

T E C H N I C A L N O T E

Doc No.: TN30-15
Date: Jan 2003
Version: 1.0
Subject: Microstep Feature on MC206 controllers

The Trio MC controllers use the command MICROSTEP for stepper motor control. In the MC202 and stepper daughter boards, MICROSTEP is used to switch the internal divider between $\div 16$ and $\div 2$.

MICROSTEP operation in MC202 and Daughter Boards

	Divider Ratio	Max. Output Rate	Comments:
MICROSTEP = OFF (Default)	$\div 16$	62.5 kHz	Low pulse jitter for smooth operation of majority of stepper drives.
MICROSTEP = ON	$\div 2$	500 kHz	High frequency output for control of microstepping drives.

MICROSTEP operation in MC206

The MC206 controller, however, uses a newer step generation and encoder circuit. Because of this dual function circuit the MICROSTEP=ON command has a different action.

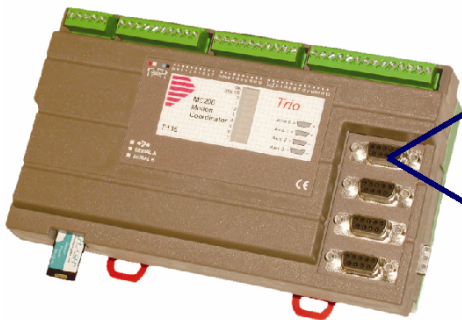
In the MC206, MICROSTEP=OFF is the default, and the Step/Dir output signals function as normal. With MICROSTEP=ON, the output Step/Dir change to a simulated encoder signal (Step = A channel, and Dir = B channel). The MC206 encoder signals can be sent to other MC controllers or drives as a master reference.

	Functions	MC206 9-Pin D Shell Connector Outputs	Max. Output Rate	Comments:																				
MICROSTEP = OFF (Default)	$\div 16$ output steps	<table style="border: none;"> <tr> <td style="color: red;">PIN</td> <td style="color: red;">Signal</td> </tr> <tr> <td>1</td> <td>Step +</td> </tr> <tr> <td>2</td> <td>Step -</td> </tr> <tr> <td>3</td> <td>Dir +</td> </tr> <tr> <td>4</td> <td>Dir -</td> </tr> <tr> <td>5</td> <td>GND</td> </tr> <tr> <td>6</td> <td>Boost +</td> </tr> <tr> <td>7</td> <td>Boost -</td> </tr> <tr> <td>8</td> <td>5V out</td> </tr> <tr> <td>9</td> <td>NC</td> </tr> </table>	PIN	Signal	1	Step +	2	Step -	3	Dir +	4	Dir -	5	GND	6	Boost +	7	Boost -	8	5V out	9	NC	2 MHz	On the MC206 a different pulse generation circuit is used which always divides the pulse rate by 16 and is NOT affected by the MICROSTEP parameter. This circuit can generate pulses up to 2Mhz
PIN	Signal																							
1	Step +																							
2	Step -																							
3	Dir +																							
4	Dir -																							
5	GND																							
6	Boost +																							
7	Boost -																							
8	5V out																							
9	NC																							
MICROSTEP = ON	A quad B line driver encoder output	<table style="border: none;"> <tr> <td style="color: red;">PIN</td> <td style="color: red;">Signal</td> </tr> <tr> <td>1</td> <td>Enc A</td> </tr> <tr> <td>2</td> <td>Enc /A</td> </tr> <tr> <td>3</td> <td>Enc B</td> </tr> <tr> <td>4</td> <td>Enc /B</td> </tr> <tr> <td>5</td> <td>GND</td> </tr> <tr> <td>6</td> <td>Enc Z</td> </tr> <tr> <td>7</td> <td>Enc /Z</td> </tr> <tr> <td>8</td> <td>5V out</td> </tr> <tr> <td>9</td> <td>NC</td> </tr> </table>	PIN	Signal	1	Enc A	2	Enc /A	3	Enc B	4	Enc /B	5	GND	6	Enc Z	7	Enc /Z	8	5V out	9	NC	2 MHz	High frequency encoder simulated output for master reference generation.
PIN	Signal																							
1	Enc A																							
2	Enc /A																							
3	Enc B																							
4	Enc /B																							
5	GND																							
6	Enc Z																							
7	Enc /Z																							
8	5V out																							
9	NC																							

The illustration below shows how a MC206 sends a master encoder reference to several slave MC206s'. The MICROSTEP feature can be useful for electronic line shafting and synchronizing multiple controllers.

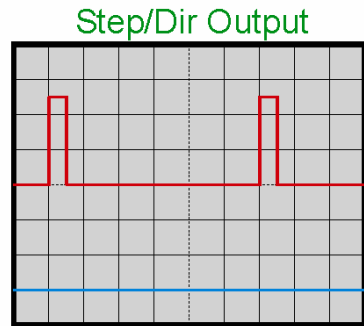
Microstep / Encoder Feature in MC206

MC206
Motion
Coordinator



MICROSTEP=OFF
(Default)

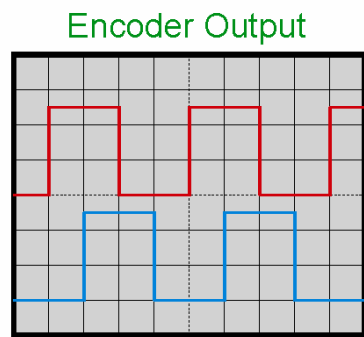
Step
Dir



OR

MICROSTEP=ON

A
B



Note:
Axis(0) is enabled as a Stepper.

Application Example - Electronic Gearing Across MC206 units

