This application notes describes the timing accuracy of the CC320. The following timings refer to firmware version V016.

General

For automation applications, the CC320 timing is much more accurate than is generally required. The timing is much better than reasonably priced PLCs (SPSs). In principle the CC320 is equivalent to a PLC with 0.1ms cycle time.

CC320 pulse outputs can be used for exposure control of cameras in most applications. Short timed pulses less than 4ms will have timing repeatable to within 0.1us.

For most timing functions the basic timing accuracy is 100us. This means that there will be up to 100us variation in delay timing.

PTT Mode, Short Delay and Pulse Width

Short PTT mode pulses are much more accurate.

If one of the following conditions is met, then the typical timing is a minimum delay is 24us with variation of +/-4us.

Delay = 0, pulse width <= 4ms

Delay + pulse width <= 4ms and O flag not set

If the free running timer is turned on then there will be larger variations. This will typically be 100us but might be longer depending on what other functions are being used.

Multiple Short Pulses

With multiple channels triggered from a single trigger input with the following condition:

Delay = 0, pulse width <= 4ms

Delay timings

OP1 has delay 24us +/-4us

OP2 has delay 29us +/-4us

OP3 has delay 34us +/-4us

OP4 has delay 40us +/-4us

PET, PTE, PEE Pulse modes

The encoder count is read every 100us. This means that encoder pulse widths or delay times have variation of 100us in the timing.

Multiple Functions on one Trigger

When multiple outputs are triggered by a single trigger input there can be an additional repeatable delay of typically 30us.

Multiple Asynchronous Triggers

When multiple triggers are used there is typically a 30us variation in delay timing when two triggers coincide.

Buffer Modes

In buffer mode there is a minimum delay of 20us between the input changing and the output changing.

Ethernet Communications

The reply time of a simple Ethernet command (for example the GT command) is around 1.8ms for UDP and 2.8ms for TCP.