

CC-Link IE Field Basic Interface

Manual

**CC-Link IE Field
Basic**

CSP+

This document applies to the following devices:

- **C1250-CC-xx-xx-xxx (SG6)**
- **C1250-MI-xx-xx-xxx (SG6)**

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Note

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1 SYSTEM OVERVIEW

The LinMot C1250-CC-xx-xx and C1250-MI-xx-xx devices are CC-Link IE Field Basic slaves with the following parameters:

Device Property	Value
Number of occupied stations	1
Standard response time	1ms or less

For further information on CC-Link IE Field Basic please visit:

<https://www.cc-link.org/en/index.html>

2 CONNECTING TO THE CC_LINK IE FIELD BASIC NETWORK

2.1 PIN ASSIGNMENT OF THE CONNECTORS X17-X18

The CC-Link IE Field Basic connector is a standard RJ45 female connector with a pin assignment as defined by EIA/TIA T568B:

X17 – X18	ETHERCAT Connector		
	Pin	Wire color code	Assignment 100BASE-TX
	1	WHT/ORG	Rx+
	2	ORG	Rx-
	3	WHT/GRN	Tx+
	4	BLU	-
	5	WHT/BLU	-
	6	GRN	Tx-
	7	WHT/BRN	-
	8	BRN	-
	case	-	-
RJ-45	Use standard patch cables (twisted pair, S/UTP, AWG26) for wiring. This type of cable is usually referred to as a "Cat5e-Cable".		

2.2 SETTING THE STAION-ID / IP-ADDRESS

The lowest byte of the Station ID (192.168.3.x) can be set via the two Hex-Switches S1 and S2. This byte can have a value between 1 (01h) and 254 (FEh). After changing the ID the new value gets active after a reset of the device.

NodeID Selectors	
C12x0 	<p>S1 (5..8)</p> <p>S2 (1..4)</p> <p>Station-ID High Nibble (0 ... F). Bit 5 is the LSB, bit 8 the MSB.</p> <p>Station-ID Low Nibble (0 ... F). Bit 1 is the LSB, bit 4 the MSB.</p> <p>Setting the Station-ID high & low to 0xFF initiates resetting the drive to manufacturer settings!</p>

3 CC-LINK IE FIELD BASIC PARAMETERS AND VARIABLES

3.1 PARAMETERS

The CC-Link IE Field Basic Interface has an additional parameter tree branch (Parameters → CC-Link IE Field Basic), which can be configured with the distributed LinMot-Talk software.

With these parameters, the CC-Link IE Field Basic behaviour can be configured.
The LinMot-Talk software can be downloaded from <http://www.linmot.com>.

3.1.1 Dis-/Enable

With the Dis-/Enable parameter the LinMot device can be run without the CC-Link IE Field Basic Interface going online. So in a first step the system can be configured and run without any bus connection.

CC-Link IE Field Basic\ Dis-/Enable	
Disable	Device runs without CC-Link IE Field Basic.
Enable	Device runs with CC-Link IE Field Basic.



Important: If the CC-Link IE Field Basic Interface is disabled, the integrated CC-Link IE Field Basic switch is not powered! No messages will be sent to other devices connected to the network via the LinMot device.

3.1.2 IP Configuration / StationID

In this section the IP-Address / StationID can be configured.

CC-Link IE Field Basic\ IP Configuration / StationID		Default value
IP Configuration Mode	Selects how the IP-Address / StationID is obtained.	Use configured IP with Hex Switches S1 and S2 as lowest byte
IP address / StationID 1st Byte	1st byte of device IP address.	192
IP address / StationID 2nd Byte	2nd byte of device IP address.	168
IP address / StationID 3rd Byte	3rd byte of device IP address.	3
IP address / StationID 4th Byte	4th byte of device IP address.	1
Netmask 1st Byte	1st byte of device Netmask.	255
Netmask 2nd Byte	2nd byte of device Netmask.	255
Netmask 3rd Byte	3rd byte of device Netmask.	255
Netmask 4th Byte	4th byte of device Netmask.	0
Default Gateway IP 1st Byte	1st byte of the default gateway IP address.	0
Default Gateway IP 2nd Byte	2nd byte of the default gateway IP address.	0
Default Gateway IP 3rd Byte	3rd byte of the default gateway IP address.	0
Default Gateway IP 4th Byte	4th byte of the default gateway IP address.	0

3.1.3 IP Configuration / StationID\ IP Configuration Mode

In this section the method how to obtain the IP-Address / StationID is configured.

CC-Link IE Field Basic\ IP Configuration / StationID\ IP Configuration Mode	
Use configured IP with Hex Switches S1 and S2 as lowest Byte	IP Address is configured manually via 'IP Configuration' . The lowest Byte of the IP Address is configured via the Hex Switches S1 and S2.

CC-Link IE Field Basic\ IP Configuration / StationID\ IP Configuration Mode

Use configured IP Address IP Address is configured manually via 'IP Configuration' .

3.1.4 Monitoring Channels

In this section the Monitoring Channels can be configured. The monitoring channels are used to map arbitrary parameters in the real-time data transmitted to the PLC via their UPID.

CC-Link IE Field Basic\ Monitoring Channels		Default value
Channel 1 UPID	Defines the source variable by UPID of the monitoring channel 1.	0
Channel 2 UPID	Defines the source variable by UPID of the monitoring channel 2.	0
Channel 3 UPID	Defines the source variable by UPID of the monitoring channel 3.	0
Channel 4 UPID	Defines the source variable by UPID of the monitoring channel 4.	0
Channel 5 UPID	Defines the source variable by UPID of the monitoring channel 5.	0
Channel 6 UPID	Defines the source variable by UPID of the monitoring channel 6.	0
Channel 7 UPID	Defines the source variable by UPID of the monitoring channel 7.	0
Channel 8 UPID	Defines the source variable by UPID of the monitoring channel 8.	0

3.1.5 Parameter Channels

In this section the Parameter Channels can be configured. The Parameter channels are used to map arbitrary parameters in the real-time data received from the PLC via their UPID.

CC-Link IE Field Basic\ Parameter Channels		Default value
Channel 1 UPID	Defines the source variable by UPID of the parameter channel 1.	0
Channel 2 UPID	Defines the source variable by UPID of the parameter channel 2.	0
Channel 3 UPID	Defines the source variable by UPID of the parameter channel 3.	0
Channel 4 UPID	Defines the source variable by UPID of the parameter channel 4.	0
Channel 5 UPID	Defines the source variable by UPID of the parameter channel 5.	0
Channel 6 UPID	Defines the source variable by UPID of the parameter channel 6.	0
Channel 7 UPID	Defines the source variable by UPID of the parameter channel 7.	0
Channel 8 UPID	Defines the source variable by UPID of the parameter channel 8.	0

3.2 VARIABLES

Name	Type	Definition
Main State	UInt16 Enumerator	Main State of CC-Link IE FB Interface SW
Error State	UInt16 Enumerator	Error State of CC-Link IE FB Interface SW
Error Code	UInt32	Error Code of CC-Link IE FB Interface SW
Error Location	UInt32	Error Location of CC-Link IE FB Interface SW
IP Address / StationID	String	Active IP address for CC-Link IE FB.
NetMask	String	Active NetMask for CC-Link IE FB.
Default Gateway	String	Active Default Gateway for CC-Link IE FB.
Config Module Control	UInt16	Current Value of Config Module Control
Config Module Index In	UInt16	Current Value of Config Module Index In
Config Module Value In	UInt32	Current Value of Config Module Value In
Config Module Status	UInt16	Current Value of Config Module Status
Config Module Index Out	UInt16	Current Value of Config Module Index Out
Config Module Value Out	UInt32	Current Value of Config Module Value Out

4 MAPPING OF PROCESS DATA

The LinMot drive is a CC-Link IE Field Basic slave. To configure it with a CC-Link master, the corresponding CSP+ file is used. The CSP+ File can be found in the installation directory. (typically C:\Program Files\LinMot\LinTalk x.x\Firmware\Interfaces\CCLinkIEFB\CSPP)

4.1 Data transmitted to PLC

Data Type	Index	Name	Data Type
RX	-	-	
	-	MCSW_Variables	
RWr	00h	MCSW_StateVar	UInt16
	01h	MCSW_StatusWord	UInt16
	02h	MCSW_WarnWord	UInt16
	03h	MCSW_ActualPosition 32Bit	Int32
	05h	MCSW_DemandPosition 32Bit	Int32

Data Type	Index	Name	Data Type
	07h	MCSW_DemandCurrent 32Bit	Int32
	-	UPID_Variables	
	09h	Parameter_by_UPID_01	UInt32
	0Bh	Parameter_by_UPID_02	UInt32
	0Dh	Parameter_by_UPID_03	UInt32
	0Fh	Parameter_by_UPID_04	UInt32
	11h	Parameter_by_UPID_05	UInt32
	13h	Parameter_by_UPID_06	UInt32
	15h	Parameter_by_UPID_07	UInt32
	17h	Parameter_by_UPID_08	UInt32
	-	Configuration_Module¹	
	19h	TX_Cfg_Module_Control	UInt16
	1Ah	TX_Cfg_Module_Index_Out	UInt16
	1Bh	TX_Cfg_Module_Value_Out	UInt32

¹ For a detailed description on how to use this module please consult the manual “LinMot drive Configuration over Fieldbus Interfaces SG5”.



4.2 Data received from PLC

Data Type	Index	Name	Data Type
RY	-	-	
		MCSW_Variables	
RWw	00h	MCSW_ControlWord	UInt16
	01h	MCSW_MotionCommandHeader	UInt16
	02h	MCSW_MotionCommandByte_00_01	UInt16
	03h	MCSW_MotionCommandByte_02_03	UInt16
	04h	MCSW_MotionCommandByte_04_05	UInt16
	05h	MCSW_MotionCommandByte_06_07	UInt16
	06h	MCSW_MotionCommandByte_08_09	UInt16
	07h	MCSW_MotionCommandByte_10_11	UInt16
	08h	MCSW_MotionCommandByte_12_13	UInt32
	09h	MCSW_MotionCommandByte_14_15	UInt16
	0Ah	MCSW_MotionCommandByte_16_17	UInt16
	0Bh	MCSW_MotionCommandByte_18_19	UInt16
	-	UPID_Variables	
	0Ch	Parameter_by_UPID_01	UInt32
	0Eh	Parameter_by_UPID_02	UInt32
	10h	Parameter_by_UPID_03	UInt32
	12h	Parameter_by_UPID_04	UInt32

Data Type	Index	Name	Data Type
	14h	Parameter_by_UPID_05	UInt32
	16h	Parameter_by_UPID_06	UInt32
	18h	Parameter_by_UPID_07	UInt32
	1Ah	Parameter_by_UPID_08	UInt32
	-	Configuration_Module¹	
	1Ch	RX_Cfg_Module_Status	UInt16
	1Dh	RX_Cfg_Module_Index_In	UInt16
	1Eh	RX_Cfg_Module_Value_In	UInt32

¹ For a detailed description on how to use this module please consult the manual “LinMot drive Configuration over Fieldbus Interfaces SG5”.

5 RT LEDS

Error Codes		
RT BUS ERROR  OK		C1250-MI:  L3 L4
OK L3 (RU N)	RT Bus Error L4 (ERR)	Description
Off	-	Station is disconnected.
On	-	Station in operation and cyclic transmission in progress.
Flickering	-	Station not configured.
Blinking	-	Station in operation and cyclic transmission stopped.
-	Off	Station in normal operation.
-	On	Communication error (e.g. no PLC connected).
-	Triple Flash	DPM watchdog has expired.

Off: constantly off.
 On: constantly on.
 Flickering: equal on and off times with a frequency of approximately 10 Hz.
 Blinking: equal on and off times with a frequency of approximately 2,5 Hz.
 Single Flash: one short flash followed by a long off phase.

Double Flash: a sequence of two short flashes, separated by an off phase . The sequence is finished by a long off phase.

Triple Flash: a sequence of three short flashes, separated by an off phase . The sequence is finished by a long off phase.

6 INTERFACE ERROR CODES

Please refer to “Usermanual Motion Control Software” for the error codes of the MC software. The CC-Link IE FB interface has the following additional error codes:

Error Code	Error Description	Recommended Actions
C0h	Cfg Err: Invalid StationID	The defined StationID is not in the valid range.

7 TROUBLESHOOTING

7.1 ANALYZING TRAFFIC IN CC-LINK IE FIELD BASIC NETWORKS

To analyze the data traffic in a CC-Link IE Field Basic network the use of a network protocol analyzer is strongly recommended.

Wireshark is one of the most used analyzers and can be downloaded free of charge from <http://www.wireshark.org>.

7.2 FREQUENT PROBLEMS AND SOLUTIONS

Problem:	The drive cannot connect to the PLC
Possible Solution:	Check if the Station-ID / IP-Address of the drive matches with the one configured in the PLC.
Possible Solution:	Check if the Station-ID / IP-Address of the drive is unique, and no other device in the network has the same ID.

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