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Declaration of Conformity

We
GOOD WILL INSTRUMENT CO., LTD.
No. 7-1, Jhongsing Rd., Tucheng City, Taipei County 236, Taiwan.
declares that the below mentioned product

PSP-603, PSP-405, PSP-2010

Are herewith confirmed to comply with the requirements set out in the Council Directive on the Approximation of the Law of Member States relating to Electromagnetic Compatibility (89/336/EEC, 92/31/EEC, 93/68/EEC) and Low Voltage Equipment Directive (73/23/EEC, 93/68/EEC). For the evaluation regarding the Electromagnetic Compatibility and Low Voltage Equipment Directive, the following standards were applied:

◎ EMC

EN 61326-1: Electrical equipment for measurement, control and laboratory use — EMC requirements **(1997+A1: 1998)**	
Conducted and Radiated Emissions EN 55011: 1998	Electrostatic Discharge EN 61000-4-2: 1995+A1:1998
Current Harmonic EN 61000-3-2: 1995+A1: 1998+A2: 1998	Radiated Immunity EN 61000-4-3: 1996
Voltage Fluctuation EN 61000-3-3: 1995	Electrical Fast Transients EN 61000-4-4: 1995
----------	Surge Immunity EN 61000-4-5: 1995
----------	Conducted Susceptibility EN 61000-4-6: 1996
----------	P.F.Magnetic Field EN 61000-4-8: 1993
----------	Voltage Dips/ Interrupts EN 61000-4-11: 1994

◎ **Safety**

Low Voltage Equipment Directive 73/23/EEC & amended by 93/68/EEC
IEC/EN 61010-1: 2001
EN 60950 :1992+A1:1993+A2 :1993+A3 :1995+A4 : 1997+A11: 1997
IEC 60950:1991+A1:1992+A2 :1993+A3 :1995+A4 : 1996

SAFETY TERMS AND SYMBOLS

These terms may appear in this manual or on the product:

WARNING. Warning statements identify condition or practices that could result in injury or loss of life.

CAUTION. Caution statements identify conditions or practices that could result in damage to this product or other property.

The following symbols may appear in this manual or on the product:

DANGER High Voltage	ATTENTION refer to Manual	Protective Conductor Terminal	Earth (ground) Terminal	Frame or Chassis Terminal

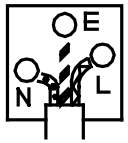
FOR UNITED KINGDOM ONLY

NOTE: This lead/appliance must only be wired by competent persons

WARNING: THIS APPLIANCE MUST BE EARTHED

IMPORTANT: The wires in this lead are coloured in accordance with the following code:

Green/ Yellow:	**Earth**
Blue:	**Neutral**
Brown:	**Live (Phase)**



As the colours of the wires in main leads may not correspond with the colours marking identified in your plug/appliance, proceed as follows:

The wire which is coloured Green & Yellow must be connected to the Earth terminal marked with the letter E or by the earth symbol or coloured Green or Green & Yellow.

The wire which is coloured Blue must be connected to the terminal which is marked with the letter N or coloured Blue or Black.

The wire which is coloured Brown must be connected to the terminal marked with the letter L or P or coloured Brown or Red.

If in doubt, consult the instructions provided with the equipment or contact the supplier.

This cable/appliance should be protected by a suitably rated and approved HBC mains fuse: refer to the rating information on the equipment and/or user instructions for details. As a guide, cable of 0.75mm^2 should be protected by a 3A or 5A fuse. Larger conductors would normally require 13A types, depending on the connection method used.

Any moulded mains connector that requires removal /replacement must be destroyed by removal of any fuse & fuse carrier and disposed of immediately, as a plug with bared wires is hazardous if a engaged in live socket. Any re-wiring must be carried out in accordance with the information detailed on this label.

1. Product Introduction

The PSP series is a programmable switching power supply with backlit liquid crystal display built to the latest technological standards. Construction is in accordance with VDE 0411 = EN 61010. Moreover, the PSP series has been EMV-tested and fulfils the requirements of the applicable European and national directives. Conformance to these has been proven; the relevant statements and documents are lodged with the manufacturer.

Note: This is a Class A device which can cause RF interference within the home.

To maintain this condition and to guarantee safe operation, the user must observe these operating instructions without fail.

Application Note

- Connection of low-voltage loads to the marked connection sockets provided for this purpose and their operation at a voltage between 0 to rating voltage.
- The current consumption of a connected load may not exceed rating current.
- The Switching Power Supply PSP series is suitable for connection to 115 or 230 V 50/60 Hz AC power sockets.
- Operation must not take place under unfavorable ambient conditions including:
  -Moisture or excessive air humidity.
  -Dust and combustible gases, fumes or solvents.

-Thunderstorms or storm conditions such as strong electrostatic fields, etc.

Any use other than above description may leads to damage to the unit; or causes dangers such as short circuit, fire, electric shock, etc. No part of the product may be modified or converted. The safety instructions are to be followed without fail.

2. Safety Information

Note: Damage caused by failure to observe the operating instructions voids the guarantee.

We accept no liability for consequential damage and accept no responsibility for damage to property or injury to persons caused by improper operation or failure to observe the safety instructions. Such cases void the guarantee.

a) Installation and handling safety instructions

Observe the following rules when installing the instrument:

a1. Avoid use the instrument in extremely cold or hot locations or directly adjacent to a heating fan.

a2. Never switch the instrument on immediately when it is brought from a cold environment into a warm room until the instrument comes to room temperature as under the adverse conditions, the resultant condensation may destroy the instrument.

a3. Ensure there is proper ventilation for the vents in the case (front left side and cooling fan on the rear) to prevent heat build-up from damaging the instrument.

a4. Never operate the instrument near hot soldering irons.

a5. Do not place the Power Supply with its front panel down to avoid damaging the operating controls.

b) General safety requirements

The Switching Power Supply PSP series has been fully inspected and tested with technically safe condition before shipping from the factory. To maintain this condition and to ensure safe operation, it is essential for the user to observe the safety instructions and warning notes which

are contained in this user manual.

The instrument is constructed to Protection Class I. It is equipped with a VDE-approved power supply with safety cable and may only be used with and connected to AC supplies with safety earthing.

Ensure that the (yellow/green) earthed wire in the instrument, in its power cable and in the AC supply remains sound, because a damaged earth wire can endanger life.

In commercial facilities the accident-prevention regulations of the industrial employers' liability association for electrical systems and equipment must be observed.

In schools, training facilities, hobby and self-help workshops, the operation of power supplies and accessories must be supervised by the trained personnel.

Make sure that only the fuses of the given types and nominal current ratings are used as replacements. The use of repaired fuses or the bridging of fuse holders is not permitted. A small flat-bladed screwdriver is required to change the AC fuse. Carefully lever up the cover in the AC power socket and withdraw it. Remove the defective fuse and replace it with an intact one of the same type and nominal current rating. Afterwards replace the fuse cover.

The measuring instrument is operated only when the case is securely closed and screwed up.

While proceeding the operation of power supplies, the wearing of metal or other conducting jewelry such as chains, bracelets, rings, etc. is not recommended.

Note: Power supplies are not intended for use with/on people or animals.

When connecting the outputs of more than one power supply in series voltages may danger to life (> 35 VDC). Only power supplies with an identical output (current and voltage) specification may be placed in series or in parallel, otherwise the weaker of the two will be damaged.

The instrument is to be placed onto a hard, non-inflammable base, so that cooling air can enter unhindered. The cooling of the unit occurs predominantly through convection.

Note: Power supply ventilation holes should not be covered.

Power supplies and their connected loads should not be left operating unsupervised. There are measures for the protection and safety of connected loads in the face of power supply incidents (e.g. overvoltages, complete failure) and effects and dangers stemming from the loads themselves (e.g. unduly-high current consumption).

Faulty power supplies can produce voltages over 50 V DC, which can be dangerous even when the indicated normal output voltages of the units are lower than this.

Note: For power-on work, only tools expressly intended for this should be used.

The power supply outputs and connecting leads, sockets and terminals must be protected from being touched directly. In addition, the leads used must be sufficiently insulated and voltage-proof and the contact points safe from being touched (safety sockets).

Use of bare metal leads and contacts should be avoided. All such items are to be covered by suitable, nonflammable insulating material or other measures taken and therefore protected from being touched directly. The electrically conducting parts of the connected load must also be appropriately protected from being touched directly.

If the instrument is assumed that safe operation is no longer possible according to the following phenomena, then the unit must be switched off and protected against unintentional operation:

- the unit shows visible signs of damage,
- the unit no longer functions and
- after prolonged storage under unfavourable conditions or
- after severe transportation stress.

Do switch on the switched power supply immediately when it has been brought from a cold environment into a warm room until it comes to room temperature as under adverse conditions, the resultant condensation can destroy the unit.

3. Technical Specifications

Model		PSP-603	PSP-405	PSP-2010
Operating voltage		115/230 VAC ±15%		
Power frequency		50/60 Hz		
Power consumption		approx. 420VA max.		
Power output		200W max.		
Output voltage		0~60VDC, 20mV resolution	0~40VDC, 10mV resolution	0~20VDC, 10mV resolution
Program Accuracy		±0.05%±4 digits	±0.05%±3 digits	±0.05%±3 digits
Output Current		0~3.5A 2mA resolution	0~5A 2mA resolution	0~10A 5mA resolution
Program Accuracy		±0.1%±5 digits	±0.1%±5 digits	±0.3%±10 digits
Voltage Load Regulation		≦ 10 mV		
Current Load Regulation		≦ 5 mA		
Voltage Line Regulation.		≦ 0.05%		
Current Line Regulation		≦ 0.05%		
Ripple Voltage		≦ 20 mV rms		
Ripple Current		≦ 10 mArms		
Readback Resolution (Meter)		20mV 2mA	10mV 2mA	10mV 5mA
Response Time	Rise Time	≦150ms (≦95% rating load)		
	Fall Time	≦150ms (≧10% rating load)		
Recovery Time		30ms (50% Load Change, Minimum load 0.5A)		
Readback Accuracy (Meter)				
Voltage		±0.05%±4 digits	±0.05%±3 digits	±0.05%±3 digits
Current		±0.1%±5 digits	±0.1%±5 digits	±0.3%±10 digits
Digital Display		Multi-line LCD with background lighting		
AC fuse		Slow-blow T6.3A/250V for 115V, T3.15A/250V for 230V		
Command Process Time		250ms		
Interface (Standard)		RS-232C		
Weight		Approx. 4 kgs		
Dimensions (W × H × L)		Approx. 225x100x305 m/m (without stand and power cable)		

Environmental Conditions	
Operating Environment	Indoor use, altitude up to 2000m. Ambient Temperature 0℃ to 40℃. Relative Humidity 80%(Maximum). Installation category II Pollution Degree 2
Operating temperature & Humidity	0°C to +40°C 80% (Maximum), non-condensing
Storage temperature range	-10°C to +70°C
Accessories	Power cord…..……... 1 Instruction manual…… 1 Test Lead…….…….. 1

4. Panel Controls & Indicator

Front Panel

1) 4 mm safety sockets: 1a negative connection "-", 1b positive connection "+" and 1c earth connection.
2) "POWER" AC switch for switching the power supply on ("1") and off ("0").
3) Encoder wheel for changing the V SET, V LIMIT, I LIMIT, P LIMIT, +%, and -% parameter settings.
4) Keypad for actual operation of the Switching Power Supply PSP series. The exact description follows below.
5) Backlit LCD Display with indication of the output voltage, current, power settings and indication of the V, I and P limits. Additionally, indication of OUTPUT On or Off and keypad locked or unlocked.

Rear Panel

6) AC rear power socket.
7) RS-232 interface (with optocoupler) for connection to PC.
8) Cooling fan.

- **Front Panel**

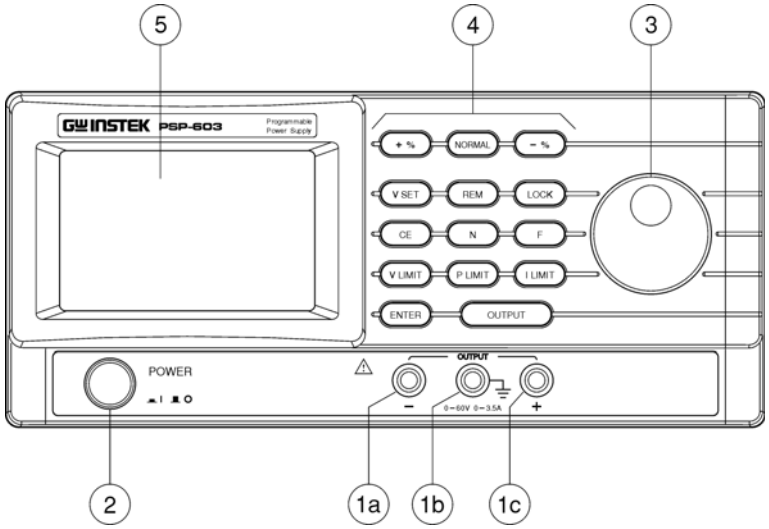


Figure 4-1

- **Rear Panel**

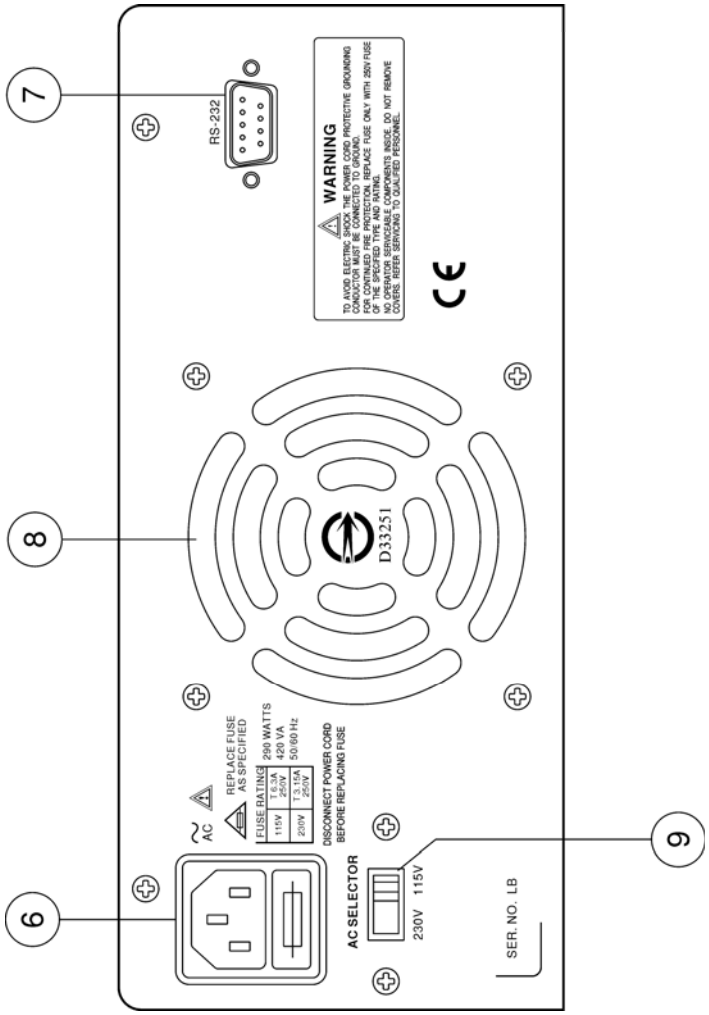


Figure 4-2

5. Functional Description of Operating Elements

With its continuously adjustable voltage and current settings, this power supply can be used universally in school, work, hobby, and other applications. An electronic current limiter protects the power supply from overload and short-circuits at its output; a fan controlled by a temperature circuit protects the power supply (its electronics) from thermal overload.

During such an overload (short circuit or overload) the output is regulated down, i.e. the voltage is reduced. Only when the short-circuit has been remedied is the output released.

The set values can be read via the illuminated multiple-line LCD display. The voltage, current or power setting is adjusted by means of an encoder wheel in 10mV, 20mV, 1mA, 2mA, 10mA and 1 W steps respectively. Therefore the exact adjustment of the output voltage and the current limit and maximum output power is possible. However, observe the safety hints without fail.

6. Operating Instructions with keypad input

A) Basic setting

a) Connect the AC power cable to the AC power socket and ensure that it is firmly seated. Then plug the earthed power plug into an earthed AC power socket.

Attention: The continuity of the safety earth wire must be unbroken within the instrument, within the AC power cable and within the AC power socket otherwise life will be endangered.

b) Press the AC power On/Off switch

Attention: The earth connector in the front of the instrument and the RS-232 interface connector earth are connected directly with the earthing wire of the AC power input socket and of the connected AC power socket.

Before operating the instrument each time, first check and ensure that the 4 mm sockets of the instrument is well fit of no damage.

B) Setting the limit

The voltage, current and power output values are each limited to a maximum. This upper limit can be varied downwards. Setting the limits is carried out using the "V LIMIT" "I LIMIT" "P LIMIT" keys as follows:

V LIMIT Voltage limit

Press the "V LIMIT" key in the "LIMITS" field until the symbol "U-const" flashes. The voltage limit can now be adjusted to 1V steps by using the encoder wheel. If

the "V LIMIT " key is now pressed for longer than 2s, the voltage upper limit will again be set at "rating voltage". To complete the input, press the "ENTER" key. An inadvertently wrong-set limit setting can be erased/reset with the " CE " key. As a result of this, the previous set value will be indicated and the setting menu exited. The "U-const" will no longer flash.

During operation (output On), the voltage output can also be adjusted up to the set limit.

I LIMIT Current limit

Press the " I LIMIT" key in the "LIMITS" field until the symbol "I-const" flashes. The current limit can now be adjusted to 1mA, 2mA, 10mA ("fine") or 100mA ("norm", coarse) steps by using the encoder wheel. If the "I LIMIT" key is now pressed for longer than 2s, the current upper limit will again be set at "rating current". To complete the input, press the "ENTER" key. An inadvertently wrong-set limit setting can be erased/reset with the " CE " key. As a result of this, the previous set value will be indicated and the setting menu exited. The "I-const" will no longer flash.

P LIMIT Power limit

Press the "P LIMIT" key in the "LIMITS" field until the symbol "P-const" flashes. The power limit can now be adjusted to 1 W steps by using the encoder wheel. If the "P LIMIT" key is now pressed for longer than 2s, the

power upper limit will again be set at "200 W". To complete the input, press the "ENTER" key. An inadvertently wrong-set limit setting can be erased/reset with the " CE " key. As a result of this, the previous set value will be indicated and the setting menu exited. The "P-const" will no longer flash.

Attention: The current "I LIMIT" is adjusted independently of its setting by the maximum output power setting. The voltage upper limit does not change.

C) "KEY INPUT" field settings

V SET Using the "V SET" key, the output voltage can be adjusted up to the preset upper limit directly. For this the "V SET" key must be pressed and held and the voltage changed with the encoder wheel. If the "fine" F key is selected, the changes occur in 10 mV, and 20mV steps. If "norm" N key is selected, the changes occur in 1V steps.

ENTER Each input via the "LIMITS" keypad is completed with the "ENTER" key.

CE Any values incorrectly entered via the "LIMITS" keypad can be reset with the "CE" key.

N The size of each setting step can be changed by using the " N " ("Normal") key. In connection with the "F" key, so-called mutual locking is achieved.

F If the " N " key is pressed, the "fine" symbol disappears

from the display. If the "F" key is pressed, the symbol "fine" appears on the display.

LOCK Pressing the "LOCK" key locks/blocks all keys and the encoder wheel against inadvertent adjustment. Only the "Power" switch remains active. Locking is indicated by the "locked" symbol in the bottom line of the display. If the "LOCK" key is pressed again (> approx. 2s), then the operating elements are released again (unlocked).

D) Adjusting the output

OUTPUT The output of the power supply is switched on or off via a relay with the "OUTPUT" key. In the process, the status "On" or "Off" is indicated at the bottom right of the display. On switching the power supply on, the output is always in switched-off status.

E) +%, -% settings

+% Under output off status, press +% key once, the LCD display will indicate xxx (the multiple value of the original storage data), now set the +% value by using the knob and press enter key to save it. Afterward, when the output is in the “ON” status, press +% key, the output will be changed according to the saved multiple value.

-% Under output off status, press -% key once, the LCD display will indicate xxx (the multiple value of the original storage data), now set the -% value by using the knob and press enter key to save it. Afterward, when the output is in the “ON” status, press -% key, the output will be changed according to

the saved multiple value.

For example:

Set the output voltage as 10.00V, the save value of +% is 105, and the save value of -% is 95. The +% key is pressed, output voltage will be changed to 10.00V × 1.05 = 10.50V, while the -% key is pressed, output voltage will be changed to 10.00V × 0.95 = 9.50V. The output voltage will be back to normal by pressing the normal key.

F) "REM" key

A serial RS-232 interface is incorporated on the rear of the case. With the appropriate interface cable and optional software, communication with an IBM-compatible PC is therefore possible. The interface is naturally via an optocoupler.

REM Clear the Remote Control mode and use panel control setting instead. Thereupon, as with "LOCK", all operating elements (except POWER) are locked against direct input.

7. Disposal

Dispose of an unusable, irreparable Switching Power Supply PSP series in accordance with applicable statutory regulations.

8. Rectification of faults

With the PSP series power supply you have acquired a new generation measuring instrument constructed to the latest technological standards. However, faults can occur. Because of this, the following describes how some of these problems can be resolved by the user relatively easily:

Problem	**Possible solution**
No display	Is the instrument switched on? Is the AC power plug making good contact both in the instrument and in the AC power socket? Is the AC fuse OK?
No input possible	"REM" or "LOCK" key pressed; see under section C or F

Attention: Except when this is possible manually, the opening of covers or removal of parts can expose voltage-carrying components. Connection points may also be live. Before any adjustment, maintenance, repair or exchange of parts or assemblies requiring opening of the unit, the unit must be disconnected from all voltage sources and measurement circuits. If the adjustment maintenance or repair is subsequently required for the open unit, these must only be performed by a specialist familiar with the associated hazards and relevant regulations (VDE-0100, VDE-0701, VDE0683).

Capacitors within t he instrument can remain charged even when the unit has been disconnected from all voltage sources and measurement circuits.

9. Maintenance

The following instructions are executed by qualified personnel only. To avoid electrical shock, do not perform any servicing other than the operating instructions unless you are qualified to do so.

9-1.Fuse Replacement

If the fuse blown, the CV or CC indicators will not light and the power supply will not operate. The fuse should not normally blow unless a problem has developed in the unit. Try to determine and correct cause of the blown fuse, then replace only with a fuse of the correct rating and type. The fuse is located on the rear panel (see Fig. 4-2).

WARNING: For continued fire protection. Replace with 250V fuse of the specified type and rating, and disconnect the power cord before replacing fuse.

9-2.Line Voltage conversion

The primary winding of the power transformer is tapped to permit operation from 115/230 VAC, 50/60 Hz line voltage. Conversion from one line voltage to another is done by change AC selects switch as shown in Fig. 4-2.

To convert to different line voltage, perform the following procedure:

(1) Make sure the power cord is unplugged.

(2) Set the AC switch to the desired line voltage position.

9-3. Cleaning

To clean the power supply, use a soft cloth dampened in a solution of mild detergent and water. Do not spray cleaner directly onto the instrument, since it may leak into the cabinet and cause damage. Do not use chemicals containing benzine, benzene, toluene, xylene, acetone, or similar solvents. Do not use abrasive cleaners on any portion of the instrument.

9-4. Fan Control

1) The fan of the power supply will not work upon power on until the temperature or load current reaches the condition as follows:

- Temperature oriented:
  When the temperature of the power supply reaches to range of 45℃±5℃ for 5 to 6 seconds, the fan starts to work, while the temperature is less than 40℃±5℃, the fan stops rolling.
- Load current oriented:
  The load current varies with different model of power supplies. After the load current reaches to the value as shown below, the fan will keep on rolling.

Model	Load Current	Fan	Load Current	Fan
PSP-405	2.10A±50mA	On	1.80A±50mA	Off
PSP-603	1.40A±50mA	On	1.20A±50mA	Off
PSP-2010	2.10A±50mA	On	1.80A±50mA	Off

2) To avoid damaging the power supply, if the fan failed to work when the temperature or current has reached to the specific condition, please power off the instrument and contact our local distributor for service.

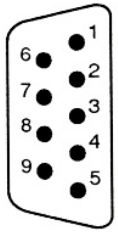
10. APPENDIX: Connecting the Programmable Power Supply via RS232 Interface

The RS232 interface capabilities:
The RS232 interface provides a point-to-point connection between two items of equipment such as a computer and the power supply. There are some parameters you need to set on the both sides. Once you have set these parameters, you can control the power supply through the RS232 interface.

- Baud rate: 2400 baud.
- Parity bit: none.
- Data bit: 8 bits.
- Stop bit: 1 stop bit.
- Data flow control: none.

Notes for RS232 installation
The power supply is a DTE device with a 9-pin D-type shell RS232 connector located on the rear panel. Figure 1 shows the equipment of 9-pin connector (Male) with its pin number assignments. Figure 2 shows the wiring configuration for DB9 to DB9. When the programmable power supply is set up with a RS232 interface, please check the following points:

- *Do not connect the output line of one DTE device to the output line of the other.*
- *Many devices require a constant high signal on one or more input pins.*
- *Ensure that the signal ground of the equipment is connected to the signal ground of the external device.*
- *Ensure that the chassis ground of the equipment is connected to the chassis ground of the external device.*
- *Do not use more than 15m of cable to connect devices to a PC.*
- *Ensure the same baud rate is used on the device as the one used on PC terminal.*
- *Ensure the connector for the both side of cable and the internal connected line are met the demand of the instrument.*



1. No connection
2. Receive Data(RxD) (input)
3. Transmit Data(TxD) (output)
4. +12V Input(*) (input)
5. Signal Ground(GND)
6. No connection
7. No connection
8. No connection
9. No connection

***Note: This pin needs a constant high signal (+12V).**

Figure 1 Pin assignments of the RS232 connector on the rear panel for DB-9-D

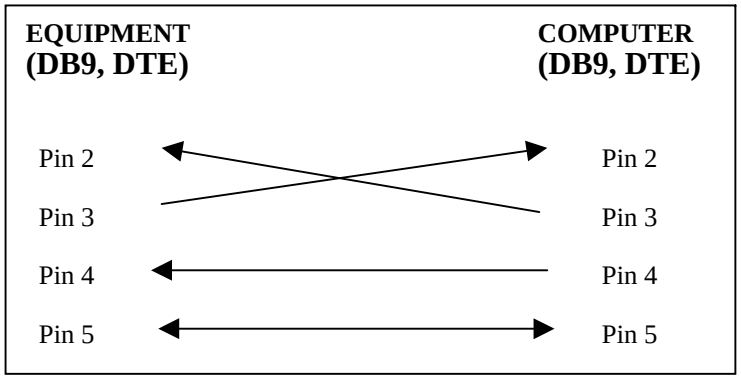


Figure 2 Wiring configuration for DB9 to DB9

Computer's Connection

A personal computer with a COM port is the essential facilities in order to operate the programmable power supply via RS232 interface. The connections between power supply and computer are as follows:

I. Connect one end of a RS232 cable to the computer.
II. Connect the other end of the cable to the RS232 port on the programmable power supply.
III. Turn on the programmable power supply.
IV. Turn on the computer.

RS232 message terminator

The power supply has 25 commands available. Every command is end up with <cr> (ASCII 0Dh or ACSCII 0D 0A acceptable). The return message <cr>of the power supply is CR/LF (ASCII 0D 0A).

***L**

Function:

To obtain all the status values of the power supply.

Syntax:

L<cr> HEX = 4C 0D

Explain:

When the message L<cr>is sent to the power supply from computer, the power supply will return the message as follows immediately:

Vvv.vvAa.aaaWwww.wUuuIi.iiPpppFffffff<cr> 37 characters totally

The contents consist of the uppercase V,A,W,U,I,P,F, the numeral from 0 to 9 and decimal. Further details is described as follows:

vv.vv = The present output voltage, the unit: V.

a.aaa = The present output current, the unit: A.

www.w = The present output load, the unit: W.

uu = The maximum voltage limit at present, the unit: V.

i.ii = The maximum current limit at present, the unit: A.

ppp = The maximum load limit at present, the unit: W.

ffffff = The status of power supply at present.

1st f = the relay status 0: OFF 1:ON

2nd f = the temperature status 0: Normal 1: Overheat

3rd f = the wheel knob status 0: Normal 1: Fine

4th f = the wheel knob status 0: Lock 1: Unlock

5th f = the remote status 0: Normal 1: Remote(*)

6th f = the lock status 0: Unlock 1: Lock

***Note: The setting is workable through computer only when the remote is at 1.**

All the data above is in the range from 0 to 9.

When the uppercase U becoming the lowercase u means that the status is in the setting of the voltage limit mode.

When the uppercase I becoming the lowercase i means that the status is in the setting of the current limit mode.

When the uppercase P becoming the lowercase p means that the status is in the setting of the load limit mode.

Example:

The return message from power supply is:

V20.00A2.500W050.0U40I5.00P200F101000<cr>

V20.00 means that the present output voltage is at 20.00V.

A2.500 means that the present output current is at 2.500A.

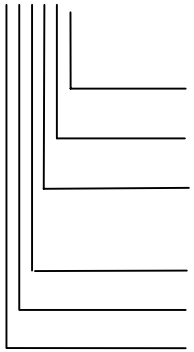
W050.0 means that the present output load is at 050.0W.

U40 means that the present voltage limit is at 40V.

15.00 means that the present current limit is at 5.00A.

P200 means that the present load limit is at 200W.

F101000



Not yet getting into Lock mode.

Not yet getting into Remote mode.

Wheel knob setting acceptable (this signal can be ignored)

Wheel knob is in the Fine mode.

The temperature isn't overheat.

Relay on.

*V

Function:

The present output voltage, the unit is V.

Syntax:

V<cr> HEX = 56 0D

Explain:

When the message of V<cr>is sent to the power supply from computer, the power supply will return the following message immediately:

Vvv.vv<cr> 6 characters totally + CR/LF

The contents consist of the uppercase V, the numeral from 0 to 9 and decimal. Further details is described as follows:

vv.vv = The present output voltage, the unit: V

*A

Function:

The present output current, the unit is A.

Syntax:

A<cr> HEX = 41 0D

Explain:

When the message of A<cr>is sent to the power supply from computer, the power supply will return the following message immediately:

Aa.aaa<cr> 6 characters totally + CR/LF

The contents consist of the uppercase A, the numeral from 0 to 9 and decimal. Further details is described as follows:

a.aaa = The present output current, the unit: A

*W

Function:

The present output load, the unit is W.

Syntax:

W<cr> HEX = 57 0D

Explain:

When the message of W<cr>is sent to the power supply from computer, the power supply will return the following message immediately:

Wwww.w<cr> 6 characters totally + CR/LF

The contents consist of the uppercase W, the numeral from 0 to 9 and decimal. Further details is described as follows:

www.w = The present output load, the unit: W

*U

Function:

The maximum voltage limit at present, the unit is V.

Syntax:

U<cr> HEX = 55 0D

Explain:

When the message of U<cr> is sent to the power supply from computer, the power supply will return the following message immediately:

Uuu<cr> 3 characters totally + CR/LF

The contents consist of the uppercase U and the numeral from 0 to 9. Further details is described as follows:

uu = The maximum voltage limit at present, the unit: V

When the uppercase U becoming the lowercase u means that the power supply is in the setting status of voltage limit mode.

*I

Function:

The maximum current limit at present, the unit is A.

Syntax:

I<cr> HEX = 49 0D

Explain:

When the message of I<cr>is sent to the power supply from computer, the power supply will return the following message immediately:

Ii.iii<cr> 5 characters totally + CR/LF

The contents consist of the uppercase I, the numeral from 0 to 9 and decimal. Further details is described as follows:

i.ii = The maximum current limit at present, the unit: A

When the uppercase U becoming the lowercase u means that the power supply is in the setting status of current limit mode.

*P

Function:

The maximum output load limit at present, the unit is W.

Syntax:

L<cr> HEX = 50 0D

Explain:

When the message of L<cr>is sent to the power supply from computer, the power supply will return the following message immediately:

Pppp<cr> 4 characters totally + CR/LF

The contents consist of the uppercase P and the numeral from 0 to 9. Further details is described as follows:

ppp = The maximum load limit at present, the unit: W

When the uppercase P becoming the lowercase p means that the power supply is in the setting status of output load limit mode.

*F

Function:

The present status of the power supply.

Syntax:

F<cr> HEX = 46 0D

Explain:

When the message of F<cr> is sent to the power supply from computer, the power supply will return the following message immediately:

Ffffff<cr> 7 characters totally + CR/LF

| | | | | |

123446

The contents consist of the uppercase F and the numeral from 0 to 9. Further details is described as follows:

1st f = the relay status 0:OFF 1:ON

2nd f = the temperature status 0: Normal 1: Overheat

3rd f = the wheel knob status 0: Normal 1: Fine

4th f = the wheel knob status 0: Lock 1: Unlock

5th f = the remote status 0: Normal 1: Remote(*)

6th f = the lock status 0: Unlock 1: Lock

***Note: The setting is workable through computer only when the remote is at 1.**

*SV+

Function:

Add one unit to the present voltage setting.

Syntax:

SV+<cr> HEX = 53 56 2B 0D

Explain:

When the message of SV+<cr> is sent to the power supply from computer, the power supply will add one unit to the present voltage setting immediately.

Example:

The present output voltage is at 20.00V, and the wheel knob status is at normal, the SV+<cr> message is sent to the power supply, the voltage of which will become 21.00V.

*SV-

Function:

Subtract one unit from the present voltage setting.

Syntax:

SV-<cr> HEX = 53 56 2D 0D

Explain:

When the message of SV-<cr> is sent to the power supply from computer, the power supply will subtract one unit from the present voltage setting immediately.

Example:

The present output voltage is at 20.00V, and the wheel knob status is at normal, the SV-<cr> message is sent to the power supply, the voltage of which will become 19.00V.

*SU+

Function:

Add one unit to the present voltage limit setting.

Syntax:

SU+<cr> HEX = 53 55 2B 0D

Explain:

When the message of SU+<cr> is sent to the power supply from computer, the power supply will add one unit to the present voltage limit setting immediately.

Example:

The present voltage limit is at 30V, and the wheel knob status is at normal, the SV+<cr> message is sent to the power supply, the voltage limit of which will become 31V.

*SU-

Function:

Subtract one unit from the present voltage limit setting.

Syntax:

SU-<cr> HEX = 53 55 2D 0D

Explain:

When the message of SU-<cr> is sent to the power supply from computer, the power supply will subtract one unit from the present voltage limit setting immediately.

Example:

The present voltage limit is at 30V, and the wheel knob status is at normal, the SU-<cr> message is sent to the power supply, the voltage limit of which will become 29V.

*SI+

Function:

Add one unit to the present current limit setting.

Syntax:

SI+<cr> HEX = 53 49 2B 0D

Explain:

When the message of SI+<cr> is sent to the power supply from computer, the power supply will add one unit to the present current limit setting immediately.

Example:

The present current limit is at 3.00A, and the wheel knob status is at normal, the SI+<cr> message is sent to the power supply, the current limit of which will become 3.10A.

*SI-

Function:

Subtract one unit from the present current limit setting.

Syntax:

SI-<cr> HEX = 53 49 2D 0D

Explain:

When the message of SI-<cr> is sent to the power supply from computer, the power supply will subtract one unit from the present current limit setting immediately.

Example:

The present current limit is at 3.00A, and the wheel knob status is at normal, the SI-<cr> message is sent to the power supply, the current limit of which will become 2.90A.

*SP+

Function:

Add one unit to the present load limit setting.

Syntax:

SP+<cr> HEX = 53 50 2B 0D

Explain:

When the message of SP+<cr> is sent to the power supply from computer, the power supply will add one unit to the present load limit setting immediately.

Example:

The present load limit is at 100W, and the wheel knob status is at normal, the SP+<cr> message is sent to the power supply, the load limit of which will become 101W.

*SP-

Function:

Subtract one unit from the present load limit setting.

Syntax:

SP-<cr> HEX = 53 50 2D 0D

Explain:

When the message of SP-<cr> is sent to the power supply from computer, the power supply will subtract one unit from the present load limit setting immediately.

Example:

The present load limit is at 100W, and the wheel knob status is at normal, the SP-<cr> message is sent to the power supply, the load limit of which will become 099W.

*SUM

Function:

Set the maximum voltage limit value.

Syntax:

SUM<cr> HEX = 53 55 4D 0D

Explain:

When the message of SUM<cr> is sent to the power supply from computer, the power supply will set the voltage limit to the maximum immediately.

Example:

The present voltage limit is at 20V, the SUM<cr> message is sent to the power supply, the voltage limit of which will become 40V.

*SIM

Function:

Set the maximum current limit value.

Syntax:

SIM<cr> HEX = 53 49 4D 0D

Explain:

When the message of SIM<cr> is sent to the power supply from computer, the power supply will set the current limit to the maximum immediately.

Example:

The present current limit is at 2.50A, the SIM<cr> message is sent to the power supply, the current limit of which will become 5.00A.

*SPM

Function:

Set the maximum load limit value.

Syntax:

SPM<cr> HEX = 53 50 4D 0D

Explain:

When the message of SPM<cr> is sent to the power supply from computer, the power supply will set the load limit to the maximum immediately.

Example:

The present load limit is at 100W, the SPM<cr> message is sent to the power supply, the load limit of which will become 200W.

*KF

Function:

Set the wheel knob to Fine status.

Syntax:

KF<cr> HEX = 4B 46 0D

Explain:

When the message of KF<cr> is sent to the power supply from computer, the power supply will set the wheel knob to Fine status immediately.

Example:

The present wheel knob status is at Normal, the KF<cr> message is

sent to the power supply, the wheel knob status will become Fine.

*KN

Function:

Set the wheel knob to Normal status.

Syntax:

KF<cr> HEX = 4B 4E 0D

Explain:

When the message of KN<cr> is sent to the power supply from computer, the power supply will set the wheel knob to Normal status immediately.

Example:

The present wheel knob status is at Fine, the KN<cr> message is sent to the power supply, the wheel knob status will become Normal.

*KO

Function:

Set the Relay status to Invert.

Syntax:

KO<cr> HEX = 4B 4F 0D

Explain:

When the message of KO<cr> is sent to the power supply from computer, the power supply will invert the relay status immediately.

Example:

The present relay status is at OFF, the KO<cr> message is sent to the power supply, the relay status will become ON, send the message again will become OFF.

*KOE

Function:

Set the Relay status to ON.

Syntax:

KOE<cr> HEX = 4B 4F 45 0D

Explain:

When the message of KOE<cr> is sent to the power supply from computer, whatever the relay status is, the relay of power supply will be set to ON immediately.

*KOD

Function:

Set the Relay status to OFF.

Syntax:

KOD<cr> HEX = 4B 4F 44 0D

Explain:

When the message of KOD<cr> is sent to the power supply from computer, whatever the relay status is, the relay of power supply will be set to OFF immediately.

*EEP

Function:

Save the present status to the EEPROM.

Syntax:

EEP<cr> HEX = 45 45 50 0D

Explain:

When the message of EEP<cr> is sent to the power supply from computer, the power supply will be save the present setting value to EEPROM immediately.

*B

Function:

To obtain +% value.

Syntax:

B<cr> HEX = 42 0D

Explain:

When the message of B<cr> is sent to the power supply from computer, the power supply will return the following message immediately

Bbbb<cr> 4 characters totally +CR/LF

The contents consist of the uppercase B, and the numeral from 0 to 9. Further details is described as follows:

bbb = The present +% value, the unit: %

When the uppercase B becoming the lowercase b means that the status is in the setting of the +% mode.

*D

Function:

To obtain -% value.

Syntax:

D<cr> HEX = 44 0D

Explain:

When the message of D<cr> is sent to the power supply from computer, the power supply will return the following message immediately

Dddd<cr> 4 characters totally +CR/LF

The contents consist of the uppercase D, and the numeral from 0 to 9. Further details is described as follows:

ddd = The present -% value, the unit: %

When the uppercase D becoming the lowercase d means that the status is in the setting of the -% mode.

*Q

Function:

Display the present value at +% or -% mode.

Syntax:

Q<cr> HEX = 51 0D

Explain:

When the message of Q<cr> is sent to the power supply from computer, the power supply will return the following message immediately

Qqqqqqq<cr> 7 characters totally +CR/LF

The contents consist of the uppercase B, and the numeral 0 or 1. Further details is described as follows:

Whether the first q is at % mode? 0: No 1:Yes

Whether the second q is at +% mode? 0: No 1: Yes

*SB+

Function:

To add one unit to the present setting of +%.

Syntax:

SB+<cr> HEX = 53 42 2B 0D

Explain:

When the message of SB+<cr> is sent to the power supply from computer, the power supply will add one unit to the present setting of +% immediately

Example:

The present +% value is at 105, after the command is sent from computer, the +% value is at 106.

*SB-

Function:

To decrease one unit from the present setting of +%.

Syntax:

SB-<cr> HEX = 53 42 2D 0D

Explain:

When the message of SD-<cr> is sent to the power supply from computer, the power supply will decrease one unit from the present setting of +% immediately

Example:

The present +% value is at 105, after the command is sent from computer, the +% value is at 104.

*SD+

Function:

To add one unit to the present setting of -%.

Syntax:

SD+<cr> HEX = 53 44 2B 0D

Explain:

When the message of SD+<cr> is sent to the power supply from computer, the power supply will add one unit to the present setting of -% immediately

Example:

The present -% value is at 90, after the command is sent from computer, the -% value is at 91.

*SD-

Function:

To decrease one unit from the present setting of -%.

Syntax:

SD-<cr> HEX = 53 44 2D 0D

Explain:

When the message of SD-<cr> is sent to the power supply from computer, the power supply will decrease one unit from the present setting of -% immediately

Example:

The present -% value is at 90, after the command is sent from computer, the -% value is at 89.

*SV

Function:

Set the output voltage value.

Syntax:

SV xx.xx<cr>

x is a number between 0 and 9.

Explain:

The power supply will set the desired value of output voltage when the command is received.

Example:

SV 12.34

Set output voltage to 12.34V

*SU

Function:

Set voltage limit.

Syntax:

SU xx<cr>

x is a number between 0 and 9.

Explain:

The power supply will set desired up-limit value of the voltage when the command is received.

Example:

SU 20

Set voltage limit to 20V

*SI

Function:

Set current limit.

Syntax:

SI x.xx<cr>

x is a number between 0 and 9.

Explain:

The power supply will set desired up-limit value of the current when the command is received.

Example:

SU 1.25

Set current limit to 1.25A

*SP

Function:

Set power limit.

Syntax:

SP xxx<cr>

x is a number between 0 and 9.

Explain:

The power supply will set desired up-limit value of the power when the command is received.

Example:

SP 100

Set power limit to 100W

****The power setting changes the current limit only, the voltage limit will remain unchanged.****