 <p><b>SAMSON</b> Samson Corp. Swannanoa, NC-USA</p>	<p><b>CONTROL MASTER SERIAL PC INTERFACE + SOFTWARE (PCI)</b>  <b>CONTROL MASTER INTERFAZ SERIALE DE LA PC + SOFTWARE (PCI)</b>  <b>CONTROL MASTER INTERFACE PÉRIODIQUES DE PC + LOGICIEL (PCI)</b></p>	
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**Description/ Descripción/ Description**

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The PC Interface connects to the PC via a standard DB9 serial cable (provided) and to the Control Master system via the CANBUS Network cable (by Installer). It provides a two-way link between the PC and the System, allowing the Control Master System to send information to the PC and likewise allowing the PC to communicate with the Control Master System. It is powered with a small transformer (provided).

**NOTE:** A dedicated PC is not required. The system will only interface with **ONE PC**.

**NOTE:** The PC interface is also known as the 'Conductor' or the 'Modem' or the 'PCI'. These terms are interchangeable.



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El interfaz de la PC conecta con la PC vía un cable serial DB9 (proporcionado) y con el sistema del amo del control vía el cable de la red de CANBUS (por Installer). Proporciona un acoplamiento de dos vías entre la PC y el sistema, permitiendo el sistema envíe la información a la PC y además permitiendo que la PC se comunique con el sistema. Se acciona con un transformador pequeño (proporcionado).

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L'interface de PC se relie au PC par l'intermédiaire d'un câble DB9 périodique (fourni) et au système de maître de commande par l'intermédiaire du câble de réseau de CANBUS (par Installer). Elle fournit un lien bi-directionnel entre le PC et le système, permettant au système d'envoyer l'information au PC et de même permettant au PC de communiquer avec le système. Elle est actionnée avec un petit transformateur (fourni).

**Installation - Operation/ Instalación – Modo de empleo/ Installation – Mode d'emploi**

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- Locate the PCI next to the PC.
- **Consult with the on-site PC administrator before touching the PC.** Different facilities will have varying security polices applied to the PC and you may not be able to load the software without their help.
- Typically the PCI will be at the end of the CANBUS Network. If this is true, then open the case (two small recessed phillips-head screws on the bottom side) and move the small blue Jumper from the factory default 'out' position to the 'in' position - pull the Jumper straight up and then reinstall it in the other position. If the PCI is to be located in any of the middle positions on the CANBUS Network, then do not open the case and do not move the Jumper from the Factory Default. Visual confirmation of the Jumper position is impossible, as the circuit board is not legibly marked. You **must** confirm the position of the Jumper using a Multi-Meter before proceeding any further. Probe the CAN H and CAN L terminals on the back of the unit with the CANBUS disconnected and the power to the unit OFF – Jumper 'in' equals 120Ω (120 OHMS), when the Jumper is 'out' there should not be any continuity. See Fig 2.

- Connect the CANBUS cable(s). See Fig 3.
- Connect the provided DB9 Serial Cable to the PC Interface. At the PC plug it into an available serial port. *Sometimes the Serial Port on the PC is not marked*, sometimes it is marked with the symbol **I O I O I** and sometimes there will be a label 'Comm 1' or 'Comm 2'. If the available serial port on the PC is the older 25 pin type, purchase an adapter (DB9 to DB25) from an electronics retailer. For PC's equipped only with USB ports an adapter can be purchased in the computer aftermarket and used, but this may require the assistance of a knowledgeable PC professional (depending on adapter model) and is not factory supported. See Fig 3.
- Connect the provided Power Supply. See Fig 3.
- To load the provided PC Software, follow the instructions included with the CD. Generally, depending on the version of Windows: Close all open programs on the PC. Insert the CD into the drive bay on the front of the PC. Wait a few moments for the PC to recognize the CD. Open the CD by double-clicking the 'My Computer' icon on the desktop, then double-click on the icon for the CD drive. From the icons/menu now available double click on the file SETUP.EXE and the installation will begin immediately. You will be asked to answer several questions as the installation proceeds – always choose the default answers. After this section of the installation is complete, a window will open with an icon similar to an Olympic torch. Minimize any open windows with the exception of the window with the torch icon. Place the mouse pointer over this icon and while holding down the right hand button on the mouse, move the icon to an unoccupied area of the desktop and release the right button. Close all of the open windows on the desktop.
- Next, Install the Borland Database Engine. Re-open the CD by double-clicking on the 'My Computer' icon on the desktop and then double-click the Icon for the CD Drive. You will find a file folder marked BDEDISK1 or it may simply be marked 'BDE', double-click on it and then from the icons/menu now available double click on the file SETUP.EXE and the installation will begin immediately. Once again, choose all of the default answers for any questions. You will be advised when installation is complete.
- Restart the PC and start the software by double-clicking on the Icon. If you were not successful moving the Icon for the software to the desktop, click on the 'Start' button in the lower left-hand corner of the screen, click on 'Programs', click on 'MDS2000 PC System', then click the next 'MDS2000 PC System' from the extended menu.
- Ignore any error messages the system generates at this point. Look at the top Menu bar and find the 'Options' button. Place the mouse pointer over 'Options' and single click the left mouse button. A drop down menu will appear below the 'Options' button, move the mouse pointer down to the item 'Comm Port' and click on it. You will see another menu appear to the side listing 'Comm 1' to 'Comm 4'. If you know from the markings on the back of the PC which Comm Port you are connected to then click on that button. If you don't know, click on the 'Comm 1' button first and if it does not work (if this is the case you will get an initial message 'Please Wait – Checking Comms' and then after a few moments an error message appears 'Retry Error – Cannot communicate with Conductor') keep following these directions over and over again, choosing each Comm Port in turn. When you have chosen the correct Comm Port you will get a message in the center of the screen 'Please wait finding I/O's'. If the rest of the system is properly connected the I/O indicator lights will turn green as the units are found. If the rest of the system is either not connected or improperly connected you will get an error message 'Network not found!' If you get any other kind of error message, consult the troubleshooting guide below.
- There are three red LED lights on the face of the PC Interface for diagnostics purposes. From left to right they are:
  - LED1 = PC to Interface serial link. In normal operation this light will blink intermittently as the PC 'talks' to the PC Interface and the Interface responds, and vice-versa. The blinking will normally be irregular but in normal service it will light up every second or so, depending on what is happening on the system. When sending the configuration the LED may periodically appear to be continuously glowing, as this operation makes very intensive and continuous use of the comms, but once the configuration operation is complete it will return to the normal blinking state. If this LED remains continuously glowing for an extended period of time it indicates an error, consult the troubleshooting section below.
  - LED2 = Power. This light should remain continuously glowing at all times when the unit is powered up. If it is not on it indicates an error, consult the troubleshooting guide below.
  - LED3 = CANBUS. This light indicates the condition of the communications from the PC Interface to the I/O Units. In normal operation this light will blink intermittently as the PC Interface 'talks' the I/O units and they respond. The blinking will normally be irregular but in normal service it will light up every second or so, depending on what is happening on the system. When sending the configuration the LED may periodically appear to be continuously glowing, as this operation makes very intensive and continuous use of the comms, but once the configuration operation is complete it will return to the normal blinking state. If this LED remains continuously glowing for an extended period of time it indicates an error, consult the troubleshooting section below.
- See the System Overview guide for instructions on CANBUS Networking, Configuring, Addressing and General System-wide Troubleshooting.

**Hardware Trouble shooting/ Anomalías y sus soluciones/ Anomalies et solutions**

Symptom	Possible Causes	Solution
LED2 not Glowing. No LED's Glowing on the face of the PCI.  <b>Note:</b> There are three red diagnostic LED's on the face of the PC Interface. From left to right they are:  LED1: PC Serial Port Comms. LED2: Power. LED3: CANBUS System.	Unit not connected properly to the building main power supply.	Make sure the power cable is plugged in to the wall socket. Check the power input cable connection and transformer connections.
	Building Circuit Breaker	<b>WARNING:</b> Confirm the cause of the fault and rectify immediately before proceeding. Check and reset the Circuit Breaker at the panel in the building.
	Transformer Defective.	Replace with an identically rated unit.
	PC Interface Defective.	Replace the PC Interface.
All of the LED's are Glowing on the face of the PCI.	Normal Condition	When the PCI is correctly connected to the power cable and not connected to the PC or the CANBUS, all three LED's will be Glowing and not flashing.
	Serial Port/Cable issue.	See below - 'LED1 Glowing solidly, not flashing'
	CANBUS cabling defective.	See below - 'LED3 Glowing solidly, not flashing'
	PC Interface Defective.	Replace the PC Interface.
LED1 Flashing	Normal Condition.	None. PC serial link to PCI functioning properly.
LED2 Glowing Solid Red	Normal Condition	None. Power connection functioning properly.
LED3 Flashing	Normal Condition.	None. CANBUS functioning properly.
LED1 Glowing solidly, not flashing.	DB9 Serial Cable not connected.	Check to make sure the cable is securely connected to the PC Interface and the correct Comm Port on the PC.
	DB9 Serial Cable connected to wrong PC Comm Port.	
	Software not running or not installed.	Start or install the software.
	PC Powered down.	Turn the PC on and start the system software.
	Wrong Comm Port chosen in the PC Software.	Enable the correct Comm Port within the PC software.
	Defective or incorrect serial cable.	Replace serial cable with a standard DB9 cable. <b>Do not use a null-modem cable or adapter!</b>
	PC Defective (Windows, BIOS or internal Hardware issue)	Consult with the in-house PC administrator to resolve the issue.
LED3 Glowing solidly, not flashing.	PC Interface Defective.	Replace the PC Interface.
	CANBUS Cable not connected.	Make sure the CANBUS cable is connected properly to the PCI. Make sure that the CANBUS cable is properly connected at all Keypads and I/O Units.
	CANBUS polarity reversed.	Check the CANH and CANL connection at the PCI (Fig 3.) Check the CANH and CANL connections at all of the Keypads and I/O Units.
	Jumpers in wrong position.	Check all Jumpers in the System.
	No Power to I/O Units.	See the PSU troubleshooting guide.
	CANBUS cabling defective.	CANBUS network not wired 'inline'. Rewire correctly. CANBUS cable broken, stripped or grounded improperly – could be anywhere in the system. Locate and replace the defective cable(s). See the System Overview Manual for additional CANBUS troubleshooting.
	Keypad(s) Defective.	See the Keypad troubleshooting guide.
	I/O Unit(s) Defective.	See the I/O troubleshooting guide.

**PC Software Error Messages/ Anomalías y sus soluciones/ Anomalies et solutions**

<b>Software Error Messages</b>	<b>Possible Causes</b>	<b>Solution</b>
Borland Database Initialisation Error.	Second half of software installation incomplete – Borland Database Engine not installed.	Install or Reinstall the Borland Database Engine using the default settings provided during installation.
	Incorrect or Defective Installation of Borland Database Engine.	
	Internal PC Hard Drive, LAN, Windows or BIOS Error.	Consult with the on-site PC Administrator.
Cannot Open Comm Port.	No Comm Port chosen in PC Software.	Select the correct Comm Port from the 'Options' Menu.
	Incorrect Comm Port chosen in 'Options' Menu.	Select the correct Comm Port from the 'Options' Menu.
	Comm Port already in use by another Software Program running on the PC.	Plug the DB9 Serial cable into a different Comm Port on the PC and then select the correct Comm Port from the 'Options' Menu.
	PC Comm Port Defective.	If no other Comm Ports are available on the PC or if this message appears on all available Comm Ports, consult with the on-site PC Administrator.
Retry Error. Cannot communicate with Conductor!	No Power to the PC Interface.	See the troubleshooting guide above 'LED2 not Glowing'.
	DB9 Serial Cable either not connected or improperly connected or Defective.	See the troubleshooting guide above 'LED1 Glowing solidly, not flashing'
	PC Interface defective.	Replace with a new unit.
Network Not Found!	CANBUS Error.	See the troubleshooting guide above 'LED3 Glowing solidly, not flashing'
User Unknown! Hose Not Assigned!	PC Software Configuration Error.	Use the Send button on the top menu bar of the PC Software to update the Configuration and User Files on the I/O units.
Warning - Oil level Low!	Oil Tank Level Low.	Confirm the tank level and fill if required. Update the tank levels in the PC Software and transmit the configuration using the 'Send' button on the top Menu Bar.
	Oil Tank levels not updated in the PC software.	
	Oil Tank level update not sent.	
The Low Oil warning window will not go away no matter how many times 'OK' button clicked.	Lots of Warning Messages.	Keep Clicking.
'Send' button not working. 'Send' button greyed out. 'Dispense' button not working. 'Dispense' button greyed out.	CANBUS error	See the troubleshooting guide above 'LED3 Glowing solidly, not flashing'
	Incorrect Comm port chosen or Comm Port settings inappropriately changed in the PC.	Choose the correct Comm Port under the 'Options' menu on the top Menu bar of the PC Software.
The PC mouse pointer blinks rapidly and/or the computer seizes up when the serial cable is connected to the PC.  The keyboard seizes up when the Serial cable is connected to the PC.	Special security precautions enabled on the PC or on the LAN	Consult with the On-Site PC administrator. Ask the PC Administrator to enable the Serial Port or provide a different PC to utilize.

**Technical data/ Datos técnicos/ Caractéristiques techniques**

Output CANBUS Voltage. System ON and operating properly.	Voltaje De la Salida CANBUS	Tension De Rendement CANBUS	+2.5 VDC CAN H to SHEILD. -2.5VDC CAN L to SHIELD Normal Variation can be from 2 to 4 VDC
Resistance CANH to CANL (CANBUS Cable Disconnected - Power OFF)	Ohms CAN H a CAN L (CANBUS Cable desconectado - energía APAGADO)	Ohms CAN H à CANL (CANBUS Câble débranché - puissance AU LOIN)	Infinite (Jumper OUT) 120Ω (Jumper IN) CANH to CANL
Resistance CANH to CANL (CANBUS Cable Connected - Power OFF)	Ohms CAN H a CAN L (CANBUS Conectado mediante cable - energía APAGADO)	Ohms CAN H à CANL (CANBUS Connecté par cables - mise hors tension)	60Ω CAN H to CAN L.

**Typical Wiring Schematic/ Diagrama Típico / Schéma Typique De Câblage**

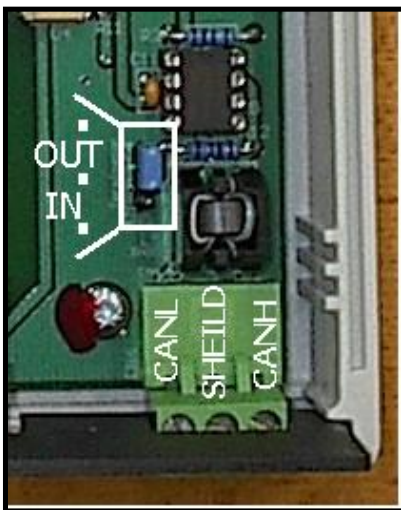


FIGURE 2. The Jumper is shown in the 'OUT' position. Pull up on the blue Jumper and move to the lower position to place in the 'IN' position. Always confirm the position of the Jumper by probing the CANH and CANL terminals and checking for the proper resistance.

With the CABUS Cable DISCONNECTED:

Jumper 'OUT' = Infinite Resistance between CANH and CANL.

Jumper 'IN' = 120Ω between CANH and CANL.

FIGURE 3. Connect the CANBUS wires as indicated.

**Special Cautions and Warnings:**

***Electricity can be lethal*** – observe all normal safety precautions and do not perform any work on units that are connected to a power source!

Ensure that all Power Supply Units are plugged into to a circuit that has a common grounding point. Electrical codes generally require that all buildings be grounded in this manner.

Do not ever connect in any fashion or ground any Control Master components in multiple buildings. Ground Loops will occur and damage the system components.

Surge Protection or other protective devices other than the normal/provided ground connection is not required. The best protection from power surges and lightning strikes is a correctly wired and grounded system in a single building meeting normal electrical codes.