Technical Bulletin, Overview of OMNICOM® Configuration PC Software

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NOTES: User Manual Reference - This Technical Bulletin complements the information contained in Volume 3, Chapter 2 "Flow Computer Configuration", and is applicable to all firmware revisions.

This bulletin was previously published as an appendix to user manuals of firmware revision Version .70 and earlier.

OMNICOM® Configuration PC Software – This powerful software package allows you to setup, copy or modify, and save to disk entire configurations of OMNI Flow Computers. It also allows you to crate customer reports and displays. You can work online, offline and remotely.

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Scope

OMNICOM® DOS Version is compatible with all xx.73 and lower firmware applications of OMNI 3000/6000 Flow Computers. For current users, the available DOS version is OMNICOM 73.18. Available only with request with helpdesk@omniflow.com.

OMNICOM® Windows Version Software is compatible with all xx.74 firmware revisions of OMNI 6000/OMNI 3000 Flow Computers. It is installed on a personal computer from which you can configure your flow computer. It is also available from our web site www.omniflow.com.

Windows version of OMNICOM® will allow a user to read data from a DOS version application and save this configuration in the Windows format. Users can also use Windows OMNICOM® to import a DOS OMNI Configuration file. Once a user has the file, no changes or downloads are permitted to the DOS version. User must upgrade the DOS version to xx.74.30 or higher EPROM or FLASH version.

Abstract

OMNICOM® is a simple-to-use yet sophisticated PC-based configuration program that can be used to setup, copy or modify, and save to disk entire configurations for OMNI Flow Computers. You can also select custom report options and modify report templates and OMNI display screens that are resident within the program, or create new ones. These can then be uploaded to the flow computer. Default reports provide standard data and formats for most requirements.

Major application programming has already been developed by OMNI and is resident in EPROM or Flash. This is of particular importance in custody transfer measurement contracts. They require that the relevant API, AGA, GPA or ISO standards are fully integrated and not exposed to tampering.

The OMNICOM® program allows you to develop your own system requirements by a simple process of menu selection and table completion. This replicates the data entry tables which can be accessed through the front panel keypad of your OMNI Flow Computer.

Configuring the Flow Computer

Configuring the flow computer involves specifying what meter types and transducers are going to be used, their calibrated ranges and the physical I/O points being assigned. Other data needed by the flow computer relates to the flowing product to be measured, the type of calculations to be used, and communication and control features.

You will usually configure the flow computer in the Off-line Mode and then upload your data. You do not have to be connected to the flow computer at this time. You will usually go to the Online Menu only when you need to communicate directly with the flow computer. Any changes made are immediately reflected in the flow computer.

Report Configurator

One of OMNICOM's indispensable features is the ability to reformat default reports by using OMNICOM's report templates. This is the ONLY feature not available through the front panel keypad. Any variable defined in the Modbus database, or programmed as a variable can be inserted into a report with accompanying text. Reports can be created in languages other than English to suit local needs.

Operations Utilities and Help

NOTE: Accessing Help in OMNICOM® - At the 'Using Help' feature, press [Enter] and [F1] for editing keystrokes.

Operational tools such as remotely proving meters, and reading hardware diagnostics are provided. Diagrams are also provided for communications cable hook-up (DOS version only). Application Programs and PC Setup for OMNICOM® can also be selected. As you work through the entries, you will find entry-sensitive Help that explains the meaning of the particular entry. Whether at the flow computer keypad or at a PC, there is always assistance.

Dial-up Access

OMNI Flow Computers encourages the installation of a telephone dial-up modem as a ready means of providing installation and maintenance support for customer and vendor alike. Serial communication passwords provide enhanced security. Three levels of passwords exist within OMNI Flow Computers to provide privileged or restricted access to critical configuration and calibration data.

The OMNICOM® program allows you to upload/download data to and from the flow computer in an on-line mode at a range of baud rates by direct-wire or by telephone dial-up modem access. This is particularly useful when the flow computer is in use. Occasionally, you will want to modify configuration or calibration data, or just monitor activity. You can do all this without interfering with pipeline or process operations or with communication links to host SCADA or DCS systems.

Passwords Using OMNICOM®

Except when changing transducer high/low alarm limits, a password is usually asked for when changing the configuration data within the computer.

NOTE: For Firmware Revisions 70+, Physical Serial Port #1 is selectable as a Modbus RTU, Modbus RTU (modem), or printer port. This serial port on previous revisions was only a printer port

The flow computer has independent password protection of the following:

- Local Keypad access
- Modbus Port #1 (Physical serial Port #1)
- Modbus Port #2 (Physical serial Port #2)
- Modbus Port #3 (Physical serial Port #3)
- Modbus Port #4 (Physical serial Port #4)

Local Keypad Access

Four password levels are provided:

a) **Privileged Level -** Allows complete access to all entries within the flow computer including keypad passwords (b) and (c). The initial privileged password for each Modbus port is selected via this password level.

b) **Level 1 -** This level allows technician access to most entries within the flow computer with the exception of I/O Points assignments, programmable variables and Boolean statements.

c) **Level 1A -** Allows access to the following entries:

- Meter factors and K Factors
- Densitometer correction factors (pycnometer factor)

d) **Level 2 -** Allows access to the operator type entries. These entries include:

- Transducer manual overrides
- Product gravity overrides
- Prover operations
- Batching operations

Changing Passwords at the Keypad

NOTE: Level B and Level C passwords for each Modbus port cannot be viewed or change from the keypad.

1) At the keypad press **[Prog] [Setup] [Enter]**

2) With the cursor blinking on 'Misc Configuration' press **[Enter]**

3) With the cursor blinking on 'Password Main?' press **[Alpha Shift] [Y] [Enter]**

4) Enter the 'Privileged Level' Password (up to 6 characters) press **[Enter]**

5) The 'Level 1', Level 1A, and 'Level 2' passwords can now be viewed and changed if required

6) Scroll down to access each of the Modbus serial port 'Level A' passwords. These are labeled 'Ser1Passwd', Ser2 Passwd', 'Ser3 Passwd' and 'Ser4 Passwd' corresponding to the physical port numbering for Modbus Ports 1, 2, 3 and 4 respectively.

Setting Up the Initial 'Level B' and 'Level C' Passwords for each Modbus Port

1) Enter an initial 'Level A' Password for the appropriate physical serial port at the keypad of the OMNI Flow Computer as described in previous section.

2) Connect a PC running OMNICOM® Software to the selected serial port of the OMNI Flow Computer. Open a file and 'Receive Omni Configuration Data'.

3) A red pop-up screen will appear which notes that a password is required to proceed. If any other screen appears at this point, check wiring and communication settings, Modbus™ ID, baud rate, etc.

4) Do not enter the 'Level A' password at this point. Keep pressed **[Alt]** as you press **[E]** to edit the passwords. A second red pop-up screen will appear asking for the 'current valid password'. A good practice would be to use uppercase letters (activate **[CapsLock]** on the keyboard) because when setting passwords from the flow computer's keypad, they are always entered in uppercase.

5) Enter the 'Level A' password that was selected for this serial port.

6) You are asked if you would like to change the 'Level A', 'Level B' and 'Level C' passwords. Select to change 'Level B' at this point. You will be asked to enter a password. As you enter the password, asterisks will show in place of the characters you typed. You will be asked to re-enter the password to ensure that what you typed was correct.

7) To setup a 'Level C' password, repeat Steps 2 and 6 substituting 'Level C' for 'Level B' at Step 6.

Maintaining the Modbus Port Password Using OmniCom®

After the initial passwords have been setup for each of the Modbus serial ports, they may be changed at any time while logged on with OMNICOM®.

1) While keeping pressed the **[Alt]** key, press **[E]** at any time and the pop-up screen appears asking for a password. This screen can be forced to appear by keeping pressed **[Ctrl] [Alt]** as you press **[P]** while viewing any editing screen; i.e., any screen with data fields that can be edited.

2) When asked, enter your current password. Password 'Level B' and 'Level C' users are allowed to change only their own password levels. 'Level A' password users can change levels A, B and C.

Operating OMNICOM® with Level A, B and C Passwords

1) With a Level A Password, a user has access complete access to data and functions within the flow computer.

2) With a Level B Password a user has access to printed reports and operator functions such as ending batches and proving flowmeters. The Configuration tree, Report Template Editor tree, configuration upload or download, and the Operate Batch Stack editing is not accessible to Level B users.

3) With a Level C Password, a user has access to read everything but no write access except to those Modbus registers needed to retrieve reports.

Disabling Modbus Port Passwords

NOTE: Level B and Level C passwords for each Modbus (serial) port cannot be viewed or changed from the keypad; i.e., you must use OMNICOM® to view, change or delete these password levels.

'Level B' and 'Level C' passwords should be disabled via OMNICOM® before disabling the privileged 'Level A' password at the keypad.

1) To disable each password proceed as though you are going to change or set-up the password.

2) Press the **[Delete]** key six (6) times where the initial password was entered followed by the **[Enter]** key (no asterisks will show).

3)   When asked to re-enter the password, re-enter six (6) **[Delete]** key presses followed by the **[Enter]** key.

4)   Repeat this procedure for both 'Level B' and 'Level C' passwords.

5)   From the OMNI Flow Computer keypad, delete the 'Level A' password for the appropriate Modbus serial port (Volume 3). To do this, move the cursor to the serial Level A password to disable and press the **[Clear]** key and then the **[Enter]** key.

Getting Started

CAUTION: ⚠Terminate and Stay Resident (TSR) programs such as SideKick™ and Keyboard Macro processors can affect the operation of high speed communication programs such as OMNICOM®. They do this by 'stealing' processor cycles or turning off the hardware interrupt system of the personal computer. These programs may have to be disabled when you are in the 'On-line' Mode, if you encounter difficulties communicating with the OMNI Flow Computer.

Installation Requirements

To properly run OMNICOM®, and have sufficient memory for report templates and copies of the database, you will require the following:

- IBM PC (or compatible)
- MS DOS, V3.3 or later (excepting 4.01)
- 640Kb RAM
- 20Mb Free Hard Disk Space with a minimum of one floppy disk drive, 3½" 1.44 Mb
- Monochrome or color monitor with EGA or VGA graphics capability
- One RS-232 serial port
- One LPT port (optional)
- One RS-232 modem (optional at various supported baud rates)

Installation Procedure

NOTE: Installing OMNICOM® Revisions Previous to 70 – Before you install earlier revisions of OMNICOM® software, you must save your existing phone directory entries and setup. For instructions and any other assistance you man need, please contact our customer support staff at (281)240-6161.

OMNICOM® is delivered via email in a compressed (zip) file. To install, perform the following:

- Extract (unzip) the attached zip file and save it to a diskette or burn it to a CD-ROM if the computer to receive the installation is equipped with a CD drive.
- Install the media with the extracted files into the computer which OMNICOM® is to be installed on.
- Copy all the files into a directory named OMNICOM®, on the C: drive.

To run OMNICOM®, execute the file, OMNICOM.exe located in the C:\OmniCom folder. The OMNICOM® installation program will guide you through the rest of the installation.

Opening a File

NOTE: Accessing Help in OMNICOM® - At the 'Using Help' feature, press [Enter] and [F1] for editing keystrokes.

First open an existing OMNI-supplied file. Each application and derived files come with their own set of templates. You can then 'SAVE AS' to create a new file to commence your configuration. Each file that you create will occupy approximately 60 Kbytes of disk space. This includes 36 Kbytes for the configuration file and 6 Kbytes for each of the four (4) custom report templates.

All menu selections are supported by entry-sensitive 'Help'. No matter where you are, by pressing **[F1]** you can obtain an explanation of the requirements for your entry selection.

View

Files can be viewed separately or in parallel with a file that is currently being edited. This allows you to compare various numeric entries in similar files. This can be helpful if you are maintaining historical files that track changes you have made. You may not be able to use the 'View' feature with certain variations of flow computer configuration files because newer firmware include additional entry fields not available in earlier revisions.

Off-line

You will usually begin in the Off-line Mode to configure your flow computer. It naturally leads in to the 'Omni Configuration' Menu selections. Only when you complete this section will you be able to activate the various 'Setup' options and proceed to establish your calibration ranges and other related data. Before you begin the configuration of I/O, be sure you know what number and type of physical I/O has been installed in the flow computer. A mismatch between your off-line configuration and physical hardware will not make a data upload to the flow computer meaningful in key areas of your configuration data.

On-line

When you have completed building your configuration database, you are then ready to upload data to your OMNI flow computer. The OMNICOM® program uses the Modbus™ RTU binary protocol which mandates the use of 8 data bits. Be sure that the serial I/O parameters in both devices have been properly setup before attempting to communicate. Baud rate and parity settings are less critical but must also be the same.

With a direct-connect to a PC, OMNICOM® will perform an auto baud rate search and display an error if baud rates are incompatible (2.5.16. Serial Input/Output Settings in Volume 3). Baud rates from 1.2 kbps to 38.4 kbps are supported. When using a modem, the auto baud rate search is not performed. In this case, the baud rate is that at which the modem is setup. Some personal computers may not have the processing power to support the higher baud rates. Note also that modems are capable of using a higher baud rate at the RS-232 connector than they are communicating on the telephone line. If the modems connect but the flow computer does not respond, try adjusting the flow computer's baud rate.

Reports

The 'Report' Menu allows you to retrieve snapshot and historical reports from the flow computer or from your hard disk. These are pre-formatted default reports that are included in the OMNI application software. You can also customize your own reports from standard templates. By using the on-screen report editor, you can add or delete text and data character strings which identify the variable in the computer's Modbus™ database. **[F1]** for help describes the control functions to enable you to format the report easily. Bring up a report template and move the cursor onto the 'XXXX.XX' fields. Press **[Enter]** and a pop-up menu defines the variable being used. Type or edit text anywhere, move the cursor and keeping pressed **[Shift]** as you press **[$]** enables you to enter or delete any database address from the report.

Utilities

The 'Utilities' Menu has several useful tools for setting up and maintaining OMNICOM®. The utilities available are:

- I/O Point Assignment List
- Prover/Batch End Commands
- OMNICOM® Setup
- Diagnostics
- OMNICOM® Application
- OMNI Panel
- Archive Maintenance

I/O Point Assignment List

When the configuration of your flow computer is complete, you should review your assignment of physical I/O by accessing the display under 'I/O Point Assignment List'. An I/O mismatch can result in erroneous calibration ranges and consequential errors in measurement and control of your metering system!

This utility shows a summary list that indicates what physical I/O points are assigned to which variables. Point numbers with asterisks '*' next to them are used for more than one variable. Check the list to ensure you have not assigned a physical I/O point to more than one transducer type; e.g.: An I/O point cannot be assigned to a temperature and pressure transmitter at the same time. The flow computer will not allow this to happen in the 'On-line' mode, but OMNICOM® does not check for this in the 'Off-line' mode.

OMNICOM® Setup

This utility allows you to:

- Select the type of video monitor
- Turn the sound effects on/off
- Setup the modem command strings

OMNICOM® Application

Use Table 1 utility before you start to select the software version of OMNICOM® that matches the firmware version number of your OMNI Flow Computer

Table 1. Firmware Versions

US VERSIONS		METRIC VERSIONS	
20	Turbine/Positive Displacement/Coriolis Liquid Flow Metering Systems (with K Factor Linearization)	24	Turbine/Positive Displacement/ Coriolis Liquid Flow Metering Systems (with K Factor Linearization)
21	Orifice/Differential Pressure Liquid Flow Metering Systems	25	Orifice/Differential Pressure Liquid Flow Metering Systems
22	Turbine/Positive Displacement Liquid Flow Metering Systems (with Meter Factor Linearization)	26	Turbine/Positive Displacement Liquid Flow Metering Systems (with Meter Factor Linearization)
23	Orifice/Turbine Gas Flow Metering Systems	27	Orifice/Turbine Gas Flow Metering Systems

Archive Start/Stop Command

WARNING: ⚠️The flow computer will not accept changes made to the archive setup at the time of a 'Transmit Omni Configuration' upload unless the archiving feature has been turned off.

NOTE: Accessing Help in OMNICOM® - At the 'Using Help' feature, press [Enter] and [F1] for editing keystrokes.

When this menu is entered, OMNICOM® tries to establish communications with the flow computer using the comm parameter settings currently selected in the 'Start Comm' submenu of the 'Online' menu. It does this to establish the status of the 'Archive' flag and 'Archive Config Enable' flag. Check comm settings if all items on the menu are inactive; i.e., OMNICOM® is unable to communicate with the target computer.

Any changes made to the flow computers configuration which involves the format of the data record, number of records in an archive file, or the total number of archive files within the flow computer, will cause the memory used to store the archive data to be reinitialized. This would cause all data stored in archive to be lost. Therefore, no changes to the target flow computers archive configuration will be allowed unless automatic data archiving has been disabled and the 'Archive Config Enable' flag is on.

Prover Commands

Proving features displayed here can only be viewed when communicating directly with an OMNI Flow Computer.

You may monitor or control the operation of a meter prover which is controlled by a remote OMNI Flow Computer. You must have already established communications with the flow computer before making this selection. If you have not established communications with a flow computer you will receive one of the following error messages:

- **Byte count does not match expected -** OMNICOM® is confused and thinks your modem is connected to a flow computer. Try dialing out first.
- **No response from OMNI -** You are either not connected to anything or the slave ID number of the flow computer you are trying to talk to does not match OMNICOM's setting.

Use the 'Shift' key with the appropriate 'Function' key to select the flowmeter you wish to remote prove.

The 'Status Window' shows the event history and the 'OMNI Display' echoes data shown locally at the OMNI Flow Computer.

Diagnostics

You must be connected and online with a flow computer for this selection to work. The screen displays diagnostic information about the flow computer such as number and type of I/O modules fitted, status of digital I/O, current output percent of analog outputs and raw input signals coming into the flow computer.

Omni Front Panel Emulator

When this feature is selected, an illustration of the OMNI front panel is displayed by which all the functions of an OMNI Flow Computer are emulated. Use the mouse to click on simulated buttons to access real time displays and make entries. OMNICOM® is actually displaying the same LCD display buffer information and the mouse select are actually sending data into the same key stroke buffer as the front panel keypad. Performance is much better at 9600 baud or higher. You must have setup the baud rate and other communication settings in the 'Start Comm' menu before you can use OMNI Panel.

Help

NOTE: Accessing Help in OMNICOM® - At the 'Using Help' feature, press [Enter] and [F1] for editing keystrokes.

You can further customize your Help screens by making use of an on-screen editor. Via this feature you can modify Help text by additions or deletions to suit your own needs and operations. Windows can be resized and repositioned to suit your own personal preference. This can be particularly useful as an additional memory aid, if the Operations Manual is not available to you, or if additional information is required for other users of this program.

Registration of License and Software Support

Remember to mail in the registration of your distribution diskette to OMNI Flow Computers. OMNICOM® is provided with each OMNI Flow Computer on a single-user license basis. Any additional installations of this program will require re-registration by the user. This will ensure that you will have the opportunity to receive free telephone support, and notice of program revisions and new add-on programs for your installation.

DOCUMENT REVISION HISTORY

DOCUMENT INITIAL RELEASE DATE..05-May-2003

REVISION	DATE	PURPOSE / CHANGE REQUEST
A	05-May-2003	Maintained on the Web - Initial release
B	26-February-2009	DCR 090043