This Datasheet for the

IC693PWR322

Power Supply, 24/48 VDC, Standard, Battery not included

http://www.cimtecautomation.com/parts/p-14694-ic693pwr322.aspx

Provides the wiring diagrams and installation guidelines for this GE Series 90-30 module.

For further information, please contact Cimtec Technical Support at

1-866-599-6507

sales@cimtecautomation.com

Programmable Controller

IC693PWR332

GFK-1826
March 2000

Power Supply, 12 VDC, 30W

Power Supply Description

This IC693 PLC system DC input power supply is a 30-watt supply designed for a 12 VDC nominal input. It will accept an input range of 9.6 to 15.0 VDC. It mounts in a standard power supply slot in any IC693 PLC baseplate.

This power supply provides three separate outputs:

- +5VDC
- +24VDC Relay Output for powering circuits on IC693 Relay Output modules
- +24VDC Isolated for powering Input modules

The load capacities for each of these outputs is provided in the following table:

Table 1. Output Capacities for IC693PWR332 Power Supply

Catalog Number	Load Capacity	Input	Output Capacities (Voltage/Power *)		
			+5VDC	+24 VDC Isolated	+24 VDC Relay
IC693PWR332	30 watts	12 VDC	30 watts	20 watts	15 watts

* Total of all outputs combined cannot exceed 30 watts.

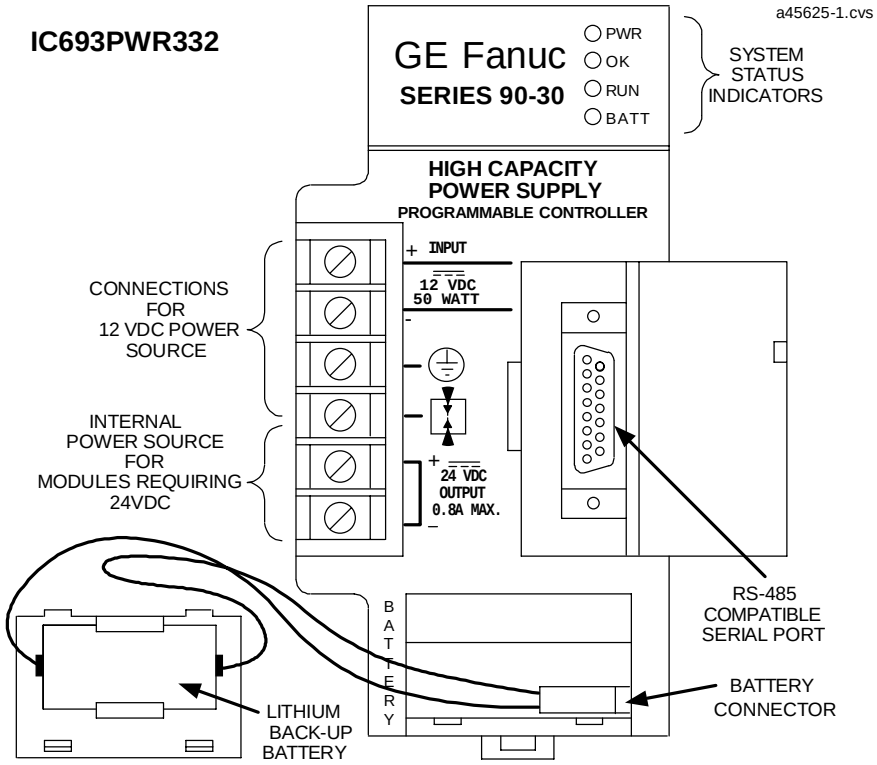

Figure 1. Series 90-30, 12 VDC Input, High Capacity Power Supply – IC693PWR332

Field Wiring Connections and Installation Information

DC Power Source Connections

The + and – wires from the 12 VDC power source connect to the top two protected terminals on the powers supply terminal board. Connect the + wire to the top terminal and the – wire to the second terminal. A connection diagram is printed on the front of the power supply module next to the terminal board.

Isolated 24 VDC Supply

The bottom two terminal board terminals provide connections to the Isolated 24 VDC output. This output can be used to provide power for input circuits for 24 VDC Input Modules (within the 15 watt limitation of this output). This is useful because power switched to input points must be supplied from a source external to the IC693 input modules.

Wire Connection information

- Each terminal can accept solid or stranded wires, but, if using two wires on one terminal, the wires should be the same size and type.
- The suggested torque for the power supply terminal board screws is 12 in-lbs. (1.36 Nm).
- Use one AWG #14 (2.1 mm^2) or two AWG #16 (1.3 mm^2) copper conductors, rated for 75 degrees C (167 degrees F) only, per terminal board terminal.

Input Overvoltage Protection Devices

The input overvoltage protection devices are connected internally to pin 4 of the terminal board. This pin is normally connected to pin 3 (frame ground) via a factory-installed jumper strap. If a Hi-Pot test is to be performed on this supply, the jumper strap *must be removed* during the test so that the overvoltage protection devices are not damaged. After testing, replace the jumper strap to restore overvoltage protection during normal operation.

Calculating Input Power Requirements for DC Input Power Supply

The following graph is a typical 12 VDC power supply efficiency curve. A basic procedure for determining the input power requirement of the 12 VDC power supply follows the figure.

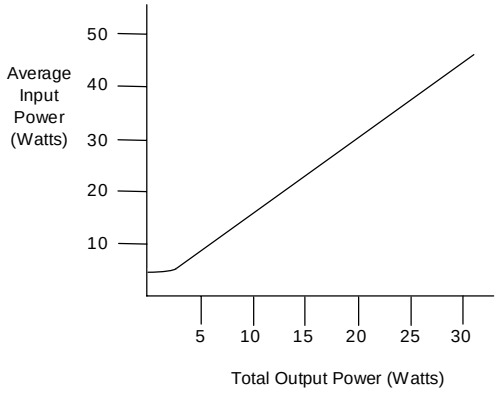

Figure 2. Typical Efficiency Curve

Note

Start-up surge at full load is 4 amps for 250 milliseconds (maximum)

Use These Steps for Calculating Input Power Requirements

- Determine total output load from typical specifications listed for individual modules in the *IC693 PLC Installation and Hardware Manual.*
- Multiply the total output load, determined in the previous step, by 1.5 to determine input power value.
- Divide the input power by the operating source voltage to determine the input current requirement. Since operating source voltage may vary, use the lowest measured or estimated input voltage to determine the maximum input current.
- Allow for start-up surge current requirements.
- Allow margin (10% to 20%) for variation.

Status Indicators on Power Supply

The power supply has four LEDs located at the top, right corner of the power supply faceplate. These LEDs provide the following status indications:

PWR

The top green LED, labeled PWR, provides an indication of the operating state of the power supply. The LED will be ON when the power supply has a correct source of power and is operating properly, and OFF when a power supply fault occurs or if power is not applied.

OK

The second green LED, labeled OK, will be ON if the PLC is operating properly, and OFF if a problem is detected by the PLC.

RUN

The third green LED, labeled RUN, will be ON when the PLC is in the RUN mode, and OFF when the PLC is stopped.

BATT

The bottom red LED, labeled BATT, will be ON if the RAM memory backup battery voltage is too low to maintain memory contents under a loss of power condition. Otherwise it remains OFF. If this LED is ON, the battery should be replaced – **refer to the information in the Warning message on the next page**.

Overcurrent Protection

The +5V logic output is electronically limited to 7 amps. An overload (including short circuits) of the output power is sensed internally and causes the supply to shut down. The supply will continually try to restore power until the overload is removed.

An internal fuse in the input line is provided as a backup. The supply will usually shut down before the fuse opens. The fuse protects against internal supply faults.

Timing Diagram

The timing diagram below shows the relationship of the DC input to the DC outputs and to the Power Supply OK (PSOK) signal generated by the power supply. When power is first applied, the PSOK signal goes false. This line remains false for a minimum of 20 msec after the +5V bus is within specifications, then it becomes true.

If DC input power is interrupted, the +5V bus will remain within specifications and PSOK will remain true a minimum of 10 milliseconds (“ride-through time”). PSOK then goes false. The +5V bus will remain within specifications for an additional 4 milliseconds minimum to allow an orderly shutdown of the system.

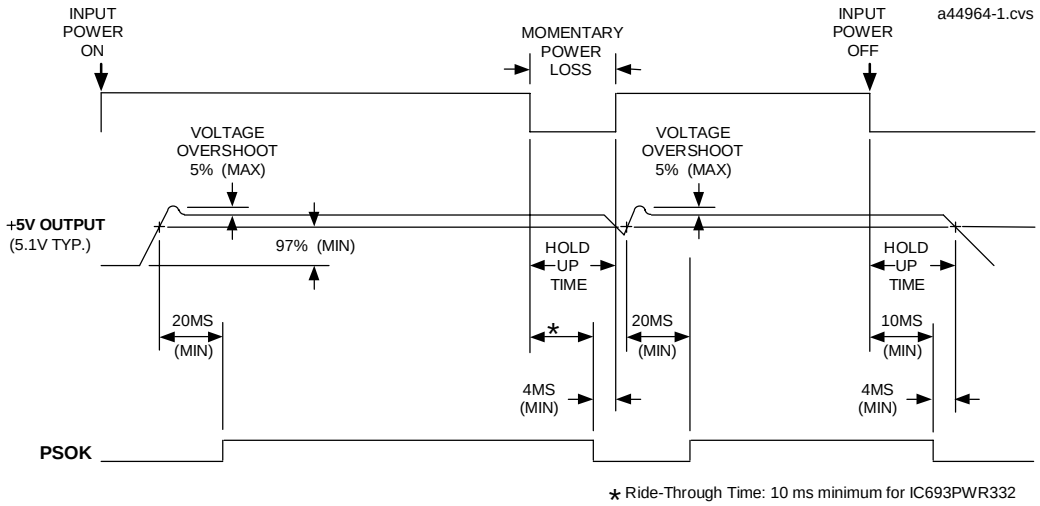

Figure 3. DC Power Supply Timing Diagram

CPU Serial Port Connector on Power Supply

A 15-pin D-type female connector is accessed by opening the hinged door on the right front of the power supply. It provides the connection to a PLC serial port used for communicating with (1) a programmer (Personal Computer) running PLC programming software, (2) the IC693 Hand-Held Programmer, or (3) other serial devices. The PLC serial port is RS-485 compatible and supports the Series Ninety Protocol (SNP) for serial communications.

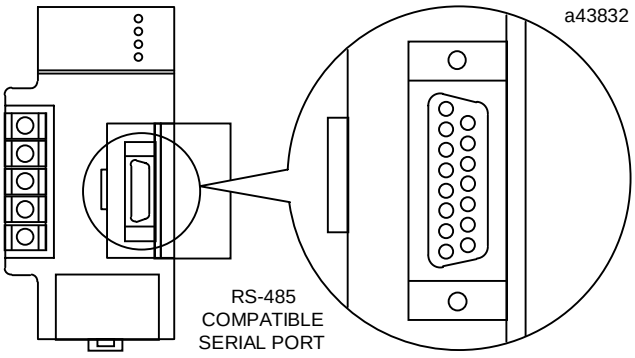

Figure 4. Serial Port Connector

CPU Serial Port Considerations

The serial port connector is only functional in a power supply that is installed in a CPU baseplate. This includes all models of the embedded CPU baseplates (CPU311 – CPU323) as well as all models of the modular CPU baseplates (CPU350 – CPU364).

Note

The serial port is not functional on a power supply that is installed in an Expansion or Remote type baseplate.

Any device connected to the serial port that uses +5VDC power from the power supply, such as the IC693ACC901 Miniconverter, must be included in the calculation for maximum power consumption. For more information, see the *IC693 PLC Installation and Hardware Manual.*

Backup Battery for RAM Memory

The long-life Lithium battery (IC693ACC301) used to maintain the contents of the CMOS RAM memory in the CPU is accessed by removing the cover plate located at the bottom of the power supply faceplate. This battery is mounted on a plastic clip attached to the inside of this cover.

The battery connects to the power supply by a pair of wires that terminate in a connector that plugs into a mating connector on the power supply circuit board (see next figure). To avoid loss of PLC RAM memory contents, refer to the instructions in the following Warning message:

WARNING

If a Low Battery Warning (BATT LED is ON) occurs, replace the battery in the power supply before removing power from the PLC rack to avoid possible loss of PLC RAM memory contents. However, exercise extreme caution because lethal voltages may be present in the enclosure or area. Failure to heed this warning could result in personal injury or death.

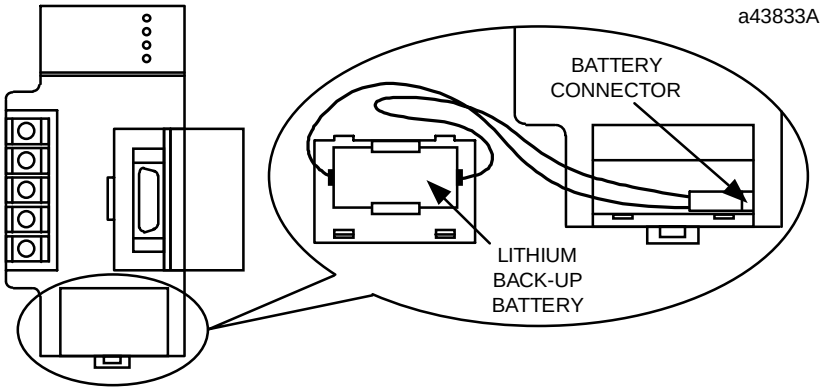

Figure 5. Location of PLC RAM Memory Backup Battery

Table 2. Specifications for IC693PWR332 Power Supply*

Nominal Rated Input Voltage	12 VDC
Input Voltage Range	9.6 VDC to 15.0 VDC
Input Power	50 Watts maximum at full load
Inrush Current	4 Amps peak, 100 milliseconds maximum
Output Power	**+5 VDC:** 30 Watts maximum **+24 VDC Isolated:** 20 Watts maximum **+24 VDC Relay:** 15 Watts maximum **NOTE:** 30 Watts maximum total of all three outputs
Output Voltage	**+5 VDC:** 5.0 VDC to 5.2 VDC (5.1 VDC typical) **+24 VDC Isolated:** 19.2 to 28.8 VDC **+24 VDC Relay:** 19.2 VDC to 28.8 VDC
Protective Limits:	**+5 VDC Output:** 6.4 VDC to 7 VCD **+5 VDC Output**: 7 amps maximum
Ride-Through Time	10 milliseconds minimum

* Refer to data sheet GFK-0867F (or later version) for product standards and general specifications

Table 3. Ordering Information

Description	Catalog Number
Power Supply, 12 VDC Input, 30 Watts	IC693PWR332
Lithium PLC Memory Backup Battery	IC693ACC301