



## Impedance Matching Networks

# Synertia® RFM

**Synertia®, Comet's integrated RF power delivery platform, enables the unprecedented power delivery control required by plasma process tools for the next generation of microchips.**

### Features

- Advanced customer-accessible metrology data
- Real-time data streaming: Full access to all available data from Synertia® RFG and RFM devices that allows reaction in real-time to change, accelerate process development and post-analyze incidents
- On-board monitoring and diagnostics to assist with preventive maintenance and enable actionable insights for more complex plasma applications
- Integration of Comet Vacuum Capacitors: Standard and customized capacitor designs, equipped with advanced technologies such as Ultra Life\* drive system or XtraVolt\*\* features for low frequency applications

\* Ultra Life vacuum capacitor drive systems with unbeaten durability and performance during sophisticated application and production processes.

\*\* XtraVolt is Comet's advanced capacitor portfolio for low frequency applications.

### Benefits

- Continuous process improvement via real time signal processing and data collection
- Superior process control and repeatability with fully digital and customizable controls
- Consistent, stable RF plasma with enhanced tuning algorithm
- Reduced total cost of ownership with improved MTBF and enhanced reliability
- Robust design with RF expertise, state-of-the-art modeling/virtual prototyping and extensive library of RF tuning circuits



## Technical data Synertia® RFM

Electrical specifications	
<b>Match types</b>	Single frequency Dual frequency
<b>Available matching topologies</b>	L, T, and Pi match
<b>Frequency range</b>	400 kHz – 60 MHz
<b>Output V/I</b>	max. current (~150 A <sub>PEAK</sub> ) max. voltage (10 kV <sub>PEAK</sub> )
<b>Input power</b>	up to 15 kW
<b>Communication interface</b>	EtherCAT®, RS232, analog, Ethernet
<b>Pulsing</b>	Single, dual and multi-level
Pulsing state time	5 µsec to 1 second
Pulsing capability	0.5 Hz to 100 kHz
External pulse sync	TTL
<b>Advanced features</b>	± 10% frequency range
<b>Optional sensors</b>	V <sub>pp</sub> , V <sub>dc</sub> and others
<b>Input voltage</b>	24 VDC
<b>Tune time</b>	< 1 sec depending on pre-set points
<b>Tuning range</b>	Depends on unit frequency and on the tuning coil installed
Mechanical specifications	
<b>Dimensions</b>	Designed per customer's requirements
<b>Weight</b>	
<b>Cooling</b>	Air
<b>RF input connector</b>	Designed per customer's requirements
<b>RF output connector</b>	Various including 7-16, HN, LC, N
<b>DC power input connector</b>	Designed per customer's requirements
<b>Primary output connector</b>	
<b>Interlock requirement</b>	Standard feature
Certification	
Compliance	Semi S2

### Switzerland (Head Office)

Comet AG  
Flamatt

### China

Comet Mechanical Equipment  
(Shanghai) Co. Ltd., Shanghai

### Germany

Comet Yxlon GmbH  
Aachen

### Japan

Comet Technologies Japan KK  
Yokohama

### Korea

Comet Technologies  
Korea Co., Ltd., Suwon-si

### Malaysia

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Malaysia Sdn Bhd, Penang

### Taiwan

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## Comet Matching Networks

### Powerful Command and Control

- Unique modular design that provides mix-match of features and seamless integration of RFM/RFG
- Wide-band frequency range sensors with high fidelity and sensitivity over a wide frequency range that continues to track and tune even when the RF fundamental frequency is varied up to ± 10 %
- Advanced single, dual, and multi-level pulsing
- Custom tuning parameters: Gamma, VSWR, Z target tune point, etc.
- Advanced motion control within a wide range of driving capability to accommodate various Vacuum Capacitor types

### RF design expertise and customization



Industry-leading expertise in RF circuit modeling, design, development and manufacturing

### Vertically integrated



- Comet is the only supplier that designs and builds every critical component, from capacitor to matching networks and RF generators
- Custom impedance matching add versatility to design and get the best value