# AMS
## Suite
### Intelligent Device Manager

# Belco

| Reference: | DQ10-125 | Application Engineering: | Michael Chan |
|---|---|---|---|
| Quote Date: | June 4th, 2010 | Account Manager: | Lew Crummey |

# Document Version Management

| Date | Révision | Description | Author |
|------|----------|-------------|--------|
| 4-06-10 | A | Original Document | M.C. |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |

## Table of Contents

| *.Ref:Client* | | *Ref LCL:* | DQ10-125 |
|---|---|---|---|
| *Project:*    AMS Package | *Laurentide  Controls* | *Date:* | 06 04,  2010 |
| *Client:*     Belco | | *Page:* | 3 |

# 1. Introduction & Proposal scope

AMS Device Manager is a software package which allows you to take advantage of the intelligence of field instruments to enable you to perform more efficient maintenance at your plant. AMS was developed by Emerson Process Management as a modern solution for CONFIGURATION, DIAGNOSTICS, CALIBRATION and DOCUMENTATION of your intelligent field instruments. Built on an open platform, the AMS application allows a bi-directional communication with instruments from various different manufacturers using the HART or Foundation FIELDBUS protocols.

Our offer consists of using the AMS software to allow you to realize the following benefits :

- A centralized database for all of your intelligent field instruments

- A single tool for management of your plant's intelligent field instruments:

    o **Configuration** – Configure new transmitters in your process. AMS allows you to transfer the configuration of an old transmitter into a new one for accelerated commissioning. (Time and money savings can be realized.)

    o **Diagnostics** – Allows you to diagnose problems with your intelligent field instruments. This can save you time and money as you can identify and resolve instrument problems more quickly.

    o **Calibration** – Using the « Calibration Assistant » functionality, AMS allows you to calibrate field instruments using a handheld calibrator (such as the Fluke 744), and to program calibration routines to help streamline how you organize your technicians.

    o **Documentation** – Allows you to generate configuration or calibration reports for traceability and historization. Allows you to print procedures or instructions related to specific instruments or calibration work, etc., which is useful when your plant required that all instrument data be recorded for quality control purposes. Documentation is required for any company following ISO procedures for quality assurance (QA).

Thank you for your interest in AMS. We are convinced it will help you conduct more efficient maintenance.

# 2. Commercial Summary

## 2.1. AMS Suite : Intelligent Device Manager for HART instruments

**- AMS ServerPLUS License- 25 tags; English; Single Workstation**
This is the base AMS license, sized according to the number of HART instrumentsin the database.

**- Serial HART Modem from MACTek; CE Compliant**
The HART modem provides the physical interface between AMS and a HART instrument. The modem connects to a Serial RS-232 port on your PC or laptop.

**- Wireless SNAP-ON; 1 Wireless Gateway**
The Wireless SNAP-ON allows you to plan and manage your Wireless HART networks. Verify that your planned network meets best practices, view devices as laid out on a graphical representation of the plant, view communication paths between wireless nodes, and customize reporting views for a quick-glance consultation of the health of your network.

**AMS Total:        $7,385.00**

## 2.2. AMS  Foundation Support Service

- One year of support; 25 Tag System                                    $ **1,017.00**

Foundation Support service is strongly recommended for all AMS users and includes the following benefits:

- All subsequent versions of AMS software while support is active

- Unlimited access to telephone technical support via the Emerson Global Service Center (GSC) between the hours of 8h30am and 5h00pm your local time.

- On-line access to the AMS website where you can find the latest "Device Descriptor" (DD) files and have access to the AMS knowledge base

## 2.3. Additional Services

Laurentide Controls offers a wide array of additional services to fit your specific needs.

We can provide additional assistance and training for familiarizing your plant maintenance personnel with the AMS system. These services are offered by our technicians who are certified by Emerson Process Management on the AMS system. Please contact us for additional details.

A list of some of the services we can offer is included in Appendix A.

Also, annual renewal of your Foundation Support service is strongly recommened to keep your AMS system up-to-date. Under Foundation Support, you have access to free copies of subsequent versions of AMS software. Conitnued support also insures that your maintenance personnel have access to telephone technical support whenever they need it.

# 3.  Project Terms and Conditions

## 3.1.  Specific Terms and Conditions of Sale

Proposal validity is until **July 4th, 2009**.

Prices are in **Canadian Dollars**.

Taxes are not included in our prices.

We propose that the following terms of payment for the system*:

100%  Upon shipping to the customer site or 2 months following receipt of Software at Laurentide Controls Staging Area, whichever event comes first

* These invoices are payable net 30 days from date of invoice.

The **Standard Terms and Conditions of Laurentide Controls**, a copy of which is available upon request, are an integral part of this proposal.

Prices are quoted **F.O.B.  Kirkland**, Quebec.

Warranty shall be Twelve (12) Months from system power-up, or 18 months from shipment.

Please note that any service pricing does not include travel and living expenses unless explicitly stated as such. Travel and living expenses will be re-billed to the customer at cost.

## 3.2.   General Terms and Conditions of Sale

These terms and conditions, the attendant quotation or acknowledgment, and all documents incorporated by reference therein, binds seller (Laurentide Controls ltd) hereinafter the Seller, and the buyer, hereinafter Buyer, and constitutes the entire agreement (Agreement) between Buyer and Seller for the provision of services (Services) and/or the sale of goods (Goods) including (except as provided in Section 10) firmware incorporated therein.

**1.** PRICES: Unless otherwise specified by Seller, Seller's price for the Goods and/or Services shall remain in effect for thirty (30) days after the date of Seller's quotation or acceptance of the order for the Goods/Services, whichever is delivered first, provided an unconditional, complete authorization for the immediate manufacture and shipment of the Goods and/or provision of Services pursuant to Seller's standard order processing procedures is received and accepted by Seller within such time period. If such authorization is not received by Seller within such thirty (30) day period, Seller shall have the right to change the price for the Goods/Services to Seller's price in effect for the Goods/Services at the time the order is released to final manufacture. Prices for Goods do not cover storing, installing, starting up or maintaining Goods unless expressly stated in Seller's quotation. Notwithstanding the foregoing, the price for Goods/Services sold by Seller, but manufactured by others, shall be Seller's price in effect at the time of shipment to Buyer.

**2.** DELIVERY, ORDER ACCEPTANCE AND DOCUMENTATION: All shipping dates are approximate and are based upon Seller's prompt receipt of all necessary information from Buyer to properly process the order. Notwithstanding any provisions to the contrary in this or other documents related to this transaction, and regardless of how price was quoted, whether FOB, FAS, EXW or otherwise, legal title to the Goods and risk of loss thereto shall transfer to Buyer upon delivery to the freight carrier at the shipping point. Seller shall provide Buyer with that data/documentation which is specifically identified in the quotation. If additional copies of data/documentation or non-standard data/documentation are to be provided by Seller, they shall be provided to Buyer at Seller's price then in effect. Data/documentation marked as confidential or proprietary may not be reproduced or used for any purpose other than the purpose for which it was provided and may not be disclosed to third parties without the prior written permission of Seller.

**3.** EXCUSE OF PERFORMANCE: Seller shall not be liable for delays in performance or for non-performance due to failure or interruption of computer or telecommunication systems, acts of God, war, riot, fire, terrorism, labor trouble, unavailability of materials or components, explosion, accident, compliance with governmental requests, laws, regulations, orders or actions, or other unforeseen circumstances or causes beyond Seller's reasonable control. In the event of such delay, the time for performance or delivery shall be extended by a period of time reasonably necessary to overcome the effect of the delay.

**4.** TERMINATION AND SUSPENSION BY BUYER: Buyer may terminate or suspend its order for any or all of the Goods/Services covered by the Agreement only upon Seller's written consent or pursuant to Seller's applicable policy or practices covering such termination or suspension.

**5.** LIMITED WARRANTY: Subject to the limitations contained in Section 6 herein, Seller warrants that the licensed firmware embodied in the Goods will execute the programming instructions provided by Seller, and that the Goods manufactured by Seller will be free from defects in materials or workmanship under normal use and care and Services will be performed by trained personnel using proper equipment and instrumentation for the particular Service provided. The foregoing warranties will apply until the expiration of the applicable warranty period. Goods are warranted for twelve (12) months from the date of initial installation or eighteen (18) months from the date of shipment by Seller, whichever period expires first. Consumables and Services are warranted for a period of 90 days from the date of shipment or completion of the Services. Products purchased by Seller from a third party for resale to Buyer ("Resale Products") shall carry only the warranty extended by the original manufacturer. Buyer agrees that Seller has no liability for Resale Products beyond making a reasonable commercial effort to arrange for procurement and shipping of the Resale Products. If Buyer discovers any warranty defects and notifies Seller thereof in writing during the applicable warranty period, Seller shall, at its option, correct any errors that are found by Seller in the firmware or Services or repair or replace F.O.B. point of manufacture that portion of the Goods or firmware found by Seller to be defective, or refund the purchase price of the defective portion of the Goods/Services. All replacements or repairs necessitated by inadequate maintenance, normal wear and usage, unsuitable power sources or environmental conditions, accident, misuse, improper installation, modification, repair, use of unauthorized replacement parts, storage or handling, or any other cause not the fault of Seller are not covered by this limited warranty, and shall be at Buyer's expense. Seller shall not be obligated to pay any costs or charges incurred by Buyer or any other party except as may be agreed upon in writing in advance by Seller. All costs of dismantling, reinstallation and freight and the time and expenses of Seller's personnel and representatives for site travel and diagnosis under this warranty clause shall be borne by Buyer unless accepted in writing by Seller. Goods repaired and parts replaced by Seller during the warranty period shall be in warranty for the remainder of the original warranty period or ninety (90) days, whichever is longer. This limited warranty is the only warranty made by Seller and can be amended only in a writing signed by Seller. THE WARRANTIES AND REMEDIES SET FORTH ABOVE ARE EXCLUSIVE. THERE ARE NO REPRESENTATIONS OR WARRANTIES OF ANY KIND, EXPRESS OR IMPLIED, AS TO MERCHANTABILITY, FITNESS FOR PARTICULAR PURPOSE OR ANY OTHER MATTER WITH RESPECT TO ANY OF THE GOODS OR SERVICES.

**6.** LIMITATION OF REMEDY AND LIABILITY: SELLER SHALL NOT BE LIABLE FOR DAMAGES CAUSED BY DELAY IN PERFORMANCE. THE REMEDIES OF BUYER SET FORTH IN THIS AGREEMENT ARE EXCLUSIVE. IN NO EVENT, REGARDLESS OF THE FORM OF THE CLAIM OR CAUSE OF ACTION (WHETHER BASED IN CONTRACT, INFRINGEMENT, NEGLIGENCE, STRICT LIABILITY, OTHER TORT OR OTHERWISE), SHALL SELLER'S LIABILITY TO BUYER AND/OR ITS CUSTOMERS EXCEED THE PRICE TO BUYER OF THE SPECIFIC GOODS MANUFACTURED OR SERVICES PROVIDED BY SELLER GIVING RISE TO THE CLAIM OR CAUSE OF ACTION. BUYER AGREES THAT IN

NO EVENT SHALL SELLER'S LIABILITY TO BUYER AND/OR ITS CUSTOMERS EXTEND TO INCLUDE INCIDENTAL, CONSEQUENTIAL OR PUNITIVE DAMAGES. THE TERM "CONSEQUENTIAL DAMAGES" SHALL INCLUDE, BUT NOT BE LIMITED TO, LOSS OF ANTICIPATED PROFITS, REVENUE OR USE AND COSTS INCURRED INCLUDING WITHOUT LIMITATION FOR CAPITAL, FUEL AND POWER, AND CLAIMS OF BUYER'S CUSTOMERS.

**7.** PATENTS: Subject to the limitations contained in Section 6, Seller shall defend any suits brought against Buyer based on a claim that use of the Goods sold by Seller constitutes an infringement of a valid patent of the United States, and shall pay any damages awarded therein against Buyer, provided that Buyer: promptly notifies Seller in writing of the filing of such suit or the threat thereof; permits Seller to control completely the defense or compromise of such claim of infringement; and provides all reasonable assistance and cooperation requested by Seller for the defense of such suit. In the event that only the Goods sold by Seller are held to be infringing in such suit and their use is enjoined, Seller shall, at its sole option and expense, provide a commercially reasonable alternative, including, but not limited to, procuring for Buyer the right to continue using the Goods, replacing them with a non-infringing product or modifying them so they become non-infringing. Buyer agrees that Seller shall not be liable for infringement, and that Buyer shall fully indemnify Seller therefore, if infringement is based upon the use of Goods in connection with goods not sold by Seller or in a manner for which the Goods were not designed by the Seller or if the Goods were not designed by the Seller or if the Goods were designed by the Buyer or were modified by or for the Buyer in a manner to cause them to become infringing.

**8.** TAXES: Any tax or governmental charge payable by the Seller because of the manufacture, sale or delivery of the Goods, or provision of Services, may at Seller's option be added to the price herein specified. The foregoing shall not apply to taxes based upon Seller's net income.

**9.** TERMS OF PAYMENT: Unless otherwise agreed by Seller, and subject to the approval of Seller's Credit Department, terms are EXW shipping point, net 30 days from date of Seller's invoice in Cdn currency, except for applicable milestone payments or export shipments for which Seller may require other arrangements. Freight charges may include shipping and handling charges, and Buyer shall pay all such charges. If any payment owed to Seller hereunder is not paid when due, it shall bear interest, at a rate to be determined by Seller which shall not exceed the maximum rate permitted by law, from the date on which it is due until it is received. Seller shall have the right, among other remedies, either to terminate the Agreement or to suspend further deliveries under this and/or other agreements with Buyer in the event Buyer fails to make any payment hereunder when due. Buyer shall be liable for all expenses attendant to collection of past due amounts, including attorneys' fees.

**10.** SOFTWARE AND FIRMWARE: Notwithstanding any other provision herein to the contrary, Seller or applicable third party owner shall retain all rights of ownership and title in its respective firmware and software, including all copyrights relating to such firmware and software and all copies of such firmware and software. Except as otherwise provided herein, Buyer is hereby granted a nonexclusive, royalty free license to use firmware and software, and copies of firmware and software, incorporated into the Goods only in conjunction with such Goods and only at the Buyer's plant site where the Goods are first used. Buyer's use of certain firmware (as specified by Seller) and all other software shall be governed exclusively by Seller's and/or third party owner's applicable license terms.

**11.** BUYER SUPPLIED DATA: To the extent that Seller has relied upon any data or information supplied by Buyer to Seller ("Data") in the selection or design of the Goods and/or provision of the Services and the preparation of Seller's quotation, and the Data is inadequate or inaccurate, any warranties or other provisions contained herein which are affected by such conditions shall be null and void.

**12.** RETURNS: Goods may only be returned for credit upon prior approval by the seller and subject to a re-stocking charge to be determined by the Seller. The amount of credit shall be subject to further reduction in an amount to be determined by seller depending upon the condition of the goods when returned to seller. All returned goods must be returned freight prepaid by the buyer.

**13.** GENERAL PROVISIONS: (a) Buyer shall not assign its rights or obligations under the Agreement without Seller's prior written consent. (b) There are no understandings, agreements or representations, express or implied, not specified in the Agreement. (c) No action, regardless of form, arising out of transactions under the Agreement, may be brought by either party more than two [2] years after the cause of action has accrued. (d) Any modification of these terms and conditions must be set forth in a written instrument signed by a duly authorized representative of Seller. (e) This contract is to be construed according to the laws of the Province of Quebec and the federal laws of Canada applicable therein. (f) UNLESS OTHERWISE SPECIFICALLY PROVIDED IN SELLER'S QUOTATION, GOODS AND SERVICES HEREUNDER ARE NOT INTENDED FOR USE IN ANY NUCLEAR OR NUCLEAR RELATED APPLICATIONS. Buyer (i) accepts Goods and Services in accordance with the restriction set forth in the immediately preceding sentence, (ii) agrees to communicate such restriction in writing to any and all subsequent purchasers or users and (iii) agrees to defend, indemnify and hold harmless Seller from any and all claims, losses, liabilities, suits, judgments and damages, including incidental and consequential damages, arising from use of Goods and Services in any nuclear or nuclear related applications, whether the cause of action be based in tort, contract or otherwise, including allegations that the Seller's liability is based on negligence or strict liability. (g) The 1980 United Nations Convention on Contracts for the International Sale of Goods does not apply to this Agreement. (h) If any provision of the Agreement is invalid under any statute or rule of law, such provision, to that extent only, shall be deemed to be omitted without affecting the validity of the remainder of the Agreement.

# 4.    Client Server Architecture

**The following architecture drawing shows a possible system configuration for a Distributed AMS Network**
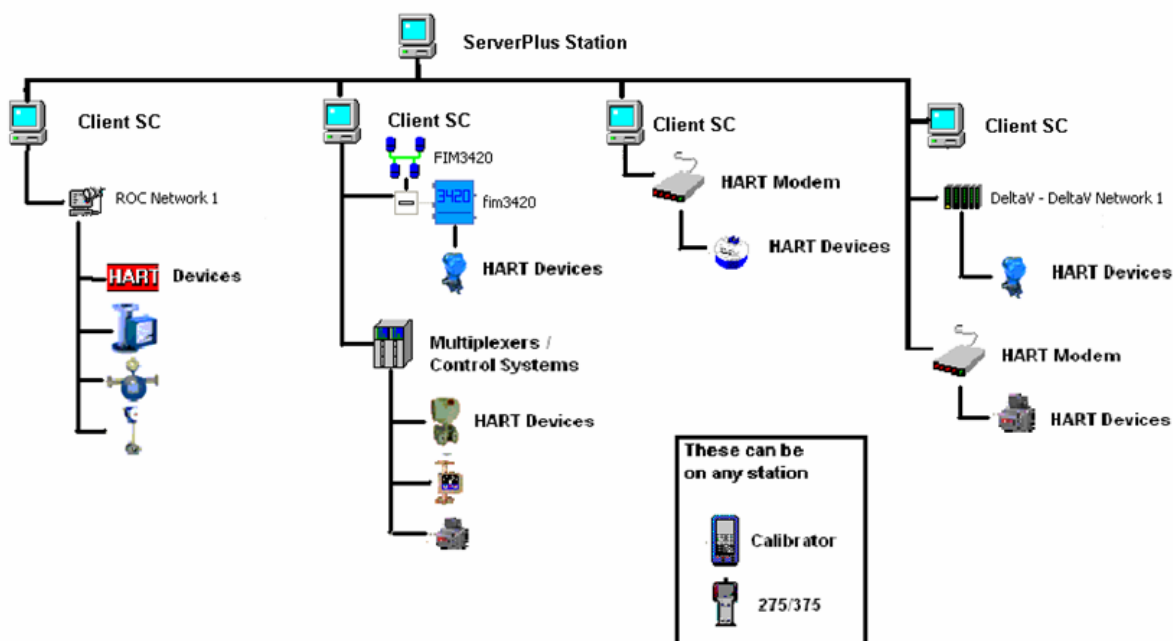


## *Types of AMS Stations:*

### AMS Server Plus Station
The AMS Server Plus Station has all the funtionalities of the AMS Server, and has access to the shared database including all management functions relating to the database. All AMS systems have one Server Plus station. If you only have one AMS station then it would be a Server Plus station.

### AMS Client SC Station
Each Client SC license permits to expand your AMS system to another computer. All Client SC Stations can access all devices across the AMS network, and have most of the AMS functionality with the exception of database management tools and system administrative tools.

### AMS Roving Station
The AMS Roving Station simply consists of a portable computer loaded with a 25tag AMS software. It is used as a portable tool to work on instruments in the field that would not be connected in live fashion to an AMS network.

# *5.* System Requirements

**AMS version 10.0 Requirements:**

## PC Processing Speed, Memory, and Disk Space

The recommended *free hard disk space* specified below is the amount needed for AMS Device Manager installation, not the amount needed for daily operation (there are no recommended minimum amounts for daily operation). If you receive a message during installation that you do not have enough hard disk space, free up as much space as possible and then retry the installation.

| Station Type | Minimum Required* | Recommended* |
|---|---|---|
| Server Plus Station | Intel® Core™2 Duo, 2.0 GHz<br>1 GB memory<br>1.5 GB free hard disk space | Intel® Core™2 Quad, 2.0 GHz or greater<br>3 GB memory or greater<br>2 GB or more of free hard disk space |
| Client SC Station | Intel® Core™2 Duo, 1.5 GHz<br>1 GB memory<br>1.5 GB free hard disk space | Intel® Core™2 Duo, 2.4 GHz or greater<br>2 GB memory or greater<br>2 GB or more of free hard disk space |

***NOTES:***
Additional hard disk space is required for migrating the database if you are upgrading from an earlier version of AMS Device Manager. The amount of space required depends on the size of the existing database. Additional space may be required on the Server Plus Station for the database, depending on the size of your database. Additional hard disk space is required for SNAP-ON applications. Set virtual memory to 2–3 times the size of the physical memory. The minimum monitor requirements are 1024x768 resolution and 16-bit color.

## Video Generator

- Minimum: 800 x 600, 256-color VGA
- Recommended: 1024 x 768, 256-color VGA

## Serial Interfaces

• An RS-232 serial interface is required for a serial HART multiplexer network, Model 275 HART Communicator, or documenting calibrator.
• A serial HART modem requires a serial port with a dedicated interrupt.

## USB Interfaces

- A USB port and USB HART modem drivers are required to use a USB HART modem. See the Release Notes for a list of supported adapters.
- A USB port is required to connect a 375 Field Communicator using a USB Infrared Data Association (IrDA) adapter. In some cases IrDA drivers

# Network Requirements

- AMS Device Manager is designed to operate on an Ethernet network running TCP/IP.
- Mobile AMS Device Manager stations are allowed to connect wirelessly using wireless plant network technology. Some communications slowdown can be expected with wireless networking.
- AMS Device Manager supports deployment within a single domain or workgroup or across multiple domains or workgroups. For more information, see the *AMS Device Manager Cross Domain Setup* document in the Technical Papers folder on CD 2 or DVD. The Microsoft Windows Management Instrumentation and Workstation services must be running on the PC during installation.

Ports:

| Interface | Port Requirement |
|---|---|
| HART Modem | Standard COM port (RS232) Requires a dedicated interrupt Or USB port (for USB Hart modem) |
| Multiplexer Network (with RS485 to 232 converter) Multiplexer Network (with RS485 to Ethernet converter, like a Rocket Port) | Standard COM port (RS232) Or Ethernet 100 Mbyte connection |
| HART 275 Communicator | Standard COM port (RS232) |
| HART 375 Communicator | InfraRed port (common on most laptops) Or InfraRed port connected on a USB port (actisys Jr IrUSB is recommended) |
| Documenting Calibrator | Standard COM port (RS232) |

# Software Requirements
## Operating Systems

- **Windows XP Professional**
  - English
  - Service Pack 2 or Service Pack 3
- **Windows Server 2003**
  - English
  - Standard Edition, Service Pack 2
- **Windows Vista Business**
  - English
  - Service Pack 1
- **Windows Server 2008**
  - English
  - Standard Edition, Service Pack 1

Note that only 32-bit versions of the operating systems are supported.

**Notes**
- AMS Device Manager was tested on the English editions of these Windows operating systems.

• AMS Device Manager 9.0 will not install on Windows 95, Windows 98, Windows ME, Windows NT, or Windows NT Terminal/Server.

• A Server operating system (Windows Server 2003) and server-class PC are required if the database is expected to be greater than 2 GB; or if AMS Device Manager is installed on a DeltaV Professional*PLUS* or Application Station and Batch Historian, VCAT, or FF Device Audit Trail will be used. Contact your hardware vendor for recommendations on server-class PCs and server operating systems.

• The correct operating system service pack (SP) must be installed on your PC before installing AMS Device Manager. If your PC does not have the correct SP installed, or you are unsure, contact your network administrator.

**Notes**
• AMS Device Manager was tested on the English editions of these Windows operating systems.
• Do not attempt to install AMS Device Manager 10.0 on any unsupported Windows versions.
• Intermixing of operating system families is not supported. You can use combinations of Windows XP and Server 2003 PCs or Windows Vista Business and Server 2008 PCs. No other combinations are supported.
• A Server operating system (Windows Server 2003/2008) and server-class PC (for example, Dell PowerEdge) are recommended if the database is expected to be greater than 4 GB due to the advanced SQL version required; or if AMS Device Manager is installed on a DeltaV ProfessionalPLUS Station, Application Station, or Maintenance Station and Batch Historian or VCAT will be used. Contact your hardware vendor for recommendations on server-class PCs and server operating systems.
• The correct operating system service pack (SP) must be installed on your PC before installing AMS Device Manager. If your PC does not have the correct SP installed, or you are unsure, contact your network administrator.

# Other Software Requirements

## Web Browser
AMS Device Manager requires Microsoft Internet Explorer (IE) Version 6.0, SP 1 or later. If you do not have a supported version of Internet Explorer, contact your IT department for assistance.

## AMS Device Manager Web Services
Microsoft Internet Information Services (IIS) and AMS Device Manager 10.0 Server Plus software must be installed on your system before you can install AMS Device Manager Web Services. If you do not have IIS installed, contact your IT department for assistance.

*Note: Some control systems do not allow IIS to be installed on the same PC. Check your control system documentation to determine IIS compatibility.*

*Note: If you want to install AMS Device Manager Web Services on a DeltaV station, it must be a DeltaV Application or ProfessionalPLUS station.*

## .NET Framework
AMS Device Manager 10.0 requires and installs Microsoft .NET Framework 3.5 Service Pack 1. Microsoft .NET Framework 3.5 SP1 is a cumulative update that includes the following versions:

- 2.0
- 2.0 SP2
- 3.0
- 3.0 SP2
- 3.5

# 6. Bill of Material

| Item | Qty | Model | Description |
|---|---|---|---|
| | | | |
| | | | **AMS Suite: 25 Tags Base Offer** |
| | | | |
| | | | **ServerPLUS License** |
| | | | |
| 1 | 1 | AW7001SP00025 | AMS Device Manager Application; Server Plus Station; 25 Tags |
| 2 | 1 | AW7001MPV105EN | AMS Device Manager Media Pack v10.5_ English |
| 3 | 1 | AW7010SW00025 | Smart Wireless System Interface; 25 Tags |
| 4 | 1 | AW7082WG001 | AMS Wireless SNAP-ON Application: 1 Gateway |
| | | | |
| | | | **HART Modem** |
| | | | |
| 5 | 1 | AW7060UHM | USB HART Modem from MACTek; CE Compliant |
| | | | |
| | | | **AMS Foundation Support** |
| | | | |
| 6 | 1 | AW7040ST00025 | Foundation Support, Standard Package, 1-Year Subscription, 25 Tags |
| | | | |

# 7. AMS Instrument Screenshots

In the following pages, you will find a few examples of AMS screenshots for different HART and Fieldbus instruments.

## 03/28/2006 10:01:58.963 [2400sa Rev. 1]

**Process Variables**

- Process Variables
  - Show Process Variables

Tabs: All Variables | Primary Variable | 2nd Variable | 3rd Variable | 4th Variable | Totalizers

PV is — Mass flo — 71.55 g/s

SV is — Dens — 171.91 kg/Cum

QV is — Temp — 117.90 degC

TV is — Vol flo — 0.42 L/s

**Inventory**

| | | |
|---|---|---|
| Mass totl | 1.18 | g |
| Mass inventory | 29.72 | g |
| Vol totl | 0.01790 | L |
| Vol inventory | 0.23685 | L |

- Configure/Setup
- Device Diagnostics
- Process Variables
- Compare

Buttons: OK | Cancel | Apply | Print | Help

Last Synchronized: Device Parameters not Synchronized.

| .Ref:Client | | Ref LCL: | DQ10-125 |
|---|---|---|---|
| Project: AMS Package | Laurentide Controls | Date: | 06 04, 2010 |
| Client: Belco | | Page: | 16 |

## Process Variables

- Process Variables
  - Process variables

Configure/Setup

Device Diagnostics
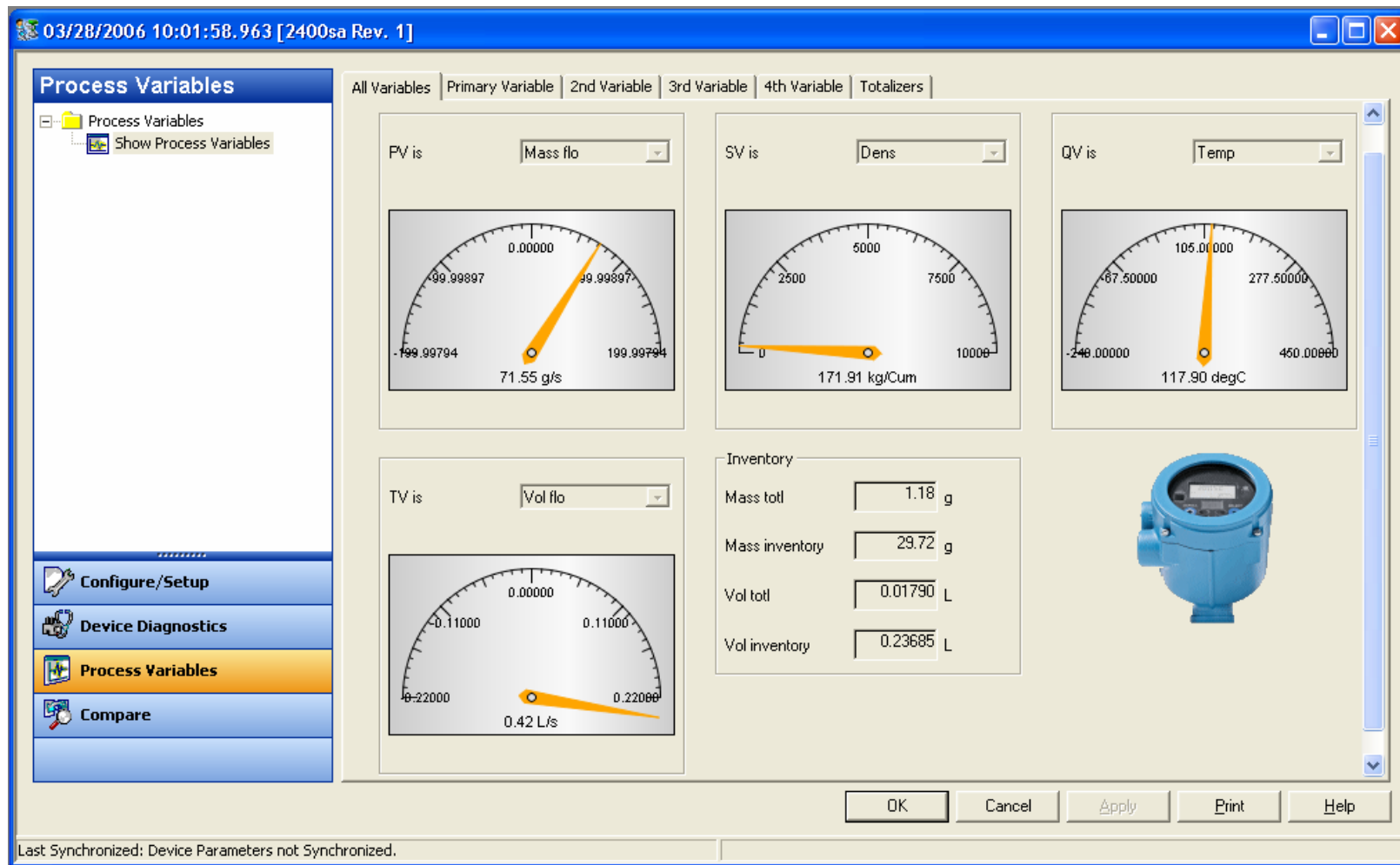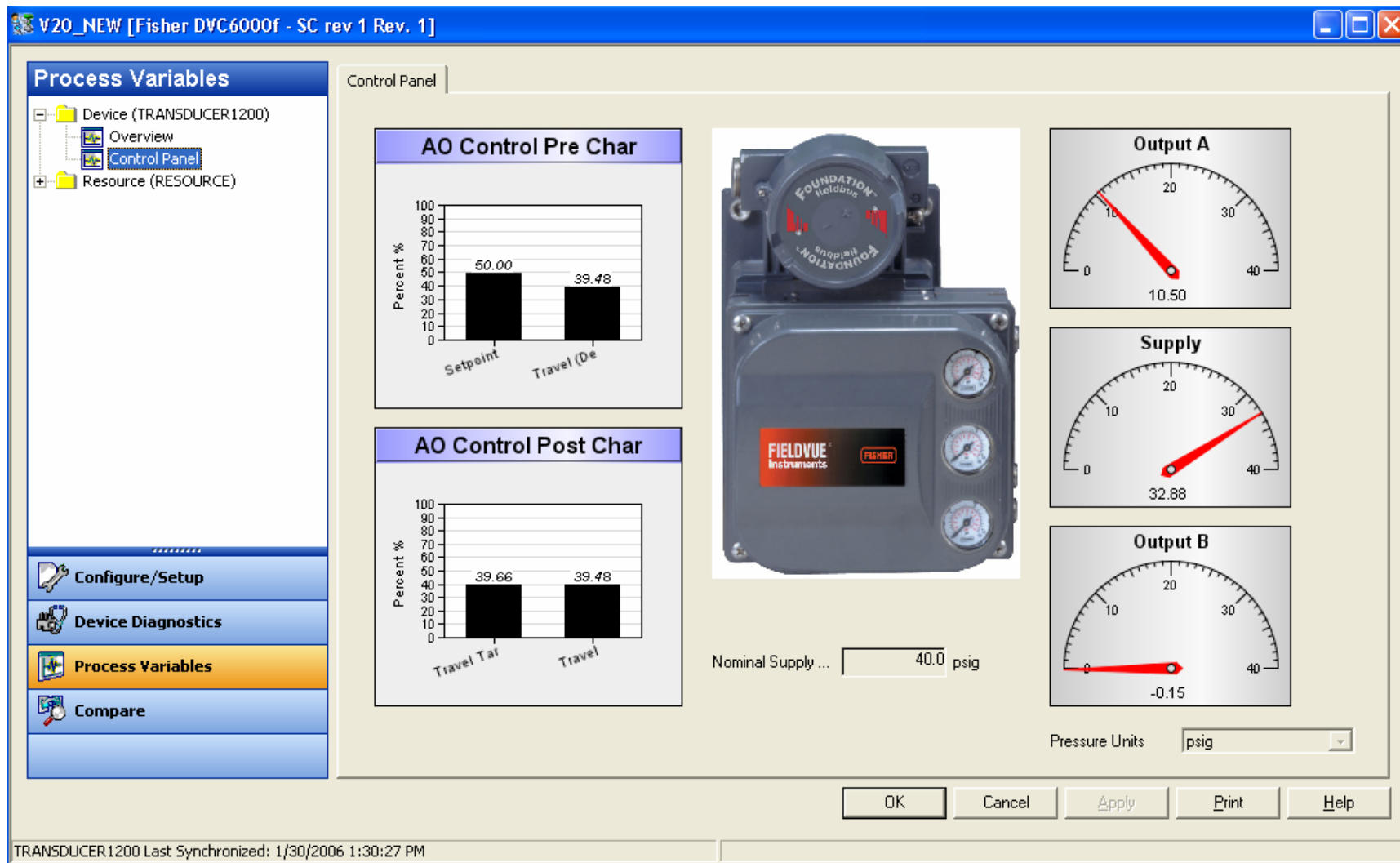
**Process Variables**

---

Primary Variable | 2nd Variable | 3rd Variable | All Variables | Device

### Device Tag

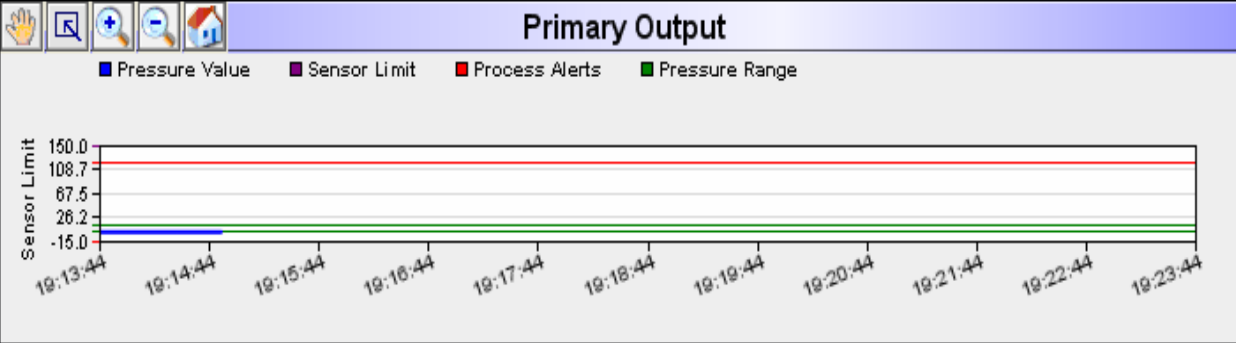Tag: 3051R7

### Primary Value

Pressure: 0.006 psi

**MAINT.**

### Primary Output

- ■ Pressure Value
- ■ Sensor Limit
- ■ Process Alerts
- ■ Pressure Range

Sensor Limit: 150.0 / 108.7 / 67.5 / 26.2 / -15.0

Time axis: 19:13:44, 19:14:44, 19:15:44, 19:16:44, 19:17:44, 19:18:44, 19:19:44, 19:20:44, 19:21:44, 19:22:44, 19:23:44

### Process Variable Information

Primary Variable: Pressure
Pressure: 0.006 psi
Unit: psi
Damping: 0.50 s
Transfer function: Linear

### Analog Output Information

Analog Output: 3.800 mA
Percent of Range: -36.314 %

#### Range Points

Upper Range Va...: 15.001 psi
Lower Range Va...: 4.001 psi

### Pressure Alert Settings

Alert Mode: On
High Alert Value: 121.105 psi
Low Alert Value: -14.695 psi
Status group 4: ☐ Pressure Alert

OK | Cancel | Apply | Print | Help

---

# 8. Additional Information

If you would like additional details regarding AMS, don't hesitate to contact us at (514) 697-9230.

Also, a large amount of information is available for your reference at the following website:

http://www.emersonprocess.com/ams/

# 9. Appendix A – List of AMS services

**General or system-related services**

Work procedure analysis (configuration, calibration, monitoring)
Software installation (new installation)
Installation of software updates
3-day AMS basic training (7020-1,2,3)
Single day AMS basic training (7020-1) with set of 3 manuals
Advanced AMS training (7021)
Specialized training (ex: individual training)
Installation and implementation of Multiplexer interfaces
Installation and implementation of Delta V  interfaces
Integration within a plant maintenance system- CMMS (Maximo, SAP, …)
Creation of an AMS network (client-server)
Creation of AMS web clients
Installation and implementation of Asset Portal
Basic database management services (savings, restoration, cleaning)
Database import / export
User Management setup (Creation of user profiles)

**Configuration**

Creation and configuration of the plant's database
Definition of a Tag convention and equipment name changes
Database loading (sampling and saving configurations)
Creation of Future configurations for a group of instruments to be installed
Creation of Typical configurations (templates)
Implementation of the EA SnapOn application and configuration of a group of 3095 transmitters
Implementation of valve monitoring (with Valvelink Snap On)
Implementation of 275/375 interface
Verification of Transmitter configurations (all types)

**Calibration**

Definition of  test equipment
Definition of calibration parameters and description of tests
Definition and configuration of calibration routes
Implementation of calibration management (manual entry)
Implementation of calibration management SnapOn (with documenting calibrator)
Verification of Transmitter calibration (with certificates)
Verification of Valve calibration
Transmitter zeroing

**Documentation**

Implementation of the ''Audit Trail" documentation tool (requires user profile creation)
Implementation of the ''Drawings & Notes" central documentation tool
Implementation of valve Spec sheets

**Diagnostics**

Configuration of ''Alert Monitor'' for equipment monitoring
Implementation of a pH monitoring system
Implementation of a temperature drift alert system or Hot Backup (3144P)
Implementation of plugged impulse lines diagnostics on DP flow applications
Implementation of valve travel deviation alert
Implementation of predictive maintenance alerts for valves
Creation of valve "birth certificates" and follow-ups
Valve signature analysis and recommendations on valves to repair
Implementation of an automated valve monitoring system (Batch Runner)
Implementation of an operating valve monitoring system (PD scheduler)
Loop validation (on project startup or maintenance)
Interlock validation (with Quickcheck)