ACS800\880 MASTER FOLLOWER GUIDE

Description:

The ACS880 can be used to replace an ACS800 in an existing master follower application without modifying any ACS800 parameters or wiring. As long as the ACS880 is configured properly it can replace an ACS800 as the master or the follower. The ACS880 can read and pass data through the fiber link exactly like the ACS800 can. This makes it easy to transition existing ACS800 customers over to the ACS880, and gives users more options for current master follower applications containing ACS800 drives. This document contains information to help install an ACS880 in a master follower application with existing ACS800 drives.

M/F Fiber Link Configuration:

The M/F link for the 880 is a two fiber wire connection just like the 800. The 880 can be programmed to pass and read data like an 800, so the fiber wire configuration is the same. ACS880 drives with a ZCU control unit require a FDCO DDCS communication module. ACS880 drives with a BCU control unit require an RDCO module. The figure below illustrates how the fiber link is made for both control units as followers.

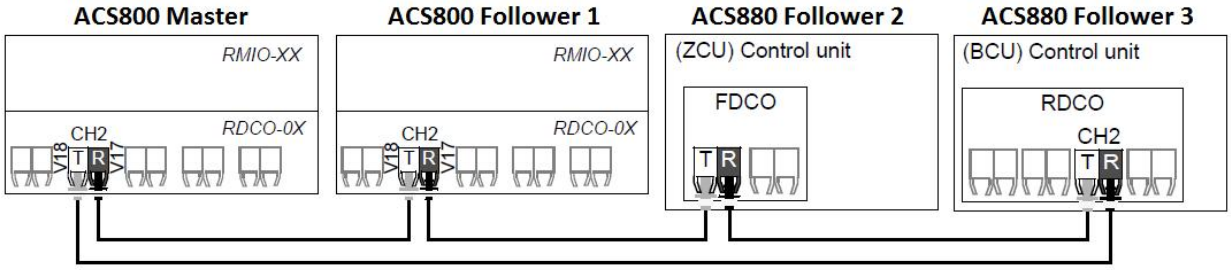

Figure 1 - ACS800/880 Fiber Link

M/F Communication and Parameter Configuration:

This section contains the parameter configuration for ACS800 and ACS880 drives as masters, followers in torque mode, and followers in speed mode.

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ACS800 Master – ACS880 Master

The tables below shows the typical parameter settings for an ACS800 drive setup as a master. The ACS880 parameters listed show how to configure an 880 to replace an 800 master. These are only the parameters related to the M/F link. The motor data, start/stop, speed control, and other parameters need to be configured as well, but are not within the scope of this document.

Table 1 - ACS800 Master

ACS800 Parameter Settings		
Param #	Name	Setting
60.01	Master link mode	Master
60.02	Torque selector	Torque
60.07	Master signal 2	202
60.08	Master signal 3	213

Table 2 - ACS880 Master

ACS880 Parameter Settings		
Param #	Name	Setting
60.01	M/F comm port	*User Depenent*
60.02	M/F node address	0 *or* 1
60.03	M/F mode	M/F master
60.11	M/F ref2 type	Torque
61.01	M/F data 1 selection	CW 16bit
61.02	M/F data 2 selection	Other - 24.01
61.03	M/F data 3 selection	Other - 26.01

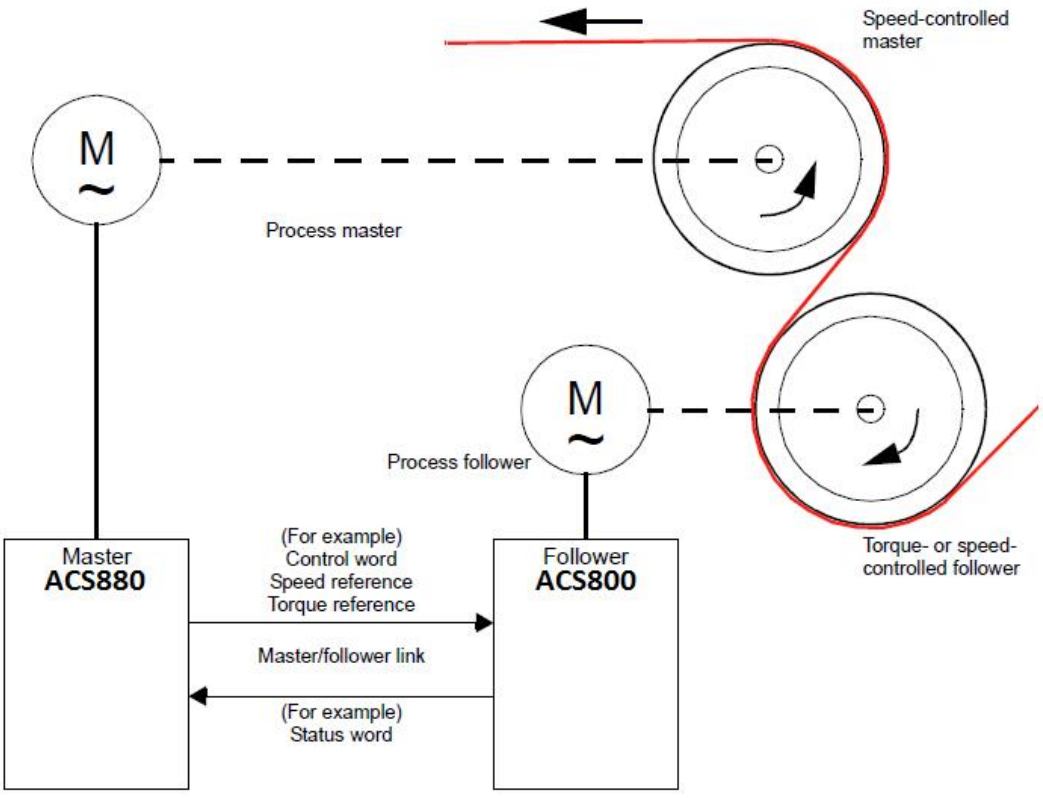

Figure 2 – Basic M/F Diagram

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ACS800 Torque Follower – ACS880 Torque Follower

The following tables show how to configure an ACS800 as a torque follower and an ACS880 the same way. An 800 and 880 with these settings can work together as followers in the same application.

Table 3 – ACS800 Torque Follower

ACS800 Parameter Settings		
Param #	Name	Setting
10.01	Ext1 strt/stp/dir	COMM.CW
10.02	Ext2 strt/stp/dir	COMM.CW
11.02	Ext1/Ext2 select	Ext2
11.03	Ext ref1 select	COMM.REF
11.06	Ext ref2 select	COMM.REF
16.01	Run enable	COMM.CW(3)
16.04	Fault Reset Sel	COMM.CW(7)
30.19	Main ref DS T-out	1
60.01	Master link mode	Follower
60.02	Torque selector	ADD

Table 4 – ACS880 Torque Follower

ACS880 Parameter Settings		
Param #	Name	Setting
19.11	Ext1/Ext2 selection	Ext2
19.14	Ext2 control mode	Torque
20.01	Ext1 commands	D2D or M/F link
20.02	Ext1 start trigger type	Level
20.06	Ext2 commands	D2D or M/F link
20.07	Ext2 start trigger type	Level
26.11	Torque ref1 source	D2D or M/F ref 2
60.01	M/F comm port	*User dependent*
60.02	M/F node address	2 *to* 60
60.03	M/F mode	M/F follower
60.10	M/F ref1 type	Speed
60.11	M/F ref2 type	Torque
62.01	M/F data 1 selection	CW 16bit
62.02	M/F data 2 selection	Ref1 16bit
62.03	M/F data 3 selection	Ref2 16bit

Because these followers are in torque mode the speed window can be adjusted in both drives. The window control for the 800 is also in the 880 and is configured the same way, but the parameter names and numbers are different. The table below shows the 800 window control parameters and the corresponding 880 parameters.

Table 5 - ACS800\880 Window Control Parameters

ACS800 Window Control		ACS880 Window Control		Description
Param #	Name	Param #	Name	
60.03	Window sel on	24.41	Speed error window control enable	Speed supervision function
60.04	Window width pos	24.43	Speed error window high	Upper boundary of speed error window.
60.05	Window width neg	24.44	Speed error window low	Lower boundary of speed error window.

Other parameters to consider are the min and max speed settings of the followers. The absolute value of the min/max speed must be greater than the value set in the master in order for the followers to share load equally at max/min speed. If the max speed values for the followers are not greater than the master the load will not be shared equally at max speed. This occurs even though the followers are in torque mode because the speed regulator works to ensure the maximum speed value is not surpassed, and it will limit the torque output of the follower as the actual speed gets closer to the maximum speed.

ACS800 Torque Follower – ACS880 Torque Follower

The following tables show how to configure an ACS800 as a speed follower and an ACS880 the same way. An 800 and 880 with these settings can work together as followers in the same application.

Table 6 – ACS800 Speed Follower

ACS800 Parameter Settings		
Param #	Name	Setting
10.01	Ext1 strt/stp/dir	COMM.CW
10.02	Ext2 strt/stp/dir	COMM.CW
11.02	Ext1/Ext2 select	Ext1
11.03	Ext ref1 select	COMM.REF
11.06	Ext ref2 select	COMM.REF
16.01	Run enable	COMM.CW(3)
16.04	Fault Reset Sel	COMM.CW(7)
30.19	Main ref DS T-out	1
60.01	Master link mode	Follower
60.02	Torque selector	Speed

Table 7 – ACS880 Speed Follower

ACS880 Parameter Settings		
Param #	Name	Setting
19.11	Ext1/Ext2 selection	Ext1
19.14	Ext2 control mode	Torque
20.01	Ext1 commands	D2D or M/F link
20.02	Ext1 start trigger type	Level
20.06	Ext2 commands	D2D or M/F link
20.07	Ext2 start trigger type	Level
26.11	Torque ref1 source	D2D or M/F ref 2
60.01	M/F comm port	*User dependent*
60.02	M/F node address	2 *to* 60
60.03	M/F mode	M/F follower
60.10	M/F ref1 type	Speed
60.11	M/F ref2 type	Torque
62.01	M/F data 1 selection	CW 16bit
62.02	M/F data 2 selection	Ref1 16bit
62.03	M/F data 3 selection	Ref2 16bit

Other parameters to consider are the min/max speed settings of the followers. Ensure the absolute value of the min/max speed parameters are greater than that of the master. This is to keep the speed regulator from limiting the followers torque while running at the master's min or max speed. Also, the ACS800 and ACS880 have a droop rate parameter which will allow for a slight speed difference between the master and follower drives. The droop rate is parameter 60.06 in the ACS800, and 25.08 in the ACS880.

Documents or other reference material:

ACS800 Master Follower Application Guide

ACS800 Firmware Manual

ACS880 Firmware Manual

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