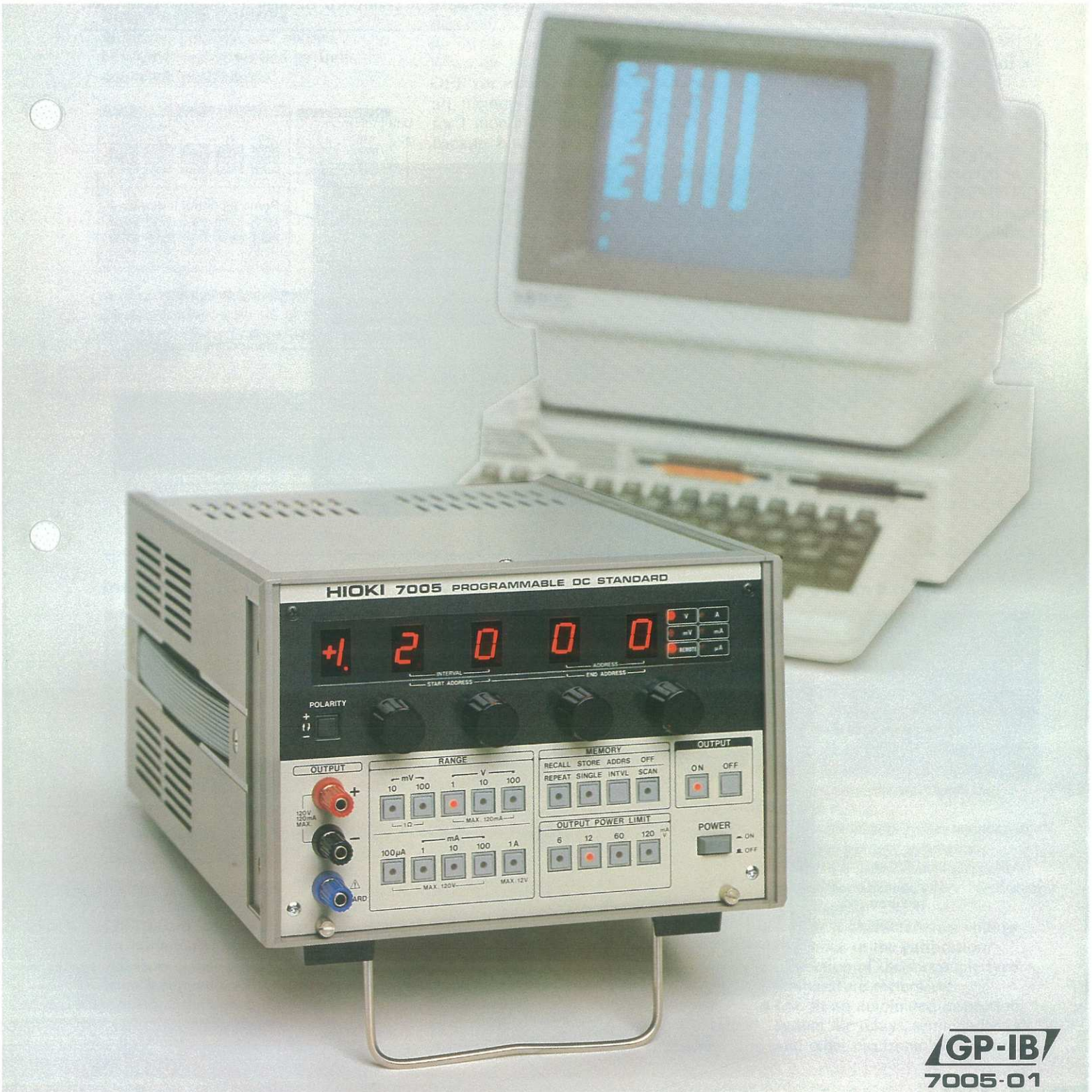
CALIBRATOR

HIOKI

PROGRAMMABLE DC STANDARD

7005

Programmable Memory DC Current & Voltage Calibration Standard



GP-IB

7005-01

- **Specified accuracy ±0.02%**
- **Wide range: 0~120V and 0~1.2A, 5 ranges each function**
- **99-step memory with battery backup**
- **High reliability**
- **Easy-to-use**
- **May be interfaced to GP-IB system (7005-01)**

The 7005 Programmable DC Standard generates DC voltage output ranging from 0 to 120V, and DC current ranging from 0 to 1.2A. Both functions feature accuracy specifications of ±0.02% or ±0.05% of reading (depending on range), making the 7005 suitable for use for both calibration lab, and manufacturing production-line applications.

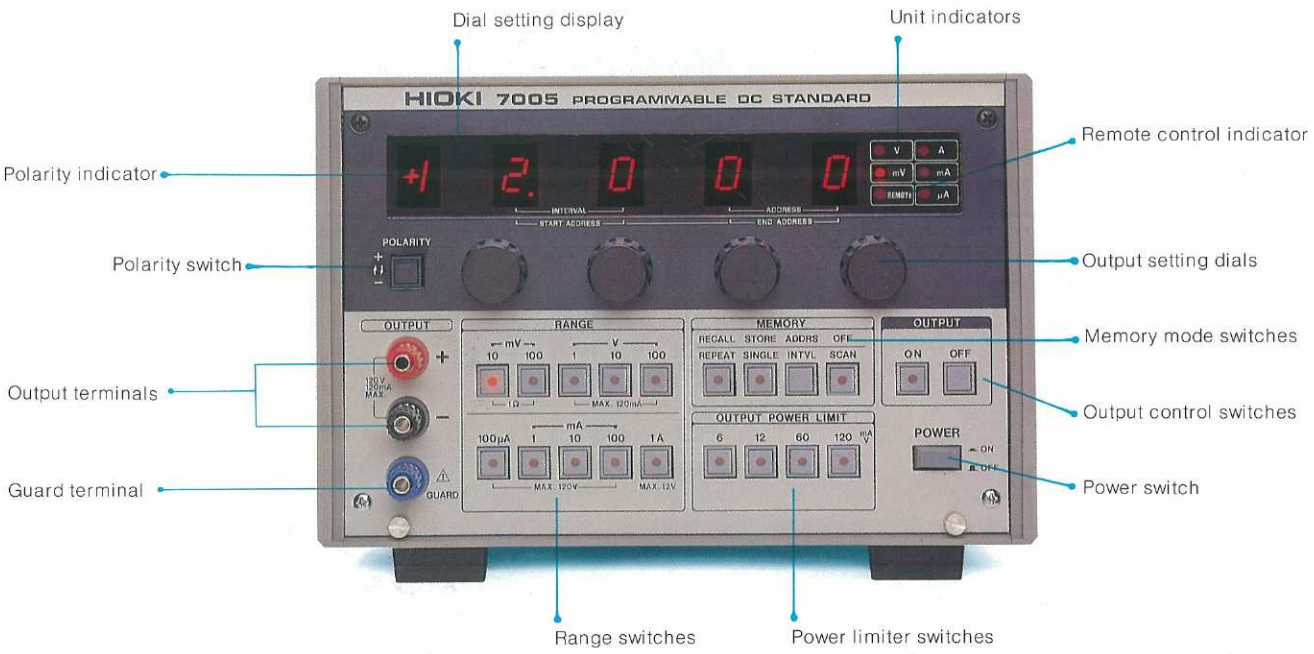
The calibrator is fully programmable, with setups stored in a 99-step memory using rechargeable NiCad batteries for backup.

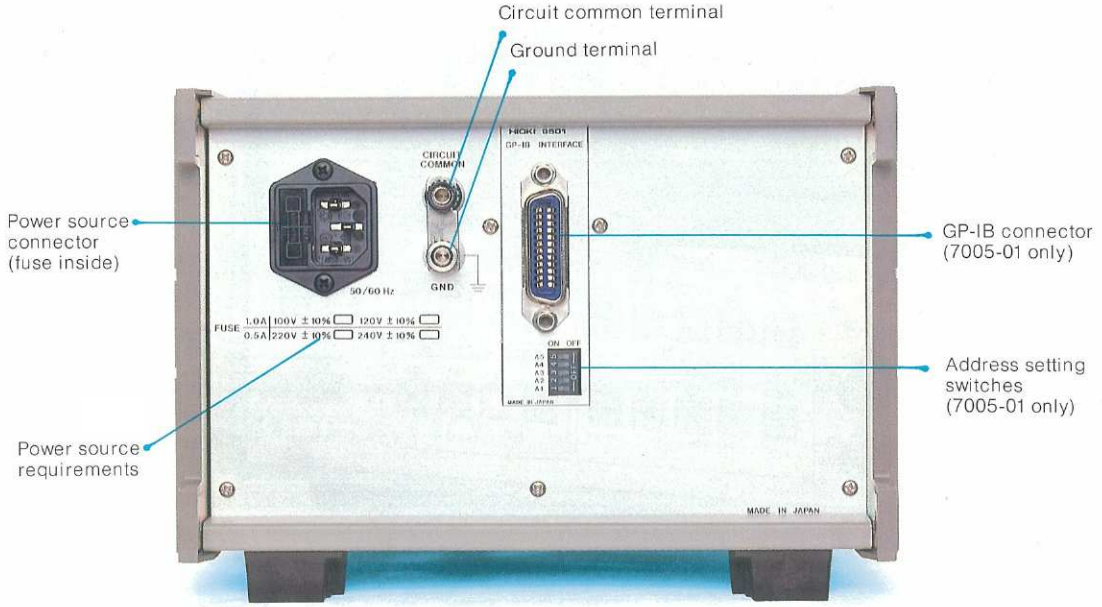
The versatile display is coupled directly to the setting dials for free up and down movement of the digits. The display is also used to report programming and instrument status.

Various safety features include 4-step power limiting, and coded display of self-diagnosed device malfunctions.

Model 7005-01 can be interfaced to a GP-IB automated data acquisition system. Operational functions such as range, polarity, output ON/OFF, power limiting, and output values can each be controlled through an external controller.

■ Instrument Nomenclature





Multi-Function——High Reliability

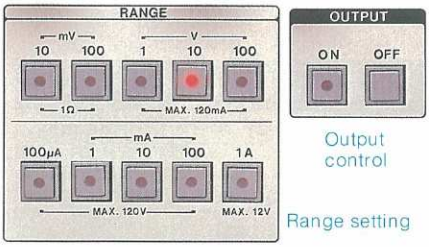
Ideal for Instrument Calibration, Power source and Production Line Inspection Procedures, Maintenance of Industrial Meters.

Wide Output Range--- ±0.02% Accuracy

DC voltage is output in five ranges, 0 to 120V, while DC current is output ranging from 0 to 1.2A (also five ranges). Instrument accuracy is ±0.02% or ±0.05%, depending on range selected.

Easy-To-Use Controls

● Range, polarity, and output ON/OFF are controlled by light, one-touch pushbuttons.



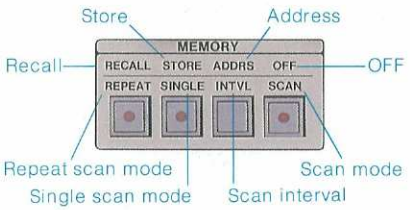
● Dial settings are indicated by a digital display, with up or down movement of each digit independently controlled.

99-Step Memory Function

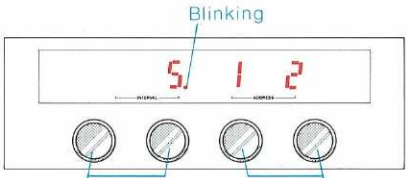
Internal memory has 99 steps, with each step capable of handling a complete set of setup conditions, including range and limiting values, dial settings, polarity information, output ON/OFF, etc.

Memory recall is performed using either the regular recall mode, or the single scan/repeat scan mode where start/end address or scan interval is set on the dials.

When the power switch is turned OFF (or in case of a power failure), all memory data is fully protected for 1 month by rechargeable NiCad backup batteries.



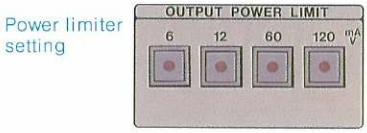
Memory Switches



High Reliability

● Power Limiter Setting

Output limiting is set by one-touch pushbuttons. Output current is limited while operations are in the voltage mode, and voltage is limited while in the current mode. The limiter activates when the setting value is exceeded by approximately 20%, protecting both the load, and the calibrator.

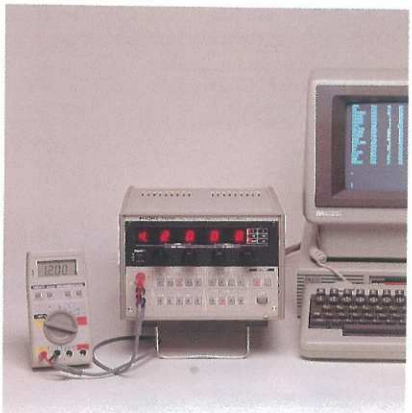


● Output Malfunction Display

When a malfunction is detected in output, all LEDs (except REMOTE) in use on the front panel start flashing, and a coded display (also flashing) informs the operator of the nature of the malfunction.

Malfunction	Display Code
Current limiter activated	1 1 1 1
Voltage limiter activated	2 2 2 2
Power source line fluctuating over ±15%	3 3 3 3
Instrument overheating	4 4 4 4
Combination of the above	5 5 5 5
Memory malfunction, other	9 9 9 9

Internal GP-IB Interface



Model 7005-01 features a built-in GP-IB card for direct interfacing to an automated measurement system. All front panel settings can be made from a remote controller.

7005-01 Programming Codes

a) Function
- F0—— ———
- F1—— DC V
- F2—— DC A

b) Range	(DC V)	(DC A)
R0——	———	———
R1——	10mV	100μA
R2——	100mV	1mA
R3——	1V	10mA
R4——	10V	100mA
R5——	100V	1A

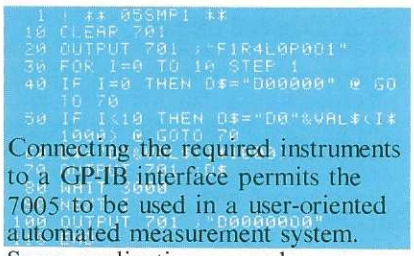
c) Polarity
- P0—— +
- P1—— —

d) Output limiting	(DC V)	(DC A)
L0——	6mA	6V
L1——	12mA	12V
L2——	60mA	60V
L3——	120mA	120V

e) Output
- O0—— OFF
- O1—— ON

f) Setting value
- D00000
- ↓
- D12000

GP-IB System Examples



Connecting the required instruments to a GP-IB interface permits the 7005 to be used in a user-oriented automated measurement system.

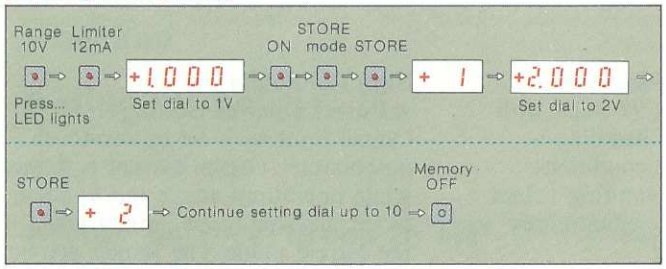
Some application examples are provided below.

- Use with sweep, pulse, sequential, or other pattern generators.
- Use in an automated calibration system for DMMs, other measuring instruments.
- Use as a characteristics voltage generator in the calibration/ inspection of thermocouple type temperature meters, etc.
- Use in an automated inspection system for relays, semiconductors, and other electronic components.

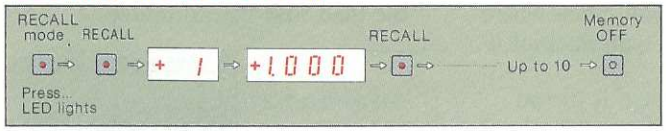
■ Using the Memory Function

Example) Entering a setup of 10V range, limiter setting of 10mA, and output from 1V to 10V in 1V steps. (Setup entered in the above order.)

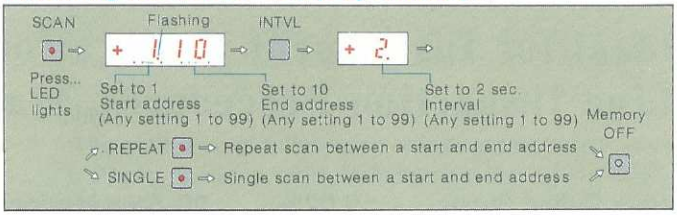
Storing in memory



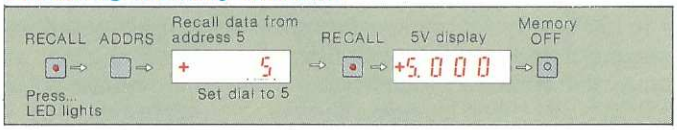
Recalling the above setup



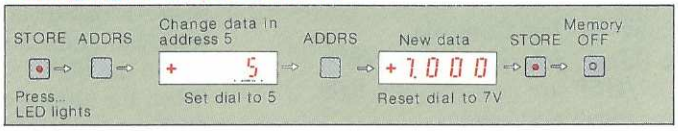
Recalling the above setup by autoscan



Checking memory contents



Changing memory contents



Specifications

	Range	Output Range	Resolution	Accuracy(23°C ±3°C)	Max.Output	Internal Resistance	Temperature Coefficient
Voltage	10mV	0～12.000mV	1μV	±(0.05%rdg.+ 5μV)		Approx.1Ω	50ppm
	100mV	0～120.00mV	10μV	±(0.02%rdg.+ 20μV)		〃	〃
	1V	0～1.2000V	100μV	±(0.02%rdg.+200μV)	Aprrox.120mA	Approx.<0.5mΩ	〃
	10V	0～12.000V	1mV	±(0.02%rdg.+ 2mV)	〃	Approx.<1mΩ	〃
	100V	0～120.00V	10mV	±(0.05%rdg.+ 20mV)	〃	Approx.<10mΩ	100ppm
Current	100μA	0～120.00μA	10nA	±(0.05%rdg.+ 20nA)	Aprrox.120V	Approx.>10^9Ω	100ppm
	1mA	0～1.2000mA	100nA	±(0.02%rdg.+200nA)	〃	〃	50ppm
	10mA	0～12.000mA	1μA	±(0.02%rdg.+ 2μA)	〃	Approx.>10^8Ω	〃
	100mA	0～120.00mA	10μA	±(0.02%rdg.+ 20μA)	〃	Approx.>2×10^7Ω	〃
	1A	0～1.2000A	100μA	±(0.05%rdg.+200μA)	Aprrox.12V	Approx.>60kΩ	100ppm

※Accuracy specified following 30 minute power-on warm-up

Output Display: LED, 12000 max. reading
Output Setting: Four dials used to set output value in display
Unit Indicators: V, mV, A, mA, μA
Memory: 99-step internal, battery backup for 1 month (NiCads)
GP-IB: (7005-01 only)
IEEE488-1978 Standard
Calibration Cycle: 3 months
Warm-up Time: Over 30 minutes
Output Noise and Ripple:
Voltage Range, within ±0.01% of range ±10mV RMS
Current Range, 100μA～100mA range, within 2μA RMS (with load resistance of 1kΩ)
1A range, within 2mA RMS (with load resistance of 10Ω)
Response Time: Rise (within 0.1% of final value), <6ms
Fall, <20ms
Line Regulation (at AC 100V ±10%):
Voltage Range, within ±0.01% of range
Current Range, within ±0.02% of range
Load Regulation:
Voltage Range, within ±0.005% of range (except 10,100mV)
Current Range, within ±0.02% of range
Limiter:
Current Limiting, 6, 12, 60, 120mA (at 1, 10, 100V range)
Voltage Limiting, 6, 12, 60, 120V (at 100μ, 1m, 10m, 100mA range)
6, 12V (at 1A range)
Operating Temperature: 0～+40°C
Operating Humidity: <75% RH
Power Source: AC 100V, 120V, 220V, 240V ±10%; 50/60Hz(specify at order)
Power Consumption: Max. 50VA (Approx. 53VA for 7005-01)
Insulation Restance: Power source-to-case, Guard-to-case; over 100MΩ at 500V DC
Dielectric Strength: Power source-to-case, 1500V AC for 1min.
Guard-to-case. 1000V AC for 1min
Dimensions: 149H×228W×363D mm
Weight: Approx. 7.2kg
(Approx. 7.5kg for 7005-01)
Accessories: Power cord, 1 ea.
Fuse(built-in), 1 ea.
1.0A, for AC100V, 120V
0.5A, for AC220V, 240V

Optional Accessories

9151 GP-IB Connector Cable
9151-01(1m), 9151-02(2m), 9151-04(4m)

Rack mounting kits
9402 full size rack mounting case
9403 Rack mounting L bars
9404 half size blank panel

Standard Packing	Sets	N.W.	G.W.	M^3
(double carton box)	2	17kg	19kg	0.10m^3

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