

# Beckhoff ADS TCP Controller

## Information Sheet for Crimson

### Compatible Devices

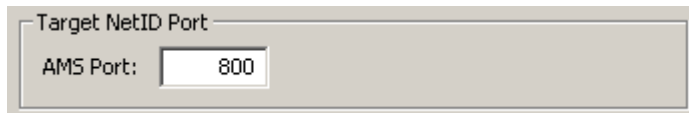
- Beckhoff Ethernet compatible devices supporting ADS/AMS

### Verified Device

- BX9000-0000
- CX1020-0111

### Device Options:

The programmer specifies the AMS Net ID Port for the ADS device:



The image shows a screenshot of a software dialog box titled "Target NetID Port". Inside the dialog, there is a label "AMS Port:" followed by a text input field containing the number "800".

(801 for the CX), and the necessary TCP/IP settings.

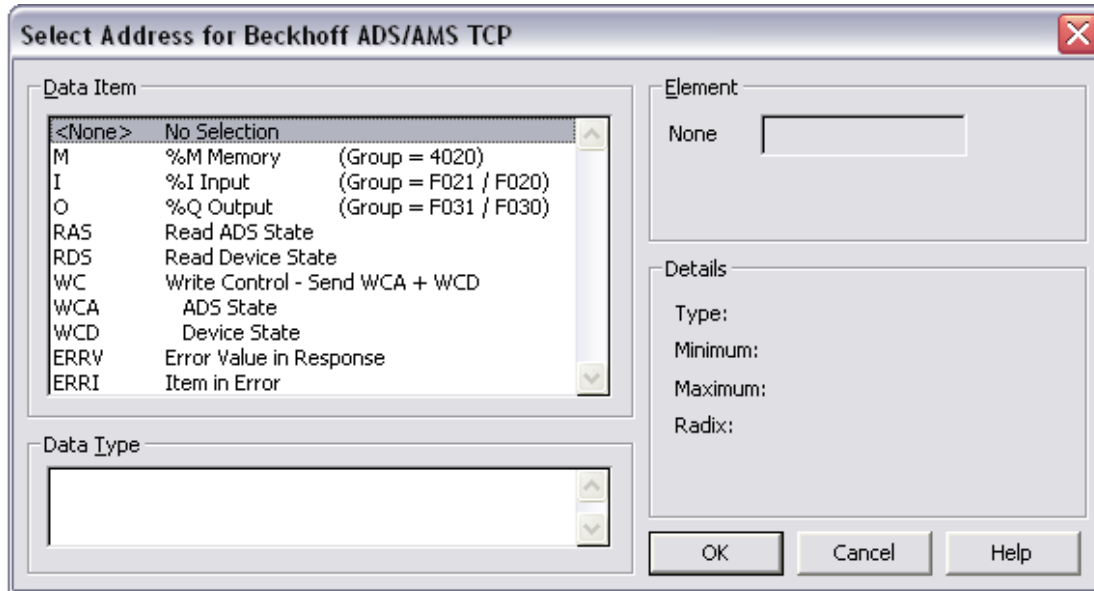
In early versions of the driver, the Net ID's are fixed as the IP addresses of the G3 and the ADS device with ".1.1" appended. If a CX model is to be connected, see **Connecting to a CX-1020 with Crimson versions that do not support entering a separate AMS NetID** at the end of this document.

Later versions of the driver added a dialog: Target Net ID.

The AMS NetID can be entered directly, or, by using the checkbox, set to the IP address of the device. Use the TwinCat software to determine the AMS NetID, and enter it here.

Another field is Suffix. This should remain at 1.1, for now, as other values have not yet been implemented.

## Accessible Data



Prefix	Description	Notes
M	%M Memory (Group = 4020)	1
I	%I Input (Group = F021 / F020)	2
O	%Q Output (Group = F031 / F030)	2
RAS	Read ADS State	3
RDS	Read Device State	4
WC	Write Control - Send WCA + WCD	5
WCA	ADS State	5
WCD	Device State	5
ERRV	Error Value In Response	6
ERRI	Item in Error	6

### NOTES:

**1) M** – The programmer can select **M** to return individual bytes, words of two bytes, and longs or reals of four bytes.

**NOTE:** The Element value is always the byte address of the item. E.g., if reading a WORD (2 bytes) at %M10, the next element will be %M12. The specified type (BOOL, (x)INT, WORD, DWORD, REAL) in the device's configuration controls the byte order of the data. Therefore, it is recommended that the programmer always match the driver's variable type to that of the device. This will avoid improper byte ordering that will lead to incorrect results.

**2) I or O** – Both Bits and Bytes can be chosen. Bits will access just one address at a time. It is advisable, when reading large numbers of I/O, to use bytes, and allocate the individual bits to tags via the G3 configuration.

When Byte is selected, byte 0 comprises bits 0-7, byte 1 comprises bits 8-15, etc. There is no provision for direct access to external I/O. The device programmer must configure internal variables and map them to the hardware I/O.

**3) RAS** – Reads the ADS State. Consult Beckhoff documentation.

**4) RDS** – Reads the Device State. Consult Beckhoff documentation.

**5) WC** – Changes the ADS State and the Device State. **WCA** and **WCD** must be set to the desired values before setting **WC** to 1. The driver does not check the values of **WCA** or **WCD**, it is the programmer's responsibility to ensure that only proper values can be entered.

**6) ERRV/ERRI** – If a data error occurs in the response, its value is stored in **ERRV**. The low 16 bits identify the error code.

The group and address that caused the latest error are stored in **ERRI**. The upper 16 bits are the group.

Groups are 0x4020 = Memory, 0xF02x = Input, 0xF03x = Output.

The address of the failing item is in the lower 16 bits of **ERRI**. Any write to either of them will set both of them to 0.

### **Connecting to a CX-1020 with Crimson versions that do not support entering a separate AMS NetID:**

- 1) Set the CX to a Fixed IP Address (i.e. not DHCP).
- 2) Connect a DVI monitor, or run the CE Remote Host package.
- 3) Select RUN.
- 4) Set Open: to \  
5) Hard Disk  
6) System  
7) TcAMSRemoteMgr
- 8) Set "Local Computer" to the IP address of the CX plus .1.1  
Ex. IP of CX is 169.254.100.224  
The Local Computer field should be set to 169.254.100.224.1.1

### **Cable Connection**

A Cross-over cable is required for direct connection.