SOFTWARE INTEGRATION GUIDE

> FBC9080
DAD / DRIVER

DATALOGIC

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FBC9080-Nx00 DAD Driver Integration Guide

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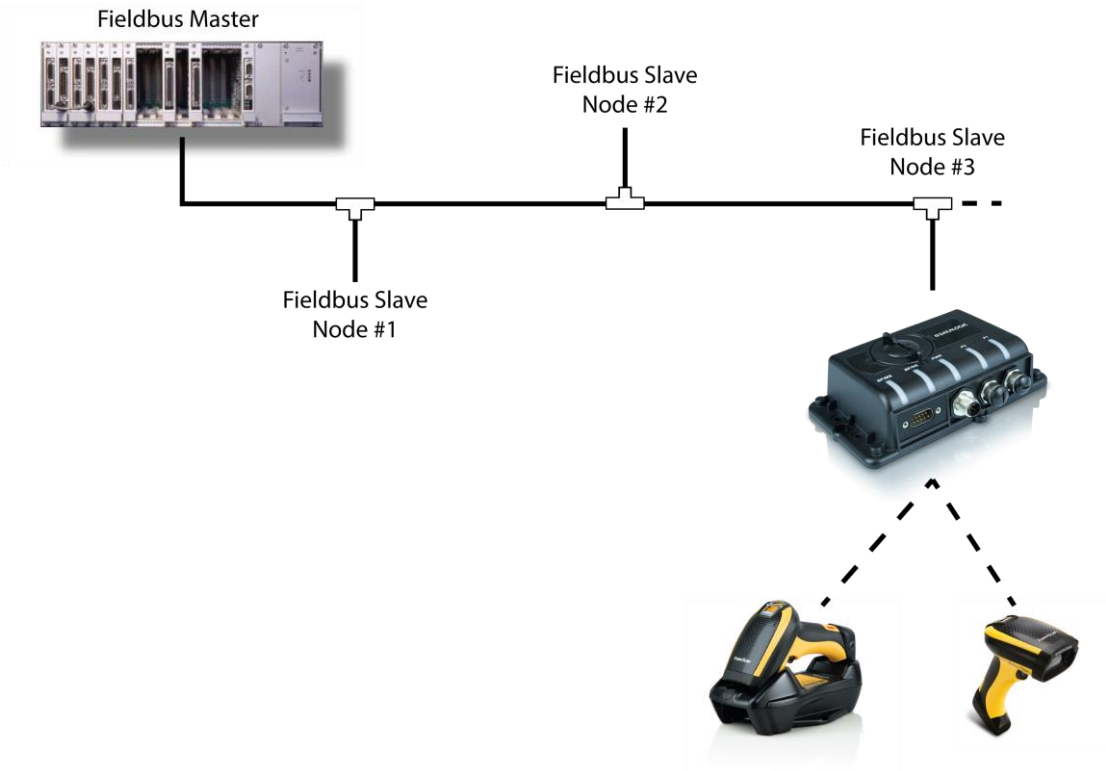
ABOUT THIS GUIDE

To increase communication reliability or to manage large labels, Datalogic Flow Control Mode can be selected on the FBC9080-Nx00. In this case, the corresponding driver must be implemented on the Fieldbus Master (PLC) side.
This document is intended to provide all the necessary information to implement Flow Control on PLC side.

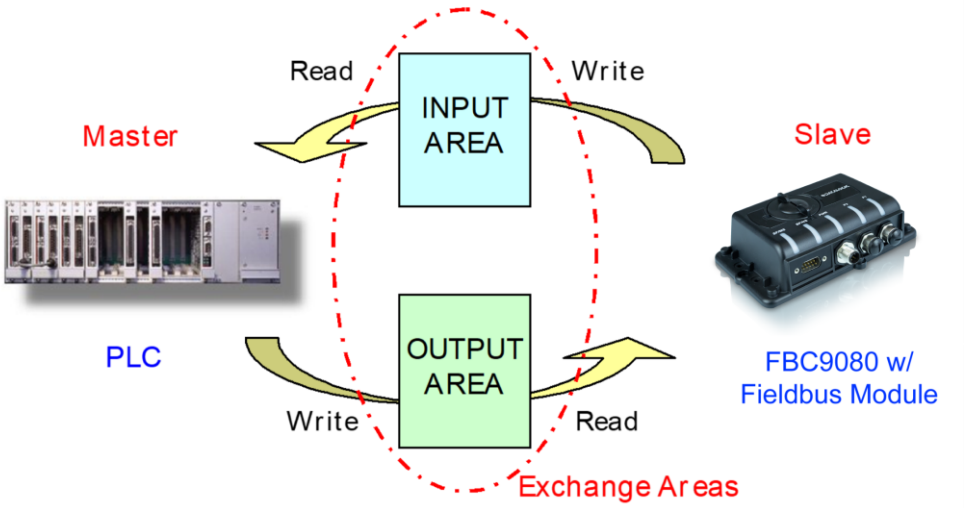
1 FIELDBUS COMMUNICATION

1.1 DATA EXCHANGE

The Fieldbus ***Master*** is usually a PLC. Sometimes it could be a PC-based device as well. FBC9080 is always a ***Slave*** in the Fieldbus network.



Basically, two shared memory areas (Exchange Areas) exist between SLAVE and MASTER so both devices provide information to each other. Exchange areas are physically placed in the Fieldbus Module inside the SLAVE.



Input and output areas always refer to the Master: this means that the slave writes to the Input buffer and the PLC writes to the Output buffer.
Dimensions of exchange areas can be set to different values by the PLC through the specific Fieldbus Configuration file (i.e. GSD file for Profibus) or by the slave's configuration program.

1.2 DATALOGIC FLOW CONTROL MODE (FCM)

The Datalogic Flow Control Mode is a powerful way to manage and optimize the communication with the Fieldbus Master. By enabling the FCM a few bytes of the exchange areas are reserved for driver operations and the rest are used by the application layer.

The reserved bytes are used to implement many different features, such as:

- Flow-control and corresponding buffering in both directions
- Fragmentation and reassembling of data longer than the exchange area sizes
- Synchronization of flow control numbers
- Service Access Point oriented communication
- Length information

NOTE

If the Datalogic Flow Control is disabled, all the bytes of the exchange areas are used by the application layer. The input area is updated whenever a new reading event has to be transferred to the Master station.

- **In this situation, the Master must read the input area before it changes due to a new message, typically new barcode occurrence.**
- **Moreover, two occurrences of the same barcode cannot be understood, since the input area does not change.**
- **In addition, if application data is longer than input area sizes, data is automatically truncated.**

FCM can be selected by means of the Data Flow Control parameter through the Rotary switch.

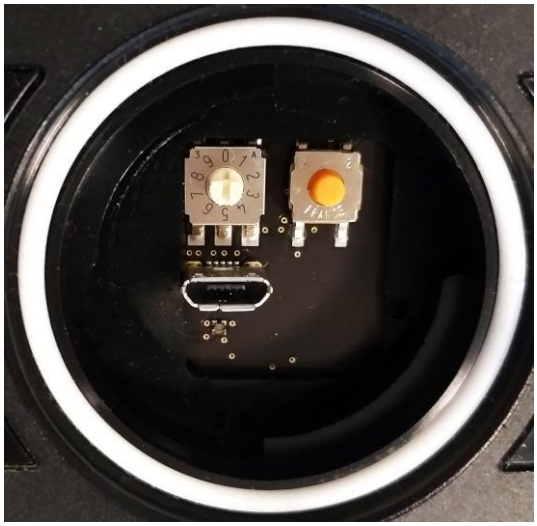


Figure 1 - Rotary switch

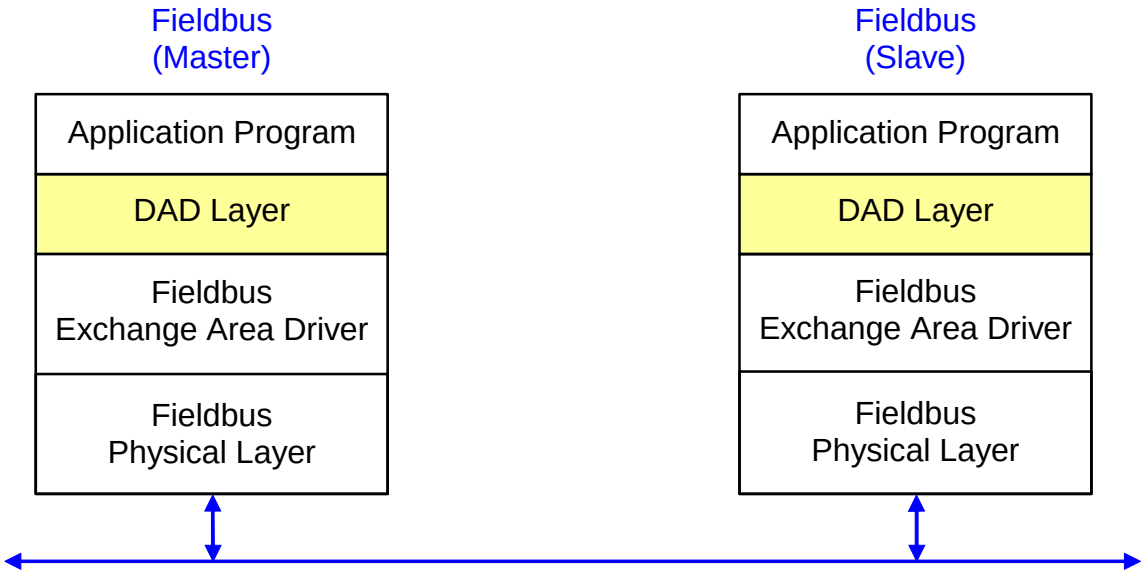
Three options are available:

- **0** → DAD disabled (factory default)
- **1** → DAD enabled
- **2** → DAD consistency enabled

1.3 FLOW CONTROL DRIVERS

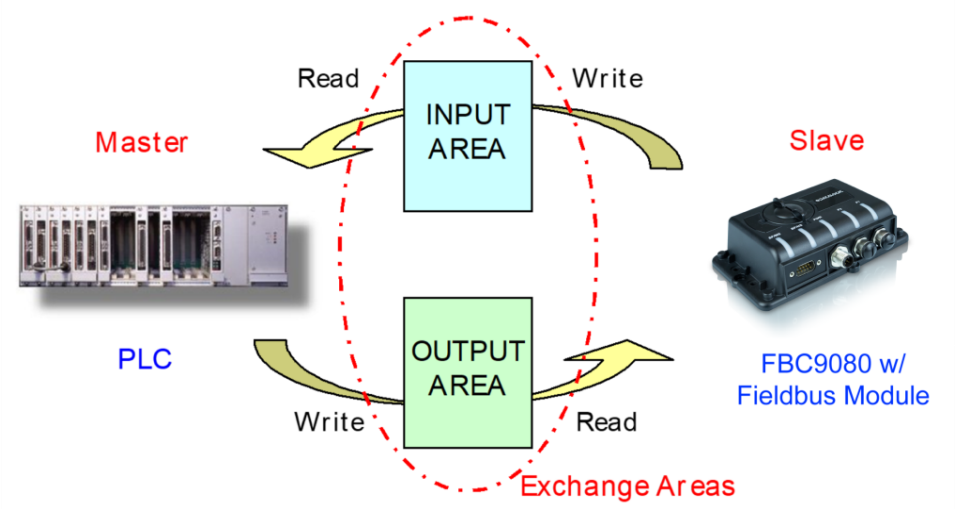
The Flow Control driver is a layer that is built upon the intrinsic data exchange mechanism. Such a layer is required because the intrinsic data exchange mechanism is not message oriented.

In the following figure the complete Stack is represented:



As described previously, it can be selected separately on the reader by means of the reader configuration tool. Obviously, the corresponding driver must be implemented on the Fieldbus Master (PLC) side.

2 FCM WITH DAD DRIVER



From now the Input Area will be referred to as a buffer made up of InputAreaSize bytes:

IN[0]	IN[1]	IN[2]	…	IN[InputAreaSize - 1]

and the Output Area as a buffer made up of OutputAreaSize bytes:

OUT[0]	OUT[1]	OUT[2]	…	OUT[OutputAreaSize - 1]

Only the first **three** bytes are used by the DAD Driver layer in both buffers:

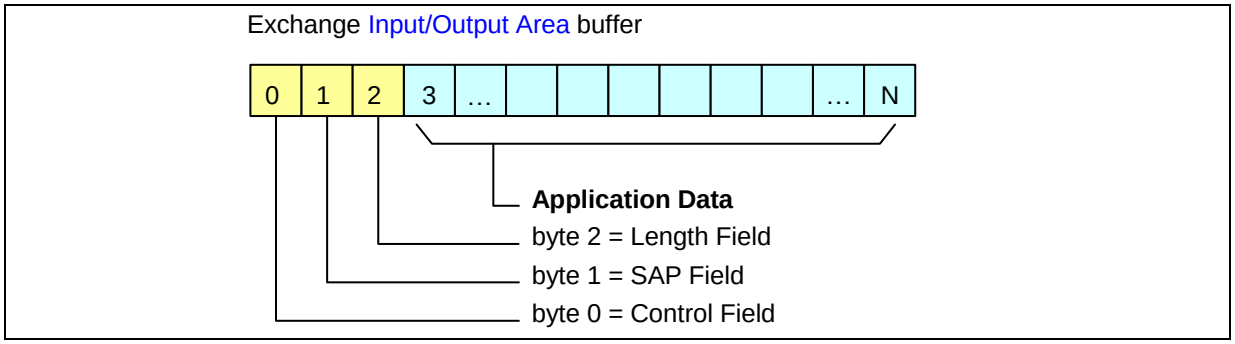
Control Field (byte 0) — used to issue and control the driver primitives such as flow-control, fragmentation and resynchronization.

Service Access Point Field (byte 1) — used to distinguish among different services and to provide future expandability. (Since this SAP definition is introduced by the DAD Driver, it must not be confused with the SAP that is defined by the international standard).

Length Field (byte 2) — contains the number of bytes used by the application layer: *(see also note below)*
Length Field ≤ (InputAreaSize – 3) for the Input Area
Length Field ≤ (OutputAreaSize – 3) for the Output Area.

NOTE

If Data Consistency is enabled, then the last byte is used for packet integrity and therefore the bytes available to the application are reduced by 1. See chapter 3 of this manual for details.



The Application Data buffer holds useful information, typically the barcode messages, processed by the application program. IN[3] contains the first significant byte of the Application Data buffer (the same first byte you would see if the reader transmitted the barcode buffer onto a serial port instead of the Fieldbus interface).

The structure of the application buffer and its length strictly depend on the selected data format on the reader. Barcode messages longer than (InputAreaSize – 3) will be split in pieces through an automatic fragmentation process (see details in the "Fragmentation and Reassembling" paragraph).

2.1 CONTROL FIELD

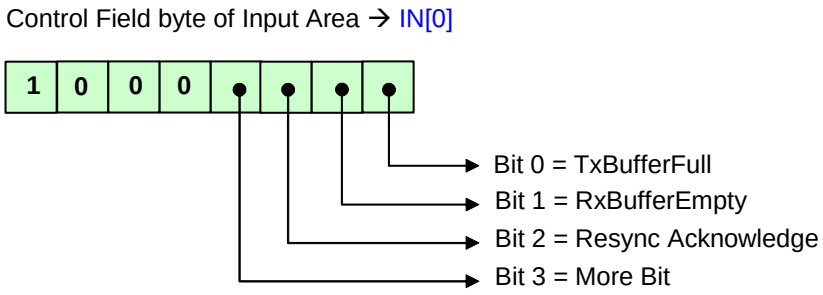
This is the core of the flow-controlled communication.

The Input Area structure reserves bit 0 and bit 1 of IN[0] for handshake purposes while the Output Area structure, which is symmetrical, reserves bit 0 and 1 of OUT[0].

At any time, the Master station can make a resynchronization request by means of bit 2 of the Output Area. This process, which resets the synchronization numbers (bit 0 and bit 1 of both Input and Output areas), has to be acknowledged by the Slave on bit 2 of the Input Area.

Bit 3 is used to control a fragmentation sequence in both directions.

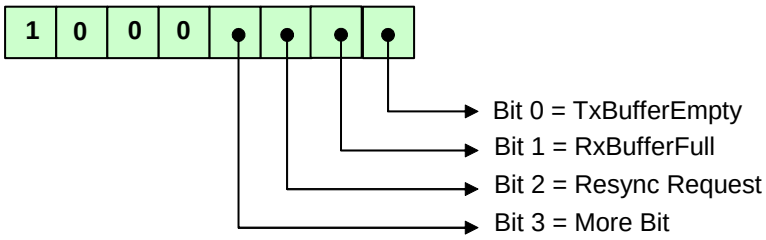
Bit 7 is always set to 1.



IN[0].bit0	**TxBufferFull** toggles when Slave has made available new Input Area data
IN[0].bit1	**RxBufferEmpty** toggles when Output Area data has been read by Slave
IN[0].bit2	**Resync Acknowledge** set to 1 as an acknowledge to a resync request. With this bit, the master can detect a slave is on line.
IN[0].bit3	**More Bit** is 1 when this is not the last piece of a fragmentation sequence while it is 0 when this is the last piece

IN[0].bit4,5,6,7	Set to **0**, **0**, **0**, **1** when DAD messaging protocol is used

Control Field byte of Output Area → OUT[0]



OUT[0].bit0	**TxBufferEmpty** must toggle when Input Area data has been read by Master
OUT[0].bit1	**RxBufferFull** must toggle when Master makes available new Output Area data
OUT[0].bit2	**Resync Request** set to 1 for one second to resynchronize the slave. After resynchronization, all 4 handshake bits are set to 0
OUT[0].bit3	**More Bit** must be 1 when this is not the last piece of a fragmentation sequence and it must be 0 when this is the last
OUT[0].bit4,5,6,7	Set to **0**, **0**, **0**, **1** when DAD messaging protocol is used

2.2 SAP FIELD

SAP (Service Access Point) is an identifier that is used to implement multiple services sharing the same communication channel between two remote stations.
The following values have been defined:

- SAP = 0 Used to transfer information messages between the reader and the PLC
- SAP = 255 Reserved for driver services (see details in paragraph 2.8)

All other SAP values are free, and they could be used by dedicated application programs after agreement between the application programs themselves.

2.3 LENGTH FIELD

The Application layer uses all or a part of the remaining bytes of the Exchange Area buffers that are not used by the DAD Driver. The Length Field is introduced to keep the information of how many bytes are really used by the Application Layer.

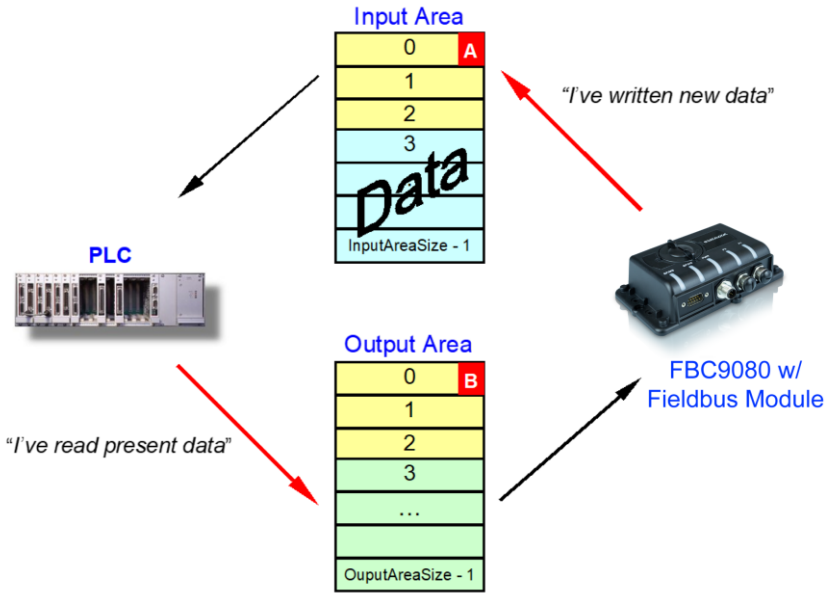
A fragment that is not the last one of a fragmentation sequence must fill this field with [InputAreaSize – 3] (or [OutputAreaSize - 3]), depending on whether it is an Input or an Output fragment. Otherwise this field gets a value that is less than or equal to [InputAreaSize – 3].

2.4 DATA TRANSMISSION FROM THE READER TO PLC

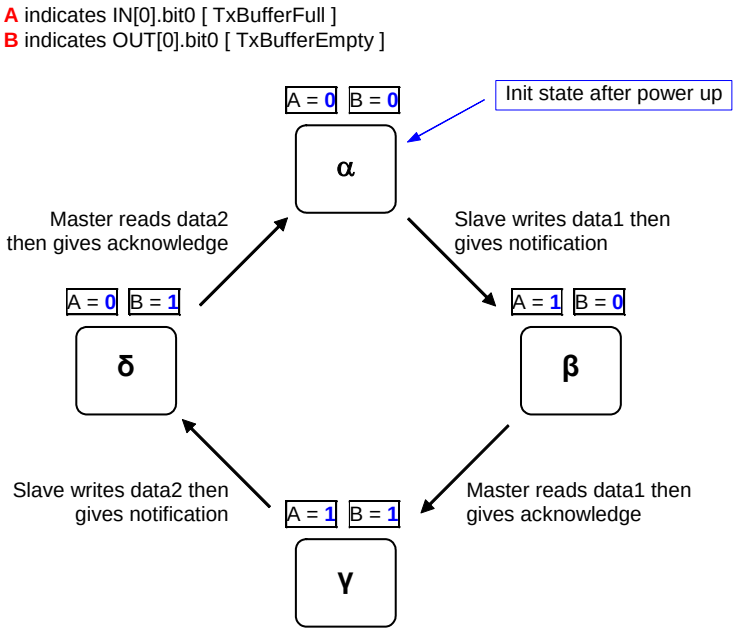
This paragraph describes how it is possible to exchange messages with flow control. The communication mechanism is simple:

- **IN[0].bit0** [**A**] is used by the reader to notify that "*Slave has written a new data so Master can read it*"
- **OUT[0].bit0** [**B**] must be used by PLC to notify that "*Master has read last data so Slave can send next message*"

This happens each time bit A (or B) changes its state (toggles). Bit level doesn't matter, only the transition has to be considered.



The following state machine shows data transmission from Slave to Master. Please note that each cycle transfers two data messages.



Let's analyze a typical data exchange based on the following settings:

- Flow Control = **DAD Driver**
- Input Area Size = **16**
- Output Area Size = **8**

1. After power-on, Input and Output areas are generally filled by zero. According to DAD driver implementation, Input area has Control Field = 80_{Hex} and SAP = 00_{Hex}.

Input Area	**80**Hex **00**Hex 00Hex 00Hex 00Hex 00Hex 00Hex 00Hex 00Hex 00Hex 00Hex 00Hex 00Hex 00Hex 00Hex 00Hex
Output Area	00Hex 00Hex 00Hex 00Hex 00Hex 00Hex 00Hex 00Hex

2. PLC must also set the Control Field of Output area properly, as long as DAD messaging protocol is used.

Input Area	80Hex 00Hex 00Hex 00Hex 00Hex 00Hex 00Hex 00Hex 00Hex 00Hex 00Hex 00Hex 00Hex 00Hex 00Hex 00Hex
Output Area	**80**Hex **00**Hex 00Hex 00Hex 00Hex 00Hex 00Hex 00Hex

3. The reader reads a barcode "01234567". Let's assume standard data formatting with <CR> as terminator. The reader toggles bit **A**.

Input Area	**81**Hex 00Hex **09**Hex **30**Hex **31**Hex **32**Hex **33**Hex **34**Hex **35**Hex **36**Hex **37**Hex **0D**Hex 00Hex 00Hex 00Hex 00Hex
Output Area	80Hex 00Hex 00Hex 00Hex 00Hex 00Hex 00Hex 00Hex

4. PLC detects transition of bit **A** so now it can read incoming data (it copies 9 bytes in its memory from IN[3] on) then toggles bit **B** as acknowledge.
   ***Note**: before the acknowledge, all further barcodes read by the reader are buffered.*

Input Area	81Hex 00Hex 09Hex 30Hex 31Hex 32Hex 33Hex 34Hex 35Hex 36Hex 37Hex 0DHex 00Hex 00Hex 00Hex 00Hex
Output Area	**81**Hex 00Hex 00Hex 00Hex 00Hex 00Hex 00Hex 00Hex

5. The reader reads a barcode "10DL" and toggles bit **A**.

Input Area	**80**Hex 00Hex 5Hex 31Hex 30Hex 44Hex 4CHex 0DHex 00Hex 00Hex 00Hex 00Hex 00Hex 00Hex 00Hex
Output Area	81Hex 00Hex 00Hex 00Hex 00Hex 00Hex 00Hex 00Hex

6. PLC reads new data message (it copies 7 bytes in its memory from IN[3] on) then toggles bit **B** as acknowledge.

Input Area	80Hex 00Hex 5Hex 31Hex 30Hex 44Hex 4CHex 0DHex 00Hex 00Hex 00Hex 00Hex 00Hex 00Hex 00Hex
Output Area	**80**Hex 00Hex 00Hex 00Hex 00Hex 00Hex 00Hex 00Hex

7. The reader reads ABC and toggles bit **A**.

Input Area	**81**Hex 00Hex 04Hex 41Hex 42Hex 43Hex 0DHex 00Hex 00Hex 00Hex 00Hex 00Hex 00Hex 00Hex 00Hex 00Hex
Output Area	80Hex 00Hex 00Hex 00Hex 00Hex 00Hex 00Hex 00Hex

8. PLC reads new data message (it copies 4 bytes in its memory from IN[3] on) then toggles bit **B** as acknowledge.

Input Area	81Hex 00Hex 04Hex 41Hex 42Hex 43Hex 0DHex 00Hex 00Hex 00Hex 00Hex 00Hex 00Hex 00Hex 00Hex 00Hex
Output Area	**81**Hex 00Hex 00Hex 00Hex 00Hex 00Hex 00Hex 00Hex

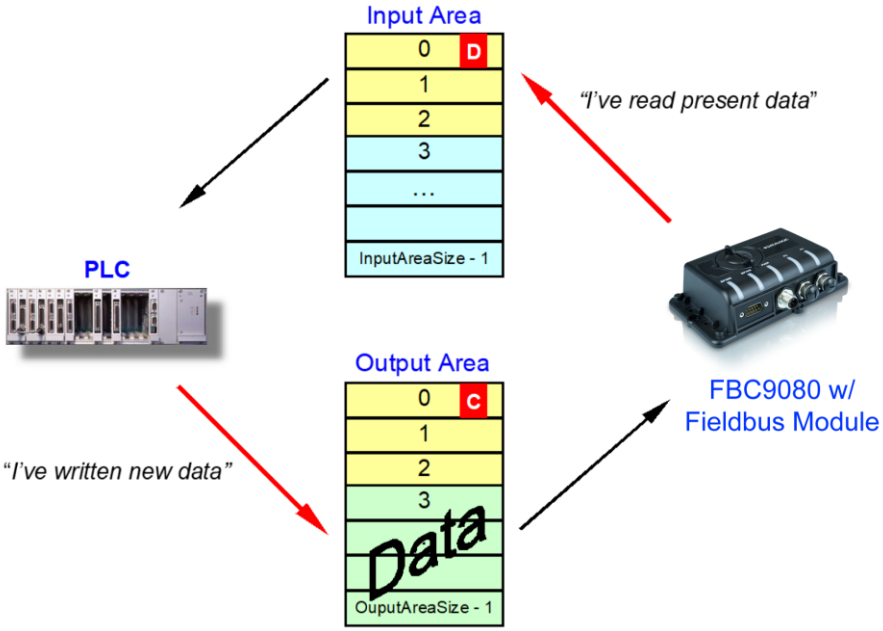
9. Data exchange continues…

2.5 DATA TRANSMISSION FROM PLC TO THE READER

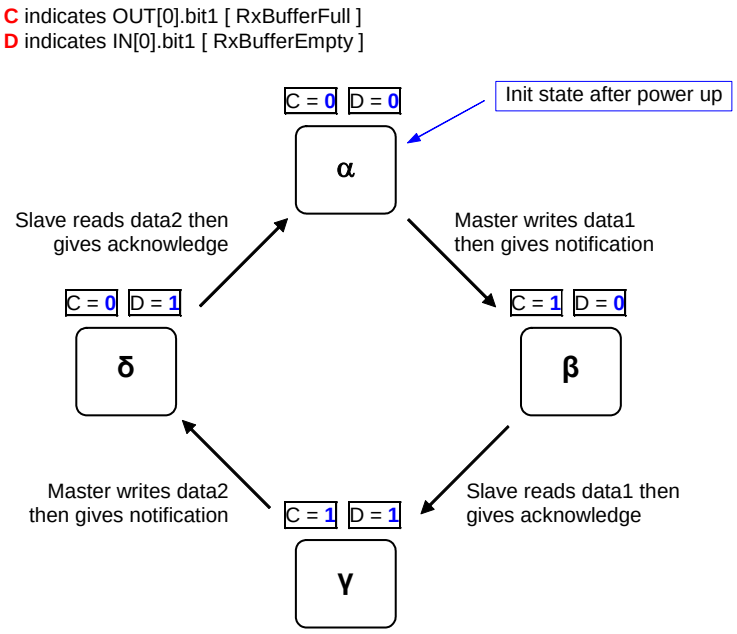
Analogous to the previous paragraph, flow control works even when data are coming from the Master towards the Slave. The communication mechanism is based on the same concepts:

- **OUT[0].bit1** [C] must be used by PLC to notify that "*Master has written new data so Slave can read it*"
- **IN[0].bit1** [D] is used by the reader to notify that "*Slave has read data so Master can send next message*"

This happens each time bit C (or D) changes its state (toggles). Bit level doesn't matter, only the transition has to be considered.



The following state machine shows data transmission from Master to Slave. Please note that each cycle transfers two data messages.

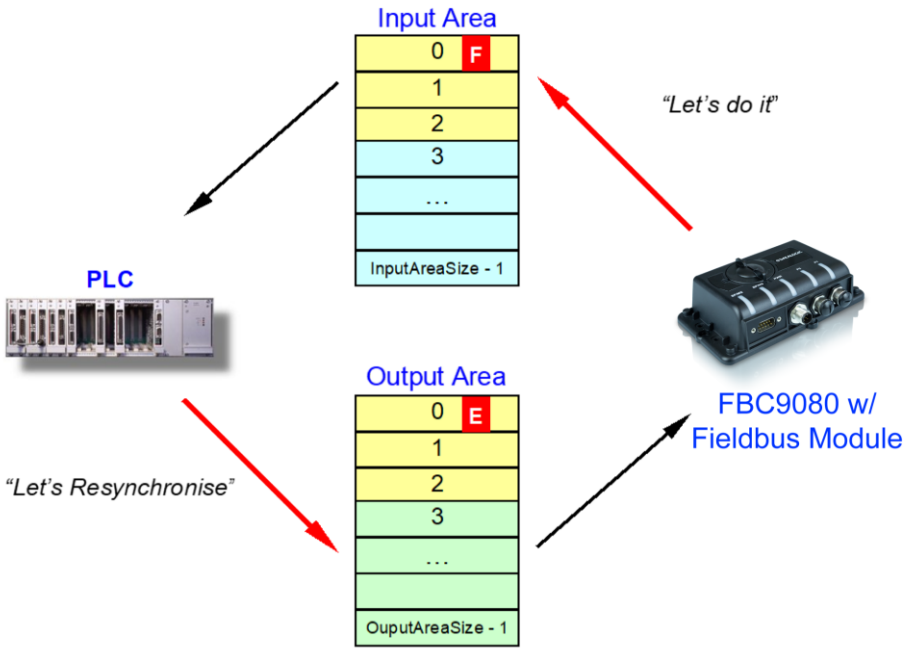


2.6 RESYNCHRONIZATION

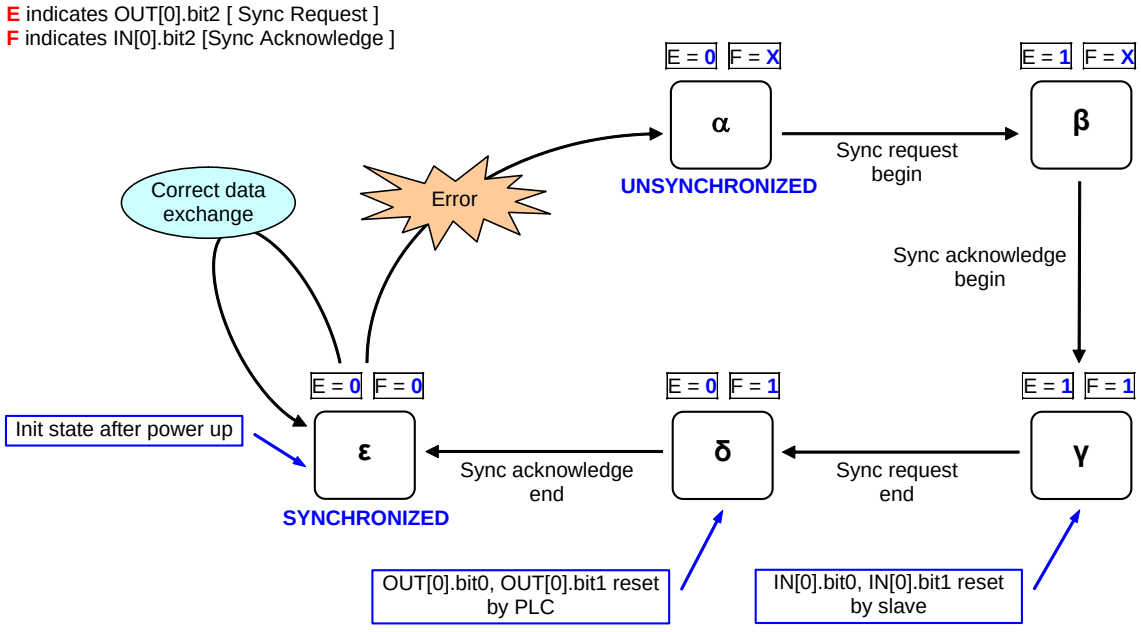
The resynchronization process restarts the messaging protocol from a predefined state.
It may be used either at the Master startup to detect if the Slave is on line or during normal operations in case of errors requiring a protocol reset procedure.

The process is based on bit two:

- **OUT[0].bit2** [E] must be used by PLC to request the Resynchronization
- **IN[0].bit2** [F] is used by the reader to acknowledge the request



The following state machine shows the resynchronization cycle, requested by the PLC and performed together with the reader:



Let's analyze the resynchronization process, starting from the previous data exchange discussed in "Data Transmission from the Reader to PLC"…

Input Area	81Hex 00Hex 04Hex 41Hex 42Hex 43Hex 0DHex 00Hex 00Hex 00Hex 00Hex 00Hex 00Hex 00Hex 00Hex 00Hex
Output Area	81Hex 00Hex 00Hex 00Hex 00Hex 00Hex 00Hex 00Hex

1. PLC requests resynchronization by setting bit E = 1.

Input Area	81Hex 00Hex 04Hex 41Hex 42Hex 43Hex 0DHex 00Hex 00Hex 00Hex 00Hex 00Hex 00Hex 00Hex 00Hex 00Hex
Output Area	**85**Hex 00Hex 00Hex 00Hex 00Hex 00Hex 00Hex 00Hex

2. The reader detects the request and so it resets **IN[0].bit0** and **IN[0].bit1**. Then it gives an acknowledge back to the PLC by means of bit F.

Input Area	**84**Hex 00Hex 04Hex 41Hex 42Hex 43Hex 0DHex 00Hex 00Hex 00Hex 00Hex 00Hex 00Hex 00Hex 00Hex 00Hex
Output Area	85Hex 00Hex 00Hex 00Hex 00Hex 00Hex 00Hex 00Hex

3. PLC has to reset **OUT[0].bit0** and **OUT[0].bit1** before completing its request with bit E = 0.

Input Area	84Hex 00Hex 04Hex 41Hex 42Hex 43Hex 0DHex 00Hex 00Hex 00Hex 00Hex 00Hex 00Hex 00Hex 00Hex 00Hex
Output Area	**80**Hex 00Hex 00Hex 00Hex 00Hex 00Hex 00Hex 00Hex

4. The reader completes the acknowledge process by setting bit F = 0.

Input Area	**80**Hex 00Hex 04Hex 41Hex 42Hex 43Hex 0DHex 00Hex 00Hex 00Hex 00Hex 00Hex 00Hex 00Hex 00Hex 00Hex
Output Area	80Hex 00Hex 00Hex 00Hex 00Hex 00Hex 00Hex 00Hex

5. Now Flow Control has been returned to a predefined state. All data exchange bits in the Control Field are surely zero and data transmission can proceed safely.

2.7 FRAGMENTATION AND REASSEMBLING

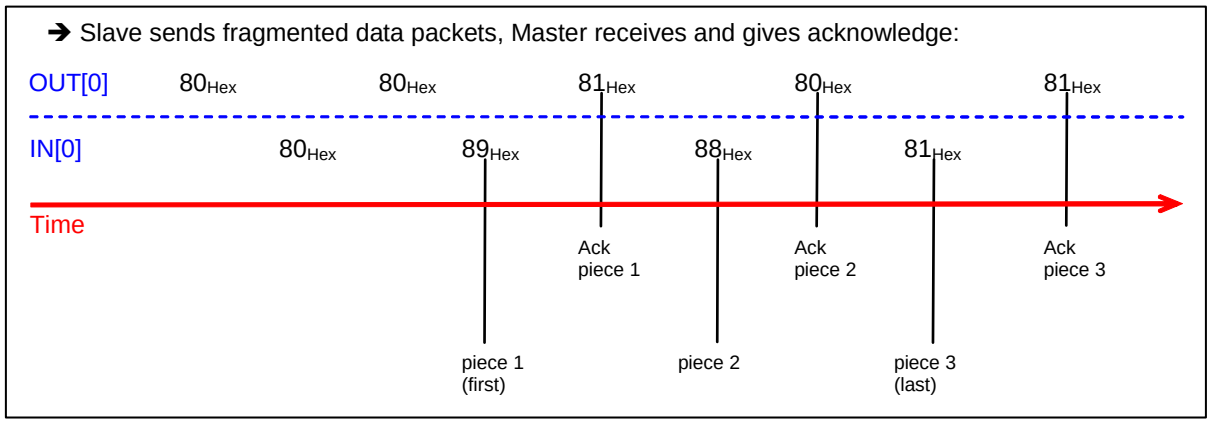
The fragmentation process is activated whenever Application Data cannot be contained in the related exchange area. Basically, long messages are split into pieces which are transmitted separately. Reassembling allows the reconstruction of the whole messages.
The reader already implements these functions in the DAD layer, while the PLC needs a congruent management.

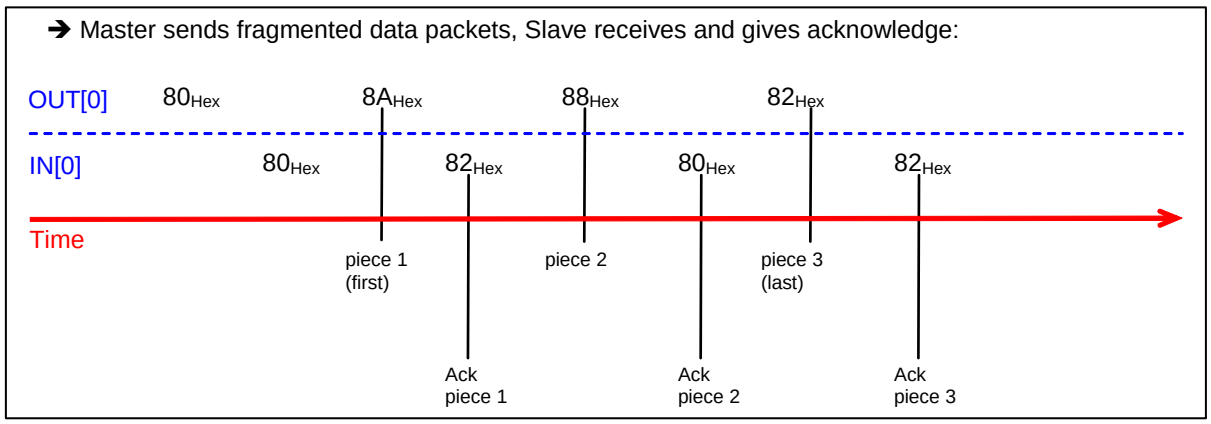
The fragmentation is based on the **More Bit** (bit 3) in the Control Field byte.
More Bit = 0 indicates that all the information is included within the current message. When Application Data is longer than (exchange area size – 3), the first partial message is transmitted having More Bit = 1. Following fragments keep More Bit = 1 and only the last piece will have More Bit = 0 again. Thanks to this mechanism, the receiver station may detect the last piece and so reassemble the entire information.

Some notes:

- Intermediate fragments have Length Field = (exchange area size – 3)
- Last fragment has Length Field ≤ (exchange area size – 3)
- Bit0 and Bit1 of both Input and Output areas are independently managed for any fragment

The following figures show how the Control Byte changes according to the fragmentation process. Both data flow directions are considered.





Let's analyze a fragmented data exchange based on the following settings:

- Flow Control = **DAD Driver**
- Input Area Size = **16**
- Output Area Size = **8**

1. After power-on, Input and Output areas are generally filled by zero. According to DAD driver implementation, Input area has Control Field = 80_{Hex} and SAP = 00_{Hex}.

Input Area	**80**Hex **00**Hex 00Hex 00Hex 00Hex 00Hex 00Hex 00Hex 00Hex 00Hex 00Hex 00Hex 00Hex 00Hex 00Hex 00Hex
Output Area	00Hex 00Hex 00Hex 00Hex 00Hex 00Hex 00Hex 00Hex

2. PLC must also set the Control Field of Output area properly, as long as DAD messaging protocol is used.

Input Area	80Hex 00Hex 00Hex 00Hex 00Hex 00Hex 00Hex 00Hex 00Hex 00Hex 00Hex 00Hex 00Hex 00Hex 00Hex 00Hex
Output Area	**80**Hex **00**Hex 00Hex 00Hex 00Hex 00Hex 00Hex 00Hex

3. The reader reads a barcode with content "0*1234567890abcde1234567890abcde*". Let's assume standard data <CR> as terminator. In this condition since the whole message cannot be included in Input Area, the reader transmits first fragment 0*1234567890ab*" only (setting More Bit = 1) then it toggles bit **A**.

Input Area	**89**Hex 00Hex **0D**Hex **30**Hex **31**Hex **32**Hex **33**Hex **34**Hex **35**Hex **36**Hex **37**Hex **38**Hex **39**Hex **30**Hex **61**Hex **62**Hex
Output Area	80Hex 00Hex 00Hex 00Hex 00Hex 00Hex 00Hex 00Hex

4. PLC detects transition of bit **A** so now it can read first incoming fragment (it copies 13 bytes in its memory from IN[3] on) then toggles bit **B** as acknowledge.

Input Area	89Hex 00Hex 0DHex 30Hex 31Hex 32Hex 33Hex 34Hex 35Hex 36Hex 37Hex 38Hex 39Hex 30Hex 61Hex 62Hex
Output Area	**81**Hex 00Hex 00Hex 00Hex 00Hex 00Hex 00Hex 00Hex

5. The reader detects transition of bit **B** so it sends second fragment "*cde1234567890*" (still More Bit = 1) and toggles bit **A**.

Input Area	**88**Hex 00Hex **0D**Hex **63**Hex **64**Hex **65**Hex **31**Hex **32**Hex **33**Hex **34**Hex **35**Hex **36**Hex **37**Hex **38**Hex **39**Hex **30**Hex
Output Area	81Hex 00Hex 00Hex 00Hex 00Hex 00Hex 00Hex 00Hex

6. PLC reads second fragment (it copies 13 bytes in its memory from IN[3] on) then toggles bit **B** as acknowledge.

Input Area	88Hex 00Hex 0DHex 63Hex 64Hex 65Hex 31Hex 32Hex 33Hex 34Hex 35Hex 36Hex 37Hex 38Hex 39Hex 30Hex
Output Area	**80**Hex 00Hex 00Hex 00Hex 00Hex 00Hex 00Hex 00Hex

7. The reader sends third (last) fragment "*abcde<CR><LF>*" (finally More Bit = 0) and toggles bit **A**.

Input Area	**81**Hex 00Hex **06**Hex **61**Hex **62**Hex **63**Hex **64**Hex **65**Hex **0D**Hex **00**Hex 00Hex 00Hex 00Hex 00Hex 00Hex 00Hex
Output Area	80Hex 00Hex 00Hex 00Hex 00Hex 00Hex 00Hex 00Hex

8. PLC reads last fragment (it copies 7 bytes in its memory from IN[3] on) and now the reassembling can be completed. Then it toggles bit **B** as acknowledge.

Input Area	81Hex 00Hex 06Hex 61Hex 62Hex 63Hex 64Hex 65Hex 0DHex 00Hex 00Hex 00Hex 00Hex 00Hex 00Hex 00Hex
Output Area	**81**Hex 00Hex 00Hex 00Hex 00Hex 00Hex 00Hex 00Hex

9. Whole message has been completely transmitted.

2.8 SAP SERVICES

When SAP = 255, the FLUSH QUEUE is the unique driver service currently available. It performs flushing of the internal queues and may be issued at any time.

FLUSH QUEUE Service

Request: Flush data buffers (issued by the Master station to the reader)

Action: Flush all information from previous decoding phases

Response: Command accepted/rejected (generated by the reader toward the Master).

Application data areas must be formatted as follows:

Request Command	**byte 3**	**byte 4**
Flush data buffer	**'['** (5B Hex)	**'F'**(46 Hex)

Response Command	**byte 3**	**byte 4**
Command accepted	**'A'** (41 Hex)	**' '**(20 Hex)
Command rejected	**'C'** (43 Hex)	**' '**(20 Hex)

2.9 DAD INTERNAL QUEUES

The Fieldbus Module has two internal queues (one for each direction) to keep the application events: input queue and output queue.

The input queue is used when a new message (generally a barcode) has to be transmitted by the Fieldbus Module before the Master station has generated all the acknowledge handshakes for each previous transmission.

The output queue is rarely used at the moment.

The queues are sized in the following way:

- 10 elements for the input queue (number of messages buffered from Slave to Master)
- elements for the output queue (number of messages buffered from Master to Slave)

The queues may be flushed by the Master station through the SAP=255 primitive. This is generally done at the Master startup if the Master station wants to cancel all the previous buffers that were generated before its startup. However, the Master station is free to decide not to cancel them.

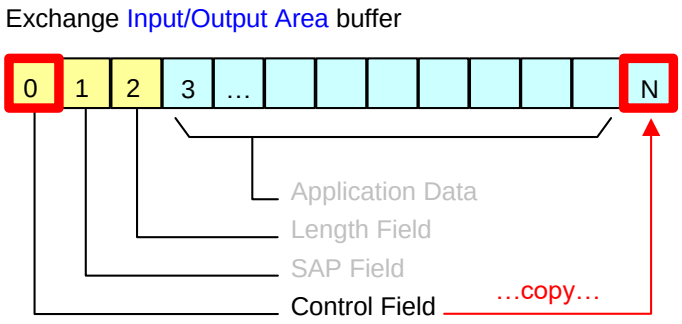
3 DATA CONSISTENCY

When Flow Control is used, the Data Consistency option is available.

If enabled, the driver implements a specific mechanism to guarantee consistency of both transmitted and received data over the entire size of the exchange area.

3.1 DATA CONSISTENCY WITH DAD DRIVER

As shown in the following figure, the application layer copies the Control Field byte in the last position of the exchange area. In this way, as the Control Field changes from message to message, the whole message is consistent as long as the first and last bytes are matching.



From the practical point of view, a complete message in the Input area could be considered consistent as soon as the PLC verifies that IN[0] is equal to IN[InputAreaSize - 1].

The PLC should take care to double OUT[0] in OUT[OutputAreaSize - 1] to let the driver check the consistency.

Due to the new byte used by the DAD driver, barcode messages longer than (InputAreaSize – **4**) will be split into pieces through an automatic fragmentation process.

Let's analyze a fragmented and consistent data exchange based on:

- Flow Control = **DAD Driver**
- Data Consistency = **Enable**
- Input Area Size = **16**
- Output Area Size = **8**

1. After power-on, Input and Output areas are generally filled by zero. According to DAD driver implementation, Input area has Control Field = IN[0] = IN[15] = 80Hex and SAP = 00Hex.

Input Area	80Hex	00Hex	00Hex	00Hex	00Hex	00Hex	00Hex	00Hex	00Hex	00Hex	00Hex	00Hex	00Hex	00Hex	80Hex
Output Area	00Hex	00Hex	00Hex	00Hex	00Hex	00Hex	00Hex	00Hex							

2. PLC must set Control Field = OUT[0] = OUT[7] = 80Hex according to DAD messaging protocol with Data Consistency.

Input Area	80Hex	00Hex	00Hex	00Hex	00Hex	00Hex	00Hex	00Hex	00Hex	00Hex	00Hex	00Hex	00Hex	00Hex	80Hex
Output Area	80Hex	00Hex	00Hex	00Hex	00Hex	00Hex	00Hex	80Hex							

3. Slave reads a barcode with content "1234567890abcde1234567890abcde". Let's assume standard data formatting <CR> as terminator. Slave transmits first fragment "01234567890a" only (setting More Bit = 1) then it toggles bit A.

Input Area	89Hex	00Hex	0CHex	30Hex	31Hex	32Hex	33Hex	34Hex	35Hex	36Hex	37Hex	38Hex	39Hex	30Hex	61Hex	89Hex
Output Area	80Hex	00Hex	00Hex	00Hex	00Hex	00Hex	00Hex	80Hex								

4. PLC detects transition of bit A so now it can read first incoming fragment (it copies 12 bytes in its memory from IN[3] on) then toggles bit B as acknowledge.

Input Area	89Hex	00Hex	0CHex	30Hex	31Hex	32Hex	33Hex	34Hex	35Hex	36Hex	37Hex	38Hex	39Hex	30Hex	61Hex	89Hex
Output Area	81Hex	00Hex	00Hex	00Hex	00Hex	00Hex	00Hex	81Hex								

5. Slave detects transition of bit B so it sends second fragment "bcde12345678" (still More Bit = 1) and toggles bit A.

Input Area	88Hex	00Hex	0CHex	62Hex	63Hex	64Hex	65Hex	31Hex	32Hex	33Hex	34Hex	35Hex	36Hex	37Hex	38Hex	88Hex
Output Area	81Hex	00Hex	00Hex	00Hex	00Hex	00Hex	00Hex	81Hex								

6. PLC reads second fragment (it copies 12 bytes in its memory from IN[3] on) then toggles bit B as acknowledge.

Input Area	88Hex	00Hex	0CHex	62Hex	63Hex	64Hex	65Hex	31Hex	32Hex	33Hex	34Hex	35Hex	36Hex	37Hex	38Hex	88Hex
Output Area	80Hex	00Hex	00Hex	00Hex	00Hex	00Hex	00Hex	80Hex								

7. Slave sends last fragment "90abcde<CR><LF>" (finally More Bit = 0) and toggles bit A.

Input Area	81Hex	00Hex	08Hex	39Hex	30Hex	61Hex	62Hex	63Hex	64Hex	65Hex	0DHex	00Hex	00Hex	00Hex	00Hex	81Hex
Output Area	80Hex	00Hex	00Hex	00Hex	00Hex	00Hex	00Hex	00Hex	80Hex							

8. PLC reads last fragment (it copies 9 bytes in its memory from IN[3] on) and now the reassembling can be completed. Then it toggles bit B as acknowledge.

Input Area	81Hex	00Hex	08Hex	39Hex	30Hex	61Hex	62Hex	63Hex	64Hex	65Hex	0DHex	00Hex	00Hex	00Hex	00Hex	81Hex
Output Area	81Hex	00Hex	00Hex	00Hex	00Hex	00Hex	00Hex	81Hex								

9. Whole message has been completely transmitted.

4 NETWORK CONFIGURATION

4.1 CONFIGURATION FILES FOR FIELDBUS

A Fieldbus configuration file is a readable ASCII text file that contains a complete description of the specific device. It basically includes both general information (e.g. vendor and device name, hw/sw releases) and device specific information (Input and Output area size).

Powerful configuration tools can be used to setup a Fieldbus network (e.g. Siemens SIMATIC Manager for Profibus). Based on the configuration files, these allow easy configuration of Fieldbus networks with devices from different manufacturers.

Note: A configuration file must first be installed into the PLC environment in order for a new device to be identified and to work on the Fieldbus network.

The Fieldbus configuration files (EDS and GSDML) are found on the specific product page under “Downloads>Software & Utilities”. See www.datalogic.com.

The Fieldbus configuration file is a certified part of the device and must not be changed manually. This file is also not changed by the configuration tool.

DATALOGIC

www.datalogic.com