



WebAccess Driver Configuration Manual

Allen-Bradley Logix5561

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Revision History

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1. Introduction

1.1 Introduction for AB LOGIX PLC Ethernet Driver

The AB LOGIX PLC Ethernet driver allows WebAccess to directly communicate with Allen-Bradley LOGIX based PLCs, which are ControlLogix series, CompactLogix series and etc., over Ethernet. This driver implements the CIP protocol over Ethernet/IP defined by ODVA and exchange data with the PLC during the runtime, using the tag names configured in the PLC by RSLogix programming tool. For communicating with Allen-Bradley PLC5 series and SLC5 series that support the CSP protocol using the data file based access method, please refer the “Allen-Bradley AB Ethernet for PLC5/E Device Driver Guide” provided by WebAccess

1.2 Features of AB LOGIX PLC Ethernet Driver

1.2.1 Functionalities

The AB LOGIX PLC Ethernet driver provides the following functionalities:

- Accesses the tag names within the LOGIX based PLC using the explicit message transport class 3 mode.
- Supports the atomic data types, like BOOL, SINT, INT etc., and array of atomic data type for the controller tags.
- Supports the import function with CVS file format that is exported by RSLogix for tag configuration in the PLC.
- Supports the automation conversion from PLC tag name to WebAccess tag name during the import procedure.

1.2.2 Data types

The data types supported by AB LOGIX PLC Ethernet driver for the controller tag name exported by PLC are followings:

- BOOL
- SINT
- INT
- DINT
- LINT
- REAL
- TIMER
- COUNTER
- CONTROL

The AB LOGIX PLC Ethernet driver also could handle the array defined by the above basic data types. The STRING and structure data types are not supported by the current driver.

2. Configuration of Allen-Bradley LOGIX PLC Ethernet Driver

1. Start the Internet Explorer **Web Browser**.
2. Enter IP address of the **Project Node**.
3. Select **WebAccess Configuration**.
4. Open or Create a **Project**.
5. Select a SCADA Node or use **Add SCADA node** to create one. (A SCADA node is the PC that will connect to the ABPLCEIP or Interface Module).
6. Configure a TCP/IP comport using **Add Comport** for the SCADA Node.
7. Select a **TCP/IP** type and Submit
8. Select the Comport to open Comport Properties.
9. Select **Add Device**.
10. Select **ABPLCEIP** as the **Device Type**. This determines the communications Protocol and Device Driver.
11. Configure the TCP Port number to match that used by the ABPLCEIP to listen. The typical port number used by **ABPLCEIP** is **44818**. All ABPLCEIPs on this Comport must use the same port.
12. Enter the ABPLCEIP Node address as the Unit Number.
Node addresses on the DH and DH+ are in octal notation.
Unit addresses in WebAccess are in decimal notation.
13. Use Add Tag to create tags.
14. Select a parameter to match the type of data to be read (AI, AO, DI, D O, ST, etc.). The data type of the parameter must match the data type being read (e.g. Analog, Digital/Discrete or Text/ASCII/String).
15. Modify the Address to match the actual address.
16. Apply a Tag name.
17. Optionally, assign Scaling, Engineering Units, Description and other features.

Note - It is recommended to select a Comport number greater than 2 so that it does not conflict with a Serial comport that you may want to use later.

2.1 Comport Configuration

First of all you create a SCADA node as the normal process with WebAccess. Then, in the WebAccess Project Manager create a new Comport with "TCPIP" interface name on the SCADA node as shown in the figure 2.1.

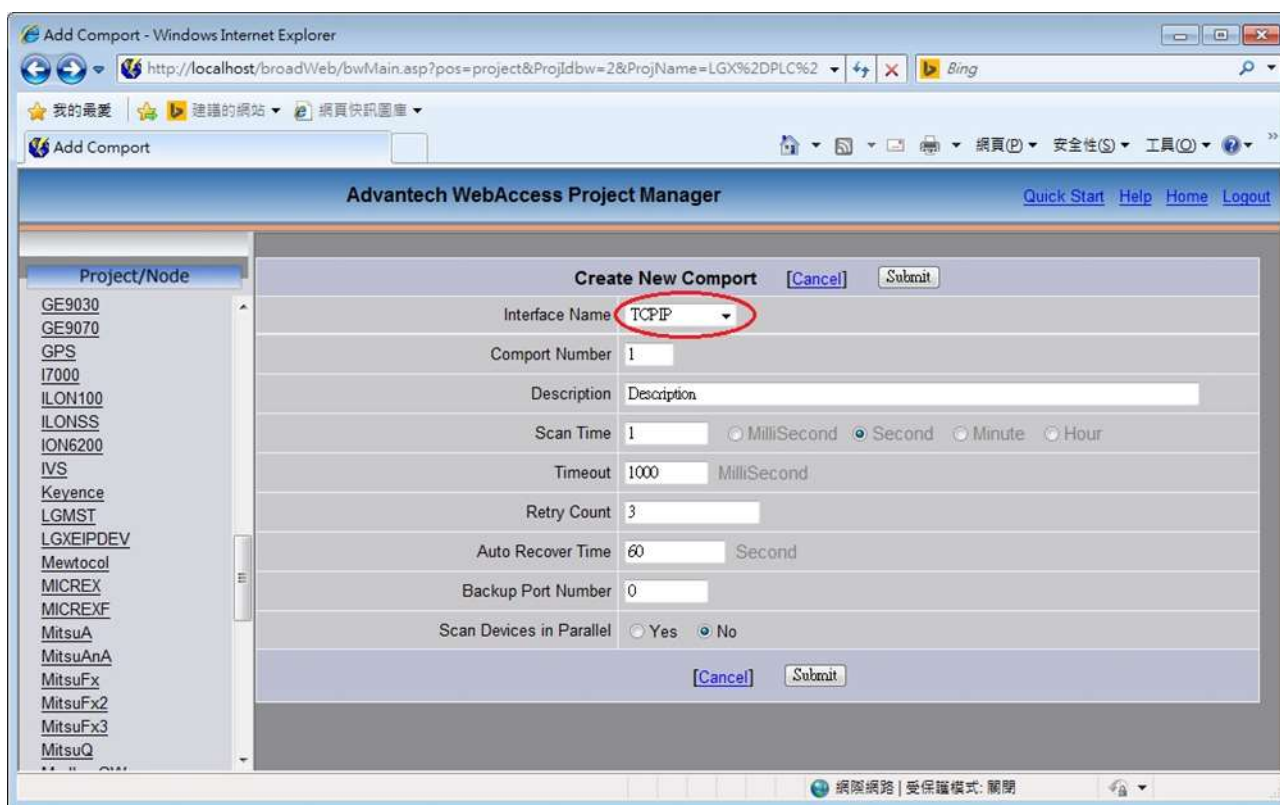


Figure 2.1

2.2 Port Configuration

The “Create New Comport” web page is used to specify the parameter settings for AB LOGIX PLC Ethernet driver. These settings are detailed as follows:

- **Comport Number:** The Comport requires the virtual comport number to provide a identity that is used for the internal process on the SCADA Node.
- **Description:** This is an optional field used for user reference.
- **Scan time:** This is the time to scan the PLC. The parameter is also used to decide how much RPI, request packet interval, in the CIP connection parameters. Currently the minimum available value is 50 milliseconds. If the value is less than 50 milliseconds, the input value will be automatically rounded up the 50 milliseconds by the driver.
- **Timeout:** Timeout is the time waited before re-sending a communication packet that did not get a reply from device.
- **Retry count:** Number of times to retry communications if no reply is received from a device. Combined with timeout, also determines time to consider a device or port as BAD.
- **Auto Recover Time:** Auto Recover time is the time to wait after a Device is marked bad (or failed) before re-initializing communications. Then WebAccess will mark the device good, and start the normal communicating procedure.
- **Backup Port Number:** This enables a redundant communications path to the device. If communications cannot be established through this Comport, WebAccess will try a second Comport, specified as the Backup Port.

2.3 Device Configuration

First you follow the steps of “Add Device” within the WebAccess, the following web page will appear on the screen as shown in the figure 2.2.

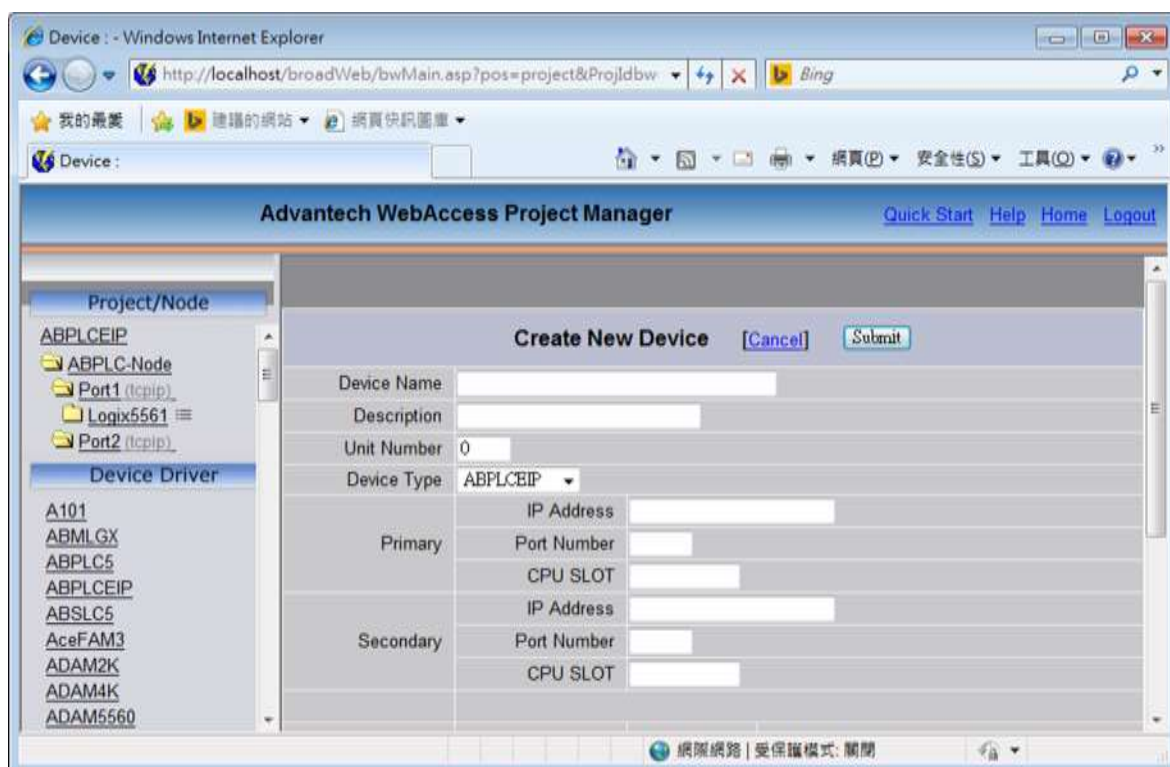


Figure 2.2

The settings of “Create New Device” are detailed as follows:

- **Device Name:** The value is any user-defined name for user reference.
- **Description:** This is an optional field used as description for user reference.
- **Unit Number:** The value is an identity used for the internal process of driver.
- **Device Type:** This parameter specifies which driver to handle the selected device type. To invoke the AB LOGIX PLC Ethernet driver, the “ABPLCEIP” device type must be selected.
- **IP Address:** This parameter specifies the IP address of LOGIX PLC. The Primary IP address must be specified. The Secondary IP address is used only if the PLC has redundant Ethernet port (i.e. two Ethernet ports in the PLC).
- **Port Number:** This parameter specifies the TCP port configured for the Ethernet/IP in the PLC. The default TCP port, 44818, is defined by ODVA as default for ETHERNET/IP protocol.
- **CPU SLOT:** The value specifies which the slot ID in the rack the CPU module resides in. If this field is left to blank, the default CPU SLOT, 0, is used in the driver.

2.4 Tag Configuration

The AB LOGIX Ethernet driver uses the form “Logix_Tag_Name /OPTIONS” as the WebAccess “Address” that maps from the address of point type of AB logix PLC to the TAG name of WebAccess, where:

Logix_Tag_Name: The Logix_Tag_Name is the tag name created by RSLogix programming tool under the field of “controller tags”, that is the global tag used within PLC.

OPTIONS: The options include two options, one is /DT for the data type of tag name and the other one is the /IDX to specify the dimension index for array.

The following sections detail the tag configuration of point type supported by the WebAccess.

2.4.1 BOOL data type

The web page of setting for “BOOL” is shown in the figure 2.3.

Create New Tag		[Cancel]	[Submit]
Parameter	BOOL	Point	(discrete)
Alarm	No Alarm		
Tag Name			
Description	1 bit value		
Scan Type	Constant Scan		
Address	Logix_Tag_Name /DT=BOOL		
Conversion Code	AUTO		
Start Bit	0		
Length	1		
Signal Reverse	<input type="radio"/> Yes <input checked="" type="radio"/> No		
Log Data	<input type="radio"/> Yes <input checked="" type="radio"/> No		
Data Log Dead Band	3 %		
Write Action Log	<input checked="" type="radio"/> Yes <input type="radio"/> No		
Read Only	<input type="radio"/> Yes <input checked="" type="radio"/> No		
Keep Previous Value	<input type="radio"/> Yes <input checked="" type="radio"/> No		
Initial Value	0		
Security area	0		
Security level	0		

Figure 2.3

The option “/DT=BOOL” specifies the BOOL data type for this WebAccess tag.

The BOOL data type is one bit length logical value in the PLC

2.4.2 BOOL array data type

The web page of setting for “BOOL array” is shown in the figure 2.4.

Create New Tag		[Cancel]	Submit
Parameter	BOOL_A	Point (discrete)	
Alarm	No Alarm		
Tag Name			
Description	One dimension array		
Scan Type	Constant Scan		
Address	Logix_Tag_Name /DT=BOOL /IDX=0		
Conversion Code	AUTO		
Start Bit	0		
Length	1		
Signal Reverse	<input type="radio"/> Yes <input checked="" type="radio"/> No		
Log Data	<input type="radio"/> Yes <input checked="" type="radio"/> No		
Data Log Dead Band	3	%	
Write Action Log	<input checked="" type="radio"/> Yes <input type="radio"/> No		
Read Only	<input type="radio"/> Yes <input checked="" type="radio"/> No		
Keep Previous Value	<input type="radio"/> Yes <input checked="" type="radio"/> No		
Initial Value	0		
Security area	0		
Security level	0		

Figure 2.4

The option “/DT= BOOL” specifies the BOOL data type for this WebAccess tag.

The option “/IDX” specifies the index of dimension for array. AB logix PLC only support the BOOL array data type up to one dimension. The following example is option format how to specify:

One dimension: /IDX=0

2.4.3 SINT data type

The web page of setting for “SINT” is shown in the figure 2.5.

Create New Tag		[Cancel]	Submit
Parameter	SINT	Point (analog)	
Alarm	No Alarm		
Tag Name			
Description	8 bit signed integer		
Scan Type	Constant Scan		
Address	Logix_Tag_Name /DT=SINT		
Conversion Code	AUTO		
Start Bit	0		
Length	8		
Signal Reverse	<input type="radio"/> Yes <input checked="" type="radio"/> No		
Scaling Type	No Scale		
Scaling factor 1	0		
Scaling factor 2	0		
Log Data	<input type="radio"/> Yes <input checked="" type="radio"/> No		
Data Log Dead Band	3	%	
Write Action Log	<input checked="" type="radio"/> Yes <input type="radio"/> No		
Read Only	<input type="radio"/> Yes <input checked="" type="radio"/> No		

Figure 2.5

The option “/DT= SINT” specifies the SINT data type for this WebAccess tag.

The SINT data type is the 8 bits signed integer in the PLC.

2.4.4 SINT array data type

The web page of setting for “SINT array” is shown in the figure 2.6.

Create New Tag		[Cancel]	[Submit]
Parameter	SINT_A	Point (analog)	
Alarm	No Alarm		
Tag Name			
Description	At most 3 dimensions array		
Scan Type	Constant Scan		
Address	Logix_Tag_Name /DT=SINT /IDX=0_0_0		
Conversion Code	AUTO		
Start Bit	0		
Length	8		
Signal Reverse	<input type="radio"/> Yes	<input checked="" type="radio"/> No	
Scaling Type	No Scale		
Scaling factor 1	0		
Scaling factor 2	0		
Log Data	<input type="radio"/> Yes	<input checked="" type="radio"/> No	
Data Log Dead Band	3	%	
Write Action Log	<input checked="" type="radio"/> Yes	<input type="radio"/> No	
Read Only	<input type="radio"/> Yes	<input checked="" type="radio"/> No	

Figure 2.6

The option “/DT= SINT” specifies the SINT data type for this WebAccess tag.

The option “/IDX” specifies the index of dimension for array. AB logix PLC only support the SINT array data type up to three dimensions. The following examples are option format how to specify the required dimensions:

One dimension: /IDX=0

Two dimensions: /IDX=0_0

Three dimensions: /IDX=0_0_0

The underscore is used as separator between the dimension index.

2.4.5 INT data type

The web page of setting for “INT” is shown in the figure 2.7.

Create New Tag		[Cancel]	[Submit]
Parameter	INT	Point (analog)	
Alarm	No Alarm		
Tag Name			
Description	16 bit signed integer		
Scan Type	Constant Scan		
Address	Logix_Tag_Name /DT=INT		
Conversion Code	AUTO		
Start Bit	0		
Length	16		
Signal Reverse	<input type="radio"/> Yes <input checked="" type="radio"/> No		
Scaling Type	No Scale		
Scaling factor 1	0		
Scaling factor 2	0		
Log Data	<input type="radio"/> Yes <input checked="" type="radio"/> No		
Data Log Dead Band	3	%	
Write Action Log	<input checked="" type="radio"/> Yes <input type="radio"/> No		
Read Only	<input type="radio"/> Yes <input checked="" type="radio"/> No		

Figure 2.7

The option “/DT= INT” specifies the INT data type for this WebAccess tag.

The INT data type is the 16 bits signed integer in the PLC.

2.4.6 INT array data type

The web page of setting for “INT array” is shown in the figure 2.8.

Create New Tag		[Cancel]	[Submit]
Parameter	INT_A	Point (analog)	
Alarm	No Alarm		
Tag Name			
Description	At most 3 dimensions array		
Scan Type	Constant Scan		
Address	Logix_Tag_Name /DT=INT /IDX=0_0_0		
Conversion Code	AUTO		
Start Bit	0		
Length	16		
Signal Reverse	<input type="radio"/> Yes <input checked="" type="radio"/> No		
Scaling Type	No Scale		
Scaling factor 1	0		
Scaling factor 2	0		
Log Data	<input type="radio"/> Yes <input checked="" type="radio"/> No		
Data Log Dead Band	3	%	
Write Action Log	<input checked="" type="radio"/> Yes <input type="radio"/> No		
Read Only	<input type="radio"/> Yes <input checked="" type="radio"/> No		

Figure 2.8

The option “/DT= INT” specifies the INT data type for this WebAccess tag.

The option “/IDX” specifies the index of dimension for array. AB logix PLC only support the INT array data type up to three dimensions. The following examples are option format how to specify the required dimensions:

One dimension: /IDX=0

Two dimensions: /IDX=0_0

Three dimensions: /IDX=0_0_0

The underscore is used as separator between the dimension index.

2.4.7 DINT data type

The web page of setting for “DINT” is shown in the figure 2.9.



Create New Tag		[Cancel]	[Submit]
Parameter	DINT	Point (analog)	
Alarm	No Alarm		
Tag Name			
Description	32 bit signed integer		
Scan Type	Constant Scan		
Address	Logix_Tag_Name /DT=DINT		
Conversion Code	AUTO		
Start Bit	0		
Length	32		
Signal Reverse	<input type="radio"/> Yes	<input checked="" type="radio"/> No	
Scaling Type	No Scale		
Scaling factor 1	0		
Scaling factor 2	0		
Log Data	<input type="radio"/> Yes	<input checked="" type="radio"/> No	
Data Log Dead Band	3	%	
Write Action Log	<input checked="" type="radio"/> Yes	<input type="radio"/> No	
Read Only	<input type="radio"/> Yes	<input checked="" type="radio"/> No	

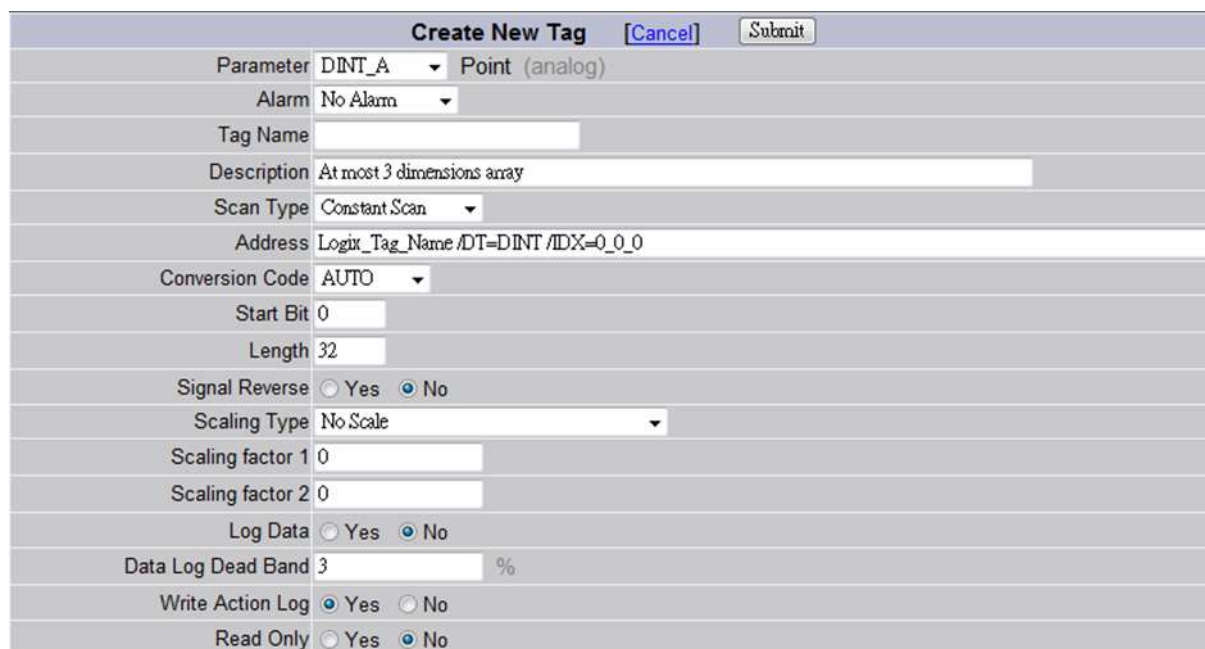
Figure 2.9

The option “/DT= DINT” specifies the DINT data type for this WebAccess tag.

The DINT data type is the 32 bits signed integer in the PLC.

2.4.8 DINT array data type

The web page of setting for “DINT array” is shown in the figure 2.10.



Create New Tag		[Cancel]	[Submit]
Parameter	DINT_A	Point (analog)	
Alarm	No Alarm		
Tag Name			
Description	At most 3 dimensions array		
Scan Type	Constant Scan		
Address	Logix_Tag_Name /DT=DINT /IDX=0_0_0		
Conversion Code	AUTO		
Start Bit	0		
Length	32		
Signal Reverse	<input type="radio"/> Yes	<input checked="" type="radio"/> No	
Scaling Type	No Scale		
Scaling factor 1	0		
Scaling factor 2	0		
Log Data	<input type="radio"/> Yes	<input checked="" type="radio"/> No	
Data Log Dead Band	3	%	
Write Action Log	<input checked="" type="radio"/> Yes	<input type="radio"/> No	
Read Only	<input type="radio"/> Yes	<input checked="" type="radio"/> No	

Figure 2.10

The option “/DT= DINT” specifies the INT data type for this WebAccess tag.

The option “/IDX” specifies the index of dimension for array. AB logix PLC only support the DINT array data type up to three dimensions. The following examples are option format how to specify the required dimensions:

One dimension: /IDX=0

Two dimensions: /IDX=0_0

Three dimensions: /IDX=0_0_0

The underscore is used as separator between the dimension index.

2.4.9 LINT data type

The web page of setting for “LINT” is shown in the figure 2.11.

Create New Tag		[Cancel]	[Submit]
Parameter	LINT	Point (analog)	
Alarm	No Alarm		
Tag Name			
Description	64 bit signed integer		
Scan Type	Constant Scan		
Address	Logix_Tag_Name /DT=LINT		
Conversion Code	AUTO		
Start Bit	0		
Length	64		
Signal Reverse	<input type="radio"/> Yes <input checked="" type="radio"/> No		
Scaling Type	No Scale		
Scaling factor 1	0		
Scaling factor 2	0		
Log Data	<input type="radio"/> Yes <input checked="" type="radio"/> No		
Data Log Dead Band	3 %		
Write Action Log	<input checked="" type="radio"/> Yes <input type="radio"/> No		
Read Only	<input type="radio"/> Yes <input checked="" type="radio"/> No		

Figure 2.11

The option “/DT= LINT” specifies the LINT data type for this WebAccess tag.

The LINT data type is the 64 bits signed integer in the PLC.

2.4.10 LINT array data type

The web page of setting for “LINT array” is shown in the figure 2.12

Create New Tag		[Cancel]	[Submit]
Parameter	LINT_A	Point (analog)	
Alarm	No Alarm		
Tag Name			
Description	At most 3 dimensions array		
Scan Type	Constant Scan		
Address	Logix_Tag_Name /DT=LINT /IDX=0_0_0		
Conversion Code	AUTO		
Start Bit	0		
Length	64		
Signal Reverse	<input type="radio"/> Yes	<input checked="" type="radio"/> No	
Scaling Type	No Scale		
Scaling factor 1	0		
Scaling factor 2	0		
Log Data	<input type="radio"/> Yes	<input checked="" type="radio"/> No	
Data Log Dead Band	3	%	
Write Action Log	<input checked="" type="radio"/> Yes	<input type="radio"/> No	
Read Only	<input type="radio"/> Yes	<input checked="" type="radio"/> No	

Figure 2.12

The option “/DT= LINT” specifies the LINT data type for this WebAccess tag.

The option “/IDX” specifies the index of dimension for array. AB logix PLC only support the LINT array data type up to three dimensions. The following examples are option format how to specify the required dimensions:

One dimension: /IDX=0

Two dimensions: /IDX=0_0

Three dimensions: /IDX=0_0_0

The underscore is used as separator between the dimension index.

2.4.11 REAL data type

The web page of setting for “REAL” is shown in the figure 2.13.

Create New Tag		[Cancel]	[Submit]
Parameter	REAL	Point (analog)	
Alarm	No Alarm		
Tag Name			
Description	32 bit signed float		
Scan Type	Constant Scan		
Address	Logix_Tag_Name /DT=REAL		
Conversion Code	AUTO		
Start Bit	0		
Length	32		
Signal Reverse	<input type="radio"/> Yes <input checked="" type="radio"/> No		
Scaling Type	No Scale		
Scaling factor 1	0		
Scaling factor 2	0		
Log Data	<input type="radio"/> Yes <input checked="" type="radio"/> No		
Data Log Dead Band	3	%	
Write Action Log	<input checked="" type="radio"/> Yes <input type="radio"/> No		
Read Only	<input type="radio"/> Yes <input checked="" type="radio"/> No		

Figure 2.13

The option “/DT= REAL” specifies the LINT data type for this WebAccess tag.

The LINT data type is the 32 bits signed float number in the PLC.

2.4.12 REAL array data type

The web page of setting for “REAL array” is shown in the figure 2.14.

Create New Tag		[Cancel]	[Submit]
Parameter	REAL_A	Point (analog)	
Alarm	No Alarm		
Tag Name			
Description	At most 3 dimensions array		
Scan Type	Constant Scan		
Address	Logix_Tag_Name /DT=REAL /IDX=0_0_0		
Conversion Code	AUTO		
Start Bit	0		
Length	32		
Signal Reverse	<input type="radio"/> Yes <input checked="" type="radio"/> No		
Scaling Type	No Scale		
Scaling factor 1	0		
Scaling factor 2	0		
Log Data	<input type="radio"/> Yes <input checked="" type="radio"/> No		
Data Log Dead Band	3	%	
Write Action Log	<input checked="" type="radio"/> Yes <input type="radio"/> No		
Read Only	<input type="radio"/> Yes <input checked="" type="radio"/> No		

Figure 2.14

The option “/DT= REAL” specifies the REAL data type for this WebAccess tag.

The option “/IDX” specifies the index of dimension for array. AB logix PLC only support the REAL array data type up to three dimensions. The following examples are option format how to specify the required dimensions:

One dimension: /IDX=0

Two dimensions: /IDX=0_0

Three dimensions: /IDX=0_0_0

The underscore is used as separator between the dimension index.

2.5 Parameter Configuration

For the convenient of user, the WebAccess provide the default parameter sets as shown in figure 2.15.

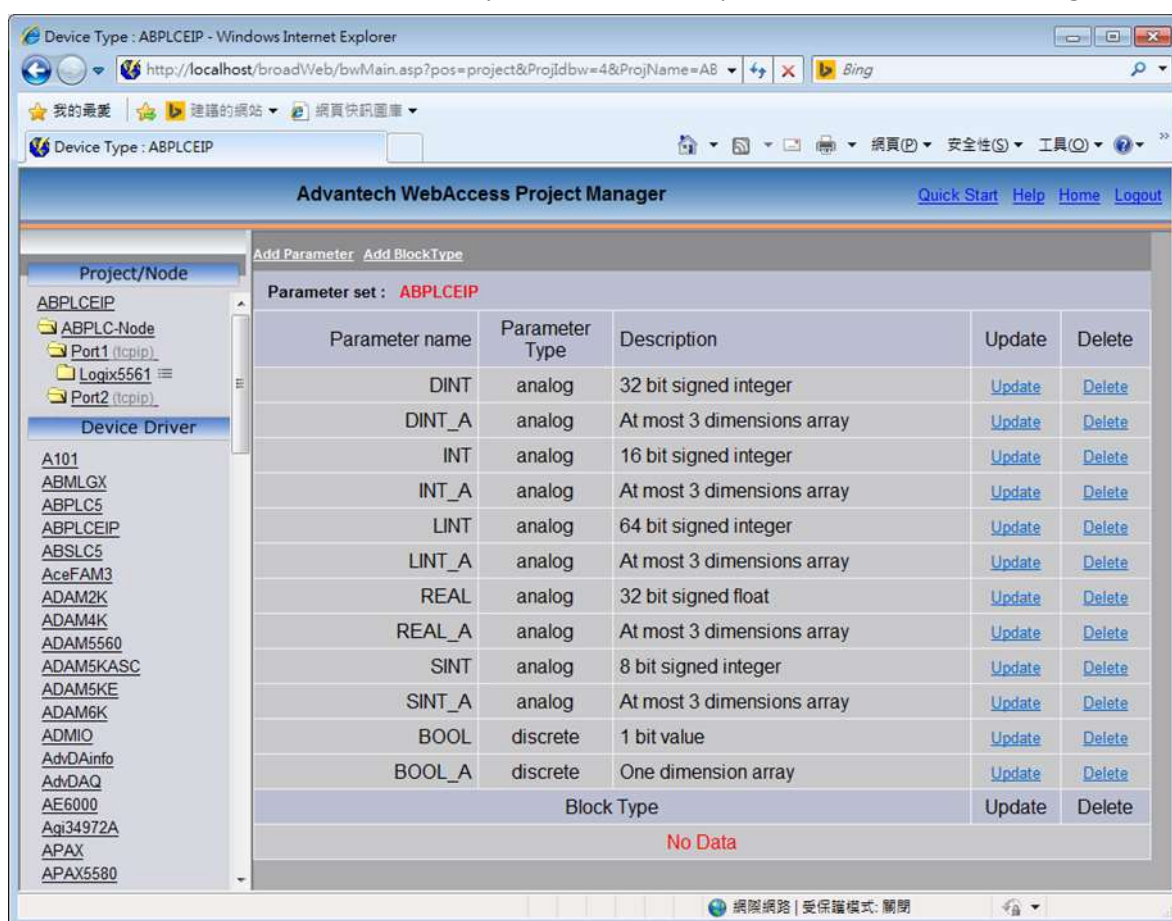


Figure 2.15

User could add or modify these Parameter Sets as the standard procedure provided by the WebAccess.

2.6 Import tag names using CSV file from RSLogix to WebAccess

2.6.1 Export CSV file within RSLogix

In order to quickly create the WebAccess tags using the configuration of the AB logix PLC, the AB LOGIX PLC Ethernet driver supports the import function which could interpret the CSV file exported by RSLogix. It also supports ADAM I/O module (Ethernet IP) address import function. Follow the following steps to export the CSV with RSlogix:

1. Click on the “Tools” on the menu bar as shown in the figure 2.16.

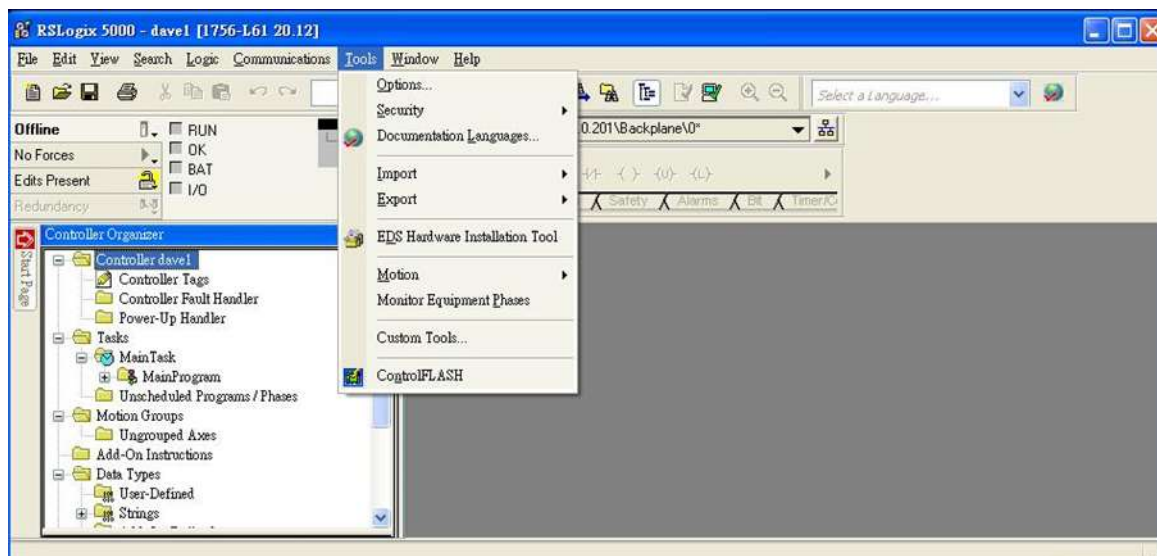


Figure 2.16

2. Then click on the “Export” and select “Tags and Logic Comments ...” command.
3. Then the “Export” dialog will appear on the screen as shown in the figure 2.17.

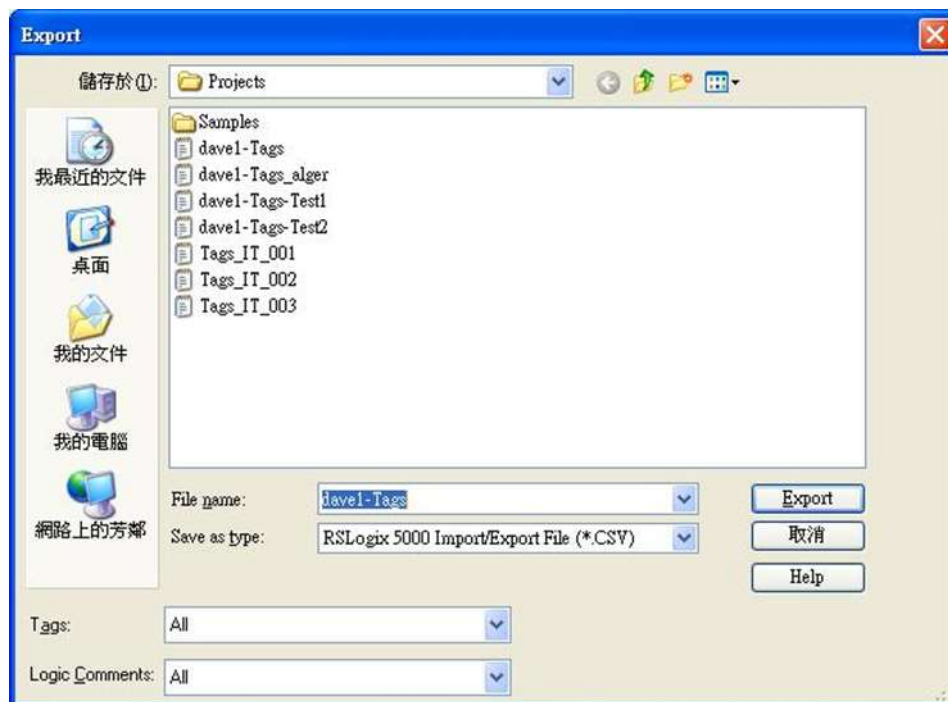


Figure 2.17

4. Select the drop-down list “Save as type” with “Import/Export File (*.CSV)” choice, and key in the file name in the edit control.
5. Click on the “Export” button to save the file.

2.6.2 Import CSV file within WebAccess

To import the CSV file from the RSLogix, follow the following steps with WebAccess:

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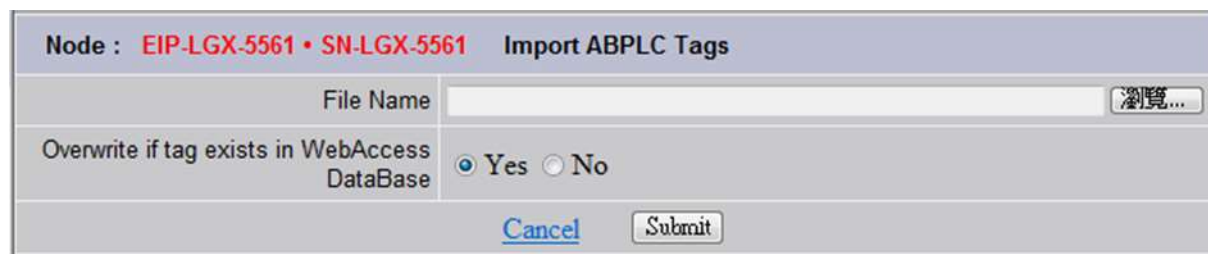
1. Copy the exported CSV file from RSlogix onto the project node of WebAccess.
2. Click on the device of your project, then the configuration of device web page will appear on the screen as shown in the figure 2.18.



Device Property		[Cancel]	[Submit]
Device Name	logix5561		
Description			
Unit Number	0		
Device Type	LGXEIPDEV		
Primary	IP Address	10.0.0.201	
	Port Number	0xAF12	
	CPU SLOT		
Secondary	IP Address		
	Port Number		
	CPU SLOT		

Figure 2.18

3. Click on the “Import ABPLC Tags”, then the dialog of “Import ABPLC Tags” will display as shown in the figure 2.19.



Node : EIP-LGX-5561 • SN-LGX-5561		Import ABPLC Tags
File Name		
Overwrite if tag exists in WebAccess DataBase	<input checked="" type="radio"/> Yes <input type="radio"/> No	
[Cancel]		[Submit]

Figure 2.19

4. Click on the “Browser” button to select the copied CSV file, then click on the submit to start the import procedure.

2.6.3 Tag Name conversion rule

Due to the limitation of WebAccess tag name, the AB LOGIX PLC Ethernet driver will automatically do the name conversion when the tag name from RSLogix is large than the maximum length supported by WebAccess.

The conversion rule is as following:

1. If the tag name of RSLogix is for the array data type, WebAccess will automatically add the postfix to specify the element index within the array, for example 0_0_0 for the first element of 3 dimensions array data type.

2. If the total length of tag name of RSLogix plus the length of postfix for array data type is larger than the maximum length, the import function of WebAccess will automatically select the propriety prefix from the RSLogix tag name plus the sequential identity string, for example "-0000", plus the postfix for array data type to form the new tag name for WebAccess.

3. Some examples are bellow:

The tag name "A012345-0000_0_0_0" is for the original tag name of

"A0123456789_ABCDEFGHIJKLMNOPQRSTUVWXYZ_0 /DT=DINT /IDX=0_0_0".

The tag name "aaaaa3_abcdefgh-0002" is for the original tag name of

"aaaaa3_abcdefghijklmnopqrstuvwxy0123456 /DT=SINT".

3. Error Code

8001 : port or unit error

8002 : Receive data error

8003 : Address error

8xxx : Server returned error code