EZ-CPU CONTROL SYSTEM

MOTORS & SERVOS - 1

**PROGRAM:** STEPPER MOTOR DRIVER
**DESCRIPTION:** Sends 4 coded outputs to turn a stepper motor.

| IP MODULE: | - |
| OP MODULE: | QSMD |
| CPU SPEED: | 1 KHz |

Using indirect addressing, a table of values can be sent to the output port that represent samples of a waveform.

```
(addr) 0x80

 addr instruction code
    00 LD HL,0x80 21 80 00
    03 LD A,(HL) 7E
    04 OUT (0xFF),A D3 FF
    06 INC HL 23
    07 LD A,L 7D
    08 AND 83 E6 83
    0A LD L,A 6F
    0B JR -13 18 F6
```

The following table has 4 codes for rotation of a stepper motor

```
DATA TABLE

Table length = 4 bytes

<table>
<thead>
<tr>
<th>ADDR</th>
<th>DATA</th>
</tr>
</thead>
<tbody>
<tr>
<td>80</td>
<td>0A</td>
</tr>
<tr>
<td>09</td>
<td>05</td>
</tr>
<tr>
<td>06</td>
<td></td>
</tr>
</tbody>
</table>
```

This table will turn the motor in the opposite direction

```
DATA TABLE

Table length = 4 bytes

<table>
<thead>
<tr>
<th>ADDR</th>
<th>DATA</th>
</tr>
</thead>
<tbody>
<tr>
<td>80</td>
<td>06</td>
</tr>
<tr>
<td>06</td>
<td>05</td>
</tr>
<tr>
<td>09</td>
<td>0A</td>
</tr>
</tbody>
</table>
```

For a 48-step motor this routine will produce a speed of:

- **Step time** = 13 machine cycles @ 1KHz = 13ms
- **Revolution time** = 48 steps x 13ms = 624ms
- **RPM** = 60,000ms / 624ms = 96.2RPM