



# UVES Exposure Time Calculator

Optical Echelle Spectroscopy Mode Version P116

[Description](#)

[FAQ](#)

## Red Arm, CD3

### Observing conditions:

- **Input flux distribution:**
  - Source type: **Blackbody**
  - Temperature: **6500 K**
  - Object Magnitude: **V = 17** (Vega)
- **Spatial Distribution: Point Source**
- **Sky Conditions:**
  - show sky model configuration details**
    - Moon FLI: **0.5**
    - Moon-target separation: **45** degrees
    - Airmass: **1.5**
    - Seeing: **0.8** arcsec
    - T category to use in phase 1: **50%**
    - PWV: **30** mm
    - Probability > **95%** of realising the PWV  $\leq$  30 mm

### Detector: MIT

#### Spectral Format Red, CD#3

Order	wav of central column (nm)	y of central column (pix)	y of central column (arcsec)	FSR range (nm)	FSR 1 Min (nm)	FSR 1 Max (nm)	start wav (nm)	end wav (nm)	TS range (nm)
90	678.54	1966	358	7.53	674.12	681.65	672.32	683.49	11.16
91	671.08	1813	330	7.37	666.75	674.12	664.94	675.98	11.04
92	663.79	1663	303	7.21	659.55	666.76	657.71	668.63	10.93
93	656.65	1517	276	7.05	652.49	659.55	650.64	661.45	10.81
94	649.67	1374	250	6.90	645.59	652.49	643.71	654.41	10.70
95	642.83	1233	224	6.76	638.83	645.59	636.94	647.53	10.59
96	636.14	1096	200	6.62	632.21	638.83	630.30	640.79	10.48
97	629.58	962	175	6.48	625.73	632.21	623.81	634.18	10.38
98	623.16	830	151	6.35	619.37	625.73	617.44	627.72	10.28
99	616.87	701	128	6.22	613.15	619.37	611.20	621.38	10.18
100	610.70	575	105	6.10	607.05	613.15	605.09	615.17	10.08
101	604.66	451	82	5.98	601.07	607.05	599.10	609.08	9.98

<b>102</b>	598.73	330	60	5.86	595.20	601.07	593.22	603.11	9.89
<b>103</b>	592.92	211	38	5.75	589.45	595.20	587.46	597.26	9.79
<b>104</b>	587.22	95	17	5.64	583.81	589.45	581.82	591.52	9.70

- **Image Quality:** **0.854** arcsec at the central wavelength  $\lambda_c = \mathbf{580}$  nm (**to be used for OB constraint set**)
  - show details of the IQ calculations at  $\lambda_c = \mathbf{580}$  nm

- **Instrument setup:**

- Pre slit filter: **comp/filt/nofilter.dat**
- Image slicer: **None**
- FLAMES **fiber feed** used
- Fiber diameter: **1** arcsec
- Fiber entrance loss: **49.7 %**
- Observation Mode:**STANDARD** Template.
- Dichroic selection: **None**
- Arm cross disperser combination: **Red, CD#3**
- Below slit filter: **ins/uves/filt/flt\_red\_BS4-SHP700.dat**
- Exposure time: **3000 s**
- Medium pixel scale in Y (spatial) direction: **0.182** arcsec/pix
- Spatial (Y) bin size: **1** unbinned pixel/bin
- Spectral (X) bin size: **1** unbinned pixel/bin
- The sky signal is integrated over : **5** unbinned spatial pixels (5 spatial bins)
- Effective sky aperture: **0.785398** arcsec<sup>2</sup>

- **Detector parameters:**

- Mode: **fast**, gain:**low**, binning:**1x1**
- Gain (conversion factor): **1.41 e-/ADU**
- Readout noise: **3.71 e-**, dark current: **0.6 e-/h**
- Saturation limit: **92400 e-**

Show detailed S/N formula

**Detected Counts**

Order	FSR Min Wavelength					Wavelength of central column								FSR Max Wavelength				
	Eff. (%)	Obj (e-)	Sky (e-)	Imax (e-)	S/N*	lambda (nm)	bin size (nm)	Eff. (%)	Obj (e-)	Sky (e-)	Imax (e-)	S/N*	Texp(s) for S/N*=30	Eff. (%)	Obj (e-)	Sky (e-)	Imax (e-)	S/N*
<b>90</b>	1.5	107	9.9	38	7.8	678.54	0.0027	3.1	184	17.5	65	11	1.7e+04	1.5	79.1	7.63	28	6.3
<b>91</b>	1.6	109	9.7	38	7.9	671.08	0.0027	3.2	188	17.4	66	11	1.7e+04	1.6	81	7.71	28	6.4
<b>92</b>	1.7	113	9.91	40	8.1	663.79	0.0027	3.3	195	17.8	68	12	1.6e+04	1.7	84.5	7.88	30	6.6
<b>93</b>	1.7	116	10.1	41	8.3	656.65	0.0026	3.4	201	18	71	12	1.6e+04	1.7	87.6	7.99	31	6.8
<b>94</b>	1.8	119	10.1	42	8.4	649.67	0.0026	3.5	206	18.1	72	12	1.5e+04	1.8	89.7	8.05	31	6.9
<b>95</b>	1.8	122	10.3	43	8.6	642.83	0.0026	3.6	211	18.3	74	12	1.5e+04	1.8	92.4	8.18	32	7
<b>96</b>	1.9	125	10.5	44	8.7	636.14	0.0026	3.7	216	18.6	76	12	1.5e+04	1.9	94.6	8.26	33	7.2
<b>97</b>	1.9	127	10.9	45	8.8	629.58	0.0025	3.8	221	19.1	77	13	1.4e+04	1.9	96.8	8.45	34	7.3
<b>98</b>	1.9	128	11.1	45	8.8	623.16	0.0025	3.9	222	19.3	78	13	1.4e+04	2	97.7	8.52	34	7.3
<b>99</b>	1.9	127	11.1	44	8.8	616.87	0.0025	3.9	221	19.2	77	13	1.4e+04	2	97.2	8.44	34	7.3
<b>100</b>	1.9	125	10.9	44	8.7	610.70	0.0025	3.9	217	19	76	12	1.4e+04	1.9	95.8	8.33	34	7.2
<b>101</b>	1.9	122	10.8	43	8.6	604.66	0.0024	3.8	213	18.7	75	12	1.5e+04	1.9	94.3	8.24	33	7.2
<b>102</b>	1.9	120	10.6	42	8.4	598.73	0.0024	3.8	209	18.3	73	12	1.5e+04	1.9	92.4	8.08	32	7.1
<b>103</b>	1.8	116	10.4	41	8.2	592.92	0.0024	3.7	203	17.9	71	12	1.6e+04	1.8	89.8	7.86	31	6.9
<b>104</b>	1.8	112	10	39	8.1	587.22	0.0024	3.6	196	17.4	69	12	1.6e+04	1.8	87.3	7.66	31	6.8

\* The S/N is per spectral bin. For point sources, Eff refers to the total efficiency including the fiber entrance

*loss and atmospheric transmission.*

**Warning:** Please be aware that without a waiver there is a one-hour execution time limit for Service Mode OBs, and that the times returned here **do not** include instrument overheads, times for sky measurements, etc. Thus, care must be taken to allow for these additional times when constructing compliant OBs.

## Detector: EEV

Spectral Format Red, CD#3

Order	wav of central column (nm)	y of central column (pix)	y of central column (arcsec)	FSR range (nm)	FSR 1 Min (nm)	FSR 1 Max (nm)	start wav (nm)	end wav (nm)	TS range (nm)
106	576.14	2018	367	5.43	572.85	578.28	570.84	580.36	9.53
107	570.76	1908	347	5.33	567.52	572.85	565.50	574.94	9.44
108	565.48	1800	328	5.23	562.29	567.52	560.26	569.62	9.36
109	560.29	1694	308	5.14	557.16	562.29	555.12	564.40	9.28
110	555.20	1590	289	5.04	552.11	557.16	550.07	559.27	9.20
111	550.20	1488	271	4.95	547.16	552.11	545.12	554.24	9.12
112	545.29	1388	253	4.86	542.30	547.16	540.25	549.29	9.04
113	540.46	1289	235	4.78	537.52	542.30	535.47	544.43	8.97
114	535.72	1193	217	4.69	532.83	537.52	530.77	539.66	8.89
115	531.07	1098	200	4.61	528.21	532.83	526.15	534.97	8.82
116	526.49	1005	183	4.53	523.68	528.21	521.61	530.36	8.75
117	521.99	913	166	4.46	519.22	523.68	517.15	525.83	8.68
118	517.57	823	150	4.38	514.84	519.22	512.77	521.38	8.61
119	513.22	734	134	4.31	510.53	514.84	508.46	517.00	8.54
120	508.95	648	118	4.24	506.30	510.53	504.22	512.69	8.47
121	504.74	562	102	4.17	502.13	506.30	500.05	508.46	8.41
122	500.60	478	87	4.10	498.03	502.13	495.95	504.29	8.34
123	496.54	396	72	4.03	494.00	498.03	491.92	500.20	8.28
124	492.53	314	57	3.97	490.03	494.00	487.95	496.17	8.22
125	488.59	235	43	3.90	486.13	490.03	484.04	492.20	8.16
126	484.72	156	28	3.84	482.28	486.13	480.20	488.30	8.10
127	480.90	79	14	3.78	478.50	482.28	476.41	484.45	8.04
128	477.14	3	1	3.72	474.78	478.50	472.69	480.67	7.98

- **Image Quality:** 0.854 arcsec at the central wavelength  $\lambda_c = 580$  nm (**to be used for OB constraint set**)
  - show details of the IQ calculations at  $\lambda_c = 580$  nm
- **Instrument setup:**
  - Pre slit filter: **comp/filt/nofilter.dat**
  - Image slicer: **None**
  - FLAMES **fiber feed** used
  - Fiber diameter: **1** arcsec
  - Fiber entrance loss: **49.7 %**
  - Observation Mode:**STANDARD** Template.
  - Dichroic selection: **None**
  - Arm cross disperser combination: **Red, CD#3**
  - Below slit filter: **ins/uves/filt/flt\_red\_BS4-SHP700.dat**
  - Exposure time: **3000 s**
  - Medium pixel scale in Y (spatial) direction: **0.182** arcsec/pix

- Spatial (Y) bin size: **1** unbinned pixel/bin
- Spectral (X) bin size: **1** unbinned pixel/bin
- The sky signal is integrated over : **5** unbinned spatial pixels (5 spatial bins)
- Effective sky aperture: **0.785398 arcsec<sup>2</sup>**

• **Detector parameters:**

- Mode: **fast**, gain:**low**, binning:**1x1**
- Gain (conversion factor): **1.47 e-/ADU**
- Readout noise: **4.18 e-**, dark current: **0.4 e-/h**
- Saturation limit: **96337 e-**

Show detailed S/N formula

**Detected Counts**

Order	FSR Min Wavelength					Wavelength of central column								FSR Max Wavelength				
	Eff. (%)	Obj (e-)	Sky (e-)	Imax (e-)	S/N*	lambda (nm)	bin size (nm)	Eff. (%)	Obj (e-)	Sky (e-)	Imax (e-)	S/N*	Texp(s) for S/N* = 30	Eff. (%)	Obj (e-)	Sky (e-)	Imax (e-)	S/N*
<b>106</b>	1.8	113	10.2	40	7.8	576.14	0.0023	3.7	197	17.5	69	11	1.6e+04	1.8	87.8	7.73	31	6.5
<b>107</b>	1.8	108	9.68	38	7.5	570.76	0.0023	3.6	189	16.8	66	11	1.7e+04	1.8	84.5	7.42	30	6.3
<b>108</b>	1.8	106	9.47	37	7.4	565.48	0.0023	3.5	186	16.5	65	11	1.7e+04	1.8	83.1	7.36	29	6.2
<b>109</b>	1.7	104	9.31	37	7.3	560.29	0.0023	3.5	183	16.2	64	11	1.7e+04	1.7	81.9	7.24	29	6.1
<b>110</b>	1.7	102	9.15	36	7.2	555.20	0.0022	3.4	179	15.9	63	11	1.8e+04	1.7	80.4	7.1	28	6
<b>111</b>	1.7	99.3	8.9	35	7.1	550.20	0.0022	3.4	175	15.6	61	10	1.8e+04	1.7	78.6	6.98	28	5.9
<b>112</b>	1.7	97.8	8.8	34	7	545.29	0.0022	3.4	172	15.4	60	10	1.9e+04	1.7	77.6	6.95	27	5.9
<b>113</b>	1.7	96.2	8.71	34	6.9	540.46	0.0022	3.4	170	15.3	59	10	1.9e+04	1.7	76.5	6.87	27	5.8
<b>114</b>	1.7	94.6	8.62	33	6.8	535.72	0.0022	3.3	167	15.1	59	10	1.9e+04	1.7	75.4	6.81	26	5.8
<b>115</b>	1.6	92.5	8.47	32	6.7	531.07	0.0022	3.3	163	14.8	57	10	2e+04	1.7	73.9	6.68	26	5.7
<b>116</b>	1.6	90.5	8.35	32	6.6	526.49	0.0021	3.3	160	14.6	56	9.8	2e+04	1.6	72.4	6.59	25	5.6
<b>117</b>	1.6	88	8.17	31	6.5	521.99	0.0021	3.2	156	14.3	55	9.7	2.1e+04	1.6	70.6	6.44	25	5.5
<b>118</b>	1.6	85.6	7.98	30	6.3	517.57	0.0021	3.2	151	14	53	9.5	2.1e+04	1.6	68.8	6.3	24	5.4
<b>119</b>	1.6	83.3	7.78	29	6.2	513.22	0.0021	3.1	148	13.7	52	9.3	2.2e+04	1.6	67.1	6.18	24	5.3
<b>120</b>	1.5	81.4	7.59	29	6.1	508.95	0.0021	3.1	144	13.4	51	9.2	2.2e+04	1.5	65.7	6.1	23	5.2
<b>121</b>	1.5	80.5	7.52	28	6	504.74	0.0021	3.1	143	13.4	50	9.1	2.2e+04	1.5	65.1	6.09	23	5.1
<b>122</b>	1.5	79.7	7.53	28	6	500.60	0.002	3.1	142	13.3	50	9.1	2.3e+04	1.5	64.7	6.09	23	5.1
<b>123</b>	1.5	78.2	7.45	27	5.9	496.54	0.002	3.1	139	13.2	49	9	2.3e+04	1.5	63.7	6.03	22	5.1
<b>124</b>	1.5	76.9	7.37	27	5.8	492.53	0.002	3.1	137	13.1	48	8.9	2.3e+04	1.5	62.8	6	22	5
<b>125</b>	1.5	75.2	7.41	26	5.7	488.59	0.002	3	135	13.1	47	8.8	2.4e+04	1.5	62	5.97	22	4.9
<b>126</b>	1.5	72.7	7.28	26	5.6	484.72	0.002	3	130	12.8	46	8.6	2.5e+04	1.5	60	5.86	21	4.8
<b>127</b>	1.5	70.5	7.2	25	5.5	480.90	0.002	2.9	126	12.6	44	8.3	2.6e+04	1.5	58	5.76	20	4.7
<b>128</b>	1.4	67.9	6.99	24	5.3	477.14	0.002	2.8	121	12.2	43	8.1	2.7e+04	1.4	55.5	5.53	20	4.5

\* The S/N is per spectral bin. For point sources, **Eff** refers to the total efficiency including the fiber entrance loss and atmospheric transmission.

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