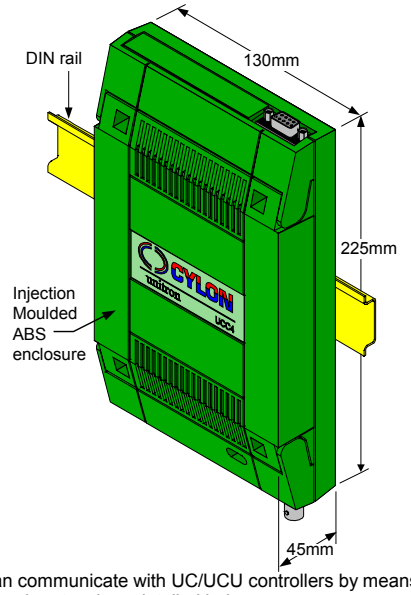
UCC4 Unitron Communications Controller

UCC4 UCC4/3P UCC4/LC UCC4/2P/MOD485M UCC4/3P/KI/MOD232M
UCC4/KI UCC4/3P/KI UCC4/LC/KI UCC4/3P/MOD232M UCC4/DTMF
UCC4/KE UCC4/3P/KE UCC4/LC/KE UCC4/3P/MOD232S

DESCRIPTION

The UCC4 is a communications controller. The UCC4 co-ordinates communication between universal controllers on its subnetwork, and with other UCC4s via ARCnet.
Modbus versions are available for communication with third-party systems.



MECHANICAL

Size	225 x 130 x 45 mm (8.86 x 5.12 x 1.78")
Enclosure	Injection moulded ABS
Mounting	DIN rail
Environment	0° - 50°C (32°-122°F) ambient.
	0% - 90% RH non-condensing
	Note: This equipment is intended for field installation within another enclosure.

TERMINALS

RS485	Plug-in terminals
Power	Plug-in terminals
Coaxial ARCnet	BNC (female)
Twisted-pair ARCnet	Plug-in terminals
RS232	DB9 (female)
Modbus	DB9 (female)

ELECTRICAL

Supply Requirements	24V AC +/- 20% 50/60 Hz
Transformer Rating	10 VA
Fuse Rating	1 A quick-blow

PROCESSOR

Type	Motorola 68HC000
Clock Speed	8 MHz
Operating System Memory	2 x 128K
User Programmable Memory	2 x 128K RAM Battery backed for 2 years minimum
Real-Time Clock	Automatic leap year compensation
	Crystal oscillator
	Battery backed for 2 years minimum

INTERFACE

Software	WN3000 software suite
Internal Keypad / Display *(UCC4/KI,UCC4/3P/KI, and UCC4/LC/KI only)*	Supertwist LCD with backlight. 32 alphanumeric characters arranged as 2 lines x 16 characters
	6 buttons on a membrane keypad.
Remote Keypad / Display *(UCC4/KE and UCC4/3P/KE only)*	UC16/KR remote Keypad
	Connected via 20-way ribbon cable with integral ferrite suppresser
	Maximum cable length 2m (6.56')
DTMF Interface *(UCC4/DTMF only)*	An optional Dual Tone Multi Frequency telephone interface is available.

COMMUNICATIONS

RS232 Ports	1 or 3 RS232 ports for connection to modems, serial printers or supervisory computers
	Baud rates and configuration of RS232 ports are user selectable.
	Port 1 baud rates are selectable via SW2 @ 1200, 2400, and 9600 baud.
	Max length of RS232 cable on ports 1, 2 and 3: 15m
RS485 Modbus Networks	UCC4s can be ordered with Modbus support added, via RS485 or RS232.
	Modbus on RS232 supports one slave device off port 2.
	Modbus on RS485 supports up to 32 slave devices off port 2.
	Port 3 cannot be used with the Modbus RS485 option.
	The Modbus configuration is shipped with a terminator on the RS485 line.
	The UCC4 should be placed at one end of the bus.
	Note: Port 3 only supported Modbus up to firmware version 3.7.0.

RS485 Sub Network — UCC4s can communicate with UC/UCU controllers by means of an RS485 sub-network as detailed below:

	RS485 Sub-network
Speed	1200, 9600, 19200, 38400 baud, switchable
Max. number of nodes *(Non-LC options)*	UC16PG, UC16IP: 8 UC24PG-R, UC16PG-R, UC16DI: 16 UC8PG-R, UC12EPG-R: 32 Other UC/UCU controllers: 63 **Note:** The maximum number of nodes is 8 for all UCxxPG-R controllers with firmware versions of 5.5.0 or earlier.
Max. number of nodes *(UCC4/LC, UCC4/LC/KI, UCC4/LC/KE)*	4
Max distance between nodes	1200m (3937')
Max. length of network	1200m (3937')
Terminating resistor	internal 120Ω, jumper selectable in/out.

ARCnet Networks — UCC4s can connect to other UCC4s by means of either Twisted-Pair or Coaxial ARCnet as detailed below:

	Twisted-Pair ARCnet	Coaxial ARCnet
Speed	78kbits/s	2.5Mbits/s
Max. number of nodes	255	255
Terminating resistor	Internal 220Ω, switchable in/out.	93Ω, external BNC connector.

WIRING

Twisted-pair ARCnet	Networks up to 1200m (3937'): 1mm (0.04") core diameter twisted pair, must be unshielded. Networks up to 600m (1968.5'): 0.5mm (0.02") core diameter twisted pair, shielded or unshielded.
Coaxial ARCnet	RG62 93Ω Propagation velocity 85% Attenuation 5.5dB per 304.8m (1000') @5MHz
RS485 Sub-network	2 core screened twisted pair (e.g. Belden 8132 or, for maximum line length, Belden 9841)
RS232	3 core screened
Modbus RS485	2 core screened twisted pair (e.g. Belden 8132 or, for maximum line length, Belden 9841)
Modbus RS232	3 core screened

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CE

RS232 Port Configuration

UCC4s are available in the following configurations:

Configuration	Port 1	Port 2	Port 3
UCC4	RS232	not present	not present
UCC4/3P	RS232	RS232	RS232
UCC4/3P/MOD232	RS232	RS232 Modbus	RS232
UCC4/3P/MOD485	RS232	RS485 modbus	not used

Default Jumper settings

The default settings for configuration jumpers **J14**, **J100**, and **J101** depend on the ARCnet configuration of the UCC4 when it is shipped from the factory.
The possible configurations are shown in this table:

Jumper	Twisted Pair ARCnet board installed	Coaxial ARCnet board installed	No ARCnet board installed
J14 (sub-network terminator)	(OUT)	(OUT)	(OUT)
J101 (ARCnet terminator)	(OUT)	(OUT)	(OUT)
J100 (Coaxial transient suppresser)	(OUT)	(IN)	(IN)

Legend: Pins covered by jumper; Pins open

Configuration Selector Switch (SW2)

RS232 Baud rate	Bit 1	Bit 2
1200	ON	ON
2400	OFF	ON
9600	ON	OFF
unused	OFF	OFF

RS485 Baud rate	Bit 3	Bit 4
1200	ON	ON
9600	OFF	ON
19200	ON	OFF
38400	OFF	OFF

Port 1 Peripheral	Bit 5	Bit 6
Computer	ON	ON
Modem	OFF	ON
Printer	ON	OFF
None	OFF	OFF

ARCnet	Bit 8
Coaxial	ON
Twisted Pair	OFF

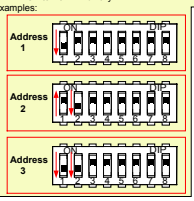
Note: Bit 7 is not used

DIP switches: Port 1 RS232 Baud Rate; RS485 Baud Rate; Port 1 Peripheral selection; Not Used; ARCnet selection

ARCnet Address Selector Switch (SW1)

SW1 sets the UCC4's ARCnet address.
The address can be 1 to 255, set in binary on the 8 DIP switches as follows:
LSB = DIP 1
MSB = DIP 8
Switch ON = binary 0
Switch OFF = binary 1

Examples:



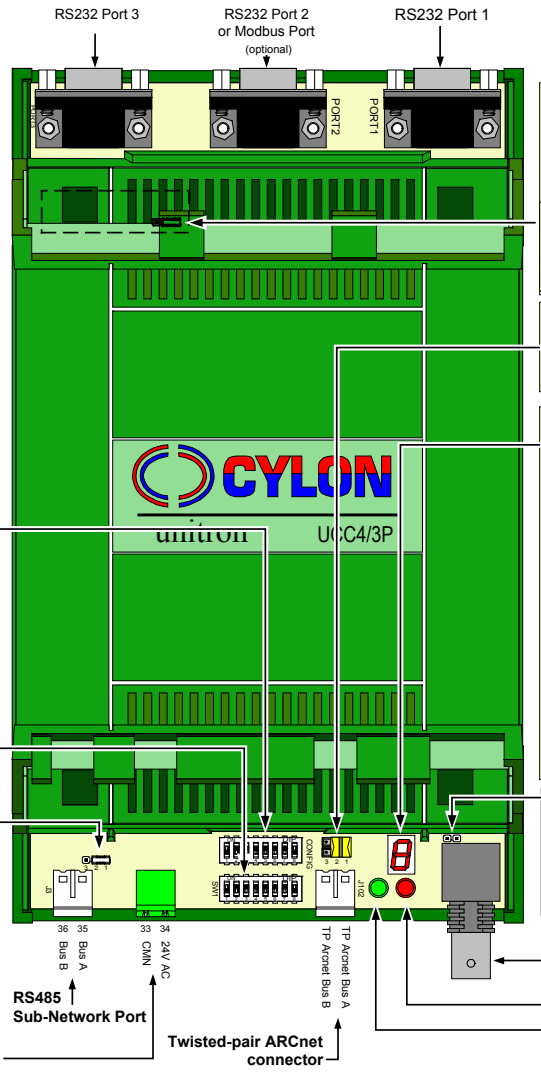
RS485 Sub-Network Terminator (J14)

Terminator IN
Terminator OUT
Terminator OUT

Legend: Pins covered by jumper; Pins open

IMPORTANT
Earth this controller by connecting the CMN wire (G_o), on the secondary side of the 24 V AC transformer, to Earth at one point.

Power input (24 V AC)



RS485 Modbus Network Terminator

The selection jumpers are located on the circuit board under the casing, below port 3.

Terminator IN
Terminator OUT
Terminator OUT

Legend: Pins covered by jumper; Pins open

Twisted-pair ARCnet terminator (J101)

Terminator IN
Terminator OUT

7-segment display

The 7-segment display alternates between ARCnet and Sub-network status

ARCnet Status

- **CLASH** ARCnet is running, but another node has this address.
- **EMPTY** ARCnet board is present, but the network is not connected
  OR
  ARCnet network is up,but no other nodes have been detected.
- **NONE** No ARCnet board present.
- **FULL** All 255 addresses have been used, and the ARCnet is full.
- **ARCNET** ARCnet is up and running.

Sub-Network Status

- **STATIONARY SINGLE SEGMENT** Sub Network is not operating, or is not connected
- **SEGMENT ROTATING AROUND DISPLAY** Sub Network is operating. The speed of rotation indicates the traffic on the nework

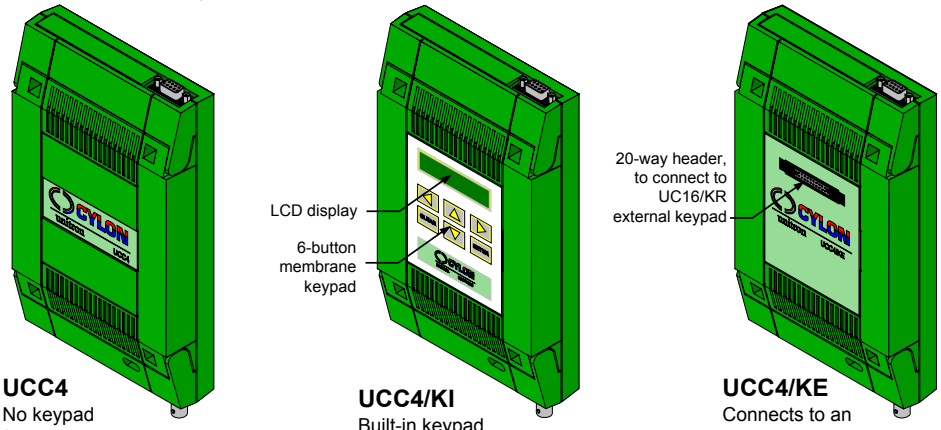
Coaxial/Twisted-pair ARCnet selection jumper (J100)

Coaxial selected
Twisted-pair selected

Legend: Pins covered by jumper; Pins open

Keypad Configuration

Keypad interfaces are available for the UCC4, in the configurations shown below:



UCC4
No keypad facility

UCC4/KI
Built-in keypad

UCC4/KE
Connects to an external keypad