



## Comparing the ORG-815 and ORG-115

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Optical Scientific, Inc. (OSi) has provided several models of Optical Rain Gauge (ORG) in the past twenty years. The ORG-115 was originally designed for compact size and minimum power consumption specifically for data buoy applications. Later, an upgraded version ORG-815 was designed, tested and manufactured. The major differences between the ORG-815 and ORG-115 are as follows.

1. The ORG-815 transmitter projects a 50-mm collimated optical beam to the receiver; however, the ORG-115 projects a cone-shape beam to the receiver. The result is that ORG-815 provides a more uniform measurement between the transmitter and the receiver than that of the ORG-115.
2. The sampling area of ORG-815 is more than three times that of the ORG-115. As a result, the ORG-815 detects more raindrops to give a more accurate statistical representation.
3. Although the ORG-115 is designed for use in environments where the year-round temperature is above freezing, occasional dew on the lens might block the light enough to reduce the carrier signal to less than the minimum threshold, which could interrupt the measurement. By adding lens heaters on the transmitter and receiver lenses, ORG-815 will not have dew or frost forming on the lenses thus ensuring continuous measurement. However, the user is able to easily disable the heaters if power consumption is a more significant concern.
4. The ORG-815 changed from the top mount to a side-mounting orientation. It can be easily mounted on either a vertical or horizontal bar, pipe or similar structure. This modification enables the user to have more flexibility on the selection of a mounting site.

Both the ORG-815 and ORG-115 use the same OSI patented optical scintillation technology to measure rain rates throughout a wide dynamic range from very light rain to extremely heavy rain rates. A comparison of the field test results is shown in the following table for several rain events at Gaithersburg, Maryland USA. The results for both rain gauges were excellent compared to that of the reference. The ORG-815 does reflect a little better accuracy than that of the ORG-115.

Date	Reference (mm)	ORG815 (s/n 800190)		ORG115 (s/n 9906005)	
		Accumulation (mm)	Accuracy (%)	Accumulation (mm)	Accuracy (%)
09/26/03	10.95	11.09	1.26%	10.80	-1.41%
10/27/03	54.77	54.37	-0.72%	56.70	3.53%
10/28/03	16.98	16.32	-3.90%	17.00	0.11%
11/06/03	31.77	30.88	-2.81%	33.28	4.75%
<b>Total</b>	<b>114.47</b>	<b>112.66</b>	<b>-1.58%</b>	<b>117.78</b>	<b>2.89%</b>