

Technical Paper

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**AMS Device Manager EDDL Feature
Set
Technical Paper**

AMS TP 925
REV 1.7
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1. INTRODUCTION

1.1 Purpose

The purpose of this document is to communicate to the device manufacturers what EDDL features will and will not be supported in the releases of AMS Device Manager.

1.2 Intended Audience

This document is targeted at HART and Foundation fieldbus device developers that are familiar with the EDDL language, including the enhancements that have been recently introduced (charts, graphs, grids, images, files, lists, and so on).

1.3 Terminology

The term “silently ignored” means that the feature will not be used by AMS Device Manager, but specifying the feature in an EDD file will have no adverse affect on these products.

1.4 Revision History

Rev.	Date	Modifier	Description
1.0	8-Sep-2005	Jon Westbrook	Initial revision.
1.1	8-Nov-2005	Jon Westbrook	Conditional menu items not supported.
1.2	14-Nov-2005	Jon Westbrook	Validity on AXIS on longer supported by HCF. Init and exit action on a SOURCE are only supported by FF, for the time being.
1.3	Feb 8 2006	Walter Sigtermans	Auto-Scaling of Y Axis now works for Graphs/Charts for both AMS Device Manager and 375 for FF devices.
1.4	March 14, 2006	Daniel E. Vande Vusse	Added new bit enumerated display behavior.
1.5	Feb 22 2007	Walter Sigtermans	Added functionality that has been added since AMS Device Manager 7.6
1.6	May 31, 2007	Daniel E. Vande Vusse	Remove 375 from the document as they have creating their own document, TP 205.
1.7	Dec 4, 2008	Walter Sigtermans	Added functionality that was added with AMS Device Manager 10.0

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2. VARIABLES

Attribute	AMS Device Manager
DEFAULT_VALUE	Not Supported
REFRESH_ACTIONS	Not Supported
CLASS LOCAL	Supported

2.1 Default Value

The DEFAULT_VALUE attribute will be silently ignored by AMS Device Manager.

2.2 Refresh Actions

The REFRESH_ACTIONS attribute will be acted upon by AMS Device Manager.

2.3 Local Variables

In addition to the definitions already specified for the CLASS attribute, Foundation fieldbus has added support for LOCAL. This has been supported by the HART Foundation for quite a while now.

AMS Device Manager will determine the local variables in a Foundation fieldbus device via the LOCAL_PARAMETERS attribute of a block. AMS Device Manager will not rely on the LOCAL class specifier being specified on local variables. In other words, the LOCAL class specifier will be silently ignored.

3. VALUE ARRAYS

Attribute	AMS Device Manager
LABEL	Supported
HELP	Supported
TYPE	Supported
NUMBER_OF_ELEMENTS	Supported
RESPONSE_CODES	Supported – FF only

Value arrays, or arrays as they are called by FF, will be supported as they are in the currently released products. Support for value arrays in HART devices is not officially supported, and then only for local variables and ONLY with the Version 8 tokenizer (fm8 dd files).

Value Arrays used by	AMS Device Manager
Menu	Supported – FF only
Method	Supported – HART and FF
Waveform	Supported – HART and FF
Grid-Vector	Not Supported – HART or FF

4. BLOCKS

Attribute	AMS Device Manager
AXIS_ITEMS	Supported
CHART_ITEMS	Supported
FILE_ITEMS	Not Supported
GRAPH_ITEMS	Supported
GRID_ITEMS	Supported
IMAGE_ITEMS	Supported
LIST_ITEMS	Not Supported
LOCAL_PARAMETERS	Supported
SOURCE_ITEMS	Supported
WAVEFORM_ITEMS	Supported

4.1 FILE_ITEMS

Files are not supported. Any files specified via the FILE_ITEMS attribute will be silently ignored.

4.2 LIST_ITEMS

Lists are not supported. Any lists specified via the LIST_ITEMS attribute will be silently ignored.

4.3 LOCAL_PARAMETERS

Local parameters are parameters that are specified in the EDD but are not stored within the field device.

5. MENUS

Attribute	AMS Device Manager
LABEL	Supported
HELP	Supported
ITEMS	Supported
STYLE	Supported
VALIDITY	Supported – HART only

Menu Item Qualifier	AMS Device Manager
REVIEW	N/A
DISPLAY_VALUE	N/A
READ_ONLY	Supported
NO_LABEL	Supported
NO_UNIT	Supported
INLINE	Supported
COLUMNBREAK	Supported
ROWBREAK	Supported

5.1 Items

AMS Device Manager will use the `process_variables_root_menu`, `diagnostics_root_menu`, and `device_root_menu` as the basis of the user interface for the device.

Conditional menu items, as defined by the HART Foundation, will not be supported. The inclusion of individual bits of a bit enumerated variable on menu will be supported. The inclusion of collections on a menu will not be supported.

5.2 Style

AMS Device Manager will convert menus of style PAGE into a tabbed dialog, and will convert menus of style GROUP into group boxes.

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AMS Device Manager makes no distinction between menus of style WINDOW and menus of style DIALOG.

AMS Device Manager will silently ignore any menu of style TABLE.

5.3 Read_Only

AMS Device Manager has a special display options for bit enumerated variables. The format of the displayed bit is dependant on the variable handling, which root menu it is part of, and the use of the READ_ONLY menu item qualifier

Display styles

Bulb – Light bulb with text to the right that is un-affected by bit state.

Alert Bulb – A light bulb with text to the right that changes background alert color when bit enabled.

Check Box – A standard read write checkbox. Bit status is indicated with a check. Background of box is white. User can change state.

Grayed Check Box – A standard read only checkbox. Bit status is indicated with a check. Background of box is gray. User can not change state.

Display Option Table.

Variable Handling	READ_ONLY Menu Modifier	Status Pages Bit Enumerated Display Format.	All Other Pages Bit Enumerated Display Format.
Read	Not used	Grayed Check Box	Grayed Check Box
Read	Used	Alert Bulb	Bulb
Read / Write	Not Used	Check Box	Check Box
Read / Write	Used	Alert Bulb	Bulb

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6. METHODS

Attribute	AMS Device Manager
TYPE	Not Supported

Built-in Function	AMS Device Manager
ListDeleteElementAt	Not Supported
ListInsert	Not Supported
Menu	Supported – HART only
MenuDisplay	Supported – HART only

The Fieldbus Method interpreter has been updated to support the builtins required for crossblock functionality.

There are now two HART method interpreters. The legacy method interpreter which has been tested with 400 HART devices, and a second generation method interpreter which supports:

- a. The new math and string builtins
- b. Methods calling methods
- c. direct referencing of variables.

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7. CHARTS

Attribute	AMS Device Manager
LABEL	Supported
HELP	Supported
HEIGHT	Supported
WIDTH	Supported
MEMBERS	Supported
CYCLE_TIME	Supported
LENGTH	Supported
TYPE	Supported
VALIDITY	Supported – HART only

7.1 HEIGHT and WIDTH

Supported.

7.2 MEMBERS

375 Field Communicator will provide a combo box that may be used to select a specific source on the chart. The selected source will be highlighted and the Y axis will correspond to the selected source.

AMS Device Manager will display a legend that may be used to distinguish between the various sources being displayed by the chart.

The description and help strings will be silently ignored.

7.3 CYCLE_TIME

The CYCLE_TIME attribute specifies how often the chart is updated. The rate at which data is read from the field device may be different than the rate at which the chart is updated.

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7.4 TYPE

For AMS Device Manager, the behavior of SWEEP charts will be the same as the behavior of SCOPE charts. The behavior of these charts will follow the definition of SCOPE charts defined in the EDDL specifications.

7.5 Zooming and Panning

Zooming and panning will be supported on STRIP charts only.

7.6 Referencing Attributes of a CHART

Referencing the VIEW_MAX and VIEW_MIN of a CHART is not supported. In other words, the following will generate a possibly unrecoverable error.

```
name_of_chart.X_AXIS.VIEW_MAX
```

8. SOURCES

Attribute	AMS Device Manager
HELP	Supported
LABEL	Supported
EMPHASIS	Supported
LINE_COLOR	Supported
LINE_TYPE	Supported
MEMBERS	Supported
VALIDITY	Supported – HART only
Y_AXIS	Supported
INIT_ACTIONS	Supported – FF only
REFRESH_ACTIONS	Not Supported
EXIT_ACTIONS	Supported – FF only

8.1 MEMBERS

The description and help strings will be silently ignored.

8.2 VALIDITY

When a source is invalid, it will be displayed.

8.3 Y_AXIS

While the EDDL specifications indicate that this is optional, AMS Device Manager does not require that this be defined for EDDLs.

8.4 INIT_ACTIONS and EXIT ACTIONS

While these actions are supported, these methods may only make use of the capabilities of the existing method interpreter, including the built-in functions supported by the existing method interpreter.

9. GRAPHS

Attribute	AMS Device Manager
LABEL	Supported
HELP	Supported
HEIGHT	Supported
WIDTH	Supported
MEMBERS	Supported
VALIDITY	Supported – HART only
X_AXIS	Supported

9.1 MEMBERS

AMS Device Manager will display a legend that may be used to distinguish between the various waveforms being displayed by the graph.

The description and help strings will be silently ignored.

9.2 X_AXIS

While the EDDL specifications indicate that this is optional, the 375 and AMS Device Manager will require that this be defined.

9.3 Zooming and Panning

Application-driven zooming and panning will be supported. However, support for DD-driven zooming and panning through the use of VIEW_MIN, VIEW_MAX, and REFRESH_ACTIONS will not be supported.

9.4 Referencing Attributes of a GRAPH

Referencing the VIEW_MAX and VIEW_MIN of a CHART is not supported. In other words, the following will generate a possibly unrecoverable error.

name_of_graph.X_AXIS.VIEW_MAX

10. WAVEFORMS

Attribute	AMS Device Manager
LABEL	Supported
HELP	Supported
EMPHASIS	Supported
HANDLING	Not Supported
KEY_POINTS	Supported
LINE_COLOR	Supported
LINE_TYPE	Supported
TYPE	Supported
Y_AXIS	Supported
INIT_ACTIONS	Supported
REFRESH_ACTIONS	Not (officially) Supported
EXIT_ACTIONS	Supported

10.1 HANDLING

Editing waveforms is not supported. However, in a subsequent release we intend to support editing waveforms via an interface very similar to a GRID.

10.2 TYPE

Waveform data is expected to be static. If dynamic variables are used with a waveform, they will be read only once. In other words, graphs do not update dynamically.

10.3 Y_AXIS

This is optional for AMS Device Manager.

10.4 INIT_ACTIONS and EXIT ACTIONS

While these actions are supported, these methods may only make use of the capabilities of the existing method interpreter, including the built-in functions supported by the existing method interpreter.

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11. AXES

Attribute	AMS Device Manager
LABEL	Supported
HELP	Supported
MIN_VALUE	Supported
MAX_VALUE	Supported
VIEW_MIN	Not Supported
VIEW_MAX	Not Supported
SCALING	Supported
CONSTANT_UNIT	Supported
VALIDITY	Not Supported

11.1 MIN_VALUE and MAX_VALUE

Optional

11.2 CONSTANT_UNIT

In cases where the unit of the axis is not constant, AMS Device Manager will support having the AXIS specified as the dependent part of a unit relation.

12. GRIDS

Attribute	AMS Device Manager
LABEL	Supported
HELP	Supported
HEIGHT	Supported
WIDTH	Supported
ORIENTATION	Supported
VECTORS	Supported
VALIDITY	Supported

12.1 VECTORS

Scrollbars will be added to the grid when the data within the grid exceeds a specific threshold.

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13. IMAGES

Attribute	AMS Device Manager
LABEL	Supported
HELP	Supported
PATH	Supported
LINK	Supported
VALIDITY	Supported

13.1 PATH

This may be conditional so that different images may be used depending on the value of a local or device parameter.

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14. STRING LITERALS

Attribute	AMS Device Manager
ZZ country code	N/A

This does not apply to AMS Device Manager since it will always use the long version of any string defined in an EDD.

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15. FILES

Attribute	AMS Device Manager
LABEL	Not Supported
HELP	Not Supported
MEMBERS	Not Supported

Files are not supported. While the definition of files will be silently ignored, any references to a file or to a member of a file will generate an error, which may or may not prevent the product from continuing to function properly.

For example,

```

FILE my_file
{
    MEMBERS
    {
        XVALS, xvals;
        YVALS, yvals;
        NUMPTS, numpts;
    }
}
    
```

will be silently ignored.

However,

```

WAVEFORM my_waveform
{
    TYPE XY
    {
        X_VALUES { my_file.XVALS }
        Y_VALUES { my_file..YVALS }
        NUMBER_OF_POINTS my_file.NUMPTS;
    }
}
    
```

will generate an error.

16. LISTS

Attribute	AMS Device Manager
LABEL	Not Supported
HELP	Not Supported
TYPE	Not Supported
COUNT	Not Supported
CAPACITY	Not Supported

Lists are not supported. While the definition of lists will be silently ignored, any references to a list or to a member of a list will generate an error, which may or may not prevent the product from continuing to function properly.

For example,

```
LIST x_values_list
{
    CAPACITY 20;
    TYPE x_value;
}
```

will be silently ignored.

However,

```
WAVEFORM my_waveform
{
    TYPE XY
    {
        X_VALUES { x_values_list }
        Y_VALUES { y_values_list }
        NUMBER_OF_POINTS 20;
    }
}
```

will generate an error.

17. COLLECTIONS

Attribute	AMS Device Manager
Heterogeneous ITEMS	Not Supported

Collections containing items of varying types has been defined so that they may be used for effectively within the definition of the file. This will not be supported until we support files.

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18. EDIT DISPLAYS

Attribute	AMS Device Manager
LABEL	Not Supported
EDIT_ITEMS	Not Supported
DISPLAY_ITEMS	Not Supported
PRE_EDIT_ACTIONS	Not Supported
POST_EDIT_ACTIONS	Not Supported

Edit displays aren't needed with AMS Device Manager (or any other PC-based application) because the capabilities of window-styled menus provide much richer capabilities than edit displays.

19. UPDATES TO EDDL SUPPORT IN AMS DEVICE MANAGER

Version	Change
8.0	Menu Style defaulting was corrected. Previously if "Style" was not set on a menu the parameters below that menu were lost. After this change all menus, charts, parameters and methods are visible regardless of whether the user defined "Style"
9.0	We added offline support for EDDL devices. A HART EDDL device could now have the timer control set to "Offline" (SRS-347)
9.0	Embedded Icons work for all EDDL devices (HART and FF). If the user adds an image named "device_icon" as either a gif, jpg, or png AMS Device Manager will use this as the icon to represent the device in the browsers. (SRS-331)
9.0	Installation of a device type using only an "FM6" file and a "SYM" file. AMS Device Manager dinstall program has been modified to handle the install of a devicetype with the minimum files. (SRS-338)
9.0	Word Wrapping. AMS Device Manager will word wrap the labels of variable parameters if the horizontal space is insufficient. (SRS-347)
9.0	Floating point tick marks are not hard coded to 6 places of resolution to the right of the decimal point. Instead they are hard coded to 4 places of resolution total

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	i.e. 1000; 100.0; 10.00; 1.000. This makes the gauge look less cluttered.
10.0	Future Devices, Templates, and DeltaV-Placeholders are now supported in EDDL. Previously, if a user accessed a Future EDDL device, AMS Device Manager would use the Resource screen to display the configuration.
10.0	275 and 375 configurations are now supported in EDDL. Previously if a user accessed a 275 or 375 configuration, AMS Device Manager would use the Resource screen to display the configuration.
10.0	EDDL based compare screens are now supported. Previously, AMS Device Manager would use the configure resource to build a compare screen. AMS device manager will now use the device_root_menu to build a set of compare screens. The device developer has the option to change the starting menu to build this compare screen. They also have the ability to force AMS Device Manager to continue using the resource file to build the compare screen. See SRS-347 (Section 6) for the device.ini file setting to manipulate this.
10.0	Installation of a device type using only an "FM6" or an "FM8" file. AMS Device Manager dinstall program has been modified to handle the install of a device type with the minimum files. If no sym file exists it will create one from information embedded in the "FM6" or "FM8" (SRS-338)
10.0	Forward Compatibility is now supported for EDDL devices. This includes the little forward compatibility arrow on embedded icons.
10.0	The Critical Parameter list is now supported from the DD. If a Critical Parameter wizard is necessary (for 275/375) it is generated on the fly, and not required from a resource file. The Device Developer still has the ability to define the Critical Parameter list in the resource file and override the Critical Parameter list generated by the HART Tokenizer.
10.0	Pre and Post Commit methods are now supported without using the resource file. AMS Device Manager uses the same mechanism to determine pre-post commit methods that is used by the 275 and 375 (See SRS-808).
10.0	Edit Displays are now supported (caveat: AMS Device Manager still does NOT support the Pre-Edit and Post-Edit methods of an Edit Display – so Edit Displays are not quite fully supported).
10.0	Cross Revision compare is now supported for EDDL devices.
10.0	Generic Exports now displays information based on the EDDL layout if it is available.
10.0	Enhanced Device help (the "More" button) is now available on a parameter-by-parameter basis for EDDL devices. Previously, this feature was only available on Resource files, when it was enabled for EDDL, it enabled the "More" button for ALL parameters whether they had Enhanced help or NOT. We also now support launching in context for PDF files. See SRS-347 (Section 6) for the device.ini file setting to manipulate this.

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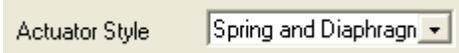
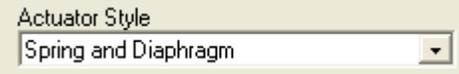
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10.0	TABLE layout is now supported. Although there is still some dispute with the HCF as to whether we are doing it right (HCF contends that graphs, charts and images should be displayed in virtual window buttons). We have also referred to this as HandHeldLayout rules. See SRS-347
10.0	“Transfer All” now works for EDDL compare screens (although this is considered a “Transfer Multiple” in certain situations). We also ensured that the “factory protection array” and “loop warning array” function the same for EDDL devices as they did for NON-EDDL devices. See SRS-346.
10.0	Image Links are now supported for both HART and FF.
10.0	TIME_VALUE is now supported for HART
10.0	Eight Byte Integers are now supported for HART
10.0	Method Buttons and Window Buttons are now wider to allow more text to fit in the buttons before they word-wrap.
10.0	<p>Label-over-Value is now supported on the parameter control for EDDL devices.</p> <p>Changing this: </p> <p>to this: </p> <p>At the same time we increased the “unit area” of the parameter control (not needed on enumerations) so that larger unit names (like: “InH2O @ 68 degF”) do not get truncated. This feature has an override to turn this off for some Legacy EDDL devices. See SRS-347.</p>
10.0	Variable column width is now supported for EDDL devices. This means that if there are only 1 or 2 columns of EDDL constructs between each row-break of a page, AMS Device Manager will use a wide column size. If there are 3 or more columns of EDDL constructs between each row-break of a page, AMS Device Manager will use a narrow column size. There is no device.ini file override to turn this feature off (See SRS-920).
10.0	Enhanced HART Method Interpreter – This supports the math, string, and date builtins. It also supports the MenuDisplay and Menu() builtins. It supports direct referencing. It supports methods-calling-methods with arguments. It supports the TIME_VALUE and it has preliminary support for UTF-8 (WARNING: until the HART Server is converted to Unicode, the preliminary UTF-8 support BREAKS any characters that are above 0x7F (i.e. German characters such as ß, ü, or ö)). See SRS-808.
10.0	FF Method Interpreter supports new builtins – This has added only those builtins required to support “Cross-Block”. This interpreter does NOT support DisplayMenu(), or any double floating point methods. This interpreter does NOT support direct referencing or methods-calling-methods. See SRS-808.
10.0	Enhanced HART Post-Read Pre-Write Methods. When the Enhanced HART

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	Interpreter is enabled (See Section 6 of SRS-347). Post-Read and Pre-Write Methods can now do more than the 6 scaling builtins. Post-Read actions can now change local variables and run all the builtins except: any UI builtins (such as ACKNOWLEDGE()) or HART communications (such as send_command()). See SRS-808.
10.0	Gauge Control now shows units from the graphed variables. In previous revisions of AMS Device Manager the Gauge Control would show units next to the value only if the units were defined in the Axis. This logic has been changed so that if there is no unit defined for the axis, AMS would then check the unit for each individual variable on the gauge and if it existed it would be displayed next to the value at the bottom of the gauge.
10.0	Gauge Control background colour, text bolding, and border. The Gauge control now defaults to a background colour of "white" (instead of "metallic silver"). The values shown at the bottom of the Gauge control are larger and bolded to make them stand out better, and the border is recessed to give the Gauge a 3-D look.
10.0	Bar Chart Control "border" and "full-scale value location" have been changed. The Bar Chart Control now has the border recessed to give the Chart a 3-D look. The values displayed above (or beside) the bars now are moved INSIDE the bar if the bar is within 90% of full scale. Previously the value was always displayed OUTSIDE the bar, so when the bar reached or exceeded full scale the value was not displayed (See SRS-920)
10.0	The Default Graph Control size is now MEDIUM for both HART and FF. Previously HART was defaulting Gauges, Grids, Charts, and Graphs to LARGE if the device developer did not specify the Graph Control size. See HCF Spec 500.
10.0	If a Graph, Chart, or Gauge is SMALL or X_SMALL the default number of tick marks will be 5. Previously, these size of controls had 10 tick marks and made for a busy control (See SRS-920).
10.0	The Chart Controls use the length of the chart correctly. In previous versions the amount of data displayed on a Chart was calculate to take CYCLE_TIME into account (wrongly). See SRS-920.
10.0	Strip Charts will now retain more than 30 minutes of data if-and-only-if the LENTH of the chart is greater than 30 minutes. In previous version of AMS Device Manager if the device developer set the length of the chart to 60 minutes the chart would still only display 30 minutes. See SRS-920.
10.0	Parameters located on a Menu of "Style WINDOW" now create a (virtual) PAGE with the Label of the parent WINDOW. Previously AMS Device Manager would create a (virtual) PAGE with the Label "Other". This is still a temporary fix, ultimately AMS Device Manager needs to support parameters located on a WINDOW without having a PAGE.
10.0	The Label of a BitEnum is now displayed. When a Device developer added a BitEnum to a menu, AMS Device Manager will now create a group box around the bits of the BitEnum, and the label of the BitEnum is the label of the group box. In previous revisions of AMS Device Manager the group box did NOT

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	have a label.
10.0	Hexidecimal display of integers now works correctly. If a parameter has (both) the display_format and edit_format set to "x" or "X" AMS Manager will correctly support this hexadecimal display and editing (for 8 byte integers the display and edit format must be set to: "lX" or "lX")
10.0	PreEdit Method of an enumerated parameter now occurs BEFORE the drop-down is displayed. In previous version of AMS Device Manager the Pre-Edit Method was executed AFTER the drop-down was displayed.
10.0	Aborting an InitAction will disable the execution of ExitActions. In previous versions of AMS Device Manager ExitActions would still be executed if the InitAction had been Aborted.
10.0	Group boxes are only nested two levels. If the default mechanism encounters more than two GROUP boxes it will convert the third GROUP box into a menu of style WINDOW. In previous revisions AMS Device Manager would allow a GROUP, under a GROUP, under a GROUP, under a GROUP until the parameter control is not allowed any client area in which to be displayed.
10.0	Menus of Style TABLE are now displayed, even if they are located under a window of Style PAGE. In previous versions of AMS Device Manager they were filtered out. Now they are defaulted based on the rules specified in HCF Spec500.
10.0	Word-Wrapping of static text now calculates height and width correctly. In previous versions of AMS Device Manager static text might take too much vertical space. OR in cases where carriage returns were used, not enough space would be allocated on the screen and the static text would be clipped.
10.0	Graphs now display BLACK lines properly. In previous version of AMS Device Manager when the Device developer set the Waveform colour to BLACK (0), AMS would consider this to be NULL and revert the colour to the default (RED).
10.0	Device.ini file can force display of Configure, Process Variables, Device Status, or Compare to be Resource based. This is sometimes useful if the device developer wants to display something different for the compare screen than for the configure screen.
10.0	Device.ini file can force display of Configure, Process Variables, Device Status to use HandHeldLayout rules (TABLE format) even though the device defines the styles of those menus. This is sometimes useful if you want to reduce the amount of data read from the device at one time.
10.0	Device.ini file can force display of Configure, Process Variables, Device Status and Compare to use EDDL layout rules (using a different starting moniker) in spite of the fact that the style of the top level menu is TABLE. This is used to avoid using HandHeldLayout rules for wireless devices that are designed for use on a gateway (what has been termed: "Optimized for wireless").
10.0	Device.ini file can define a landing point different than the "Configure" screen.

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Manager EDDL Feature Set.doc

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	This is an option added to set "Overview" (Process Variables) as the default screen for Wave 0.5 devices (See SRS-347 Section 6).
10.0	AMS Device Manager will search for a XXX_wha_root_menu in cases of wireless HART. If a device is wireless and an XXX_wha_root_menu exists AMS device manager will use that menu rather than an existing XXX_root_menu (See SRS-347).
10.0	There is preliminary support for Refresh Actions. Currently Refresh actions work on HART Graphs and FF Charts. They do NOT execute when Graphs/Charts are zoomed or panned. They do NOT execute on Parameters
10.0	There is preliminary support of FF Cross-block. The functionality should be complete, but has not been fully tested.
10.0	There is preliminary support for VALUE_ARRAYs. Currently in HART, VALUE_ARRAYs work in: Methods, Menus and Waveforms. They do NOT work in: grid-vectors, and there is an unresolved issue with a value_array in a menu on a HART test DD. Currently in FF, VALUE_ARRAYs work in: Methods, Menus and Waveforms. They do NOT work in: grid-vectors.
10.0	Embedded icons in FF devices will NOT cause lockups the very first time the icon is displayed. In previous version of AMS Device Manager if there was an FF EDDL device with an embedded icon the very first time that device was displayed AMS Device Manager would lockup. This was because AMS spawned another thread to read the context menu information (methods) at the same moment that the icon was being retrieved. DCI (the interface used to get both pieces of information) was NOT thread-safe which caused the lockup.
10.0	AMS Device Manager will now support PlantWeb Alerts for HART devices. This is done by adding "Orphan" menus that have specific names: "PWA_Failed", "PWA_Maintenance", & "PWA_Advisory" (See SDD-1074). The DDInstall program will then create alert and alm files based on these menus.
10.0	AMS Device Manager also now supports NumberOfPoints property on XY Graph Waveforms