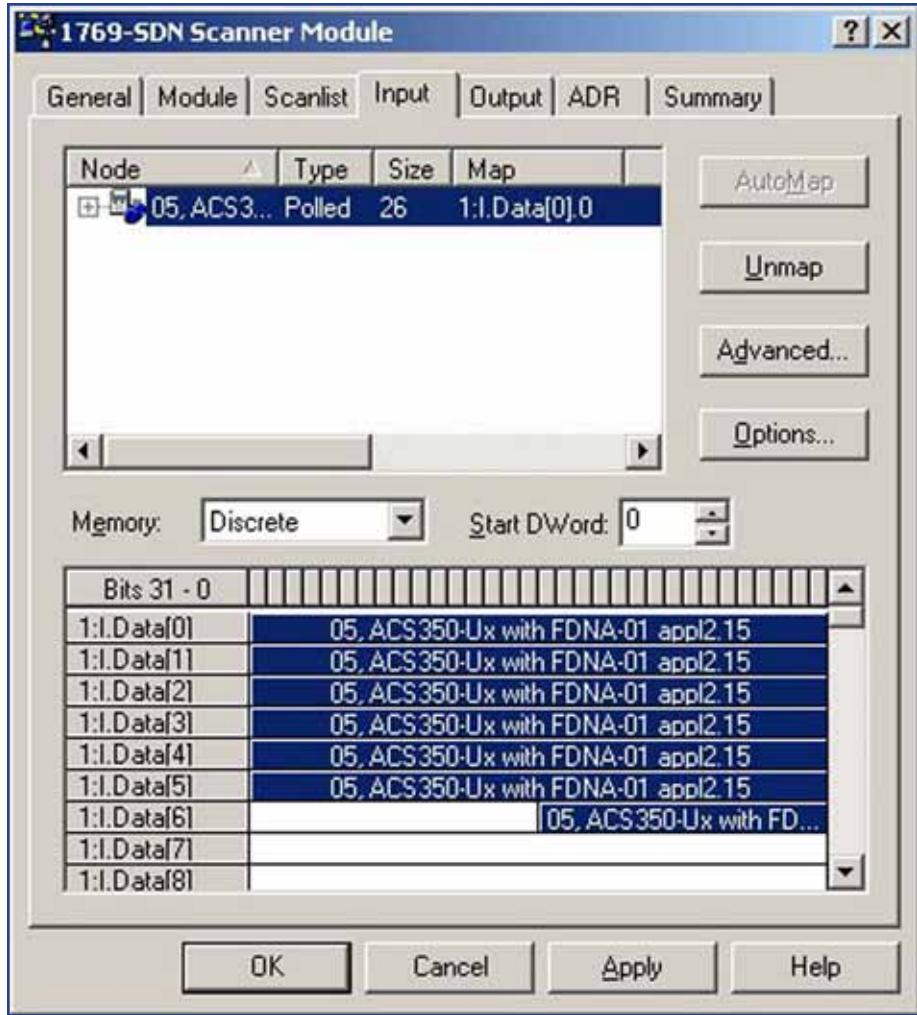
## FDNA-01 Installation (continued)

10. Click Apply. Make sure the PLC is in Program Mode.
    Then Click <u>Yes</u>.

Scanner Configuration Applet ✕

? Do you want to download these changes to the device?

[<u>Y</u>es]   <u>N</u>o   Cancel
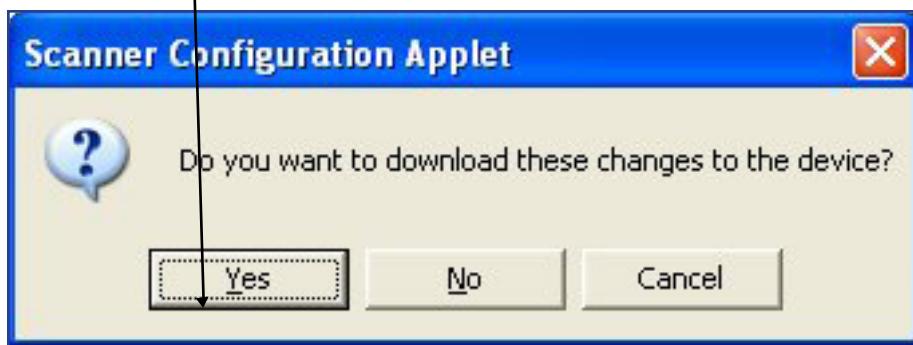
11. Enter a rung with a COPY FILE instruction in RSLogix 5000. Create a PLC
    tag array of fourteen (INT) named INPUT_INT_ARRAY. This COPY FILE
    instruction will remap 7 (DINT) 32 bit words to 14 (INT) 16 bit words.

Source (32 Bit Words)	Destination (16 Bit Words)	
LOCAL:3.I.DATA[0]	INPUT_INT_ARRAY[0]	INPUT_INT_ARRAY[1]
LOCAL:3.I.DATA[1]	INPUT_INT_ARRAY[2]	INPUT_INT_ARRAY[3]
LOCAL:3.I.DATA[2]	INPUT_INT_ARRAY[4]	INPUT_INT_ARRAY[5]
LOCAL:3.I.DATA[3]	INPUT_INT_ARRAY[6]	INPUT_INT_ARRAY[7]
LOCAL:3.I.DATA[4]	INPUT_INT_ARRAY[8]	INPUT_INT_ARRAY[9]
LOCAL:3.I.DATA[5]	INPUT_INT_ARRAY[10]	INPUT_INT_ARRAY[11]
LOCAL:3.I.DATA[6]	INPUT_INT_ARRAY[12]	INPUT_INT_ARRAY[13]

The length in the <u>COPY FILE</u> instruction refers to the Destination length
(14 - INT's)
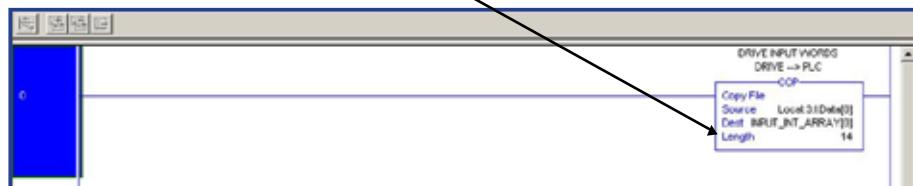
DRIVE INPUT WORDS
DRIVE --> PLC
COP
Copy File
Source   Local:3:I.Data[0]
Dest   INPUT_INT_ARRAY[0]
Length   14

FDNA-01 Installation (continued)

12. Enter a rung with a COPY FILE instruction in RSLogix 5000. Create a PLC tag array of fourteen (INT) named OUTPUT_INT_ARRAY. This COPY FILE instruction will remap 14 (INT) 16 bit words to 7 (DINT) 32 bit words.

Source (16 Bit Words)		Destination (32 Bit Words)
OUTPUT_INT_ARRAY[0]	OUTPUT_INT_ARRAY[1]	LOCAL:3.O.DATA[0]
OUTPUT_INT_ARRAY[2]	OUTPUT_INT_ARRAY[3]	LOCAL:3.O.DATA[1]
OUTPUT_INT_ARRAY[4]	OUTPUT_INT_ARRAY[5]	LOCAL:3.O.DATA[2]
OUTPUT_INT_ARRAY[6]	OUTPUT_INT_ARRAY[7]	LOCAL:3.O.DATA[3]
OUTPUT_INT_ARRAY[8]	OUTPUT_INT_ARRAY[9]	LOCAL:3.O.DATA[4]
OUTPUT_INT_ARRAY[10]	OUTPUT_INT_ARRAY[11]	LOCAL:3.O.DATA[5]
OUTPUT_INT_ARRAY[11]	OUTPUT_INT_ARRAY[13]	LOCAL:3.O.DATA[6]

The length in the <u>COPY FILE</u> instruction refers to the Destination length (7 - DINT's)

A sample INT to DINT RSLogix 5000 PLC Program can be found at:
http://www.abb.com/product/ap/seitp322/6eca4f6b6e92e987c1257941006a 3f70.aspx
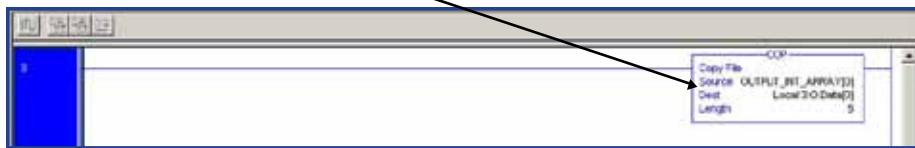
Notes:

RETA-01 EtherNet Adapter Module EtherNet/IP™

Overview

This chapter contains the basic start-up procedure of the ACH550/ACS550/ ACQ550 /ACS800 and DCS800 drives with the RETA-01 EtherNet Adapter module configured for EtherNet/IP ™. The RETA-01 EtherNet adapter module is a optional device for ABB ACH550, ACS550, ACQ550, ACS800 and DCS800 drives which enables the connection of the drive to an EtherNet/IP or Modbus/TCP network. Reference the specific drive user manual and RETA-01 user manual for additional product information.

With the RETA-01 module, the EtherNet network may employ either the ODVA AC/ DC Drive profile or the ABB Drives profile. The ACS800 and DCS800 drive product converts the ODVA profile to ABB Profile (detailed in the drive documentation) by the RETA-01 module. The DCS800 drive employs ABB Drives profiles and ODVA profile. The ACS550/ACH550/ACQ550 both ODVA/ABB Profiles are converted to the DCU profile (detailed in drive documentation) by the RETA-01 module.

Assembly objects

I/O Assembly Instances may also be referred to as Block Transfer of data. Intelligent devices realizing a Functional Profile, such as the RETA-01, have several objects. Since it is not possible to transmit more than one object data through a single connection, it is practical and more efficient to group attributes from different objects into a single I/O connection (for example a Polled Connection) using the Assembly object. The Assembly object acts as a tool for grouping these attributes.

The Assembly selections described above are, in fact, instances of the Assembly object class. The RETA-01 uses dynamic assembly sizes.

EtherNet/IP - Drive Setup

RETA-01 Installation, drive protocol & profile configuration

Preliminary preparation

1. Before installation, write down the MAC ID of the module (Printed on a sticker located on the back of the module)

Mechanical installation

2. Insert the RETA-01 into its specified slot in the drive (SLOT2 for ACS550, ACQ550 and ACH550, SLOT1 for ACS800 and DCS800).

3. Using the two mounting screws included in the module kit fasten the module to the drive.

Electrical installations

4. Arrange the bus cables as far away from the motor cables as possible. Avoid parallel runs. See the RETA-01 User's Manual for connection and bus termination details.

5. Connect the EtherNet cable (RJ-45 connector) to the RETA-01 module.

6. Power up the drive.

Activating the adapter & profile configuration

The detailed procedure of activating the drive for communication with the module is dependent on the drive type. Parameter(s) must be adjusted to activate the desired communication port. Refer to the User/Firmware Manual of the drive for additional protocol and profile settings.

Table 1: ACH550/ACS550/ACQ550 Parameter Settings

Par. No.	Parameter Name	Setting
98.02	COMM PROT SEL	(4) EXT FBA

NOTE!   With ACH550/ACS550/ACQ550 the profile selection is automatic.

RETA-01 I/O assembly instances

Table 2: ACS800 and DCS800 Parameter Settings

Par. No.	Parameter Name	Setting
98.02	COMM MODULE LINK	FIELDBUS
98.07*	COMM PROFILE	ABB DRIVE, GENERIC, CSA 2.8/3.0

* This parameter is only used in ACS800. For new drives system installations select either ABB DRIVE profile or Generic Drive profile. If replacing drives with application program 2.8 and 3.0 select CSA 2.8/3.0 profile for backward compatibility.

Table 3: DCS800 and DCS800 Parameter Settings

Par. No.	Parameter Name	Setting
98.02	COMM MODULE	FIELDBUS

NOTE!   *The MODULE STATUS LED should be green. If the network cable is connected to an active network, the green LINK/ACTIVITY LED should also be lit or blinking. If the configuration is correct, drive parameter group 51 should appear in the parameter list of the drive and show the status of the RETA-01 configuration parameters.*

I/O assembly instances

Table 4: Possible combinations of Input & Output Assembly Instances

Output Instance	Input Instance	Communication Profile To Be Used
20	70	Generic Drive Profile
	71	Generic Drive Profile
	171	Generic Drive Profile
21	70	Generic Drive Profile
	71	Generic Drive Profile
	171	Generic Drive Profile
121	70	Generic Drive Profile
	71	Generic Drive Profile
	171	Generic Drive Profile
100	101	ABB Drive Profile
	103	ABB Drive Profile
102	101	ABB Drive Profile
	103	ABB Drive Profile

NOTE!   *Assembly instance 103 can be used with AC/DC drive profile if it contains only drive parameters and not data sets.*

The communication profile setting in the table above is parameter 98.07 in the ACS800 drive product. The ACS800 is the only drive product that this drive parameter will need to be programmed. Example: the drive is programmed to use assembly instances 21 and 71, parameter 98.07 needs to be programmed to Generic Drive Profile.

EtherNet/IP - Drive Setup

RETA-01 Network configuration

Network configuration

To enable communication through the EtherNet network, the module must be configured for the network. There are numerous ways of setting the module IP address (DIP switch settings, DHCP/BOOTP, parameter settings, gleaning, EtherNet/IP); references RETA-01 user manual's section Network configuration for more information.

Table 5: RETA-01 Configuration Network Parameteres

Par. No.	Parameter Name	Setting Range	Default Setting
51.01	MODULE TYPE	(read-only)	ETHERNET
51.02	COMM RATE	(0) Auto-negotiate (1) 100 Mbit/s, full duplex (2) 100 Mbit/s, half duplex (3) 10 Mbit/s, full duplex (4) 10 Mbit/s, half duplex	(0) Auto-negotiate
51.03	DHCP	(0) DHCP disabled (1) DHCP enabled	(1) DHCP enabled
51.04	IP Address 1	0...255	0
51.05	IP Address 2	0...255	0
51.06	IP Address 3	0...255	0
51.07	IP Address 4	0...255	0
51.08	Subnet Mask 1	0...255	0
51.09	Subnet Mask 2	0...255	0
51.10	Subnet Mask 3	0...255	0
51.11	Subnet Mask 4	0...255	0
51.12	Gateway Address 1	0...255	0
51.13	Gateway Address 2	0...255	0
51.14	Gateway Address 3	0...255	0
51.15	Gateway Address 4	0...255	0
51.16	Protocol	(0) Modbus/TCP (1) EtherNet/IP AC/DC communication profile (2) EtherNet/IP ABB Drives communication profile	(0) Modbus/TCP
51.17	Modbus Timeout	0...65535	0
51.18	Stop Function	(0) Ramp stop (1) Coast stop	(0) Ramp stop
51.19	Output 1	0...65535	0
51.20	Output 2	0...65535	0

RETA-01 Network configuration (continued)

Table 5: RETA-01 Configuration Network Parameteres (continued)

Par. No.	Parameter Name	Setting Range	Default Setting
51.21	Output 3	0...65535	0
51.22	Output 4	0...65535	0
51.23	Input 1	0...65535	0
51.24	Input 2	0...65535	0
51.25	Input 3	0...65535	0
51.26	Input 4	0...65535	0
51.27*	FBA Par Refresh	(0) DONE (1) REFRESH	(0) DONE

* New settings take effect only when the module power is cycled or when the module receives a Fieldbus Adapter parameter refresh by setting parameter 51.27 to REFRESH

EtherNet/IP - Drive Setup

RETA-01 Examples: **ACS800/DCS800/ACS550/ACH550/ACQ550** - ABB Drives Profile (4 Data words In/Out)

The drive is programmed to use data sets to write Main control word, reference 1, reference 2 and one additional parameter. The drive is programmed to read main status word, actual 1 and actual 2 and one additional parameters. Information on how a data set works can be found in the Overview section of this publication.

NOTE!   *ABB recommends using the data sets and index pointers when available in the drive product. Mapping parameters directly may result in slower update times or drive faults and should be used only after all data sets are occupied.*

Table 6: I/O Assembly Instance 102 & 103

Drive Parameter	Example setting for ACS800	Example setting for DCS800	Example setting for ACx550
10.01 EXT1 COMMANDS	COMM.CW	MainCtrlWord	COMM
10.03 DIRECTION	REQUEST	N/A	REQUEST
11.03 REF1 SELECT	COMM.REF	SpeedRef2301	COMM
16.04 FAULT RESET SEL	COMM.CW	N/A	COMM
98.02 COMM. PROT SEL	FIELDBUS	Fieldbus	EXT FBA
98.07 COMM PROFILE	ABB DRIVES*	N/A	N/A
51.01 MODULE TYPE	ETHERNET	ETHERNET	ETHERNET
51.02 Comm rate	(0) Auto-negotiation	(0) Auto-negotiation	(0) Auto-negotiation
51.03 DHCP	(0) Disabled	(0) Disabled	(0) Disabled
51.04 IP address 1	192	192	192
51.05 IP address 2	168	168	168
51.06 IP address 3	0	0	0
51.07 IP address 4	15	16	17
51.08 Subnet mask 1	255	255	255
51.09 Subnet mask 2	255	255	255
51.10 Subnet mask 3	255	255	255
51.11 Subnet mask 4	0	0	0
51.12 GW address 1	192	192	192
51.13 GW address 2	168	168	168
51.14 GW address 3	0	0	0
51.15 GW address 4	1	1	1
51.16 Protocol	(2) ETHERNET/IP ABB DRIVE	(2) ETHERNET/IP ABB DRIVE	(2) ETHERNET/IP ABB DRIVE
51.19 Output 1	(1) Main Control Word	(1) Main Control Word	(1) Main Control Word
51.20 Output 2	(2) Reference 1	(2) Reference 1	(2) Reference 1

RETA-01 Examples: **ACS800/DCS800/ACS550/ACH550/ ACQ550** - ABB Drives Profile (4 Data words In/Out)

Table 6: I/O Assembly Instance 102 & 103 (continued)

Drive Parameter	Example setting for ACS800	Example setting for DCS800	Example setting for ACx550
51.21 Output 3	(3) Reference 2	(3) Reference 2	(3) Reference 2
51.22 Output 4	(7) AUX DS REF3	(7) AUX DS REF3	(2205) ACCEL TIME 2
51.23 Input 1	(4) Status Word	(4) Status Word	(4) Status Word
51.24 Input 2	(5) Actual Ref 1 (Speed)	(5) Actual Ref 1 (Speed)	(5) Actual Ref 1 (Speed)
51.25 Input 3	(6) Actual Ref 2 (Torque)	(6) Actual Ref 2 (Torque)	(6) Actual Ref 2 (Torque)
51.26 Input 4	(10) Actual Ref 3 (305 FAULT WORD 1)	(10) DsetXplus-3Val1 (802) Auxiliary Status Word)	(106) POWER
51.27 FBA PAR REFRESH	(1) REFRESH**	(1) REFRESH**	(1) REFRESH**
90.01 AUX DS REF3 or DsetXVal1	(2204) ACCELTIME 2	(701) MainCtrlWord	N/A
92.01 DsetXplus1Val1	N/A	(801) MainStatWord	N/A
92.02 MAIN DS ACT1 or DsetXplus1Val2	(102) SPEED	(104) MotSpeed	N/A
92.03 MAIN DS ACT2 or DsetXplus1Val3	(105) TORQUE	(209) TorqRef2	N/A
92.04 AUX DS ACT3 or DsetXplus3Val1	(305) FAULT WORD 1	(802) AuxStatWord	N/A

* This parameter is only in the ACS800 product.

** New settings take effect only when the module power is cycled or when the module receives a Fieldbus Adapter parameter refresh by setting parameter 51.27 to REFRESH.

NOTE!   *The connection size programmed in the drive will need to match the PLC connection size. If parameter 51.19 - 51.26 are programmed to zero, this is the same as being disabled. (ie. Parameters 51.19, 51.20 and 51.21 are programmed to a valid setting and 51.21 is programmed to zero, the output assembly connection size will be three words.)*

EtherNet/IP - Drive Setup

RETA-01 Examples: **ACS800/ACS550/ACH550/ACQ550** - ODVA Drives Profile (2 Data words In/Out)

Do not use Index numbers (1) Main Control, (2) Speed Ref, (4) Main status word and (5) Actual speed when ODVA Profile Assemblies.

Table 7: I/O Assembly Instance 21 & 71

Drive Parameter	Example setting for ACS800, ACx550	Example setting for DCS800
10.01 EXT1 COMMANDS	COMM.CW	MainCtrlWord
10.03 DIRECTION	REQUEST	N/A
11.03 REF1 SELECT	COMM.REF	SpeedRef2301
16.04 FAULT RESET SEL	COMM.CW	N/A
98.02 COMM PROT SEL	FIELDBUS	Fieldbus
98.07 COMM PROFILE	GENERIC*	N/A
51.01 MODULE TYPE	ETHERNET	ETHERNET
51.02 Comm rate	(0) Auto-negotiation	(0) Auto-negotiation
51.03 DHCP	(0) Disabled	(0) Disabled
51.04 IP address 1	192	192
51.05 IP address 2	168	168
51.06 IP address 3	0	0
51.07 IP address 4	15	16
51.08 Subnet mask 1	255	255
51.09 Subnet mask 2	255	255
51.10 Subnet mask 3	255	255
51.11 Subnet mask 4	0	0
51.12 GW address 1	192	192
51.13 GW address 2	168	168
51.14 GW address 3	0	0
51.15 GW address 4	1	1
51.16 Protocol	(1) Ethernet/IP AC/DC	(1) Ethernet/IP AC/DC
51.19 Output 1	(0)**	(0)**
51.20 Output 2	(0)**	(0)**
51.21 Output 3	(0)**	(0)**
51.22 Output 4	(0)**	(0)**
51.23 Input 1	(0)**	(0)**
51.24 Input 2	(0)**	(0)**
51.25 Input 3	(0)**	(0)**
51.26 Input 4	(0)**	(0)**
51.27 FBA PAR REFRESH	(1) REFRESH***	(1) REFRESH***

EtherNet/IP - Drive Setup

* This parameter is only in the ACS800 product.
** When output instance 20 or 21 and input instance 70 or 71 are selected the Input & Output I/O Parameters 51.19 - 51.26 MUST be set to the default value of (0)
*** New settings take effect only when the module power is cycled or when the module receives a Fieldbus Adapter parameter refresh by setting parameter 51.27 to REFRESH.

RETA-01 Examples: **ACS800/ACS550/ACH550/ACQ550** - ODVA Drives Profile (6 Data words In/Out). Four of the In/Out Data words are user configured by parameters in group 51.

The example will write the Main Control Word, Speed Ref, and four user configured parameters. It will read Main status word, Actual speed, and four user configured parameters. The Assembly Instance 121 & 171 the Main Control, Speed Ref, Main status word, Actual speed do not have to be programmed in group 51 Input/Output I/O parameters.

Do not use Index numbers (1) Main Control, (2) Speed Ref, (4) Main status word and (5) Actual speed when ODVA Profile Assemblies.

NOTE!   ABB recommends using the data sets and index pointers when available in the drive product. Mapping parameters directly may result in slower update times or drive faults and should be used only after all data sets are occupied.

Table 8: I/O Assembly Instance 121 & 171

Drive Parameter	ACS800	ACx550	DCS800
10.01 EXT1 COMMANDS	COMM.CW	COMM	MainCtrlWord
10.03 DIRECTION	REQUEST	REQUEST	N/A
11.03 REF1 SELECT	COMM.REF	COMM	SpeedRef2301
16.04 FAULT RESET SEL	COMM.CW	COMM	N/A
98.02 COMM PROT SEL	FIELDBUS	EXT FBA	Fieldbus
98.07 COMM PROFILE	GENERIC*	N/A	N/A
51.01 MODULE TYPE	ETHERNET	ETHERNET	ETHERNET
51.02 Comm rate	(0) Auto-negotiation	(0) Auto-negotiation	(0) Auto-negotiation
51.03 DHCP	(0) Disabled	(0) Disabled	(0) Disabled
51.04 IP address 1	192	192	192
51.05 IP address 2	168	168	168
51.06 IP address 3	0	0	0
51.07 IP address 4	15	15	15
51.08 Subnet mask 1	255	255	255
51.09 Subnet mask 2	255	255	255
51.10 Subnet mask 3	255	255	255
51.11 Subnet mask 4	0	0	0
51.12 GW address 1	192	192	192
51.13 GW address 2	168	168	168
51.14 GW address 3	0	0	0
51.15 GW address 4	1	1	1
51.16 Protocol	(1) Ethernet/IP AC/DC	(1) Ethernet/IP AC/DC	(1) Ethernet/IP AC/DC
51.19 Output 1	(3) Reference 2**	(3) Reference 2**	(3) Torq Ref A

RETA-01 Examples: **ACS800/ACS550/ACH550/ACQ550** - (continued)
ODVA Drives Profile (6 Data words In/Out). Four of the In/Out Data words are user configured by parameters in group 51.

Table 8: I/O Assembly Instance 121 & 171 (continued)

Drive Parameter	ACS800	ACx550	DCS800
51.20 Output 2	(7) AUX DS REF3	(2208) EMERG DEC TIME	(7) DsetXplus3Val1 (702 AuxCtrlWord)
51.21 Output 3	(8) AUX DS REF4	(2204) ACCEL TIME 2	(8) DsetXplus2Val2 (703 AuxCtrlWord2)
51.22 Output 4	(9) AUX DS REF5	(2205) DECEL TIME 2	(9) DsetXplus2Val3
51.23 Input 1	(6) Actual Ref 2 (Torque)**	(6) Actual Ref 2 (Torque)**	(6) TorqRef2
51.24 Input 2	(10) Actual Ref 3 (305 FAULT WORD 1)	(106) POWER	(10) DsetXplus3Val1 (802 Auxiliary Status Word)
51.25 Input 3	(11) Actual 4 (308 ALARM WORD 1)	(104) CURRENT	(11) DsetXplus3Val2 (101 MotSpeedFilt)
51.26 Input 4	(12) Actual 5 (306 FAULT WORD 2)	(105) TORQUE	(12) DsetXplus3Val3 (108 MotTorq)
51.27 FBA PAR REFRESH	(1) REFRESH***	(1) REFRESH***	(1) REFRESH***
90.01 AUX DS REF3 or DsetXVal1	(2204) ACCELTIME 2	N/A	(701) MainCtrlWord
90.02 AUX DS REF4 or DsetXVal2	(2205) DECELTIME 2	N/A	(2301) SpeedRef
90.03 AUX DS REF5 or DsetXVal3	(1202) CONST SPEED 1	N/A	(2501) TorqRefA
90.04 DsetXplus2Val1	N/A	N/A	(702) AuxCtrlWord
90.05 DsetXplus2Val2	N/A	N/A	(703) AuxCtrlWord2
90.06 DsetXplus2Val3	N/A	N/A	0
92.01 DsetXplus1Val1	N/A	N/A	(801) MainStatWord
92.02 MAIN DS ACT1 or DsetXplus1Val2	(102) SPEED	N/A	(104) MotSpeed
92.03 MAIN DS ACT2 or DsetXplus1Val3	(105) TORQUE	N/A	(209) TorqRef2
92.04 AUX DS ACT3 or DsetXplus3Val1	(305) FAULT WORD 1	N/A	(802) Auxiliary Status Word
92.05 AUX DS ACT4 or DsetXplus3Val2	(308) ALARM WORD 1	N/A	(101) MotSpeedFilt
92.06 AUX DS ACT5 or DsetXplus3Val3	(306) FAULT WORD 2	N/A	(108) MotTorq

* This parameter is only in the ACS800 product.
** Minimum connection size for assmebly 121&171 is 3 words transmitted and received. Parameter 51.19 and 51.23 must be programmed to a value other then zero.
*** New settings take effect only when the module power is cycled or when the module receives a

FENA-01/-11 EtherNet Adapter Module

Overview

This document contains the basic start-up procedure of the ACS350, ACS355 drives, ACH550 with E-Clipse Bypass, ACS850, ACSM1 and ACS880 with the FENA-01/-11 EtherNet Adapter Module. The FENA-01/-11 EtherNet Adapter Module is an optional device for the ABB ACS350, ACS355, ACH550 with E-Clipse Bypass, ACS850, ACSM1 and ACS880 drive which enables the connection of the drive to an EtherNet/IP or Modbus/TCP network. Reference the specific drive user manual and FENA-01/-11 user's manuals for additional product information.

With the FENA-01/-11 module, the EtherNet network may employ either the ODVA AC/DC Drive profile or the ABB Drives profile. The two profiles are converted to the DCU profile or ACS850/ACSM1 profile (detailed in the drive documentation) by the FENA-01/-11 module. In addition, two Transparent modes for 16 and 32 bit words respectively are available. With the Transparent modes, no data conversion takes place.

Assembly objects

I/O Assembly Instances may also be referred to as Block Transfer of data. Intelligent devices realizing a Functional Profile, such as the FENA-01/-11, have several objects. Since it is not possible to transmit more than one object data through a single connection, it is practical and more efficient to group attributes from different objects into a single I/O connection (for example a Polled Connection) using the Assembly object. The Assembly object acts as a tool for grouping these attributes.

The Assembly selections described above are, in fact, instances of the Assembly object class. The FENA-01/-11 uses Static assemblies (in other words, fixed groupings of different object data only).

EtherNet/IP - Drive Setup

FENA-01/-11 Installation

Preliminary preparation

1. Before installation, write down the MAC ID of the module (Printed on a sticker located on the front of the module).

Mechanical installation

2. Install clamping plate and fieldbus option ground plate, clamps and screws.

3. Insert the FENA-01/-11 into its specified slot in the drive. The FENA-01/11 must be only installed in Slot 3 in the ACS850 or ACSM1 drive. The FENA-01/11 can be installed into any slot on the ACS880 drive.

4. Using the encapsulated mounting screw in the module kit fasten the module to the drive.

Electrical installation

5. Connect the EtherNet cable (RJ-45 connector) to the FENA-01/-11 module. Arrange the bus cables as far away from the motor cables as possible. Avoid parallel runs.

EtherNet/IP - Drive Setup

FENA-01/-11 Drive protocol & profile configuration

Drive protocol & profile configuration

The detailed procedure of activating the drive for communication with the module is dependent on the drive type. Parameter(s) must be adjusted to activate the desired communication port. Refer to the User/Firmware Manual of the drive for additional protocol and profile settings.

6. Power up the drive.

7. Set Parameters as follows:

Table 1: ACS350, ACS355 and ACH550 with E-Clipse Bypass Parameter Settings

Par. No.	Parameter Name	Setting
98.02	COMM PROT SEL	(4) EXT FBA

Table 2: ACS850 and ACSM1 Parameter Settings

Par. No.	Parameter Name	Setting
50.01	FBA ENABLE	(1) ENABLE

Table 3: ACS880 Parameter Settings

Par. No.	Parameter Name	Setting
50.01	FBA A enable	(3) Option slot 3

NOTE! The HOST LED should be green. If the network cable is connected to an active network, the MODULE and NETWORK LEDs should also be lit or blinking green. If the configuration is correct, drive parameter group 51 should appear in the parameter list of the drive and show the status of the FENA-01/-11 configuration parameters.

EtherNet/IP - Drive Setup

FENA-01/-11 I/O assembly instances

I/O assembly instances

The table below highlights the amount of data that will be transmitted and received from the fieldbus controller for a given profile. The size column will need to be programmed in the fieldbus controller. The column labeled Profile states the profile (Main Control, Status Word) the drive will be using for control.

Table 4: Input & Output Assembly Instances

Name	Output Instance	Input Instance	Size (bytes)	Profile
Basic Speed Control	20	70	4	ODVA AC/DC Drive
Enhanced Speed Control	21	71	4	ODVA AC/DC Drive
Basic Speed and Torque Control	22	72	6	ODVA AC/DC Drive
Enhanced Speed and Torque Control	23	73	6	ODVA AC/DC Drive
Basic Speed Control plus Drive Parameters	120	170	24	ODVA AC/DC Drive
Enhanced Speed Control plus Drive Parameters	121	171	24	ODVA AC/DC Drive
Basic Speed and Torque Control plus Drive Parameters	122	172	26	ODVA AC/DC Drive
Enhanced Speed and Torque Control plus Drive Parameters	123	173	26	ODVA AC/DC Drive
ABB Drives Profile w/Set Speed	1	51	4	ABB Drives Profile
ABB Drives Profile w/Set Speed and Set Torque	2	52	6	ABB Drives Profile
ABB Drives Profile w/Set Speed plus Drive Parameters	101	151	24	ABB Drives Profile
ABB Drives Profile w/Set Speed and Set Torque plus Drive Parameters	102	152	26	ABB Drives Profile
Transparent16 w/One	11	61	4	Transparent16 Profile
Transparent16 w/Two	12	62	6	Transparent16 Profile
Transparent16 w/One plus Drive Parameters	111	161	24	Transparent16 Profile
Transparent16 w/Two plus Drive Parameters	112	162	26	Transparent16 Profile
Transparent32 w/One	21	71	8	Transparent32 Profile
Transparent32 w/Two	22	72	12	Transparent32 Profile
Transparent32 w/One plus Drive Parameters	121	171	28	Transparent32 Profile
Transparent32 w/Two plus Drive Parameters	122	172	32	Transparent32 Profile

FENA-01/-11 Network configuration

Network configuration

To enable communication through the EtherNet network, the module must be configured for the network. There are numerous ways of setting the module IP address (DHCP/BOOTP, parameter settings, gleaning); references FENA-01/-11 EtherNet/IP Protocol user manual's section Drive configuration for more information.

Table 5: Network configuration with drive parameters

Par. No.	Parameter Name	Setting Range	Default Setting
51.01	FBA TYPE	(Read-only)	ETHERNET
51.02	PROTOCOL/ PROFILE	EtherNet/IP (100) ODVA AC/DC Drive (101) ABB Drives Profile (102) Transparent 16-bit (103) Transparent 32-bit	(0) Modbus/TCP - ABB Drives Classic
51.03	COMMRATE	(0) Auto-negotiate; (1) 100 Mbps, Full Duplex (2) 100 Mbps, Half Duplex (3) 10 Mbps, Full Duplex (4) 10 Mbps, Half Duplex	(0) Auto-negotiate
51.04	IP CONFIGURATION	(0) Static IP (1) Dynamic IP (DHCP)	(1) Dynamic IP (DHCP)
51.05	IP ADDRESS 1	0...255	0
51.06	IP ADDRESS 2	0...255	0
51.07	IP ADDRESS 3	0...255	0
51.08	IP ADDRESS 4	0...255	0
51.09	SUBNET CIDR	1...31	1
51.10	GW ADDRESS 1	0...255	0
51.11	GW ADDRESS 2	0...255	0
51.12	GW ADDRESS 3	0...255	0
51.13	GW ADDRESS 4	0...255	0
51.14 - 19	Reserved	N/A	N/A
51.20	Control Timeout	0...65535	0
51.21	Idle Action	(0) Off-line (1) On-line	0
51.22	ODVA Stop Function	(0) Ramp (1) Coast	0
51.23	ODVA Speed Scale	0...255	128
51.24	ODVA Torque Scale	0...255	128
51.25 -26	Reserved	N/A	N/A
51.27*	FBA Par Refresh	(0) DONE (1) REFRESH	(0) DONE

* New settings take effect only when the module power is cycled or when the module receives a Fieldbus Adapter parameter refresh by setting parameter 51.27 to REFRESH

EtherNet/IP - Drive Setup

FENA-01/-11 Network configuration & subnet masks

Subnet masks

Subnet masks are used for splitting networks into smaller networks called subnets. A subnet mask is a 32-bit binary number that is used to split the IP Address into a network address and host address. Subnet masks are typically represented in either dotted-decimal notation or the more compact CIDR notation (Classless Inter-Domain Routing).

Table 7: Parameter 51.09 SUBNET CIDR

Dotted Decimal	CIDR	Dotted Decimal	CIDR
255.255.255.254	31	255.254.0.0	15
255.255.255.252	30	255.252.0.0	14
255.255.255.248	29	255.248.0.0	13
255.255.255.240	28	255.240.0.0	12
255.255.255.224	27	255.224.0.0	11
255.255.255.192	26	255.224.0.0	10
255.255.255.128	25	255.128.0.0	9
255.255.255.0	24	255.0.0.0	8
255.255.254.0	23	254.0.0.0	7
255.255.252.0	22	252.0.0.0	6
255.255.248.0	21	248.0.0.0	5
255.255.240.0	20	240.0.0.0	4
255.255.224.0	19	224.0.0.0	3
255.255.192.0	18	192.0.0.0	2
255.255.128.0	17	128.0.0.0	1
255.255.0.0	16		

EtherNet/IP - Drive Setup

FENA-01/-11 Network configuration

Table 8: ODVA Speed Scaling

ODVA Speed Scale Value[1]	Drive Parameter Speed Scale Value[2]	Speed Unit
-5	123	32 RPM
-4	124	16 RPM
-3	125	8 RPM
-2	126	4 RPM
-1	127	2 RPM
0 (default)	128	1 RPM
1	129	0.5 RPM
2	130	0.25 RPM
3	131	0.125 RPM
4	132	0.0625 RPM
5	133	0.03125 RPM

Table 9: ODVA Torque Scaling

ODVA Torque Scale Value[1]	Drive Parameter Torque Scale Value[2]	Torque Unit
-5	123	32 NM
-4	124	16 NM
-3	125	8 NM
-2	126	4 NM
-1	127	2 NM
0 (default)	128	1 NM
1	129	0.5 NM
2	130	0.25 NM
3	131	0.125 NM
4	132	0.0625 NM
5	133	0.03125 NM

[1] *Use ODVA Speed/Torque Scale Value when reading/writing ODVA Speed or Torque scale via the AC/DC Drive Object (2Ah). When written via AC/DC Drive Object, the new value takes effect immediately.*

[2] *Use Drive Parameter Speed/Torque Scale Value when reading/writing ODVA Speed or Torque Scale via the drive panel, drive parameter object (90h) and drive configuration object (91h). When written via these methods, the new value takes effect after the drive is repowered or a Fieldbus Adapter Parameter Refresh is given.*

EtherNet/IP - Drive Setup

FENA-01 Example: **ACS350, ACS355 and ACH550 with E-Clipse Bypass** - ABB Drives Profile - (13 Data Words In/Out)

The example will write the Main Control Word, Speed Ref, Torque Ref, Acceler Time 2 and Deceler Time 2. It will read Main status word, Actual speed, Actual Torque, Current and DC Bus Voltage and KW Hours from the E-Clipse Bypass unit.

Table 10: I/O Assembly Instance 102 & 152

Drive Parameter	Example setting for ACS350, ACS355	Example setting for E-Clipse Bypass
10.01 EXT 1 COMMANDS	COMM	n/a
10.03 REF DIRECTION	REQUEST	n/a
11.03 REF1 SELECT	COMM	n/a
16.01 START/STOP	n/a	2 = COMM
16.04 FAULT RESET SEL	COMM	n/a
16.07 RESET SRC	n/a	2 = COMM
98.02 COMM PROT SEL	Enable	Enable
51.01 MODULE TYPE	ETHERNET (READ ONLY)	ETHERNET (READ ONLY)
51.02 PROTOCOL/PROFILE	(101) ABB DRIVES PROFILE	(101) ABB DRIVES PROFILE
51.03 COMM RATE	(0) AUTO NEGOTIATE	(0) AUTO NEGOTIATE
51.04 IP CONFIGURATION	(0) STATIC IP	(0) STATIC IP
51.05 IP ADDRESS	192	192
51.06 IP ADDRESS	168	168
51.07 IP ADDRESS	0	0
51.08 IP ADDRESS	2	2
51.09 SUBNET MASK	24	25
51.10 GW ADDRESS	0	0
51.11 GW ADDRESS	0	0
51.12 GW ADDRESS	0	0
51.13 GW ADDRESS	0	0
51.20 CONTROL TIMEOUT	0	0
51.21 IDLE ACTION	0	0
51.22 ODVA STOP FUNCTION	(0) RAMP	(0) RAMP
51.23 ODVA SPEED SCALE	128	128
51.24 ODVA TORQUE SCALE	128	128
54.01 FB DATA INPUT 1	(104) CURRENT	(104) CURRENT**
54.02 FB DATA INPUT 2	(107) DC BUS VOLTAGE	(107) DC BUS VOLTAGE**
54.03 FB DATA INPUT 3	0	(10106) KW HOURS from Eclipse unit***

EtherNet/IP - Drive Setup

FENA-01 Example: **ACS350, ACS355 and ACH550 with E-Clipse Bypass** - ABB Drives Profile - (13 Data Words In/Out) (continued)

Table 10: I/O Assembly Instance 102 & 152 (continued)

Drive Parameter	Example setting for ACS350, ACS355	Example setting for E-Clipse Bypass
54.04 ... 54.10 FB DATA INPUT	0	0
55.01 FB DATA OUTPUT 1	(2205) ACCELER TIME 2	(2205) ACCELER TIME 2**
55.02 FB DATA OUTPUT 2	(2206) DECELER TIME 2	(2206) DECELER TIME 2**
55.03 ... 55.10 FB DATA OUTPUT	0	0
51.27* FBA PAR REFRESH	(1) REFRESH	(1) REFRESH

* New settings take effect only when the module power is cycled or when the module receives a Fieldbus Adapter parameter refresh by setting parameter 51.27 to REFRESH

** To map ACH550 parameters in groups 54 or 55, program parameters 5401...5410 or 5501...5510 with the actual ACH550 parameter value. For example to read ACH550 parameter 0106 (Power), program parameter 5401 to 0106.

*** To map E-Clipse Bypass parameters in groups 54 or 55, program parameters 5401...5410 or 5501...5510 and add 10,000 to the E-Clipse Bypass parameter value. For example to read E-Clipse Bypass parameter 0106 (KW Hours), program parameter 5401 to 10106.

FENA-11 Example: **ACS850, ACSM1 and ACS880** - ABB Drives Profile - (13 Data Words In/Out)

The example will write the Main Control Word, Speed Ref, Torque Ref, Const Speed 1 - 3, Acc Time 2 and Dec Time 2. It will read Main status word, Actual speed, Actual Torque, Motor Temp, Motor Current, DC Bus Voltage and Encoder 1 speed.

Every parameter in the ACS880 when mapped as a dataword is user selectable via parameter group 52, 53, 55 and 56 as 16 bit or 32 bit format

Table 11: I/O Assembly Instance 102 & 152

Drive Parameter	Example setting for ACS850	Example setting for ACSM1	Example setting for DCS800
16.15 Menu set sel	Load long	n/a	n/a
10.01 Ext1 start func	FBA	FBA	n/a
20.01 Ext1 commands	n/a	n/a	Fieldbus A
21.01 Speed ref1 sel	FBA ref1	n/a	n/a
22.11 Speed ref1 source	n/a	n/a	FB A ref1
24.01 SPEED REF1 SEL	n/a	FBA REF1	n/a
50.01 Fba enable	Enable	Enable	Option slot 3
51.01 MODULE TYPE	ETHERNET (READ ONLY)	ETHERNET (READ ONLY)	ETHERNET (READ ONLY)
51.02 PROTOCOL/PROFILE	(101) ABB DRIVES PROFILE	(101) ABB DRIVES PROFILE	(101) ABB DRIVES PROFILE
51.03 COMM RATE	(0) AUTO NEGOTIATE	(0) AUTO NEGOTIATE	(0) AUTO NEGOTIATE
51.04 IP CONFIGURATION	(0) STATIC IP	(0) STATIC IP	(0) STATIC IP
51.05 IP ADDRESS	192	192	192
51.06 IP ADDRESS	168	168	168
51.07 IP ADDRESS	0	0	0
51.08 IP ADDRESS	2	2	2
51.09 SUBNET MASK	24	24	24
51.10 GW ADDRESS	0	0	0
51.11 GW ADDRESS	0	0	0
51.12 GW ADDRESS	0	0	0
51.13 GW ADDRESS	0	0	0
51.20 CONTROL TIMEOUT	0	0	0
51.21 IDLE ACTION	0	0	0
51.22 ODVA STOP FUNCTION	(0) RAMP	(0) RAMP	(0) RAMP
51.23 ODVA SPEED SCALE	128	128	128
51.24 ODVA TORQUE SCALE	128	128	128
52.01 DATA IN 1	(105) MOTOR CURRENT	(117) MOTOR TEMP	(3501) 16bit - Motor estimated temperature

FENA-11 Example: **ACS850, ACSM1 and ACS880** - ABB Drives Profile - (13 Data Words In/Out)

Table 11: I/O Assembly Instance 102 & 152 (continued)

Drive Parameter	Example setting for ACS850	Example setting for ACSM1	Example setting for DCS800
52.02 DATA IN 2	(123) MOTOR POWER - MSW	(104) MOTOR CURRENT - MSW	(107) 32bit - MOTOR CURRENT - MSW
52.03 DATA IN 3	(0) MOTOR POWER - LSW	(0) MOTOR CURRENT - LSW	(0) MOTOR CURRENT - LSW
52.04 DATA IN 4	(107) DC-VOLTAGE - MSW	(107) DC-VOLTAGE - MSW	(111) 16bit - DC-VOLTAGE - MSW
52.05 DATA IN 5	(0) DC-VOLTAGE - LSW	(0) DC-VOLTAGE - LSW	(104) 16bit - Encoder 1 speed filtered
52.06 DATA IN 6	(108) ENCODER1 SPEED - MSW	(108) ENCODER1 SPEED - MSW	0
52.07 DATA IN 7	(0) ENCODER1 SPEED - LSW	(0) ENCODER1 SPEED - LSW	0
52.08 DATA IN 8	0	0	0
52.09 DATA IN 9	0	0	0
52.10 DATA IN 10	0	0	0
53.01 DATA OUT 1	(2606) Const speed sel1	(2606) Const speed sel1	(2226) 16bit - Constant speed 1
53.02 DATA OUT 2	(2607) Const speed sel2	(2607) Const speed sel2	(2227) 16bit - Constant speed 2
53.03 DATA OUT 3	(2608) Const speed sel3	(2608) Const speed sel3	(2228) 16bit - Constant speed 3
53.04 DATA OUT 4	(2204) Acc time2 - MSW	(2204) Acc time2 - MSW	(2314) 32bit - Acceleration time 2 - MSW
53.05 DATA OUT 5	(0) Acc time2 - LSW	(0) Acc time2 - LSW	(0) Acceleration time 2 - LSW
53.06 DATA OUT 6	(2205) Dec time2 - MSW	(2205) Dec time2 - MSW	(2315) 32bit - Deceleration time 2 - MSW
53.07 DATA OUT 7	(0) Dec time2 - LSW	(0) Dec time2 - LSW	(0) Deceleration time 2 - LSW
53.08 DATA OUT 8	0	0	0
53.09 DATA OUT 9	0	0	0
53.10 DATA OUT 10	0	0	0
51.27* FBA PAR REFRESH	(1) REFRESH	(1) REFRESH	(1) REFRESH

* New settings take effect only when the module power is cycled or when the module receives a Fieldbus Adapter parameter refresh by setting parameter 51.27 to REFRESH.

MSW *= Most Significant Word*
LSW *= Less Significant Word*

EtherNet/IP - Drive Setup

FENA-01 Example: **ACS350, ACS355 and ACH550 with E-Clipse Bypass** - ODVA AC/DC Drives Profile (3 Data words In/Out)

The example will write the ODVA Main Control Word, Speed Ref and Torque Ref. It will read ODVA Main status word, Actual speed, Actual Torque.

Table 12: I/O Assembly Instance 23 & 73

Drive Parameter	Example setting for ACS350, ACS355	Example setting for E-Clipse Bypass
10.01 EXT 1 COMMANDS	COMM	n/a
10.03 REF DIRECTION	REQUEST	n/a
11.03 REF1 SELECT	COMM	n/a
16.01 START/STOP	n/a	2 = COMM
16.04 FAULT RESET SEL	COMM	n/a
16.07 RESET SRC	n/a	2 = COMM
98.02 COMM PROT SEL	Enable	Enable
51.01 MODULE TYPE	ETHERNET (READ ONLY)	ETHERNET (READ ONLY)
51.02 PROTOCOL/PROFILE	(100) ODVA AC/DC Drive	(100) ODVA AC/DC Drive
51.03 COMM RATE	(0) AUTO NEGOTIATE	(0) AUTO NEGOTIATE
51.04 IP CONFIGURATION	(0) STATIC IP	(0) STATIC IP
51.05 IP ADDRESS	192	192
51.06 IP ADDRESS	168	168
51.07 IP ADDRESS	0	0
51.08 IP ADDRESS	2	3
51.09 SUBNET MASK	24	25
51.10 GW ADDRESS	0	0
51.11 GW ADDRESS	0	0
51.12 GW ADDRESS	0	0
51.13 GW ADDRESS	0	0
51.20 CONTROL TIMEOUT	0	0
51.21 IDLE ACTION	0	0
51.22 ODVA STOP FUNCTION	(0) RAMP	(0) RAMP
51.23 ODVA SPEED SCALE	128	128
51.24 ODVA TORQUE SCALE	128	128
51.27* FBA PAR REFRESH	(1) REFRESH	(1) REFRESH

* *New settings take effect only when the module power is cycled or when the module receives a Fieldbus Adapter parameter refresh by setting parameter 51.27 to REFRESH*

FENA-11 Example: **ACS850, ACSM1 and ACS880** - ODVA Drives Profile - (3 Data Words In/Out)

The example will write the ODVA Main Control Word, Speed Ref and Torque Ref. It will read ODVA Main status word, Actual speed, Actual Torque.

Table 13: I/O Assembly Instance 23 & 73

Drive Parameter	Example setting for ACS850	Example setting for ACSM1	Example setting for DCS800
16.15 Menu set sel	Load long	n/a	n/a
10.01 Ext1 start func	FBA	FBA	n/a
20.01 Ext1 commands	n/a	n/a	Fieldbus A
21.01 Speed ref1 sel	FBA ref1	n/a	n/a
22.11 Speed ref1 source	n/a	n/a	FB A ref1
24.01 SPEED REF1 SEL	n/a	FBA REF1	n/a
50.01 Fba enable	Enable	Enable	Option slot 3
51.01 MODULE TYPE	ETHERNET (READ ONLY)	ETHERNET (READ ONLY)	ETHERNET (READ ONLY)
51.02 PROTOCOL/PROFILE	(100) ODVA AC/DC Drive	(100) ODVA AC/DC Drive	(100) ODVA AC/DC Drive
51.03 COMM RATE	(0) AUTO NEGOTIATE	(0) AUTO NEGOTIATE	(0) AUTO NEGOTIATE
51.04 IP CONFIGURATION	(0) STATIC IP	(0) STATIC IP	(0) STATIC IP
51.05 IP ADDRESS	192	192	192
51.06 IP ADDRESS	168	168	168
51.07 IP ADDRESS	0	0	0
51.08 IP ADDRESS	12	13	14
51.09 SUBNET MASK	24	24	24
51.10 GW ADDRESS	0	0	0
51.11 GW ADDRESS	0	0	0
51.12 GW ADDRESS	0	0	0
51.13 GW ADDRESS	0	0	0
51.20 CONTROL TIMEOUT	0	0	0
51.21 IDLE ACTION	0	0	0
51.22 ODVA STOP FUNCTION	(0) RAMP	(0) RAMP	(0) RAMP
51.23 ODVA SPEED SCALE	128	128	128
51.24 ODVA TORQUE SCALE	128	128	128
51.27* FBA PAR REFRESH	(1) REFRESH	(1) REFRESH	(1) REFRESH

* New settings take effect only when the module power is cycled or when the module receives a Fieldbus Adapter parameter refresh by setting parameter 51.27 to REFRESH.

MSW = *Most Significant Word*
LSW = *Less Significant Word*

EtherNet/IP - Drive Setup

FENA-01 Example: **ACS350, ACS355 and ACH550 with E-Clipse Bypass** - ODVA AC/DC Drives Profile (13 Data words In/Out)

The example will write the Main Control Word, Speed Ref, Torque Ref, Acceler Time 2 and Deceler Time 2. It will read Main status word, Actual speed, Actual Torque, Current, DC Bus Voltage and KW Hours from the Eclipse Bypass unit.

Table 14: I/O Assembly Instance 123 & 173

Drive Parameter	Example setting for ACS350, ACS355	Example setting for E-Clipse Bypass
10.01 EXT 1 COMMANDS	COMM	n/a
10.03 REF DIRECTION	REQUEST	n/a
11.03 REF1 SELECT	COMM	n/a
16.01 START/STOP	n/a	2 = COMM
16.04 FAULT RESET SEL	COMM	n/a
16.07 RESET SRC	n/a	2 = COMM
98.02 COMM PROT SEL	Enable	Enable
51.01 MODULE TYPE	ETHERNET (READ ONLY)	ETHERNET (READ ONLY)
51.02 PROTOCOL/PROFILE	(100) ODVA AC/DC Drive	(100) ODVA AC/DC Drive
51.03 COMM RATE	(0) AUTO NEGOTIATE	(0) AUTO NEGOTIATE
51.04 IP CONFIGURATION	(0) STATIC IP	(0) STATIC IP
51.05 IP ADDRESS	192	192
51.06 IP ADDRESS	168	168
51.07 IP ADDRESS	0	0
51.08 IP ADDRESS	2	3
51.09 SUBNET MASK	24	24
51.10 GW ADDRESS	192	192
51.11 GW ADDRESS	168	168
51.12 GW ADDRESS	0	0
51.13 GW ADDRESS	1	1
51.20 CONTROL TIMEOUT	0	0
51.21 IDLE ACTION	0	0
51.22 ODVA STOP FUNCTION	(0) RAMP	(0) RAMP
51.23 ODVA SPEED SCALE	128	128
51.24 ODVA TORQUE SCALE	128	128
51.27* FBA PAR REFRESH	(1) REFRESH	(1) REFRESH
54.01 FB DATA INPUT 1	(104) CURRENT	(104) CURRENT**
54.02 FB DATA INPUT 2	(107) DC BUS VOLTAGE	(107) DC BUS VOLTAGE**

EtherNet/IP - Drive Setup

FENA-01 Example: **ACS350, ACS355 and ACH550 with E-Clipse Bypass** -ODVA AC/DC Drives Profile (13 Data words In/Out) (continued)

Table 14: I/O Assembly Instance 123 & 173 (continued)

Drive Parameter	Example setting for ACS350, ACS355	Example setting for E-Clipse Bypass
54.03 FB DATA INPUT 3	0	(10106) KW HOURS from Eclipse unit***
54.03 ... 54.10 FB DATA INPUT	0	0
55.01 FB DATA OUTPUT 1	(2205) ACCELER TIME 2	(2205) ACCELER TIME 2**
55.02 FB DATA OUTPUT 2	(2206) DECELER TIME 2	(2206) DECELER TIME 2**
55.03 ... 55.10 FB DATA OUTPUT	0	0

*   New settings take effect only when the module power is cycled or when the module receives a Fieldbus Adapter parameter refresh by setting parameter 51.27 to REFRESH

** To map ACH550 parameters in groups 54 or 55, program parameters 5401...5410 or 5501...5510 with the actual ACH550 parameter value. For example to read ACH550 parameter 0106 (Power), program parameter 5401 to 0106.

*** To map E-Clipse Bypass parameters in groups 54 or 55, program parameters 5401...5410 or 5501...5510 and add 10,000 to the E-Clipse Bypass parameter value. For example to read E-Clipse Bypass parameter 0106 (KW Hours), program parameter 5401 to 10106.

EtherNet/IP - Drive Setup

FENA-11 Example: **ACS850, ACSM1 and ACS880** - ODVA Drives Profile - (13 Data Words In/Out)

The example will write the Main Control Word, Speed Ref, Torque Ref, Const Speed 1 - 3, Acc Time 2 and Dec Time 2. It will read Main status word, Actual speed, Actual Torque, Motor Temp, Motor Current, DC Bus Voltage and Encoder 1 speed.

Every parameter in the ACS880 when mapped as a dataword is user selectable via parameter group 52, 53, 55 and 56 as 16 bit or 32 bit format.

Table 15: I/O Assembly Instance 123 & 173

Drive Parameter	Example setting for ACS850	Example setting for ACSM1	Example setting for DCS800
16.15 Menu set sel	Load long	n/a	n/a
10.01 Ext1 start func	FBA	FBA	n/a
20.01 Ext1 commands	n/a	n/a	Fieldbus A
21.01 Speed ref1 sel	FBA ref1	n/a	n/a
22.11 Speed ref1 source	n/a	n/a	FB A ref1
24.01 SPEED REF1 SEL	n/a	FBA REF1	n/a
50.01 Fba enable	Enable	Enable	Option slot 3
51.01 MODULE TYPE	ETHERNET (READ ONLY)	ETHERNET (READ ONLY)	ETHERNET (READ ONLY)
51.02 PROTOCOL/PROFILE	(100) ODVA AC/DC Drive	(100) ODVA AC/DC Drive	(100) ODVA AC/DC Drive
51.03 COMM RATE	(0) AUTO NEGOTIATE	(0) AUTO NEGOTIATE	(0) AUTO NEGOTIATE
51.04 IP CONFIGURATION	(0) STATIC IP	(0) STATIC IP	(0) STATIC IP
51.05 IP ADDRESS	192	192	192
51.06 IP ADDRESS	168	168	168
51.07 IP ADDRESS	0	0	0
51.08 IP ADDRESS	2	2	2
51.09 SUBNET MASK	24	24	24
51.10 GW ADDRESS	0	0	0
51.11 GW ADDRESS	0	0	0
51.12 GW ADDRESS	0	0	0
51.13 GW ADDRESS	0	0	0
51.20 CONTROL TIMEOUT	0	0	0
51.21 IDLE ACTION	0	0	0
51.22 ODVA STOP FUNCTION	(0) RAMP	(0) RAMP	(0) RAMP
51.23 ODVA SPEED SCALE	128	128	128
51.24 ODVA TORQUE SCALE	128	128	128
52.01 DATA IN 1	(105) MOTOR CURRENT	(117) MOTOR TEMP	(3501) 16bit - Motor estimated temperature
52.02 DATA IN 2	(123) MOTOR POWER - MSW	(104) MOTOR CURRENT - MSW	(107) 32bit - MOTOR CURRENT - MSW

FENA-11 Example: **ACS850, ACSM1 and ACS880** - ODVA Drives Profile - (13 Data Words In/Out) (continued)

Table 15: I/O Assembly Instance 123 & 173

Drive Parameter	Example setting for ACS850	Example setting for ACSM1	Example setting for DCS800
52.03 DATA IN 3	(0) MOTOR POWER - LSW	(0) MOTOR CURRENT - LSW	(0) MOTOR CURRENT - LSW
52.04 DATA IN 4	(107) DC-VOLTAGE - MSW	(107) DC-VOLTAGE - MSW	(111) 16bit - DC-VOLTAGE - MSW
52.05 DATA IN 5	(0) DC-VOLTAGE - LSW	(0) DC-VOLTAGE - LSW	(104) 16bit - Encoder 1 speed filtered
52.06 DATA IN 6	(108) ENCODER1 SPEED - MSW	(108) ENCODER1 SPEED - MSW	0
52.07 DATA IN 7	(0) ENCODER1 SPEED - LSW	(0) ENCODER1 SPEED - LSW	0
52.08 DATA IN 8	0	0	0
52.09 DATA IN 9	0	0	0
52.10 DATA IN 10	0	0	0
53.01 DATA OUT 1	(2606) Const speed sel1	(2606) Const speed sel1	(2226) 16bit - Constant speed 1
53.02 DATA OUT 2	(2607) Const speed sel2	(2607) Const speed sel2	(2227) 16bit - Constant speed 2
53.03 DATA OUT 3	(2608) Const speed sel3	(2608) Const speed sel3	(2228) 16bit - Constant speed 3
53.04 DATA OUT 4	(2204) Acc time2 - MSW	(2204) Acc time2 - MSW	(2314) 32bit - Acceleration time 2 - MSW
53.05 DATA OUT 5	(0) Acc time2 - LSW	(0) Acc time2 - LSW	(0) Acceleration time 2 - LSW
53.06 DATA OUT 6	(2205) Dec time2 - MSW	(2205) Dec time2 - MSW	(2315) 32bit - Deceleration time 2 - MSW
53.07 DATA OUT 7	(0) Dec time2 - LSW	(0) Dec time2 - LSW	(0) Deceleration time 2 - LSW
53.08 DATA OUT 8	0	0	0
53.09 DATA OUT 9	0	0	0
53.10 DATA OUT 10	0	0	0
51.27* FBA PAR REFRESH	(1) REFRESH	(1) REFRESH	(1) REFRESH

* New settings take effect only when the module power is cycled or when the module receives a Fieldbus Adapter parameter refresh by setting parameter 51.27 to REFRESH.

MSW = *Most Significant Word*
LSW = *Less Significant Word*

EtherNet/IP - Drive Setup

Standard ABB Drive on EtherNet/IP™ (RETA-01 or FENA-01/-11) with RSLogix® 500 Software

Overview

This document contains an overview on how to setup a standard ABB drive in RSLogix 500 on EtherNet/IP.

NOTE!   RSLogix 500 and the PLC processor must support Class 3 messaging.

(RETA-01 or FENA-01/-11/-11) with RSLogix® 500
Software Installation

1. Open RSLogix® 500 and open a RSLogix® 500 program. A message instruction will need to be added to write the output assembly and to read the input assembly. Name the MSG.

*The **write** message for the Quick Start Guide is named MG10:0*

*The **read** message for the Quick Start Guide is named MG11:0*
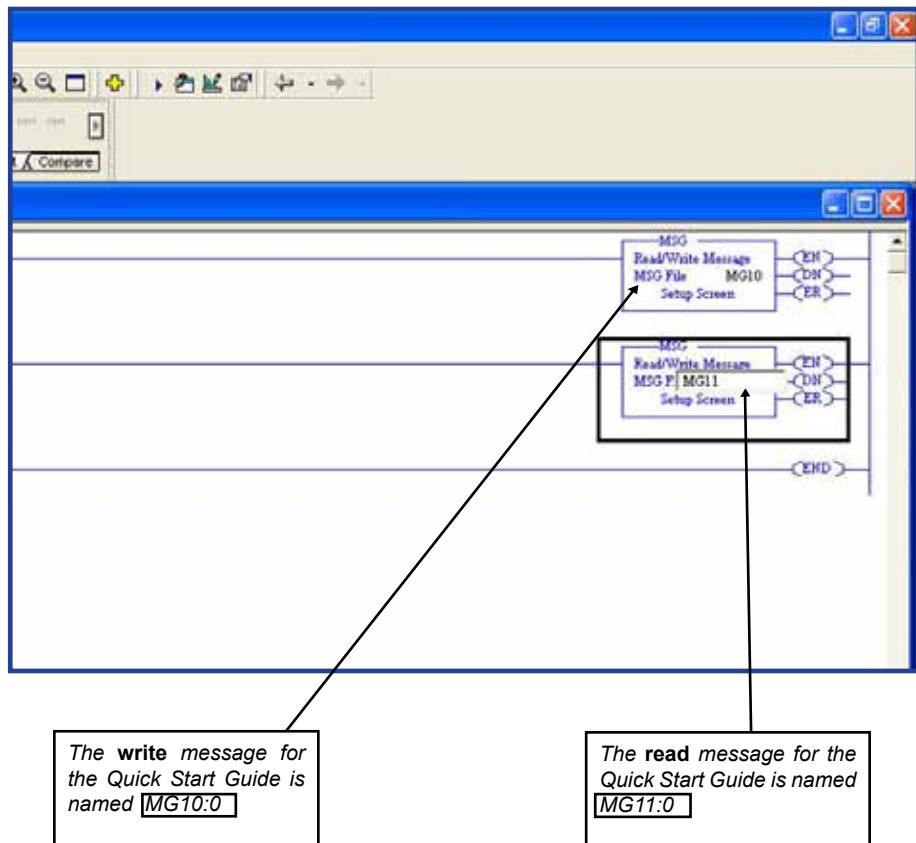
(RETA-01 or FENA-01/-11) with RSLogix® 500
Software Installation (continued)

2. Setting up the write message MG10:0. Click the Setup Screen button. Change Channel to 1.
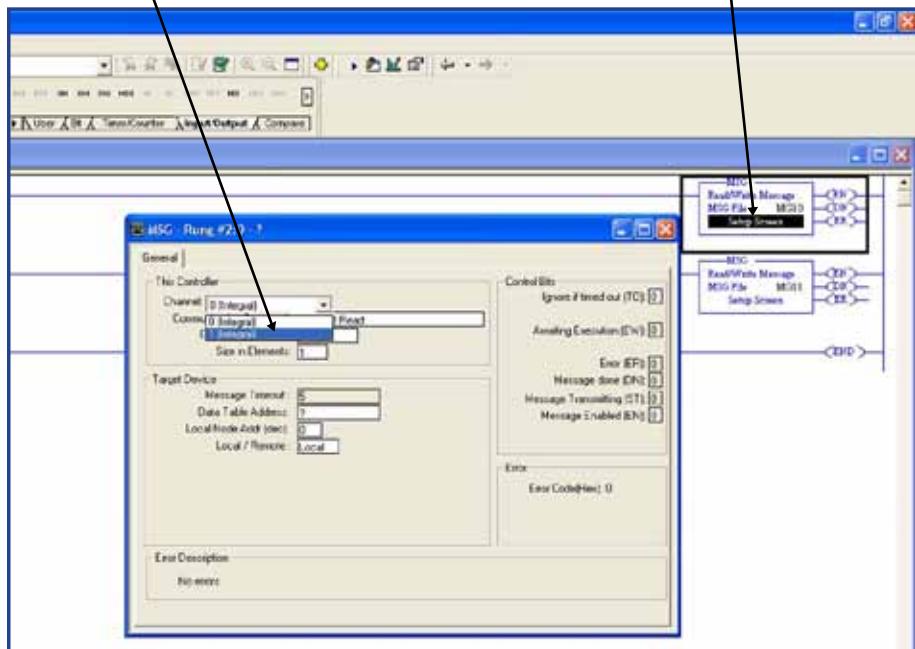
(RETA-01 or FENA-01/-11) with RSLogix® 500 Software Installation (continued)

3. Program Communication Command to CIP Generic.
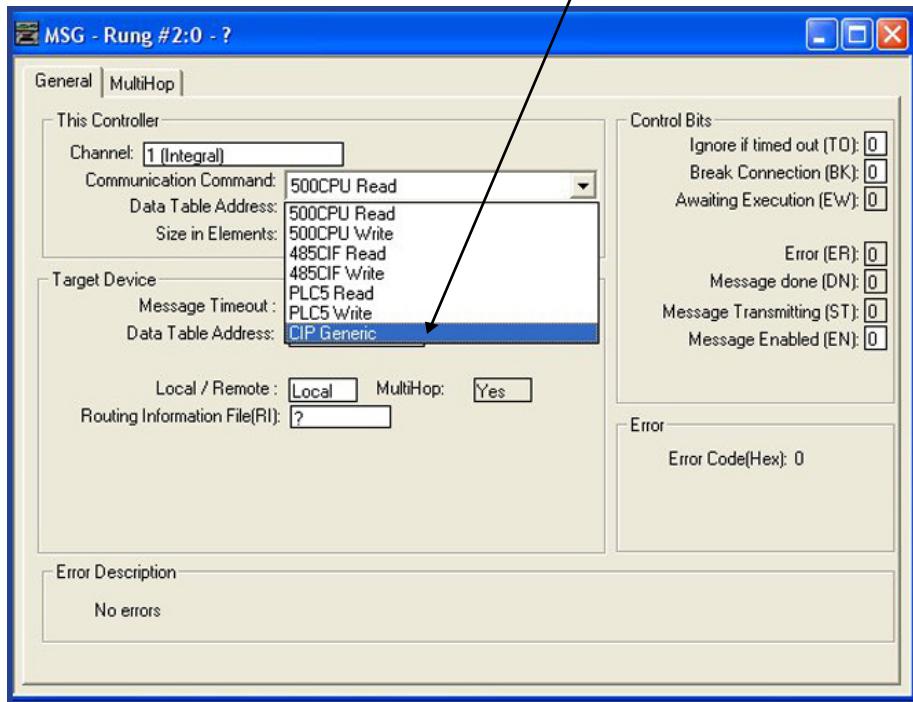
(RETA-01 or FENA-01/-11) with RSLogix® 500
Software Installation (continued)

4. Program the service to Write Assembly.
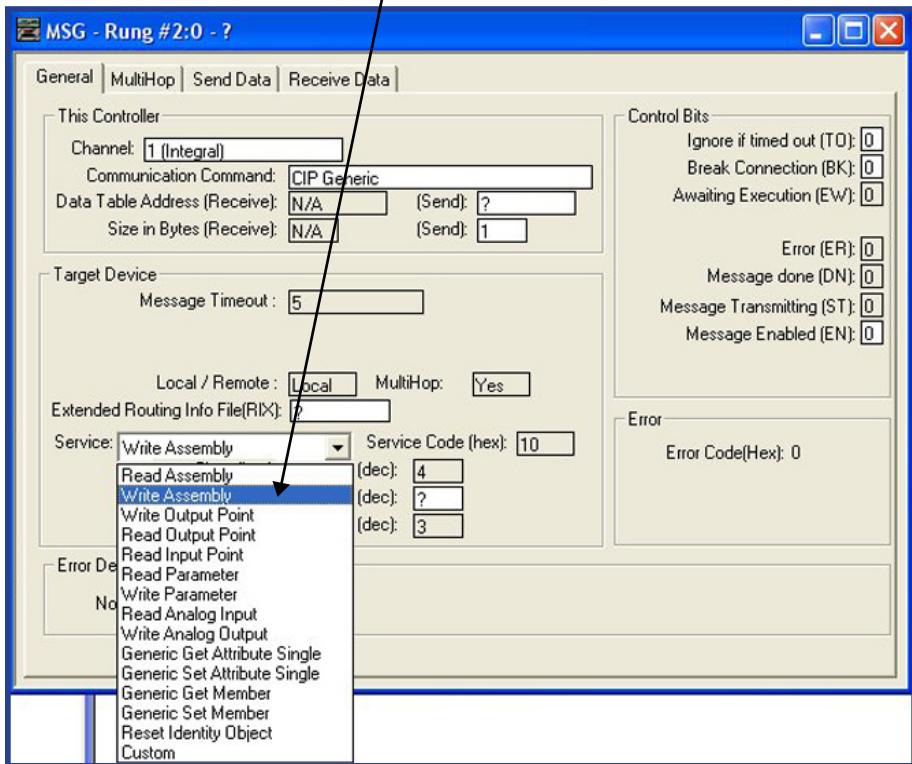
(RETA-01 or FENA-01/-11) with RSLogix® 500
Software Installation (continued)

5. Program the following information. In the example below, the drive will use assembly 21 (Write).

Program the address where the data that is in the PLC will be written to the drive.

Enter the number of bytes the message will write to the drive.

MSG - Rung #2:0 - ?

General | MultiHop | Send Data | Receive Data

This Controller
Channel: 1 (Integral)
Communication Command: CIP Generic
Data Table Address (Receive): N/A   (Send): N20
Size in Bytes (Receive): N/A   (Send): 4

Target Device
Message Timeout : 5

Local / Remote : Local   MultiHop: Yes
Extended Routing Info File(RIX): RIX15:0
Service: Write Assembly   Service Code (hex): 10
Class (hex): 4   (dec): 4
Instance (hex): 15   (dec): 21
Attribute (hex): 3   (dec): 3

Error Description
No errors

Control Bits
Ignore if timed out (TO): 0
Break Connection (BK): 0
Awaiting Execution (EW): 0

Error (ER): 0
Message done (DN): 0
Message Transmitting (ST): 0
Message Enabled (EN): 0

Error
Error Code(Hex): 0

Enter the Output Assembly number here.

Enter RIX # for the PLC to use.

(RETA-01 or FENA-01/-11) with RSLogix® 500 Software Installation (continued)

RETA-01 I/O assembly instances

Name	Input Instance	Output Instance	Typical PLC Word Size
Basic Speed Control	70	20	2
Enhanced Speed Control	71	21	2
Enhanced Speed Control plus Drive Parameters	171	121	6
ABB Drives Profile w/Set Speed	101	100	2
ABB Drives Profile plus Drive Parameters	103	102	4

FENA-01/-11 I/O assembly instances

Name	Input Instance	Output Instance	PLC Word Size
Basic Speed Control	70	20	2
Enhanced Speed Control	71	21	2
Basic Speed and Torque Control	72	22	3
Enhanced Speed and Torque Control	73	23	3
Basic Speed Control plus Drive Parameters	170	120	12
Enhanced Speed Control plus Drive Parameters	171	121	12
Basic Speed and Torque Control plus Drive Parameters	172	122	13
Enhanced Speed and Torque Control plus Drive Parameters	173	123	13
ABB Drives Profile w/Set Speed	51	1	2
ABB Drives Profile w/Set Speed and Set Torque	52	2	3
ABB Drives Profile w/Set Speed plus Drive Parameters	151	101	12
ABB Drives Profile w/Set Speed and Set Torque plus Drive Parameters	152	102	13
Transparent16 w/One	61	11	2
Transparent16 w/Two	62	12	3
Transparent16 w/One plus Drive Parameters	161	111	12
Transparent16 w/Two plus Drive Parameters	162	112	13
Transparent32 w/One	71	21	4
Transparent32 w/Two	72	22	6
Transparent32 w/One plus Drive Parameters	171	121	14
Transparent32 w/Two plus Drive Parameters	172	122	16

EtherNet/IP - PLC Setup

(RETA-01 or FENA-01/-11) with RSLogix® 500 Software Installation (continued)

6. Click the MultiHop tab.
   Enter the IP Address for the RETA-01 or FENA-01/-11.
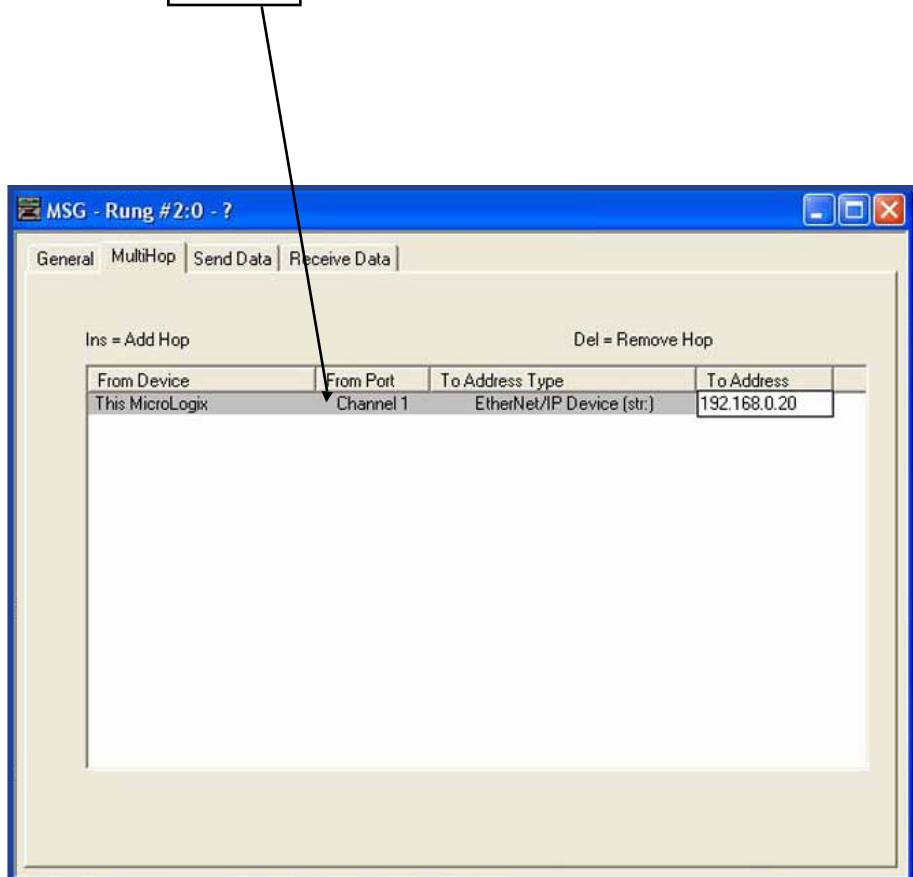
(RETA-01 or FENA-01/-11) with RSLogix® 500
Software Installation (continued)

7. Program the same kind of information for the read message.
    The example below the drive will use assembly 71 (Read.)

Program the address where the data that is read from the drive will be placed in the PLC.

Enter the number of bytes the message will read from the drive.

Enter RIX # for the PLC to use.

Enter the Input Assembly number here.

(RETA-01 or FENA-01/-11) with RSLogix® 500 Software Installation (continued)

RETA-01 I/O assembly instances

Name	Input Instance	Output Instance	Typical PLC Word Size
Basic Speed Control	70	20	2
Enhanced Speed Control	71	21	2
Enhanced Speed Control plus Drive Parameters	171	121	6
ABB Drives Profile w/Set Speed	101	100	2
ABB Drives Profile plus Drive Parameters	103	102	4

FENA-01/-11 I/O assembly instances

Name	Input Instance	Output Instance	PLC Word Size
Basic Speed Control	70	20	2
Enhanced Speed Control	71	21	2
Basic Speed and Torque Control	72	22	3
Enhanced Speed and Torque Control	73	23	3
Basic Speed Control plus Drive Parameters	170	120	12
Enhanced Speed Control plus Drive Parameters	171	121	12
Basic Speed and Torque Control plus Drive Parameters	172	122	13
Enhanced Speed and Torque Control plus Drive Parameters	173	123	13
ABB Drives Profile w/Set Speed	51	1	2
ABB Drives Profile w/Set Speed and Set Torque	52	2	3
ABB Drives Profile w/Set Speed plus Drive Parameters	151	101	12
ABB Drives Profile w/Set Speed and Set Torque plus Drive Parameters	152	102	13
Transparent16 w/One	61	11	2
Transparent16 w/Two	62	12	3
Transparent16 w/One plus Drive Parameters	161	111	12
Transparent16 w/Two plus Drive Parameters	162	112	13
Transparent32 w/One	71	21	4
Transparent32 w/Two	72	22	6
Transparent32 w/One plus Drive Parameters	171	121	14
Transparent32 w/Two plus Drive Parameters	172	122	16

EtherNet/IP - PLC Setup

(RETA-01 or FENA-01/-11) with RSLogix® 500
Software Installation (continued)

8. Click the MultiHop tab.
   Enter the IP Address for the RETA-01 or FENA-01/-11.
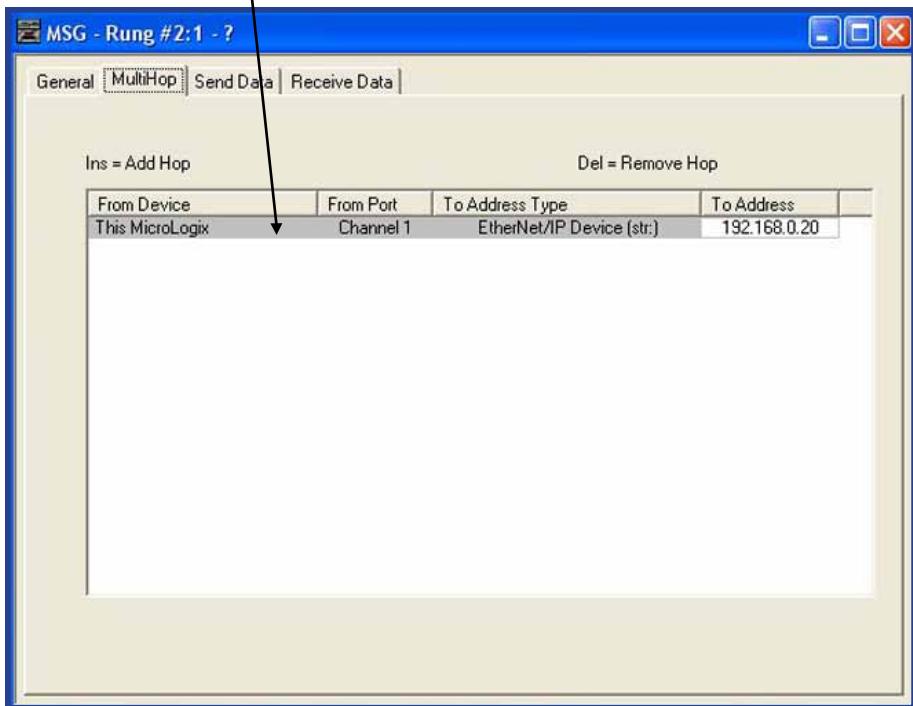
(RETA-01 or FENA-01/-11) with RSLogix® 500
Software Installation (continued)

9. Message timing will need to be added to program.
   See examples below for timing using timers.
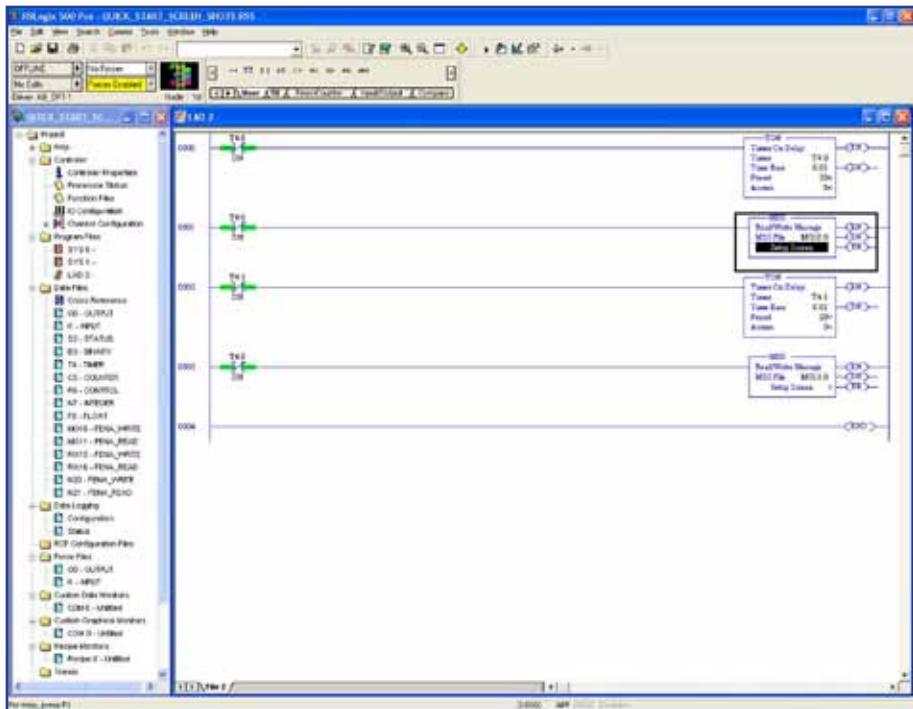
A sample RSLogix 500 PLC Program can be found at:
http://www.abb.com/product/ap/seitp322/6eca4f6b6e92e987c1257941006a
3f70.aspx

Standard ABB Drive on EtherNet/IP (RETA-01) with RSLogix® 5000 Software

Overview

This document contains an overview on how to setup a standard ABB drive in RSLogix 5000 on EtherNet/IP.

Installation

1. Open RSLogix® 5000 and open a RSLogix® 5000 program. Right click on the 1769-L32E EtherNet Port LocalENB. Click on New Module.
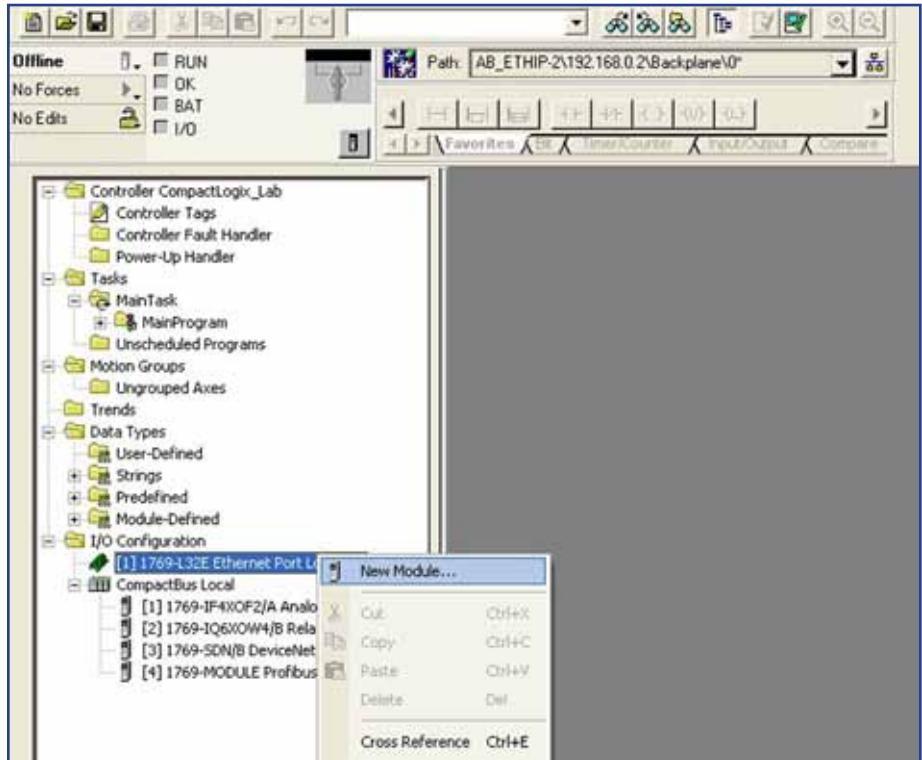
(RETA-01 with RSLogix® 5000 Software Installation (continued)

2. Select Module Type: ETHERNET-MODULE.
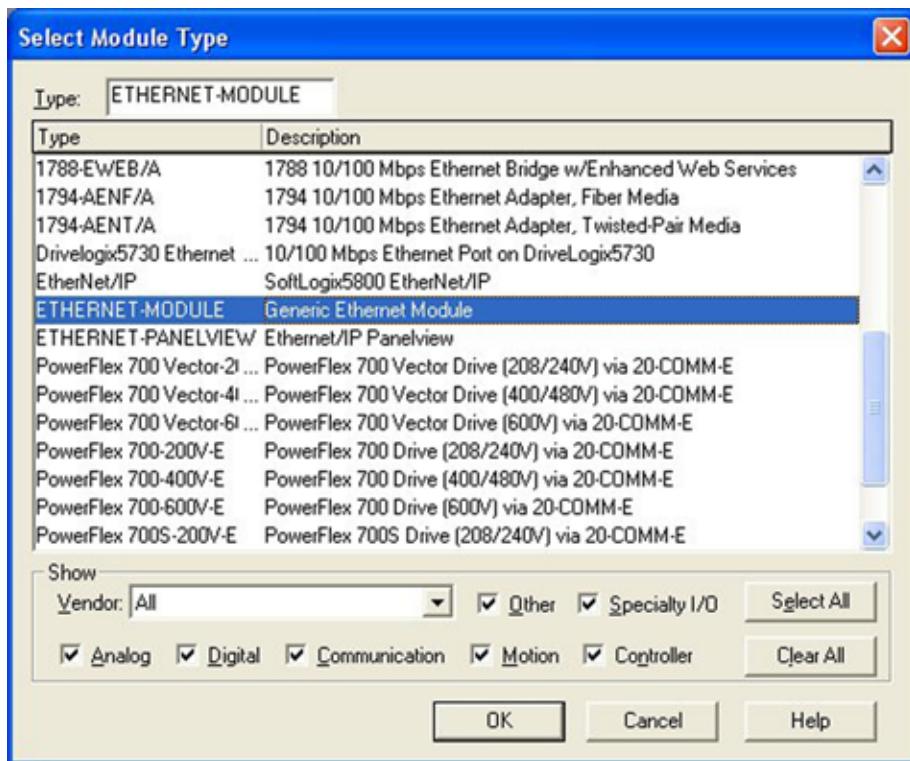
3. Program the following information below. The example shown is using the ABB Profile Assembly Instances 102 and 103. The following table will display Input and Output Assembly Instances and PLC I/O Memory size.

Input Assembly Instances	Output Assembly Instances	Typical PLC Word Size Settings
70	20	2
71	21	2
171	121	6
101	100	2
103	102	4

Reference RETA-01 User Manual's section "Communication" for more information on Input/Output Assembly Instances.

(RETA-01 with RSLogix® 5000 Software
Installation (continued)

4. Enter the following information. The example shown is using the ABB Profile Assembly Instances 102 and 103. The PLC will transmit and receive four words.

Enter the name that will be given to the RETA-01

Sets the size of the Input/Output words for the RETA-01

Module Properties - LocalENB (ETHERNET-MODULE 1.1)

Type: ETHERNET-MODULE Generic Ethernet Module
Vendor: Allen-Bradley
Parent: LocalENB
Name: RETA_01

Description:

Comm Format: Data - INT

Address / Host Name
● IP Address   192 . 168 . 0 . 50
○ Host Name:

Connection Parameters

	Assembly Instance:	Size	
Input:	103	4	(16-bit)
Output:	102	4	(16-bit)
Configuration:	1	0	(8-bit)
Status Input:			
Status Output:			

Cancel   < Back   Next >   Finish >>   Help

ABB RETA-01 uses 16 Bit words, change Comm Format to Data - INT (16Bits)

Enter the IP address of the RETA-01

Configuration needs to be programmed to 1 and size to 0

5. Click Finish.

(RETA-01 with RSLogix® 5000 Software Installation (continued)

6.   The RETA-01 is now added to the PLC I/O.
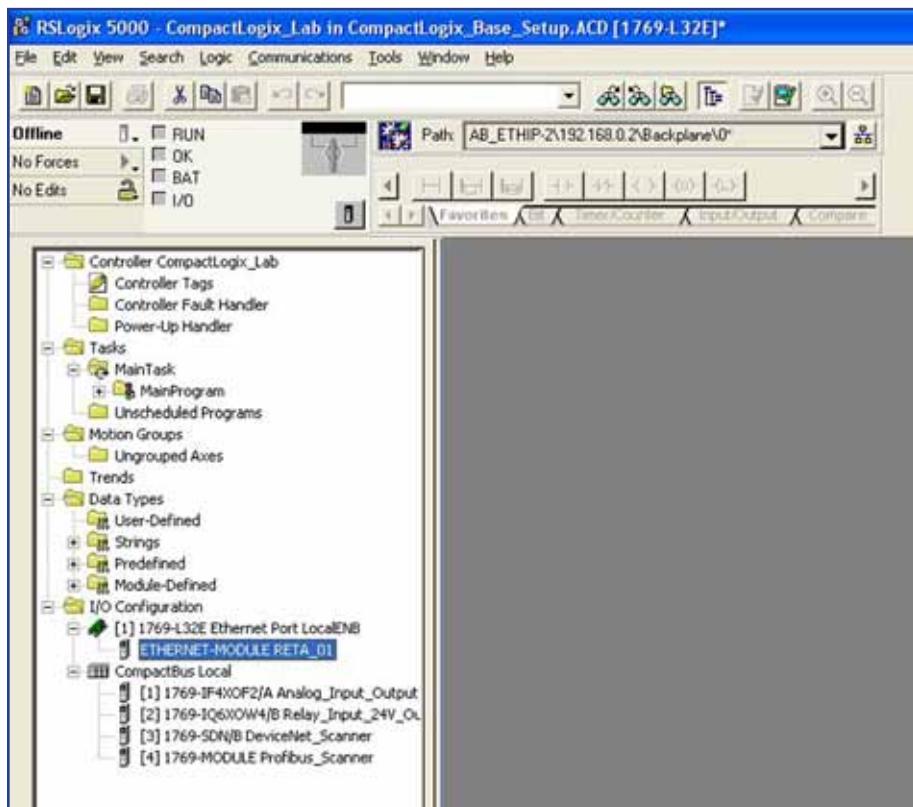
Standard ABB Drive on EtherNet/IP™ (FENA-01/-11) with RSLogix® 5000

Overview

This document contains an overview on how to setup a standard ABB drive in RSLogix 5000 on EtherNet/IP.

(FENA-01/-11 with RSLogix® 5000 Software

Installation

1. Open RSLogix® 5000 and open a RSLogix® 5000 program. Right click on the 1769-L32E EtherNet Port LocalENB. Click on New Module.
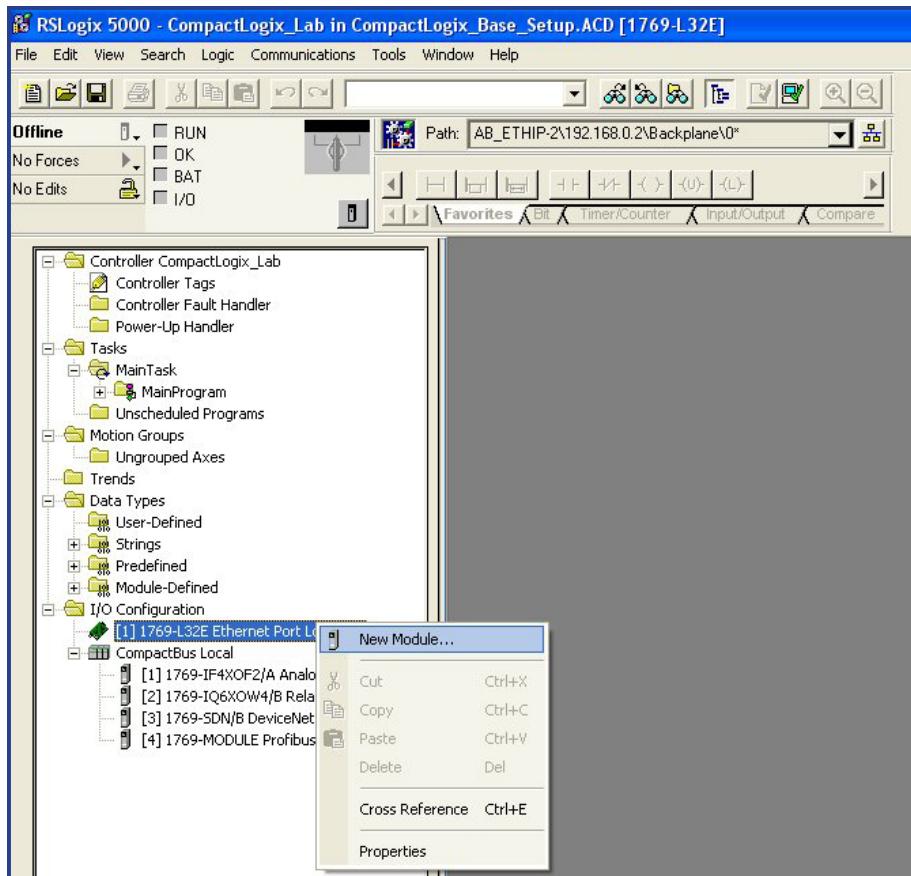
(FENA-01/-11 with RSLogix® 5000 Software Installation (continued)

2. Select Module Type: ETHERNET-MODULE.
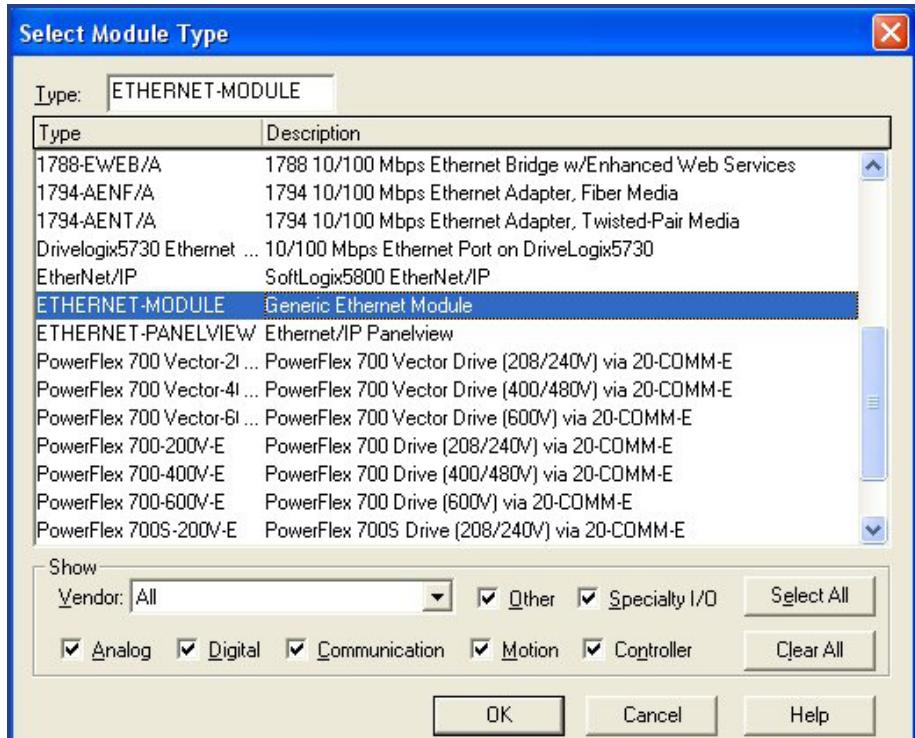
(FENA-01/-11 with RSLogix® 5000 Software Installation (continued)

3. Program the following information below. The example shown is using the ABB Profile Assembly Instances 102 and 152. The following table will display Input and Output Assembly Instances and PLC I/O Memory size.

Input Assembly Instances	Output Assembly Instances	PLC Word Settings
70	20	2
71	21	2
72	22	3
73	23	3
170	120	12
171	121	12
172	122	13
173	123	13
51	1	2
52	2	3
151	101	12
152	102	13
61	11	2
62	12	3
161	111	12
162	112	13

Reference FENA-01/-11 EtherNet Adapter Module User's Manual 3AUA0000093568 section "Communication" for more information on Input/Output Assembly Instances.

(FENA-01/-11 with RSLogix® 5000 Software Installation (continued)

4. Enter the following information. The example shown is using the ABB Profile Assembly Instances 102 and 152. The PLC will transmit and receive 13 words.

Enter the name that will be given to the FENA-01

Enter Input and Output Assembly Instances numbers.

Sets the size of the Input/Output words for the FENA-01

ABB FENA-01 uses 16 Bit words, change Comm Format to Data - INT (16Bits)

Enter the IP Address of the FENA-01

Configuration needs to be programmed to 1 and size to 0
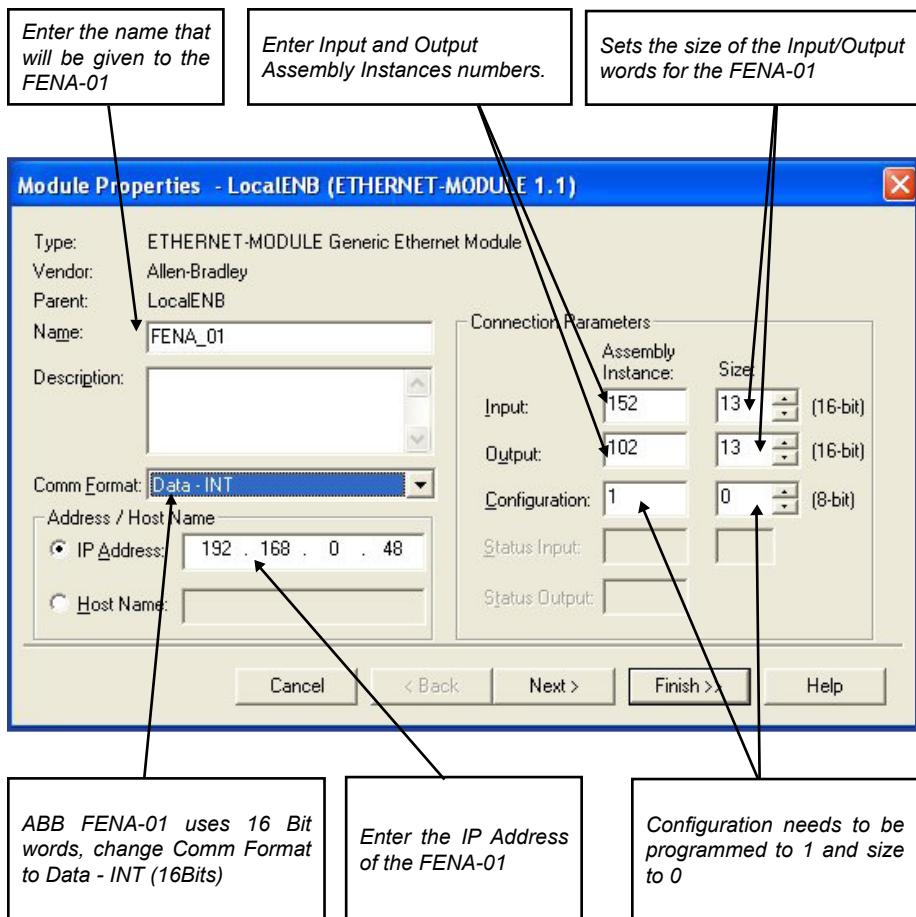
5. Click Finish.

(FENA-01/-11 with RSLogix® 5000 Software Installation (continued)

6.   The FENA-01 is now added to the PLC I/O.
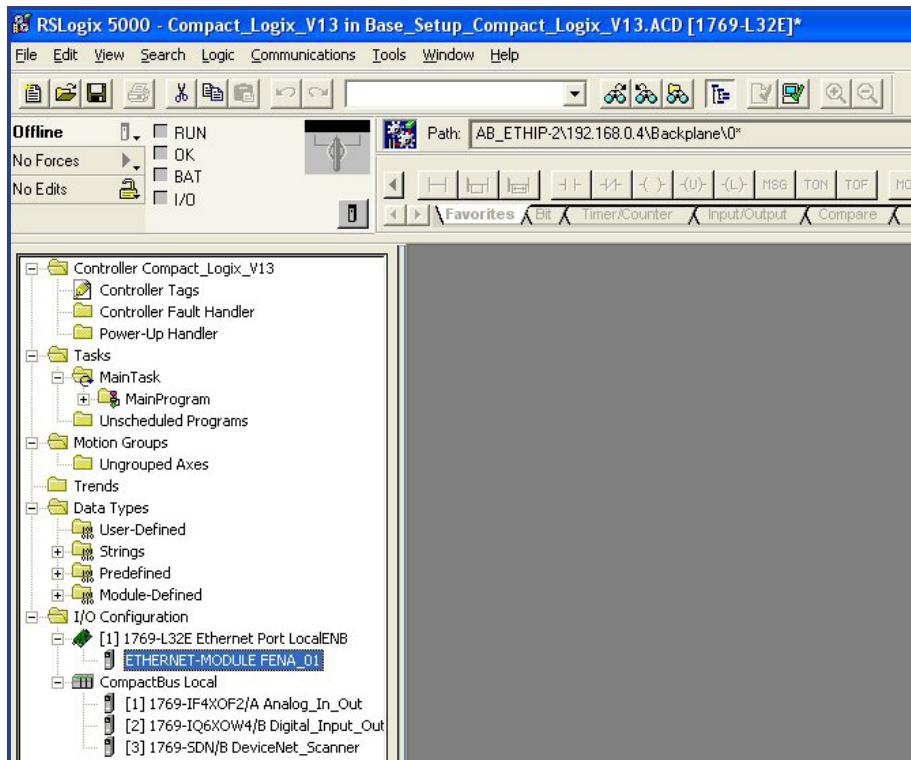
Reference Documents

General:

ACS350 User's Manual
3AFE68462401

ACS355 User's Manual
3AUA0000066143

ACH550 E-Clipse Bypass
User's Manual, US
3AUA0000016461

ACH550-UH HVAC Drives
User's Manual, US
3AUA000081823

ACS550-U1 User's Manual
3AUA0000001609

ACS800 Firmware Manual
3AFE64527592

ACS800 Primary Control Program
Firmware Manual
3AUA0000085967

ACS850 Standard Control Program
Firmware Manual
3AUA0000045497

ACSM1 Speed and Torque Control
Program Firmware Manual
3AFE68848261

DCS800 Firmware Manual
3ADW000193

ControlNet (RCNA-01) Drive Set-Up:

ACS550-U1 User's Manual
3AUA0000001609

ACQ550 Firmware Manual
3AUA0000145616

ACS800 Firmware Manual
3AFE64527592

DCS800 Firmware Manual
3ADW000193

RCNA Users Manual
3AFE64506005

ControlNet (RCNA-01)PLC Set-Up:

RCNA-01 ControlNet Adapter
Module User's Manual
3AFE64506005

ACS550-U1 User's Manual
3AUA0000001609

ACQ550 Firmware Manual
3AUA0000145616

ACS800 Firmware Manual
3AFE64527592

DCS800 Firmware Manual
3ADW000193

Reference Documents

ControlNet (FCNA-01) Drive Set-Up:

FCNA-01 ControlNet Adapter Module
3AUA0000141650

ACS355 User's Manual
3AUA0000066143

ACS850 Standard Control Program
Firmware Manual
3AUA0000045497

ACSM1 Speed and Torque Control
Program Firmware Manual
3AFE68848261

ACS800 Primary Control Program
Firmware Manual
3AUA0000085967

ControlNet (FCNA-01) PLC Set-Up

FCNA-01 ControlNet Adapter Module
3AUA0000141650

ACS355 User's Manual
3AUA0000066143

ACS850 Standard Control Program
Firmware Manual
3AUA0000045497

ACSM1 Speed and Torque Control
Program Firmware Manual
3AFE68848261

DeviceNet (RDNA-01) Drive Set-Up:

RDNA-01 DeviceNet Adapter
User's Manual
3AFE64504223

ACS550-U1 Users Manual
3AUA0000001609

ACQ550 Firmware Manual
3AUA0000145616

ACS800 Firmware Manual
3AFE64527592

DCS800 Firmware Manual
3ADW000193

DeviceNet (FDNA-01) Drive Set-Up:

ACS350 User's Manual
3AFE68462401

ACS355 User's Manual
3AUA0000066143

ACS850 Standard Control Program
Firmware Manual
3AUA0000045497

ACS880 Primary Control Program
Firmware Manual
3AUA0000085967

ACSM1 Speed and Torque Control
Program Firmware Manual
3AFE68848261

ACH550 E-Clipse Bypass
User's Manual, US
3AUA0000081823

FDNA-01 DeviceNet Adapter
User's Manual
3AFE68573360

Reference Documents

DeviceNet (RDNA-01) PLC Set-Up:

RDNA-01 DeviceNet Adapter
User's Manual
3AFE64504223

ACS550-U1 Users Manual
3AUA0000001609

ACQ550 Firmware Manual
3AUA0000145616

ACS800 Firmware Manual
3AFE64527592

DCS800 Firmware Manual
3ADW000193

DeviceNet (FDNA-01) PLC Set-Up:

FDNA-01 DeviceNet Adapter
User's Manual
3AFE68573360

ACS350 User's Manual
3AFE68462401

ACS355 User's Manual
3AUA0000066143

ACS850 Standard Control Program
Firmware Manual
3AUA0000045497

ACS880 Primary Control Program
Firmware Manual
3AUA0000085967

ACSM1 Speed and Torque Control
Program Firmware Manual
3AFE68848261

ACH550 E-Clipse Bypass
User's Manual, US
3AUA0000081823

**EtherNet Adapter (RETA-01) Drive
Set-Up:**

RETA-01 EtherNet Adapter Module
User's Manual -
3AFE64539736

ACS550-U1 User's Manual
3AUA0000001609

ACQ550 Firmware Manual
3AUA0000145616

ACS800 Firmware Manual
3AFE64527592

DCS800 Firmware Manual
3ADW000193

**EtherNet Adapter (FENA-01) Drive
Set-Up:**

FENA-01/-11 EtherNet Adapter
Module User's Manual
3AUA0000093568

ACS350 User's Manual
3AFE68462401

ACS355 User's Manual
3AUA0000066143

ACH550 E-Clipse Bypass
User's Manual, US
3AUA000081823

ACS880 Primary Control Program
Firmware Manual
3AUA0000085967

Reference Documents

EtherNet (RETA-01 or FENA-01/-11)
PLC Set-Up:

FENA-01/-11 EtherNet Adapter
Module User's Manual
3AUA0000093568

RETA-01 EtherNet Adapter Module
User's Manual
3AFE64539736

ACS350 User's Manual
3AFE68462401

ACS355 User's Manual
3AUA0000066143

ACH550 E-Clipse Bypass
User's Manual,
US 3AUA000081823

ACS550-U1 Users Manual
3AUA0000001609

ACQ550 Firmware Manual
3AUA0000145616

ACS800 Firmware Manual
3AFE64527592

ACS880 Primary Control Program
Firmware Manual
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DCS800 Firmware Manual
3ADW000193

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