



# CesCom

**N400**  
ACA approved

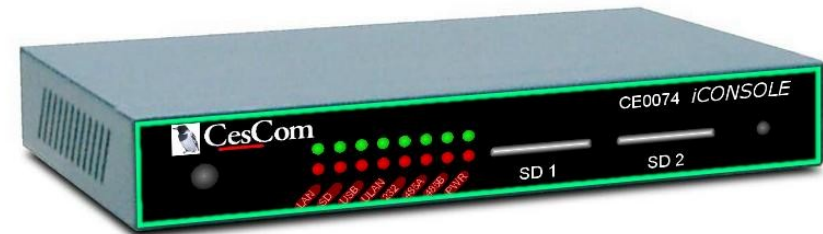


## CE0074B iCONSOLE

*Stand-alone terminal console and controller*

### Features

- **P8X32A Multicore I/O processor** (8 x 32-bit)
- **ARM7 32-bit applications processor** (512K FLASH)
- **VGA output** up to 128 characters x 64 lines
- **PS/2 keyboard and mouse ports**
- Dual **SD card** slots
- **USB UART** interface
- Dual **RS-485** ports or single **RS-422**
- **RS-232** RJ45
- **Ethernet** 10/100
- Programmable switch **output** (2A sink)
- **Switch-mode** regulator
- **Real Time Clock**
- **Digital Audio** output via jack or internal **speaker**



### Overview

Small enough to fit in the palm of your hand this unit is really a stand-alone computer with a powerful 8-core 32-bit array processor capable of emulating peripherals in software. This realtime I/O processor is teamed up with a conventional 32-bit ARM7 CPU which handles high-level applications software. Because of the rich complement of communications ports it can be used in simple protocol conversion applications to complete PC-like control.

On-board configuration software allows the user to select the operating parameters of each port as well as default action. Alternatively the customer may specify their own requirements or else program applications directly on the iCONSOLE computer using a keyboard and VGA display or via the USB serial port.

### Applications

- Programmable Field Controller
- PLC bus access and control using RS-485 MODBUS
- PC cluster terminal – connect PC RS-232 ports over TBUS with iNODEs
- Networked Operator Terminal
- Multiprotocol Hub
- Application Specific Computer



# CesCom

 **N400**  
ACA approved



## CE0074B iCONSOLE

*Stand-alone terminal console and controller*

### OPERATION

#### MULTICORE CPU

Conventional CPUs are interrupt driven single cores with general-purpose peripheral circuits. The iCONSOLE is different in that it uses the [Parallax Propeller](#) chip which is comprised of eight 20MIP 32-bit CPUs integrated onto a single chip. These CPUs called COGs are capable of emulating hardware peripherals in software in a deterministic real-time manner as well as general processing. As all I/O is general-purpose the ports may be retasked to suit application-specific requirements.

#### ARM CPU

The LPC2148 ARM CPU includes 512kB of Flash suitable for large applications and is able to draw on existing tools and software bases. Both CPUs are coupled in parallel with the SD card, Ethernet, USB UART, USB port, I2C and audio so are quite flexible in the way they may be assigned according to application.

#### LAN

Full telnet access is possible with the iCONSOLE including transparent access to TBUS devices such as web servers, PLCs, etc. The LAN port is implemented either as a third-party [XPORT](#) device or an [ENC28J60](#) with customer specified protocols.

#### VGA

The standard display mode for VGA is 80 characters by 25 lines but can include tile graphics up to 64 colors. Super VGA resolutions are possible. Firmware emulates standard VT-100 ANSI mode when the VGA is

used as a terminal console with a keyboard.

#### USB

A standard type B connection makes connection to USB host devices such as PCs possible. The USB port appears as a serial communications class device and is assigned a Virtual Com Port by most operating systems. The port can be connected at up to 2Mbits/sec full-duplex.

#### PS/2

PS/2 interfaces include keyboards and mice as well as other HIDs common to PCs. Although the ports are labelled Keyboard and Mouse they are totally under software control and in combination with the I2C bus that is tandemed onto the connector it is possible to run I2C or SPI devices straight from these ports.

#### POWER-SUPPLY

Although not the heart of any system a good power-supply is very important to reliability. The switch-mode supply is equipped with reverse polarity protection and is able to accept voltages from 10 to 30V with a very-high conversion efficiency thus runs inherently cool without the need for heatsinks or fans. The switch-mode regulates down to +5V and also supplies multiple 3.3V regulators for the CPU and other logic functions.

#### RS232

The enduring method for connecting low-speed devices and implemented in the iCONSOLE. This port supports full-duplex operation with or without handshake and in any format. Two hardware handshake lines are available if needed in the form of RTS/CTS or these may also be used as a secondary RS-232 port.

#### RS485/422

RS485 is the means by which multiple RS-232 device connect to the iCONSOLE using iNODEs. The RS485 can run up to 2Mbits/sec or more, the format of which is totally under software control through serial port emulation by an element or more of the array processor. By selecting RS422 mode both RS485 ports appear as a single full-duplex RS422 port.

#### RS485 TBUS

The TBUS employs a continuous 8-way IDC cable in true multidrop bus fashion where RS485 devices are connected at any interval along the cable. By means of crimping IDC plugs directly onto the cable, taps may be made for connecting new devices.

#### AUDIO

Polyphonic sound is desirable for operator feedback and prompts etc. The iCONSOLE implements speech, sound-effects, music through Digital to Analog sound synthesis using wave files stored on an SD card at up to 16-bits resolution. The 3W amplifier drives an internal speaker or can be accessed via the 3.5mm audio jack.

#### REAL-TIME CLOCK

The capacitor backup does not need replacing and charges to near full capacity in minutes and will maintain the clock for approximately a week or more if the unit is left powered off.

#### SWITCHED OUTPUT

A single N-channel MOSFET connected as an open-drain (open-collector) device can be controlled by software to directly control heavy DC loads such as sirens, lamps, solenoids etc.

#### ISP

A separate fail-safe processor monitors the supply voltage and operating condition of the main processor and maintains reliable operation of the system.

The ISP also overrides the main processor when new firmware is being uploaded.



### Stand-alone terminal console and controller

### Specifications

<b>Supply Voltage</b>	8-30VDC
<b>Current</b>	200ma @12VDC
<b>Physical</b>	165mm x 25mm x 100mm (WHD)
<b>Weight</b>	300g approx
<b>Case</b>	1mm Steel, powder-coated
<b>Environment</b>	0°C to +70°C operating
<b>Standards</b>	IEC 1010; AS/NZS 3548 EMI/EMC; C Tick compliant
<b>CPU</b>	P8X32A octal core 32-bit CPU, 48kB RAM, 32kB ROM
	LPC2148 ARM7 32-bit CPU, 512kB Flash, 48kB RAM

### Ports

<b>RS-232</b>	110 – 460.8K baud, all formats supported, RJ45
<b>RS-485 (2)</b>	110 – 2M baud, all formats supported, IDC8
<b>LAN</b>	10BASE-T IEEE 802.3 using either XPORT or ENC28J60
<b>USB</b>	USB 2.0, FT232R USB UART slave, Standard B connection
<b>AUDIO</b>	14-bit 11.025Khz mono, 3W amplifier
<b>SD CARD</b>	Dual SD Card – FAT16 format, max 2GB each
<b>VGA</b>	32x16 to 128x64, 64 colors, mixed text and graphics
<b>PS/2 (2)</b>	Keyboard, mouse,

### CONNECTIONS

RS232		RJ45	
1	CTS	I	Input
2	SWITCH	O	Switched output
3	RXD	I	Receive Input
4	GND		
5	GND		
6	TXD	O	Transmit output
7	DTR	O	Tied to VCC
8	RTS	O	Output

RS485		IDC8 HEADER	
1	VDC	IO	Unregulated DC out
2	GND		
3	RS485 A	IO	Non-inverted data
4	RS485 B	IO	Inverted data
5	RS485 B	IO	
6	RS485 A	IO	
7	GND		
8	VDC	O	

PS/2		Minidin6	
1	DAT	IO	PS/2 DATA I/O
2	SDA	IO	I2C DATA
3	GND		
4	+5V	O	
5	CLK	O	PS/2 CLOCK
6	SCL	IO	I2C CLOCK

SD		Full-size SD	
1	CS	O	Card chip select
2	DI	O	Card data input
3	GND		
4	VDD	O	Card VDD (switched)
5	CLK	O	Card Clock
6	GND		
7	DO	I	Card Data out
8	rsv		
9	rsv		



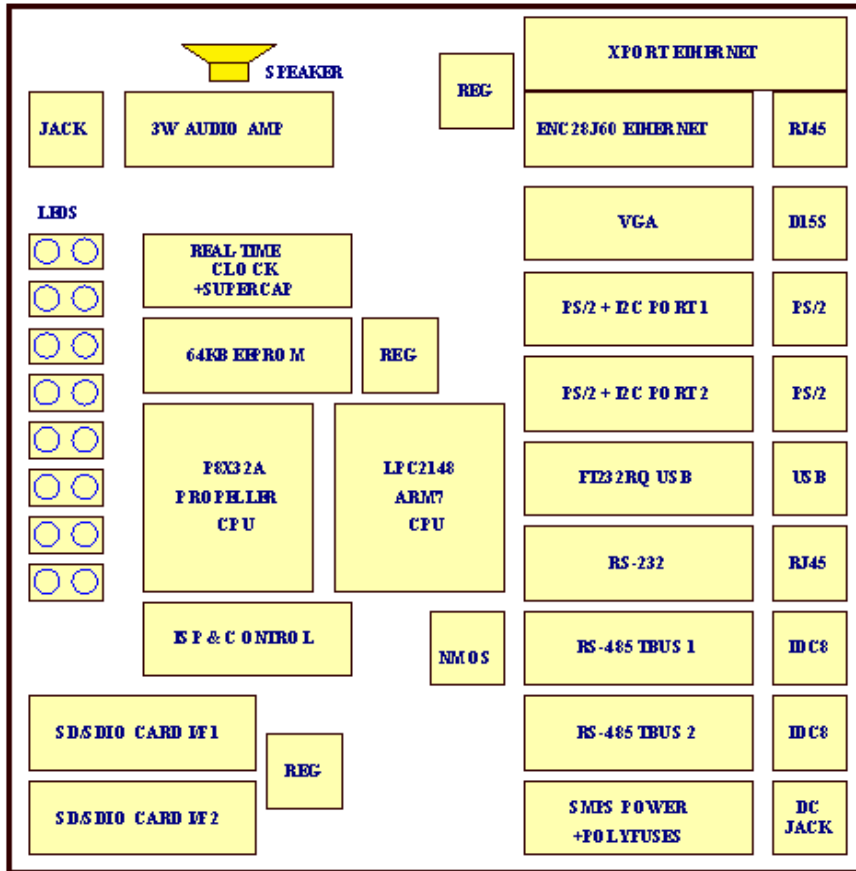
# CesCom

**N400**  
ACA approved



## CE0074B iCONSOLE

Stand-alone terminal console and controller



BLOCK DIAGRAM

