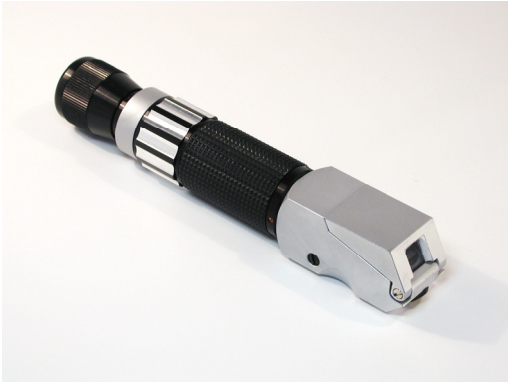


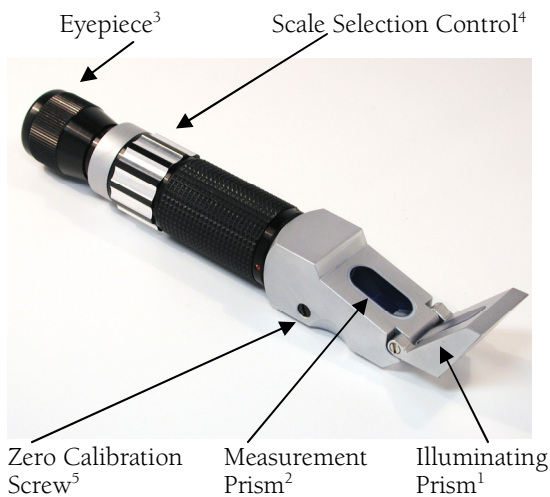
# E-Line 80 Refractometer Instruction Manual



E-Line 80 Refractometer Illuminating Prism closed



E-Line 80 Refractometer Illuminating Prism open



The E-Line 80 is a dual scale Brix refractometer ideal for use in the food industry and other applications requiring concentration measurements over a wide measurement range.

### Applying the sample to the refractometer:

Lift the illuminating prism<sup>1</sup> and apply the sample to the measurement prism<sup>2</sup>. Close the prism and view the borderline (light/dark demarcation line) through the eyepiece<sup>3</sup>.

### Taking a reading:

Depending on the concentration of the sample, select the range of measurement<sup>(Table 1)</sup> by adjusting the scale selection control<sup>4</sup>. If the concentration is unknown, apply the sample and step through the ranges until a clear borderline is found.

The concentration of the sample can be measured at the point the borderline crosses the scale. Take care to ensure that the reading is taken from the correct scale range.

### Calibration:

The E-line 80 is calibrated to read accurately at 20°C. Readings may be taken at any other temperature by applying a correction factor (Table 2).

Alternatively the E-line 80 has the facility to correct for temperature by manual offset. Prior to taking a reading, ensure the temperature of the instrument is stable. Apply distilled water and check that the reading is zero (Scale 1). If the reading is not zero, use the screwdriver supplied to adjust the zero calibration screw<sup>5</sup> so that the borderline crosses the zero mark on the scale. No temperature correction is required for this method but as the relationship between refractive index and temperature is not linear, small errors may occur at the top end of the scale compared to readings near water.



### Warning

Always check sample Health & Safety Data before applying to the refractometer.

When applying samples to the prism which are likely to cause harm to skin or eyes, wear appropriate protective clothing and glasses.

This refractometer is a precision optical instrument and should be handled with care. Do not drop or subject it to sharp knocks.

Optical glass is relatively soft and care should be taken not to scratch the prism surface. Do not use metal spatulas or glass rods to apply samples but instead use softer materials such as plastic.

Table 1

Specification	
Range	0-80 °Brix
Scale One	0-50 °Brix
Scale Two	50-80 °Brix
Minimum Division	0.1 °Brix

Order Code	Description
44-807	E-Line 80 Refractometer



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**Correcting the reading for temperature:**

The refractometer is calibrated to read correctly at 20°C. The refractive index of the measured sample will vary with temperature and the reading must be corrected to take account of this. Please use the Table 2 below to adjust your reading accordingly.

**Temperature Correction Table (Table 2)**

This table gives mass fraction corrections to refractometric tables for sucrose solutions at 589nm for temperature different from 20°C. Taken from ICUMSA, Appendix 2, SPS-3 (1998) page 8.

Temperature (°C)	Measured Sucrose °Brix (Mass Fraction)																	
	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85
15	-0.29	-0.30	-0.32	-0.33	-0.34	-0.35	-0.36	-0.37	-0.37	-0.38	-0.38	-0.38	-0.38	-0.38	-0.38	-0.38	-0.37	-0.37
16	-0.24	-0.25	-0.26	-0.27	-0.28	-0.28	-0.29	-0.30	-0.30	-0.30	-0.31	-0.31	-0.31	-0.31	-0.31	-0.30	-0.30	-0.30
17	-0.18	-0.19	-0.20	-0.20	-0.21	-0.21	-0.22	-0.22	-0.23	-0.23	-0.23	-0.23	-0.23	-0.23	-0.23	-0.23	-0.23	-0.22
18	-0.12	-0.13	-0.13	-0.14	-0.14	-0.14	-0.15	-0.15	-0.15	-0.15	-0.15	-0.15	-0.15	-0.15	-0.15	-0.15	-0.15	-0.15
19	-0.06	-0.06	-0.07	-0.07	-0.07	-0.07	-0.07	-0.08	-0.08	-0.08	-0.08	-0.08	-0.08	-0.08	-0.08	-0.08	-0.08	-0.07
20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
21	0.06	0.07	0.07	0.07	0.07	0.07	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.07
22	0.13	0.14	0.14	0.14	0.15	0.15	0.15	0.15	0.16	0.16	0.16	0.16	0.16	0.16	0.15	0.15	0.15	0.15
23	0.20	0.21	0.21	0.22	0.22	0.23	0.23	0.23	0.23	0.24	0.24	0.24	0.24	0.23	0.23	0.23	0.23	0.22
24	0.27	0.28	0.29	0.29	0.30	0.30	0.31	0.31	0.31	0.32	0.32	0.32	0.32	0.31	0.31	0.31	0.30	0.30
25	0.34	0.35	0.36	0.37	0.38	0.38	0.39	0.39	0.40	0.40	0.40	0.40	0.40	0.39	0.39	0.38	0.38	0.37
26	0.42	0.43	0.44	0.45	0.46	0.46	0.47	0.47	0.48	0.48	0.48	0.48	0.48	0.47	0.47	0.46	0.46	0.45
27	0.50	0.51	0.52	0.53	0.54	0.55	0.55	0.56	0.56	0.56	0.56	0.56	0.56	0.55	0.55	0.54	0.53	0.52
28	0.58	0.59	0.60	0.61	0.62	0.63	0.64	0.64	0.64	0.65	0.65	0.64	0.64	0.63	0.63	0.62	0.61	0.60
29	0.66	0.67	0.68	0.70	0.71	0.71	0.72	0.73	0.73	0.73	0.73	0.73	0.72	0.72	0.71	0.70	0.69	0.67
30	0.74	0.76	0.77	0.78	0.79	0.80	0.81	0.81	0.82	0.82	0.81	0.81	0.80	0.80	0.79	0.78	0.76	0.75
31	0.83	0.84	0.85	0.87	0.88	0.89	0.89	0.90	0.90	0.90	0.90	0.89	0.89	0.88	0.87	0.86	0.84	0.82
32	0.92	0.93	0.94	0.96	0.97	0.98	0.98	0.99	0.99	0.99	0.99	0.98	0.97	0.96	0.95	0.93	0.92	0.90
33	1.01	1.02	1.03	1.05	1.06	1.07	1.07	1.08	1.08	1.08	1.07	1.07	1.06	1.04	1.03	1.01	1.00	0.98
34	1.10	1.11	1.13	1.14	1.15	1.16	1.16	1.17	1.17	1.16	1.16	1.15	1.14	1.13	1.11	1.09	1.07	1.05
35	1.19	1.21	1.22	1.23	1.24	1.25	1.25	1.26	1.26	1.25	1.25	1.24	1.23	1.21	1.19	1.17	1.15	1.13
36	1.29	1.30	1.31	1.33	1.34	1.34	1.35	1.35	1.35	1.34	1.34	1.33	1.31	1.29	1.28	1.25	1.23	1.20
37	1.39	1.40	1.41	1.42	1.43	1.44	1.44	1.44	1.44	1.43	1.43	1.41	1.40	1.38	1.36	1.33	1.31	1.28
38	1.49	1.50	1.51	1.52	1.53	1.53	1.54	1.54	1.53	1.53	1.52	1.50	1.48	1.46	1.44	1.42	1.39	1.36
39	1.59	1.60	1.61	1.62	1.63	1.63	1.63	1.63	1.63	1.62	1.61	1.59	1.57	1.55	1.52	1.50	1.47	1.43
40	1.69	1.70	1.71	1.72	1.73	1.73	1.73	1.73	1.72	1.71	1.70	1.68	1.66	1.63	1.61	1.58	1.54	1.51

**Cleaning the prism:**

Thoroughly clean the prism after use with water or other suitable solvent and dry with clean tissue.

The prism surface could be damaged by strong alkalis or acids if left in contact for long periods of time. Clean samples from the prism as soon as practicable.

Wiping the prism surface occasionally with alcohol will remove any build-up of oils left from the samples.



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