Beckhoff TwinCAT

Writing to the CX1000 Display

Revision: 1.0
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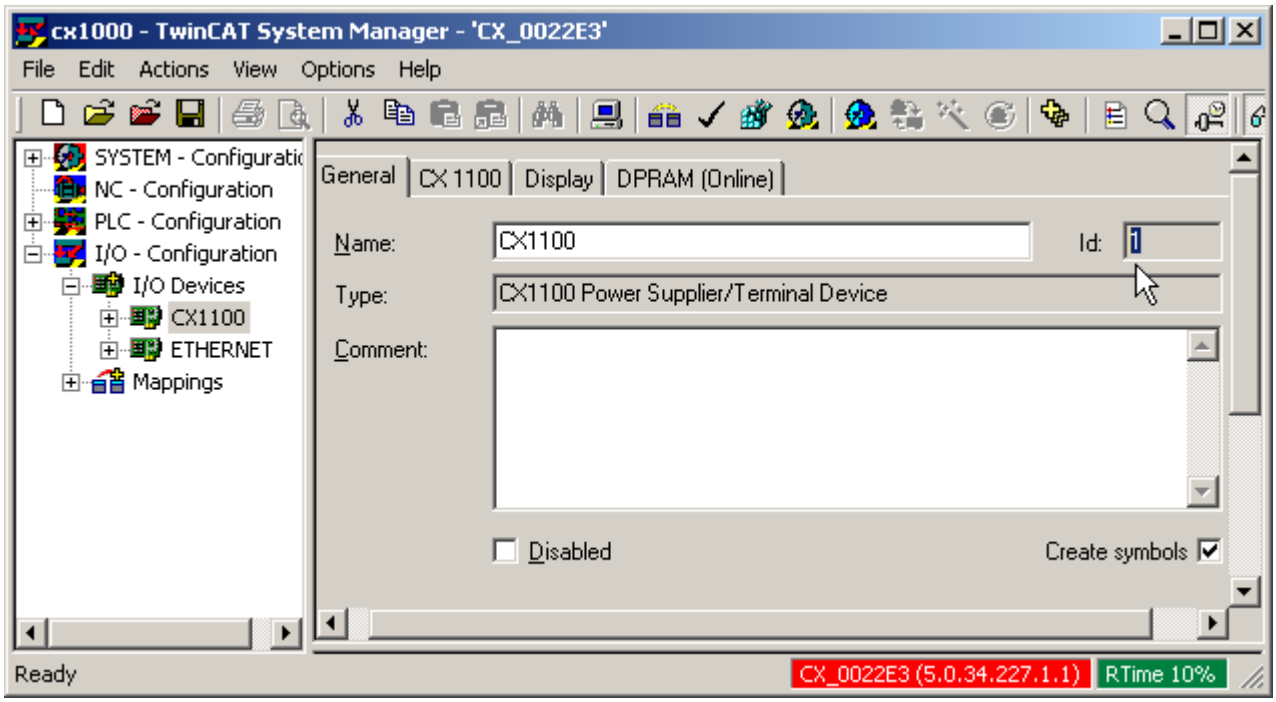
Table Of Contents

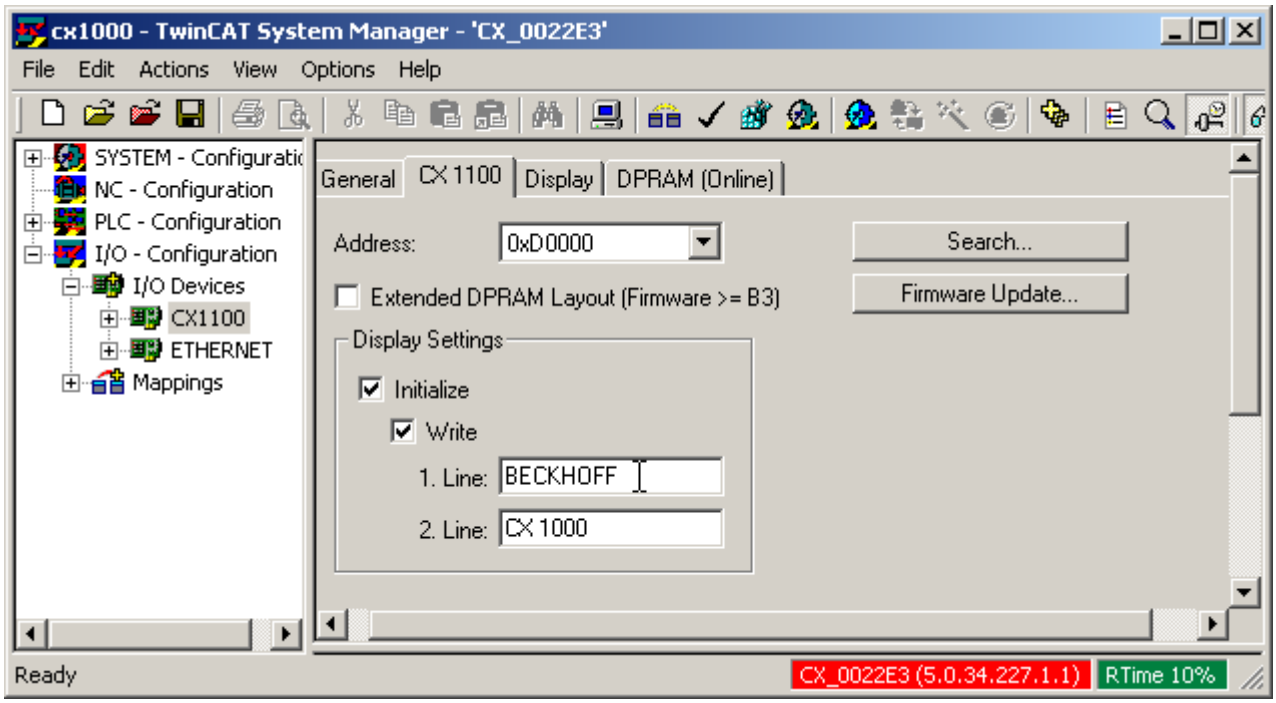
1. CX1000 Default Display Settings

The CX1000 default display text can be configured in TwinCAT System Manager and written to the CX1000 during initialisation. To configure the default text strings:

1. Select the CX1100 Power Supply/Terminal Device under "I/O Devices"



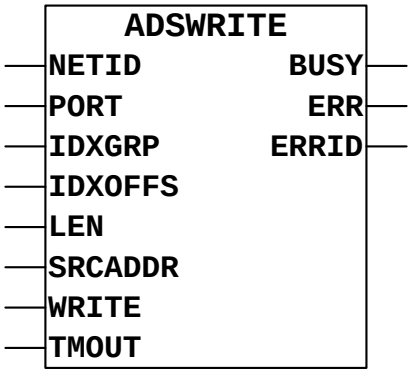
2. Select the "CX1100" tab.
3. Select "Initialize", ticked in enabled.
4. Select "Write", ticked in enabled.
5. Enter the required display text for each line.



Once the updated system configuration has been downloaded, the CX1000 will initialise the display with the specified text.

2. Writing to the CX1000 Display Panel

The CX1000 display panel is part of the "CX1100 Power Supplier/Terminal Device" ADS device, and data is written to it using the **ADSWRITE** function block



Inputs	Function	Type	Description
NETID	AMS Net ID	STRING	The AMS Net ID of the CX1000
PORT	**Error! Reference source not found.**	UINT	The ADS port number for the CX1000 display is fixed at 300 decimal
IDXGRP	Index Group	UDINT	The index group number of the requested ADS service
IDXOFFS	Index Offset	UDINT	The index offset number of the requested ADS service
LEN	String Length	UDINT	The number of data bytes to be written
SRCADDR	Source Address	DWORD	The address of the first byte of the buffer containing the data to be written
WRITE	**Error! Reference source not found.**	BOOL	A rising edge triggers the **ADSWRITE** command
TMOUT	**Error! Reference source not found.**	TIME	The time period to wait for a response before **ADSWRITE** is aborted

Outputs	Function	Type	Description
BUSY	**Error! Reference source not found.**	BOOL	Set to TRUE while the **ADSWRITE** is in progress. Reset to FALSE when the **ADSWRITE** function completes or aborts due to timeout
ERR	**Error! Reference source not found.**	BOOL	Set to TRUE when BUSY goes FALSE if an error occurred with **ADSWRITE**. Reset to FALSE when a rising edge is detected on the WRITE input
ERRID	**Error! Reference source not found.**	UDINT	Returns an error code if ERR is set to TRUE. Reset to 0 when a rising edge is detected on the WRITE input

2.1. AMS Net ID

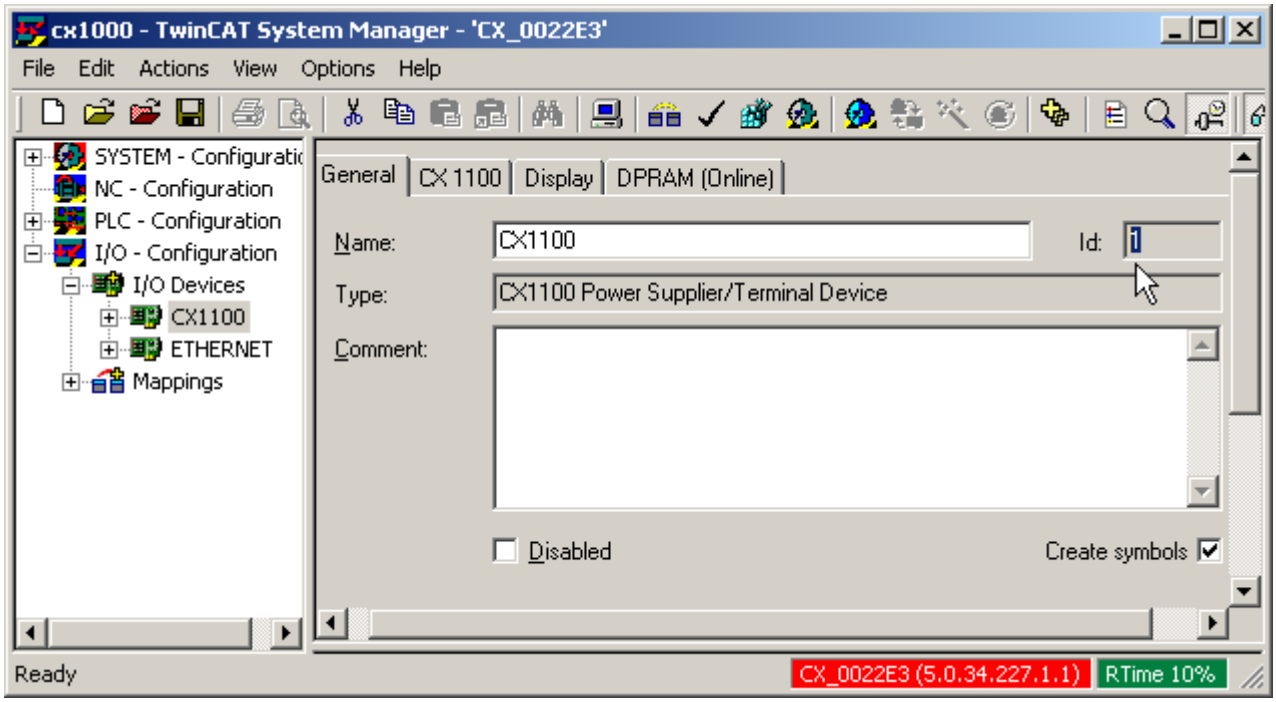
The AMS Net ID is the network address of the CX1000. This is shown in the red box at the bottom of the TwinCAT System Manager screen when the CX1000 has been selected

as the target system. The AMS Net ID (**NETID**) input uses a string for the AMS Net ID, e.g. '5.0.34.227.1.1'.

2.2. Index Group

IndexGroup: 0x5000 + DeviceID

The display panel is part of the "CX1100 Power Supplier/Terminal Device", and the DeviceID can be found on the CX1100 tab for this device. In the example below, the DeviceID is 1.



2.3. Index Offset

The Index Offset specifies the feature of the CX1000 display that is to be controlled by the ADSWRITE function. The CX1000 display functions are shown in the table below, along with the index offset value for each function, and any additio0nal info that is required with .

Function	Index Offset	Additional Info
Write Text to Line 1	0xFFFF00FF	Write text string at Source Address (**SRCADDR**) input to line 1 of the CX1000 display
Write Text to Line 2	0xFFFF40FF	Write text string at Source Address (**SRCADDR**) input to line 2 of the CX1000 display
Switch Display On	0xFFFF95FF	No additional info required
Switch Display Off	0xFFFF94FF	
Clear Display	0xFFFFA0FF	
Switch Backlight On	0xFFFF96FF	
Switch Backlight Off	0xFFFF97FF	

2.4. String Length

String Length (**LEN**) input specifies how many characters of the string variable will be written to the CX1000 display when the "Write Text To Line 1" or "Write Text To Line 1" functions are called. This input has no effect with the other display control functions. The CX1000 can display up 16 chars on each line, but if less than 16 chars are written to a line of the display, the remaining chars on the display will remain unchanged. There are several ways to ensure that all characters in the display line are always updated:

- Use string constants with fixed message length of 16 chars.
- Concatenate a string of 16 blank chars to the text string using the **CONCAT** command, and use **LEFT** to trim the string to 16 chars in length.
- Concatenate a string of 16 blank chars to the text string using the **CONCAT** command, and fix the **LEN** input at 16 so that only the first 16 chars of the string are written to the display.

2.5. Source Address

The Source Address (**SRCADDR**) input is the memory address of the first byte of the text string to be written to the CX1000 display, and this can be passed into **ADSWRITE** by using the **ADR** command. **ADR** simply returns the first memory byte address used by the variable, string or array name passed into it. This ensures that if the string variable used to generate the text string is moved to another memory location, the program will still write the correct data to the display.

3. Example Program

The program below shows a simple implementation of ADSWRITE to update both lines on the CX1000 display. The following libraries must be included in the PLC project:

- STANDARD.LIB
- TcSystem.LIB (TcBase.lib added automatically)

Set **`bDisplayWrite`** to **`TRUE`** to update the display when required.