

## Introduction

IO-Link process data can be directly addressed via the PLC's input / output address range. IO-Link process data structures and lengths differ device-specifically.

Process data mirrors the device's essential feature, which is 'output measured value'.

It depends on the PLC's architecture how the process data is to be interpreted.

Some examples for ifm devices integrated in a Simatic architecture are provided within this doc.

## Content



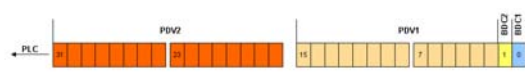
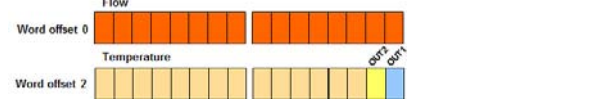
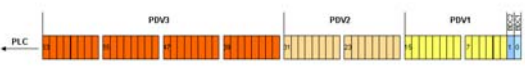
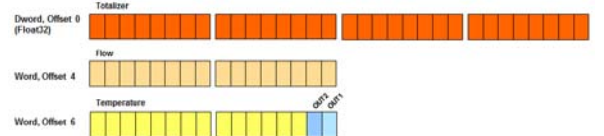
Introduction .....	1
Different design of process data pictures .....	2
PLC integration of PN family .....	3
PLC integration of SA, SV, SI family .....	4
PLC Integration of SD, SM family .....	5

### Release Notes:

V1.1	PVT-krm	[CHG] Screenshots in English [ADD] Description of historic and current process data views [CHG] Try to explain the topic more stringent
V1.0	PVT-krm	Initial version showing SA, SI, SV, SD, SM integration into Simatic PLC

## Different design of process data pictures

Since ifm provides PDFs to provide IO-DDs that can be read by humans, it is always a challenge to describe process data.

Historic	Current PLC's point of view Note: not all PDFs do support this view
1 analogue value, 2 switch bits, e. g. PN family	
	
2 analogue values, 2 switch bits, e. g. SA, SV, SI family	
	
3 analogue values, 2 switch bits, e. g. SM, SD family	
	

## PLC integration of PN family

IO-Link process data structure according to IODD

Pressure 14 bit

Switching outputs 2 bit

-----  
Total Length 16 bit (2 Bytes)



### Simatic Variable table

	Address	Symbol	Symbol comment	Display format	Status value	Modify value
15		//AY1000 Port 1				
16	PEW 298		Pressure + OUT2 + OUT1	HEX	W#16#0518	
17	PEB 298		Pressure HB	BIN	2#0000_0101	
18	PEB 299		Pressure LB + OUT2 + OUT1	BIN	2#0001_1000	

Please note:

1. Pressure is located at PEW298, it is a “14-2” formatted value, which means 14 bit pressure, 2 bit switching outputs.
2. To get an appropriate pressure you have to perform a right-shift operation of 2 bits.  
Please use the SHR\_I (2) function provided by Simatic to keep the sign bit.
3. Address only words, accessing bytes will cause a byte swap, as shown in line 16, 17 and 18.

## PLC integration of SA, SV, SI family

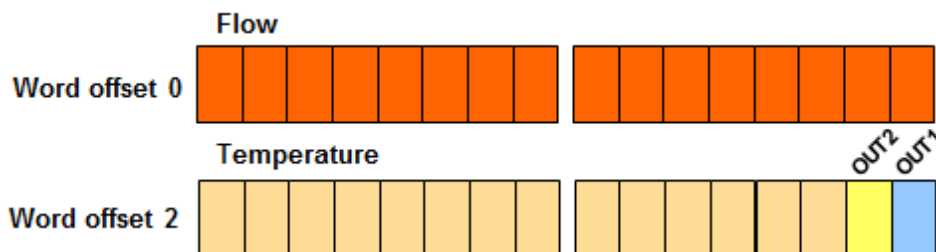
IO-Link process data structure according to IODD

Flow 16 bit

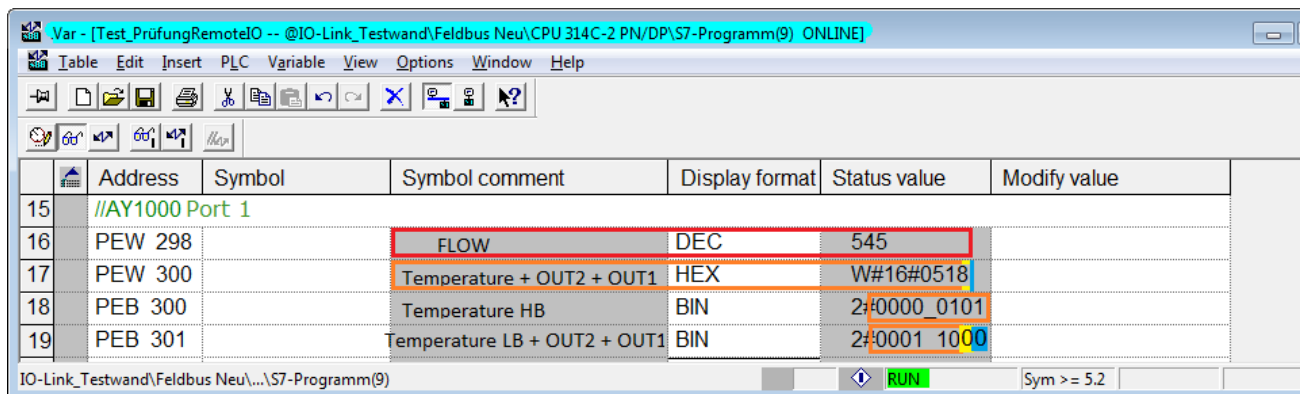
Temperature 14 bit

Switching outputs 2 bit

-----  
Total Length 32 bit (4 Bytes)



Simatic Variable table



	Address	Symbol	Symbol comment	Display format	Status value	Modify value
15		//AY1000 Port 1				
16	PEW 298		FLOW	DEC	545	
17	PEW 300		Temperature + OUT2 + OUT1	HEX	W#16#0518	
18	PEB 300		Temperature HB	BIN	2#0000_0101	
19	PEB 301		Temperature LB + OUT2 + OUT1	BIN	2#0001_1000	

Please note:

1. Flow is located at PEW 298, 16 bit Integer
2. Temperature is located at PEW300 it is a "14-2" formatted value, which means 14 bit temperature, 2 bit switching outputs.
3. To get an appropriate temperature you have to perform a right-shift operation of 2 bits.  
Please use the SHR\_I (2) function provided by Simatic to keep the sign bit.
4. Address only words, accessing bytes you will cause a byte swap, as shown in line 17, 18 and 19.

## PLC Integration of SD, SM family

IO-Link process data structure according to IODD

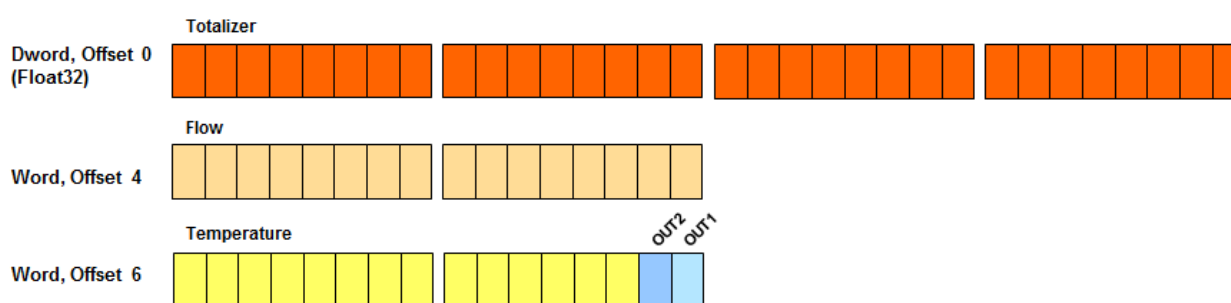
Totalizer 32 bit (Float)

Flow 16 bit

Temperature 14 bit

Switching outputs 2 bit

-----  
Total Length 64 bit (8 Bytes)



### Simatic Variable table

Address	Symbol	Symbol comment	Display format	Status value	Modify
15	//AY1000 Port 1				
16	PED 298	Totalizer	FLOATING POINT	1142.4	
17	PEW 302	Flow	HEX	W#16#0258	
18	PEW 304	Temperature + OUT2 + OUT1	HEX	W#16#0321	
19	PEB 304	Temperature HB	BIN	2#0000_0011	
20	PEB 304	Temperature LB + OUT2 + OUT 1	BIN	2#0010_0001	

Please note:

1. Totalizer is located at PED298, 32 bit Float
2. Flow is located at PEW300, 16 bit Integer
3. Temperature is located at PEW302 it is a "14-2" formatted value, which means 14 bit temperature, 2 bit switching outputs.
4. To get an appropriate temperature you have to perform a right-shift operation of 2 bits.  
Please use the SHR\_I (2) function provided by Simatic to keep the sign bit.
5. Address only words, accessing bytes will cause a byte swap, as shown in line 18, 19 and 20