

# MASTER SOURCES

## Combine High Performances with Low Cost



- High loading capacity: from 26cc to 5800cc
- Excellent flux stability
- Outstanding uniformity
- High reliability, durability and low maintenance
- Cost effective solution: made to last
- Re-usable crucibles

The Master Source benefits from MS technology which consists of a **specific crucible design** combining high performances with **low operating and maintenance costs**. The **ultra-pure beam of stable flux** is a result of the MS crucible concept.

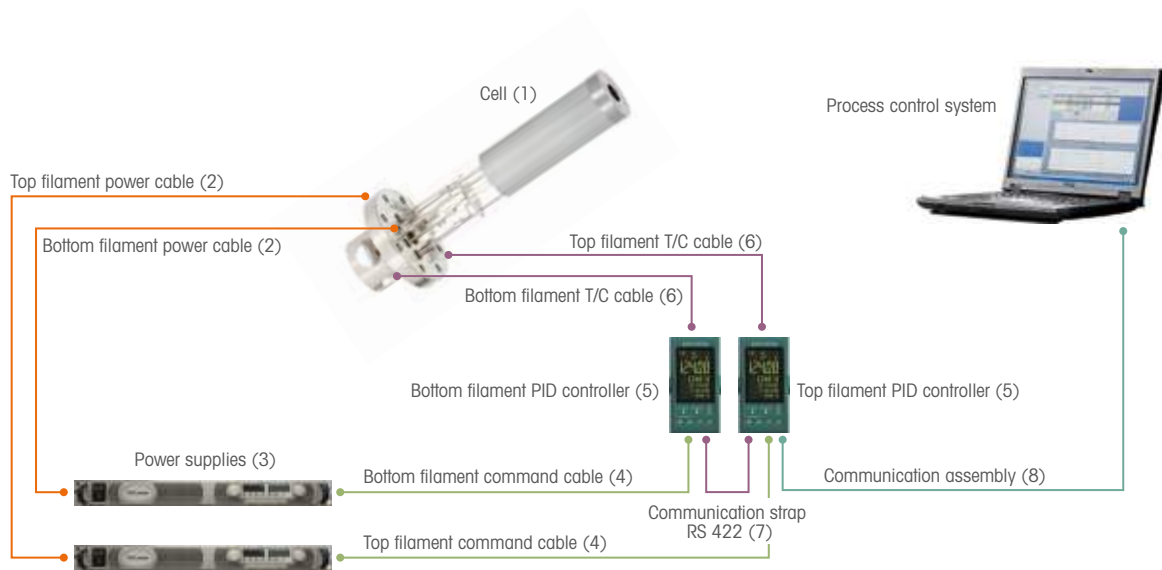
The MS crucible is designed in **two parts** : the **reservoir** containing the material, and the **effusion nozzle** screwed in the reservoir. The **removable nozzle** of the MS crucible is shaped in such a way that it gives better uniformity and an optimal utilization of the material on the wafer. The **cylindrical reservoir** shape maximizes the capacity of the crucible and allows the loading of **a single shaped piece of material**. The use of a shaped charge helps to reduce surface contaminations and results in high layer performance. The nozzle shape defines the spatial distribution of the flux. The **innova-**

**tive design** permits a narrow or wide flux beam, governing material consumption and defining uniformity criteria for the geometry of each system. The **surface of the effusion nozzle** for the MS crucible is lower than the evaporation surface in the crucible leading to a KNUDSEN effect. Thanks to the KNUDSEN effect, the depletion observed in an open crucible is strongly decreased and even eliminated.

Crucibles are made of Pyrolytic Graphite that is not wetted by Ga or In which guarantees **a very low defect density**. The nominal capacity of the Master Source varies **from 25 cc to 5800 cc**, for research applications to production. The Master Source is **the optimal cell technology for the evaporation of materials** with low and medium vapor pressure. It is used for elements III, but also allows the evaporation of more exotic materials like Ag, LiF, CdTe, etc.



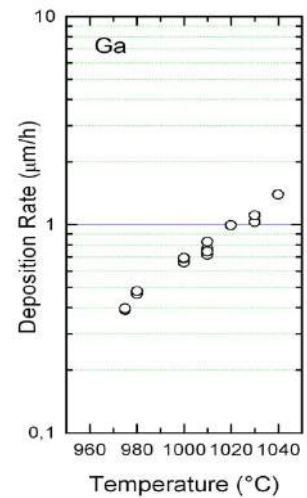
## OPERATING THE SOURCE



## RESULTS

### GaAs deposition rate versus crucible bottom temperature.

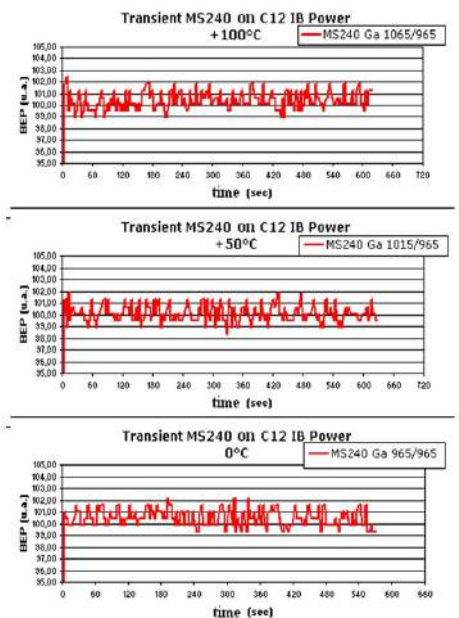
The results have been obtained on a C12 using an MS240.



### Measurement of the flux transient of the MS source during the opening of the shutter.

The three graphs are obtained for three different tip-bottom temperature gradients. No flux overshoot is observed.

The results were obtained on a C12 using an MS240.





# SOURCE SELECTION GUIDE

SYSTEMS	SOURCE MODEL	S40 MS140	S40 MS240	S63 MS440	S80 MS540	S100 MS1640	S150 MS4000	S250 MS22000
<b>RIBER</b>	MBE 32							
	Compact 12							
	Compact 21							
	EPINEAT							
	MBE 412 (4"/6")							
	MBE 49							
	MBE 6000							
	MBE 7000							
<b>VEECO / VARIAN</b>	GEN II							
	MOD GEN II							
	GEN 930							
	GEN 10							
	GEN 20							
	GEN 200							
	GEN 2000							
<b>VG</b>	V80							
	V90							
	V100							
	V150							
<b>OTHER SYSTEMS</b>		Riber sources are also available for use on systems from Eiko, Anelva, Ulvac, SVTA and DCA, as well as customs chambers. Contact Riber for details.						

RECOMMENDED

CONTACT RIBER FOR MORE DETAILS

INAPPROPRIATE

## TECHNOLOGICAL LEADERSHIP

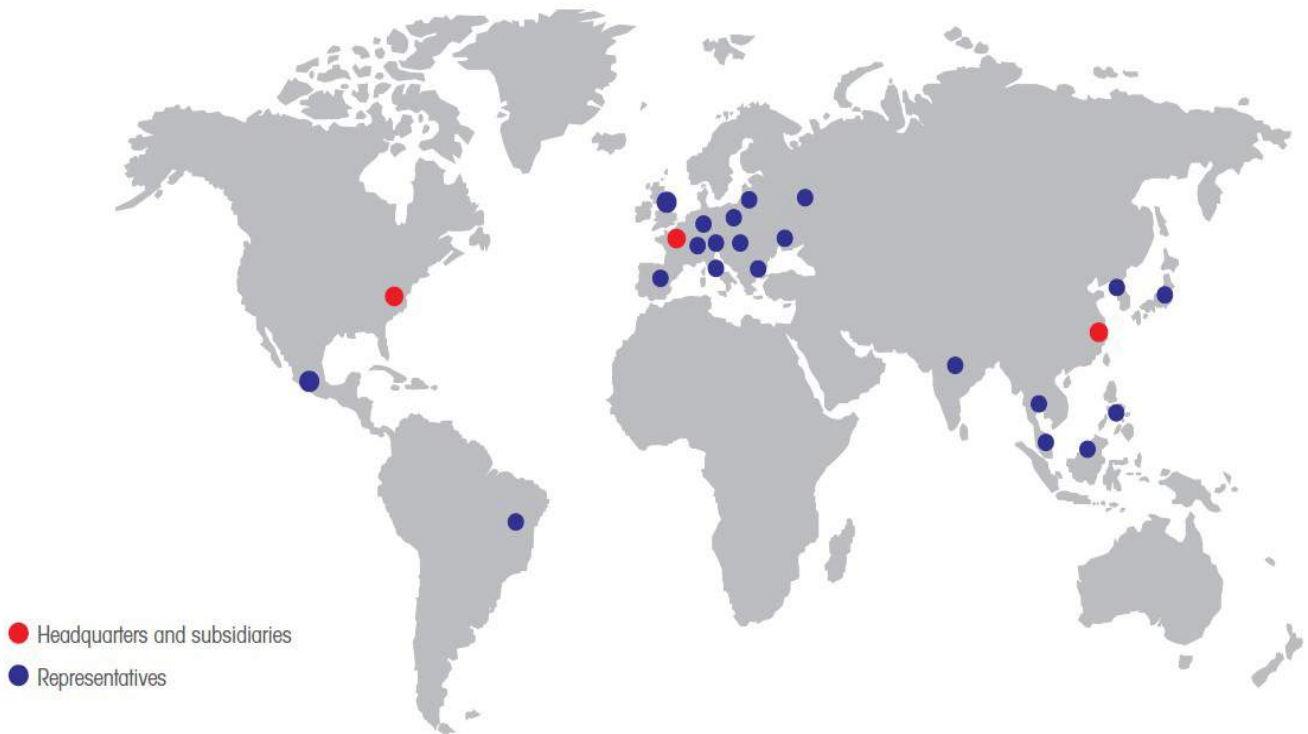
Riber is the world leading supplier of MBE processing equipment and related services.

In total, 750 of our MBE systems have been installed with at least one system in each of the 35 countries with which MBE is involved. This represents 75% of the global market.

Capitalizing on its 30 years of experience, the company's core philosophy is to design systems in close association with customers. Riber has invented and designed major features which are now found in all MBE systems.

Riber plays a key role in the development of MBE technology, providing customers with solutions from equipment to epitaxial growth.

## WORLDWIDE PRESENCE



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