Myostat Motion Control Inc .
Cool Muscle 1
RT3 Application Note

Program Bank Notes for Cool Muscle Language

1. Program Banks

1. Basic Program Bank

This example shows how to write a very basic program bank that moves the motor to position 10000 pulses and back to 0.

1) Register values are assigned
2) Program bank 1 in motor 1 (B1.1) is created
3) Bank 1 is executed

CML Code Used:

P1, P2 → position values
S1 → assigned speed
A1 → assigned acceleration

B1 → start of bank1 programming
END → end of bank programming

[1 →execute bank1. The '[' character indicates starting the bank. The number following it indicates which bank is executed

Example CML Code:

```
/initialize the registers
P1.1=10000
P2.1=0
S1.1=50
A1.1=10

/program the bank
B1.1
A1.1,S1.1,P1.1
P2.1
END.1

/execute the bank
[1.1
```

Notes:

1) Inside the bank a speed and acceleration are always called at least once before the 1st position. This ensures a known speed and acceleration is set before a position is executed.
2) All commands on the same line are executed together. Commands on different lines are executed sequentially once the previous line is complete. In this example P1 will complete before P2 is executed.
3) Unless and M value (torque) is called the M0 value is used as the torque. By default this is 100 (%).

2. Starting a Program Bank on Power-Up

This example shows how to start a program bank on power up. It uses both logic banks and program banks. Essentially only a logic bank can be started on power up, so, a logic bank is used to execute a program bank.

In this example the motor will start to run continuously clockwise immediately on power up.

CML Code Used:

P1=1000000000 → position 1 register. If this is set to 1 billion the motor is in speed control.
A1=100 → acceleration 1 register.
S1=30 → speed 1 register.

B1 → beginning of program bank

L1 → beginning of logic bank 1
END → end of logic bank

[L1 → execute/run logic bank 1
]L → stop the logic bank

K87=1 → logic bank execution time in milliseconds.
K85=1 → logic bank number started on power up

Example CML Code:

```
/set the logic scan time
K87=1
/set logic bank on power up
K85=1

/set pos, spd and accel
P1=1000000000
S1=30
A1=100

/Program Bank 1
/running speed control
B1
A1,S1,P1
END
```

```
/Logic Bank 1 on power up
/executes program bank 1
/then jumps to Logic 2 to do nothing
L1
[1.1
END

L2.1
END
```

3. Running 2 motors in a program bank

This example runs two motors from a program bank in motor 1. All position moves are absolute. The move sequence is as follows:

1) Move motor 1 to 10000 pulses
2) Move motor 2 to -5000 pulses
3) Move motor 1 to 0 pulses
4) Move motor 2 to 0 pulses

When executing a move for the first time a speed and acceleration must be set for that motor. Careful note should also be taken with the motor ID. Note that the last position called is P2.2. When the END of the bank is called it must have END.1 or it will be associated with motor 2 and will not load correctly.

CML Code Used:

```
P1.1=10000    → position 1 motor 1 register.
P2.1=0        → position 2 motor 1 register
A1.1=10       → acceleration 1 motor 1 register.
S1.1=30       → speed 1 motor 1 register.

P1.2=5000     → position 1 motor 2 register.
P2.2=0        → position 2 motor 1 register
A1.2=20       → acceleration 1 motor 1 register.
S1.2=10       → speed 1 motor 1 register.

B1.1    → beginning of program bank 1 in motor 1
END.1         → end of program bank 1 in motor 1

[1.1    →start bank 1 in motor 1
```

Example CML Code:

```
/load motor 1 registers
P1.1=10000
P2.1=0
A1.1=10
```

```
S1.1=30

/load motor 2 registers
P1.2=5000
P2.2=0
A1.2=20
S1.2=10

/load bank 1 in motor 1
/note A and S are called before P
B1.1
A1.1,S1.1,P1.1
A1.2,S1.2,P1.2
P2.1
P2.2
END.1

/start the bank 1 motor 1
[1.1
```