Logosol Network Master Controller LS-984

Doc #712984001 / Rev. 1.0, 04/23/2001

NEW! 10BASE-T Ethernet port

Features

- **18.432 MHz Rabbit 2000™ CPU**
- **256K FLASH Memory**
- **128K RAM**
- **RAM Backup Battery**
- **Two Logosol Distributed Control Network (LDCN) ports, hosting of up to 62 network nodes**
- **One programming / RS-232 serial port**
- **One RS-232 / RS-485 (2 wire) serial port**
- **One Ethernet 10BASE-T port**
- **12VDC to 32VDC single power supply**
- **Real-time and multi-tasking capabilities**
- **Free Dynamic C® Library supporting Logosol product family for distributed servo, stepper and I/O control**
- **Small footprint (5.00” x 3.30” x 0.85”)**

Description

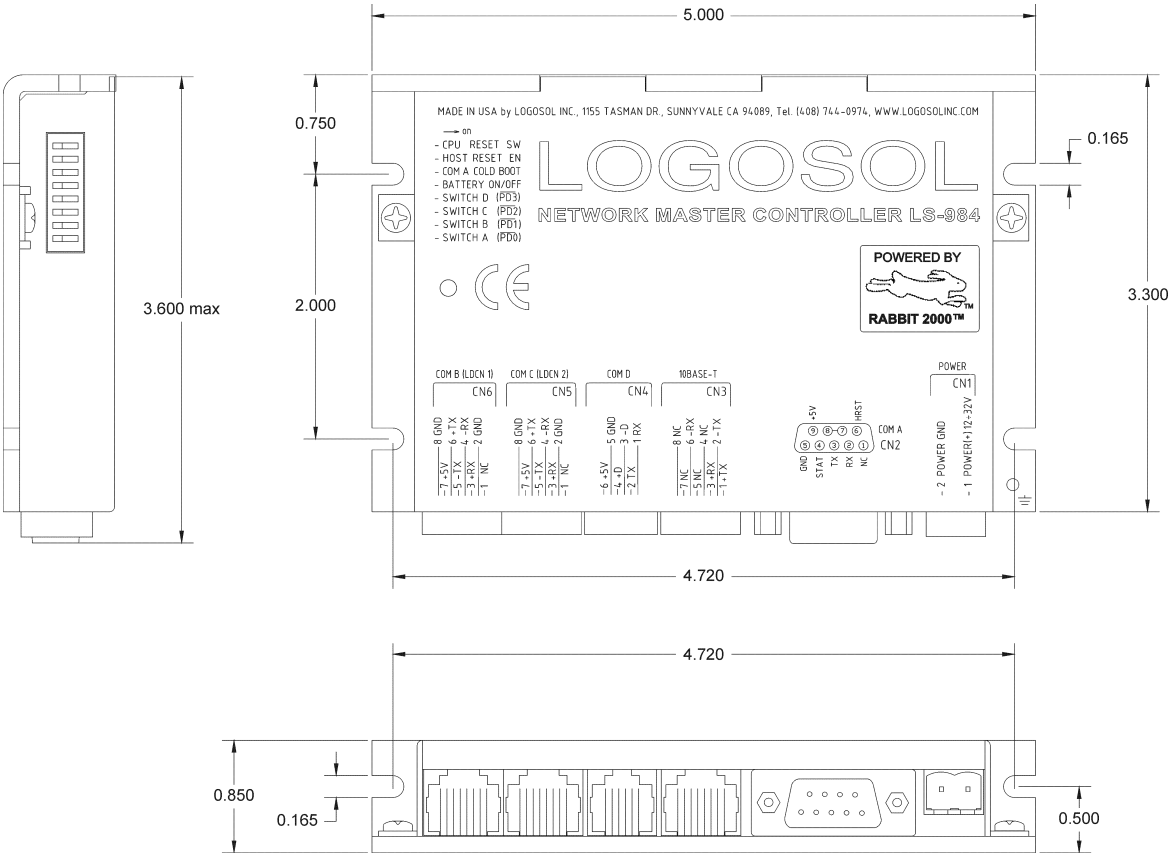
LS-984 is a powerful, cost-effective C-programmable CPU module with **10BASE-T** Ethernet port, developed especially for hosting of Logosol devices as distributed servo, stepper and I/O control nodes. The programming is accomplished via a standard RS-232 port by using Z-World’s Dynamic C® development environment featuring interactive editor, compiler and source level debugger. The high-performance Rabbit 2000™ microprocessor combined with Logosol’s servo, stepper and I/O nodes offers a versatile platform for wide range of industrial control applications.

Dynamic C® is an enhanced version of the industry standard C programming language with TCP/IP support, real-time and multi-tasking capabilities, designed to compile a program with applicable library routines and download the code to a target system. Comprehensive Dynamic C® libraries are available free of charge to facilitate the integration of Logosol controllers with LS-984.

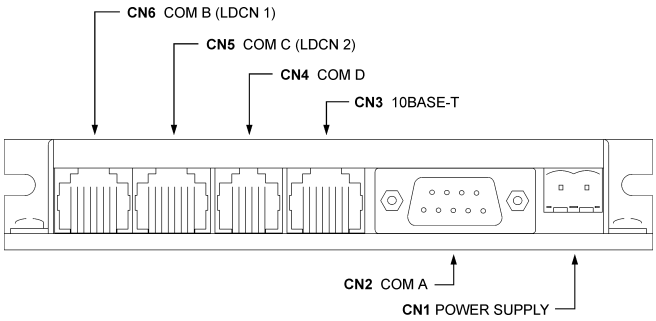
TECHNICAL SPECIFICATIONS rated at 25°C ambient, POWER(+) 12÷32V = 24VDC

POWER SUPPLY VOLTAGE	12÷32 VDC, (10÷40VDC Abs. Max range) Supply current <100 mA at 24VDC
CPU	Rabbit 2000™ – 18.432 MHz
FLASH Memory	256K
RAM	128K
ETHERNET INTERFACE	10BASE-T
SERIAL INTERFACES	COM A – RS-232 COM B – RS-485 full duplex (4 wire) LDCN compatible COM C – RS-485 full duplex (4 wire) LDCN compatible COM D – RS-232 or RS-485 half duplex (2 wire)
LED 10BESE-T STATUS	LOW light intensity – no 10BASE-T LINK connection HIGH light intensity – 10BASE-T LINK connection ready BLINKING – 10BASE-T activity
RAM BACKUP BATTERY	3V - CR2032
THERMAL REQUIREMENTS Storage temperature range Operating temperature range	 –30 to +85 °C 0 to 45 °C
MECHANICAL Size Weight	 5.00”x3.30”x0.85” 0.55lib. (250gr.)
MATING CONNECTORS CN1 – POWER CN2 – COM A CN3 – 10BASE-T CN4 – COM D CN5 – COM C (LDCN 2) CN6 – COM B (LDCN 1)	 Magnum EM2565-02-VL or Phoenix MSTB 2.5/2-ST-5.08 D-sub 9pin / female 8 pin RJ-45 6 pin RJ-45 8 pin RJ-45 8 pin RJ-45

DIMENSIONAL DRAWING



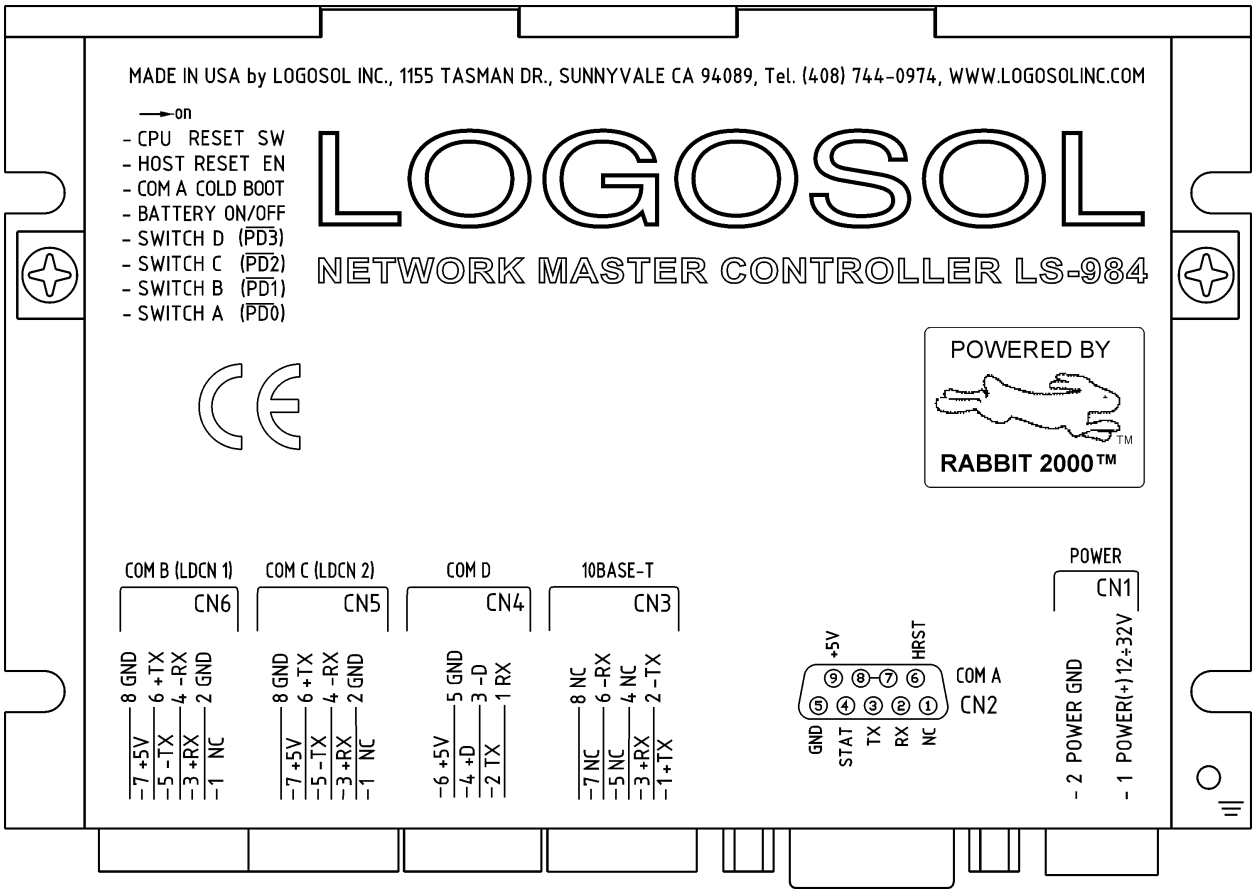
CONNECTOR LAYOUT



ORDERING GUIDE

PART NUMBER	MODEL	DESCRIPTION
921984001	LS-984	Network master controller, Rabbit 2000™ CPU, 18.432MHz, 128K RAM, 256K FLASH, 10BASE-T
324010036	EM2562-02-VL	Magnum EM2565-02-VL

CONNECTORS AND PINOUT



DIP SWITCHES

SW	FUNCTION	DESCRIPTION
1	SWITCH A (/PD0)	Configuration switch connected to PD0 (ON = logic "0")
2	SWITCH B (/PD1)	Configuration switch connected to PD1 (ON = logic "0")
3	SWITCH C (/PD2)	Configuration switch connected to PD2 (ON = logic "0")
4	SWITCH D (/PD3)	Configuration switch connected to PD3 (ON = logic "0")
5	BATTERY ON/OFF	RAM Backup battery ON/OFF
6	COM A COLD BOOT	ON = COM A COLD BOOT ENABLED
7	HOST RESET EN	ON = HOST RESET ENABLED
8	CPU RESET SW	ON = CPU RESET

CN1 – POWER

PIN	SIGNAL	DESCRIPTION
1	POWER (+) 12÷32V	12÷32V power supply, positive terminal
2	POWER GND*	Power supply ground

CN2 – COM A

PIN	SIGNAL	DESCRIPTION
1	N.C.	Not connected
2	RX	Receive data
3	TX	Transmit data
4	STAT	STATUS output from Rabbit 2000™ CPU (used by software development tools)
5	GND*	Interface ground
6	HRST	HOST RESET input (used by software development tools) Enabled by HOST RESET EN switch
7	Connected to pin 8	
8	Connected to pin 7	
9	+5V**	+5V Power output

CN3 – 10BASE-T

PIN	SIGNAL	DESCRIPTION
1	+TX	10BASE-T transmit pair (+) Data terminal
2	–TX	10BASE-T transmit pair (–) Data terminal
3	+RX	10BASE-T receive pair (+) Data terminal
4	N.C.	Not connected
5	N.C.	Not connected
6	–RX	10BASE-T receive pair (–) Data terminal
7	N.C.	Not connected
8	N.C.	Not connected

CN4 – COM D

PIN	SIGNAL	DESCRIPTION
1	RX	RS-232 mode receive data
2	TX	RS-232 mode transmit data
3	–D	RS-485 mode (–) Data terminal
4	+D	RS-485 mode (+) Data terminal
5	GND*	Interface ground
6	+5V**	+5V Power output

CN5 – COM C (LDCN 2)

PIN	SIGNAL	DESCRIPTION
1	N.C.	Not Connected
2	GND*	Interface ground
3	+RX	(+) Receive data
4	–RX	(–) Receive data
5	–TX	(–) Transmit data
6	+TX	(+) Transmit data
7	+5V**	+5V Power output
8	GND*	Interface ground

CN6 – COM B (LDCN 1)

PIN	SIGNAL	DESCRIPTION
1	N.C.	Not Connected
2	GND*	Interface ground
3	+RX	(+) Receive data
4	–RX	(–) Receive data
5	–TX	(–) Transmit data
6	+TX	(+) Transmit data
7	+5V**	+5V Power output
8	GND*	Interface ground

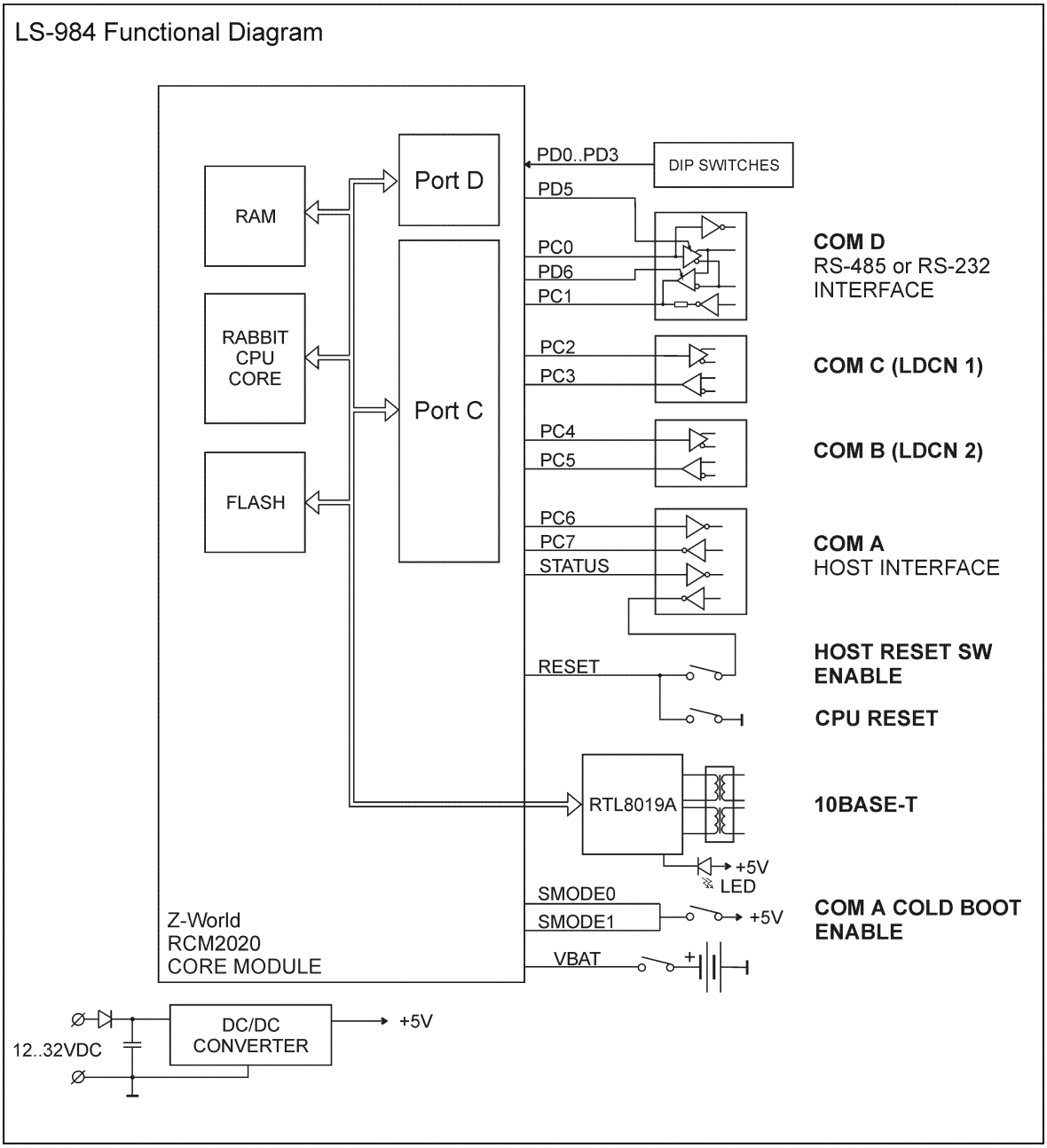
* POWER GND and GND are electrically connected. Drive's case is isolated from the controller circuitry and can be grounded externally.

** 250mA MAX for all outputs combined.

LS-984 ARCHITECTURE OVERVIEW

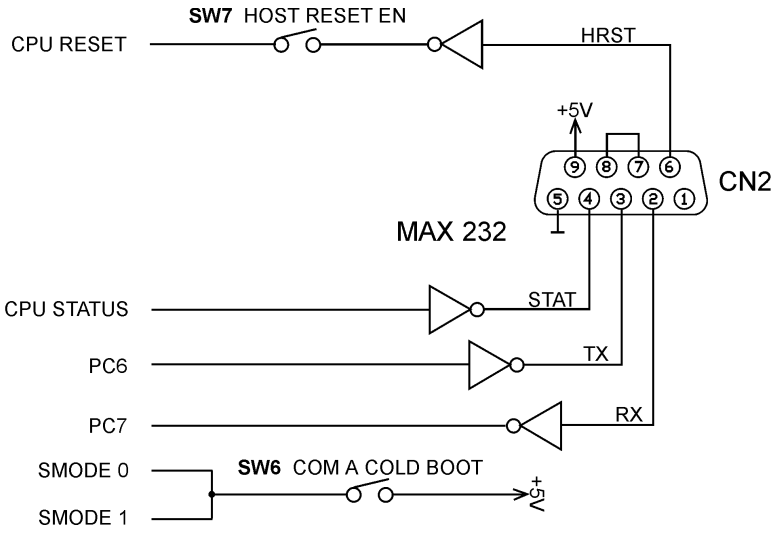
- CPU - Rabbit 2000™
- CPU clock – 18.432 MHz
- 256K FLASH memory
- 128K SRAM with battery backup
- Two full-duplex (4 wire) RS-485 port for hosting of up to 62 LDCN nodes
- One RS-232 for software development and general purpose applications
- One configurable RS-232 or RS-485 (2 wire) serial port
- One 10BASE-T Ethernet port for TCP/IP networking
- LED indicator with two intensity levels

LS-984 Functional Diagram



SERIAL INTERFACE (COM A)

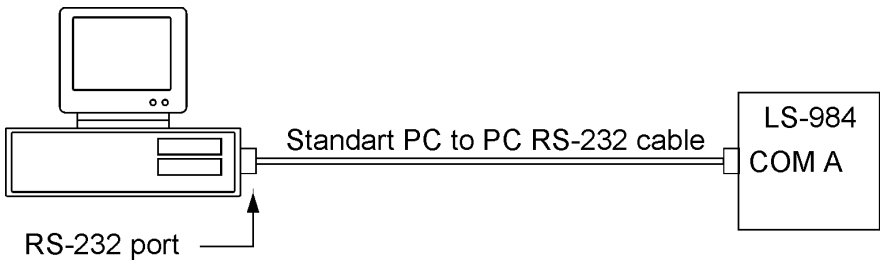
- COM A corresponds to Rabbit 2000™ Serial port A.
- COM A schematics:



- SOFTWARE DEVELOPMENT mode:
  SW 6 = ON
  SW 7 = ON
  In this mode LS-984 can be controlled by Z-World development tools.
  For more information see the related documents at http://www.zworld.com and http://www.rabbitsemiconductor.com.

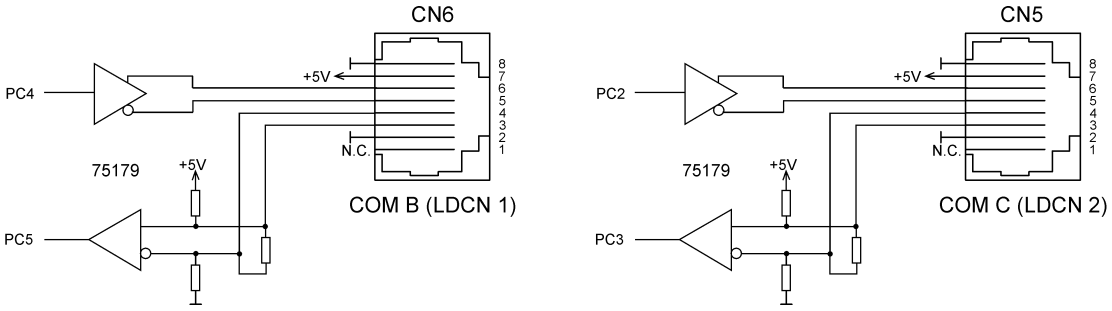
- RS-232 interface mode:
  SW 6 = OFF
  SW 7 = OFF

- Typical LS-984 to PC interfacing:

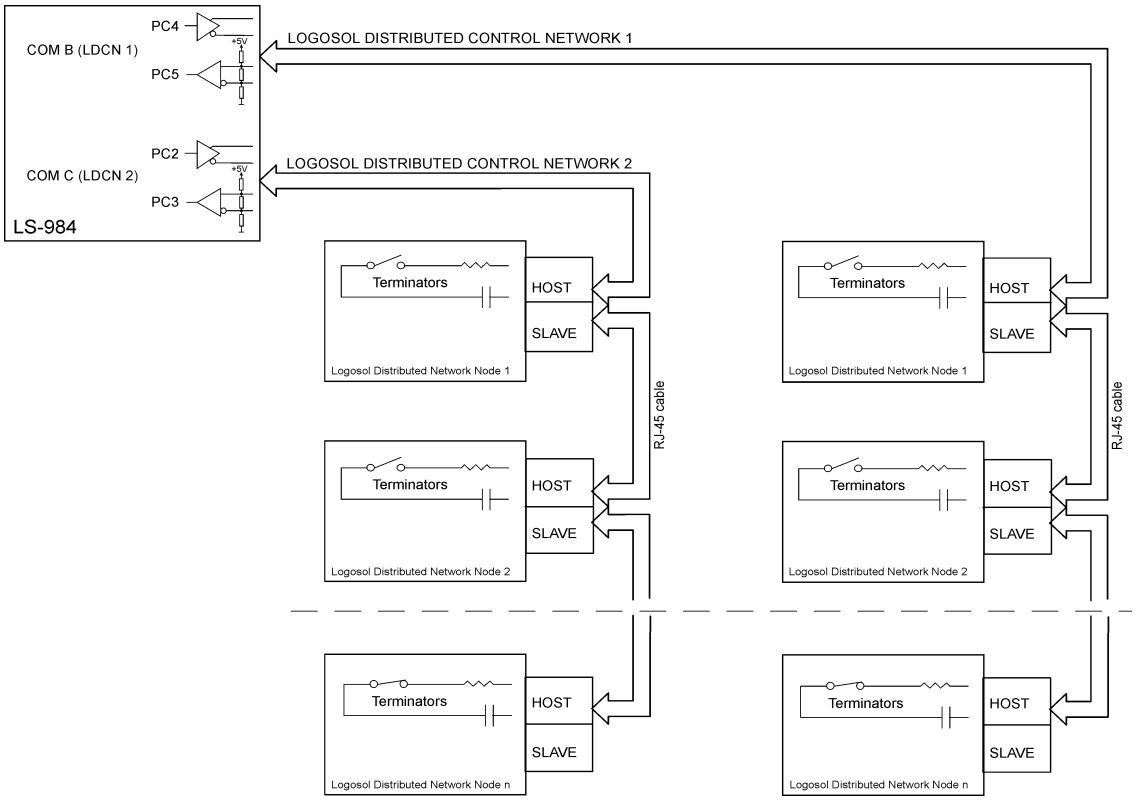


SERIAL INTERFACE COM B (LDCN 1) and COM C (LDCN 2)

- COM B corresponds to Rabbit 2000™ Serial port B.
- COM C corresponds to Rabbit 2000™ Serial port C.
- Interface schematics:



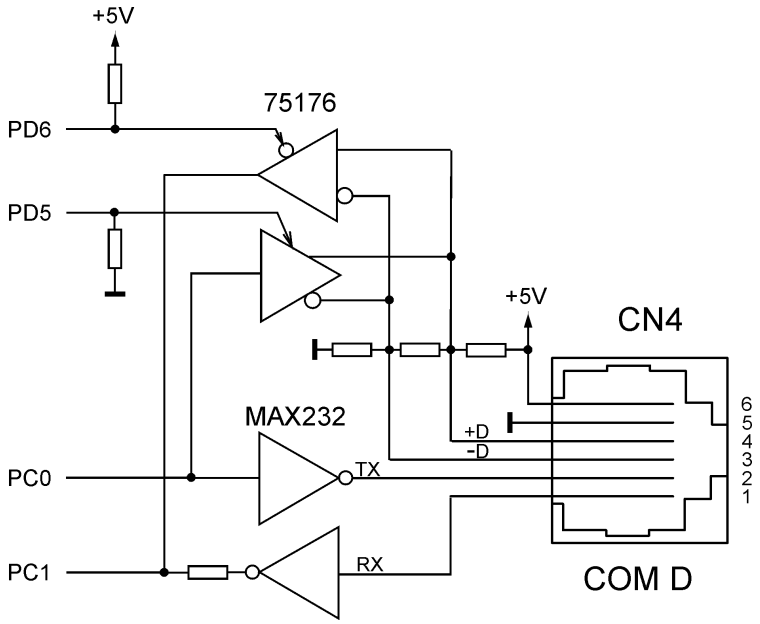
- LDCN 1 and LDCN 2 are especially designed for interfacing with Logosol Distributed Control Network, hosting up to 31 distributed servo, stepper, I/O and other devices per network.
- Typical LDCN application schematics:



For a full description of LDCN refer to the manuals and software library, available for download at http://www.logosolinc.com.

SERIAL INTERFACE (COM D)

- COM D corresponds to Rabbit 2000™ Serial port D.



- RS-232 mode:
  PD5 and PD6 should be programmed as inputs.

- RS-485 mode:
  PD6 should be programmed as output and set to logic 0.
  To control the direction PD5 should be programmed as a standard output.
  PD5 = 1 – transmit mode
  PD5 = 0 – receive mode

LED

- LED intensity is controlled by 10BASE-T interface
- LED intensity table:

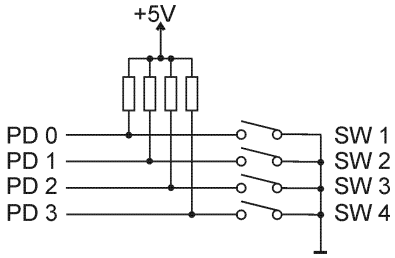
LED INTENSITY	10BASE-T STATUS
LOW INTENSITY	Cable is not connected. Bad link.
HIGH INTENSITY	Link ready.
BLINKING	10BASE-T activity.

DIP SWITCHES

- SWITCH A (SW 1) to SWITCH D (SW 4) are corresponding to Rabbit 2000™ Parallel port D (PD0 ÷ PD3) respectively.

- PD0 to PD3 must be programmed as inputs.
  CAUTION! DO NOT PROGRAM PD0 TO PD3 AS OUTPUTS. THIS MAY DAMAGE THE CPU.

- Configuration switches schematics:



  Configuration switches are available for using with user software.

- SW 5 (BATTERY ON/OFF) switch turns on and off RAM backup battery.
  SW 5 = ON – RAM keeps the information during power off.
  SW 5 = OFF – The information in RAM is destroyed during power off.

- SW 6 (COM A COLD BOOT) switch – see Serial interface COM A

- SW 7 (HOST RESET EN) switch – see Serial interface COM A

- SW 8 (CPU RESET SW) switch corresponds to Rabbit 2000™ CPU master reset.
  SW 8 = ON – Rabbit 2000™ CPU in reset condition.
  SW 8 = OFF – Rabbit 2000™ CPU is running.