⬡ TESCOM

TC-5952C, TC-5901C
Pneumatic Shield Box

Operating Manual

R121030

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SPECIFICATIONS SUBJECT TO CHANGE WITHOUT PRIOR NOTICE

Connects

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General Information

This chapter has general information about warranty, cautions, specifications and key features of a TC-5952C, TC-5901C shield box.

1.1 WARRANTY

TESCOM guarantees that this product will be free from defects in materials and workmanship for a period of six months from the date of shipment. During the warranty period, TESCOM will, at its discretion, either repair or replace defective products.

For the warranty service, customer must notify TESCOM of the defect before the expiration of the warranty period and make suitable arrangements for the performance of service. Customer shall be responsible for packaging and shipping the defective product to TESCOM or a service center designated by TESCOM. Customer shall pay for shipping charges as well as any other charges incurred outside of Korea. TESCOM shall pay shipping charge to return the product to customer.

This warranty shall not apply to consumable parts and any failure or damage caused by improper use or unauthorized service. In such cases, TESCOM may refuse to furnish service under the warranty.

LIMITATION OF WARRANTY

> The foregoing warranty shall nor apply to defects resulting from improper or inadequate malignance by customer, Customer-supplied software or interfacing, unauthorized modification or misuse, accident or abnormal conditions of operations.
> TESCOM responsibility to repair or replace deductive products is the sole and exclusive remedy provided to the customer for breach of this warranty. TESCOM will not be liable for any indirect, special, incidental, or consequential damages, despite any advance notice of the possibility of such damages.

1.2 Safety Considerations

Review the following safety precautions to avoid injury and prevent damage to this product or any

product connected to it.

Use Proper Power Cord

To avoid fire hazard, use only the power cord specified for this product.

Use Proper Power Source

Do not operate this product from a power source that applies more than the voltage specified.

Use Proper Compressed Air

Do not operate this product from a compressed air that applies more than the pressure specified.

Avoid Electric Overload

To avoid electric shock or fire hazard, do not apply a voltage to a terminal that is specified beyond the range.

Ground the Product

This product is grounded through the grounding conductor of the power cord. In case no ground is available at the power outlet, it is recommended to provide a separate grounding path to the instrument by connecting wire between the instrument ground terminal and an earth ground to avoid electric shock or instrument damage. Before making connections to the input or output terminals of the product, ensure that the product is properly grounded.

Do Not Operate Without Plexiglas safety shield

To avoid electric shock or product damage or injury, do not operate this product with Plexiglas safety shield removed.

Do Not Open the Bottom Cover

Do Not Disassemble any part except replaceable parts

Do Not Operate in Wet/Damp Conditions

To avoid injury or fire hazard, do not operate this product in wet or damp conditions.

Do Not Operate in Explosive Atmosphere

To avoid injury or fire hazard, do not operate this product in an explosive atmosphere.

Provided Proper Ventilation

To prevent product overheating, provide proper ventilation.

Do Not Operate With Suspected Failures

If there is damage to this product, have it inspected by qualified service personnel

Environmental Conditions

Refrain from using this equipment in a place subject to much vibration, direct sunlight, and where the surface is not level. Also, use it where the temperature is between 0 °C to 50 °C and relative humidity is less than 85%.

1.3 Safety Symbols and Terms

Terms in this manual:

> **WARNING**: Identifies conditions or practices that could result in injury or loss of life.
> **CAUTION**: Identifies conditions or practices that could result in damage to the product or other property.

Terms on the product:

> **DANGER**: Indicates an injury hazard immediately accessible as you read the marking.
> **WARNING**: Indicates an injury hazard not immediately accessible as you read the marking.
> **CAUTION**: Indicates a hazard to property including the product.

Symbols on the Product: The following symbols may appear on the product.

WARNING	DANGER	ATTENTION	Indicates earth
Proper precaution must	Risk of electric shock	Refer to Manual	(ground) terminal
be taken while the lid is			
open and closed.			

1.4 Instructions and Key Features

The Shield Box provides effective shielding for testing small RF devices such as a portable phone or a PC Assembly. The unique, compact, economical design is intended to provide medium accuracy measurements.

1) Pneumatic control of lid open-close and optional automatic test fixture motions
2) EMI filters on all data ports and power lines
3) Manual or remote operation (RS-232C)
4) Customization to meet various data and RF connection requirements
5) Easy-to-exchange customized fixtures

1.5 Specifications

Specifications are listed in Appendix A

1.6 Initial Inspection

This section provides the information for verifying proper shipment of the Shield Box.

Product Condition and Accessory Check
1) Upon receipt of the Shield Box, check for damage that could have occurred during shipment.
2) Verify you have received the accessories supplied with the Shield Box and module, which are listed in Appendix B.

⚠ WARNING	To avoid hazardous electrical shock, do not perform electrical tests when there are signs of shipping damage to the equipment.

1.7 Connectors

This section contains reference information for Shield Box connectors.

[Table 1] Shield Box Connectors

Connector	Specification
RS-232C	Working Voltage: 100 VDC Dielectric Withstanding Voltage: 300 VDC
N Coaxial Connector of the outside SMA Coaxial Connector of the inside	Impedance: 50 ohm Voltage Rating: 250 Vpeak Dielectric Withstanding Voltage: 750 Vrms
DB9 Data Connector	Working Voltage: 100 VDC Dielectric Withstanding Voltage: 300 VDC EMI Filter: 1000 pF Pi
DB25 Data Connector	Working Voltage: 100 VDC Dielectric Withstanding Voltage: 300 VDC EMI Filter: 1000 pF Pi

1.8 Service and Support

If you have a problem with your Shield Box, contact Tescom Technical Support specialists.
Any adjustment or repair of this product must be performed by qualified personnel.

Contact Information

Address : Tescom Company Limited
        #927 Unitechvil 142, Ilsan-ro, Ilsandong-gu, Goyang-si, Gyeonggi-do, Korea
        [410-722]
TEL : 82-31-920-6601
FAX : 82-31-920-6607
Email : tescom-sales@tescom.org   http://www.tescom.co.kr

1.9 Component Identification

TC-5952C Component Identification
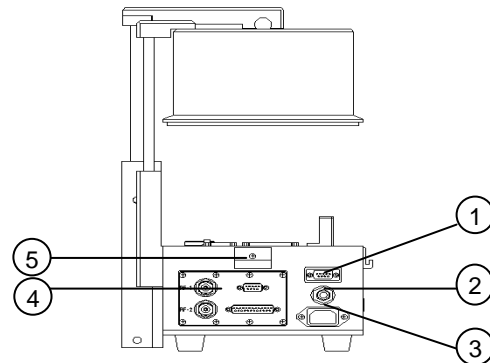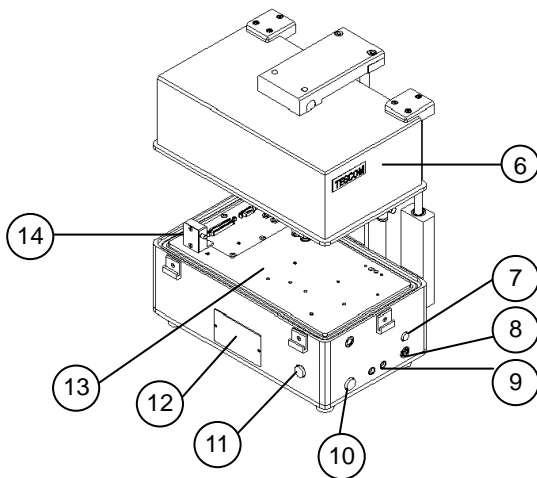
1) RS-232C Connector
2) Air Inlet
3) AC Input Connector 100 V ~ 240 VAC
4) Interface Panel
5) Safety Shield Holder
6) Lid
7) In/Out Switch (Fixture Operation Switch)
8) Remote Control Switch Connector
9) Red and Green LED (Controlled by RS-232C Command "PASS" or "FAIL")
10) Open / Close Switch

11) Power ON/OFF Switch

12) Name Plate

13) N(f) to SMA(f) Connector

14) Handler Sensor

[Figure 1] TC-5952C Component Identification

TC-5901C Component Identification
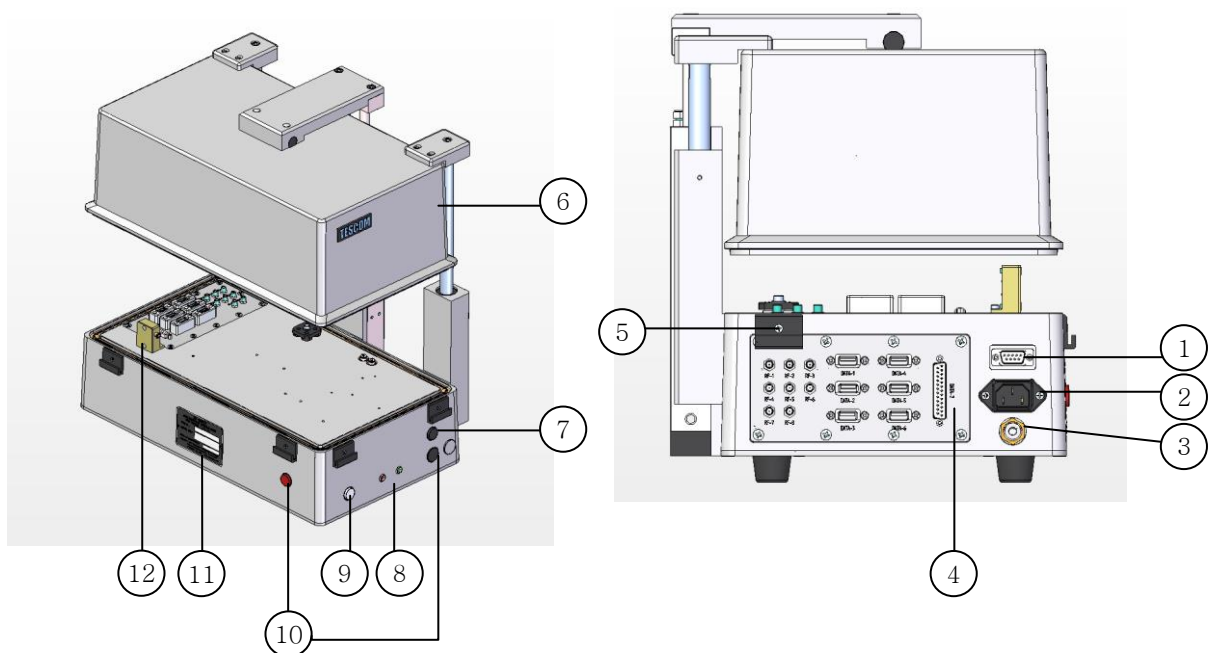
1) RS-232C Connector

2) AC Input Connector 100 V ~ 240 VAC

3) Air Inlet

4) Interface Panel

5) Safety Shield Holder

6) Lid

7) In/Out Switch (Fixture Operation Switch)
8) Red and Green LED (Controlled by RS-232C Command "PASS" or "FAIL")
9) Power ON/OFF Switch
10) Open / Close Switch
11) Name Plate
12) Handler Sensor

[Figure 2] TC-5901C Component Identification

RF gasket

Optional Fixture
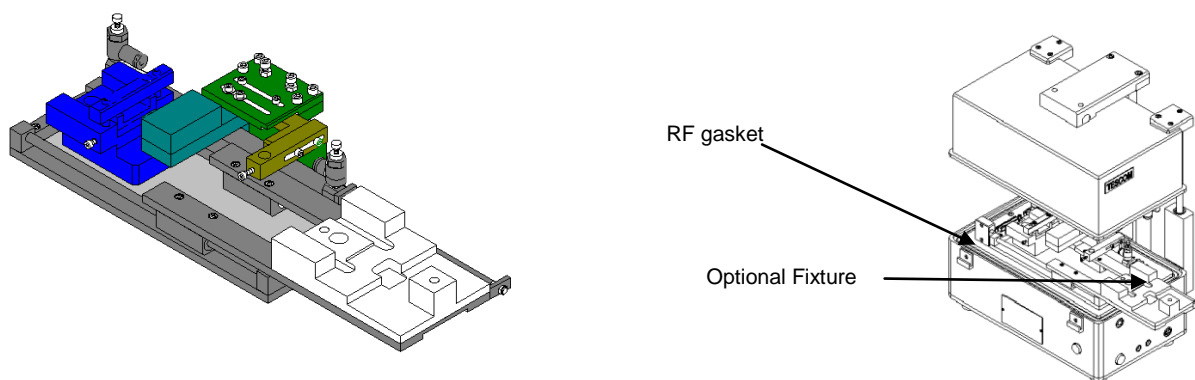
[Figure 3] Shield Box with TC-59421A/B Fixture Installed

Installation

This chapter introduces installation and storage of products includes general information about.

2.1 Power Requirement

Input voltage : 100 ~ 240 VAC, Max. 0.4 A
Frequency : 50/60 Hz
Power Consumption : Less than 15 watt

2.2 Compressed Air Requirement

Input air pressure: 5 bar to 10 bar
Main air connector: 6 mm OD hose, one-touch push-on fitting
Fixture control air connectors : 4 mm OD hose, one-touch push-on fitting

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NOTE :   It is highly recommended that the compressed air system must be used in conjunction shown in figure 4. Low air quality may cause deterioration of performance.
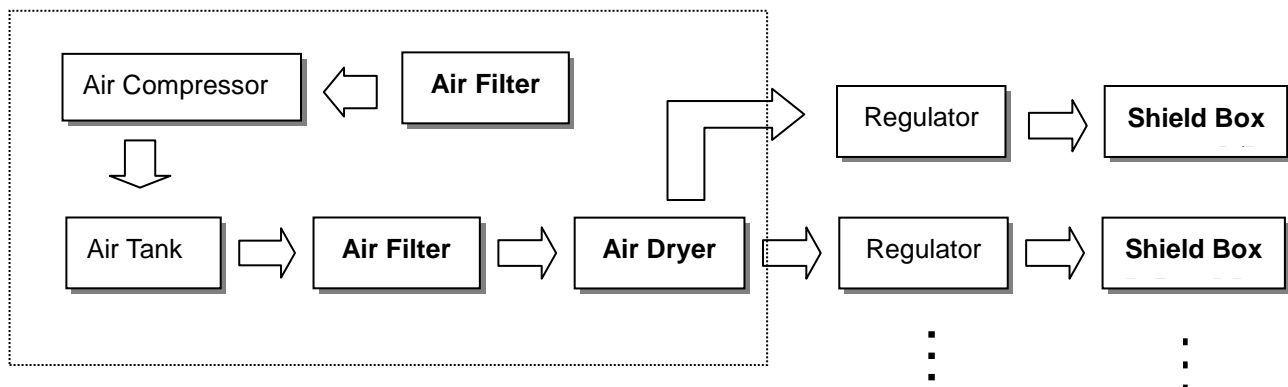
[Figure 4] General Compressed Air Connection System

2.3 Operating Environment

Refrain from using this equipment in a place subject to excessive vibration, direct sunlight, or where corrosive gas is generated. Also, use it where the temperature is between 0 °C to 50 °C and relative humidity is less than 85 %.

2.4 Storage

The storage temperature range for this equipment is –20 °C to 70 °C. When this equipment is not used for a long period of time, cover with vinyl or place in a cardboard box and store in a dry place away from direct sunlight.

NOTE: If it is not used for a long period of time, the shielding effectiveness may be degraded because the elasticity of the gasket is reduced. It will be recovered while using over 100 times after cleaning the gasket.

2.5 Plexiglas Safety Shield Installation

The Plexiglas safety shield C5901C-8196 can be easily installed and removed by using the safety shield holder on the each side.

Safety shield holder

Plexiglas safety shield
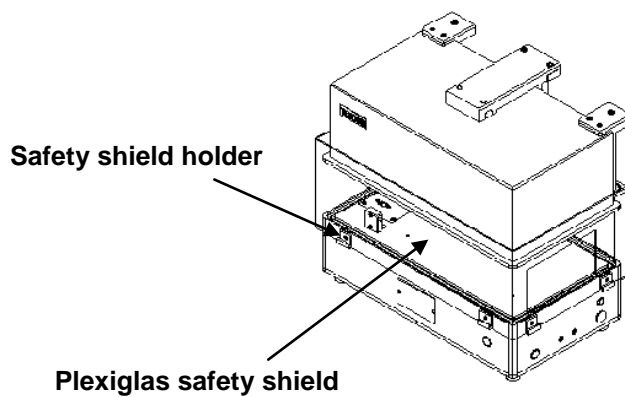
[Figure 5] Plexiglas Safety Shield Installation

Operation

This chapter introduces describes the behavior of Shield Box, RS-232C remote control using recognized.

3.1 Operation

1) Connect compressed air to "Air Inlet". The lid will open as soon as compressed air is connected to Shield Box.
2) Connect the AC power cord to a 100 to 240 VAC outlet, Turn the power on.
3) Install a DUT in Shield Box. To open the Shield Box, press "Open - Close" switch. (Figure 1~2, 6)

⚠ **WARNING**	Proper precaution must be taken while the lid is open and close. To avoid electric shock or product damage, do not operate this product with the Plexiglas safety shield removed.

⚠ **CAUTION**	To avoid product damage, do not connect or disconnect the compressed air while the power is turned on.

3.1.1 TC-59014A Fixture Operation

TC-59014A Fixture automatically moves outward when the lid opens, and it returns to inside position before the lid is closed. Press the "IN-OUT switch", while the lid is opening, to manually move the Handler and Probe Mount. The IN-OUT switch is on the right side of the Shield Box.
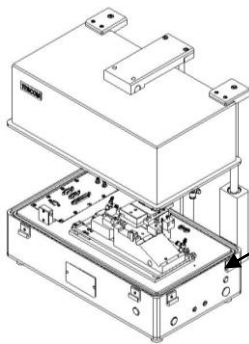
The IN-OUT switch is on the right corner of the Shield Box. Activating this switch makes the handler move inward and outward.

[Figure 6] IN-OUT Switch

Handler and Probe Mount operation can be controlled by RS-232C command. Handler has three-operation modes (Sensor, Timer, Off) respectively.

- **Sensor mode** : The operation is controlled by handler sensor. Refer to "Sensor Operation" on Figure 8.
- **Timer mode** : Sensor is disabled and Handler is operated along preset time.
- **Off mode** : Handler is not operated.

[Table 2] Fixture operation RS-232C command

Command	Response	Description
Handler Mode Sensor	OK	Enable handler sensor
Handler Mode Timer	OK	Disable handler sensor
Handler Mode Off	OK	Disable handler operation
Solenoid Mode?		Fixture operation mode query

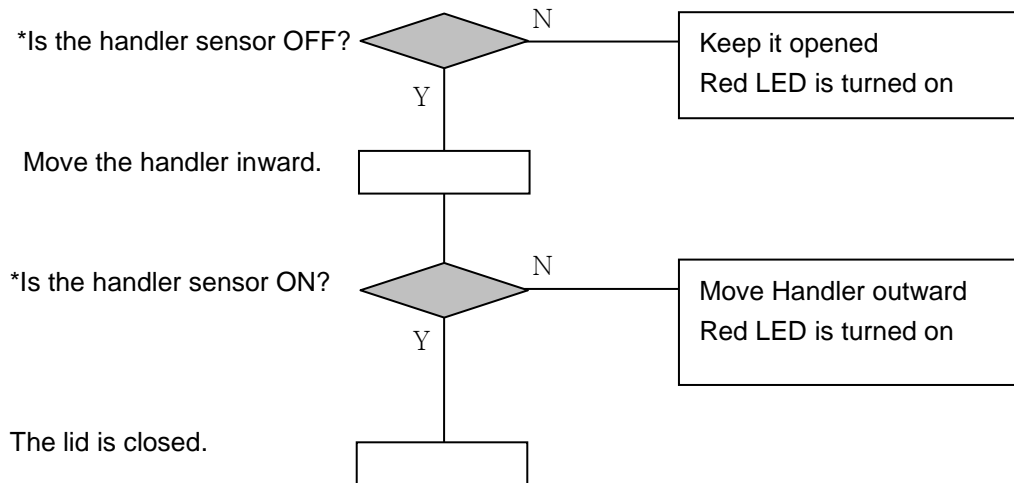|	
⚠️ *CAUTION*	1) If the compressed air is disconnected while the lid is opening, the lid will remain in opened position for several seconds and then will move downward. The Handler must be pushed inward manually to avoid damaging the handler or DUT. 2) If the Handler sensor detects an error that the Handler is not closed completely, the Handler will move back to former position and the red LED will be turned on. Refer to Figure 8 3) To avoid product and DUT damage, if possible, do not operate the Shield Box with the fixture while the handler sensor is disabled. Closing Shield Box will be available even if the Fixture is out of order, when the handler sensor is disabled.

3.1.2 Operation without fixture

To operate Shield Box without the fixture, the handler operation have to be disabled (Off mode). Refer to Table 2.

3.1.3 Sensor Operation

Shield Box has the handler sensor to prevent damage to the product or DUT. This sensor is activated when the lid is closed. The handler sensor sense whether the handler is completely closed.

Shield Box checks status of sensors during the lid close movement as Figure 7.

|	
*Is the handler sensor OFF?	N → Keep it opened / Red LED is turned on
Move the handler inward.	
*Is the handler sensor ON?	N → Move Handler outward / Red LED is turned on
The lid is closed.	

[Figure 7] Lid closing flow chart

* Sensor can be disabled by RS-232C command. Refer to Table 2 on 3.1.3 ~ 3.1.4.
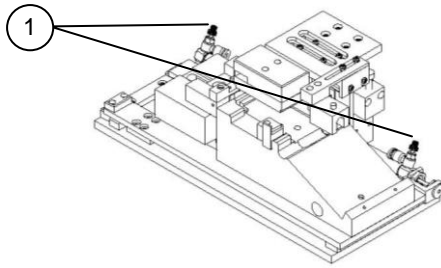
3.1.4 Speed Control

1. Opening speed control

Adjust "Air Valve" for lid opening speed as necessary as shown in Figure 8.

Opening Speed Control Valve ⟶
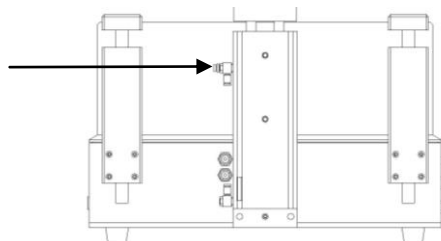
[Figure 8] Speed control valve

2. Fixture speed control

[Figure 9] Fixture Speed Control Components

① Air Valve for 59014-10 Cylinder Speed Control. One is for inward control and the other is for outward control.

3.1.5 Pass/Fail LED Indicator
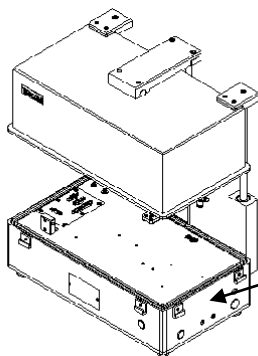
The LED indicator is on the right corner of the Shield Box. Red or Green LED indicators is turned ON or OFF by RS-232C

[Figure 10] LED Indicator

Red or Green LED indicators is turned ON or OFF by RS-232C Command.
"PASS" and "FAIL" command turn on the green or red LED respectively. LED turns on only when the lid is opened.

3.1.6 Counter Function

The Shield Box counts the lid open/close cycle and save it in the memory. The cumulative open/close frequency number can be viewed on PC by sending a RS-232C command. Send "COUNT?" query command, then the Shield Box return the cumulative frequency data as numeric 7 digits.

3.2 Remote Operation Using RS-232C

Shield Box supports high speed RS232C serial interface for remote operation under PC control. A standard 9-pin RS232C connector is located at the left side. Any communication program (such as WINDOW 2000/XP Hyper Terminal) could be used for simple tasks. Complex tasks can be automated using PC programming.

3.2.1 RS-232C Connection

A 9-pin standard connector is used in the Shield Box for a RS232C connection. To make a connection to the 25-pin RS232C connector, a 9-pin to 25-pin adapter can be used. The cable pin configuration is shown below.
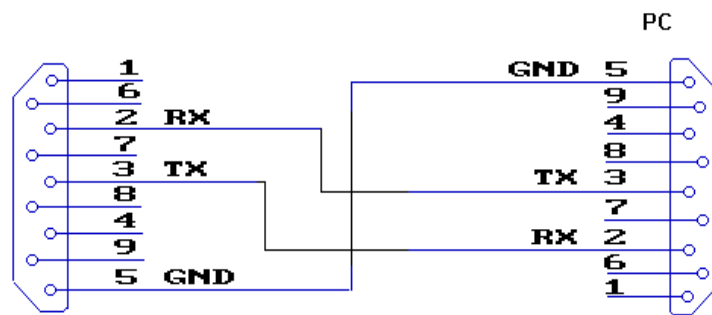
3.2.2 Windows 2000/XP Hyper Terminal

1) Check for the Hyper Terminal installation on your PC. Click Start → Program → Accessories → (Communications). If Hyper Terminal folder is not found in the Accessories list, it must be installed. Insert Windows 2000 or XP CD ROM and install hyper terminal program.

2) Start Hyper Terminal: Click Start → Program → Accessories → (Communications) and then click "Hyper Terminal"
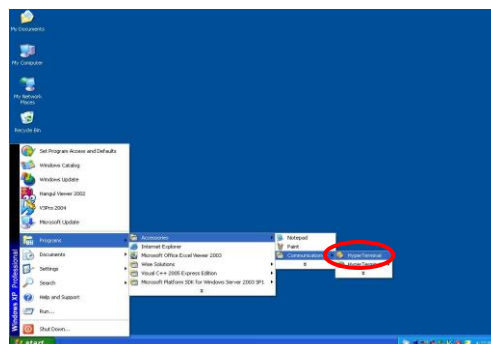
3) In "Name" block, on "New Connections" screen, enter "Shield Box". On "Connect To" screen, click "▼" in "Connect Using:" block, select "Direct to COM1" and then click "OK".
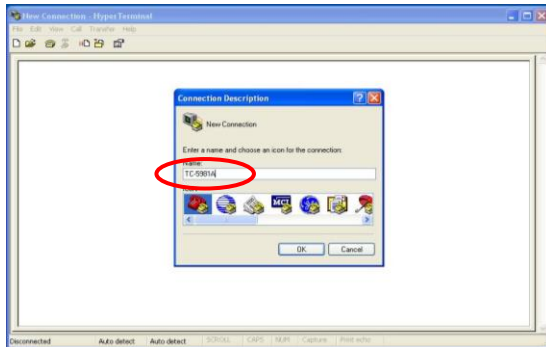
4) On "COM1 Property" screen, select as following. And then click "OK".
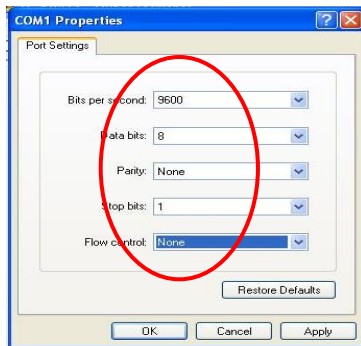
Bits per Second	9600 bps
Data bits	8 bit
Parity	None
Stop bits	1 bit
Flow controls	None

5) Click "FILE" on menu bar and select "Property". You should see the "Shield Box Properties" screen. Select "Setting" tab.
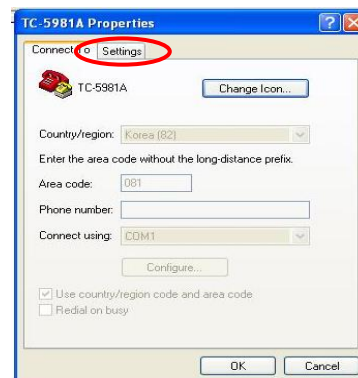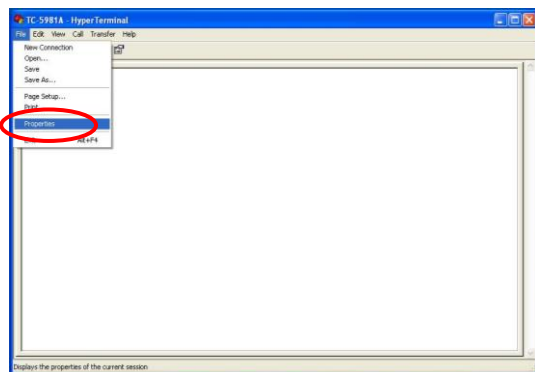
6) Click "ASCII Setup" button
   A.   Check "Echo typed characters locally"
   B.   Check "Append line feeds to incoming line ends"
   C.   Check "Wrap lines that exceed terminal width"
   And click "OK", Click "OK" again.
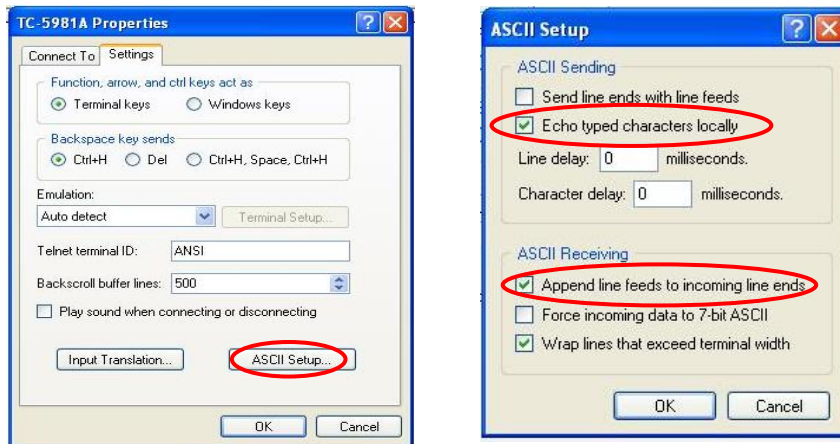
7) Connect 9 pin D type RS232C Cable between PC COM 1 port and TC-5901C
8) Type in a RS232C command (Ex: "OPEN") on "Shield Box Hyper Terminal" screen and press Enter on PC keyboard. Shield Box returns OK or Error Data signal.
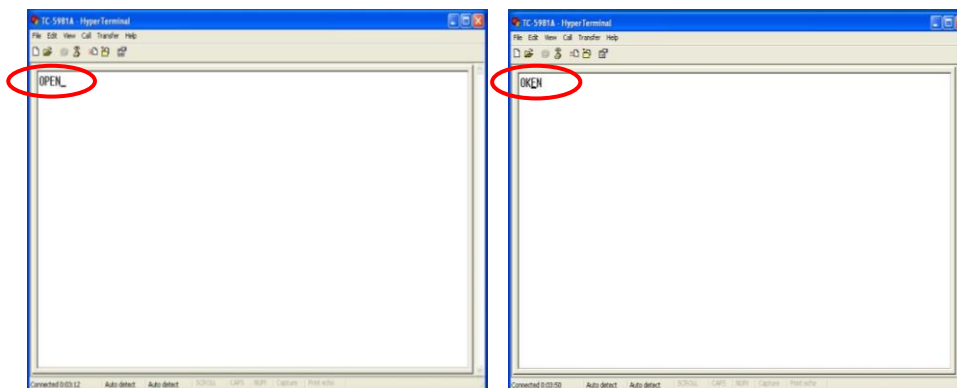
3.2.3 Programming Windows 2000/XP

1. **Programming Procedure**

 1) Port select(COM1-COM4)

 2) Set-up Baud Rate(9600 bps), Parity Bit(None), Data Bit(8 bit), Stop Bit(1 bit)

 3) Open selected COM Port.

 4) Send RS232C Command string to the COM Port.

 5) Wait until the response data is received.

 6) When confirmed, send the next command

2. **Command and Response Message**

 - Shield Box returns the response message (Response Data + $0A + $0D) after some delay.

 - In case of error, Shield Box returns the error message (Error Data + $0A + $0D).

3. **Programming Example**

The following examples are written in Visual Basic.

Example 1) OPEN the Shield Box

```
Private Sub Form_Load()
          MSComm1.CommPort = 1    ' select COM1'
          MSComm1.Settings = "9600, N, 8, 1"
                   ` Baud Rate(9600 bps), Parity Bit(None), Data Bit(8 bit), Stop Bit(1 bit)
          MSComm1.PortOpen = True    ' Open Com Port.
          MSComm1.Output = "OPEN" + Chr(13)   ` send command.
          MSComm1.PortOpen = False ` Close Com Port.
     End Sub
```

Example 2) Check "OK" is received in input Buffer

```
Private Sub MSComm1_OnComm()
       ` Triggers when TX or RX event occurs
       If MSComm1.CommEvent = 2 Then   ` event in input Buffer
       Text1.Text = MSComm1.Input        ' read the input string and check later if it is "OK"
       End If
   End Sub
```

3.2.4 RS-232C Command

[Table 3] Error Data

Error Data	Description
ERR10	Syntax error
ERR20	Probe Downward error
ERR30	Handler Inward error
ERR40	Status error
ERR60	Safety error

[Table 4] RS-232C Basic Command

RS-232C Commands	Response Data	Description
OPEN	OK	LID OPEN
CLOSE	READY	LID CLOSE
LID?	OPEN or CLOSE	LID Status query
PASS	OK	Turn on the green LED and open the lid
FAIL	OK	Turn on the red LED
DUAL HAND ON	OK	Switch to the both hands operation
DUAL HAND OFF	OK	Switch to the one hand operation
DUAL HAND?	DUAL HAND ON/ OFF	Operation
MODEL?		Model name query
SYSTEM INITIAL	OK	Reset the count memory
COUNT?	Numeric 7digit(ex: 0000001)	The cumulative frequency of Open/Close query

[Table 5] RS-232C User Option Command

RS-232C Commands	Response Data	Description
UPWARD	OK	PROBE UPWARD
DOWNWARD	OK	PROBE DOWNWARD
PROBE?	UPWARD or DOWNWARD	PROBE Status Query
INWARD	OK	HANDLER INWARD
OUTWARD	OK	HANDLER OUTWARD
HANDLER?	INWARD or OUTWARD	HANDLER Status Query

Maintenance

This section contains information for keeping the instrument in good working order and checking its overall performance

4.1 Maintenance

Shield Box is designed and built for long life and easy maintenance.

Optimal RF shielding is obtained using a wire mesh gasket between the case and lid. It must be checked periodically for damage or excessive wear that would compromise the seal. Pressure on the gasket by the lid results in a proper RF seal.

A black oxide deposit can build up in the cavity holding the wire mesh gasket. This oxide reduces conduction and degrades the performance of the RF seal. Periodic cleaning is required to remove any oxide buildup.

NOTE: Preventive maintenance requires you check the RF gasket regularly for excessive wear. Also check the gasket cavity for any black oxide build-up.

NOTE: If it is not used for a long period of time, the shielding effectiveness may be degraded because the elasticity of the gasket is reduced. It will be recovered while using over 100 times after cleaning the gasket.

4.1.1 Check List for Maintenance

1. Check for loose screws and tighten with proper tools, if necessary.

Check for loose screws
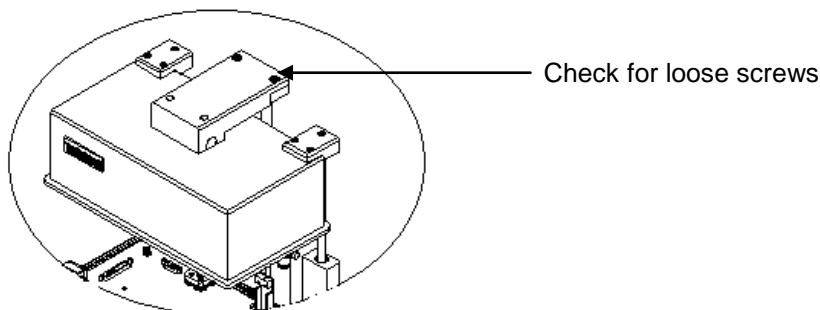
[Figure 11] Shield Box Lid

2. Check for a loose connection. If a loose connector is found, tighten the connector with proper tools.
3. Check for a damaged cable, especially near the connector-cable neck. Replace any damaged cables found.
4. Visually inspect the RF seal (wire mesh gasket) between the bottom shield box case and lid for excessive wear.
    - A worn gasket will not have as much height protruding from the cavity as a new or good gasket.
    - A worn gasket may exhibit a frayed mesh.

    Replace the gasket if excessive wear is observed.

The RF gasket is an important element of optimum shielding. It must be checked periodically for damage or wear out

Periodic cleaning of the aluminum contact surface where the gasket touches is important for optimum shielding performance.
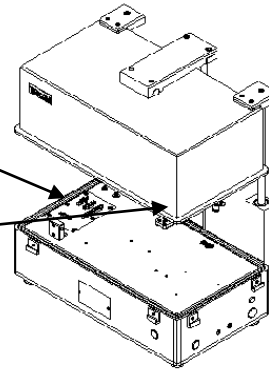
[Figure 12] Shield Box RF gasket

4.1.2 Maintaining the shielding effectiveness.

1. RF shielding effectiveness of Shield Box depends on mechanical contact and will degrade with its use.

2. If there are no mechanical damages to the gasket or its contacts, the original shielding value may be restored using the cleaning procedure described below.

    A Remove the mesh shielding gasket from the grove and dust it with on ordinary painting brush.
    B Remove the black oxide deposit on both sides of aluminum contact surface. The black stain can be removed using a WD-40 type lubrication oil and light scrubber such as 3M-green wool. Wipe out the stain and excess oil with a soft cloth, leaving the surface clean and lightly oiled.

3. The interval between shielding maintenances may be shorter or longer in length depending on the applications.

CAUTION : Do not clean this equipment with organic solvents such as benzene, toluene or acetone as they will damage the plastic parts. Use alcohol to clean and maintain parts of the equipment.

4.2 Performance Test

Tescom Shield Boxes are precision RF devices built very sturdy. Their electrical performance can, however, deteriorate with mechanical damages. Worn out shielding gaskets, as well as metal corrosion or oxidation at the lid contact, can significantly reduce the effectiveness of the Shield Box. This section describes the test and calibration procedure for the Shield Box.

Calibration Period : <6 months

Test Subject: Shielding Effectiveness

Required Equipment

- Spectrum Analyzer: HP8562B or equivalent
- Signal Generator: HP8648C or equivalent
- Dipole Antenna: Tescom 900 MHz, 1.8 GHz, 2.4 GHz

Test Connection
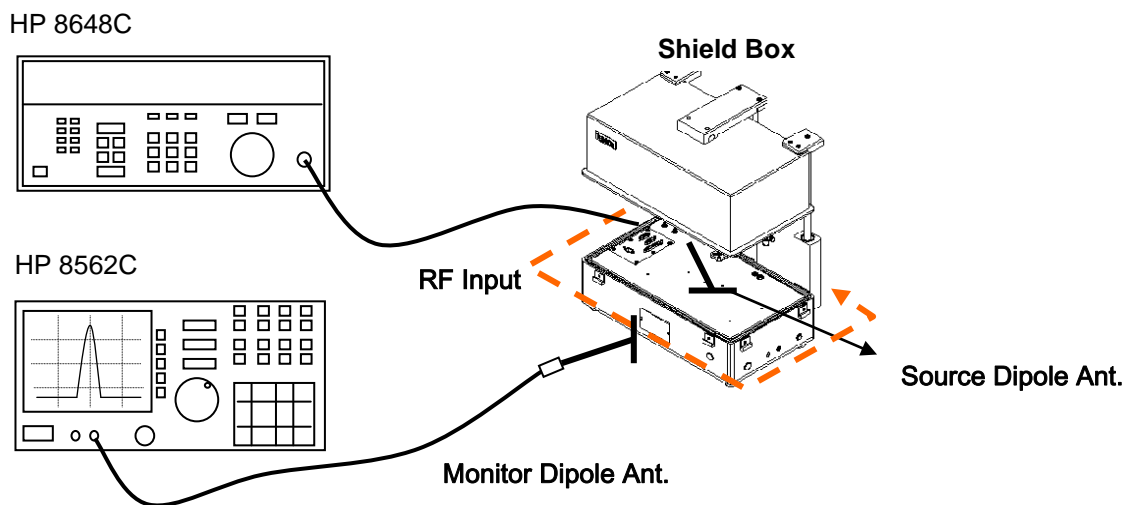
[Figure 13] Shielding Measurement Test Set Up

NOTE: Before making a measurement, visually inspect the shielding gasket around the lid. Replace the gasket if there is any visible damage or excessive wear. Look for a black oxide deposit on the aluminum contact surface around the gasket. If an oxide deposit is found, remove the oxide with a cloth or 3M household scrubber saturated with alcohol.

Specification

The Specification for each shield box varies on I/O interface panel. Therefore, please take a look Appendix A and C before order.

TEST Procedure

1) Connect the HP8648C Signal Generator output to the RF connector of the Shield Box.
2) Connect the 900 MHz Rod or Dipole antenna to the SMA connector inside the Shield Box.
3) Set the HP8648C to CW 900 MHz, 10 dBm output.
4) Set the HP8562B Spectrum Analyzer as follows:
   - CF: 900 MHz
   - Span: 1 MHz
   - Resolution BW: 10 kHz
   - 10 dB/div

5) Connect the 900 MHz Dipole antenna to the Spectrum Analyzer with RF cable.
6) Open the door of the Shield Box and move the antenna around the Shield Box to find the location where the maximum field is found. Fix the location of antenna for maximum field.
7) Adjust the spectrum analyzer input range and set the 800 MHz signal to the top display line.
8) Close the lid.
9) The shield effectiveness, which is measured when the lid opens or closed, should be within the specification in the Appendix A.
10) Change frequency to 1.8 GHz and repeat the test described above.
11) Change frequency to 2.4 GHz and repeat the test described above.

4.3 Check List for Common Problems

This section provides a brief checklist of common failures.

NOTE: First verify that the problem is not a result of an external connection before considering the problem is with the shield box. Then isolate the failure to the shield box before troubleshooting or repairing the Shield Box. Verify the shield box performance is to specification while troubleshooting the problem.

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1. **Verify that the AC power cord is connected to the Shield Box.**
   Make sure that the power cord is firmly plugged into the power module on the left side. Also make sure that the power source for the Shield Box is energized.

2. **Verify that the Shield Box power switch is depressed.**

3. **Verify the line voltage.**
   The line voltage to the power source should be 100 ~ 240 VAC.

4. **Verify the compressed air and air cables.**
   The compressed air to the Shield Box should be 5~10 bar.

5. **Verify external cables provide good connections.**

6. **Verify shield box specifications if the shield box is functional.**

APPENDICES
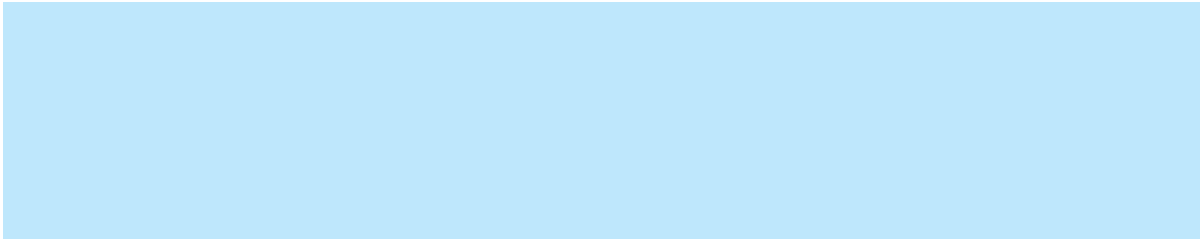
Appendix A

TC-5952C Specification

Mechanical Specification

Line voltage	100 to 240 VAC, 50/60 Hz, 15 watt max.
Remote control	RS-232C, 3 wire, DB9(p)
Air connection	
Main connector	6 mm OD hose, one-touch push-on fitting
Fixture control connector	4 mm OD hose, one-touch push-on fitting
Input air pressure	5 to 10 bar
Dimension	
Inside	280(W) x 150(D) x 95(H) mm
Outside	342(W) x 239(D) x 262(H) mm, lid closed. 410(H) mm, lid open
Weight	approx. 13 kg
*Packing	
Size	515 (W) x 360(D) x 397(H) mm
Weight	approx. 15 kg

*The size or weight of a package may vary on how to pack a package.

Typical RF Shielding

The shield effectiveness below is measured when the blank panel is mounted; other I/O interface panel results a different shielding effectiveness of the shield box.

100 to 2000 MHz	> 70 dB
2000 to 3000 MHz	> 70 dB
3000 to 6000 MHz	> 50 dB

TC-5901C Specification

Mechanical Specification	
Line voltage	100 to 240 VAC, 50/60 Hz, 15 watt max.
Data line capacity	100 VDC, 3 Amps max
Remote control	RS-232C, 3 wire, DB9(p)
Air connection	
Main connector	6 mm OD hose, one-touch push-on fitting
Fixture control connector	4 mm OD hose, one-touch push-on fitting
Input air pressure	5 to 10 bar
Dimension	
Inside	408(W) x 218(D) x 135(H) mm
Outside	459(W) x 300(D) x 302(H) mm, lid closed. 449(H) mm, lid open
Weight	approx.19 kg
*Packing	
Size	610 (W) x 425(D) x 440(H) mm
Weight	approx. 21 kg

*The size or weight of a package may vary on how to pack a package.

Typical RF Shielding	

The shield effectiveness below is measured when the blank panel is mounted; other I/O interface panel results a different shielding effectiveness of the shield box.

100 to 2000 MHz	> 70 dB
2000 to 3000 MHz	> 60 dB
3000 to 6000 MHz	> 50 dB

Appendix B

TC-5952C Initial Inspection

[Table 6] TC-5952C Accessories list

Order Number	Description
TC-5952C	**Pneumatic Shield Box (including accessories bellow)**
	Operating Manual
	Test Report
	SS-402, N(m) to N(m) cable, 1 m, 1 pc
	DB9(s) to DB9(s) cable, 2 m, 1 pc.
	Power Cable, 220 V, 1 pc
	Hand Valve, 1 pc
	Lid Stopper, 1 pc

TC-5901C Initial Inspection

[Table 7] TC-5901C Accessories list

Order Number	Description
TC-5901C	**Pneumatic Shield Box (including accessories bellow)**
	Operating Manual
	Test Report
	Power Cable, 220 V, 1 pc
	DATA, DB9(s) –DB9(s) 2 m, 1 pc
	SS-402, N(m) to N(m) 1 m, 1 pc
	Hand Valve, 1 pc
	Lid Stopper, 1 pc