



HOST ENGINEERING, INC.
"Solutions Designed with Spirit"



H0-CTRIO



H2-CTRIO



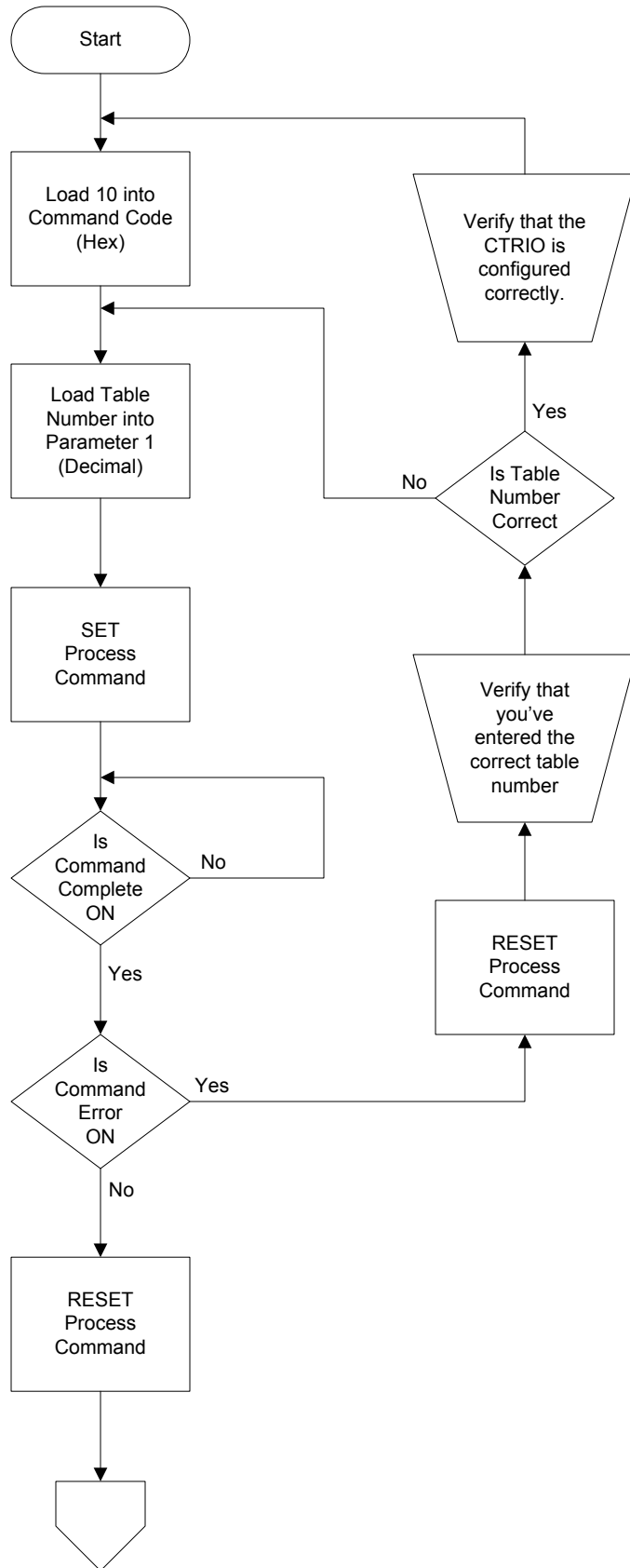
H4-CTRIO



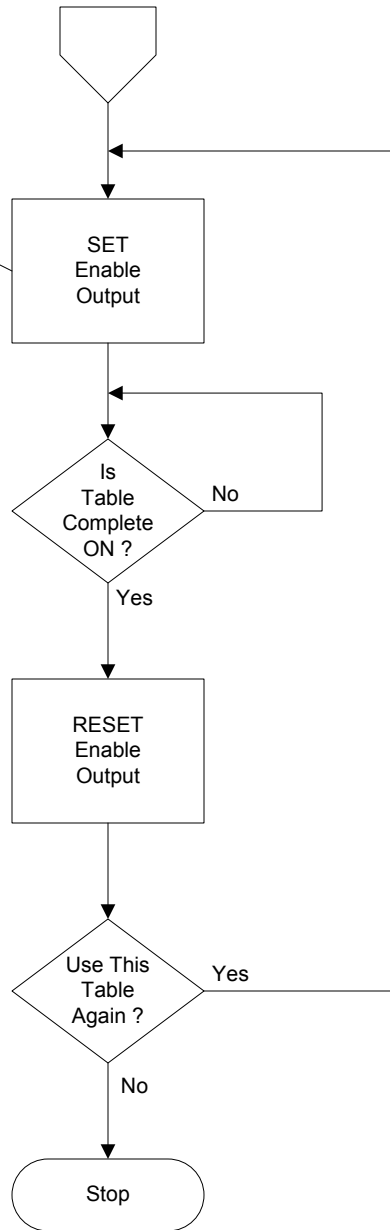
T1H-CTRIO

FLOW CHARTS

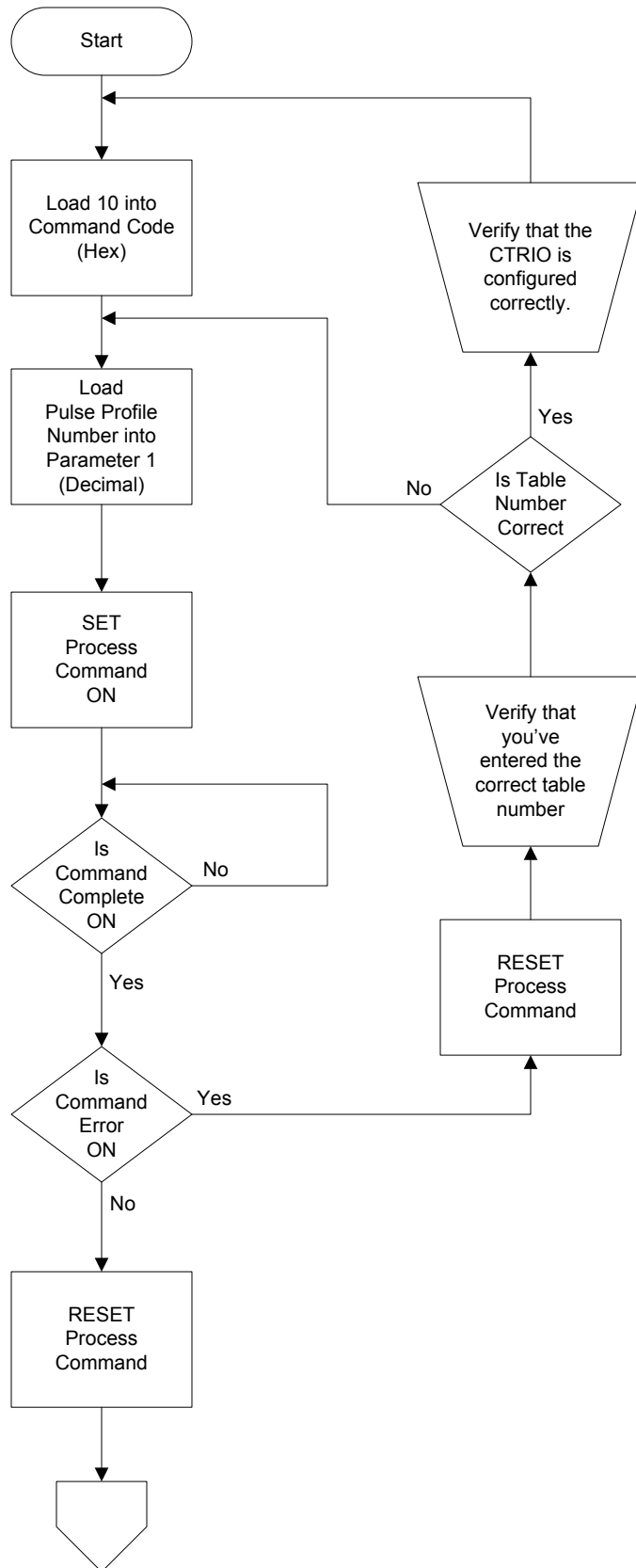
Load Preset Table

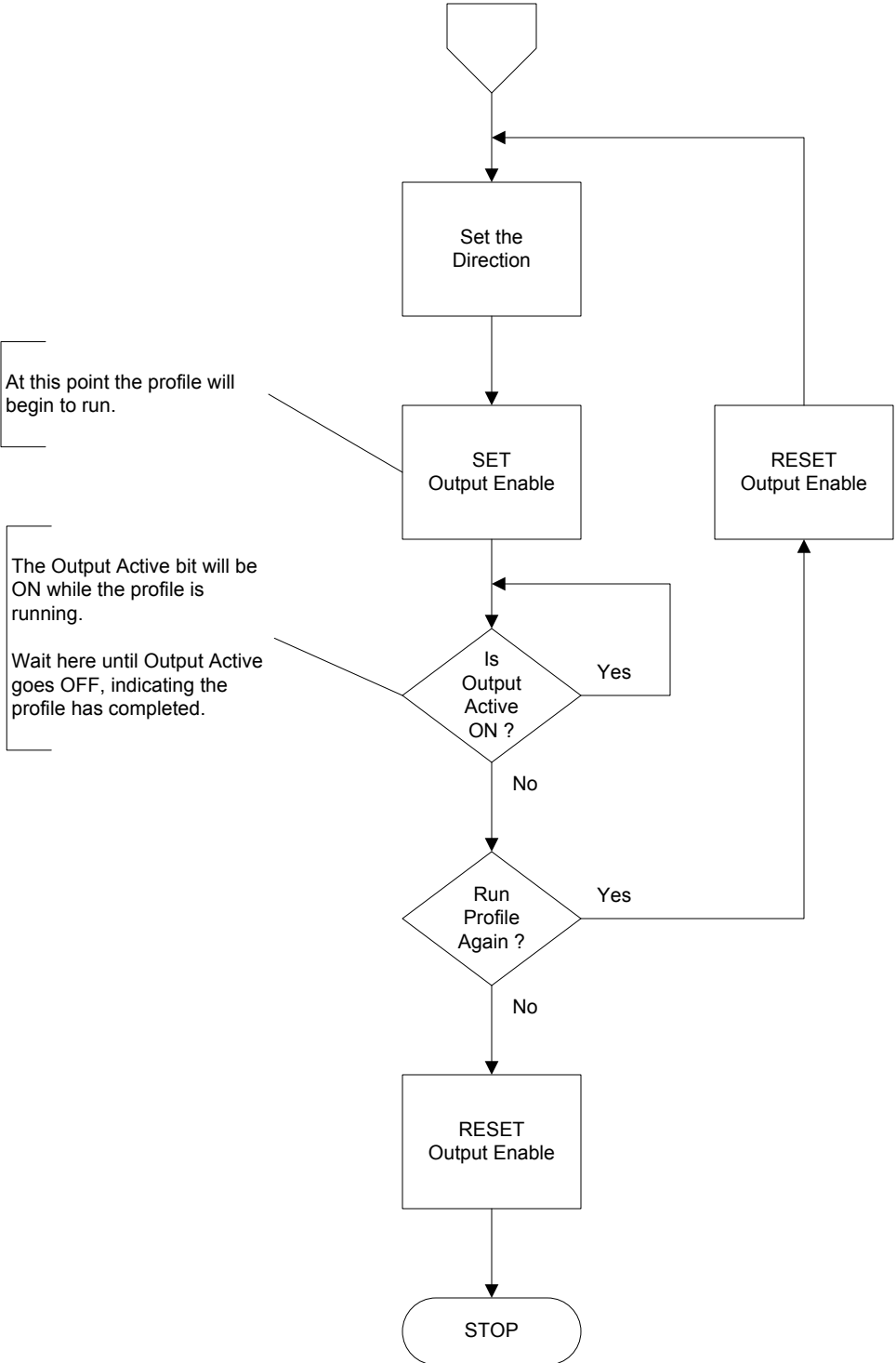


At this point, your table is active

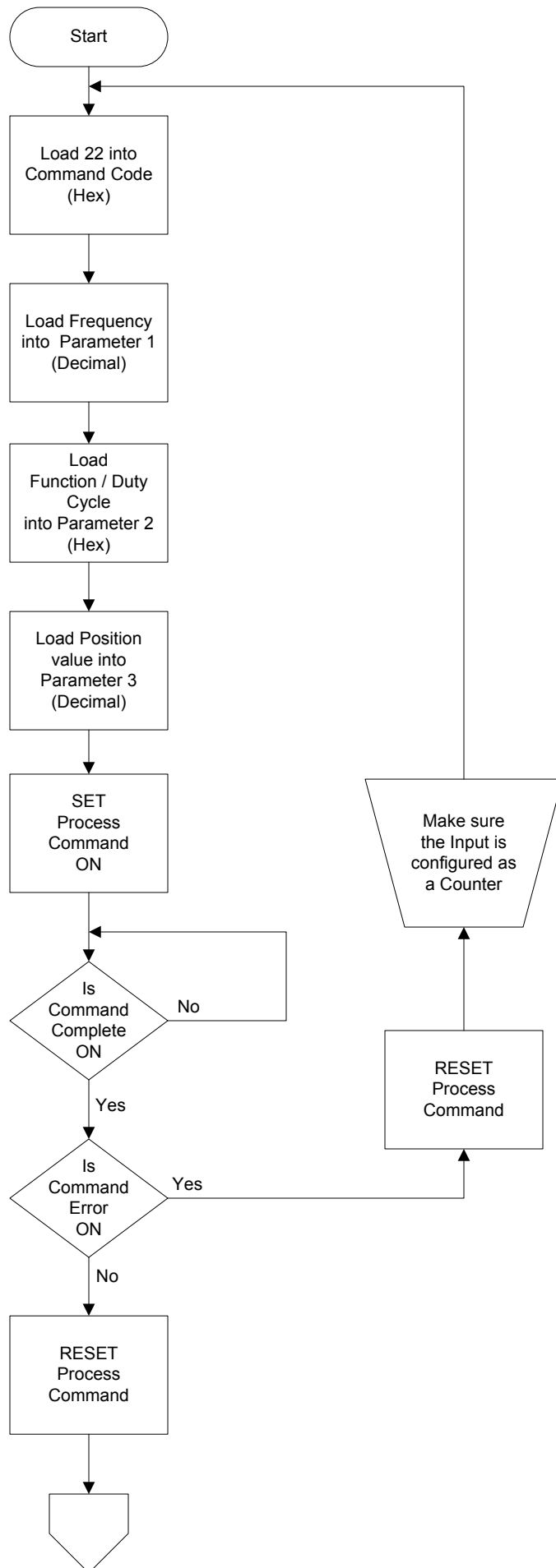


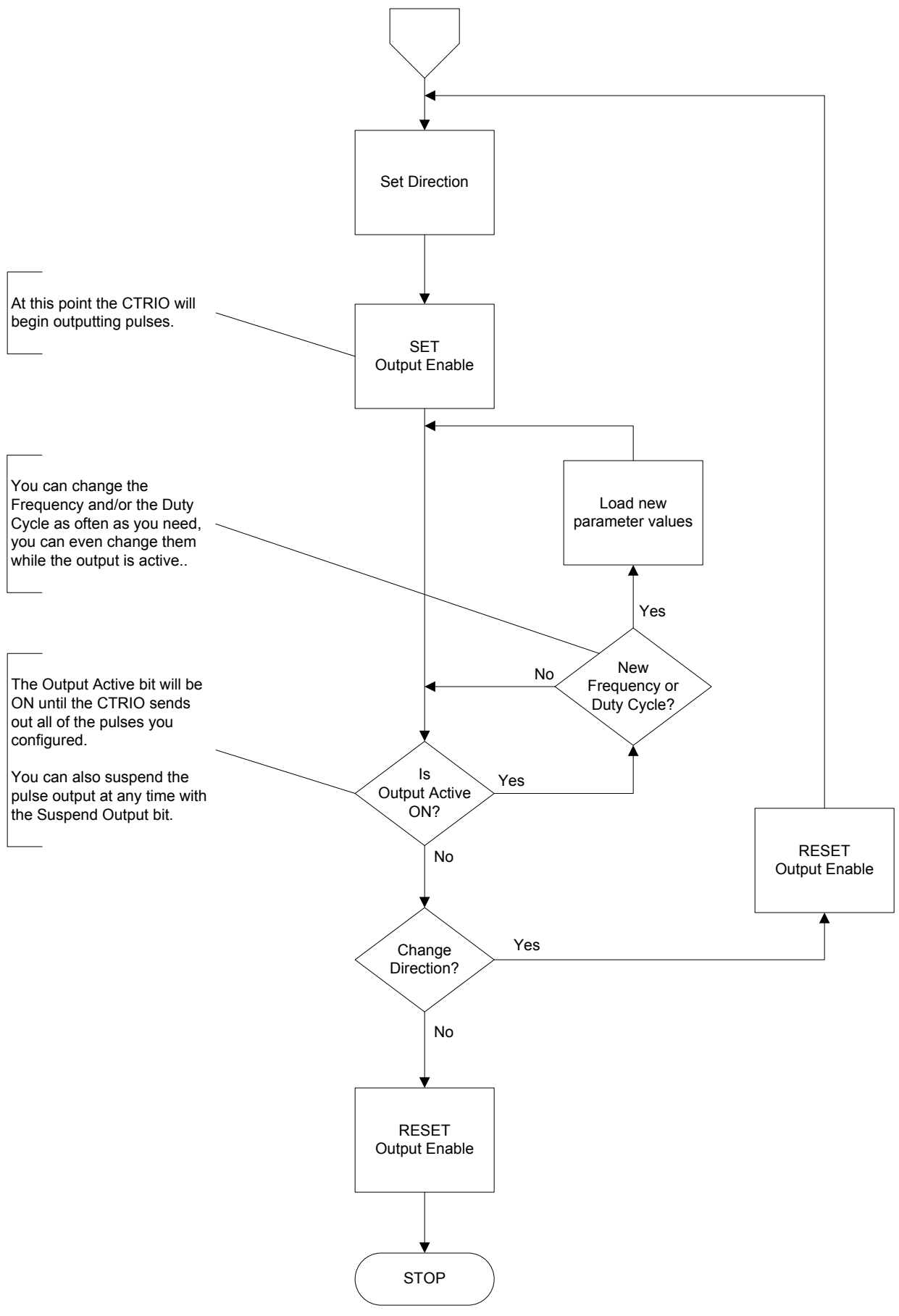
Run a Trapezoid, S-Curve, Symmetrical S-Curve, or Home Search Profile





Run To Position



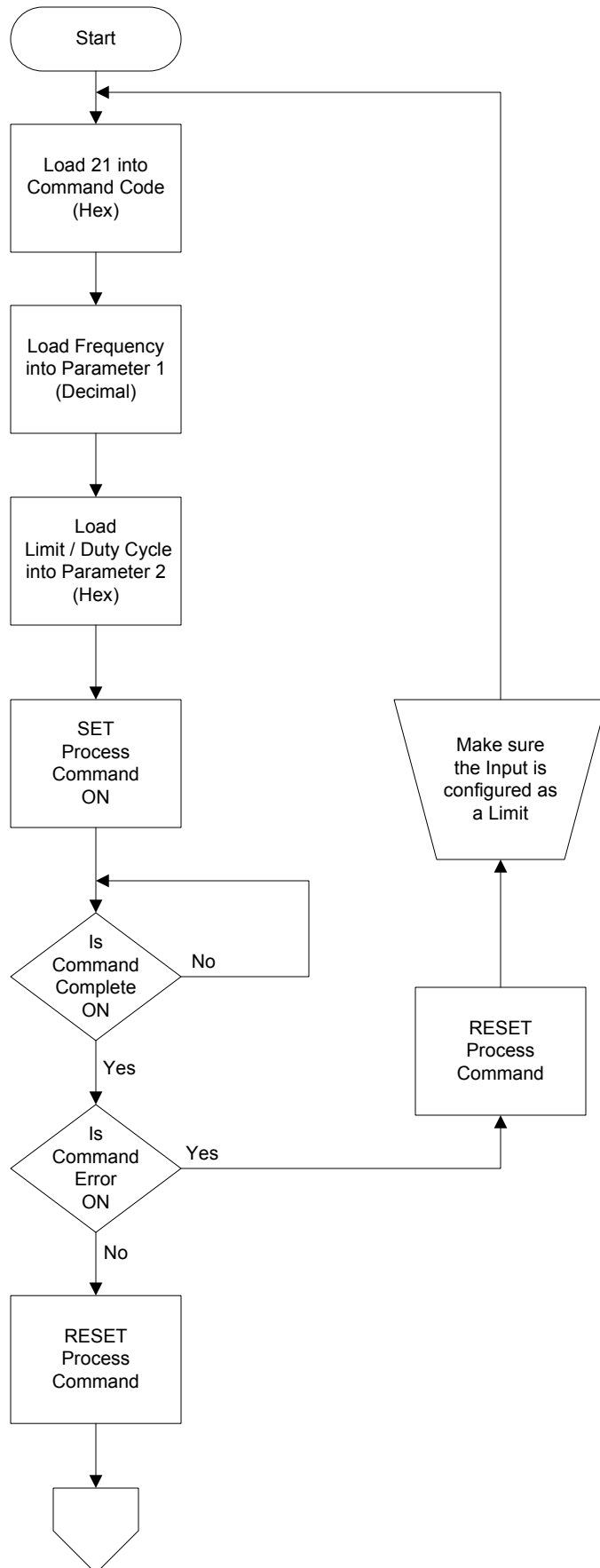


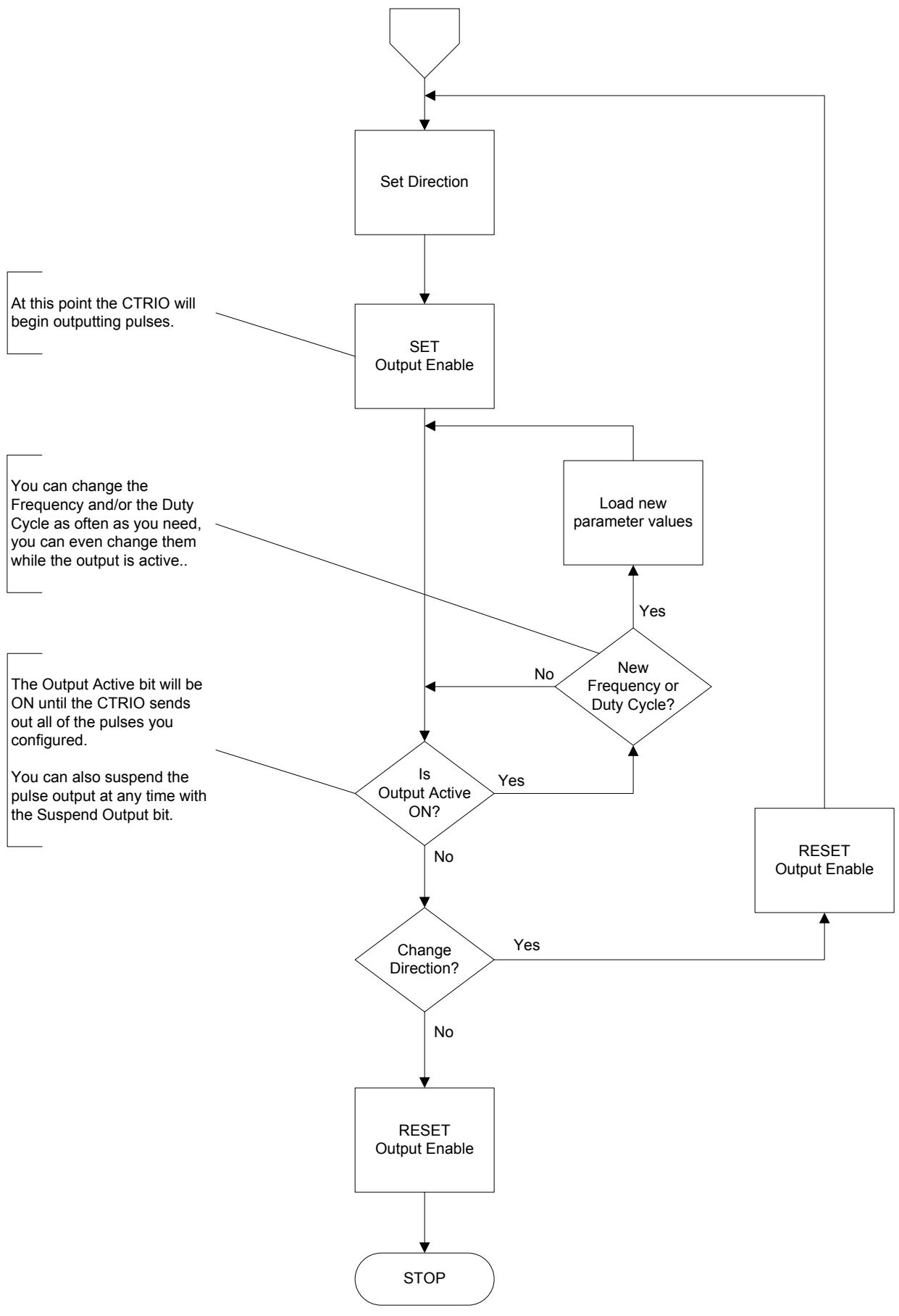
At this point the CTRIO will begin outputting pulses.

You can change the Frequency and/or the Duty Cycle as often as you need, you can even change them while the output is active..

The Output Active bit will be ON until the CTRIO sends out all of the pulses you configured.
 You can also suspend the pulse output at any time with the Suspend Output bit.

Run To Limit



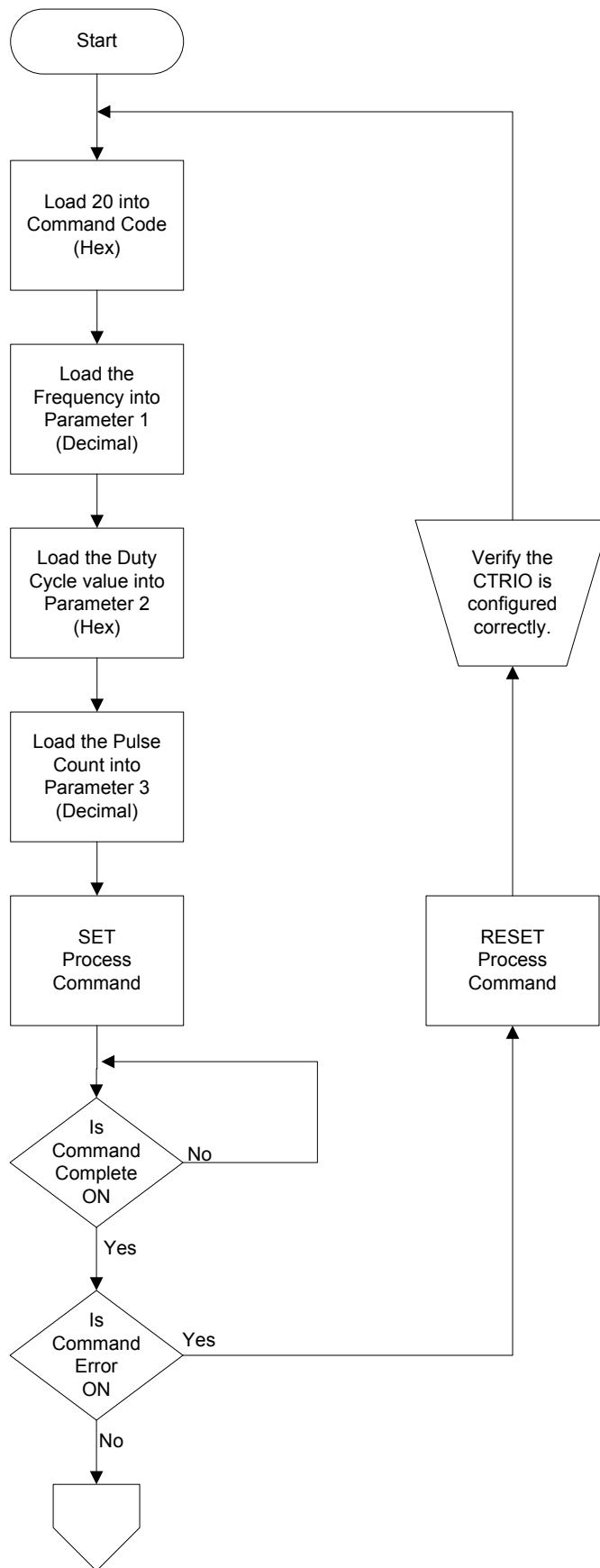


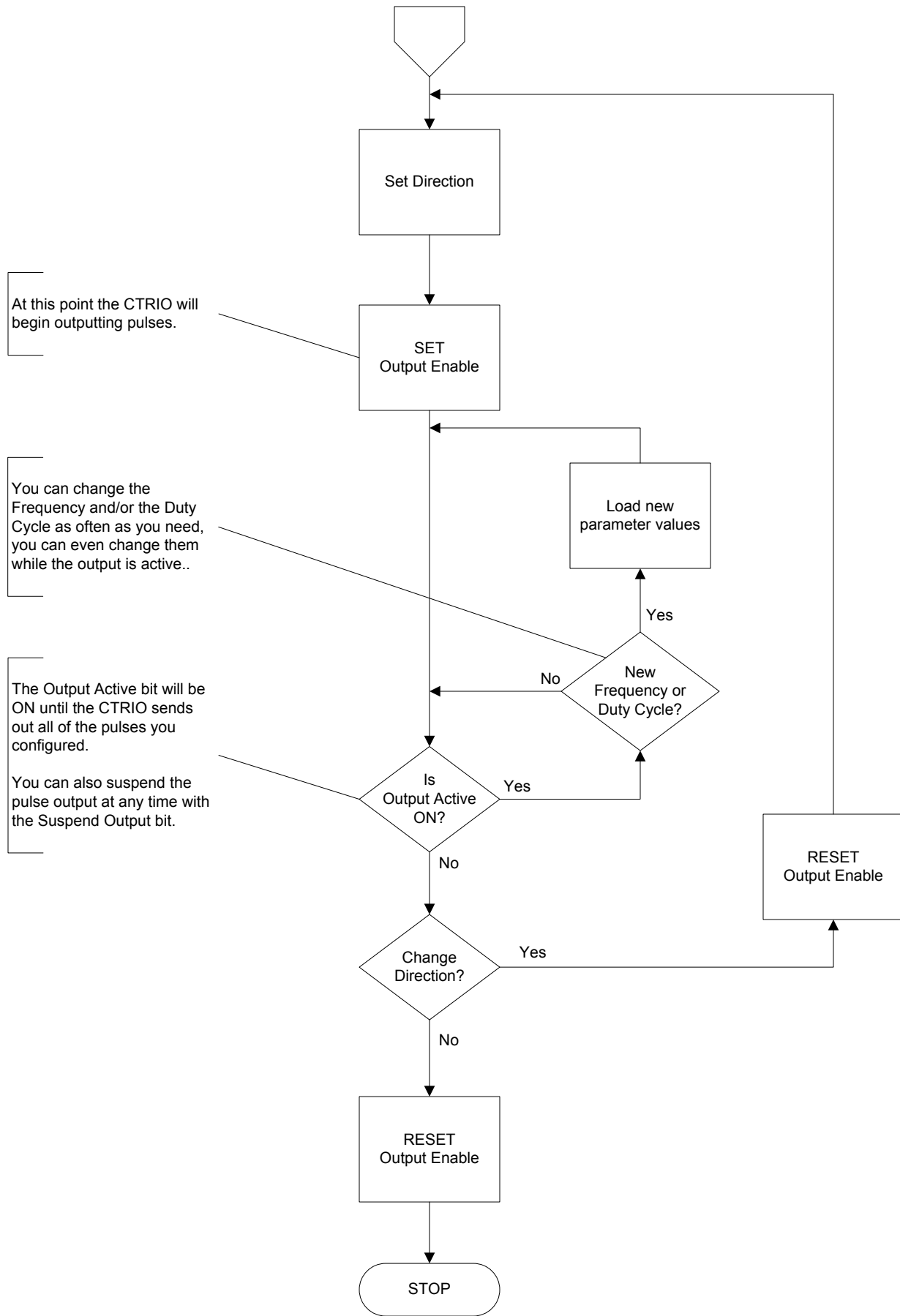
At this point the CTRIO will begin outputting pulses.

You can change the Frequency and/or the Duty Cycle as often as you need, you can even change them while the output is active..

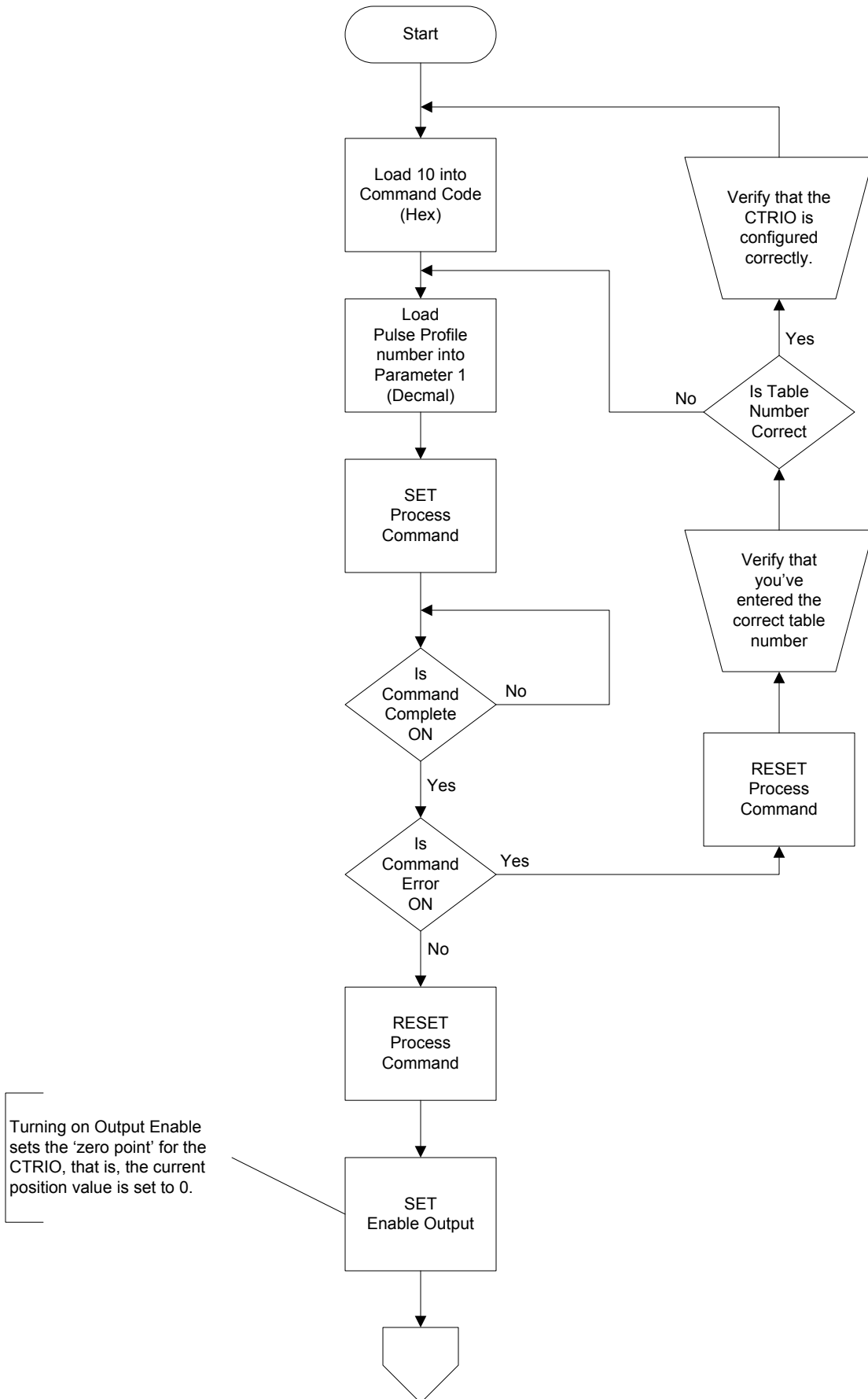
The Output Active bit will be ON until the CTRIO sends out all of the pulses you configured.
 You can also suspend the pulse output at any time with the Suspend Output bit.

Velocity Mode





Dynamic Positioning

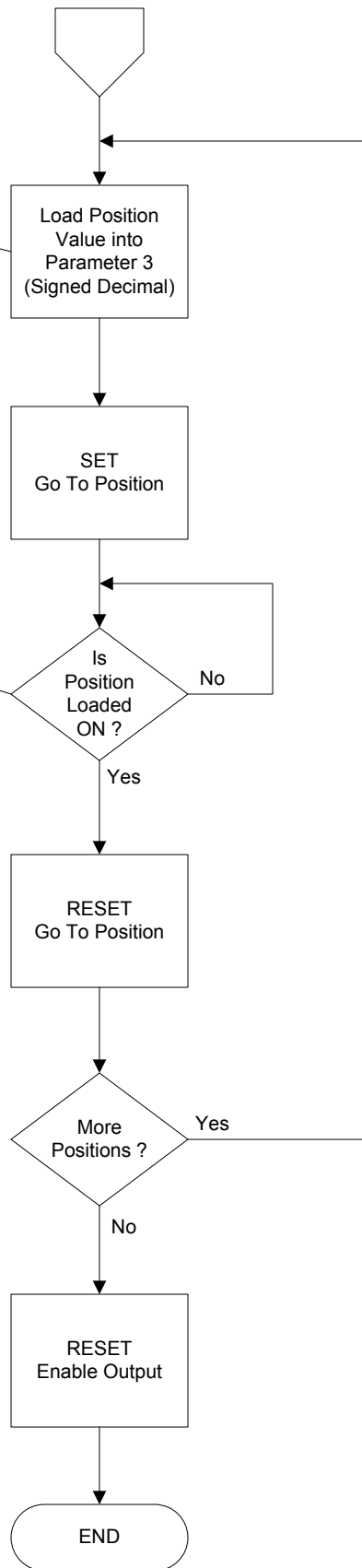


The direction will be determined automatically by the CTRIO.

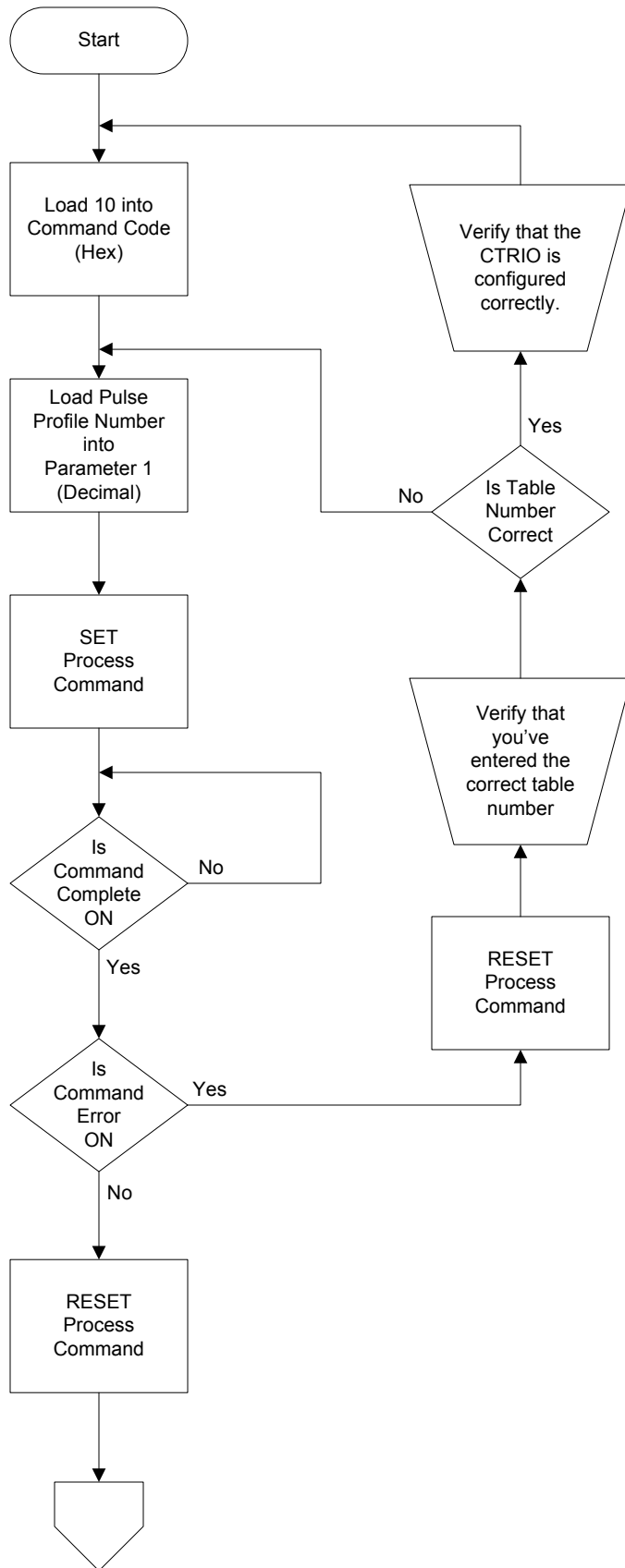
Once the current position is loaded, The CTRIO will begin to send output pulses.

You can suspend the pulse output at any time by using the Suspend Output bit.

Using Suspend Output will NOT reset the 'zero-point'.



Dynamic Velocity



The CTRIO is continually reading the Velocity register in the CPU. When a new value appears in this register the CTRIO will use the profile settings to move to the new velocity.

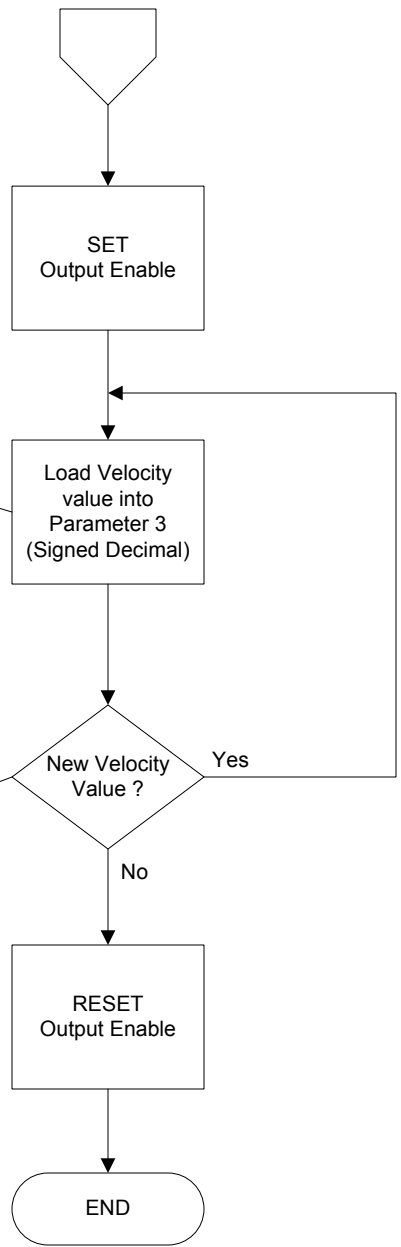
The direction is determined automatically from the sign of the velocity value.

Positive values will produce CW pulses.

Negative values will produce CCW pulses.

You can change the velocity value as often as you need.

You can also suspend the pulse output at any time with the Suspend Output bit.



System Command - PLC Read from CTRIO

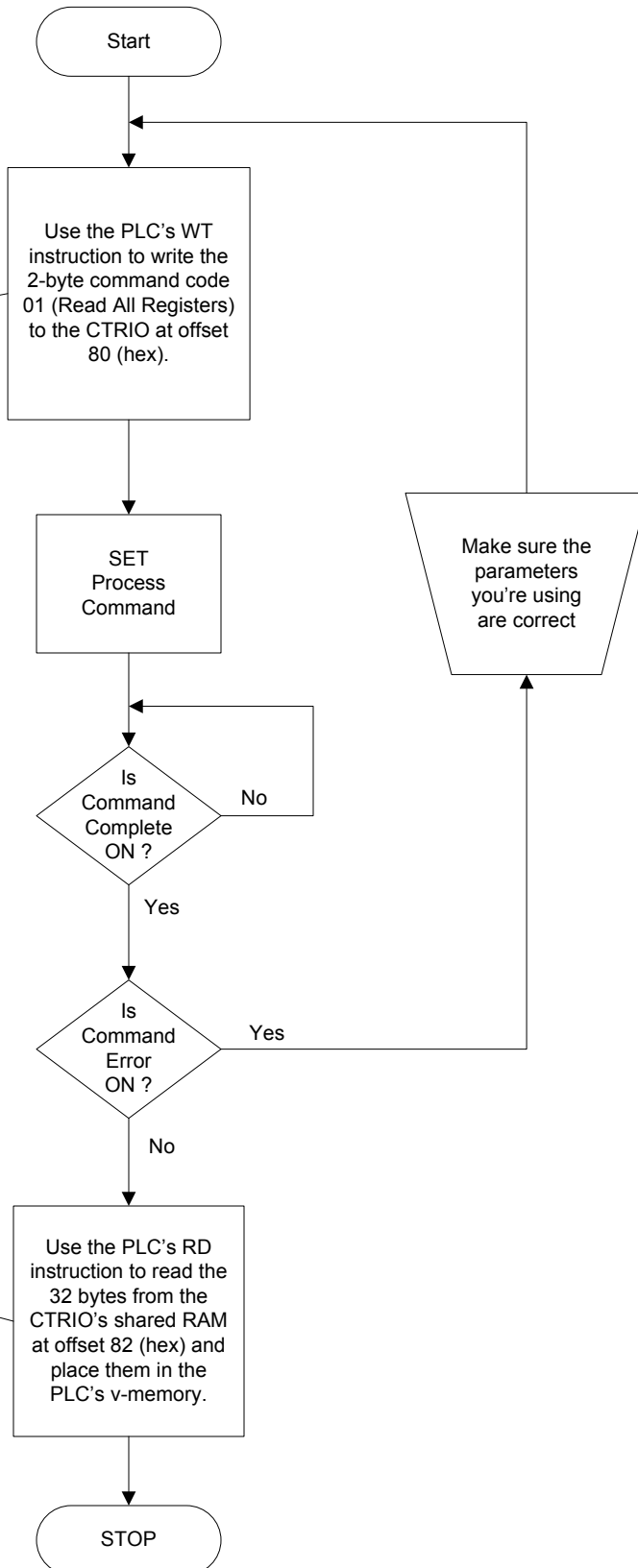
Reading the CTRIO's internal data registers is a two-step process:
1. Ask the CTRIO to transfer the internal register values to it's shared RAM.
2. Transfer the values from the CTRIO's shared RAM to the PLC's V-memory.

- 1 -
This command tells the CTRIO to copy all 8 of it's internal register values (4 bytes per value) into it's shared RAM, making them accessible to the CPU.

- 2 -
The 32 bytes of data make up the 8 CTRIO register values. They are arranged as follows:

Bytes 0/3 - Ch1/Fn1
Bytes 4/7 - Ch1/Fn2
Bytes 8/11 - Ch2/Fn1
Bytes 12/15 - Ch2/Fn2

Bytes 16/19 - Output 0
Bytes 20/23 - Output 1
Bytes 24/27 - Output 2
Bytes 28/31 - Output 3

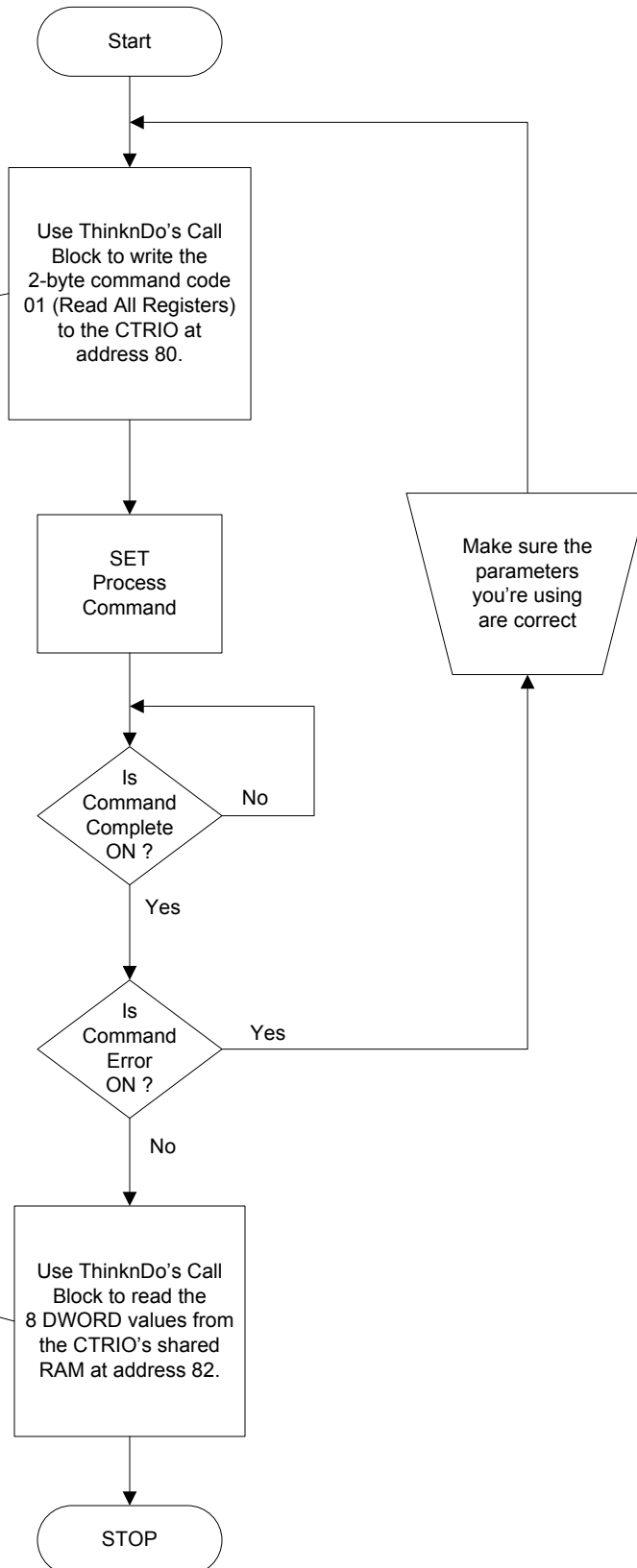


System Command - ThinknDo Read from CTRIO

Reading the CTRIO's internal data registers is a two-step process:
1. Ask the CTRIO to transfer the internal register values to its shared RAM.
2. Transfer the values from the CTRIO's shared RAM to ThinknDo's memory.

- 1 -

This command tells the CTRIO to copy all 8 of its internal register values into its shared RAM, making them accessible.



- 2 -

The 8 CTRIO register values are arranged as follows:

DWORD 0 - Ch1/Fn1
DWORD 1 - Ch1/Fn2
DWORD 2 - Ch2/Fn1
DWORD 3 - Ch2/Fn2

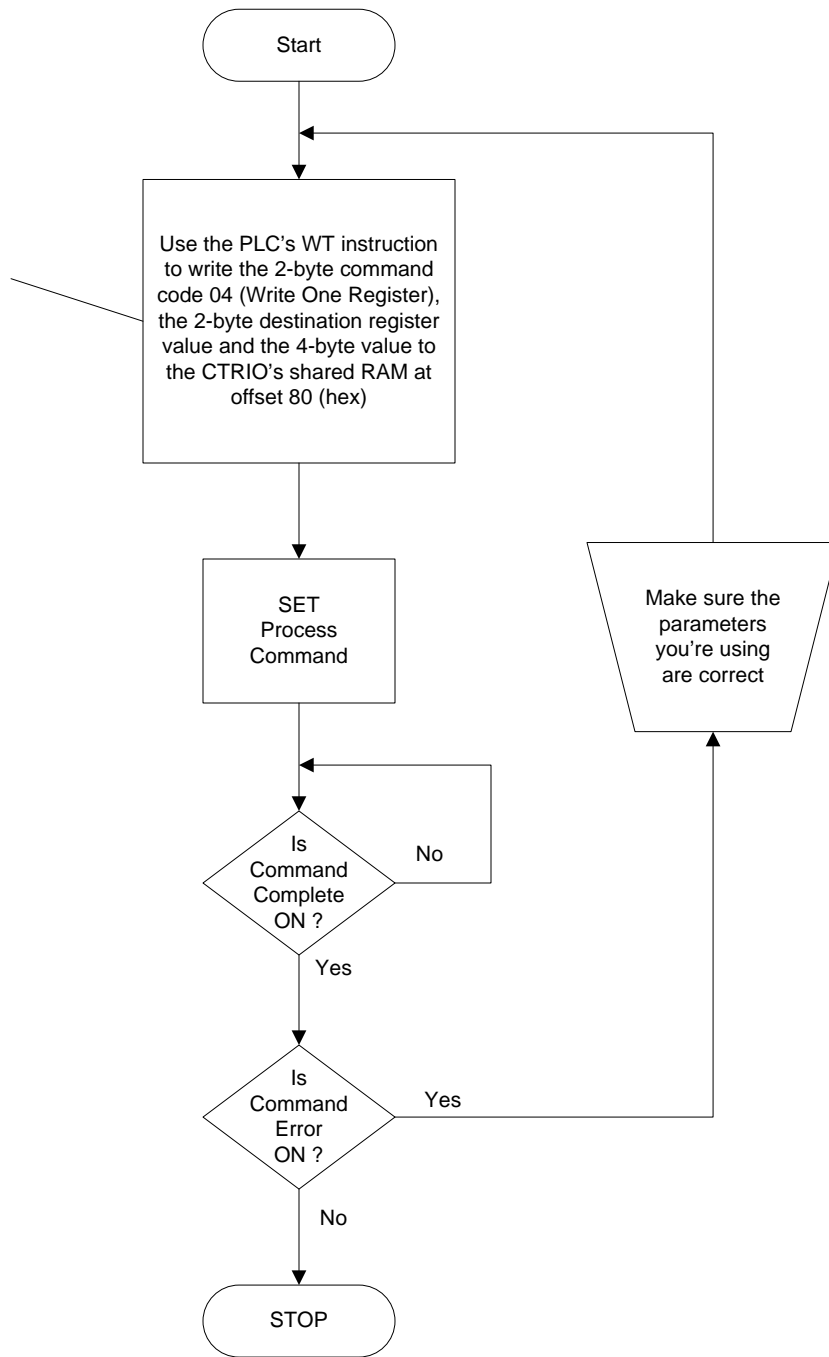
DWORD 4 - Output 0
DWORD 5 - Output 1
DWORD 6 - Output 2
DWORD 7 - Output 3

System Command (PLC Write One Register to CTRIO)

Writing to the CTRIOs internal data registers is a two-step process:
1. Transfer the data values from the PLCs V-memory to the CTRIO's shared RAM
2. ask the CTRIO to transfer these values from its shared RAM to it's internal registers.

The Destination Register values are as follows:
0 - Ch1/Fn1
1 - Ch1/Fn2
2 - Ch2/Fn1
3 - Ch2/Fn2

4 - Output 0
5 - Output 1
6 - Output 2
7 - Output 3

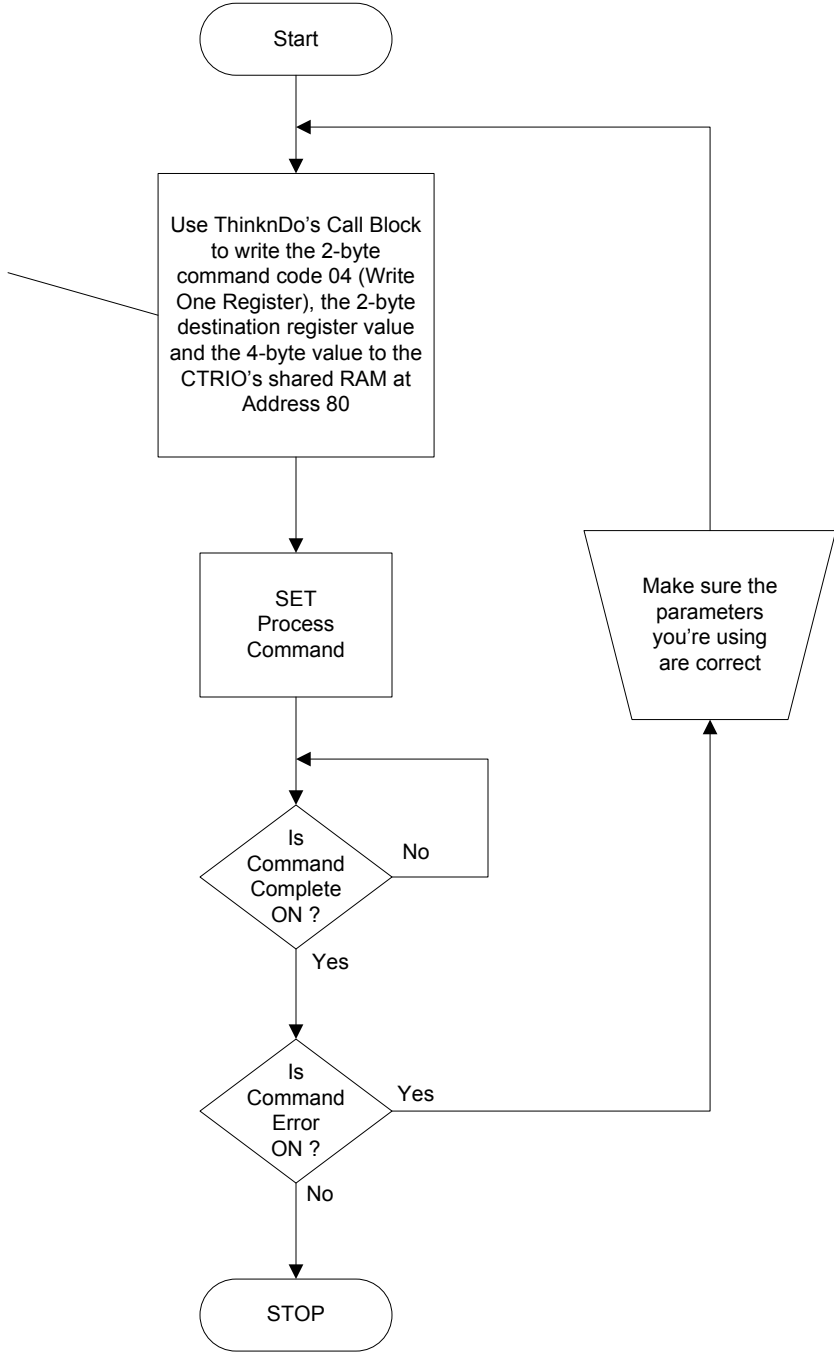


System Command (TnD Write One Register to CTRLIO)

Writing to the CTRLIOs internal data registers is a two-step process:
1. Transfer the data values from ThinknDo to the CTRLIO's shared RAM
2. ask the CTRLIO to transfer these values from its shared RAM to it's internal registers.

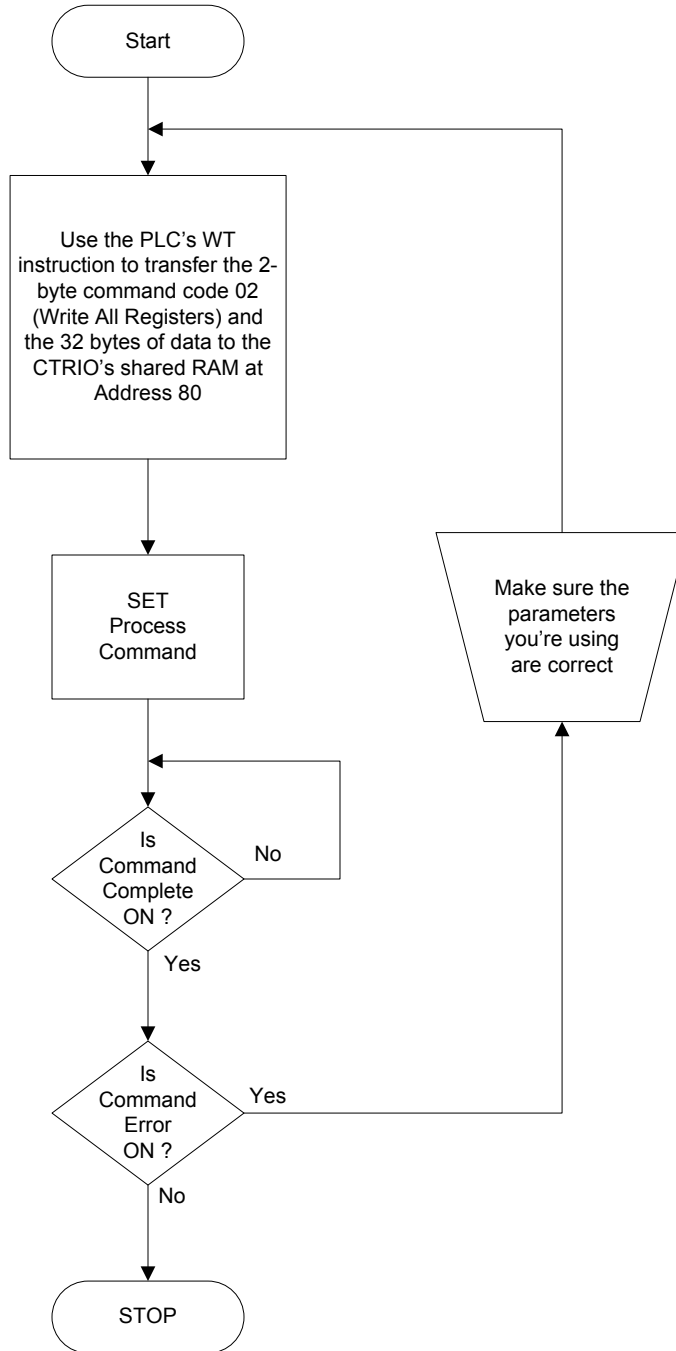
The Destination Register values are as follows:
0 - Ch1/Fn1
1 - Ch1/Fn2
2 - Ch2/Fn1
3 - Ch2/Fn2

4 - Ouput 0
5 - Ouput 1
6 - Ouput 2
7 - Ouput 3



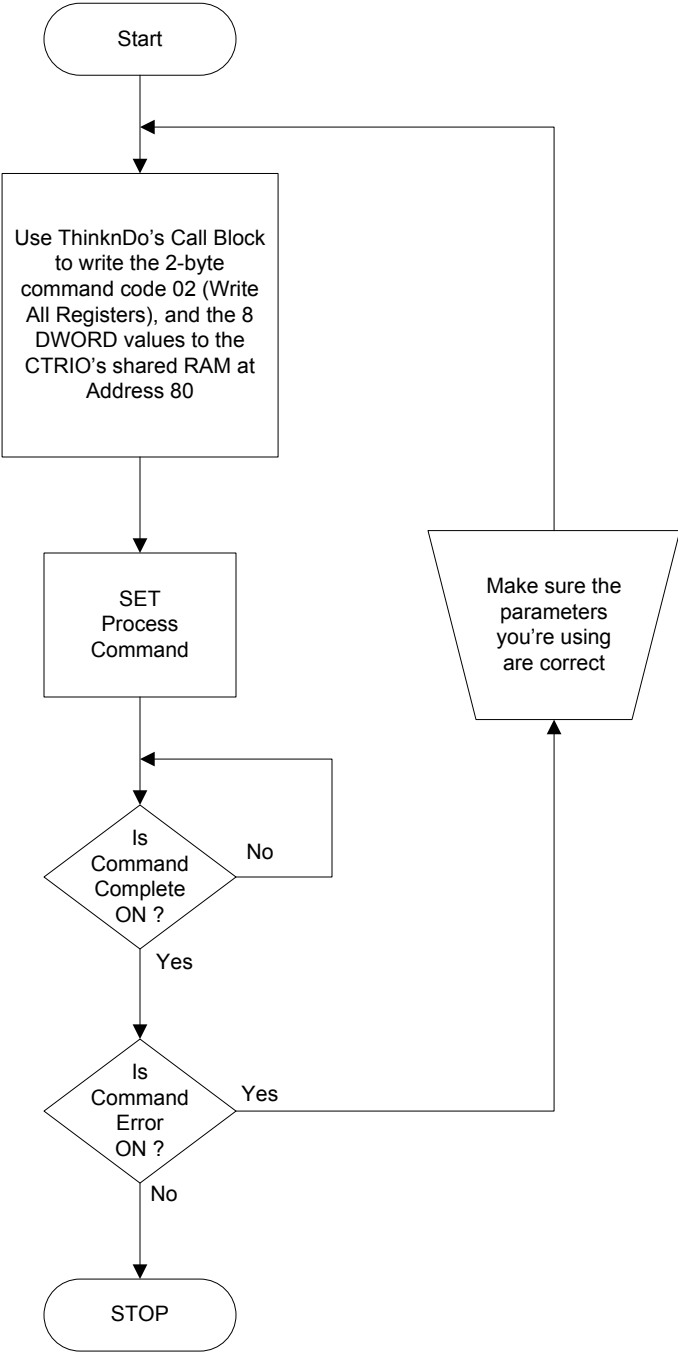
System Command (PLC Write All Registers to CTRIO)

Writing to the CTRIO's internal data registers is a two-step process:
1. Transfer the data values from ThinknDo to the CTRIO's shared RAM
2. ask the CTRIO to transfer these values from its shared RAM to it's internal registers.



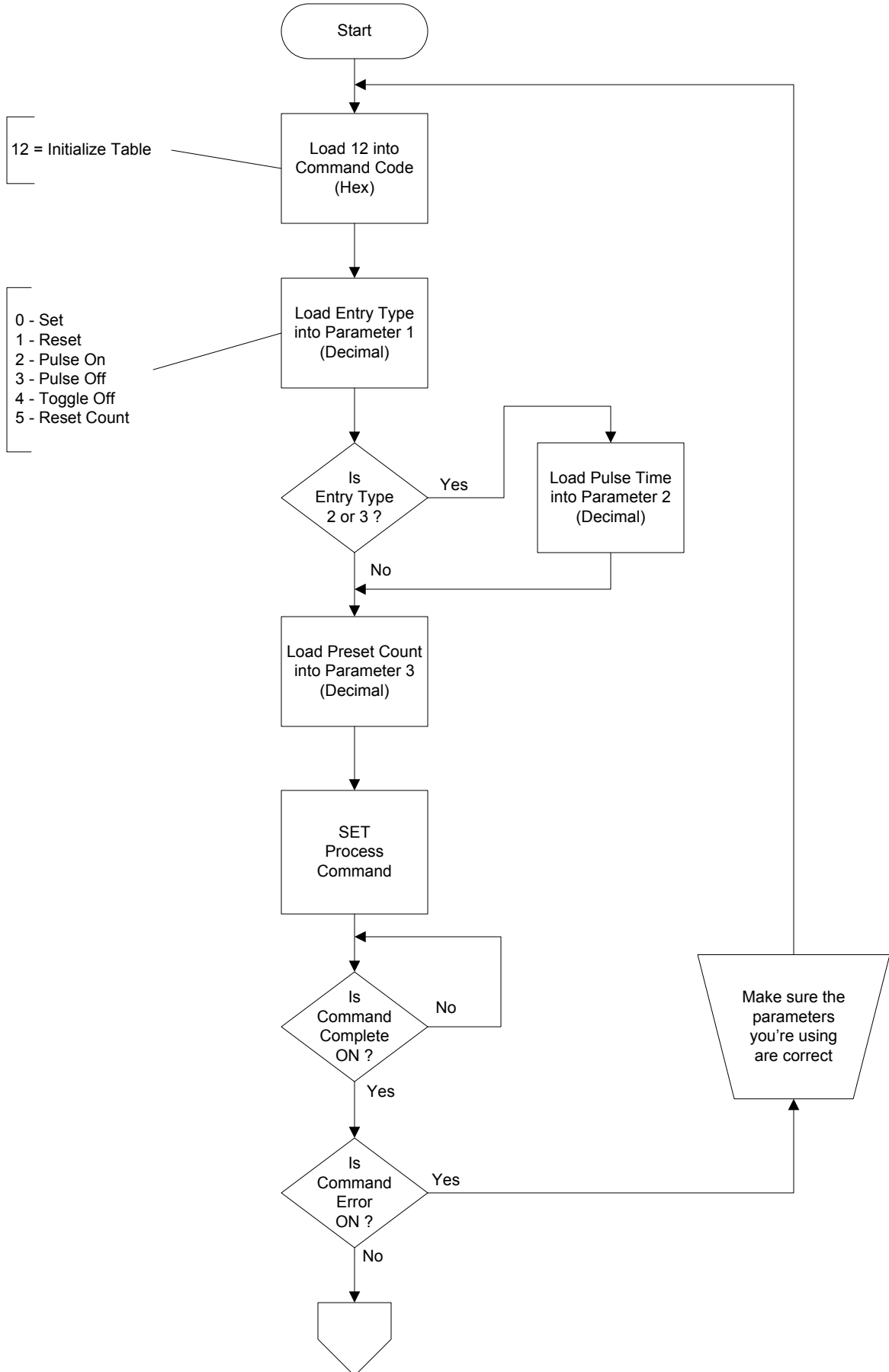
System Command (TnD Write All Registers to CTRLIO)

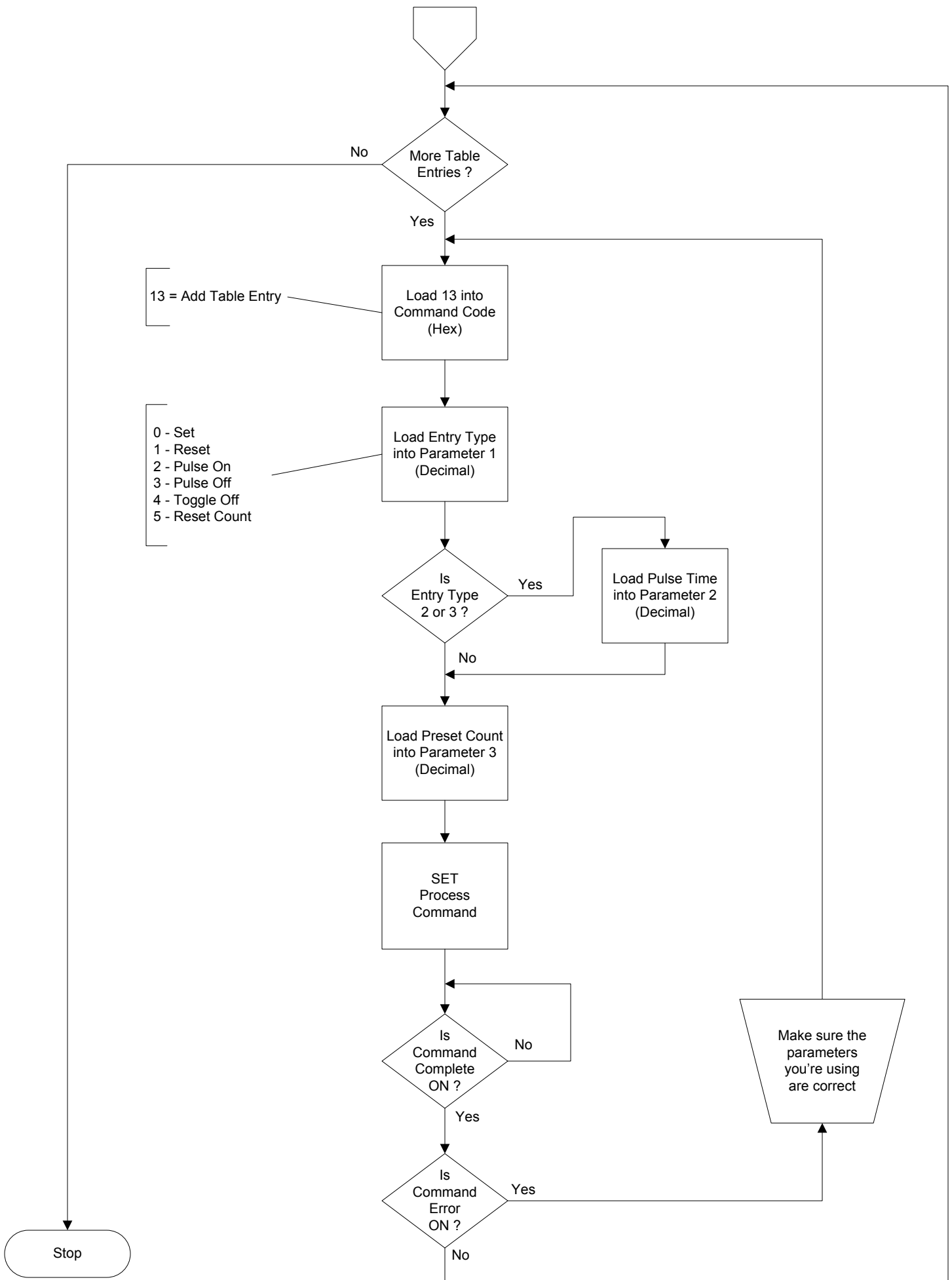
Writing to the CTRLIO's internal data registers is a two-step process:
1. Transfer the data values from ThinknDo to the CTRLIO's shared RAM
2. ask the CTRLIO to transfer these values from its shared RAM to it's internal registers.



Build Preset Table

Using Initialize Table and Add Table Entry Commands





Edit Preset Table Entry

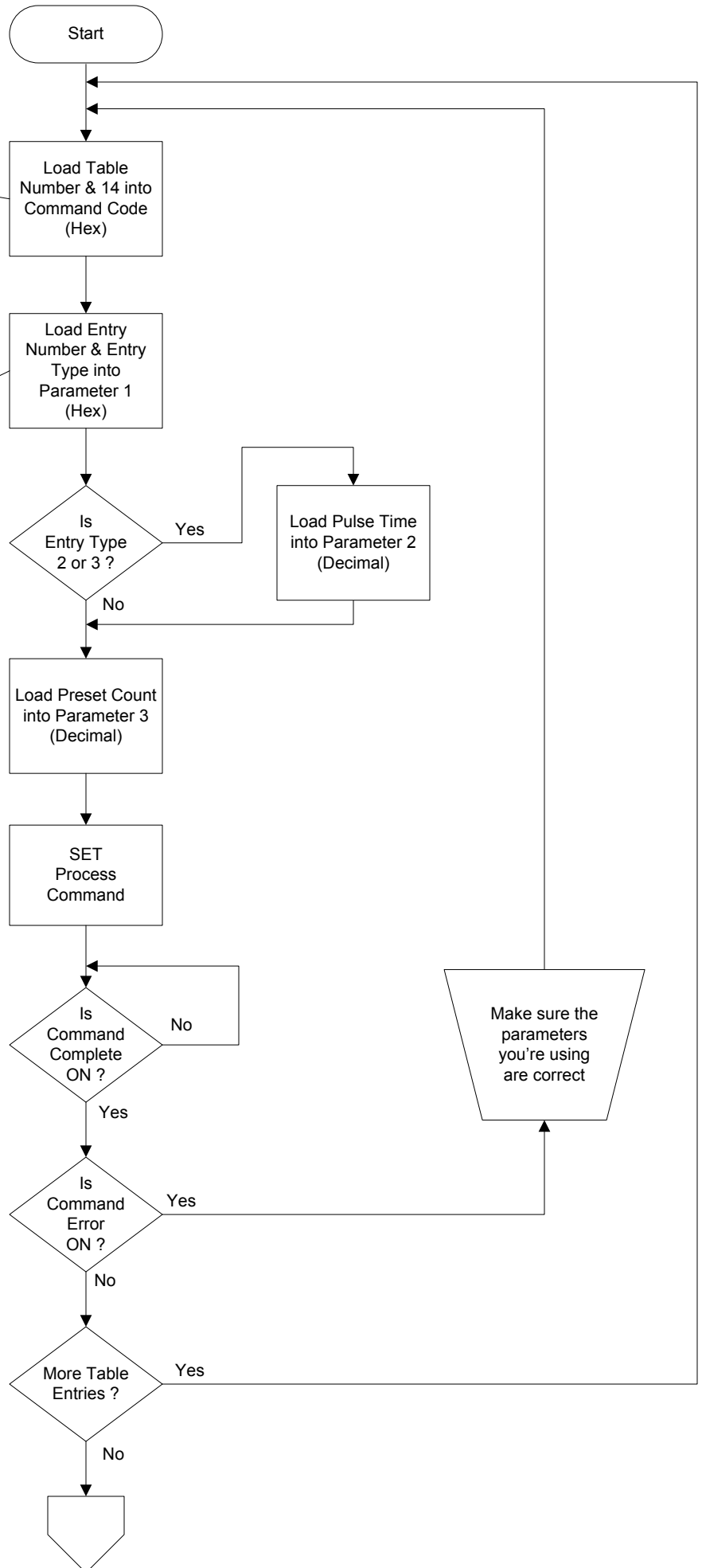
The Table number is loaded into the high byte and the value 14 is loaded into the low byte, for example:

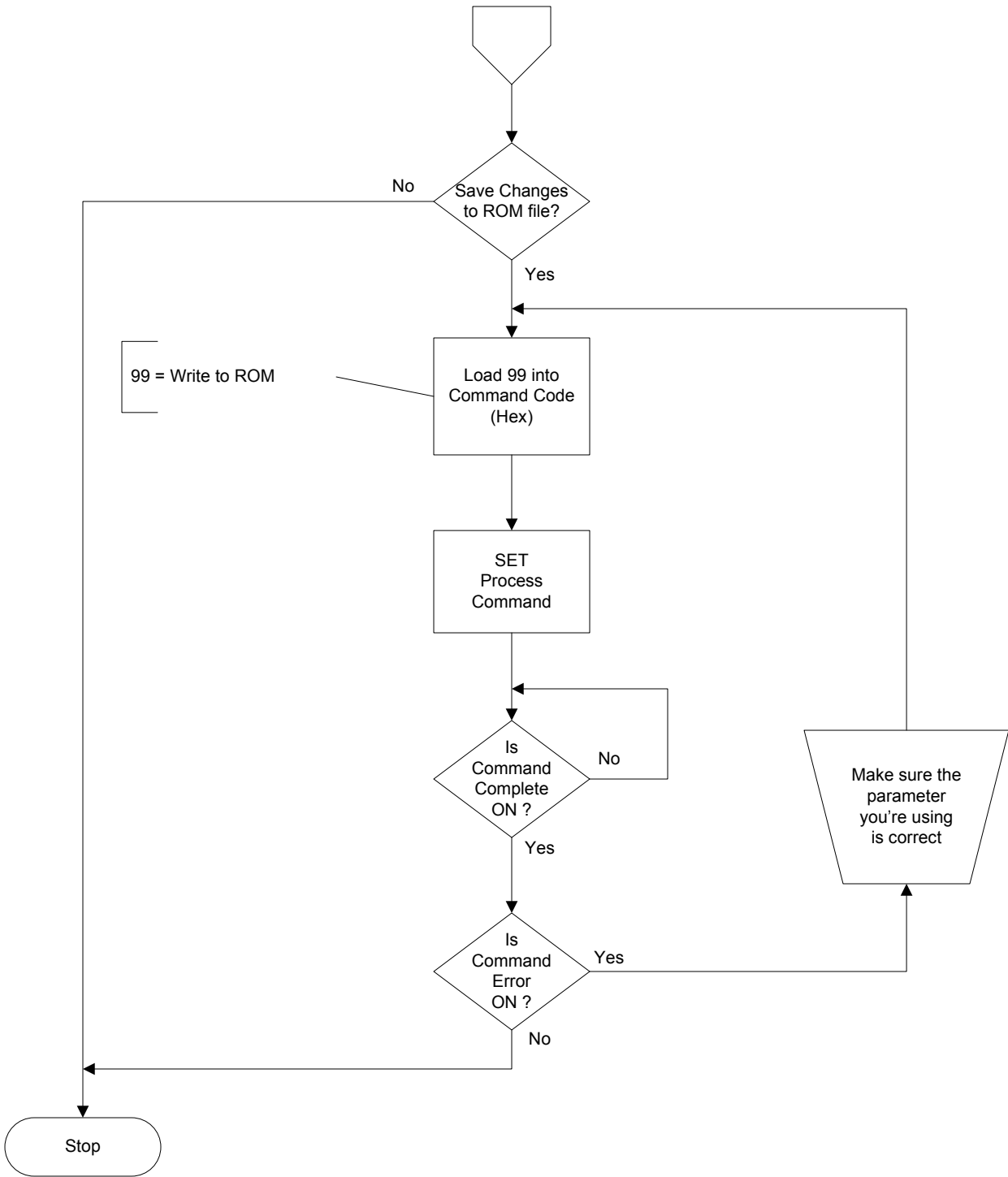
0214 = Edit Table #2

The Entry Number is loaded into the high byte and the Entry Type is loaded into the low byte, for example:

0202 = 3rd Entry is a Pulse ON

- 0 - Set
- 1 - Reset
- 2 - Pulse On
- 3 - Pulse Off
- 4 - Toggle Off
- 5 - Reset Count





Edit and Reload Preset Table Entry

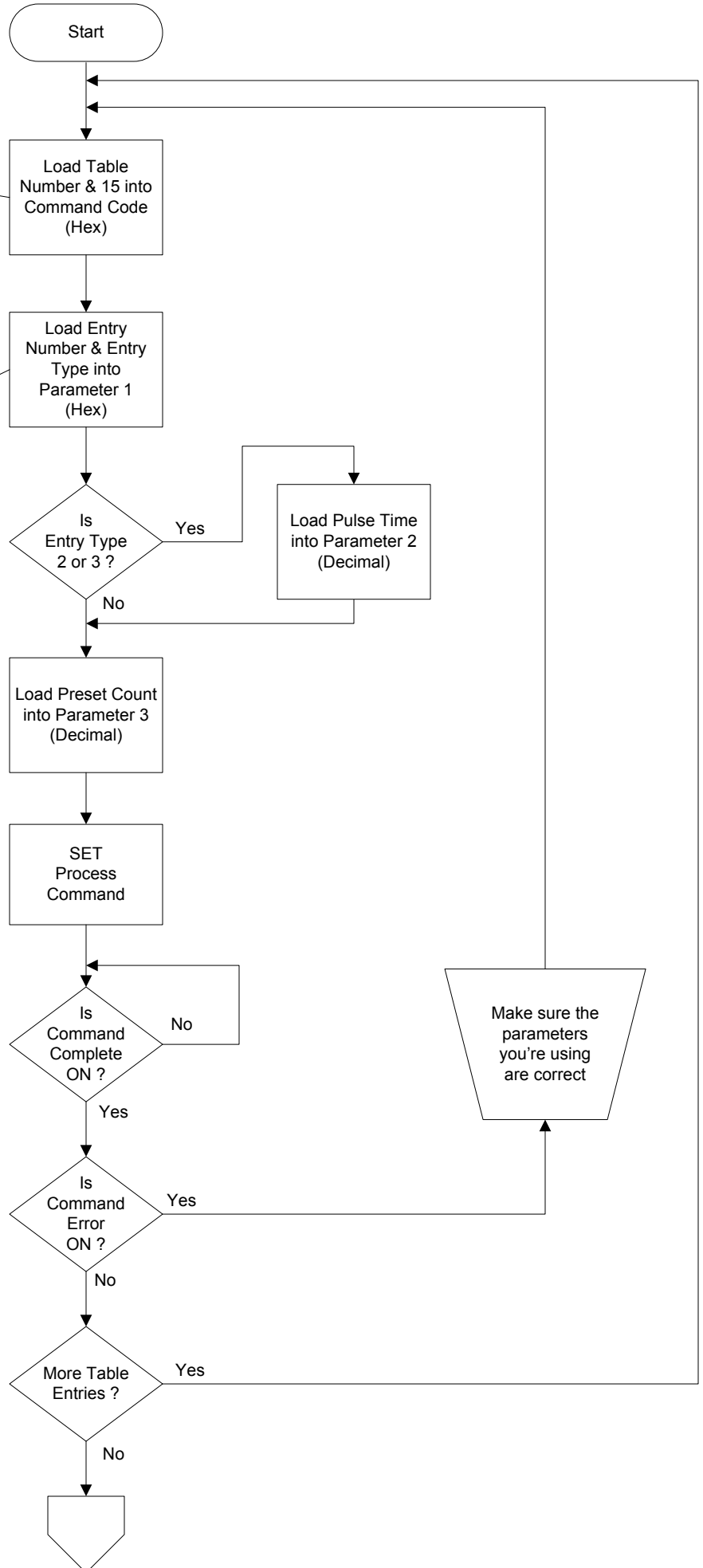
The Table number is loaded into the high byte and the value 15 is loaded into the low byte, for example:

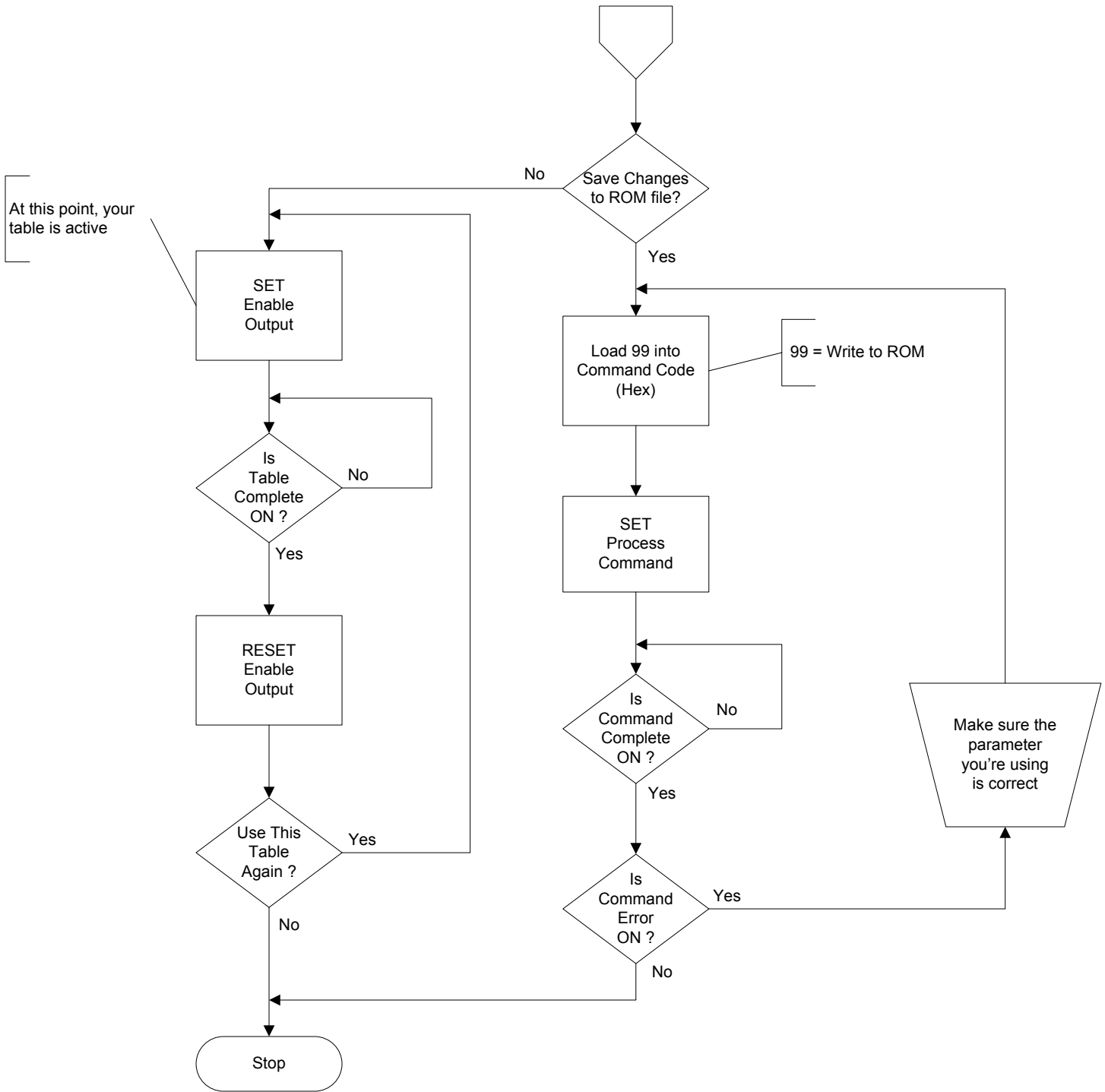
0215 = Edit then reload Table #2

The Entry Number is loaded into the high byte and the Entry Type is loaded into the low byte, for example:

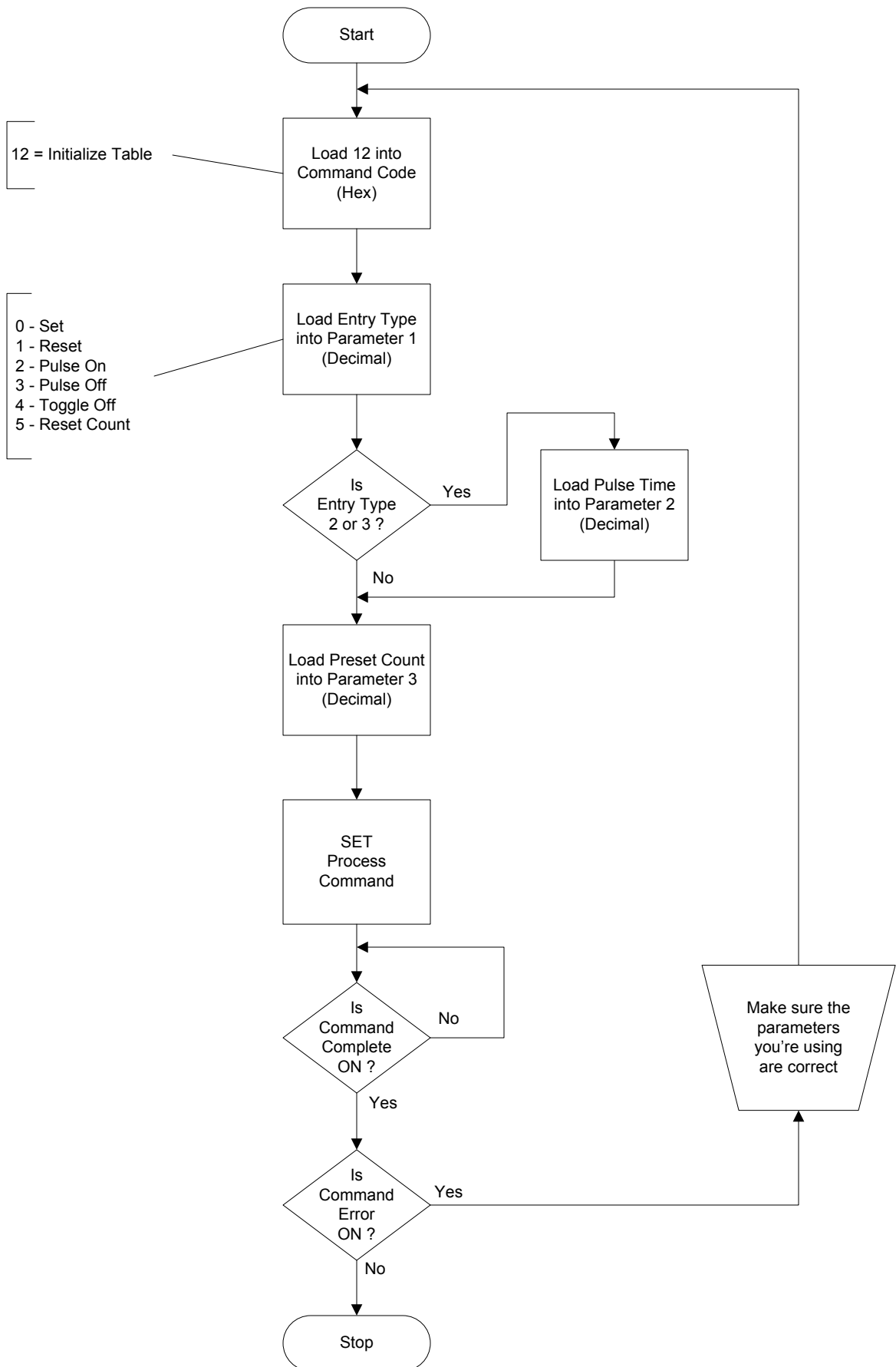
0202 = 3rd Entry is a Pulse ON

- 0 - Set
- 1 - Reset
- 2 - Pulse On
- 3 - Pulse Off
- 4 - Toggle Off
- 5 - Reset Count

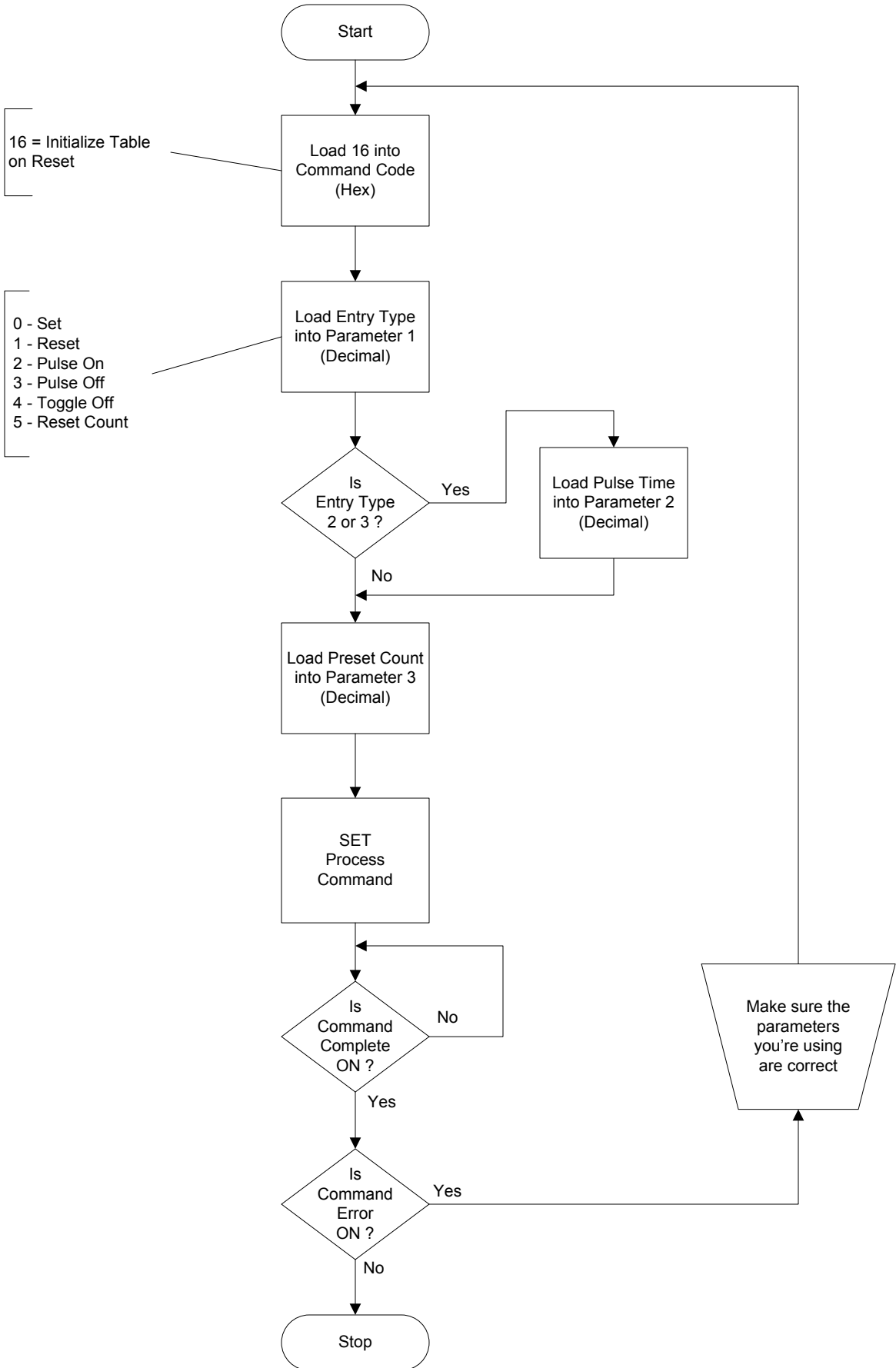




Initialize Table



Initialize Table on Reset



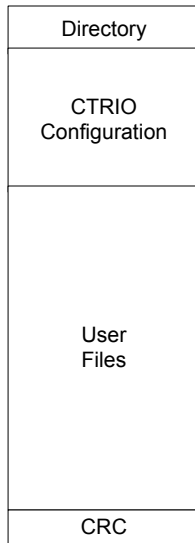
CTRIO File System Overview

At power up, the CTRIO:

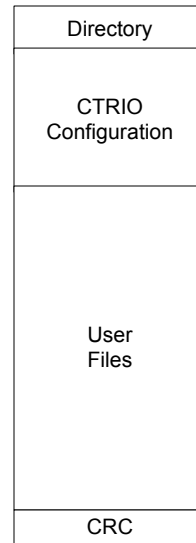
1. clears the RAM file system
2. ensures the ROM file system is intact
3. copies the entire ROM file system to the RAM file system.

From this point on, all File and Table operations operate from the RAM copy.

CTRIO ROM File System



CTRIO RAM File System



When you Load a Profile or Preset Table, that file or table is copied from the RAM file system into the output's table buffer.

All operations performed by the output get the data from the table buffer.

Outputs configured as pulse outputs will use a pair of table buffers.

Table Buffer for Output 0



Table Buffer for Output 1



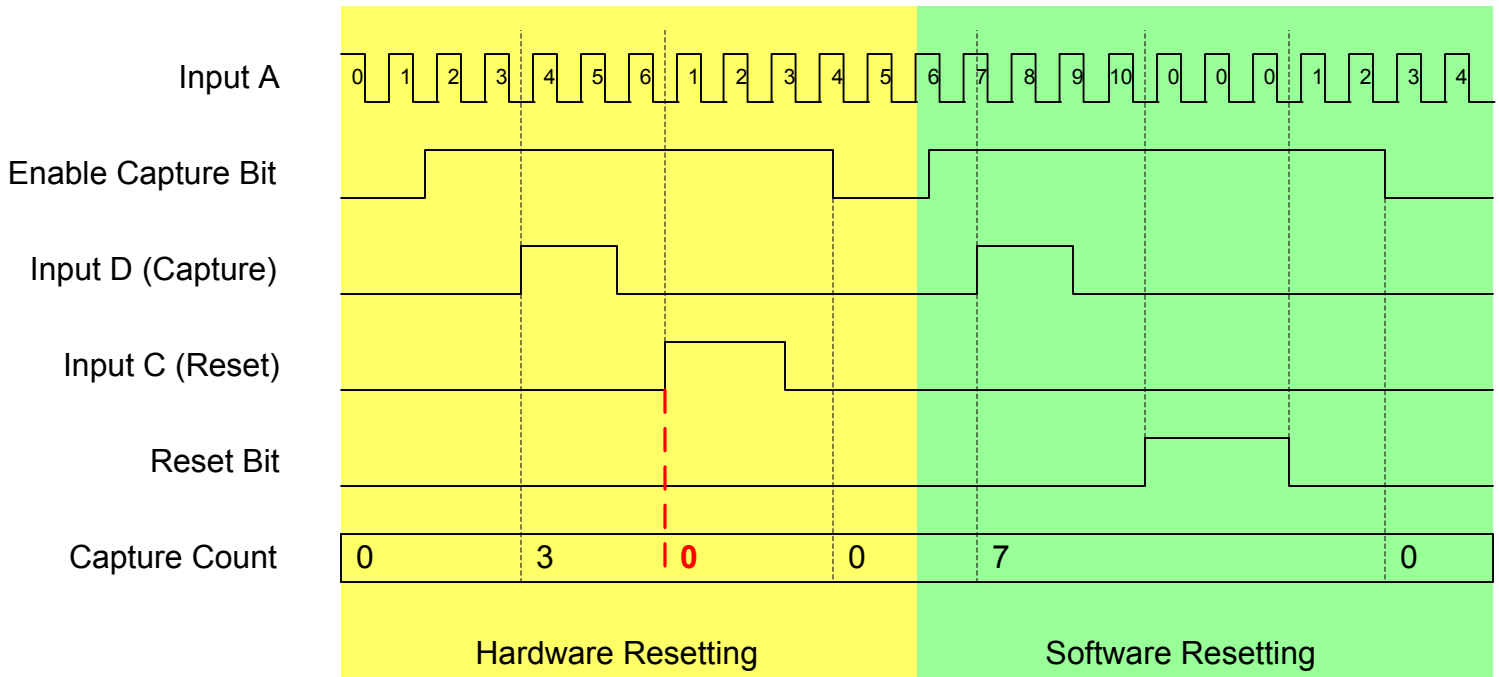
Table Buffer for Output 2



Table Buffer for Output 3



Behavior Previous to CTRIO Firmware v2.1.7



Behavior in CTRIO Firmware v2.1.7 and Later

