

A METHOD FOR RETRIEVING AND STORING DATA FROM FIELD DEVICES

5 FIELD OF INVENTION

This invention relates to a method of retrieving data from field devices for monitoring purposes.

10 BACKGROUND OF THE INVENTION

In the prior art as illustrated in Figure 1, a user monitors a field device by requesting for data from the field devices, such as parameters and/or enumerated values, on a user interface. The user interface calls for a data retrieval process. The data retrieval process sends a request to the server for the data.

The server retrieves the data for all the field devices from a desired source. The desired source can be the field devices themselves or the device description files of the field devices. The data is likely to be of multiple parameters and/ or enumerated values. When the server retrieves the data from the desired source, each parameter or enumerated value is retrieved one at a time until all parameters and/or enumerated values of field device are retrieved. There are field devices where the data is stored with and without function blocks.

An example of the prior art process is illustrated in Figure 2. The process is implemented in the Plant Resource Manager (PRM Client) 1, and is known as Read Device Details (RDD) 2, The RDD process communicates with a Fieldbus Communication Server (FBCom) 5 via an external library known as the OPC Client 4. The FBCom retrieves the required field device data from the field devices 6 themselves or from the Device Description File 7 of respective field devices.

The process for retrieving data from field devices with data stored without function blocks, such as those based on the HART protocol (HART devices) is illustrated in Figure 3. The process loops through all the HART devices. For each field device, the server retrieves all parameters from the desired source. For each retrieved parameter, a check is done to

determine if the retrieved parameter has an enumerated value. A single enumerated value is retrieved each time till all enumerated values for the retrieved parameter have been retrieved from the field device. The process flow ends when all parameters and any enumerated values are retrieved from all the field devices.

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This method of data retrieval is time consuming and inefficient.

There are field devices with data stored with function blocks such as those based on the Foundation Fieldbus protocol (FF devices). For FF devices, the process flow is illustrated in Figure 4. When retrieving data from the FF devices, this process flow includes an additional loop for all function blocks to retrieve each parameter and any enumerated one at a time. Therefore, the efficiency of the retrieval process for the FF devices is even less desirable.

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There is a need to reduce the time taken for the retrieval of data from field devices.

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SUMMARY OF THE INVENTION

According to a first embodiment of the invention, there is provided a method of retrieving and storing field device data, the data having a pre-defined identifier, including the steps of (a) packing the data of a field device into package, (b) generating a unique identifier for the package, (c) transferring the generated identifier, (d) comparing the transferred identifier with the pre-defined identifier. When the comparison result shows that the transferred identifier differs from the pre-defined identifier, the method further includes the steps of transferring the package, unpacking the transferred package, and storing the unpacked data and the transferred identifier. If the identifiers are the same, there is no transfer of data.

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According to a second aspect of the invention, a method for retrieving data for a field device such as FF devices where the data is stored a function block.

A third aspect of the invention provides a method of retrieving and storing data for a plurality of field devices where the data is stored in a plurality of function blocks.

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A fourth aspect provides a method for retrieving data for field devices such as field devices where there is no pre-defined identifier for the data.

A fifth aspect provides a method for retrieving data for field devices with data organised in a function block where there is no pre-defined identifier for the data.

- 5 A sixth aspect provides a method for retrieving data for field devices with data organised in a plurality of function blocks where there is no pre-defined identifier for the data.

In a second embodiment, the invention provides a method for a plurality of field devices, further including the steps of locating the predefined identifier prior to the comparison step
10 and repeating the all the previous steps until identifiers generated for all the field devices have been compared with the predefined identifiers.

In a third embodiment, the method further including the steps of compressing the package prior to generating the identifier, and decompressing the package prior to the step of storing
15 the unpacked data.

A fourth embodiment of the invention provides a method for a plurality of field devices, including the steps of compressing the package prior to generating the identifier, locating the predetermined identifier prior to the comparison step, decompressing the package after the
20 transfer of the package, and repeating all the previous steps until all identifiers generated for all the field devices have been compared with the predefined identifiers.

The second to fourth embodiments of the first aspect are provided for the second to sixth aspects of the invention.

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In the above embodiments, the data includes parameters and/ or enumerated values.

BRIEF DESCRIPTION OF THE DRAWING

30 Figure 1 illustrates a process flow in the prior art.

Figure 2 illustrates an example of an implementation of the prior art process.

Figure 3 illustrates a process flow for a HART device in the prior art.

Figure 4 illustrates a process flow for a FF device in the prior art.

Figure 5 illustrates a process flow for a first embodiment of the first aspect of the invention.

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Figure 6 illustrates a process flow for a second embodiment of the first aspect of the invention.

Figure 7 illustrates a process flow for a fourth embodiment of the first aspect of the invention.

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Figure 8 illustrates a process flow for a second embodiment of the third aspect of the invention.

Figure 9 illustrates a process flow for a fourth embodiment of the third aspect of the invention.

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Figure 10 illustrates an example of an implementation of the current invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

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The invention relates to a method for retrieving data from a device description file of at least one field device or from the field device itself. In the present invention, data from a field device is previously stored with a unique identifier. In the first embodiment of the invention, there is provided a method for retrieving and storing field device data from a device description file of a field device or the field device itself. The method as illustrated in Figure 5 including the following steps (a) packing the data of the field device into a pre-determined package, (b) generating an identifier for the package, (c) transferring the generated identifier to a pre-determined storage location, (d) comparing the transferred identifier with the stored identifier. In a comparison result which shows that the transferred identifier matches the stored identifier, the package is not transferred. If the transferred identifier differs from the stored identifier, the method further includes the steps of transferring the package, unpacking the transferred package, and storing the unpacked data and transferred identifier in the pre-determined location. This pre-determined location may be a database or user interface. The previously stored data and the corresponding identifier are updated to the transferred data

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and identifier. This saves valuable resources such as storage place or system memory, cache of a system when the invention is implemented.

When data retrieval from more than one device is desired, a second embodiment of the invention provides a method for retrieving and storing field device data from the device description files or the field devices. The method as illustrated in Figure 6 including the following steps (a) packing the data of a field device into a pre-determined package, (b) generating an identifier for the package, (c) transferring the generated identifier to a pre-determined storage location, (d) locating the previously stored identifier of the field device since there is more than one identifier, one identifier is stored with the stored data from each field device, (e) comparing the transferred identifier with the located stored identifier. In a comparison result which shows that the transferred identifier matches the stored identifier, the package is not transferred. If the transferred identifier differs from the stored identifier, the method further includes the steps of transferring the package, unpacking the transferred package, and storing the unpacked data and transferred identifier in the pre-determined location. This pre-determined location may be a database or user interface. The previously stored data and the corresponding identifier are updated to that of the transferred data and identifier. In addition, there is a step for detecting a subsequent field device, after the step (e). If a subsequent field device is detected, the steps (a) to (e) are repeated for said subsequent field device. Otherwise the process is terminated.

Transferring a packaged data for a field device is more convenient than transferring each parameter and/or enumerated value individually. Hence, the step of packing the data prior to transferring is implemented. In addition, the file size of an identifier is much smaller than that for a packaged data. The time taken to transfer the identifier as opposed to each individual parameter and/or enumerated value and even that of packaged data will be much shorter. Therefore, the steps (b) to (e) improve the efficiency of the data retrieval. The packaged data is not transferred if the identifiers compared are identical. This helps to save the resources of the server for other purposes.

In a third embodiment, the method further includes compressing the packaged data prior to transferring. Advantageously, this step helps to reduce the file size of the data to be transferred. This further reduces the time taken and resources needed for each transfer. In a variation, the data is compressed prior to packaging.

In this third embodiment, after each transfer, there is a provided a step to decompress the data prior to unpacking for storing. Correspondingly in the variation, if the data has been compressed prior to packaging and transferring, the transferred data is unpacked before the
5 step of decompressing.

A fourth embodiment provides the method in the third embodiment for retrieving data from more than one field device as illustrated in Figure 7. In this embodiment, when the comparison result shows that the transferred identifier matches with the located pre-defined
10 identifier, the method further includes the step of detecting a subsequent field device. When a subsequent field device is detected, the previous steps (a) to (e) are repeated until the identifiers for all the field devices have been transferred. Further, when the comparison result shows that the transferred identifier differs from the pre-defined identifier, the method includes the same steps as in the third embodiment and the additional step of detecting a
15 subsequent device. The previous steps (a) to (e) are repeated when a subsequent device is detected.

According to a second aspect of the invention, there is provided a method for retrieving and storing data from a field device. In this aspect, the data is organised in a function block and
20 the data from each function block is stored with a pre-defined identifier. An example of a field device with such a data organisation is the FF device. The method includes the steps of (a) packing the data of the function block of the field device into a package, (b) generating a unique identifier for the package, (c) transferring the generated identifier and (d) comparing the transferred identifier with the pre-defined identifier of the function block. When the
25 transferred identifier differs from the pre-defined identifier, the method further includes the steps of transferring the package, unpacking the transferred package, and storing the unpacked data and the transferred identifier.

A third aspect of the invention provides a method for retrieving and storing data from a field
30 device. The data is organised in a plurality of function blocks in the field device and the data from each function block is stored with a pre-defined identifier. The method includes the steps of (a) packing the data of a function block of the field device into a package, (b) generating a unique identifier for the package, (c) transferring the package of said function block, (d) locating the pre-defined identifier of the function block and (e) comparing the

transferred identifier with the pre-defined identifier of the function block. When the transferred identifier differs from said pre-defined identifier, the method further includes the steps of transferring the packaged data, unpacking the transferred package, storing the unpacked data and the transferred identifier, and detecting a subsequent function block, as illustrated in Figure 8. When a subsequent function block is detected, the steps (a) to (e) are performed.

In a fourth aspect of the invention, there is provided a method for retrieving and storing data from a field device. In this aspect, the data has not been previously stored with any identifier.

10 The method includes the steps of (a) retrieving data from the field device, (b) packing the retrieved data into a package, (c) generating a unique identifier for the package, (d) transferring the package and the generated identifier, (e) unpacking the transferred package, (f) storing the unpacked data and the transferred identifier in a predetermined location. The predetermined location includes any database, GUI interface or any other locations. Further,

15 the method includes the steps of (g) receiving a request to retrieve data from a field device, (h) retrieving data from the field device, (i) packing the retrieved data into a package, (j) generating a unique identifier for package, (k) transferring the generated identifier, (l) comparing the transferred identifier with the previously stored identifier. If the transferred identifier differs from the stored identifier, the steps further includes transferring the

20 packaged data, unpacking the transferred package, and storing the unpacked data and the transferred identifier.

According to a fifth aspect of the invention, there is provided a method for retrieving and storing data from a field device, where the data is organised in a function block has not been

25 previously stored with any identifier. The method includes the steps of (a) retrieving data from the function block of the field device, (b) packing the retrieved data into a package; (c) generating a unique identifier for the package of the function block, (d) transferring the package and the generated identifier, (e) unpacking the transferred package, (f) storing the unpacked data and the transferred identifier in a predetermined location. Further, the method

30 includes the steps of (g) receiving a request to retrieve data from a field device, (h) retrieving data from the function block of the field device, (i) packing the retrieved data into a package, (j) generating a unique identifier for package, (k) transferring the generated identifier, (l) comparing the transferred identifier with the previously stored identifier. When the transferred identifier differs from the stored identifier, the method further includes the steps of

transferring the packaged data, unpacking the transferred package, and storing the unpacked data and the transferred identifier.

A sixth aspect of the invention is a method for retrieving and storing data from a field device.

- 5 In this aspect, the data is organised in a plurality of function blocks in the device and there is no previously stored or pre-defined identifier. The method includes the steps of (a) retrieving data from a function block of the field device, (b) packing the retrieved data into a package, (c) generating a unique identifier for the package, (d) transferring the package and the generated identifier, (e) unpacking the transferred package, (f) storing the unpacked data
10 and the transferred identifier in a predetermined location, (g) detecting a subsequent function block. If a subsequent function block is detected, the method further includes repeating the steps (a) to (g) until data from all function blocks in the field device has been retrieved.

When data from all blocks has been retrieved, no subsequent function block will be detected.

- 15 In this case, the method further includes the following steps of (h) receiving a request to retrieve data from the field device, (i) retrieving data from a function block of the field device in response to the request, (j) packing the data of a function block of the field device into a package; (k) generating a unique identifier for the package, (l) transferring the package, (m) locating the stored identifier of the function block, (n) comparing the transferred identifier with
20 the stored identifier of the function block. When the transferred identifier differs from the previously stored identifier, the method further includes the steps of transferring the packaged data, unpacking the transferred package, storing the unpacked data and the transferred identifier, and detecting a subsequent function block. If a subsequent function block is detected, the steps (i) to (n) are repeated until the updated data for function blocks
25 have been transferred where necessary.

- Preferably, in the fourth to sixth aspects of the invention, the previously stored data and identifier are discarded or updated with the transferred data and identifier. This saves valuable resources such as storage place or system memory, cache of a system where the
30 invention is implemented.

The second to fourth embodiments and the variations of the first aspect of the invention are provided for all the other second to sixth aspects accordingly.

The unique identifier in the above embodiments is a hash value.

In the above embodiments, the mentioned data includes parameters and/ or enumerated values.

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An example of the invention implemented in a PRM Client is illustrated in Figure 10. When the RDD process requests the FBCom for the data of a field device, the data are parameters and/ or enumerated values of the field device, the FBCom retrieves the data from the field device or the Device Description File of the field device and uses the Data Packager 51 to
10 pack the data for transfer to the PRM client. Then the Data Compressor 52 compresses the packed data to minimize the amount of data being transferred.

Before the PRM Client tries to retrieve the data, it requests the FBCom for the hash value of the packed and/or compressed data. Upon receipt of the request, the FBCom uses the Hash
15 Value Calculator 53 to calculate a hash value of the packaged data which is transferred to the PRM Client.

The PRM Client will compare the transferred hash value with a previously stored or a predefined hash value for the field device. If the transferred hash value differs from the
20 previously stored or the predefined hash value, the PRM will request for the full packed and/or compressed data. The RDD process then proceeds to uncompress the transferred data using the Date De-Compressor 21. It then uses the Un-Packager 22 to unpack the data and store it in a PRM database.

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We claim:

1. A method for retrieving and storing data from a field device, the data having a pre-defined identifier, including the steps of

- 5 (a) packing said data of said field device into a package;
 (b) generating a unique identifier for said package;
 (c) transferring the generated identifier;
 (d) comparing the transferred identifier with said pre-defined identifier,
 transferring the packaged data when said transferred identifier differs from
10 said pre-defined identifier;
 unpacking the transferred data; and
 storing the unpackaged data and said transferred identifier.

2. A method for retrieving and storing data from a plurality of field devices, the data having a
15 pre-defined identifier, including the steps of

- (a) packing said data of a field device into a package;
 (b) generating a unique identifier for said package;
 (c) transferring the generated identifier;
 (d) locating the pre-defined identifier of said field device;
20 (e) comparing the transferred identifier with said pre-defined identifier,
 wherein when said transferred identifier matches that of said pre-defined
 identifier, the method further including the step of
 detecting a subsequent field device,
 performing the steps (a) to (e) when a subsequent field device is
25 detected,
 wherein when said transferred identifier differs from said pre-defined identifier,
 the method further including the steps of
 transferring the packaged data;
 unpacking the transferred data;
30 storing the unpackaged data and said transferred identifier; and
 detecting a subsequent field device,
 performing the steps (a) to (e) when a subsequent field device is
 detected.

3. A method for retrieving and storing data from a field device, the data is organised in a function block, said data having a pre-defined identifier, including the steps of

- 5 (a) packing said data of said function block of said field device into a package;
- (b) generating a unique identifier for said package;
- (c) transferring the generated identifier;
- (d) comparing the transferred identifier with said pre-defined identifier of said function block;
- 10 transferring said package when said transferred identifier differs from said pre-defined identifier;
- unpacking the transferred package; and
- storing the unpacked data and said transferred identifier.

4. A method for retrieving and storing data from a plurality of field devices, the data in each field device is organised in a function block, said data having a pre-defined identifier , including the steps of

- (a) packing said data of a function block of a field device into a package;
- (b) generating a unique identifier for said package;
- (c) transferring the generated identifier;
- 20 (d) locating the pre-defined identifier of said function block of said device;
- (e) comparing the transferred identifier with said pre-defined identifier of said function block;
- wherein when said transferred identifier matches that of said pre-defined identifier, the method further including the step of
- 25 detecting a subsequent field device,
- performing the steps (a) to (e) when a subsequent field device is detected,
- wherein when said transferred identifier differs from said pre-defined identifier, the method further including the steps of
- 30 transferring the packaged data;
- unpacking the transferred package;
- storing the unpacked data and said transferred identifier; and
- detecting a subsequent field device,
- performing steps (a) to (e) when a subsequent field device is detected.

5. A method for retrieving and storing data from a field device, the data is organised in a plurality of function blocks, said data having a pre-defined identifier, including the steps of
- (a) packing said data of a function block of said field device into a package;
 - (b) generating a unique identifier for said package;
 - (c) transferring the generated package;
 - (d) locating the pre-defined identifier of said function block;
 - (e) comparing the transferred identifier with said pre-defined identifier of said function block;
- transferring the packaged data when said transferred identifier differs from said pre-defined identifier;
- unpacking the transferred package;
- storing the unpacked data and said transferred identifier; and
- detecting a subsequent function block,
- performing steps (a) to (e) when a subsequent function block is detected.
6. A method for retrieving and storing data from a plurality of field devices, the data is organised in a plurality of function blocks, said data of each function block having a pre-defined identifier, including the steps of
- (a) packing said data of a function block of a field device into a package;
 - (b) generating a unique identifier for said package;
 - (c) transferring the generated identifier;
 - (d) locating the pre-defined identifier of said function block;
 - (e) comparing the transferred identifier with said pre-defined identifier of said function block;
- wherein when said transferred identifier matches that of said pre-defined identifier, the method further including the step of
- detecting a subsequent function block,
- wherein when a subsequent function block is detected,
- performing the steps (a) to (e),
- wherein when no subsequent function block is detected,

the method further includes the step of
detecting a subsequent field device,
performing the steps (a) to (e) when a subsequent field
device is detected,
5 wherein when said transferred identifier differs from said pre-defined identifier,
the method further including the steps of
transferring the packaged data;
unpacking the transferred package;
storing the unpacked data and said transferred identifier; and
10 detecting a subsequent function block,
wherein when a subsequent function block is detected,
performing the steps (a) to (e),
wherein when no subsequent function block is detected,
the method further includes the step of
15 detecting a subsequent field device,
performing the steps (a) to (e) when a subsequent field
device is detected.

7. A method for retrieving and storing data from a field device including the steps of
20 (a) retrieving data from said field device;
(b) packing the retrieved data into a package;
(c) generating a unique identifier for said package;
(d) transferring said package and the generated identifier;
(e) unpacking the transferred package;
25 (f) storing the unpacked data and the transferred identifier in a predetermined
location;
(g) receiving a request to retrieve data from said field device;
(h) retrieving data from said field device;
(i) packing said retrieved data into a package;
30 (j) generating a unique identifier for package;
(k) transferring the generated identifier;
(l) comparing the transferred identifier with the stored identifier;
transferring the packaged data when said transferred identifier differs from
said stored identifier;

unpacking said transferred package; and
storing said unpacked data and said transferred identifier.

8. A method for retrieving and storing data from a plurality of field devices, including the
5 steps of

- (a) retrieving data from a field device;
- (b) packing the retrieved data into a package;
- (c) generating a unique identifier for said package;
- (d) transferring said package and the generated identifier;
- 10 (e) unpacking the transferred package;
- (f) storing the unpacked data and the transferred identifier in a predetermined location;
- (g) detecting a subsequent field device,

wherein when a subsequent field device is detected,

15 the method further including performing the steps (a) to (g),

wherein when a subsequent field device is not detected,

the method further including the following steps

(h) receiving a request to retrieve data from said plurality of field
devices;

20 (i) retrieving data from a field device;

(j) packing the retrieved data into a package;

(k) generating a unique identifier for package;

(l) transferring the generated identifier;

(m) locating the stored identifier of said field device;

25 (n) comparing the transferred identifier with said stored identifier;

transferring the packaged data when said transferred
identifier differs from said stored identifier;

unpacking said transferred package;

storing said unpacked data and said transferred identifier; and

30 detecting a subsequent field device,

performing the steps (i) to (n) when a subsequent field
device is detected.

9. A method for retrieving and storing data from a field device, the data organised in a function block, including the steps of

- (a) retrieving said data from said function block of said field device;
- (b) packing the retrieved data into a package;
- 5 (c) generating a unique identifier for said package of said function block;
- (d) transferring said package and the generated identifier;
- (e) unpacking the transferred package;
- (f) storing the unpacked data and the transferred identifier in a predetermined location;
- 10 (g) receiving a request to retrieve data from said field device;
- (h) retrieving data from said function block of said field device;
- (i) packing the retrieved data into a package;
- (j) generating a unique identifier for package;
- (k) transferring the generated identifier;
- 15 (l) comparing the transferred identifier with said stored identifier;
- transferring the packaged data when said transferred identifier differs from said stored identifier;
- unpacking said transferred package; and
- storing said unpacked data and said transferred identifier.

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10. A method for retrieving and storing data from a plurality of field devices, the data in each field device organised in a function block, including the steps of

- (a) retrieving data from the function block of a field device;
- (b) packing the retrieved data into a package;
- 25 (c) generating a unique identifier for said package;
- (d) transferring said package and the generated identifier;
- (e) unpacking the transferred package;
- (f) storing the unpacked data and the transferred identifier in a predetermined location;
- 30 (g) detecting a subsequent field device,
- wherein when a subsequent field device is detected,
- the method further including performing the steps (a) to (g),
- wherein when a subsequent field device is not detected,
- the method further including the following steps

5 (h) receiving a request to retrieve data from said plurality of field devices;
 (i) retrieving data from the function block of a field device;
 (j) packing the retrieved data into a package;
 (k) generating a unique identifier for the package;
 (l) transferring the generated identifier;
 (m) locating the stored identifier of said function block of said device;
 (n) comparing the transferred identifier with said stored identifier of said
 function block;
 wherein when said transferred identifier matches that of said stored
 10 identifier, the method further including the steps of
 detecting a subsequent field device; and
 performing the steps (i) to (n) when a subsequent field device is
 detected
 wherein when said transferred identifier differs from said stored
 15 identifier, the method further including the steps of
 transferring the packaged data;
 unpacking the transferred package;
 storing the unpacked data and said transferred identifier; and
 detecting a subsequent field device,
 20 performing steps (i) to (n) when a subsequent field device is
 detected.

11. A method for retrieving and storing data from a field device, the data organised in a
 plurality of function blocks, including the steps of
 25 (a) retrieving said data from a function block of said field device;
 (b) packing the retrieved data into a package;
 (c) generating a unique identifier for said package;
 (d) transferring said package and the generated identifier;
 (e) unpacking the transferred package;
 30 (f) storing the unpacked data and the transferred identifier in a predetermined
 location;
 (g) detecting a subsequent function block,
 wherein when a subsequent function block is detected,
 the method further including performing the steps (a) to (g),

wherein when a subsequent function block is not detected,
the method further including the following steps

5 (h) receiving a request to retrieve data from said field device;
(i) retrieving data from a function block of said field device;
(j) packing said data of a function block of said field device into a
package;
(k) generating a unique identifier for said package;
(l) transferring said package;
10 (m) locating the stored identifier of said function block;
(n) comparing the transferred identifier with the stored identifier of said
function block,
transferring the packaged data when said transferred identifier differs
from said stored identifier;
unpacking the transferred package;
15 storing the unpacked data and said transferred identifier; and
detecting a subsequent function block,
performing steps (i) to (n) when a subsequent function block is
detected.

20 12. A method for retrieving and storing data from a plurality of field devices, the data in each
field device organised in a plurality of function blocks, including the steps of

(a) retrieving data from a function block of a field device;
(b) packing the retrieved data into a package;
(c) generating a unique identifier for said package;
25 (d) transferring said package and the generated identifier;
(e) unpacking the transferred package;
(f) storing the unpacked data and the transferred identifier in a predetermined
location;
(g) detecting a subsequent function block,
30 wherein when a subsequent function block is detected,
the method further including performing the steps (a) to (g),
wherein when a subsequent function block is not detected,
detecting a subsequent field device,
wherein when a subsequent field device is detected,

the method further including performing the steps (a) to (g),
wherein when a subsequent field device is not detected,
the method further including the following steps

- 5 (h) receiving a request to retrieve data from said plurality of field devices;
- (i) retrieving data from a function block of a field device;
- (j) packing the retrieved data into a package;
- (k) generating a unique identifier for said package;
- (l) transferring said package;
- 10 (m) locating the stored identifier of said function block of said field device;
- (n) comparing the transferred identifier with said stored identifier of said function block;
- wherein when said transferred identifier matches that of said
- 15 stored identifier, the method further including the step of detecting a subsequent function block,
- wherein when a subsequent function block is detected, performing the steps (i) to (n),
- wherein when no subsequent function block is detected,
- 20 the method further includes the step of detecting a subsequent field device; and performing the steps (i) to (n) when a subsequent field device is detected,
- wherein when said transferred identifier differs from said stored
- 25 identifier, the method further including the steps of transferring the packaged data;
- unpacking the transferred package;
- storing the unpacked data and said transferred identifier; and detecting a subsequent function block,
- 30 wherein when a subsequent function block is detected, performing the steps (i) to (n),
- wherein when no subsequent function block is detected, the method further includes the step of detecting a subsequent field device; and

performing the steps (i) to (n) when a subsequent field device is detected.

13. A method for retrieving and storing data from one or more field devices, the data having a pre-defined identifier, including the steps of

(a) packing said data of a field device into a package;

(b) generating a unique identifier for said package;

(c) transferring the generated identifier;

(d) locating the pre-defined identifier of said field device;

(e) comparing the transferred identifier with said pre-defined identifier,

wherein when said transferred identifier matches that of said pre-defined identifier, the method further including the step of

detecting whether there is a subsequent field device,

performing the steps (a) to (e) if a subsequent field device is detected,

terminating the method if a subsequent field device is not detected,

wherein when said transferred identifier differs from said pre-defined identifier, the method further including the steps of

transferring the packaged data;

unpackaging the transferred data; and

storing the unpackaged data and said transferred identifier; and

detecting whether there is a subsequent field device,

performing the steps (a) to (e) when a subsequent field device is detected,

terminating the method if a subsequent field device is not detected.

14. A method as claimed in any of the preceding claims further including the steps of compressing said package prior to said step of generating a unique identifier for said package; and

decompressing said package prior to said step of unpacking the transferred data.

15. A method as claimed in any of the preceding claims 1 to 13 further including the steps of compressing said package prior to said step of packing said data into a package; and

decompressing said package after said step of unpacking the transferred data.

16. A method as claimed in any of the preceding claims wherein the data is retrieved from a
5 device description file of the field device.

17. A method as claimed in any of the preceding claims including providing a predetermined location for storing said data and said corresponding identifier.

10 18. A method as claimed in any of the preceding claims wherein said data includes parameters.

19. A method as claimed in any of the claims 1 to 18 wherein said data includes enumerated values.

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20. A method as claimed in claim 18 wherein said parameters further includes enumerated values.