

4700

Instrument FSC

Description

The 4700 FSC controls the following functions of the Datron 4700 Multifunction Calibrator:

- DC Voltage
- AC Voltage
- DC Current with Option 20
- AC Current with Option 20
- Resistance with Option 20
- DC Current from the 4600 Transconductance Amplifier
- AC Current from the 4600 Transconductance Amplifier

The M4700 FSC is used for controlling the following:

- Range Locking
- Safety Delay Override
- Driver Settling Delay

Note

The 4700 FSC can also be used to control a 4800, 4800A 4707, 4708, or 4808. The accuracy file corresponding to the instrument that is actually configured is used at run time.

Functional Capability

Function	Amplitude	Frequency	MOD3
DC Voltage	-199.9999 V to 199.9999 V -1100 V to 1100 V ¹		
AC Voltage	90 μ V to 19.99999 V 90 μ V to 199.9999 V 90 μ V to 1100 V ¹	10 Hz to 1 MHz 10 Hz to 100 kHz 10 Hz to 33 kHz	
DC Current	-1.999999 A to 1.999999 A ² -11 A to 11 A ^{3,2}		BC
AC Current	9 μ A to 1.999999 A ² 100 mA to 11 A ^{3,2}	10 Hz to 5 kHz 10 Hz to 20 kHz	BC
Resistance or Conductance ²	10 Ω to 100 M Ω , 100 mS to 10 nS (in decade steps)		
1. Requires Option 10, 1000 V Ranges (DCV & ACV) 2. Requires Option 20, DC Current, AC Current, and Resistance Functions 3. Requires Option 60, 4600 Transconductance Amplifier			

Parameters

RANGE

This field specifies the UUT range as described in the section "General Rules for Instrument Evaluation FSCs".

NOMINAL

This field specifies one of the following.

- Voltage (DC or RMS) entered as:
- $[numeric][prefix]V$
- Current entered as $[numeric][prefix]A$.
- Resistance entered as $[numeric][prefix]Z$.
- Conductance entered as $[numeric][prefix]Y$.
- Frequency entered as $[numeric][prefix]H$.
- Reset entered as *.

Rules:

- When the NOMINAL field specifies frequency or period, the MOD1 field must specify voltage or or current.

TOLERANCE

This field specifies the UUT tolerance as described in the section "General Rules for Instrument Evaluation FSCs".

MOD1

This field specifies one of the following for AC signals.

- Voltage (RMS) entered as: *[numeric][prefix]*V
- Current entered as *[numeric][prefix]*A.
- Frequency entered as *[numeric][prefix]*H.
- *blank* DC or not applicable

Rules:

- The MOD1 field may specify frequency or period only when the NOMINAL field specifies voltage or current.
- The MOD1 field may specify voltage or current only when the NOMINAL field specifies frequency or period.
- The MOD1 field must be blank when the NOMINAL field specifies resistance or conductance.

MOD2

This field allows you to specify negative zero for DC Voltage or DC Current.

- *-Z* Negative Zero
- *blank* All other amplitudes

Rules:

- The MOD2 field may specify Z only for DC Voltage or DC Current when the Nominal value is zero.

MOD3

This field specifies one of the following:

- BC use 4600 for current boost
- *blank* No boost or not applicable

Rules:

If the current can be created only by the Boost Amplifier, BC is inserted automatically.

MOD4

This field specifies the type of test being performed as described in the section "General Rules for Instrument Evaluation FSCs".

CON

This field specifies the UUT connection.

- 2W 2-wire
- 4W 4-wire

Rules:

- 2W is automatically entered in the CON field when no CON field code is entered.
- The CON field may specify 4W only for resistance, conductance, and DC Voltage and AC Voltage ≥ 200 mV.

Use of Standard Memory Locations and Results Reporting

System memory locations MEM and MEM1 are used. For more information, refer to the "Syntax Rules for Instrument Evaluation FSCs" in Chapter 1 of this manual.

Examples

STEP	FSC	RANGE	NOMINAL	TOLERANCE	MOD1	MOD2	3	4	CON
1.001	4700		*						S
1.002	4700	1000	1100V	1U 1/					2W
2.001	4700	10	0V	1U					2W
3.001	4700	200	220mV	10%	50H				2W
4.001	4700	1000	1100V	1U	1kH				4W
5.001	4700	100	-22uA	10%					2W
6.001	4700	2	1.999A	1% 1/	1kH				2W
7.001	4700	A	mV	0.1U	50H				2W
8.001	4700	A	A	5%	1kH				2W
9.001	4700		1.999A		1kH			S	2W
9.002	4700	10	20mV		500H			N	2W
9.003	4700	10	20mV	0.5%	1kH			C	2W
10.001	4700	A	10Z	5%					4W