# VWEB-MC PRELIMINARY SPEC

## 1. Prerequisites

- INFOR ERP VISUAL (SQLBase or SQLServer) Licenses
- INFOR VISUAL ALTS / AMTS Module License
- An Ethernet Port for each machine
- Installed Industrial Sensors (Proximity, Infrared, Microswitch, Relay etc)

## 2. Components

| | |
|---|---|
| • PICO-BOX Fan-less Server Appliance | 1 Per VISUAL Database |
| • Ethernet Controller | 1 Per Machine |

## 3. Basic Concepts

1) Each machine needs to create one electrical pulse for every part which is produced. This may be achieved many ways, for example by fitting a commercially available sensor to the machine to detect a cycle or stroke of the machine, by a finished component breaking an infra red beam through a hopper or conveyor, or by programming the machine's PLC controller to create a pulse or close a relay each time one piece is completed.

2) The PICO-BOX server is an Embedded Linux Server Appliance which connects to the VISUAL database and manages the generation of the VWEB-LT web pages, the control and configuration of the Ethernet Counters, and the generation of Labour Tickets using Visual's ALTS module.

3) One Ethernet Counter is required per machine, it connects via the Local Area Network to the PICO-BOX and collects and stores count pulses collected from the machines fitted with a cycle sensor.

4) An Employee ID is pre-associated with each machine and this is the Employee ID which will be used for Labour Tickets for that machine. One Employee ID can only be associated with 1 machine, we recommend creating new employee ID for each machine rather than using an existing 'real' employee.

5) Depending upon the Trigger Type settings, periodic and final labour tickets will be generated. Periodic tickets allow the progress of the machine to be monitored in real time, and stop the current open labour ticket with the qty completed, and then opens a new labour ticket waiting for the next count. Final labour tickets stop the current ticket but does not start a new one, and the operation is then considered 'unloaded'.

## 4.Principle of Operation

1) If no operation has been started, the LED on the counter will be steady on.

2) The operator starts an operation for the M/C using the vweb-lt screen, by scanning a paper Traveller, or by selecting the required job button on the screen.

3) When an operation has been loaded but not started, the LED will blink slowly.

4) If Auto Start is not enabled, the operator presses the button to enable count detection.

5) The LED will blink once with every count received. If the qty complete exceeds the qty required then the LED will blink twice for each cycle detected.

6) If the TRIGGER TYPE is set to Qty or Time, then tickets will be generated based on the trigger type and values defined.

7) When the M/C stops and the IDLE time is exceeded, depending upon the setting of IDLE QTY, either a final labour ticket will be created and the operation will be unloaded, or a L/T will be created and it will wait for the M/C to rseume until the M/C again becomes idle and the qty counted exceeds the qty required.

## 5. Configurable Options

Each machine has it's own configuration settings which are set via the web-based control panel running on the PICO-BOX.

- **Ethernet Mac ID**
  The unique Mac Address of the Ethernet Counter.

- **Machine ID**
  A Unique ID for the Machine for example: MC-1, STAMP-1, MILL-B etc

- **Machine Employee ID**
  The Employee ID for whom Labour Tickets on this M/C will be generated.

- **Max Qty Per Sec**ond
  The absolute max frequency in hertz for the M/C. This is used to prevent false triggers due to electrical noise caused by the contacts of a relay or microswitch.

- **Idle Minutes**
  The Threshold in minutes at which a M/C is considered to be idle. When a running M/C enters this state, it is considered to be stopped and no longer working on the job, this condition will trigger the final labour ticket.

- **Idle Qty**
  After the M/C has become idle, this option tells the system to either:
  1. Only unload the w/o if the qty required has been exceeded
  2. Unload the w/o even if the qty required has not been exceeded.

- **Trigger Type**
  This can be either Qty, Time or One-Shot. Tickets can be created periodically based on time or qty, or just one qty right at the end when the M/C becomes idle.

- **Trigger Value**
  This is not applicable for one-shot mode, and determines the frequency of the periodic tickets, the value is either a duration (1min, 5min, 50min etc) , or a quantity (1,10,1000,1000000 etc).

- **Auto-Start**
  This controls how and when the Ethernet counter starts to collect counts from the m/c. If Auto then the counter will automatically detect when the M/C starts counting, if set to Manual, then the operator will need to press the button on the counter in order to start collection of counts.

## 6. Ethernet Counter Device

This is a small solid-state micro-controller based device in a brushed aluminum casing, which has a single large red LED, a large Push Button and connectors for Ethernet, power and the M/C sensor power and sense connections.

One counter is required for each machine, the Ethernet's MAC address uniquely identifies the M/C to the PICO-BOX server and is individually configurable via the web control panel.

The counter is responsible for counting the pulses from the M/C, storing and transmitting the accumulated counts to the server. The counter is software limited to a maximum machine frequency of 5 pieces per second, however this is a software limit only and frequencies of 1000 per second or more is possible.

The push button switch and the large LED provide simple control and information capabilities to the machine's operator.

## 6.1 Push-Button Switch

The push button switch provides the following control features for the operator of the machine

- **Enable counting of machine cycles**
  When the LED is blinking slowly, this indicates that a valid work order is loaded, however counting has not begun.

  A single short press of the button will enable the counter, and the LED will glow at 50% brightness.

- **Pause counting of machine cycles**
  If the LED is glowing @ 50% brightness, and / or blinking with each count, this indicates that a valid work order is loaded and counting is enabled.

  A single short press of the button will pause the counter and the LED will blink rapidly.

- **Resume counting of machine cycles**
  When the LED is blinking rapidly, this indicates that counting has been paused.

  A single short press of the button will re-enable the counter and it will glow and blink with each count received.

- **Reset Counter and clear all data**
  By holding the button for more than 3 seconds and then releasing it, all counts and data on the device will be erased and it will refresh it's configuration settings from the server.

## 6.2 Status LED

The LED provides simple feedback to the operator as to the status of the machine and it's associated work order demand:

- **No Work Order operation loaded**
  LED Status: On

- **Operation is loaded, but counting not enabled**
  LED Status: Blinks slowly

- **Operation Loaded, counting is enabled**
  LED Status: Glows at 50% brightness

- **Count detected and qty is less than required quantity.**
  LED Status: Single fast blink

- **Count detected, qty exceeds qty required**
  LED Status: Double fast blink

- **Operator pressed push button to pause counting**
  LED Status: Rapid continuous blinking.

 