Square Wave™ 745NC
Non-Contact Dispense Valve

The Square Wave 745NC high speed non-contact valve applies low-viscosity water soluble and solvent-based liquid fluxes in accurate, repeatable amounts on cell bus bars and solder-coated ribbon used in cell string attachment.

Features
• High speed capability – innovative solenoid technology delivers cycle rates up to 500Hz
• Actuation speeds as low as 2 ms
• Compact design
• Light weight and easy end-of-arm installation
• Low-maintenance design
• Small wetted path minimizes fluid waste
• Volume output as small as 0.15µL
• Adjustable fluid flow
• Positive shutoff

Benefits
• Non-contact dispensing eliminates need for Z-axis motion
• Less frequent replacement, less downtime, lower maintenance costs
• High production throughput and yield
• Easy to service
• Integrated solenoid minimizes process variation
• High cycle speed creates dot-to-dot “stitching” that flows together to form a continuous line
Square Wave Valve System

The 745NC Square Wave non-contact valve includes the valve, 24 watt solenoid and .004” nozzle plate orifice. Optional .005”, .006” and .007” nozzle plates sold separately. 1-liter tank and air input regulator assembly also sold separately.

Expert technical assistance and high quality standards ensure productive, trouble-free performance. EFD offers a full line of reliable dispensing systems to meet your specific application requirements.

*Important Note:* The ValveMate™ 8000 controller can only be used to cycle Square Wave valves with 4 watt solenoids.

Specifications

**Dimensions:**
- (24 watt solenoid): 70.11 mm x 21.84 mm x 33.27 mm
  (2.76” x .86” x 1.31”)
- (4 watt solenoid): 80.48 mm x 21.84 mm x 33.27 mm
  (3.17” x .86” x 1.31”)

**Minimum cycle time:**
- 24 watt solenoid: 2 ms (Open and close once)
- 4 watt solenoid: 6 ms (Open and close once)

**Maximum cycle time:**
- 24 watt solenoid: 15 ms (Open and close once)
- 4 watt solenoid: continuous

**Minimum dispensing frequency:**
- 24 watt solenoid: 50 Hz
- 4 watt solenoid: continuous

**Maximum dispensing frequency:**
- 24 watt solenoid: 500 Hz
- 4 watt solenoid: 150 Hz

**Maximum fluid pressure:**
- 100 psi (6.8 bar)

**Actuating operating pressure:**
- 70-90 psi (4.8-6.2 bar)

**Electrical inputs:**
- 24 VDC - 24 watts
- 24 VDC - 4 watts

**Volume output:**
- 101.6 μm (.004”) nozzle - .030 ml - 30 μL @ 5 psi (.345 bar)
- 127 μm (.005”) nozzle - .040 ml - 40 μL @ 5 psi (.345 bar)

**Material with fluid contact:**
- Fluid body: Type 303 stainless steel
- Shaft: 17-4 PH stainless steel
- Ball cage: 303 stainless steel
- Fluid seal: PTFE carbon filled, type with 304 SS spring energized
- Valve ball: Tungsten carbide
- Valve seat: Cobalt stainless steel
- Nozzle: Type 303 stainless steel with ruby insert

**Fluid inlet thread:**
- M5 x 0.8

**Mounting:**
- M4 x 0.7

**Weight:**
- 114 grams (4.02 oz)