1.2 IC/4 Specifications

Measurement	IC/4 PLUS	IC/4
Crystal Frequency	6.0 MHz(new crystal) to 4.5 MHz	6.0 MHz (new crystal) to 4.75 MHz
Internal Precision	± 0.004657 Hz over 100ms sample for fundamental and anharmonic.	±0.0282 Hz over 200ms sample for fundamental
Thickness & Rate Resolution	0.00577 Å (new crystal); 0.01016 Å (crystal @ 4.5 MHz) over 100ms sample for material density = 1.0, Z-ratio = 1.0.	0.0348 (new crystal) 0.0612Å (crystal @ 4.75 MHz) over 200ms sample
Thickness Accuracy	0.5% typical, (dependent on process conditions and materials; especially sensor location, material stress and density)	
Measurement Frequency	10 Hz.	5 Hz
Set Up Parameters		
Processes	4	
Layers	250	100
Materials	24	12
Density	.500 to 99.99 gm/cc	
Z-ratio	0.100 to 15.000 or Automatic	0.100 to 15.000
Sources	2 standard, 2 (optional hardware)	
PID Control Mode	Fast or Slow Source	
Process Gain	.01 to 100 Å/sec/%Power	
Primary Time Constant	1.0 to 200.0 seconds (Slow Source)	
System Dead Time	1.0 to 50.0 seconds (Slow Source)	
Tooling Factor	10.0 to 399.9%	
Secondary Tooling Factor	10.0 to 399.9%	
Sensors	2 standard, 2 (optional hardware)	
Maximum Power	0 to 99%	
Power Ramps	2 per material	
Soak Power	0 to 99%	
Rise Time	00:00 to 99:59 min:sec	
Soak Time	00:00 to 99:59 min:sec	
Shutter Delay	Until rate control established within ± 5% or 60 seconds.	
Feed Ramps	1 per material	
Feed Power	0 to 99%	
Feed Ramp Time	00:00 to 99:59 min:sec	
Feed Time	00:00 to 99:59 min:sec	

Set Up Parameters	IC/4 PLUS	IC/4
Idle Ramps	1 per material	
Idle Power	0 to 99%	
Idle Ramp Time	00:00 to 99:59 min:sec	
Rate	0.0 to 999.9 Å/sec	
Final Thickness	0.0 to 999.9 kÅ	
Thickness Limit	0.0 to 999.9 kÅ	
Time Limit	00:00 to 99:59 min:sec	
Co-deposition	Optional Hardware Required (available on IC/4 PLUS only)	
Ratio Control	0 to 999.9%	
Cross-Sensitivity	0 to 99.9%	
RateWatcher(TM)	Sample and Hold Feature	
RateWatch Time	00:00 to 99:59 min:sec	
RateWatch Accuracy	1 to 99%	
Rate Ramps	2 per layer	
New Rate	0 to 999 Å/sec	
Start Ramp	0 to 999.9 kÅ	
Ramp Time	00:00 to 99:59 min:sec	
Crucible Selection	1 to 64, each source	
Display		
Type	CRT, Amber, 5" H x 9" W	
Thickness Display Range	0.000 to 999.9 kÅ	
Thickness Display Resolution	1 Å	
Rate Display Range	0.0 to 99.9 Å/sec; 100 to 999 Å/sec	
Rate Display Resolution	.1 Å for 0 to 99.9 Å/sec 1 Å for 100 to 999 Å/sec	
Power Display Range	0.0 to 99.9%	
Graphic Display	Rate Deviation at ± 10 or ± 20 Å/sec or Power at 0 to 100%	
Display Data Update Rate	1 Hz	
Source Controls / Recorder Output		
Configuration	2 source channels, 1 recorder; 2 additional channels, 1 additional recorder (optional)	
Analog Ranges		
Sources	0 to 10V, 0 to -10V, 0 to 5V, 0 to -5V, 0 to 2.5V, 0 to -2.5V	
Recorders	0 to 10V	
Resolution	15 bits over full range (10V)	
Update Rate	10 Hz, maximum, (dependent on source characteristics).	5 Hz
Recorder Outputs	Rate or Thickness or Rate Deviation	
Rate Ranges	0 to 100 Å/sec, 0 to 1000 Å/sec	
Thickness Ranges	0 to 100 kÅ, 0 to 1000 kÅ	
Rate Deviation Range	Desired rate ± 50 Å/sec	

Relays / Inputs	IC/4 PLUS	IC/4
Relays	Sixteen 240V relays; 120 VA inductive; 2A maximum.	8 standard, 8 optional
Inputs	Sixteen lines; 10 to 24VAC(30VDC)	8 standard, 8 optional
Update Rate	10 Hz.	5 Hz
Remote Communications		
RS232 Serial Port	Standard; Inficon protocol with or without checksum	
RS422 Serial Port	Optional; replaces RS232	
IEEE488 Parallel Port	Optional; replaces RS232	
Accessories		
Manual Power Control	Front panel connect wired handheld remote	
IC Memory Card	Optional external storage	
Connector Kit	Connectors for Inputs, Relays and Source Control.	
Power	100-120 VAC or 200-240 VAC, 50/60 Hz	
Operating Temperature	0 to 50°C (32-122°F)	
Warm Up Period	None required; 5 minutes for maximum stability.	
Size		
(not including mounts or user connectors)	5.25" H x 17.625" W x 18.5" D / 13.3cm H x 44.77cm W x 47cm D.	
(including mounts, but no user connectors)	5.25" H x 18.85" W x 18.5" D / 13.3cm H x 47.88cm W x 47cm D.	
Weight (with all options)	10.5 kg / 23 lb	

1.4 Parts and Options Overview

Base Configurations	IC/4 PLUS	IC/4
IC/4 Control Unit	755-500-G1 (120V) or 755-500-G2 (230V)	756-500-G1 (120V) or 756-500-G2 (230V)
Technical Manual	074-176	074-176
Hand Controller	755-262	755-262
Input/Relay Interface Connectors	755-122 or 756-122-G2	756-122-G1
Source Control Interface Connectors	755-144	755-144
Power Cord	068-002 or 068-151 (Eur)	068-002 or 068-151 (Eur)
Pre-Installed Options or Spares		
Additional Sensor Module	755-112-G1	
2 Channel Sensor Module (IC/4 only)		756-112-G1
4 Channel Sensor Module (IC/4 only)		756-112-G2
Additional Source Control Module	755-142-G1	755-142-G1
RS422 Serial Communications	755-232-G1	755-232-G1
IEEE488 Parallel Communications	755-230-G1	755-230-G1
16 Input/Relay Interface Board (IC/4 only)	Standard	756-122-G2
Optional Accessories		
IC Memory Card	755-270-G1	755-270-G1
IC/4 Oscillator	755-252-G1	756-252-G1
Controller to Oscillator Cable, 15'	755-258-G15	755-258-G15
Oscillator to vacuum feedthrough cable, 6"	755-257-G6	755-257-G6
Extension cable, 25'	755-256-G25	755-256-G25
Pneumatic Shutter Actuator Control Valve	007-199	007-199