

FR-Roboter Serie an CC-Link IE Field Basic

Quickstart

CC-Link IE Field Basic

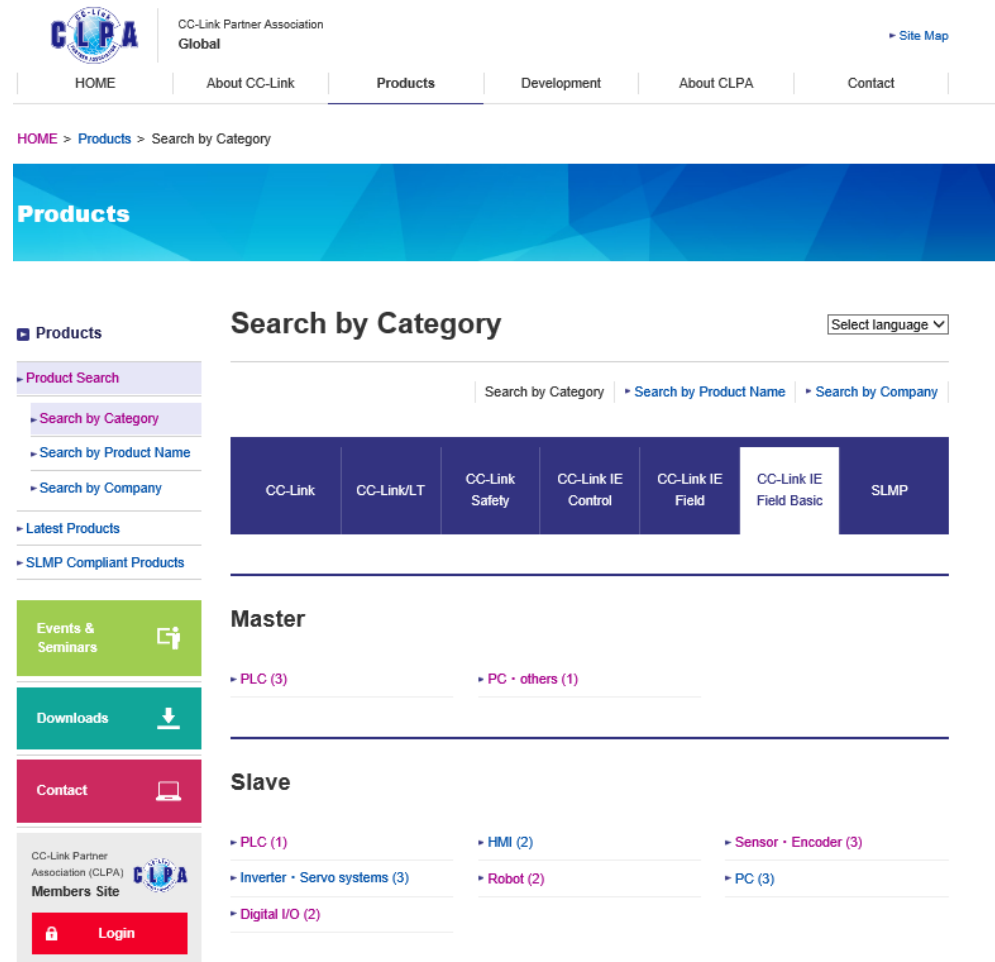
Die FR-Roboter-Serie unterstützt das CC-Link IE Field Basic Protokoll auf seiner eingebauten Ethernetschnittstelle. Der Roboter ist immer ein Slave-Modul.

Standard Ethernetkommunikation und Netzwerk-Kommunikation über CC-Link IE Field Basic auf dem gleichen RJ45-Ethernetkabel.



Auf der Webseite der CC-Link Organisation gibt es eine Übersicht der verfügbaren Master und Slave Module.

<https://eu.cc-link.org/en/>



The screenshot shows the website interface for the CC-Link Partner Association Global. The main navigation bar includes links for HOME, About CC-Link, Products, Development, About CLPA, and Contact. A breadcrumb trail indicates the current location: HOME > Products > Search by Category. A large blue banner with the word 'Products' is displayed. Below this, a sidebar on the left contains a 'Products' menu with options for Product Search, Search by Category (selected), Search by Product Name, Search by Company, Latest Products, and SLMP Compliant Products. There are also buttons for Events & Seminars, Downloads, and Contact. The main content area is titled 'Search by Category' and features a language selection dropdown and three search filters: Search by Category, Search by Product Name, and Search by Company. A table of product categories is shown, with 'CC-Link IE Field Basic' highlighted. Below the table, the 'Master' section lists 'PLC (3)' and 'PC - others (1)'. The 'Slave' section lists 'PLC (1)', 'Inverter - Servo systems (3)', 'Digital I/O (2)', 'HMI (2)', 'Robot (2)', and 'Sensor - Encoder (3)'. At the bottom left, there is a 'Members Site' section with a 'Login' button.

CC-Link	CC-Link/LT	CC-Link Safety	CC-Link IE Control	CC-Link IE Field	CC-Link IE Field Basic	SLMP

Master

- PLC (3)
- PC - others (1)

Slave

- PLC (1)
- Inverter - Servo systems (3)
- Digital I/O (2)
- HMI (2)
- Robot (2)
- Sensor - Encoder (3)
- PC (3)



Mitsubishi Electric Industrial Robot

CR800 series controller
CR750/CR751 series controller

Ethernet Function Instruction Manual

Handbuch zum CR800-Controller

Im Handbuch wird die Kommunikation zu einem IQ-R Master beschrieben.

Im Beispiel hier wird als Master eine IQ-F eingesetzt.

Mögliche Mitsubishi Steuerungen:

IQ-R, IQ-F, System Q, L-Serie

MELFA
BFP-A3379-B


5.2 Product List

This section describes the products which configure a CC-Link IE Field Network Basic system.

CPU modules can be used as the master station

The following table lists the CPU modules which can be used as the master station of CC-Link IE Field Network Basic.

To check the firmware version of these CPU modules, refer to the following.

 Page 57 Added and Enhanced Functions

MELSEC iQ-R

Product name	Model name
Programmable controller CPU	R04CPU, R04ENCPU, R08CPU, R08ENCPU, R16CPU, R16ENCPU, R32CPU, R32ENCPU, R120CPU, R120ENCPU

MELSEC iQ-F

Product name	Model name
FX5U CPU module	FX5U-32MR/ES, FX5U-32MT/ES, FX5U-32MT/ESS, FX5U-64MR/ES, FX5U-64MT/ES, FX5U-64MT/ESS, FX5U-80MR/ES, FX5U-80MT/ES, FX5U-80MT/ESS, FX5U-32MR/DS, FX5U-32MT/DS, FX5U-32MT/DSS, FX5U-64MR/DS, FX5U-64MT/DS, FX5U-64MT/DSS, FX5U-80MR/DS, FX5U-80MT/DS, FX5U-80MT/DSS
FX5UC CPU module	FX5UC-32MT/D, FX5UC-32MT/DSS, FX5UC-64MT/D, FX5UC-64MT/DSS, FX5UC-96MT/D, FX5UC-96MT/DSS

MELSEC-Q

Product name	Model name
High-speed Universal model QCPU	Q03UDV/CPU, Q04UDV/CPU, Q06UDV/CPU, Q13UDV/CPU, Q26UDV/CPU

MELSEC-L

Product name	Model name
Built-in Ethernet port LCPU	L02CPU, L02CPU-P, L06CPU, L06CPU-P, L26CPU, L26CPU-P, L26CPU-BT, L26CPU-PBT

CC-Link IE Field Network Basic Reference Manual SH(NA)-081684ENG-B

Appendix 3 Added and Enhanced Functions

This section describes added and enhanced functions of CC-Link IE Field Network Basic, as well as the corresponding firmware versions/serial numbers (first five digits) of the CPU module and software versions of GX Works3/GX Works2.

MELSEC iQ-R

Added or enhanced function	CPU module firmware version	GX Works3 software version	Reference
CC-Link IE Field Network Basic	"25" or later	"1.030G" or later	—
Group number setting	"28" or later	"1.035M" or later	Page 30 Group number setting
Automatic detection of connected device	—		Page 36 Automatic detection of connected device

MELSEC iQ-F

Added or enhanced function	CPU module firmware version	GX Works3 software version	Reference
CC-Link IE Field Network Basic	"1.040" or later	"1.030G" or later	—
Automatic detection of connected device	—	"1.035M" or later	Page 36 Automatic detection of connected device

MELSEC-Q

Added or enhanced function	CPU module serial number (first five digits)	GX Works2 software version	Reference
CC-Link IE Field Network Basic	"18112" or later	"1.555D" or later	—
Group number setting	"19042" or later	"1.565P" or later	Page 30 Group number setting
Automatic detection of connected device	—		Page 36 Automatic detection of connected device

MELSEC-L

Added or enhanced function	CPU module serial number (first five digits)	GX Works2 software version	Reference
CC-Link IE Field Network Basic	"18112" or later	"1.555D" or later	—
Automatic detection of connected device	—	"1.565P" or later	Page 36 Automatic detection of connected device

Betriebssystem und RT Toolbox Versionen

3.6.2. Supported version

Controller type	Version	Remarks
CR800-R CR800-D	A1d or later	CR75x-Q and CR75x-D are not supported

Computer support SW	Version	Remarks
RT ToolBox3	1.10L or later	

Die CC-Link IE Field Basic Kommunikation, wie auch die SLMP Kommunikation wird vom RT Toolbox3 Simulator nicht unterstützt (Stand RT Toolbox3 V1.20W).

Um die CC-Link IE Field Basic Funktion zu nutzen, muss Parameter CCLBENA=1 gesetzt werden.

In NETIP wird die IP-Adresse eingetragen.

3.6.4. Parameters

Specify settings with the following parameters.

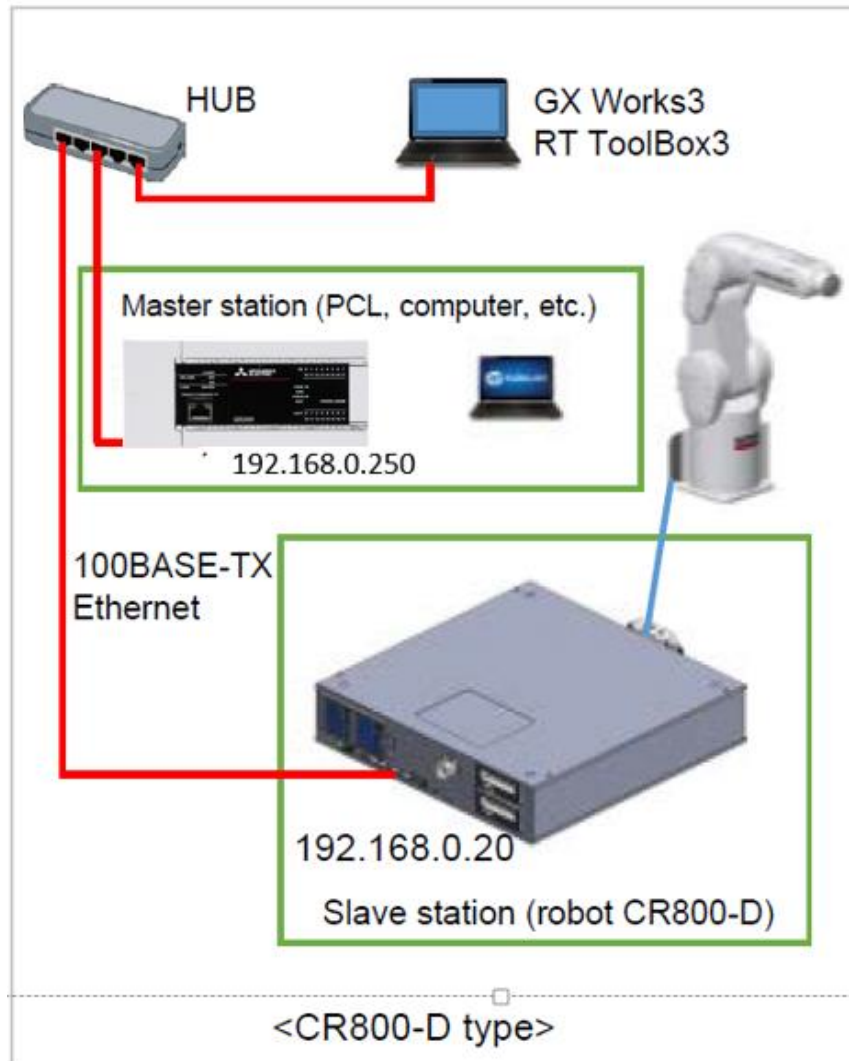
Parameter	Parameter name	No. of arrays No. of characters	Description	Factory setting
CC-Link IE Field Network Basic function, switch enable/disable	CCLBENA	Integer 1	Enable the CC-Link IE Field Network Basic function. 0: Disable / 1: Enable	0 (disable)
CC-Link IE Field Network Basic function, setting at data link error	CCLBCLR	Integer 1	When the data link malfunctions, specify whether the input status of CC-Link IE Field Network Basic is cleared to OFF or 0 or is retained. 0: Clear input / 1: Retain input	0 (clear input)

CR800 E/A Signale

Die CC-Link E/A-Daten liegen beim Roboter ab Ein-/Ausgang 6000.
Es können über die Master-Einstellungen 1 bis 4 Adressen belegt werden.

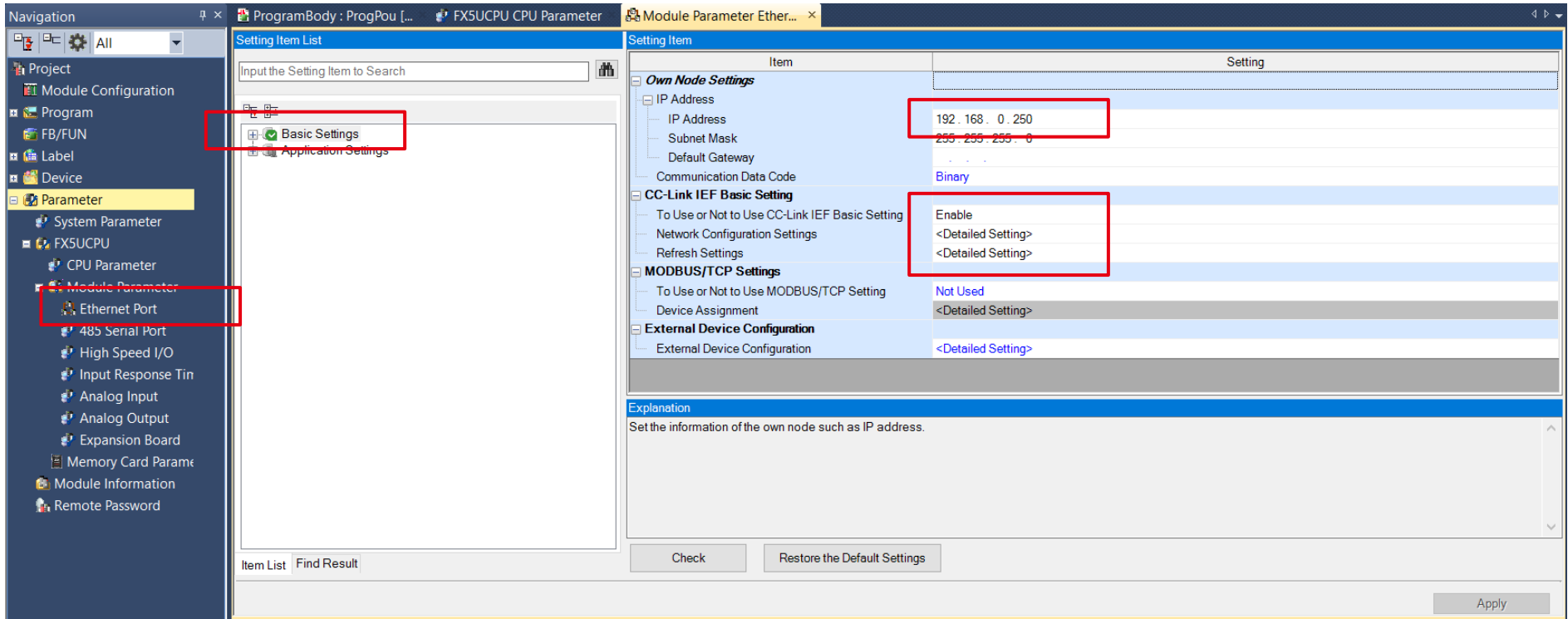
Number of stations occupied by robot	Input Output	Bitwise device				1 word device			
		Points	Link relay RX/RX (*1)	I/O signal		Points	Link register RWw/RWw (*2)	I/O register	
				Start	End			Start	End
1	Input	64	RY0 to RY3F	6000	6063	32	RWw0 to RWw1F	6000	6031
	Output	64	RX0 to RX3F	6000	6063	32	RWw0 to RWw1F	6000	6031
2	Input	128	RY0 to RY7F	6000	6127	64	RWw0 to RWw3F	6000	6063
	Output	128	RX0 to RX7F	6000	6127	64	RWw0 to RWw3F	6000	6063
3	Input	192	RY0 to RYBF	6000	6191	96	RWw0 to RWw5F	6000	6095
	Output	192	RX0 to RXBF	6000	6191	96	RWw0 to RWw5F	6000	6095
4	Input	256	RY0 to RYFF	6000	6255	128	RWw0 to RWw7F	6000	6127
	Output	256	RX0 to RXFF	6000	6255	128	RWw0 to RWw7F	6000	6127

Netzwerkkonfiguration



Basic Settings

IP-Adresse einstellen und Kommunikation über CC-Link IEF Basic mit Enable freigeben.
Danach Network Configuration und Refresh Settings einstellen.



The screenshot displays the 'Module Parameter Ether...' configuration window. The left sidebar shows the navigation tree with 'Basic Settings' and 'Ethernet Port' highlighted. The main window is divided into a 'Setting Item List' and a 'Setting Item' table.

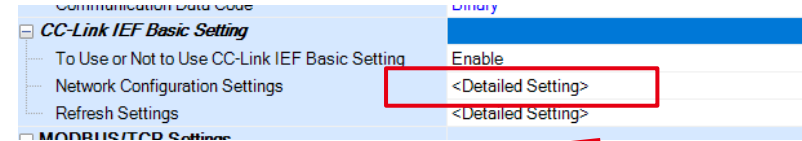
Item	Setting
Own Node Settings	
IP Address	192.168.0.250
Subnet Mask	255.255.255.0
Default Gateway	..
Communication Data Code	Binary
CC-Link IEF Basic Setting	
To Use or Not to Use CC-Link IEF Basic Setting	Enable
Network Configuration Settings	<Detailed Setting>
Refresh Settings	<Detailed Setting>
MODBUS/TCP Settings	
To Use or Not to Use MODBUS/TCP Setting	Not Used
Device Assignment	<Detailed Setting>
External Device Configuration	
External Device Configuration	<Detailed Setting>

Explanation
Set the information of the own node such as IP address.

Buttons: Check, Restore the Default Settings, Apply

Network Configuration Settings

CC-Link IEF Basic-Modul einfügen, Anzahl der belegten Stationen, IP-Adresse und Subnet Mask eingeben.



CC-Link IEF Basic Configuration

CC-Link IEF Basic Configuration Edit View Close with Discarding the Setting Close with Reflecting the Setting

Detect Now Link Scan Setting

Connected Count 1

No.	Model Name	STA#	Station Type	RX/Ry Setting			RWw/RWw Setting			Group No.	RSVD STA	IP Address	Subnet Mask
				Points	Start	End	Points	Start	End				
0	Host Station	0	Master Station								192.168.0.250	255.255.255.0	
1	CC-Link IEF Basic Module	1	Slave Station	64 (1 Occupied Station)	0000	003F	32	0000	001F	1	No Setting	192.168.0.20	255.255.255.0

Module List

CC-Link IEF Basic Selection Find Module

CC-Link IEF Basic Module (General)

CC-Link IEF Basic Module

Host Station

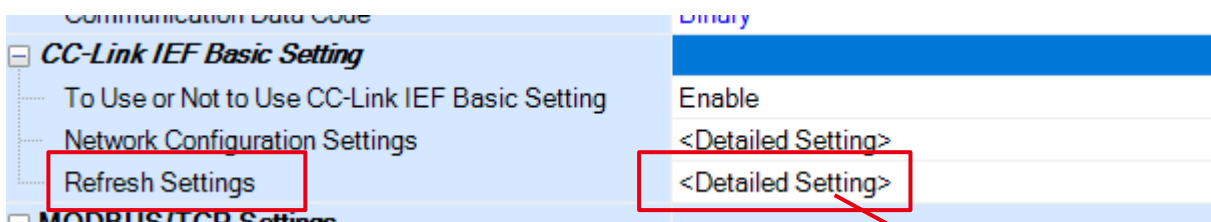
STA#0
All Connected Count:1
Total STA#:1

STA#1
CC-Link IEF Basic Module

[Outline]
CC-Link IEF Basic Module
[Specification]
Can be used instead of the slave station which is not registered on the

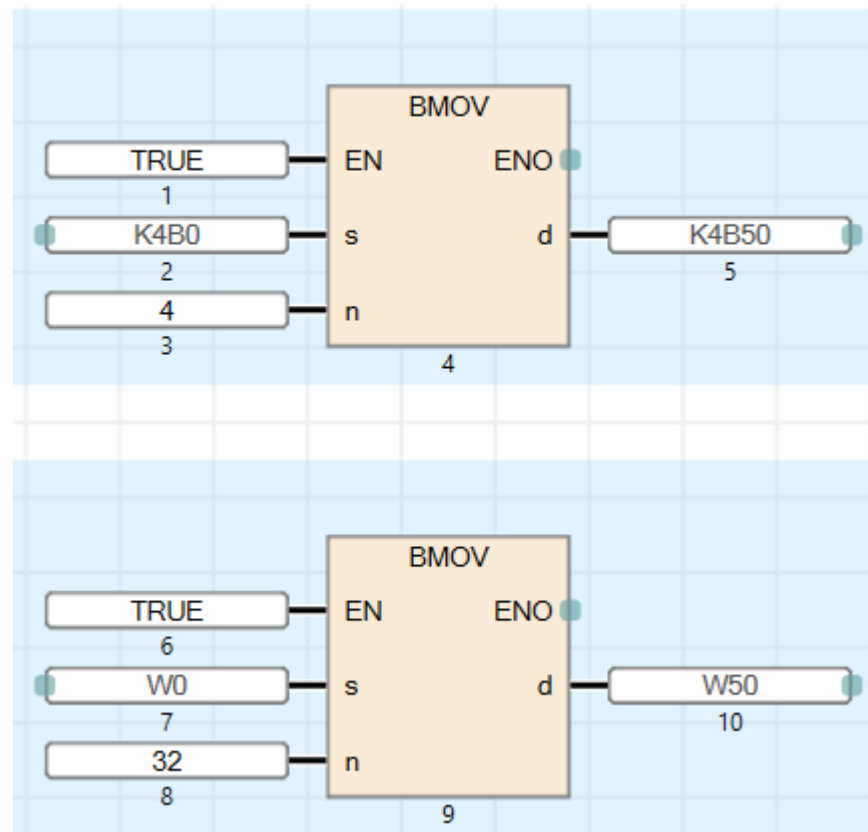
Refresh Setting

- RX sind Daten vom Slave zum Master, in der SPS abgelegt in B00 bis B3F
- RY sind Daten vom Master zum Slave, in der SPS abgelegt in B50 bis B8F
- RWr sind Daten vom Slave zum Master, in der SPS abgelegt in W00 bis W1F
- RWw sind Daten vom Master zum Slave, in der SPS abgelegt in W50 bis W6F

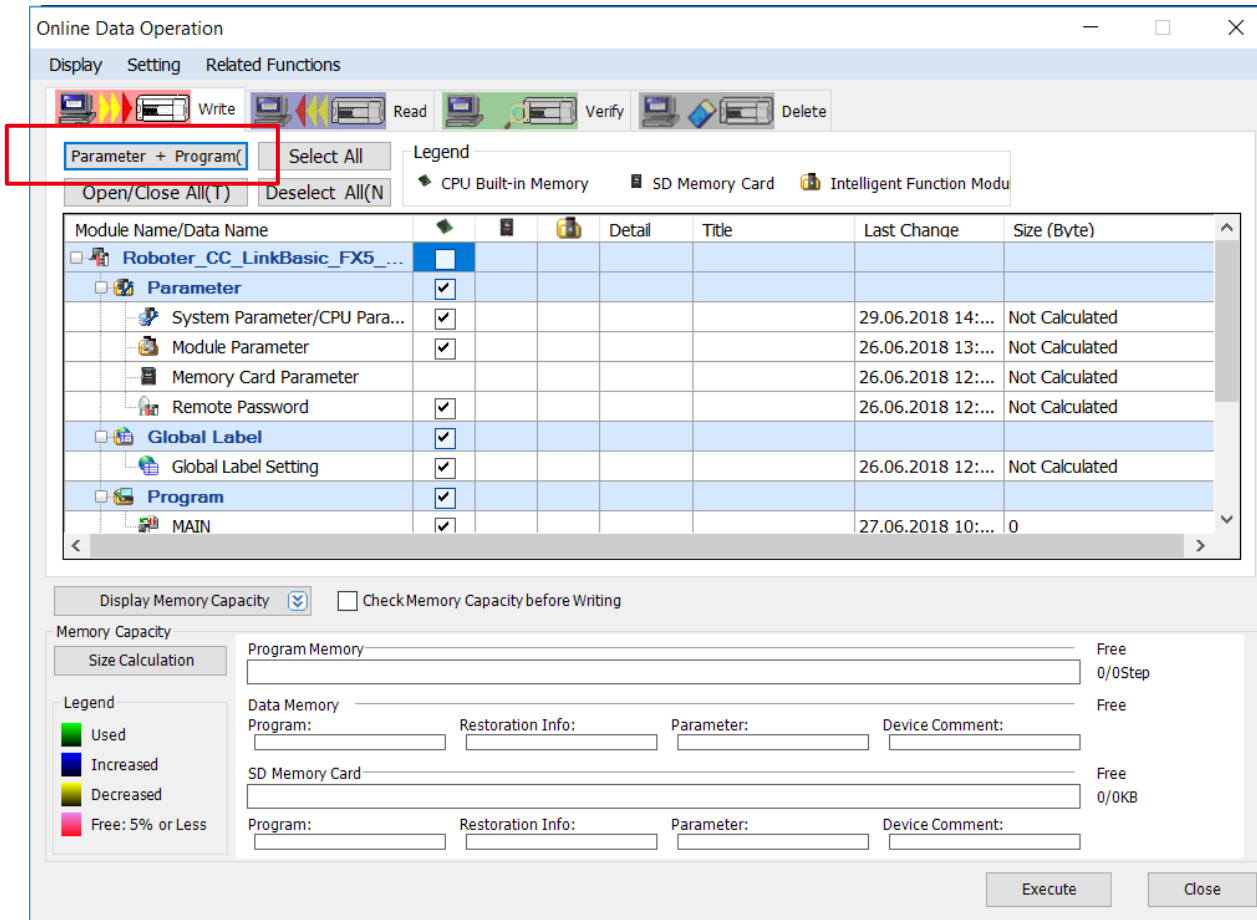


Link Side						CPU Side				
Device Name	Points	Start	End		Target	Device Name	Points	Start	End	
RX	64	00000	0003F	↔	Specify Devi	B	64	00000	0003F	
RY	64	00000	0003F	↔	Specify Devi	B	64	00050	0008F	
RWr	32	00000	0001F	↔	Specify Devi	W	32	00000	0001F	
RWw	32	00000	0001F	↔	Specify Devi	W	32	00050	0006F	

Für die Daten-Kommunikation ist kein Programm erforderlich.
Mit diesem kleinen Testprogramm werden die ankommenden Daten in den
Ausgangsbereich kopiert.



Programm und Parameter in die IQ-F übertragen und Programm starten.



Online Data Operation

Display Setting Related Functions

Write Read Verify Delete

Parameter + Program Select All Legend
Open/Close All(T) Deselect All(N) CPU Built-in Memory SD Memory Card Intelligent Function Modu

Module Name/Data Name	Detail	Title	Last Change	Size (Byte)
Roboter_CC_LinkBasic_FX5_...				
Parameter	<input checked="" type="checkbox"/>			
System Parameter/CPU Para...	<input checked="" type="checkbox"/>		29.06.2018 14:...	Not Calculated
Module Parameter	<input checked="" type="checkbox"/>		26.06.2018 13:...	Not Calculated
Memory Card Parameter	<input checked="" type="checkbox"/>		26.06.2018 12:...	Not Calculated
Remote Password	<input checked="" type="checkbox"/>		26.06.2018 12:...	Not Calculated
Global Label	<input checked="" type="checkbox"/>			
Global Label Setting	<input checked="" type="checkbox"/>		26.06.2018 12:...	Not Calculated
Program	<input checked="" type="checkbox"/>			
MAIN	<input checked="" type="checkbox"/>		27.06.2018 10:...	0

Display Memory Capacity Check Memory Capacity before Writing

Memory Capacity

Size Calculation

Legend

- Used
- Increased
- Decreased
- Free: 5% or Less

Program Memory: Free 0/0Step

Data Memory: Free

Program: Restoration Info: Parameter: Device Comment:

SD Memory Card: Free 0/0KB

Program: Restoration Info: Parameter: Device Comment:

Execute Close

Für die Daten-Kommunikation ist kein Programm erforderlich.

Mit diesem kleinen Testprogramm werden die Ausgangsdaten mit verschiedenen Werten beschrieben. Programm auf Controller CR800 speichern und starten.

```
Program 1:RC1 CCLBASICTEST.p... X
1 'Testprogramm für CC-Link IE Field Basic
2 '
3 'Erforderliche Parameter:
4 'NetIP hier Default auf 192.168.0.20
5 'Parameter CCLBENA=1
6 '
7 '64 Link Ausgangsbits M_Out(6000) bis M_Out(6063) beschreiben
8 For M1=6000 To 6063
9 M_Out(M1)=1
10 Dly 1
11 Next M1
12 '32 Link Ausgangsregister M_DOut(6000) bis M_DOut(6031) beschreiben
13 For M1=6000 To 6031
14 M_DOut(M1)=M1-6000+1
15 Dly 1
16 Next M1
17 '64 Link Ausgangsbits M_Out(6000) bis M_Out(6063) mit 0 beschreiben
18 For M1=6000 To 6063
19 M_Out(M1)=0
20 Dly 1
21 Next M1
22 '32 Link Ausgangsregister M_DOut(6000) bis M_DOut(6031) mit 0 beschreiben
23 For M1=6000 To 6031
24 M_DOut(M1)=0
25 Dly 1
26 Next M1
```


Vielen Dank

Noch Fragen?