



ASAM

Association for Standardization of
Automation and Measuring Systems

ASAM iLinkRT

High-Speed Automation Access Protocol for
MC-Server

Programmers Guide

Version 2.0.0

Date: 2019-01-20

Base Standard

© by ASAM e.V., 2019

Disclaimer

This document is the copyrighted property of ASAM e.V.
Any use is limited to the scope described in the license terms. The license
terms can be viewed at www.asam.net/license

Table of Contents

Foreword	6
1 Introduction	7
1.1 Overview	7
1.2 Motivation	7
1.3 Scope	8
2 Relations to Other Standards	9
2.1 References to Other Standards	9
2.1.1 ASAM ASAP3	9
2.1.2 ASAM MCD 2-MC	9
2.1.3 ASAM Datatypes.....	9
3 iLinkRT Protocol	10
3.1 Protocol basics.....	10
3.1.1 Data Acquisition (DAQ)	10
3.2 Message format	11
3.2.1 Header	12
3.2.1.1 Length field.....	12
3.2.1.2 Counter field.....	12
3.2.2 CTO Packet	13
3.2.2.1 PID field.....	13
3.2.2.2 Data field	13
3.2.3 Sending of multiple commands	16
3.2.4 DTO Packet	16
3.2.4.1 DAQID field	16
3.2.4.2 Timestamp field	16
3.2.4.3 Data field	17
3.3 State Machine	17
4 Command, Event and Data Type overview	18
4.1 Protocol Commands	18
4.2 Event codes	19
4.3 Data Types	19
4.3.1 RT_STRING.....	19
4.3.2 Characteristic dimension enumeration	19
4.3.3 Data type enumeration	20
4.3.4 Protocol and COMPATIBILITY ID enumeration.....	20
5 Detailed Description of all Commands	21
5.1 Standard Commands	21
5.1.1 RT_CONNECT	21
5.1.2 RT_DISCONNECT.....	23

5.1.3	RT_GET_STATUS.....	24
5.1.4	RT_SHORT_UPLOAD	25
5.2	Calibration Commands	26
5.2.1	RT_CAL_DOWNLOAD	26
5.2.2	RT_CAL_UPLOAD	28
5.2.3	RT_SHORT_DOWNLOAD.....	30
5.3	Data acquisition Commands	31
5.3.1	RT_GET_DAQ_EVENT_INFO	31
5.3.2	RT_GET_DAQ_RESOLUTION_INFO.....	33
5.3.3	RT_SET_DAQ_PTR	35
5.3.4	RT_START_STOP_DAQ_LIST.....	36
5.3.5	RT_START_STOP_SYNCH	37
5.4	Configuration Commands.....	38
5.4.1	RT_GET_ALL_SERVER	38
5.4.2	RT_READ_CAL	39
5.4.3	RT_READ_DAQ	41
6	Description of Events and error handling	42
6.1	Communication Error Handling.....	42
6.1.1	Error Code Handling	42
6.1.2	Error Code Overview.....	43
6.2	Event Description.....	43
6.2.1	EV_SESSION_TERMINATED	43
7	Terms and Definitions	44
8	Symbols and Abbreviated Terms	45
9	Bibliography	46
Appendix: A.	MC-Clients / MC-Servers connections	47
A.1.	Step 1: Detection of available servers	47
A.2.	Step2: Establish of logical communication	48
A.3.	Step 3: DAQ access.....	48
A.3.1.	Multicast DAQ transmission	48
A.3.2.	Unicast DAQ transmission	49
Appendix: B.	Sequence for DAQ list measurements	50
B.1.	ASAP 3 Configuration	50
B.2.	iLinkRT MC-Server identification	51
B.3.	Configuration upload	52
B.4.	Measurement start.....	53
B.5.	Data access.....	53
Appendix: C.	DAQ Numbering	55

C.1. MC-Server configuration.....	55
C.2. DAQ sequence in Multi Client scenario and multicast usage	55
Figure Directory	56
Table Directory	57

Foreword

iLinkRT describes a multi MC-Client / multi MC-Server architecture for the purpose of fast and channel based communication between MC-Servers and MC-Clients.

The iLinkRT standard was introduced 2006 into the market as an industry standard for the automotive area. The target was to extend the communication between MC-Clients (test benches / auto calibration tools) and MC-Servers. ASAM e.V. took over this standard in 2019 as it is meanwhile used for multiple solutions.