



OMNI 68-6201 CPU

TECHNICAL BULLETIN



NOTE: User Manual Reference – This Technical Bulletin complements the information contained in the User Manual, applicable to all OMNI Flow Computer firmware revisions.
OMNI 68-6201 CPU – The 68-6201 CPU Module is an updated CPU for the OMNI 6000/3000 Flow Computer. It is compatible with all existing I/O boards and can be used as a direct replacement of the 16Mhz 68-6001 CPU board within any system.

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NOTE: Getting Support – Support is available at: Phone: (281)240-6161
Email should be sent via the WEB Page at: www.omniflow.com
or email to: helpdesk@omniflow.com

Scope

This Technical Bulletin applies to all revisions of the OMNI 3000/6000 Flow Computers.

Abstract

OMNI Flow Computers manufactures an updated CPU Module for the OMNI 3000/6000 Flow Computers. The module model produced is:

68-6201 CPU Module

This CPU Module provides an advanced 32 bit processor, FLASH Memory, additional battery backed up memory to provide additional resources for future enhancements. The firmware can be upgraded in the field using a utility program and binary files licensed through OMNI Flow Computers, Inc.

Currently, two applications can be loaded into the FLASH memory; the user configures which of the two applications to run on power up.

Features and Specifications

The 68-6201 CPU is a migration of the 68-6001 CPU. It has an updated processor as well as additional memory and resources for future enhancements. The board contains FLASH memory instead of EPROM for holding the Application Firmware and EEPROM for retaining I/O calibration data. I/O calibrations will be restored from EEPROM after a memory clear operation is performed. The FLASH memory is large enough to store code for multiple firmware applications. A card ejector is also provided on the module to help remove the module from the flow computer chassis.

The 68-6201 runs the same firmware as the 68-6001 CPU and is backward compatible with all I/O modules. Features of the CPU module are:

- 32 bit advanced processor
- 4 Mbytes of FLASH memory
- 2 Mbytes of Battery Backed RAM
- 4 Mbytes of Fast Execution RAM
- Temperature Compensated Real Time Clock Oscillator
- EEPROM for storing I/O Calibration Data

Installation

To install in an existing flow computer, use OmniCom to retrieve your current configuration before removing the CPU module. Pull out the CPU module and remove the front panel ribbon cable. Re-connect the ribbon cable to the new 68-6201 CPU and insert in the flow computer chassis. Use OmniCom to transfer the configuration to the new CPU.

All active inputs and outputs will need to be re-calibrated.

Quick Installation Reference



NOTE: FLASH Memory – Flash is a nonvolatile memory that can be electrically erased and reprogrammed. It is divided up into blocks which can be erased and programmed individually and does not require power to retain the information programmed into it.

CPU Jumper Settings – For normal operation the Flash Update jumper should be in the “Disabled” position and the Watchdog jumper should be “In”.

Follow these steps to install the CPU module.

- Use OmniCom to retrieve the configuration from the current CPU and save to a disk file. Refer to OmniCom help and documentation if unfamiliar with this operation.
- Power down the unit, remove the current CPU and replace with the 68-6201 CPU board.
- Power up and verify that the desired firmware revision is contained in FLASH by scrolling to the bottom of the Status screen. If the correct application is not running, refer to the sections on FLASH Updating and Application Selection.
- Transfer the saved configuration using OmniCom.
- Re-calibrate the analog inputs and outputs

Jumper Settings

Figure 1 is a drawing of the OMNI 68-6201 CPU Module.

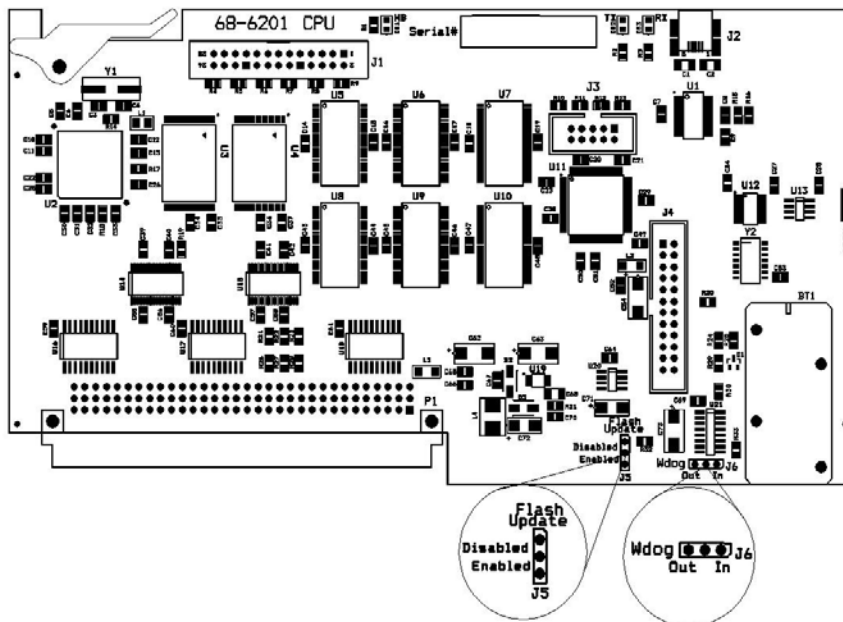


Figure 1. OMNI 68-6201 CPU Module

Flash Update Jumper

The Flash Update jumper is left in “Disabled” for normal operation. It is moved to the “Enabled” position only when programming the FLASH with a new application. If the jumper is left in the “Enabled” position when running an application, an alarm will be generated.

Note: The ‘Flash Update’ jumper ensures that the application programs stored within the CPU FLASH memory cannot be changed accidentally, or without on-site operator intervention. This is an OIML/WELMEC/Weights and Measures requirement.

Wdog Jumper

The Watchdog ‘Wdog’ jumper is provided for factory use only and is always in the ‘In’ position during normal operation.

Operation

Application Selection

Currently, two OMNI firmware applications can be loaded into the FLASH memory at any time. The user configures which application the flow computer should use by switching the flow computer to the ‘BootLoader’ menu and making the appropriate selection. This application selection process is only required after an upgrade of FLASH memory, or if you wish to switch between application images. The ‘BootLoader’ menu is accessed as described as follows:

- Make sure the ‘Program Lockout Switch’, located on the rear face of the front panel PCB, is in the Enabled position. The Program Lockout Switch is the lower red switch.
- Press and hold the <Prog> key on the Front Panel Keypad.
- Press the red ‘Reset’ switch located on the rear face of the front panel PCB. The reset switch is the upper red switch.
- Release the reset switch while continuing to press the <Prog> key.

Once the BootLoader menu is entered, the user has 5 seconds to press a key (i.e. make a menu selection change) before the default application is booted. Once a key has been pressed, the default application will be booted following a 5 minute period of key press inactivity. If there are no valid application images loaded in Flash memory, the system will restart and run in the “Idle” mode of the BootLoader.

Within the BootLoader Menu, scroll down to “Select BootImage” and select the default application you wish to run at startup. If only one application is loaded in Flash memory, the single application will be pre-selected for booting. Press the <Enter> key to boot the selected application. If the user is selecting the other application for booting, both the old and new application selections are presented with a user prompt for confirmation. If the application number and/or the major revision number are different in the two applications, a second prompt is presented to the user with a warning that ALL RAM will be cleared upon booting the selected application.

NOTE: I/O calibration data will be retained by restoring a backup from EEPROM.

Saving a Previous Firmware Version

The ability to store two sets of application code in the CPU's FLASH memory currently, also gives the user the option of updating his application firmware at some point and retaining the previous firmware version for backup purposes. This would allow a user to revert to using the previous firmware version if desired.

FLASH Updating

To update FLASH memory the CPU needs to be placed in the BootLoader "Idle" mode and the OMNI SmartFlash program to transfer the new application image file(s).

The PC connects to the CPU board via a USB cable. The SmartFlash application installation includes the necessary USB driver files. The driver can be installed either prior to or after connecting the 68-6201 CPU to a PC. *See the section: Installing the USB drivers.*

Flash Update Jumper

Prior to updating the FLASH memory using SmartFlash, the 'Flash Update' jumper on the CPU module must be installed in the 'Enabled' position. The flow computer must be powered down and the CPU module removed to change the jumper setting. After re-programming the CPU FLASH memory, the flow computer must be powered down and the jumper returned to the "Disabled" position or an alarm will be generated when the application runs.

Using SmartFlash

SmartFlash, the utility for updating the FLASH in the 68-6201 CPU, is available for download from the Omni web site. Refer to SmartFlash help and documentation for detail on operation.

When SmartFlash is installed the drivers necessary to connect the PC to the CPU module are included. *See the section on installing USB drivers.*

Activate the BootLoader mode in the flow computer by pressing and holding the <Prog> key on the keypad while resetting the panel as described earlier. Immediately scroll down to "Enter BootLoader" and press the <Enter> key. The BootLoader will be in "Idle" mode waiting for commands from the SmartFlash utility program.

Run SmartFlash and make the following selections:

1. Select the "OMNI 68-6201" target unit from the available selections.
2. Select one or both binary files to transfer to the CPU.
3. Select which Flash application image location you want each application file to be programmed to.
4. Select the application image to be booted by default.
5. Select whether you would like to clear configuration memory only or clear all memory. Clearing RAM will also force a unit reset and subsequent boot of the selected default application.
6. Select the Start button to initiate the programming sequence.

The application file(s) will be transferred to the CPU and then verified. Once verified you will be prompted to select whether you want to go ahead and program the FLASH. The selected applications will then be programmed into the selected Flash memory image areas. If a RAM clear option was selected, the RAM is cleared following a successful programming sequence and finally the selected application is booted and run.

Connecting to the CPU for the first time

Installing USB Drivers

Win XP, 2000, Vista

There are two methods for installing the necessary USB drivers for Win2000/XP/Vista. Method number 1 is the easiest method and is recommended. Method number 2 is the standard method for installing a driver in Windows which involves interaction with the "Found New Hardware Wizard" dialogs.

Method 1 - RECOMMENDED

This method should be implemented PRIOR to connecting your PC to an Omni 68-6201 unit. Locate the file "CDM_Setup.exe" within the SmartFlash application installation directory. The standard SmartFlash installation directory is as follows.

C:\OmniFlow\SmartFlash

Execute the executable file "CDM_Setup.exe" using the Windows Start menu "Run" selection. Use the "Run" dialog's "Browse..." button to navigate to the "CDM_Setup.exe" file. Press the "OK" button to execute the file. Alternately, the file can be executed from within Windows Explorer – navigate to the file location and double-click it to execute the file. A message dialog will appear indicating that the driver was successfully installed.

Method 2

Apply power to a unit with an installed 68-6201 CPU board. Connect the USB between the unit and the PC requiring driver installation. Windows will recognize that a new device type has been connected and will invoke the "Found New Hardware Wizard" series of dialogs to perform a manual installation of the required driver files. Driver files are located in the following standard location:

C:\OmniFlow\SmartFlash\USB Drivers\Windows Vista-XP-2K

The SmartFlash installation includes driver installation guides for both Windows 2000 and Windows XP/Vista. These guides are in the form of PDF files and are specified as follows:

C:\OmniFlow\SmartFlash\USB Drivers\Windows Vista-XP-2K\Windows 2000 Installation Guide.pdf

C:\OmniFlow\SmartFlash\USB Drivers\Windows Vista-XP-2K\Windows XP Installation Guide.pdf

Follow section 2.1 "Installing CDM Drivers" in the appropriate guide to complete the installation.

Follow section 2.1 "Installing D2XX Drivers" in the above guide to complete the installation.

Boot Option Menu

The following items are available through the Boot Option Menu

Boot 2X.75.YY

- Continue and run the Application indicated.

Show Revisions

- Select to view the revisions of the BootLoader and installed applications.

Select BootImage

- Select to choose which Applications will run at startup. The application is immediately booted.

Enter BootLoader

- Select to enter the BootLoader “Idle” mode and wait for commands from SmartFlash.

Clear Calib RAM

- Select to clear all calibrations in both RAM and EEPROM. The booted application will set all calibration data entries to their defaults. The boot application is immediately booted.

NOTE: ALL previously stored calibration data will be lost!

Clear Config RAM

- Select to clear the system configuration RAM area of the selected application. Calibrations and Totalizers will be retained. The boot application is immediately booted.

Clear All RAM

- Select to clear all memory including Totalizers. Calibrations will be retained. The boot application is immediately booted.

DOCUMENT REVISION HISTORY

DOCUMENT INITIAL RELEASE DATE 17-December-2007

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A	17-December-2007	Maintained on the Web - Initial release
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