



Vending & Change Machine Mini Controller Board

HW400

User Manual

Version 1.0

Revision History

<u>Issue</u>	<u>Date</u>	<u>Comments</u>
1.0	04/19/04	First Edition

Introduction

VENDING & CHANGE MACHINE MINI CONTROLLER BOARD (VCM) is a low cost controller board designed for simple time vending and coin change systems. This controller board is designed with flexibility such as different time settings, multiple inputs and outputs, pilot light indication, credit meter for audit and a versatile serial interface for unlimited expansion.

When the VCM is used as a Change machine, the amount of coins to dispense is programmable via onboard DIP switches. When the VCM is used as a Vending machine, the amount of time and coin change is fully programmable via another set of DIP switches.

Hardware Setup

2.0 POWER

VCM is powered through a 2.1mm power jack connector. This power input +Vsupply also supplies power to various devices connecting to VMC. All devices connecting to VMC MUST have the same input voltage requirement. In case of a device needs a different input voltage, a separate power source should be used.

+Vsupply MUST be within +10VDC to +24VDC

Warning: Incorrect voltage input will cause severe damage to device(s) and is hazardous to surroundings.

2.1 INPUT 1 & 2

VCM is able to connect up to two different credit input devices simultaneously. These two input devices can be a coin selector and/or a bill validator.

Input connectors J2 (INPUT1) and J3 (INPUT2) have the following configuration:

- Pin 1 +Vsupply
- Pin 2 GND
- Pin 3 Credit Input (Active Low; ON=40msec to 120msec / OFF > or = 40msec)
- Pin 4 Enable Control to Input Device (Active Low). Default = Always Enable

Each successful pulse received by INPUT1 will dispense a TIME set by S2 FUNCTION (0sec – 10mins). In contrary, each successful pulse received by INPUT2 will be multiplied by PRESCALER and wait until a *Full* credit is reached before VCM will dispense the TIME. Refer to later section for S2 FUNCTION and PRESCALER details.

2.2 OUTPUT 1, 2 & 3

VCM has an option of up to 3 relay outputs for users to control their target system. These outputs are individual “dry” relay contacts. The function and duration of contact of each control relay is individually programmable and can be tailored to users’ application. This information must be specified when ordering. These outputs are suitable for Turning ON / OFF switches or to Make Contacts on the target system.

Relay Switching Voltage = 200VAC

Relay Switching Current = 0.5A

Relay Carry Current = 1.2A

Function type: 1 = Continuous ON during the entire TIME
 2 = Momentarily ON at the beginning of TIME only
 3 = Momentarily ON at the beginning and end of TIME

Pin configuration of J4

Pin 1 & 2 OUTPUT2 : Relay contacts

Pin 3 & 4 OUTPUT1 : Relay contacts

Pin configuration of J6

Pin 3 & 4 OUTPUT3 : Relay contacts

2.3 OUTPUT 4

This output follows the same function and duration of OUTPUT 3 except it is a paired +Vsupply and Open Collector output. This output is suitable for Turning ON / OFF motor or light bulb etc.

Open Collector output rating: Inductive loading. Max. continuous current sink = 500mA

Pin configuration of J6

Pin 1 OUTPUT4 : +Vsupply

Pin 2 OUTPUT4 : Open Collector

2.4 LIGHT SIGNAL (LED or light bulb)

VCM has a light signal on connector J7. By inserting/removing BULB jumper, this light signal can be connected directly to a LED or a light bulb. This signal is turned ON when VCM is dispensing a TIME and has more than one credit in memory. It starts FLASHING when the last credit is being dispensed and it will be turned OFF when the TIME ends. This light signal is best use for signifying the user to insert more credit when the last recorded credit is being dispensing.

BULB jumper: Jumper inserted = LED T1 -3/4 type
Jumper removed = Light bulb. Rating +Vsupply, max 500mA

Pin configuration of J7

Pin 3 LED anode / light bulb +
Pin 4 LED cathode / light bulb -

2.5 AUDIT METER

This is an electromechanical meter output. This serves as an audit function for auditor to keep track of total credit received. Therefore, a non-resetable meter is preferred. Each credit received from INPUT1 will register one count to the meter. Each credit received from INPUT2 will be multiplied by PRESCALER and wait until a *Full* credit is reached before registering to the meter. Refer to PRESCALER section for details.

Meter rating: Voltage = +Vsupply Current 500mA
Pin configuration of J7

Pin 1 Meter +
Pin 2 Meter -

2.6 S1 FUNCTION

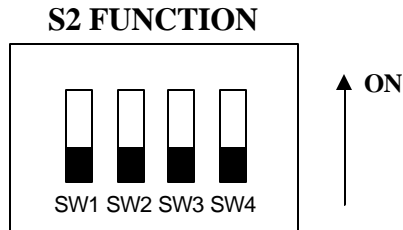


SW1:SW2 HOPPER FUNCTION
Refer to later "HOPPER Control" section for details.

SW3:SW4 PRESCALER FUNCTION
This function set the value ratio of INPUT1 to INPUT2. This is particular useful when the value of INPUT1 is different from the value of INPUT2. For example: INPUT1 is connected to a bill validator where each credit pulse = \$1.00 whereas INPUT2 is connected to a coin selector where each credit pulse = \$0.25. Therefore, PRESCALER should set to 4 : 1 in order to set the credit pulse of INPUT2 equals ¼ of INPUT1. And only on 4 pulses of INPUT2 will give out a *Full* credit for VMC to dispense a TIME and a METER register.

SW2 : SW3 settings	RATIO
OFF : OFF	INPUT1 : INPUT2 = 1 : 1
OFF : ON	INPUT1 : INPUT2 = 1 : 2
ON : OFF	INPUT1 : INPUT2 = 2 : 1
ON : ON	INPUT1 : INPUT2 = 4 : 1

2.7 S2 FUNCTION



The TIME duration is programmable by using S2 FUNCTION SW1:SW4. TIME for INPUT1 ranges from 0 second to 10 minutes. Since INPUT2 is a function of INPUT1, depending on PRESCALER setting, TIME for INPUT2 can range from 0 second to the most 20 minutes (Ratio = 1 : 2). Thus INPUT2 is used as a single input when TIME dispense > 10 minutes.

Dip switch settings

SW1	SW2	SW3	SW4	TIME
OFF	OFF	OFF	OFF	*0m0s
OFF	OFF	OFF	ON	0m30s
OFF	OFF	ON	OFF	1m0s
OFF	OFF	ON	ON	1m30s
OFF	ON	OFF	OFF	2m0s
OFF	ON	OFF	ON	2m30s
OFF	ON	ON	OFF	3m0s
OFF	ON	ON	ON	3m30s
ON	OFF	OFF	OFF	4m0s
ON	OFF	OFF	ON	4m30s
ON	OFF	ON	OFF	5m0s
ON	OFF	ON	ON	6m0s
ON	ON	OFF	OFF	7m0s
ON	ON	OFF	ON	8m0s
ON	ON	ON	OFF	9m0s
ON	ON	ON	ON	10m0s

* VMC is being used as a change machine

2.8 S3 FUNCTION

This function switch is customer independent. Consult Hemisphere West for correct setting.

2.9 BUTTON Input

BUTTON Input Reserved for future expansion

3.0 HOPPER Control

In application where change is desirable, VMC can connect to a coin hopper in two different ways.

- (1) Pulse interface
- (2) Serial TTL or RS-232 interface

The amount of change is programmable via S1 FUNCTION SW1:SW2.

Since there are so many control variation interface types on a coin hopper, this Hopper Control is not loaded in the VMC as default. Specification must be provided to Hemisphere West for proper programming.

Recommended settings

+Vsupply = +12VDC input

INPUT 1 connects to a bill validator

INPUT 2 connects to a coin validator (optional)

OUTPUT 1, 2, 3 or 4 connect to user system

LED port connects to a LED (BULB jumper removed)

METER port connects to a non-resetable +12V electromechanical meter

S1 FUNCTION set to correct credit ratio of INPUT 1 and INPUT 2

S2 FUNCTION set to desired TIME