# iqMonitor

User Manual

# 1 History

Data	Changes
09 September 2018	Initial version
27 September 2018	Add power recommendation
22 October 2018	Change power recommendation
v. 1.0.4.0	Control MSEQ data
02 November 2021	Add troubleshooting
v. 1.5.0.0	Add possibility to change trace folder
	Add possibility to write process data into file
	Show process data values in realtime
28 September 2023	Add Load stored trace section

# Contents

1	His	istory	2
2		troduction	
3	Set	etup Power	5
3	.1	Power	
3	.2	Serial port setting	5
3	.3	Ethernet port settings Hardware setup Monitor User Interface	5
3	.4	Hardware setup	7
4	iqN	Monitor User Interface	7
4	.1	Establish a communication	
4	.2	Start monitoring	
	4.2	2.1 Process Data is showing in realtime	
4	.3	Control MSEQ data	
4	.4	iqMonitor Tool Setting	
	4.4		
	4.4	4.2 Activate storing process data into text file	
4	.5	Load stored data	
5	Tro	oubleshooting	

# 2 Introduction

iqMonitor is an IO-Link communication sniffer.

It is intended to "listening" IO-Link communication and analyze master and device telegrams directly on the C/Q line. The timestamped telegrams are streamed over USB or Ethernet connection to PC. The intelligent software module of iqMonitor GUI can interpret and analyze them to represent graphically the communication and its possible problems in an easy-to-understand way.

# 3 Setup

#### 3.1 Power

It is recommended to connect external power supply to IO-Link Master. iqMonitor will use IO-Link connection as power supply (the power consumption is about 80 mA for iqInterface in Monitor mode). If external power supply for master is not available, it is possible to connect external power supply to iqMonitor, but it can be distortion in communication recognition.

# 3.2 Serial port setting

It is recommended to use Ethernet communication with iqMonitor.

If USB communication is preferable, it is needed to setup Serial port for low latency:

Open Device Manager, find serial port, connected to iqInterface - open properties

Select "Port Settings" - > "Advanced"

Set "Latency timer" to 1

E Computer Management		
File Action View Help		
Computer Management (Local	Actions Desize Manager USB Serial Port (COM9) Properties General Pot Settings Driver Details	
▷ (◎) Performance     ▷ (□) DVD/CD-ROM drives       ○ Dovice Manager     ▷ (□) ATA/ATAPI controllers       ○ Dick Management     ▷ (□) Train devices       ▷ (□) Services and Applications     ▷ (□) Mice and other pointing devices       ▷ (□) Mice and other pointing devices	Bits per second: 9600 • • Data bits: 8 • • Party: None • •	
Monitors  Metwork adapters  Me		Advanced Settings for COM9  COM Port Number: COM9  COM Port Number: COM9  COM Cancel USB Transfer Sizes Select lower settings to correct performance problems at low baud rates. Select ligher settings for faster performance. Receive (Bytes): 4096  Transmit (Bytes): 4096
Sound, video and game controllers	OK Ca	Ca BM Options Select lower settings to correct response problems. Serial Enumerator Latency Timer (msec): Timeouls Timeouls Minimum Read Timeout (msec): 0
		Minimum Write Timeout (msec): 0

#### 3.3 Ethernet port settings

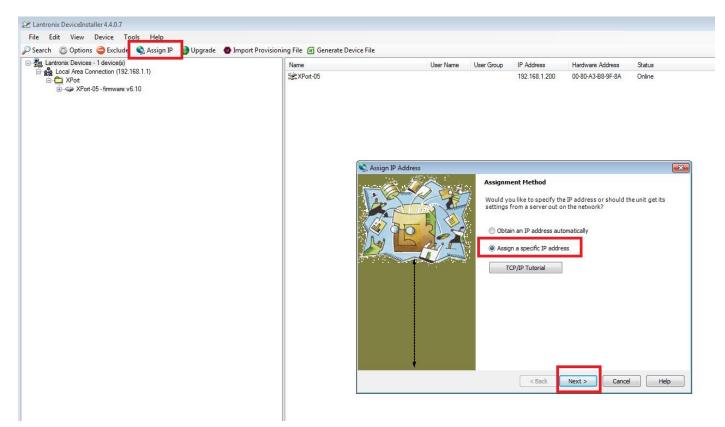
If current ip address is unknown, it is needed to download "Device Installer" software from "lantronix" web site

https://www.lantronix.com/products/xport/#tab-docs-downloads

After software installation – run finding device:

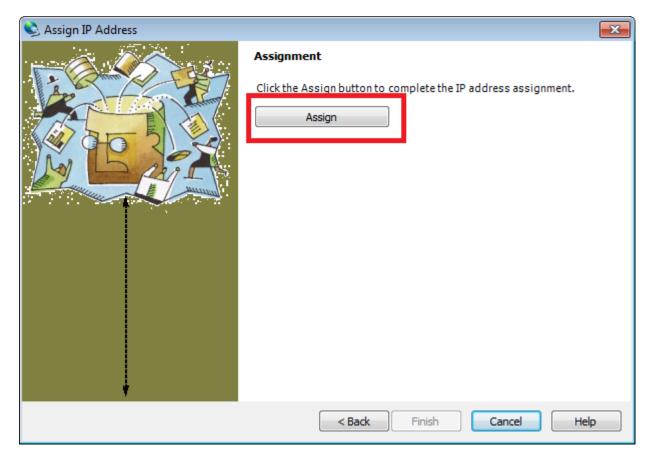
E Lantronix DeviceInstaller 4.4.0.7						
File Edit View Device Tools Help						
🔎 Search 👔 Options 🤤 Exclude 🔌 Assign IP						
Lantronix Devices - 1 device(s)	Name	User Name	User Group	IP Address	Hardware Address	Status
Search for devices on the network.	Mont-05			192.168.1.200	00-80-A3-B8-9F-8A	Online
. APort-05 - firmware v6.10						

After device has been found – it is needed to setup ip address and mask the similar to setting for Network card



Select "Assign a specific IP Address" -> Enter correct IP Address and Mask -> Assign

🔌 Assign IP Address			<b>—</b>
	IP Settings		
	The subnet will be it for accuracy. Inc	address, subnet, and gate filled in automatically as yo correct values in any of the ir device to communicate, a	ou type, but please verify below fields can make it
	IP address:	192.168.1.200	
	Subnet mask:	255.255.255.0	
	Default gateway	0.0.0.0	
	< 6	Back Next >	Cancel Help



After assignment process has been completed, close the application and power cycle the iqInterface

# 3.4 Hardware setup



# Connect power supply

IO-Link Master should be connected to Device Connector (2) on iqInterface IO-Link Device should be connected to Master Connector (1) on iqInterface

# 4 iqMonitor User Interface

Run iqMonitor application – it can be downloaded from iq2-development site: https://www.iq2-development.com/downloads.html

#### 4.1 Establish a communication

Open communication setting, select appropriate connection and press connect:

IQ <sup>®</sup> IQ Connection Settings	
Connections Common Cor	nport
O Connect by serial number	
<ul> <li>Comport / USB</li> </ul>	auto 🔹
O IP 192.168.1.200	Port 10001
Connect	Ok cancel
Connect	Cancer

Port for Ethernet communication should be: 10001

If communication has been established correctly - the setting dialog will be closed and Connect button turn into green color

	🗣 IO-Link iqMonitor 1.0.1	1.0		
Γ	Settings	Update FW	Info	
	IOLMonitor			
	IO-Link Monitor			
	Trace Segment:	1/1		$\diamond \leftrightarrow \rightarrow \rightarrow$
E				

Now it is ready to start monitoring IO-Link communication

# 4.2 Start monitoring

To start monitoring, just press start "Button" on "IO-Link Monitor" panel

Start button should be turned into red and status window should show raw IO-Link messages.

l <sup>®</sup> IO-Link iqMonitor 1.0.1.0	
Settings Update FW Info	
LMonitor	
IO-Link Monitor	
Trace Segment: 4/4	$\diamond \leftrightarrow \rightarrow \forall$
<ul> <li>MSEQ ISDUIdle, PDOut: , PDOut: , PDIn: ff:c5, PDIn: , OD: 00:00, 22372 ms.</li> <li>MSEQ ISDUIdle, PDOut: , PDOut: , PDIn: ff:c3, PDIn: , OD: 00:00, 22371 ms.</li> <li>MSEQ ISDUIdle, PDOut: , PDOut: , PDIn: ff:c0, PDIn: , OD: 00:00, 22370 ms.</li> <li>MSEQ ISDUIdle, PDOut: , PDOut: , PDIn: ff:be, PDIn: , OD: 00:00, 22369 ms.</li> <li>MSEQ ISDUIdle, PDOut: , PDOut: , PDIn: ff:be, PDIn: , OD: 00:00, 22368 ms.</li> <li>MSEQ ISDUIdle, PDOut: , PDOut: , PDIn: ff:b9, PDIn: , OD: 00:00, 22367 ms.</li> <li>MSEQ ISDUIdle, PDOut: , PDOut: , PDIn: ff:b9, PDIn: , OD: 00:00, 22366 ms.</li> <li>MSEQ ISDUIdle, PDOut: , PDOut: , PDIn: ff:b7, PDIn: , OD: 00:00, 22366 ms.</li> <li>MSEQ ISDUIdle, PDOut: , PDOut: , PDIn: ff:b5, PDIn: , OD: 00:00, 22364 ms.</li> <li>MSEQ ISDUIdle, PDOut: , PDOut: , PDIn: ff:b0, PDIn: , OD: 00:00, 22363 ms.</li> <li>MSEQ ISDUIdle, PDOut: , PDOut: , PDIn: ff:ae, PDIn: , OD: 00:00, 22361 ms.</li> <li>MSEQ ISDUIdle, PDOut: , PDOut: , PDIn: ff:ae, PDIn: , OD: 00:00, 22359 ms.</li> <li>MSEQ ISDUIdle, PDOut: , PDOut: , PDIn: ff:a7, PDIn: , OD: 00:00, 22359 ms.</li> <li>MSEQ ISDUIdle, PDOut: , PDOut: , PDIn: ff:a7, PDIn: , OD: 00:00, 22357 ms.</li> <li>MSEQ ISDUIdle, PDOut: , PDOut: , PDIn: ff:a7, PDIn: , OD: 00:00, 22356 ms.</li> <li>MSEQ ISDUIdle, PDOut: , PDOut: , PDIn: ff:a3, PDIn: , OD: 00:00, 22356 ms.</li> <li>MSEQ ISDUIdle, PDOut: , PDOut: , PDIn: ff:a3, PDIn: , OD: 00:00, 22356 ms.</li> <li>MSEQ ISDUIdle, PDOut: , PDOut: , PDIn: ff:a3, PDIn: , OD: 00:00, 22356 ms.</li> <li>MSEQ ISDUIdle, PDOut: , PDOut: , PDIn: ff:a4, PDIn: , OD: 00:00, 22355 ms.</li> <li>MSEQ ISDUIdle, PDOut: , PDOUt: , PDIn: ff:a1, PDIn: , OD: 00:00, 22355 ms.</li> <li>MSEQ ISDUIdle, PDOut: , PDOUt: , PDIn: ff:a4, PDIn: , OD: 00:00, 22355 ms.</li> <li>MSEQ ISDUIdle, PDOut: , PDOUt: , PDIn: ff:a4, PDIn: , OD: 00:00, 22354 ms.</li> </ul>	
<ul> <li>MSEQ ISDUIdle, PDOut: , PDOut: , PDIn: ff:9c, PDIn: , OD: 00:00, 22353 ms.</li> <li>MSEQ ISDUIdle. PDOut: . PDOut: . PDIn: ff:9a. PDIn: . OD: 00:00. 22352 ms.</li> </ul>	•

For analyse data monitor should be stopped (press stop button)

Catching data will be stored and parsed data will be showed on status window

Settings Update FW Info	
LMonitor	
IO-Link Monitor	
Trace Segment: 27/27	\$ € → -
<ul> <li>Standard Parameters</li> <li>Master Cycle Time 1ms</li> <li>Device MIR Cycle Time 1ms</li> <li>Preoperate MSeq Type1</li> <li>Preoperate MSeq Type2</li> <li>Operate On-request data length 2 bytes</li> <li>IO-Link Revision 1.1</li> <li>ISDU is supported</li> <li>Process Data Output 0 bits</li> <li>Process Data Output 0 bits</li> <li>Process Data Input 16 bits</li> <li>Vendor ID 396</li> <li>Device ID 1622017</li> <li>Function ID 0</li> <li>OPERATE</li> <li>IDLE 4282</li> <li>MSEQ ISDUIdle, PDOut., PDOut., PDIn: ff.c9, PDIn:, OD: 00:00, 142248 ms.</li> <li>MSEQ ISDUIdle, PDOut., PDOut., PDIn: ff.c9, PDIn:, OD: 00:00, 142248 ms.</li> <li>MSEQ ISDUIdle, PDOut., PDOut., PDIn: ff.c9, PDIn:, OD: 00:00, 142252 ms.</li> <li>MSEQ ISDUIdle, PDOut., PDIn: ff.c4, PDIn:, OD: 00:00, 142252 ms.</li> <li>MSEQ ISDUIdle, PDOut., PDIn: ff.c4, PDIn:, OD: 00:00, 142252 ms.</li> <li>MSEQ ISDUIdle, PDOut., PDIn: ff.d4, PDIn:, OD: 00:00, 142255 ms.</li> <li>MSEQ ISDUIdle, PDOut., PDUt., PDIn: ff.d7, PDIn:, OD: 00:00, 142255 ms.</li> <li>MSEQ ISDUIdle, PDOut., PDUt., PDIn: ff.d7, PDIn:, OD: 00:00, 142255 ms.</li> <li>MSEQ ISDUIdle, PDOut., PDUt., PDIn: ff.d7, PDIn:, OD: 00:00, 142255 ms.</li> <li>MSEQ ISDUIdle, PDOut., PDUt., PDIn: ff.d7, PDIn:, OD: 00:00, 142255 ms.</li> <li>MSEQ ISDUIdle, PDOut., PDUt., PDIn: ff.d7, PDIn:, OD: 00:00, 142255 ms.</li> <li>MSEQ ISDUIdle, PDOut., PDUt., PDIn: ff.d7, PDIn:, OD: 00:00, 142255 ms.</li> <li>MSEQ ISDUIdle, PDOut., PDUt., PDIn: ff.d7, PDIn:, OD: 00:00, 142255 ms.</li> <li>MSEQ ISDUIdle, PDOut., PDUt., PDIn: ff.d7, PDIn:, OD: 00:00, 142255 ms.</li> <li>MSEQ ISDUIdle, PDOut., PDUt., PDIn: ff.d7, PDIn:, OD: 00:00, 142255 ms.</li> <li>MSEQ ISDUIdle, PDOut., PDUt., PDIn: ff.d7, PDIn:, OD: 00:00, 142255 ms.</li> <li>MSEQ ISDUIdle, PDUt., PDU., PDIn: ff.d7, PDIn:, OD: 00:00, 142255 ms.</li> <li>MSEQ ISDUIdle, PDUt., PDUt., PDIn: ff.d7, PDIn:, OD: 00:00, 142256 ms.</li> <li>MSEQ ISDUIdle, PDUt., PDUt., PDIn: ff.d7, PDIn:, OD: 00:00, 142256 ms.</li> <li>MSEQ ISDUIdle, PDUt., PDUt., PDIn: ff.d7,</li></ul>	

Due to a lot of data, the trace is split to segments

It is possible to switch between segments with controls on "Segment" panel

Trace Segment: 27/27	$( \leftarrow \rightarrow )$

It is possible to switch next, previous and any segment

For example to switch to segment 0: Select button "Switch segment" and select first segment:

🖵 IO-Link Monitor	
Trace Segment: 27/27	\$ € →
<ul> <li>✓ Standard Parameters         Master Cycle Time 1ms         Device Min Cycle Time 1ms         Preoperate MSeq Type1         Preoperate On-request data length 2 bytes         Operate On-request data length 2 bytes         Operate On-request data length 2 bytes         IO-Link Revision 1.1         ISDU is supported         Process Data Output 0 bits         Process Data Output 0 bits         Process Data Input 16 bits         Vendor ID 396         Device ID 1622017         Function ID 0         ✓ OPERATE         ✓ IDLE 4282         ▶ MSEQ ISDUIdle, PDOutt , PDOutt , PDIn: ff.c9, PDIn: , OD: 00:00, 142248 ms.         ▶ MSEQ ISDUIdle, PDOutt , PDOutt , PDIn: ff.c9, PDIn: , OD: 00:00, 142249 ms.         ▶ MSEQ ISDUIdle, PDOutt , PDOutt , PDIn: ff.c4, PDIn: , OD: 00:00, 142250 ms.         ▶ MSEQ ISDUIdle, PDOutt , PDOutt , PDIn: ff.c4, PDIn: , OD: 00:00, 142251 ms.         ▶ MSEQ ISDUIdle, PDOutt , PDOutt , PDIn: ff.c4, PDIn: , OD: 00:00, 142252 ms.         ▶ MSEQ ISDUIdle, PDOutt , PDOutt , PDIn: ff.c4, PDIn: , OD: 00:00, 142252 ms.         ▶ MSEQ ISDUIdle, PDOutt , PDIn: ff.c4, PDIn: , OD: 00:00, 142255 ms.         ▶ MSEQ ISDUIdle, PDOutt , PDIn: ff.c4, PDIn: , OD: 00:00, 142252 ms.         ▶ MSEQ ISDUIdle, PDOutt , PDIn: ff.c4, PDIn: , OD: 00:00, 142255 ms.         ▶ MSEQ ISDUIdle, PDOutt , PDIn: ff.c4, PDIn: , OD: 00:00, 142255 ms.         ▶ MSEQ ISDUIdle, PDOutt , PDIn: ff.c4, PDIn: , OD: 00:00, 142255 ms.         ▶ MSEQ ISDUIdle, PDOutt , PDIn: ff.c4, PDIn: , OD: 00:00, 142255 ms.         ▶ MSEQ ISDUIdle, PDOutt , PDIn: ff.c4, PDIn: , OD: 00:00, 142255 ms.         ▶ MSEQ ISDUIdle, PDOutt , PDIn: ff.c4, PDIn: , OD: 00:00, 142255 ms.         ▶ MSEQ ISDUIdle, PDOutt , PDUnt ; PDIn: ff.c4, PDIn: , OD: 00:00, 142255 ms.         ▶ MSEQ ISDUIdle, PDOutt , PDUnt ; PDIn: ff.c4, PDIn: , OD: 00:00, 142255 ms.         ▶ MSEQ ISDUIdle, PDOutt , PDUnt ; PDIn: ff.c4, PDIn: , OD: 00:00, 142256 ms.         ▶ MSEQ ISDUIdle, PDOutt , PDUnt ; PDIn: ff.c4, PDIn: , OD: 00:00, 142256 ms.         ▶ MSEQ ISDUIdle, PDOutt</li></ul>	IQ° Select trace segment         10.77 s. (10770467µs) 0 µs.         16.03 s. (16029540µs) 0 µs.         21.29 s. (21288676µs) 0 µs.         26.55 s. (26547791µs) 0 µs.         31.81 s. (31806785µs) 0 µs.         37.07 s. (37065851µs) 0 µs.         42.32 s. (42324835µs) 0 µs.         47.58 s. (47583953µs) 0 µs.         52.84 s. (52842996µs) 0 µs.         Ok

# And the first segment will be seen:

□L Trace Segment: 1/27		\$ ← →
<ul> <li>MSEQ ParRead 5 (ProcessDataln)</li> <li>MSEQ ParRead 6 (ProcessDataO)</li> <li>MSEQ CMD MasterIdent, PDOut.,</li> <li>MSEQ ParRead 7 (VendorID_MSE)</li> <li>MSEQ ParRead 8 (VendorID_LSB)</li> <li>MSEQ ParRead 9 (DeviceID_MSB)</li> <li>MSEQ ParRead 10 (DeviceID_MSB)</li> <li>MSEQ ParRead 11 (DeviceID_LSE)</li> <li>MSEQ ParRead 12 (FunctionID_LSE)</li> <li>MSEQ ParRead 13 (FunctionID_LSE)</li> <li>MSEQ ParRead 13 (FunctionID_LSE)</li> <li>MSEQ ParRead 13 (FunctionID_LSE)</li> </ul>	Dout: , PDout: , PDIn: , PDIn: , OD: 11, 5574 ms. put), PDout: , PDOut: , PDIn: , PDIn: , OD: 10, 5575 ms. utput), PDOut: , PDIn: , PDIn: , OD: 00, 5576 ms. , PDOut: , PDIn: , OD: 95, 5576 ms. 3), PDOut: , PDOut: , PDIn: , OD: 01, 5577 ms. 3), PDOut: , PDOut: , PDIn: , OD: 01, 5577 ms. 3), PDOut: , PDOut: , PDIn: , OD: 00, 5578 ms. 3), PDOut: , PDOut: , PDIn: , OD: 01, 5578 ms. 3), PDOut: , PDOut: , PDIn: , OD: 01, 5578 ms. 3), PDOut: , PDOut: , PDIn: , OD: 01, 5578 ms. 3), PDOut: , PDOut: , PDIn: , OD: 00, 5579 ms. SB), PDOut: , PDOut: , PDIn: , DDI: , OD: 00, 5579 ms. SB), PDOut: , PDOut: , PDIn: , DDI: , OD: 00, 5579 ms. SB), PDOut: , PDIn: , PDIn: , OD: 00, 5579 ms. SB), PDOut: , PDIn: , PDIn: , OD: 00, 5579 ms. PDOut: , PDIn: , PDIn: , OD: 00, 5579 ms. PDOut: , PDIn: , PDIn: , OD: 00, 5579 ms. PDOut: , PDIn: , PDIn: , OD: 00, 5579 ms. Message structure: MSeq Type0	

If only special messages are interested, it is possible to filter them:

Filter disable – all messages are shown:

IO*IO-Link iqMonitor 1.0.2.0         Settings       Update FW         IOLMonitor			<b>N</b>	Components	
IO-Link Monitor	Trace View Con	figuration	n		
Trace Segment: 1/3  Standard Parameters Startup PREOPERATE OPERATE IDLE 263 DS Read Index List IDLE 4641	Show Monitor even Show timestamps Show WakeUp even Show Trigger 0 even Show Trigger 1 even Events Event Timestamp WakeUp Trigger0RisingEdge Trigger1RisingEdge I	events [ ents [ ents [ ents [ 2503111 NA NA		cess	е (µ:

Filter enable – disable show ISDU idle messages (uncheck "Show ISDU Idle" and press Refresh button):

😡 IO-Link iqMonitor 1.0.2.0				- • •	3
Settings Update FW Info			IO-L	Development	
IO-Link Monitor	Trace View Cor	figuration			
	Show Monitor even Show timestamps Show WakeUp even Show Trigger 0 even Show Trigger 1 even	events Show ents Show ents Show	w All IO link mes w Direct Page Ao w ISDU  Show w Process Data w Events	ccess	
▷ DS Read Index List	F Events	Latest (µs)	Latest differer	nce (µs) Min. difference (µ	]
	Timestamp WakeUp Trigger0RisingEdge Trigger1RisingEdge	25031111 NA NA	56888 NA NA NA	56879 NA NA NA	
	 •				ם
-0					_

#### 4.2.1 Process Data is showing in realtime

If process data is available, if will be shown additionally in separate block:

IOLMonitor					10-LI	ink menigent components
IO-Link Monitor		Trace View Cor	nfiguratio	on		
Trace Segment: 1/1	$\diamond \leftrightarrow \rightarrow$	Show Monitor even	nts	Show All IO link	messages	
MSEQ ISDUIdle, PDOut: , PDOut: , PDIn: 23:5b, PD     MSEQ ISDUIdle, PDOut: , PDOut: , PDIn: 23:5b, PD     MSEQ ISDUIdle, PDOut: , PDOut: , PDIn: 23:5b, PD	In: , OD: 00:00, 20380 ms. A In: , OD: 00:00, 20373 ms.	<ul> <li>Show timestamps</li> <li>Show WakeUp even</li> <li>Show Trigger 0 even</li> </ul>	ents	<ul> <li>Show Direct Pa</li> <li>Show ISDU</li> <li>Show Process</li> </ul>	Show ISDU Idle	-
<ul> <li>MSEQ ISDUIdle, PDOut: , PDOut: , PDIn: 23:5c, PD</li> <li>MSEQ ISDUIdle, PDOut: , PDOut: , PDIn: 23:5c, PD</li> <li>MSEQ ISDUIdle, PDOut: , PDOut: , PDIn: 23:5c, PD</li> </ul>	In: , OD: 00:00, 20351 ms.	Show Trigger 1 ev	ents	Show Events		
<ul> <li>MSEQ ISDUIdle, PDOut: , PDOut: , PDIn: 23:5c, PD</li> <li>MSEQ ISDUIdle, PDOut: , PDOut: , PDIn: 23:5b, PD</li> </ul>	In: , OD: 00:00, 20330 ms.	F Events	Late	st (µs) Latest di	ifference (µs) Min	n. difference (µs) Max. diff
<ul> <li>MSEQ ISDUIdle, PDOut: , PDOut: , PDIn: 23:5b, PD</li> <li>MSEQ ISDUIdle, PDOut: , PDOut: , PDIn: 23:5b, PD</li> <li>MSEQ ISDUIdle, PDOut: , PDOut: , PDIn: 23:5b, PD</li> </ul>	In: , OD: 00:00, 20315 ms.	Timestamp WakeUp	204231 NA	11 56882 NA	56 NA	882 56895 A NA
<ul> <li>MSEQ ISDUIdle, PDOut: , PDOut: , PDIn: 23:5b, PD</li> <li>MSEQ ISDUIdle, PDOut: , PDOut: , PDIn: 23:5c, PD</li> </ul>	In: , OD: 00:00, 20301 ms. In: , OD: 00:00, 20293 ms.	· ·	NA	NA	NA NA	A NA
<ul> <li>MSEQ ISDUIdle, PDOut: , PDOut: , PDIn: 23:5c, PD</li> <li>MSEQ ISDUIdle, PDOut: , PDOut: , PDIn: 23:5c, PD</li> <li>MSEQ ISDUIdle, PDOut: , PDOut: , PDIn: 23:5c, PD</li> </ul>	In: , OD: 00:00, 20279 ms.					
<ul> <li>MSEQ ISDUIde, PDOut: , PDOut: , PDIn: 23:5c, PD</li> <li>MSEQ ISDUIde, PDOut: , PDOut: , PDIn: 23:5c, PD</li> <li>MSEQ ISDUIde, PDOut: , PDOut: , PDIn: 23:5b, PD</li> </ul>	In: , OD: 00:00, 20264 ms.	F Process data				
<ul> <li>MSEQ ISDUIdle, PDOut: , PDOut: , PDIn: 23:5b, PD</li> <li>MSEQ ISDUIdle, PDOut: , PDOut: , PDIn: 23:5b, PD</li> <li>MSEQ ISDUIdle, PDOut: , PDOut: , PDIn: 23:5b, PD</li> </ul>	In: , OD: 00:00, 20242 ms.	PD In 23:5B 00:01:02:03:04	:05:06:07:0	08:09:10:11:12:13:14:15	5:16:17:18:19:20:21:2	22:23:24:25:26:27:28:29:30:31
<ul> <li>MSEQ ISDUIdle, PDOut: , PDOut: , PDIn: 23:5b, PD</li> <li>MSEQ ISDUIdle, PDOut: , PDOut: , PDIn: 23:5b, PD</li> </ul>	In: , OD: 00:00, 20228 ms.	PD Out -				

#### 4.3 Control MSEQ data

It possible to set expected MSEQ parameters to control additionally master and device request

To set additional control open monitor option and set appropriate parameters (for example: Process data In length to 4, Onrequest data in Operate/Preoperate to 32) and press ok

IO-Link Monitor		Trace View Configuration	ion
Trace Segment: 1/1	$\diamond \leftrightarrow \rightarrow$	Show Monitor events	Show All IO link messages
		<ul> <li>Show timestamps events</li> <li>Show WakeUp events</li> <li>Show Trigger 0 events</li> </ul>	<ul> <li>Show Direct Page Access</li> <li>Show ISDU Show ISDU Idle</li> <li>Show Process Data</li> </ul>
	I Monitor options	- 🗆 X	Show Events
	IO-Link Baudrate:	AUTO ~	Î
	Process data input byte length	: <u>4</u> ~	st (μs) Latest difference (μs) Min. difference (με NA NA
	Process data output byte lengt	th: AUTO ~	NA NA
	On-request data in preoperate	: OD_32 ~	NA NA NA NA
	On-request data in operate:	OD_32	
		Ok Cancel	

And start Monitoring, wait needed time, stop monitoring.

Application controls these parameters only after monitoring is stop and parsing is started

if Application detect mismatch between set parameters and parameters from device – this messages will be marked with red:

OPERATE
▲ IDLE 43
MSEQ ISDUIdle, PDOut: , PDOut: , PDIn: , PDIn: , OD: , 2293 ms.
Master Message , TimeStamp 2293699 µs. data: f1:94 (size 2)
Device Message TimeStamp 2293828 us_data: 00:00:23:d1:0c (size 5)
ERROR: Wrong length of device message response. Expected: 7.

# if on-request data size mismatch:

▷ MSEQ ParRead 2 (DeviceMinCycleTime), PDOut: , PDOut: , PDIn: , PDIn: , OD: 41, 2575 ms.			
MSEQ ParRead 3 (MSequenceCapability), PDOut: , PDOut: , PDIn: , PDIn: , OD: 2b, 2576 ms.			
Master Message , TimeStamp 2576309 μs. data: a3:11 (size 2)			
Device Message , TimeStamp 2576435 μs. data: 2b:1b (size 2)			
OD: 2b (size: 1)			
ERROR: Defined before on-requert data length for Operate OD_8 differs from one, obtained from direct page: 2			
MSEQ ParRead 4 (RevisionID), PDOut: , PDOut: , PDIn: , PDIn: , OD: 11, 25/7 ms.			
MSEQ ParRead 5 (ProcessDataInput), PDOut: , PDOut: , PDIn: , PDIn: , OD: 10, 2577 ms.			
MSEQ ParRead 6 (ProcessDataOutput), PDOut: , PDOut: , PDIn: , PDIn: , OD: 00, 2578 ms.			
MSEQ CMD MasterIdent, PDOut: , PDIn: , PDIn: , OD: 95, 2579 ms.			
▷ MSEQ ParRead 7 (VendorID_MSB), PDOut: , PDOut: , PDIn: , PDIn: , OD: 02, 2579 ms.			
▷ MSEQ ParRead 8 (VendorID_LSB), PDOut: , PDOut: , PDIn: , PDIn: , OD: 40, 2580 ms.			
MSEQ Unknown Read PAGE AddrCtrl 0x09, PDOut: , PDOut: , PDIn: , PDIn: , OD: , 2581 ms.			
▷ MSEQ ParRead 9 (DeviceID_MSB), PDOut: , PDOut: , PDIn: , PDIn: , OD: 00, 2581 ms.			
▷ MSEQ ParRead 10 (DeviceID_MID), PDOut: , PDOut: , PDIn: , PDIn: , OD: 03, 2582 ms.			
▷ MSEQ ParRead 11 (DeviceID_LSB), PDOut: , PDOut: , PDIn: , OD: 85, 2583 ms.			
MSEQ ParRead 12 (FunctionID_MSB), PDOut: , PDOut: , PDIn: , PDIn: , OD: 00, 2583 ms.			
MSEQ ParRead 13 (FunctionID_LSB), PDOut: , PDOut: , PDIn: , PDIn: , OD: 00, 2584 ms.			
▷ MSEQ CMD Preoperate, PDOut: , PDOut: , PDIn: , OD: 9a, 2585 ms.			
▶ PREOPERATE			
▲ OPERATE			
DLE 42			
▲ MSEQ ISDUCtrlReserved, PDOut: , PDOut: , PDIn: , PDIn: , OD: , 2899 ms.			
Master Message , TimeStamp 2899041 μs. data: 70:80:93:0d (size 4)			
Device Message , TimeStamp 2899253 µs. data: 23:d3:2d (size 3)			
ERROR: Wrong length of master message. Expected: 10.			
A NOTO IODUIO-114444 4 DDOLA, DDOLA, DDILA, DDILA, OD, 4000-114			

## 4.4 iqMonitor Tool Setting

#### 4.4.1 Setup user trace folder

By default, trace files are written into c:\Users\[username]\AppData\Roaming\iqMonitor\Workspace\[date\_time]

To change default folder to saving trace file – open iqMonitor Tool setting, select desired folder and press enter

IOLMonitor		
IO-Link Monitor		Trace View Configu
Trace Segment: 1/1	Monitor settings	×
	Workspace folder: C:\tm	p\iqMonitor\Workspace s
	Save process data into file:	S
		Ok Cancel

# 4.4.2 Activate storing process data into text file

To activate saving process data into file – open iqMonitor Tool setting, select option "Save process data into file" and press ok.

The process data will be saved into file "process\_data.log" in the same folder as trace files:

[Workspace folder]\[date\_time folder]

File Format:

[Date/Time] | [Master message timestamp] | [Process data in] | [Process Data out] | [word "changed", if process data has been changed]

# Example:

11/05/2021 12:00:31 | 4160498 | 23:5E | - | 11/05/2021 12:00:31 | 4167753 | 23:5D | - | changed 11/05/2021 12:00:31 | 4175008 | 23:5D | - | 11/05/2021 12:00:31 | 4182263 | 23:5D | - |

# 4.5 Load stored data

# All traces stored in iqMonitor workspace folder:

lଔ IO-Link iqMonitor 1.0.5.1	- 0 X
Settings Update FW Info	E-Link Intelligent Components
IOLMonitor	
D-Link Monitor	Trace View Configuration
Trace Segment: $1/1$ $\diamondsuit \leftarrow \rightarrow \rightarrow$	Show Monitor events     Show All IO link messages
Standard Parameters STARTUP PREOPERATE ISDU Read index 0x0015 subindex 0x00 error 0x8011 IDLE 1	Show timestamps events       Show Direct Page Access         Show WakeUp events       Show ISDU Idle         Show Trigger 0 events       Show Process Data         Show Trigger 1 events       Show Events
<ul> <li>MSEQ ParWrite 1 (MasterCycleTime), PDOut: , PDOut: , PDIn: , PDIn: , OD: 41</li> <li>IDLE 1</li> <li>MSEQ CMD Operate, PDOut: , PDOut: , PDIn:OD: 99:00:00:00:00:00:00</li> </ul>	<b>Ψ</b> Events
<ul> <li>▲ OPERATE</li> <li>▶ IDLE 46</li> <li>▶ DS Read Index List</li> <li>▶ IDLE 438</li> <li>▶ MSEQ CMD Fallback, PDOut: , PDOut: , F</li> <li>■ Save process data into file: □</li> </ul>	- X atest difference (ps) Mint. difference (
	Ok Cancel

To load previously stored traces (Tool has to be connected to iqInterface !):

- Click "Open Trace" button:
- Select appropriate folder

IC IO-Link iqMonitor 1.0.5.1		- 0 X
Settings Upda	ate FW Info	O-Link Intelligent Components
IO-Link Monitor	🕟 🌣 🖳 🖻 🔯 Trace View Configuration	
► Standard Par ► Standard Par ► STARTUP ■ PREOPERAT ► ISDU Rea ► IDLE 1 ► MSEQ Pa	Folder	All IO link manages ess SDU Idle
<ul> <li>▷ IDLE 1</li> <li>▷ MSEQ CN</li> <li>✓ OPERATE</li> <li>▷ IDLE 46</li> <li>▷ DS Read</li> <li>▷ IDLE 438</li> <li>▷ MSEQ CN</li> </ul>	<ul> <li>2023_07_19_17_27_31</li> <li>2023_07_19_17_28_13</li> <li>2023_07_19_17_30_42</li> <li>2023_07_19_17_30_58</li> <li>2023_07_19_17_52_29</li> <li>2023_07_19_18_21_15</li> </ul>	e (μs) Min. difference (μs) Max. diffe 56885 56893 NA NA NA NA NA NA
٩	<ul> <li>2023_07_19_18_21_44</li> <li>2023_07_19_18_26_30</li> <li>2023_07_19_18_27_32</li> <li>2023_07_20_09_53_58</li> <li>2023_07_20_09_54_13</li> <li>2023_08_04_10_25_01</li> <li>2023_08_04_10_25_36</li> </ul>	8:19:20:21:22:23:24:25:26:27:28:29:30:31

# 5 Troubleshooting

Issue	Solution
Process Data In/Out, On-Request Data are not detected correctly, not showed in trace	This happen, if tracing has been started in the middle of communication and automatic detection for communication option is set. To use automatic detection – it is required to run tracing before communication start. If start tracing should be run in the middle of communication – the correct communication parameters, such as Baudrate, Length of Process data and On-Request data should be set manually in Monitor Option dialog Another possibility to force autodetection during communication, send ISDU request – for example read/write some ISDU parameter (except with addresses 0 and 1).