



MS332 to BY641 Conversion

The Motrona BY641 is a Synchronous controller that can in some instances replace the MS332 controller. This document is to facilitate that transition and is to be used in conjunction with the BY641 manual.

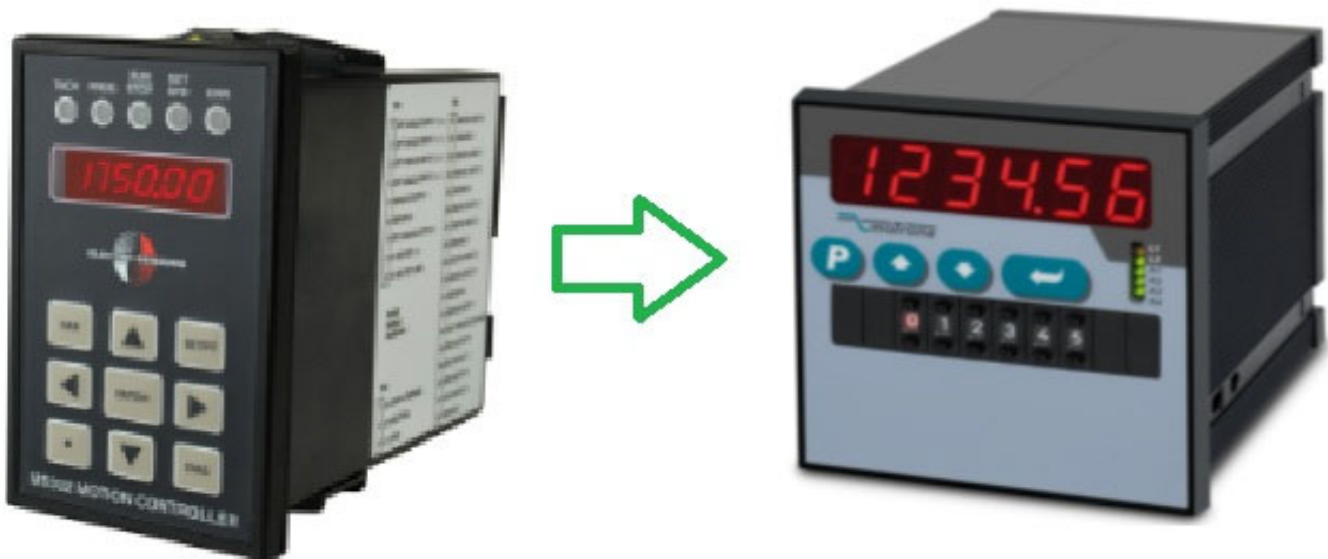


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Caution

The MS332 is a 115 VAC or 230 VAC device. The BY641 is a 24 VDC device.

DO NOT WIRE A BY641 CONTROLLER TO 115 OR 230 VAC.

Hardware Requirements

- BY641 Synchronous Controller
- DC power supply (minimum 10W).
 - 24 VDC output (17-40 Volt)
 - 200mA output for controller + sensor current (up to 240mA).

Optional hardware

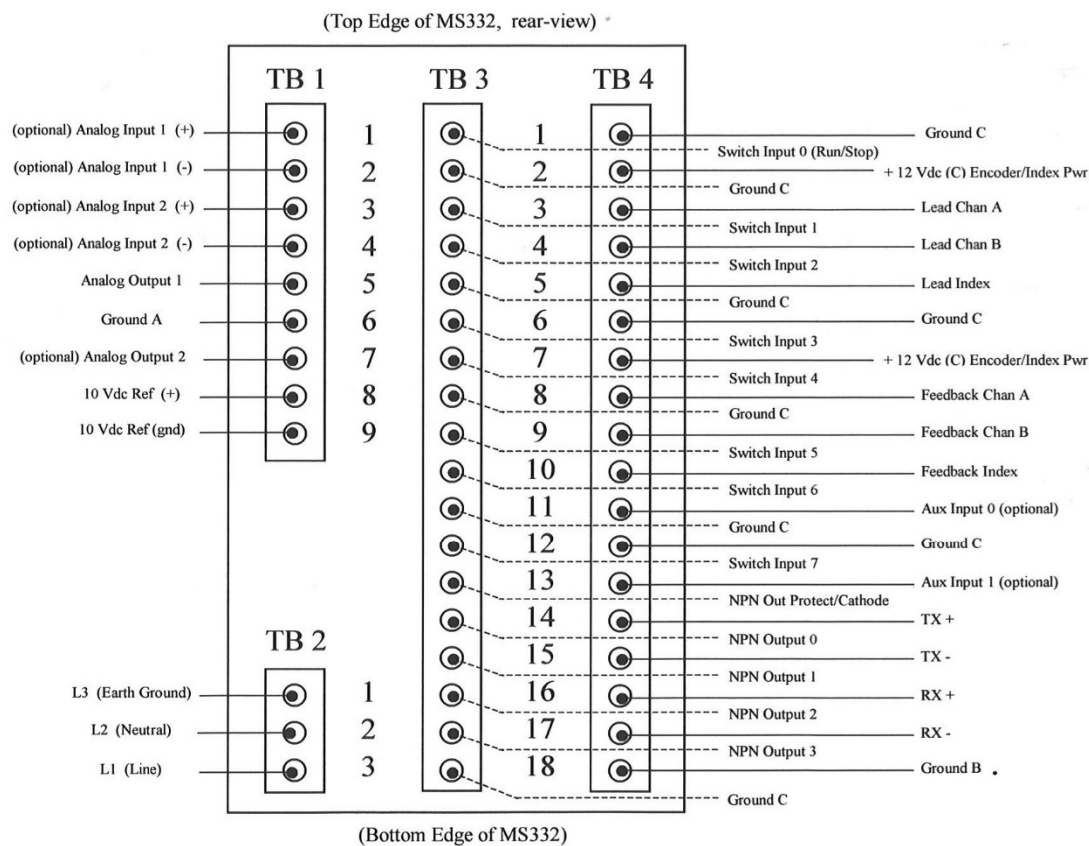
- MS332 to BY641 Interface board (ESI P/N 800-XXXXXX).

This board is designed to interface between the MS332 terminals and the BY641 terminals in such a manner as to provide the pull up signals needed for NPN open collector sensors since the BY641 controller does not provide them. Although the Interface board is not mandatory, it is a clean solution for providing the necessary pull-up resistors for the NPN encoders/sensors.

MS332 Reference Section
(bA02.XX)

Hardware Illustrations (Rear-View, Top-View, Block-View)

Rear-View (Showing all four terminal strips; TB1, TB2, TB3, and TB4):



Pinout Conversion Table

MS332	DESCRIPTION	BY641	NOTES
POWER IN			
N/A	(+) 24 VDC	17	
N/A	(-) 24 VDC	20	
ANALOG OUT			
TB1-5	+/- 10VDC SPEED SIGNAL	16	
TB1-6	GND	32	
DIGITAL SIGNALS			
TB4-1	GND	20	
TB4-2	+24 VDC	19	
TB4-3	LEAD A	24	
TB4-4	LEAD B	23	
TB4-5	LEAD Index	28	
TB4-6	GND	20	
TB4-7	+24 VDC	19	
TB4-8	FDBK A	22	
TB4-9	FDBK B	21	
TB4-10	FDBK Index	27	

Starting Point for Your Variables

A good starting point for programming is to view the current variables of the MS332 and apply them to the BY641. Afterwards start your system and make further adjustments as needed.

- Ratio or Index Operation
 - F02.004 = Var01.06 from MS332
- Integration Time
 - F02.006 = 100-1000 (this is based on system response and may be higher or lower)
- Sampling Time
 - F02.011 = 0.020 seconds
- Max User Frequency
 - F02.013 = 20,000 Hz (we operated at 1800 RPM * 600PPR /60. See Notes: 1 below).
- Ramp Times
 - F02.014 = Var 02.00 from MS332
 - F02.015 = Var 02.02 from MS332
- Phase Offset (Index Mode only)
 - F0.018 = offset in phasing is in encoder pulses
- Slave Pulses Index
 - F0.019 = Var 01.07 from MS332 see notes: 2
- Phase Adjust (Index only operation)
 - F0.020 = 1-5 dependent on your system needs
- Definition to Lead Encoder
 - F03.028 = 1 (we need to change this to set lead direction as forward)
- Definition to Feedback Encoder
 - F04.034 = 1 (we need to change this to set feedback direction as forward)
- Analog Output Definitions
 - F0.039 to F0.043 are determined by your system needs.
- Key Command Assignments
 - F06.046 to F06.048 are determined by your system needs.

General Notes:

1. 10 VDC output point. It is critical that it is greater than the Max operational speed. Set this value such that when operating uncorrected the speed is as close to the desired speed as possible. This can be done by programming F06.046 UP key (↑) as assignment 1 (Reset) until the system is tuned. You now can adjust F02.013 as needed and then momentarily hold down the UP key (↑) and observe operation. When tuning is complete then you can then reprogram it as no function or as a desired user function.
2. If using a high PPI encoder for the index you may experience Index signal loss at high speeds. The Index input has a minimum 50uS on and off time limitation. See page 15 of the user's manual.
3. If using NPN inputs please be advised: Pull up resistors are needed, they are not provided with the BY641 controller. See notes in the BY641 user's manual, page 12.
4. This synchronizer needs 17-30 VDC for input power. You may need to purchase a separate power supply if 24 VDC is not available.
5. Customers that have anything programmed in the MS332 variable 3.04 other than a code of "0" may need to program a front panel key or back panel input on the BY641 to set the pulse error to zero (0) when stopped and activate it by some other means such as pressing a front-panel key or manually activated external switch connected to the back panel input.

MS332 to BY641 Interface Board Table

MS332 Output	Signal Description	Interface board input	Switch S1 position for Pull-Up	Interface board output	BY641 input position
POWER IN					
N/A	(+) 24 VDC				17
N/A	(-) 24 VDC				1
DIGITAL SIGNALS					
TB4-1	GND	TB1-1		TB2-1	N/A
TB4-2	+24 VDC	TB1-2		TB2-5	N/A
TB4-3	LEAD A	TB1-3	1	TB2-4	24
TB4-4	LEAD B	TB1-4	2	TB2-3	23
TB4-5	LEAD Index	TB1-5	3	TB2-2	28
TB4-6	GND	TB1-6		TB3-1	20
TB4-7	+24 VDC	TB1-7		TB3-5	19
TB4-8	FDBK A	TB1-8	4	TB3-4	22
TB4-9	FDBK B	TB1-9	5	TB3-3	21
TB4-10	FDBK Index	TB1-10	6	TB3-2	27
ANALOG OUT					
TB1-5	+/- 10VDC SPEED Command	TB1-17		TB4-2	16
TB1-6	GND	TB1-18		TB4-1	32

If you opt to use the optional interface board to facilitate adding Pull-up resistors all you need to do is plug the MS332's TB4 into the interfaces TB1 and remove the MS332's speed command wires from TB1-5 & TB1-6 and put them into the Interfaces boards TB1-17 & TB1-18. At that point you simply need to wire from the Interface board output column to the BY641 input column (grey area above). Next you would need to turn on the appropriate pull-ups. Lastly you would need to wire in switches as needed.

