# Futronix Interfacing to Crestron

Futronix dimming systems can be interfaced to all Crestron control systems using a RS485 connection.

First determine which control processor you have (the current CNMSX-AV, CNMSX-Pro or ST-CP or the older CNMS) and then refer to the appropiate section for full details of the cables, interface and programming needed.

Notes:
1. For ST-CP and CNMS control processors a suitable RS232 to RS485 interface will be required. This should be the 'smart' KK Systems KK485ADE adapter.

2. The ST-CP uses RJ11 connectors (also known as FCC68). All RJ11 plugs should be 6-position, 6-contact types. The top view of a connector i.e. latch facing toward the viewer, is shown below:

Pin6   Pin1
  ↓   ↓

Flat Cable
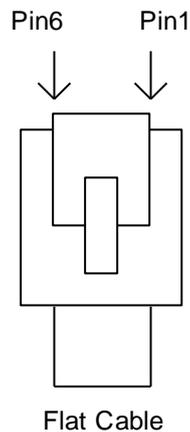
4. The KK485ADE interface can be used with with a 9w female to 25w male adapter. This arrangement makes it practical to plug the combined KK485ADE plus 9w to 25w adapter directly into a PC COM port so that terminal emulation software such as the Crestron Viewport, may be used to test communication with the dimmers. A 9w to 25w adapter is not required for use with the RS232 cables described in this document and also should not be used with CNX com ports.

5. Recommended Crestron programming methods are summarised in the following table:

Control Processor	RS232 to RS485 Interface	VisionTools STS	SIMPL Windows
CNMSX-AV Or CNMSX-Pro	N/a	N/a	SERIAL I/O
ST-CP	KK485ADE	Custom Serial Driver 20	SERIAL I/O
CN-MS	KK485ADE	N/a	SERIAL I/O

6. To use SIMPL Windows simply type the supplied strings into a SERIAL I/O symbol and route the serial signal output to a com port.

7. To use the Custom Serial Driver 20 simply copy the CUSTM20.SER file to the C:\CRESTRON\CRESDB\ folder, replacing the current file, then start VisionTools.

Crestron CNMSX-AV or CNMSX-Pro

The CNMSX-AV and CNMSX-Pro control processors both have six bi-directional (CNX type) RS232/422/485 ports – COM A through COM F. Any of one of these COM ports may be used to control a Futronix system.

Interface
An external RS232 to RS485 interface is *not* required.

Cables
One cable will be needed.

CNX COM port to the Futronix dimmer pack (This is a RS485 connection).

The following RS485 cable assumes that the Futronix dimmer has an RJ11 port. This is fitted as standard on the PFX range of Futronix dimmers. The Enviroscene range of dimmers have a hard wired connection on the internal control card labled A, B, Ground. If you are connecting to an Enviroscene use the signal names given below.

CNX 9w D-type female	Futronix 9w D-type	
5	5	Ground
4+6	2+7	Data A
1+9	1+6	Data B

Note the two links in the CNX connector (i.e. 4+6 and 1+9) as described in the Crestron 'CNMSX Operations Guide' for RS485 operation.

This lead may be extended as required.

Programming
The CNX type COM ports when operating in RS485 mode default to a continuous transmit state. It is therefore necessary to control the RS485 transmit/receive state from the program and arrange for the port to only go into transmit state when the CNX has data to send, otherwise the CNX will jam any other RS485 (Futronix) communications.

The CNX type COM port symbol has a RTS input that is used to switch between RS485 transmit and receive states. (For RS232 or RS422 modes the RTS symbol input only controls the state of the RTS output line itself. CNMS com ports do not have RTS control but ST-CP com ports do).

Note that RTS symbol input low = transmit and RTS symbol input high = receive. Also be aware that because of the com port's wired loop back links, necessary for RS485 operation, the received data will also contain any transmitted data. I.e. on the CNMSX-Pro the RX LED will light for both received and transmitted data and the RTS LED will blink off when a dimmer command is sent by the program.

Serial I/O symbol details:

Serial I/O	
[rx$]	[tx$] DIM_TX$
[enable]	
SCENE_1 #0005000101F9:	str1
SCENE_2 #0005000102F8:	str2
SCENE_3 #0005000103F7:	str3
SCENE_4 #0005000104F6:	str4
SCENE_5 #0005000105F5:	str5
SCENE_6 #0005000106F4:	str6
SCENE_7 #0005000107F3:	str7
SCENE_8 #0005000108F2:	str8
SCENE_9 #0005000109F1:	str9
SCENE_10 #000500010AF0:	str10
str11	
[delimiter]	
S-3.1	
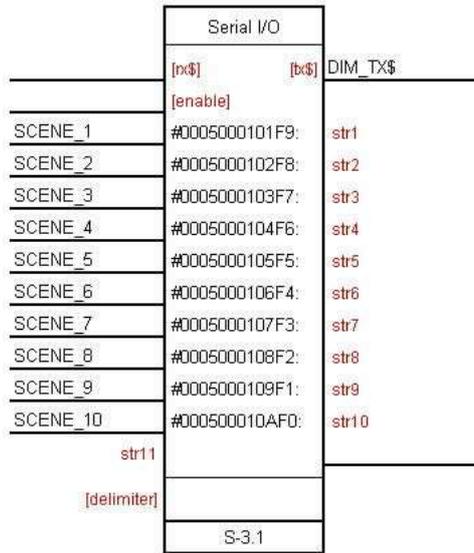
Crestron ST-CP

The ST-CP control processor has two bi-directional (CNCOMH-2 type) RS232 ports – COM A and COM B. Either COM port may be used to control a Futronix system.

Interface
An external RS232 to RS485 interface *is* required.

The KK485ADE interface is recommended.

Cables
Two cables will be needed.

ST-CP COM A or COM B port to the KK485ADE. (This is a RS232 connection).

ST-CP	KK485ADE	
RJ11 Plug	25w D-type male	
1	5	CTS to CRESTRON
2	7	Ground
3	3	Data to CRESTRON
4	2	Data from CRESTRON
5	4	RTS from CRESTRON
6	-	No connection

Recommended lead length is 1 metre.

Futronix dimmer pack to the KK485ADE. (This is a RS485 connection).

Futronix	KK485ADE	
9w D-type	9w D-type female	
1	-	No connection
2	5	Ground
3	6	Data B
4	2	Data A
5	9	+12V
6	-	No connection

This lead may be extended as required.

Programming
If the ST-CP is programmed with Crestron VisionTools software, as part of an STS system, then use a Custom Serial Driver as described below. Note that this driver does not process any feedback from the Futronix system as the STS touch panel is a 1-way RF device and cannot be used to display it.

STS Custom Serial driver

Functions: Presets 1 to 10 for Address 0, Zone 1.

Application: Simple scene selection.

Note: Use KK485ADE *only*.

Use the Windows NOTEPAD text editor to customize one of the 20 custom serial driver files located in the C:\CRESTRON\CRESDB\ folder.

For example edit CUSTM20.SER as follows:
(Be sure to leave all other lines unchanged).

```
[Communication]
Baud=9600
Parity=N
DataBits=8
StopBits=1

[Strings]
String1="#0005000101F9"
String2="#0005000102F8"
String3="#0005000103F7"
String4="#0005000104F6"
String5="#0005000105F5"
String6="#0005000106F4"
String7="#0005000107F3"
String8="#0005000108F2"
String9="#0005000109F1"
String10="#000500010AF0"

[StringNames]
String1=Preset-1
String2=Preset-2
String3=Preset-3
String4=Preset-4
String5=Preset-5
String6=Preset-6
String7=Preset-7
String8=Preset-8
String9=Preset-9
String10=Preset-10
```

Crestron CNMS

The older CNMS control processor has two bi-directional (CNCOMH-2 type) RS232
ports – COM A and COM B. Either of these COM ports may be used to control a
Futronix system.

Interface
An external RS232 to RS485 interface *is* required.

The KK485ADE interface is recommended.

Cables

CNMS COM A or COM B port to the KK485ADE. (This is a RS232 connection).

CNMS	KK485ADE	
9w D-type female	25w D-type male	
2	3	Data to CRESTRON
3	2	Data from CRESTRON
5	7	Ground
7	4	RTS from CRESTRON
8	5	CTS to CRESTRON

Recommended lead length is 1 metre.

Futronix dimmer pack to the KK485ADE. (This is a RS485 connection).

Futronix	KK485ADE	
9w D-type	9w D-type female	
1	-	No connection
2	5	Ground
3	6	Data B
4	2	Data A
5	9	+12V
6	-	No connection

This lead may be extended as required.

Programming
See the SERIAL I/O symbol in the CNMSX section for details.