



Configuring Data Exchange in iX Developer

KI00323 2013-04

1 Function and area of use

This document explains how an iX Developer application can be configured to facilitate data exchange between different controllers (PLCs).

2 About this Start-Up document

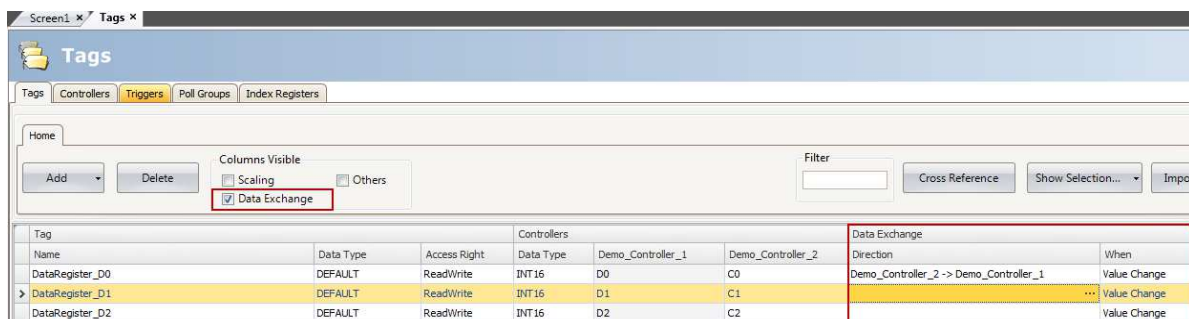
This Start-Up document should not be considered as a complete manual. It is an aid to be able to start up a normal application quickly and easily. For further information we refer to the manual for iX Developer 2.0. This document and other Start-Up documents can be downloaded from www.beijerelectronics.com.

Please use the address manuals@beijerelectronics.com for feedback on our Start-Up documents.

3 Configuration

To be able to configure data exchange, at least two controllers must be configured in the project. It is currently not possible to configure data exchange between stations in a single controller.

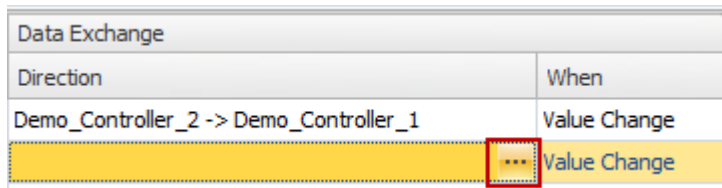
Data exchange is configured in the **Tags** editor:



The **Data Exchange** checkbox under **Columns Visible** must be ticked to be able to see the configuration. (it is filtered by default).

Unchecking the checkbox will not remove your settings, it is just a visibility filter.

The three dotted button to the right in each field in the **Direction** column is where you configure in which direction you wish the data exchange to occur:



In the following screenshot, data exchange is configured to move the data for the selected tag from the device configured under the Demo_Controller_2 to the device configured under Demo_Controller_1.



In this case, it would mean that the value from C1 in Demo_Controller_2 would be copied to D1 in Demo_Controller_1:

Tag				Controllers		Data Exchange	
Name	Data Type	Access Right	Data Type	Demo_Controller_1	Demo_Controller_2	Direction	When
DataRegister_D0	INT16	ReadWrite	D0		C0	Demo_Controller_2 -> Demo_Controller_1	Value Change
DataRegister_D1	DEFUALT	ReadWrite	D1		C1	Demo_Controller_2 -> Demo_Controller_1	Value Change
DataRegister_D2	DEFUALT	ReadWrite	D2		C2		Value Change

Note:

The direction setting must be configured separately for each tag.

This configuration is included when you perform a Tags list export, so the best way to do this configuration for a large amount of tags is to export the tags list to an excel sheet, make the changes in Excel and save, then import the modified excel file using the **Merge option**.

The fields you will need to change are the **AccessRight_x** and **AccessRight_y**

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
1	// Name	Data Type	Size	Array Size	Access Right	Offset	Gain	Global Data Ty	Poll Group	Index Regis	Log To Audit	Always Acti	Non Volatile	Initial Value	Address_1	Access Right_1	Address_2	Access Right_2
2	DataRegister_D0	INT16	1	1	ReadWrite	0	1	DEFAULT	PollGroup1	0	FALSE	FALSE	FALSE		D0	Write	C0	Read
3	DataRegister_D1	INT16	1	1	ReadWrite	0	1	DEFAULT	PollGroup1	0	FALSE	FALSE	FALSE		D1	Write	C1	Read
4	DataRegister_D2	INT16	1	1	ReadWrite	0	1	DEFAULT	PollGroup1	0	FALSE	FALSE	FALSE		D2	Write	C2	Read
5	DataRegister_D3	INT16	1	1	ReadWrite	0	1	DEFAULT	PollGroup1	0	FALSE	FALSE	FALSE		D3	Write	C3	Read

The number corresponds to the different controllers. **Read** corresponds to **From** and **Write** corresponds to **To** in the direction configuration popup.

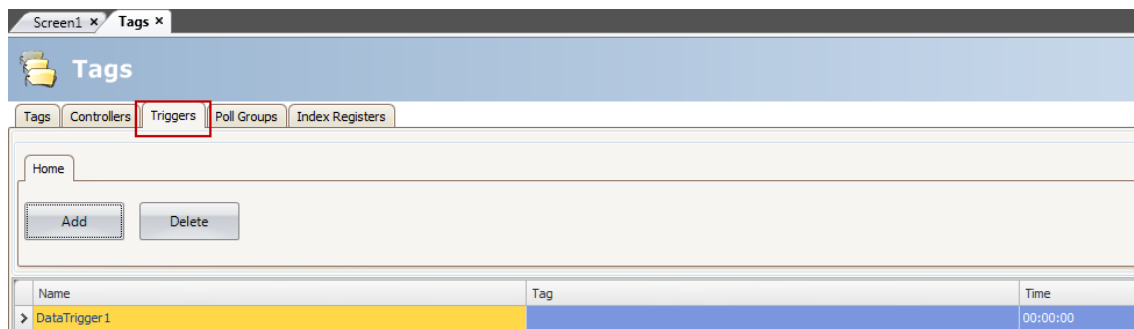
4 Triggers

Due to the implementation of Data Exchange, the default setting in the **When** column is Value Change. This means that every time the tag value changes, it will trigger a data exchange which in turn will trigger a write to the controller(s).

If a lot of tags have this configuration, it can potentially generate a large amounts of telegrams and will impact the performance of the project in a bad way.

A better configuration is to change the **When** column setting to **Trigger** instead.

Triggers are configured in the **Tags** section as well:



A trigger can be either **cyclic (time)** or activated on a **tag's value change event**.

If a cyclic trigger is chosen, the fastest (and most intense) data exchange allowed is 1 second.

If a tag is connected to the trigger, the trigger will activate on the tags value change event.

If this is used, it is possible to achieve data exchange faster than 1 second, but it will greatly reduce the performance of the project depending on which hardware platform is used.

The benefit of using triggers, is that the driver will generate more efficient telegrams and not affect the performance as much as the **Value Change** alternative does.

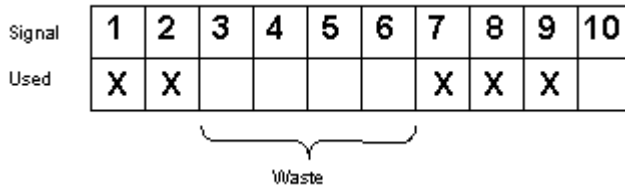
5 Group controller devices consecutively

The devices from the controller are read most rapidly if all devices are consecutive. If the devices are spread out (e.g. 4, 17, 45, etc.) the updating is slower.

Packaging of signals

When the devices are transferred to the controller, all devices are not transferred simultaneously. Instead they are divided into packages with a number of devices in each package. To decrease the number of packages that have to be transferred and make the communication faster this number has to be considered. The number of devices in each package depends on the used driver.

To make the communication as fast as possible the number of packages has to be minimized. Consecutive devices require a minimum of used packages but it is not always possible to have consecutive signals. In such cases the so-called waste between two signals has to be considered. The waste is the maximum distance between two signals you can have and still keep them in the same package. The waste depends on the used driver.

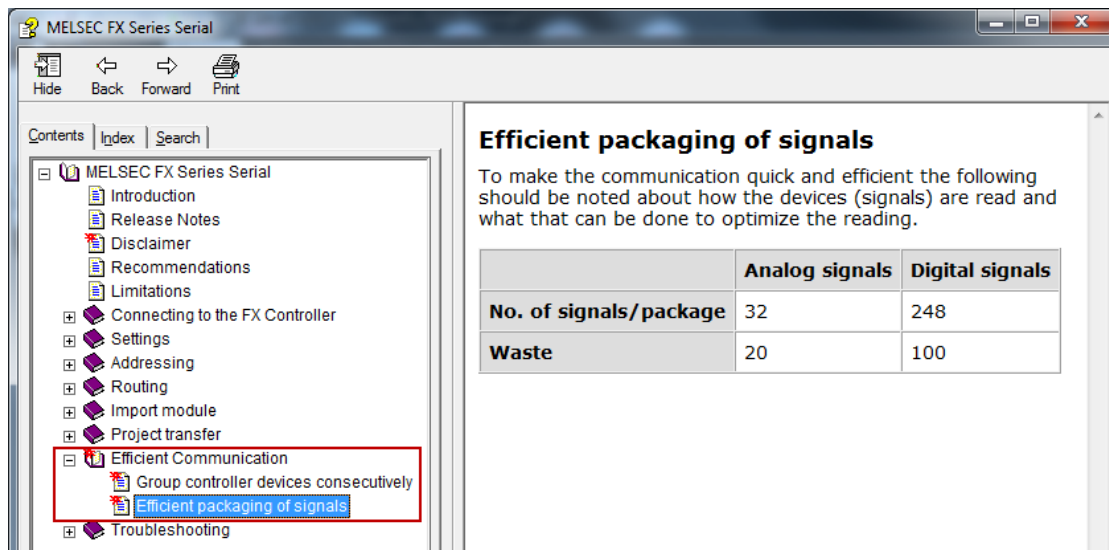


Note: ASCII Strings and arrays are packed into one package for each object.

The number of devices that fit into a communication telegram is dependent on which communication driver is used.

The maximum number of devices and the largest allowed “waste” for each driver can be found in respective drivers help file.

Example with FX Series Serial driver:



This driver allows a maximum of 32 analog devices **or** 248 digital devices in each telegram.

The maximum allowed waste (space between 2 signals before they are separated into different telegrams) is 20.

To maximize the performance of your data exchange, you should try to only use consecutive devices and you should use a data trigger.