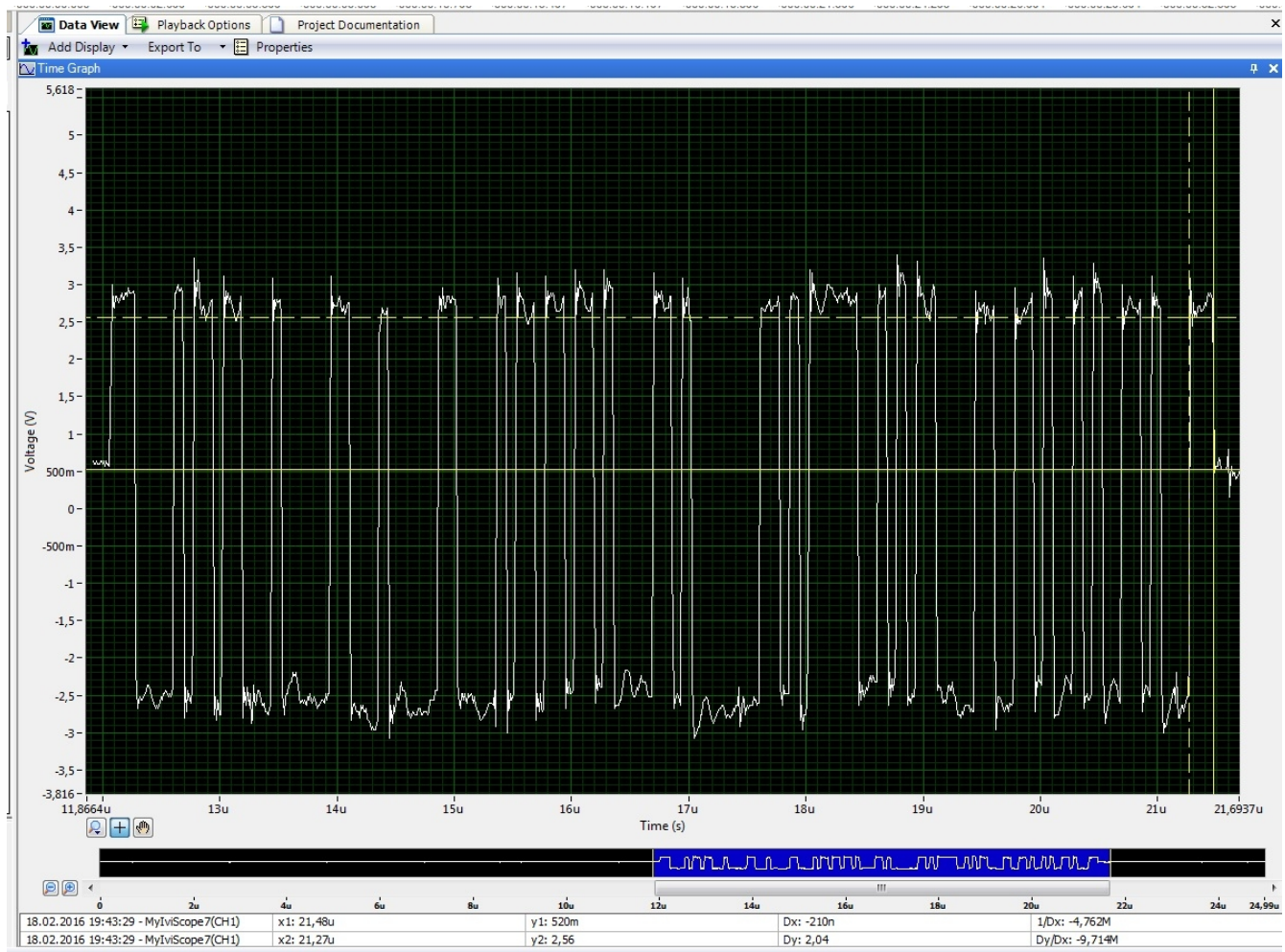


# Factory Communication System Assignment 1

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## 1. PROFIBUS Telegram Analysis:

Screen Shot of the acquired signal is



### Steps taken to Identify the Telegram:

- Followed all the instruction of the given manual to set-up the test environment.
- Initiated the TwinCAT.
- Opened the LABView Signal Express and tuned the Oscilloscope to get a proper graph to analyze.

### **Data-Table**

1	2	3	4	5	6	7	8	9	10	11	Hex Value of Data Bits
0	0	0	0	1	0	1	1	0	1	1	68 H
0	0	0	1	0	0	0	0	0	1	1	04 H
0	0	0	1	0	0	0	0	0	1	1	04 H
0	0	0	0	1	0	1	1	0	1	1	68 H
0	1	1	0	1	0	0	0	0	1	1	0B H
0	1	0	0	0	0	0	0	0	1	1	01 H
0	1	0	1	1	1	1	1	0	0	1	7D H
0	1	0	1	1	0	0	0	0	1	1	0D H
0	0	1	1	0	1	0	0	1	0	1	96 H
0	0	1	1	0	1	0	0	0	1	1	16 H

From the table we became sure that the telegram is a SD2 type.

#### **Problem Faced:**

- Finding the right signal. In our case 10 signals of 11bytes data what should be 11 of 11.
- We had to invert the Oscilloscope probe to get a correct Data.
- Other many small bad problem.

#### **2. Why Terminal Resistors are needed in industrial Buses:**

Terminal resistor prevents internal signal reflection inside the bus that is why it is used in industrial BUS systems.

**3. Designing the Telegram Frame:** The First Signal SD = 68H, LE = 04H, LEr = 04H, DA= 11H, SA= 1H, FC= 4H, DU= 3E H, FCS= 96H, ED=16H. The Signal will look like this:

1	2	3	4	5	6	7	8	9	10	11	Hex Value of Data Bits
0	0	0	0	1	0	1	1	0	1	1	68 H
0	0	0	1	0	0	0	0	0	1	1	04 H
0	0	0	1	0	0	0	0	0	1	1	04 H
0	0	0	0	1	0	1	1	0	1	1	68 H
0	0	0	0	1	0	1	1	0	1	1	68 H
0	1	1	0	1	0	0	0	0	1	1	0BH
0	1	0	0	0	0	0	0	0	1	1	01H
0	0	0	1	0	0	0	0	0	1	1	04H
0	0	1	1	1	1	1	0	0	1	1	3EH
0	0	1	1	0	1	0	0	1	0	1	96 H
0	0	1	1	0	1	0	0	0	1	1	16 H

The Second Signal the Data structure is: SD = 68H, LE = 04H, LEr = 04H, DA= 11H, SA= 1H, FC= 4H, DU= 4FH, FCS= 96H, ED=16H.

1	2	3	4	5	6	7	8	9	10	11	Hex Value of Data Bits
0	0	0	0	1	0	1	1	0	1	1	68 H
0	0	0	1	0	0	0	0	0	1	1	04 H
0	0	0	1	0	0	0	0	0	1	1	04 H
0	0	0	0	1	0	1	1	0	1	1	68 H
0	0	0	0	1	0	1	1	0	1	1	68 H
0	1	1	0	1	0	0	0	0	1	1	0BH
0	1	0	0	0	0	0	0	0	1	1	01H
0	0	0	1	0	0	0	0	0	1	1	04H
0	1	1	1	1	0	0	1	0	1	1	4FH
0	0	1	1	0	1	0	0	1	0	1	96 H

#### **4. Calculating the Overhead of the Telegram:**

The data we gathered is 11 bits and 10 frames long so  $11 \times 10 = 110$  bits -16 bits = 94 bits  
Hence over-head is  $(94/110) \times 100\% = 85\%$

#### **5. What is GSD File and how it is used by TwinCAT application:**

A GSD file is used to identify the basic operational characteristics of a PROFIBUS device & it guarantees interoperability and interchangeability of the DATA. Manufacturer-independent configuration is only possible when GSD file is implemented.

GSD file is down loadable from the vendors web site. It will automatically get integrated with the TwinCAT application software once downloaded and added like a patch.

#### **6. Things to be considered selecting BAUD Rate in PROFIBUS:**

- Distance o the BUS system.
- Speed of operation.