SC6000 Controller

QUICK REFERENCE GUIDE

CONTENTS

> ☝ **NOTE**
>
> *For further details on product installation, see the complete Reference Manual available on the configuration CD-ROM included with this product.*

SC6000-1200 STANDARD MODEL

Figure A

(1) Connector Panel

Figure B

(1) Power ON and Communication LEDs   (4) Programming Keypad
(2) LCD Display   (5) Connector Panel Legend
(3) Status LEDs
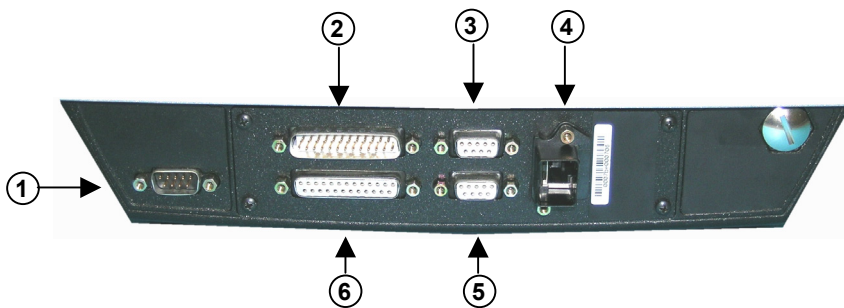
Figure C
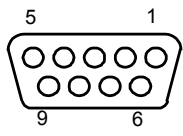
(1) Modem Connector   (4) Ethernet Connector
(2) Power/Net Connector   (5) Auxiliary Interface Connector
(3) Main Interface Connector (6) Extended I/O Connector

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Electrical Connections

The SC6000 is designed to easily connect to the PWO power supply through two standard accessory cables. All system cabling is concentrated at the PWO except for some Host connections and the Auxiliary interface for SC6000 configuration using a laptop PC.

The following connector pinouts are given for reference.

MAIN INTERFACE			
Pin	RS232	RS485 Full Duplex	
2	TX	TX485 +	
3	RX	RX485 +	
5	GND_ISO	GND_ISO	9-pin D-sub Female Connector
7	CTS	RX485 -	
8	RTS	TX485 -	

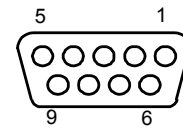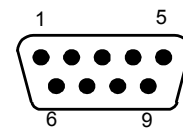> ⚠ **CAUTION**
>
> *Do not connect GND and GND_ISO to different (external) ground references. GND and GND_ISO are internally connected through filtering circuitry which can be permanently damaged if subjected to voltage drops over 0.8 Vdc.*

AUXILIARY INTERFACE			
Pin	Name	Function	
2	TX	Transmit	
3	RX	Receive	9-pin D-sub Female Connector
5	GND	Ground	

MODEM CONNECTOR			
Pin	Name	Function	
1	CD	Carrier detect	
2	RX	Receive	
3	TX	Transmit	
4	DTR	Data terminal ready	9-pin D-sub Male Connector
5	GND	Ground	
6	DSR	Data set ready	
7	RTS	Request to send	
8	CTS	Clear to send	
9	RI	Ring indicator	

ETHERNET CONNECTOR			
Pin	Name	Function	
1	TX +	Transmitted data (+)	
2	TX -	Transmitted data (-)	
3	RX +	Received data (+)	RJ45 Modular Connector
6	RX -	Received data (-)	
4, 5, 7, 8	N.C.	Not connected	

Typical Layouts

Host
HUB
ETHERNET
NULL-MODEM Cable
AUX
VAC INPUT
Power/Net
CAB-SC6003
SC6000
CAB-SC6003
Extended I/O
PWO

Ethernet Connection

HUB
ETHERNET
NULL-MODEM Cable
AUX
VAC INPUT
Main
CAB-SC6103
SC6000
CAB-SC6003
Extended I/O
CAB-SC6003
Power/Net
PWO
Host
Main

Main Connection

HUB
ETHERNET
NULL-MODEM Cable
AUX
VAC INPUT
Power/Net
CAB-SC6003
SC6000
CAB-SC6003
Extended I/O
CAB-SC6103
Modem
PWO
Telephone line
to Remote Host
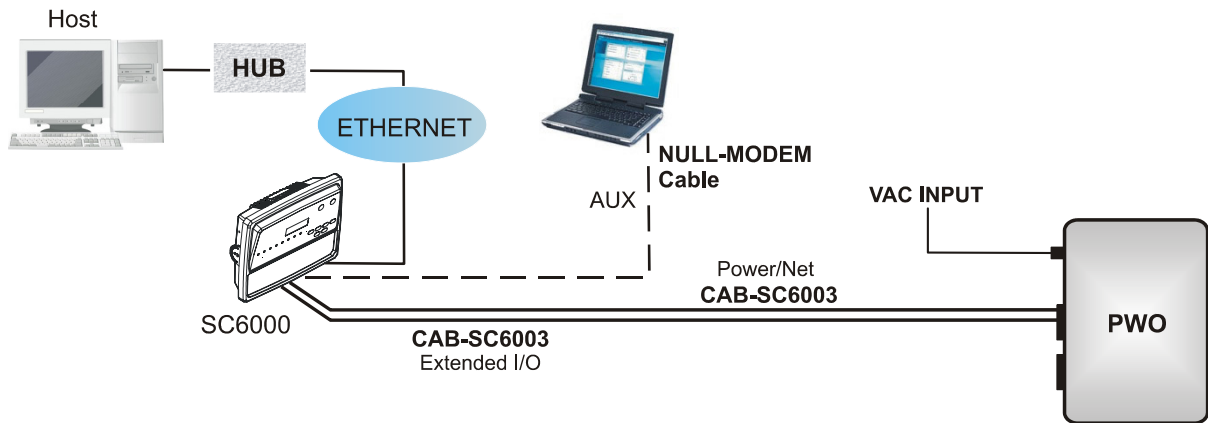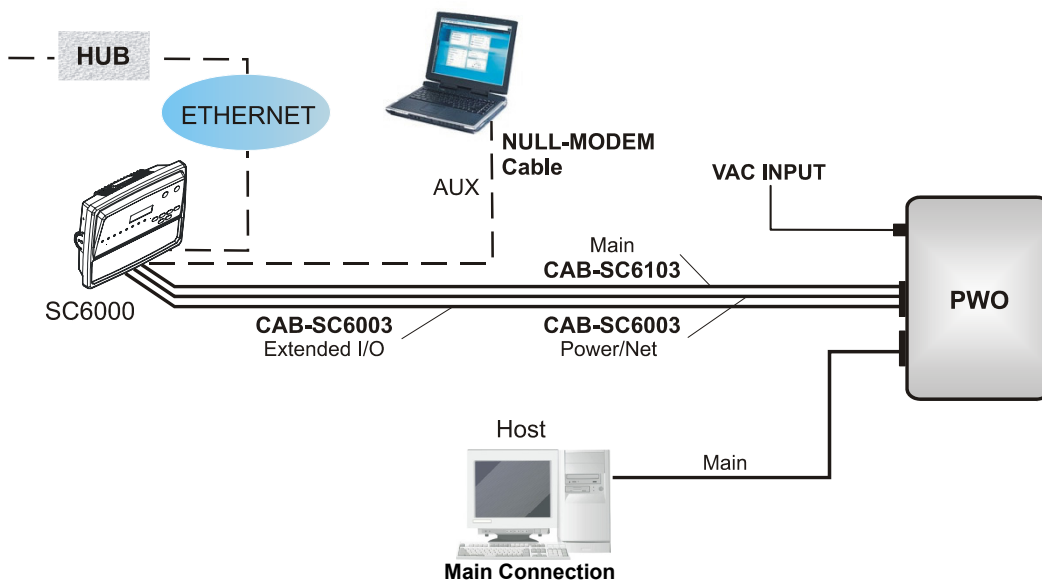
Modem Connection

SC6000-1211 PROFIBUS MODEL

SC6000 Profibus Connector Panel

1. Modem Connector
2. Power/Net Connector
3. Main Interface Connector
4. Ethernet Connector
5. Profibus Connector
6. Auxiliary Interface Connector
7. Extended I/O Connector

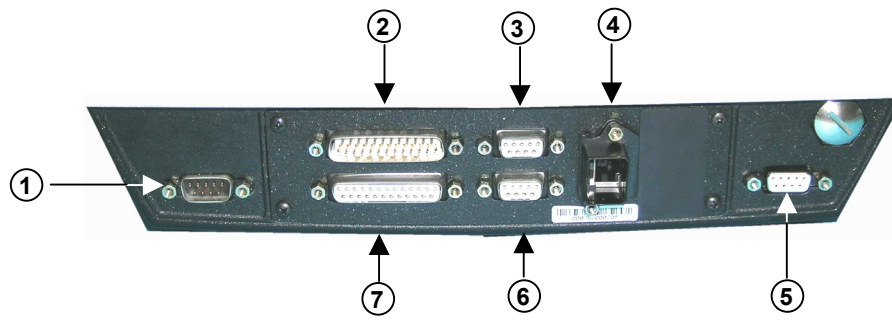| PROFIBUS CONNECTOR			
Pin	**Name**	**Function**	
1	Shield*	Shield, protective ground resp.	
2	N.C.	Not connected	
3	B-LINE (RxD/TxD-P)	Received/Transmitted data-P	
4	CNTR-P**	Repeater control signal	
5	DGND	Data ground (M5V)	
6	+5 V	Voltage plus (P5V)	
7	N.C.	Not connected	
8	A-LINE (RxD/TxD-N)	Received/Transmitted data	
9	CNTR-N**	Repeater control signal	

9-pin D-sub Female Connector

*   signal is optional

**   signal is optional; RS485 level

Fieldbus Network

DATALOGIC
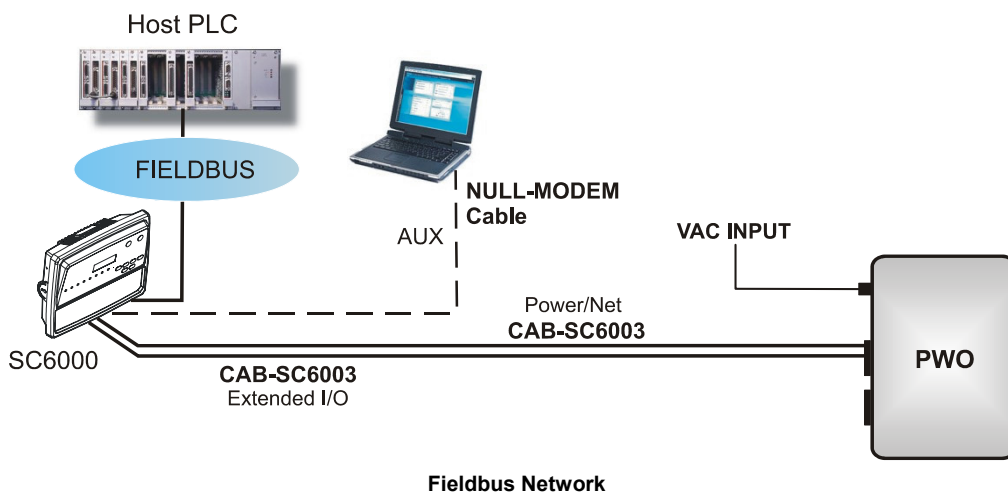
SC6000-1215 DEVICENET MODEL
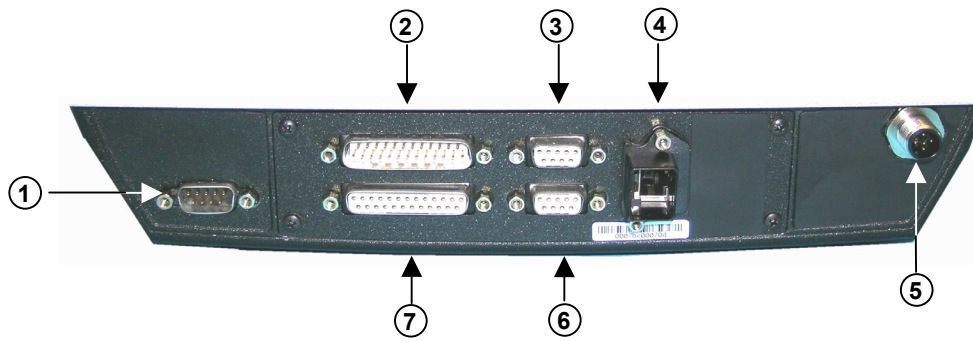
SC6000 DeviceNet Connector Panel

① Modem Connector ⑤ DeviceNet Connector
② Power/Net Connector ⑥ Auxiliary Interface Connector
③ Main Interface Connector ⑦ Extended I/O Connector
④ Ethernet Connector

DEVICENET CONNECTOR			
Pin	**Name**	**Function**	
2	V+	Supply voltage – positive pin	
5	CAN_L	CAN bus data line – L	
1	SHIELD	Shield	
4	CAN_H	CAN bus data line – H	
3	V-	Supply voltage – negative pin	

5-pin male DeviceNet Connector

Host PLC

FIELDBUS

NULL-MODEM Cable

AUX

VAC INPUT

Power/Net
CAB-SC6003

SC6000

CAB-SC6003
Extended I/O

PWO

Fieldbus Network

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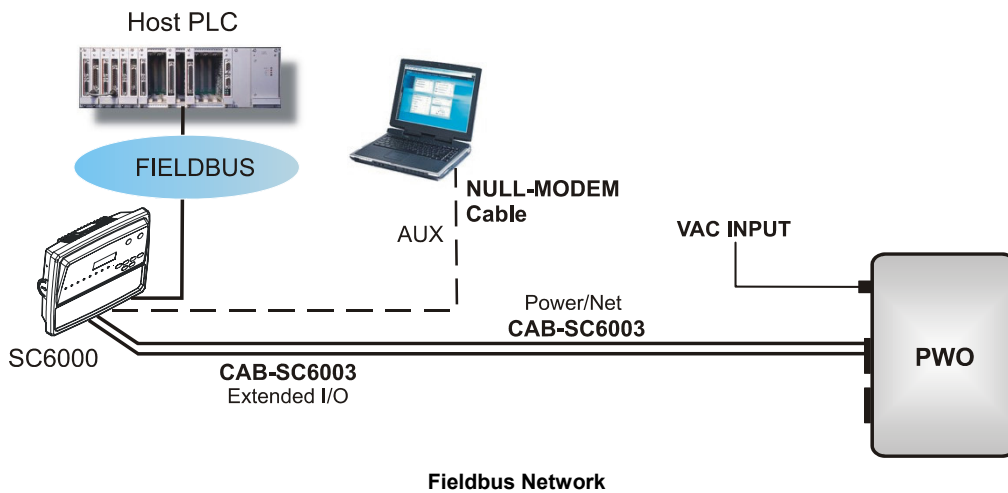
SC6000-1230 DUAL ETHERNET MODEL

SC6000 Dual Ethernet Connector Panel

① Modem Connector   ⑤ Second Ethernet Connector
② Power/Net Connector   ⑥ Auxiliary Interface Connector
③ Main Interface Connector   ⑦ Extended I/O Connector
④ Ethernet Connector

ETHERNET CONNECTOR			
Pin	**Name**	**Function**	
1	TX +	Transmitted data (+)	
2	TX -	Transmitted data (-)	
3	RX +	Received data (+)	
6	RX -	Received data (-)	
4, 5, 7, 8	N.C.	Not connected	**RJ45 Modular Connector**

Dual Ethernet Connection
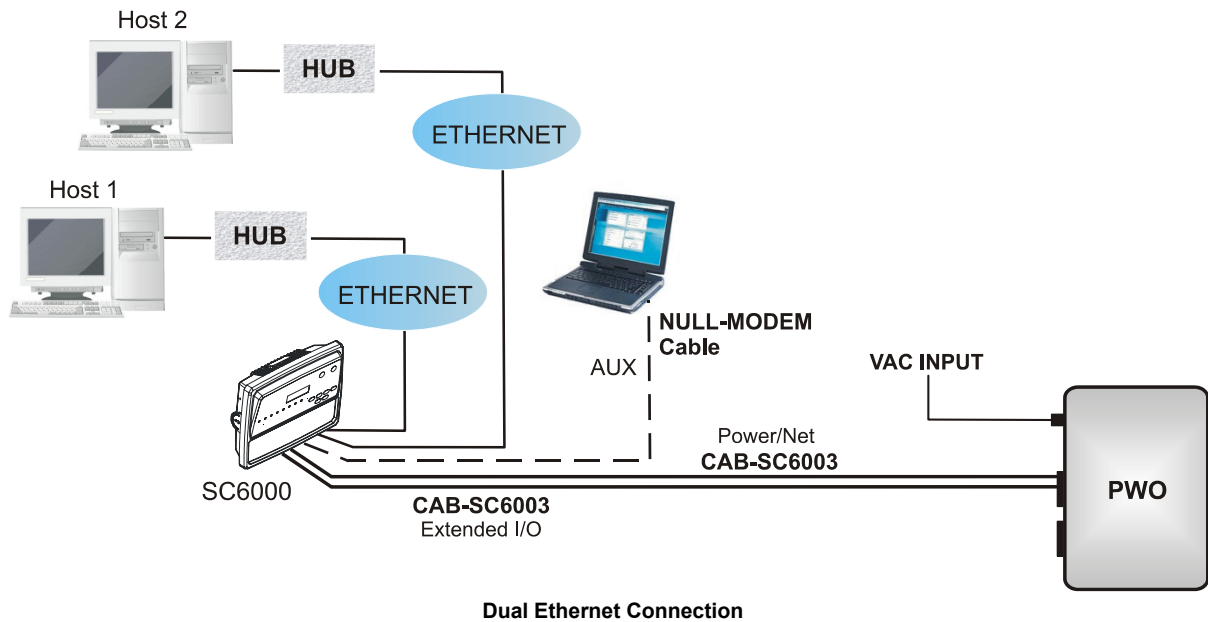
COMMON FEATURES

Overall Dimensions
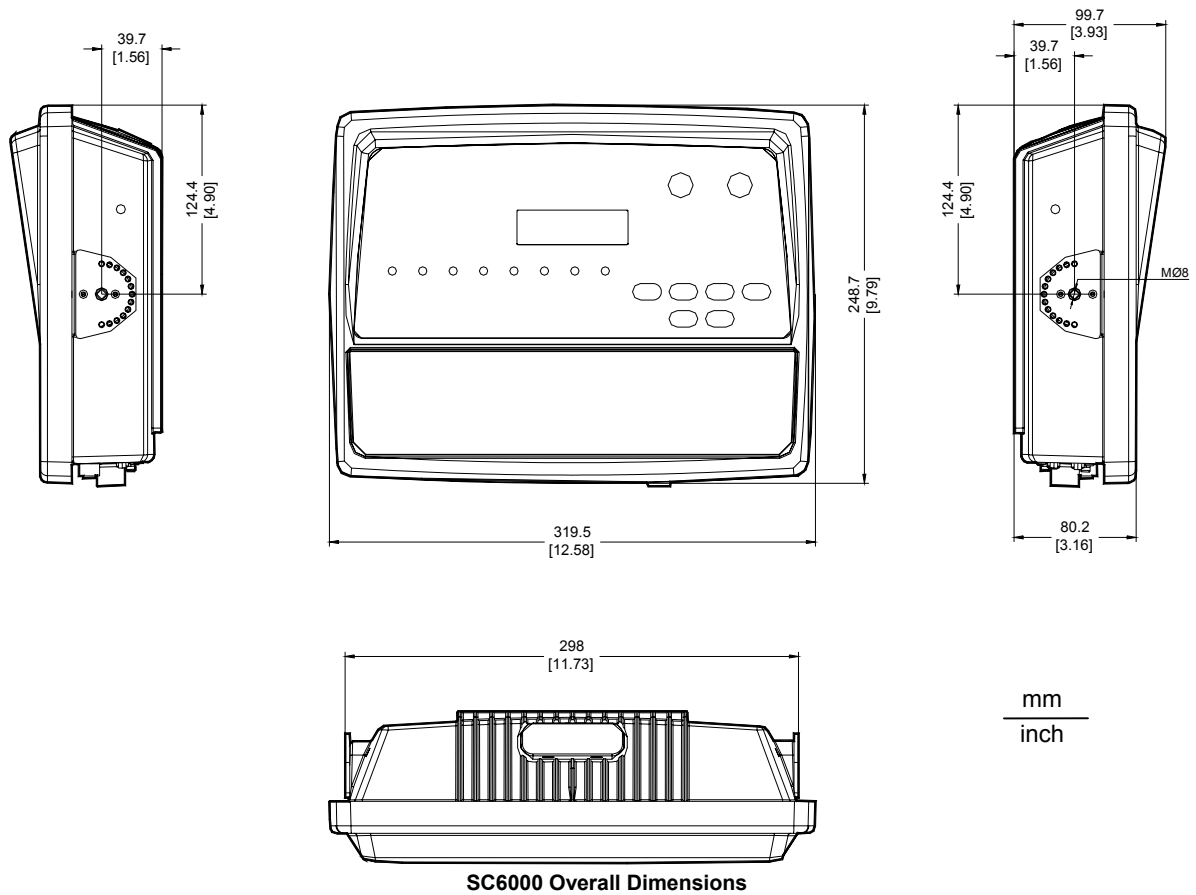
SC6000 Overall Dimensions
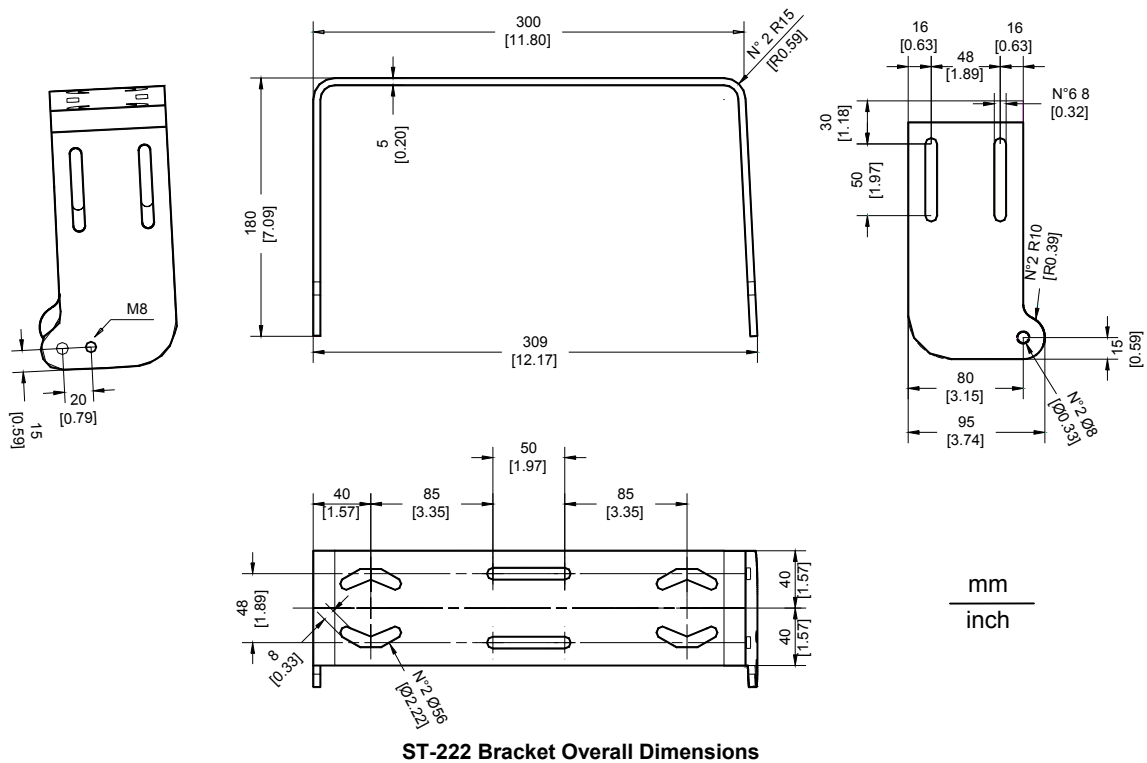
ST-222 Bracket Overall Dimensions

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Mechanical Installation

To mount the SC6000 Controller on the reading station frame proceed as follows:

1   Mount the bracket on the reading station frame: the slots on the bracket will help obtain the best positioning. When working in environments characterized by strong vibrations, set the screws as close as possible to the bracket edges, see the figure below.

2   Tighten the ST-222 bracket to the reading station frame using the screws and washers.
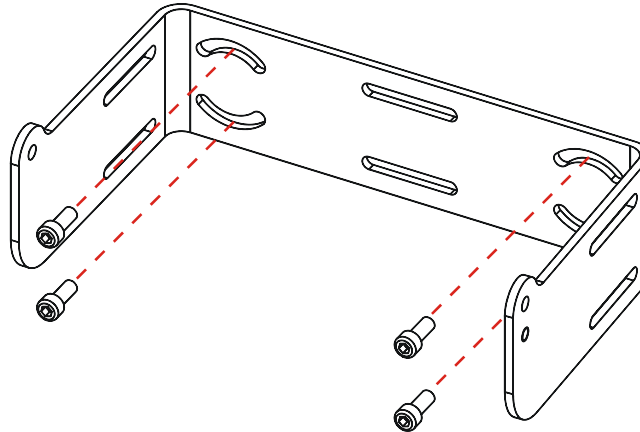
Mounting the bracket on the conveyor

3   Position the SC6000 Controller at the top of the bracket: make sure the two large round openings coincide to the ones located at the edges of the SC6000 Controller.

4   While supporting the SC6000 Controller, rotate the whole device until it is aligned for the best viewing position, then insert the set pin screw with locking washer until it inserts into one of the small positioning holes located on the terminal bracket.
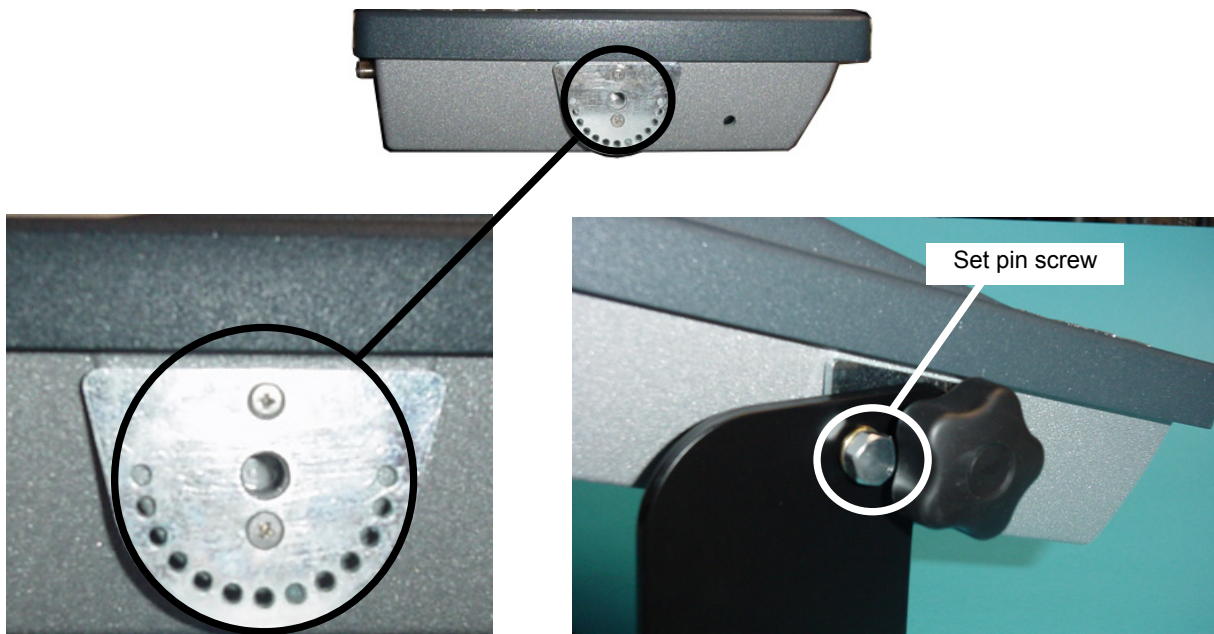
Set pin screw

SC6000 Controller Side View with Punched Steel Ring and Relative Set Pin Screw

The specially punched steel ring has been designed to obtain the most precise rotation possible in terms of angle calibration, steadiness and consequent absence of torque between both sides of device.

DATALOGIC

5   Place a locking washer and then a flat washer onto each knob. Tighten the SC6000 Controller to its bracket by screwing the knobs into their holes - one on each side.
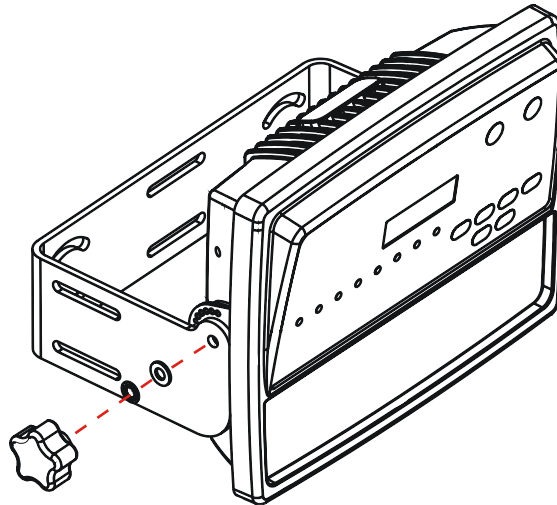
Mounting the SC6000 Controller on the bracket

The SC6000 Controller can rotate on its mounting bracket up to 90° with respect to the mounting bracket position. See figure below for suggested positions:
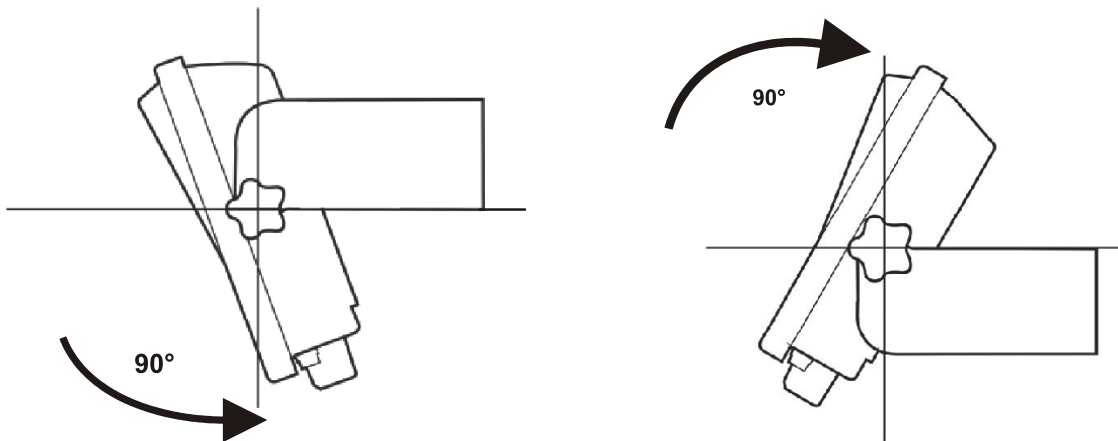
Suggested Mounting Positions

Electrical Installation

To make electrical connections to your SC6000 controller proceed as follows:

1. Connect the SC6000 controller to the PWO by means of the appropriate accessory cables for your application.

2. Provide correct and complete system cabling through the PWO according to the signals (Lonworks, encoder P.S., etc.) necessary for the layout of your application. Refer to the PWO Installation Manual for details.

Software Installation

To install Genius™, proceed as follows:

1) Turn on the PC that will be used for configuration (Windows 98, NT or XP);

2) Insert the Genius™ CD-ROM;

3) Wait for the CD to autorun and follow the installation procedure.

4) See the Reference Manual for Software Configuration procedures.

Accessories

The following accessories are used to build up a reading station based on SC6000 (the scanner-related accessories are not included):

Name	Description	Part Number
CAB-SC6003	25p cable SC6000 to PWO, 3 m (for Power/Net & Extended I/O connections)	93A051293
CAB-SC6103	9p cable SC6000 to PWO, 3 m (for Main and Modem connections)	93A051294
CAB-PWO 03	17p cable PWO to PWO, 3 m (for redundancy)	93A051295
PWO-480	Power&Connect system, 480W	93ACC1767

LED Indicators

Figure 1 - LEDs Description

(1) Power ON and Communication LEDs   (2) Status LEDs

SYSTEM SIGNAL LEDS			
Name	**Color**	**State**	**Function**
Power ON	Green	ON OFF	SC6000 Powered No Power
Tx Data	Green	Blinking OFF	Transmitting Data on MAIN No Data Transmission
Rx Data	Green	Blinking OFF	Receiving Data on MAIN No Data Reception
Ethernet	Red	ON OFF	Ethernet Line Connected No Ethernet Line Connected
PS	Yellow	ON OFF	Presence Sensor Active Presence Sensor Not Active
PS Aux	Yellow	ON OFF	Presence Sensor Active Presence Sensor Not Active
Tach	Yellow	Blinking OFF	Encoder Active Encoder Not Active
Network	Red	ON OFF	Lonworks OK Lonworks Error

SYSTEM EVENT STATUS LEDS			
Name	**Color**	**State**	**Function**
Warning	Red	ON OFF	Scanner Cluster Failure Scanner Cluster OK
Status OK	Green	ON OFF	Controller Status OK Controller Failure

Available Models

SC6000 - 1XXX

200 = Standard
211 = Profibus
215 = DeviceNet
230 = Dual Ethernet
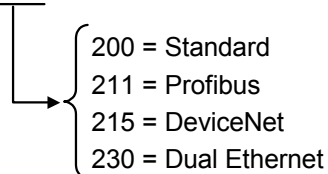
Keypad and Display

The SC6000 keypad allows entering a menu to select one of the functions described in the following paragraphs.

STANDARD MODE

Upon startup, the diagnostic mask window is visualized by default. Using the UP and DOWN keys it is possible to scroll the other windows following this order:

1) Diagnostic Mask Window
2) Performance Window
3) Reading Mask Window
4) I/O Status Window
5) System Info Window

Diagnostic Mask Window (Default Window)
This window illustrates the status of each node (of each scanner of the cluster) according to the following convention:

" - "   From the startup the node NID has not been discovered.
" ? "   At the startup of the system the NID has been discovered but the node does not answer to the master.
" * "   The node status is OK.
" ! "   The node returns an error code to the diagnostic Laser Off.
" & "   The node returns an error code to the diagnostic Motor Off.
" % "   The node is in monitor mode.

Reading Performance Window
This window displays the following data:
- Number of the processed parcels
- Good Read Rate
- No Read Rate
- Multiple Read Rate

Reading Mask Window
This window indicates the node that performed a reading of the codes enabled on the master.

The following indicators are used:
" * "   The node read a barcode enabled on the master.
" - "   The node read no barcode.

I/O Status Window
This window provides data concerning the conveyor speed and the digital input/output status.

System Info Window
This window provides information about the software release.

MENU MODE

For security purposes, the menu mode is entered by pressing the ENTER and MENU keys at the same time.

Through this menu, it is possible to perform the following:

- Main Parameter Setting: IP address, Netmask, Gateway address (for all models), Profibus address (for Profibus models), DeviceNet address (for DeviceNet models), supplementary IP address, supplementary Netmask, supplementary Gateway address (for Dual Ethernet models).

  These parameters may be set through the Genius™ program.

- Date&Time setting;

- DARP™ (Datalogic Automatic Replacement Procedure);

- CASP™ (Cluster AutoSetup Procedure): this procedure allows automatic address assignment to the scanner cluster nodes. This operation can also be performed by starting up the system while pressing the SETUP key.

Datalogic Automatic Replacement Procedure (DARP™)

Once the system configuration has been completed, launch the DARP™ backup by one of the following methods:

Using Genius:

Click on the DARP™ backup icon in the Device Network area. You will be prompted to select the desired backup option (complete, all scanners, controller, or each single scanner).

Using the SC6000 keypad:

1. Press the <Ent> and <Menu> keys simultaneously to enter the Menu;

2. Use the <arrow> keys to move within the menu items;

3. In the <System> menu choose <Backup> and select the desired backup option (complete, all scanners, controller, or each single scanner).

The SC6000 Controller will store the complete system configuration on the Compact Flash card.

If a slave scanner has to be replaced, the corresponding configuration (node address, code configuration, PackTrack™ configuration, etc.) is automatically downloaded by the SC6000 into the new scanner at the next system startup.

NOTE	*Systems with DS8100 or DX8200 slave scanners must have been installed according to the procedure described in par. 3.3 in the SC6000 Reference Manual.*

In case of SC6000 failure, the complete system configuration can be recovered from the damaged SC6000 Compact Flash: by simply installing the old Compact Flash in the new SC6000, the system configuration is automatically restored and the reading station is ready to start working again.

WARNING	*Before removing the Compact Flash card, switch the SC6000 Controller off.*

In case of SC6000 failure proceed as follows:

Figure 2 - Removing the Compact Flash

1. Disconnect the device.

2. Remove the rubber cover of the Compact Flash slot using a screwdriver.

3. Remove the Compact Flash.

4. Connect a new SC6000 to the system.

5.   Insert the Compact Flash card.

> ⚠️ *Make sure not to insert the Compact Flash card upside down. Carefully insert it in the guides, so that it will not fall inside the device. Gently push it into the slot.*
>
> **CAUTION**

6.   Start up the system.

The system configuration is automatically restored and the reading station is ready to start working again.

Safety Precautions

Power Supply

This product is intended to be installed by Qualified Personnel only.

This device is intended to be supplied by either a UL Listed or CSA Certified Power Unit marked 'Class 2' or 'LPS', output rated 15 - 30 V dc , minimum 0.6 A.

WEEE Compliance

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Technical Features

ELECTRICAL FEATURES			
Supply voltage	15 to 30 Vdc		
Power consumption	6.5 W typical		
	9 W Max. (including startup current)		
Communication Interfaces	**Main (isolated)**	**Auxiliary**	**Modem**
	RS232, RS485 full-duplex	RS232	RS232
	Other		
	Lonworks	1,25 Mb/s	
	Ethernet	10 or 100 Mb/s	
	DeviceNet	125 or 250 Kb/s	
	Profibus	12 Mb/s	
Inputs (optocoupled NPN or PNP)	Encoder, PS, PS Aux, 3 polarity insensitive optocoupled inputs		
Outputs (optocoupled)	6 optocoupled outputs, 3 relay control inputs		
USER INTERFACE			
LCD Display	4 lines by 20 characters LCD		
Keypad	6 keys		
LED indicators	Power ON / TX data / RX data / Ethernet	PS / PS Aux / TACH / Networks	Controller / Scanners

SOFTWARE FEATURES	
Configuration modes	Genius™ utility program
Parameter storage	Non-volatile extractable FLASH card

ENVIRONMENTAL FEATURES	
Operating temperature	0° to +50 °C (+32° to +122 °F)
Storage temperature	-20° to +70 °C (-4° to +158 °F)
Humidity	90% non condensing
Vibration resistance	IEC 68-2-6 test FC
	14 mm @ 2 to 10 Hz; 1.5 mm @ 13 to 55 Hz;
	2 G @ 70-200 Hz; 2 hours on each axis
Shock resistance	IEC 68-2-27 test EA
	30 G; 11 ms;
	3 shocks on each axis
Protection class	IP64*
PHYSICAL FEATURES	
Mechanical dimensions	320 x 250 x 90 mm (12.6 x 9.84 x 3.54 in)
Weight	3.3 kg. (7.26 lb)

*with Harting RJ Industrial push pull Ethernet connector.

DATALOGIC S.p.A.,
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Bologna - Italy

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bescheinigt, daß das Gerät
declare que el

SC6000-XXXX Universal Controller   e tutti i suoi modelli
                                           and all its models
                                           et tous ses modèles
                                           und seine modelle
                                           y todos sus modelos

sono conformi alle Direttive del Consiglio Europeo sottoelencate:
are in conformity with the requirements of the European Council Directives listed below:
sont conformes aux spécifications des Directives de l'Union Européenne ci-dessous:
der nachstehend angeführten Direktiven des Europäischen Rats:
cumple con los requisitos de las Directivas del Consejo Europeo, según la lista siguiente:

89/336/EEC EMC Directive   e   **92/31/EEC, 93/68/EEC**   emendamenti successivi
                               and   further amendments
                               et   ses successifs amendements
                               und   späteren Abänderungen
                               y   succesivas enmiendas

Basate sulle legislazioni degli Stati membri in relazione alla compatibilità elettromagnetica ed alla sicurezza dei prodotti.
On the approximation of the laws of Member States relating to electromagnetic compatibility and product safety.
Basées sur la législation des Etats membres relative à la compatibilité électromagnétique et à la sécurité des produits.
Über die Annäherung der Gesetze der Mitgliedsstaaten in bezug auf elektromagnetische Verträglichkeit und Produktsicherheit entsprechen.
Basado en la aproximación de las leyes de los Países Miembros respecto a la compatibilidad electromagnética y las Medidas de seguridad relativas al producto.

Questa dichiarazione è basata sulla conformità dei prodotti alle norme seguenti:
This declaration is based upon compliance of the products to the following standards:
Cette déclaration repose sur la conformité des produits aux normes suivantes:
Diese Erklärung basiert darauf, daß das Produkt den folgenden Normen entspricht:
Esta declaración se basa en el cumplimiento de los productos con las siguientes normas:

EN 55022 (Class A ITE), August 1994:   LIMITS AND METHODS OF MEASUREMENTS OF RADIO DISTURBANCE
Amendment A1 (Class A ITE), October 2000: CHARACTERISTICS OF INFORMATION TECHNOLOGY EQUIPMENT

EN 61000-6-2, October 2001:   ELECTROMAGNETIC COMPATIBILITY (EMC)
                                               PART 6-2: GENERIC STANDARDS - IMMUNITY FOR INDUSTRIAL ENVIRONMENTS

Lippo di Calderara, 08.09.05

Ruggero Cacioppo

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Quality Assurance Laboratory Manager

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