

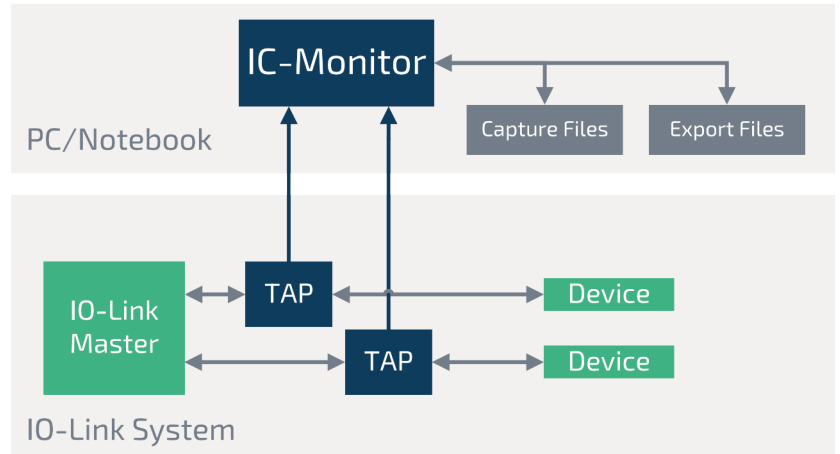


## IO-LINK FEATURE SHEET



# OVERVIEW

The IC-Monitor enables the analysis of IO-Link systems. In addition to packet-based protocol analysis and the general tools of the IC-Monitor, the user also has access to specific functions and views for analyzing IO-Link communication.



Analysis of an IO-Link system with the IC-Monitor

## PACKET-BASED ANALYSIS

- / Display of process data, resolved on the basis of device description files (IODDs)
- / Individually configurable protocol fields for IO-Link
- / Different representation formats of the telegram fields, including Byte, Binary, Hex and String
- / Use of filter, trigger and export functions
- / Simultaneous analysis with other communication systems, e.g. a higher-level Industrial Ethernet system for connecting the IO-Link master

No.	Time<rf>[s]	Protocol	R/W	ComChn	Addr	OD Device	PDin	Switch state [OUT1]	Distance
1583	7,089787000	IQ2 Telegram	Read	ISDU	17	-	-	-	-
1584	7,090517000	IQ2 Telegram	-	-	-	0x00	0xE1 0x00	1	14
1585	7,096593000	IQ2 Telegram	Read	ISDU	17	-	-	-	-
1586	7,097344000	IQ2 Telegram	-	-	-	0x00	0xE1 0x00	1	14
1587	7,103399000	IQ2 Telegram	Read	ISDU	17	-	-	-	-
1588	7,104118000	IQ2 Telegram	-	-	-	0x00	0xE1 0x00	1	14
1589	7,110203000	IQ2 Telegram	Read	Diagnosis	0	-	-	-	-
1590	7,110944000	IQ2 Telegram	-	-	-	0x81	0xE1 0x00	1	14
1591	7,117009000	IQ2 Telegram	Read	Diagnosis	1	-	-	-	-
1592	7,117744000	IQ2 Telegram	-	-	-	0xAC	0xE1 0x00	1	14
1593	7,123815000	IQ2 Telegram	Read	Diagnosis	2	-	-	-	-
1594	7,124545000	IQ2 Telegram	-	-	-	0x8C	0xE1 0x00	1	14
1595	7,130621000	IQ2 Telegram	Read	Diagnosis	3	-	-	-	-
1596	7,131370000	IQ2 Telegram	-	-	-	0xB0	0xE1 0x00	1	14
1597	7,137426000	IQ2 Telegram	Read	ISDU	17	-	-	-	-
1598	7,138144000	IQ2 Telegram	-	-	-	0x00	0xE1 0x00	1	14
1599	7,141124000	IQ2 Telegram	-	-	-	-	-	-	-
1600	7,144231000	IQ2 Telegram	Read	ISDU	17	-	-	-	-
1601	7,144971000	IQ2 Telegram	-	-	-	0x00	0x51 0x00	1	5
1602	7,151038000	IQ2 Telegram	Read	ISDU	17	-	-	-	-
1603	7,151772000	IQ2 Telegram	-	-	-	0x00	0x51 0x00	1	5
1604	7,157843000	IQ2 Telegram	Read	ISDU	17	-	-	-	-
1605	7,158572000	IQ2 Telegram	-	-	-	0x00	0x51 0x00	1	5

Packet-based analysis of an IO-Link Event

## WORKING WITH IO-LINK TRANSMISSIONS

For an analysis and diagnosis of an IO-Link system a separate view is available which displays the IO-Link transmissions, the so-called M-Sequences. The transmissions are created automatically based on the communication and identification parameters determined in the startup phase or specified manually. By referencing device description files (IODDs), transmissions such as events or ISDUs are decoded according to the IODDs.

Transmission Type	No.	Monitor	Phase	Mseq Type	SubType	Direction	Index	SubIndex	Name	Transmitted Data
Page	59	192.168.16.200	Startup	TYPE_0	Page	Page 1	Read		Revision ID	0x11
Page	61	192.168.16.200	Startup	TYPE_0	Page	Page 1	Read		Process Data In	0x50
Page	63	192.168.16.200	Startup	TYPE_0	Page	Page 1	Read		Process Data Out	0x00
Page	65	192.168.16.200	Startup	TYPE_0	Page	Command	Write		MasterIdent	0x95
Page	67	192.168.16.200	Startup	TYPE_0	Page	Page 1	Read		Vendor ID 1 (MSB)	0x01
Page	69	192.168.16.200	Startup	TYPE_0	Page	Page 1	Read		Vendor ID 2 (MSB)	0x36
Page	71	192.168.16.200	Startup	TYPE_0	Page	Page 1	Read		Device ID 1 (MSB)	0x00
Page	73	192.168.16.200	Startup	TYPE_0	Page	Page 1	Read		Device ID 2	0x01
Page	75	192.168.16.200	Startup	TYPE_0	Page	Page 1	Read		Device ID 1 (LSB)	0x74
Page	77	192.168.16.200	Startup	TYPE_0	Page	Page 1	Read		Function ID 1 (MSB)	0x00
Page	79	192.168.16.200	Startup	TYPE_0	Page	Page 1	Read		Function ID 2 (LSB)	0x00
Page	82	192.168.16.200	Startup	TYPE_0	Page	Command	Write		DevicePreOperate	0x9A
Page	86	192.168.16.200	PreOperate	TYPE_1_V	ISDU	ISDU Request	Read	0x03	DS Size	57 Byte
Page	96	192.168.16.200	PreOperate	TYPE_1_V	ISDU	ISDU Request	Read	0x03	State Property	Inactive
Page	107	192.168.16.200	PreOperate	TYPE_1_V	ISDU	ISDU Request	Read	0x03	Parameter Checksum	0x 00 00 00 5A
Page	216	192.168.16.200	PreOperate	TYPE_1_V	ISDU	ISDU Request	Read	0x03	Index List	10 Entries
Page	809	192.168.16.200	PreOperate	TYPE_1_V	Page	Page 1	Write		Master Cycle Time	0x40
Page	813	192.168.16.200	PreOperate	TYPE_1_V	Page	Command	Write		DeviceOperate	0x99 00 00 00 00
Page	1538	192.168.16.200	Operate	TYPE_2_2	Diagnosis	Write			Master   Warning   EventAppears	nEA
Page	1589	192.168.16.200	Operate	TYPE_2_2	Diagnosis	Write			Master   Warning   EventDisappears	nEA
Page	4311	192.168.16.200	Operate	TYPE_2_2	Diagnosis	Write			Master   Error   EventAppears	-
Page	4386	192.168.16.200	Operate	TYPE_2_2	Diagnosis	Write			Master   Warning   EventAppears	ErP
Page	4422	192.168.16.200	Operate	TYPE_2_2	Diagnosis	Write			Master   Warning   EventDisappears	ErP
Page	4943	192.168.16.200	Operate	TYPE_2_2	Diagnosis	Write			Master   Error   EventDisappears	-
Page	18201	192.168.16.200	Operate	TYPE_2_2	Page	Command	Write		Fallback	0x5A

View for displaying the IO-Link transmissions

### Functions of the IO-Link Transmission View:

- / List of all IO-Link transmissions of the different phases
- / ISDU Search by Index and SubIndex
- / Performance optimization through active filtering of IDLE transfers
- / Advanced filtering options, e.g.:
  - › Transmission Type: Page, ISDU, Diagnosis
  - › Transmission Sub-Type: Command, Page 1 or 2, ISDU Idle or Request
  - › Direction: Read/Write
  - › Master/Device: Depending on the IP address
  - › Further filter
- / Information on individual IO-Link transmissions
  - › Listing of the individual master and device messages (M-Sequences)
  - › Transmitted process data, parameter data and diagnostic data

In addition to the IO-Link Transmissions view, general tools and views of the IC-Monitor, such as the Oscilloscope view and the Diagnostic Trace view, are also available for further analysis and diagnostics.

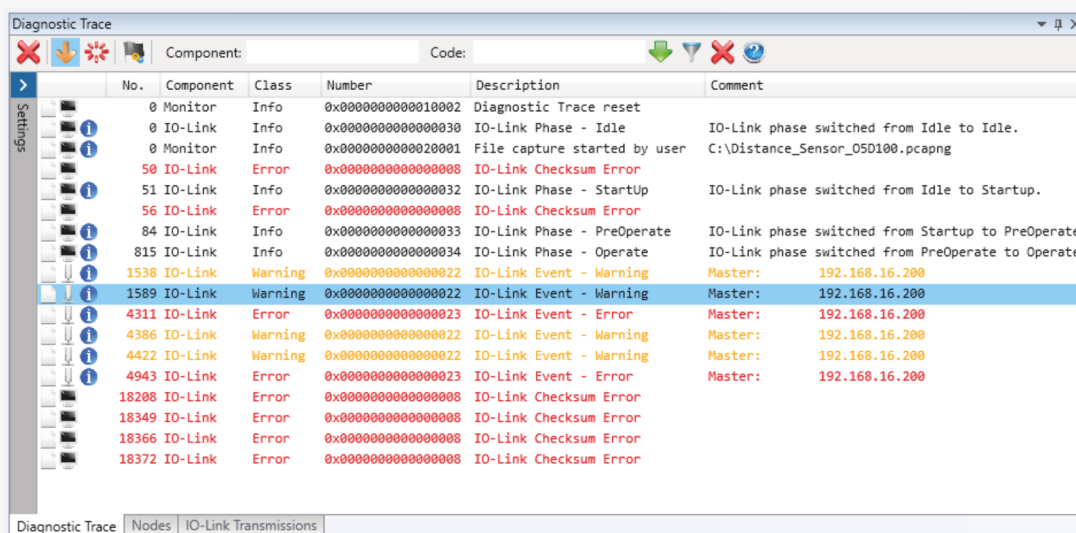
# FEATURES

## CONFIGURATION

- / Storage folder for IODD files
- / Automatic detection of properties of an IO-Link device based on stored IODDs
- / Overview of all automatically detected and manually set up IO-Link devices and their device-specific information:
  - › IP address, Cycle-Times, Capability, PDin und PDout
  - › Revision-, Vendor-, Device-, and Function-ID

## DIAGNOSIS

The Diagnostic Trace view provides an overview of all diagnostic messages that occur during a packet capture. In addition to general messages such as phase changes, protocol-specific diagnostics such as IO-Link events are also displayed in this view. If required, trigger or filter conditions can be applied to these events, for example to start a packet capture only in the event of an error.



No.	Component	Class	Number	Description	Comment
0	Monitor	Info	0x0000000000010002	Diagnostic Trace reset	
0	IO-Link	Info	0x000000000000030	IO-Link Phase - Idle	IO-Link phase switched from Idle to Idle.
0	Monitor	Info	0x0000000000020001	File capture started by user	C:\Distance_Sensor_05D100.pcapng
50	IO-Link	Error	0x000000000000008	IO-Link Checksum Error	
51	IO-Link	Info	0x000000000000032	IO-Link Phase - StartUp	IO-Link phase switched from Idle to StartUp.
56	IO-Link	Error	0x000000000000008	IO-Link Checksum Error	
84	IO-Link	Info	0x000000000000033	IO-Link Phase - PreOperate	IO-Link phase switched from StartUp to PreOperate
815	IO-Link	Info	0x000000000000034	IO-Link Phase - Operate	IO-Link phase switched from PreOperate to Operate
1538	IO-Link	Warning	0x000000000000022	IO-Link Event - Warning	Master: 192.168.16.200
1589	IO-Link	Warning	0x000000000000022	IO-Link Event - Warning	Master: 192.168.16.200
4311	IO-Link	Error	0x000000000000023	IO-Link Event - Error	Master: 192.168.16.200
4386	IO-Link	Warning	0x000000000000022	IO-Link Event - Warning	Master: 192.168.16.200
4422	IO-Link	Warning	0x000000000000022	IO-Link Event - Warning	Master: 192.168.16.200
4943	IO-Link	Error	0x000000000000023	IO-Link Event - Error	Master: 192.168.16.200
18208	IO-Link	Error	0x000000000000008	IO-Link Checksum Error	
18349	IO-Link	Error	0x000000000000008	IO-Link Checksum Error	
18366	IO-Link	Error	0x000000000000008	IO-Link Checksum Error	
18372	IO-Link	Error	0x000000000000008	IO-Link Checksum Error	

IO-Link Events displayed in the Diagnostic Trace view

## TECHNICAL DATA

### SUPPORTED TAPs

The IC monitor supports the following TAPs required for capturing IO-Link packets:

- / IQ² Development GmbH & Co. KG - iqInterface®
- / Germedded GmbH - IO-Link Analyzer

### IO-LINK SPECIFICATIONS

The IC-Monitor supports IO-Link 1.0, 1.1 und 1.1.2.