



# UVES Exposure Time Calculator

Optical Echelle Spectroscopy Mode [Version P116](#)

[Description](#)

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## 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: **1** arcsec
    - T category to use in phase 1: **70%**
    - 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: 1.082 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: **61.6 %**
- 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*=50	Eff. (%)	Obj (e-)	Sky (e-)	Imax (e-)	S/N*
<b>90</b>	1.2	81.8	9.9	23	6.4	678.54	0.0027	2.4	141	17.5	40	9.3	6.2e+04	1.2	60.4	7.63	17	5.1
<b>91</b>	1.2	83.3	9.7	24	6.5	671.08	0.0027	2.4	143	17.4	40	9.4	6.1e+04	1.2	61.9	7.71	18	5.2
<b>92</b>	1.3	86.6	9.91	24	6.7	663.79	0.0027	2.5	149	17.8	42	9.7	5.8e+04	1.3	64.6	7.88	18	5.4
<b>93</b>	1.3	89	10.1	25	6.8	656.65	0.0026	2.6	154	18	43	9.9	5.6e+04	1.3	66.9	7.99	19	5.5
<b>94</b>	1.3	90.8	10.1	26	6.9	649.67	0.0026	2.7	157	18.1	44	10	5.5e+04	1.4	68.5	8.05	19	5.6
<b>95</b>	1.4	93.3	10.3	26	7.1	642.83	0.0026	2.8	162	18.3	46	10	5.4e+04	1.4	70.6	8.18	20	5.8
<b>96</b>	1.4	95.3	10.5	27	7.2	636.14	0.0026	2.9	165	18.6	47	10	5.2e+04	1.4	72.3	8.26	20	5.9
<b>97</b>	1.5	97.3	10.9	27	7.3	629.58	0.0025	2.9	169	19.1	48	10	5.1e+04	1.5	74	8.45	21	6
<b>98</b>	1.5	97.8	11.1	28	7.3	623.16	0.0025	3	170	19.3	48	11	5.1e+04	1.5	74.6	8.52	21	6
<b>99</b>	1.5	97	11.1	27	7.2	616.87	0.0025	3	169	19.2	48	10	5.1e+04	1.5	74.2	8.44	21	6
<b>100</b>	1.5	95.3	10.9	27	7.2	610.70	0.0025	2.9	166	19	47	10	5.2e+04	1.5	73.2	8.33	21	5.9
<b>101</b>	1.5	93.6	10.8	26	7.1	604.66	0.0024	2.9	163	18.7	46	10	5.3e+04	1.5	72.1	8.24	20	5.9
<b>102</b>	1.4	91.4	10.6	26	6.9	598.73	0.0024	2.9	160	18.3	45	10	5.4e+04	1.4	70.6	8.08	20	5.8
<b>103</b>	1.4	88.6	10.4	25	6.8	592.92	0.0024	2.8	155	17.9	44	9.9	5.6e+04	1.4	68.7	7.86	19	5.6
<b>104</b>	1.4	85.8	10	24	6.6	587.22	0.0024	2.7	150	17.4	42	9.7	5.8e+04	1.4	66.7	7.66	19	5.5

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

**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:** 1.082 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: **61.6 %**
- 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*=50	Eff. (%)	Obj (e-)	Sky (e-)	Imax (e-)	S/N*
106	1.4	86.3	10.2	24	6.3	576.14	0.0023	2.8	151	17.5	43	9.4	5.8e+04	1.4	67.1	7.73	19	5.2
107	1.4	82.8	9.68	23	6.1	570.76	0.0023	2.7	145	16.8	41	9.1	6e+04	1.4	64.6	7.42	18	5.1
108	1.3	81.3	9.47	23	6.1	565.48	0.0023	2.7	142	16.5	40	9	6.1e+04	1.3	63.5	7.36	18	5
109	1.3	79.7	9.31	22	6	560.29	0.0023	2.7	140	16.2	39	8.9	6.2e+04	1.3	62.6	7.24	18	5
110	1.3	77.8	9.15	22	5.9	555.20	0.0022	2.6	137	15.9	39	8.8	6.4e+04	1.3	61.4	7.1	17	4.9
111	1.3	75.9	8.9	21	5.8	550.20	0.0022	2.6	134	15.6	38	8.7	6.5e+04	1.3	60	6.98	17	4.8
112	1.3	74.7	8.8	21	5.7	545.29	0.0022	2.6	132	15.4	37	8.6	6.6e+04	1.3	59.3	6.95	17	4.8
113	1.3	73.5	8.71	21	5.6	540.46	0.0022	2.6	130	15.3	37	8.5	6.7e+04	1.3	58.5	6.87	16	4.7
114	1.3	72.3	8.62	20	5.5	535.72	0.0022	2.6	128	15.1	36	8.4	6.8e+04	1.3	57.6	6.81	16	4.7
115	1.3	70.7	8.47	20	5.5	531.07	0.0022	2.5	125	14.8	35	8.3	7e+04	1.3	56.4	6.68	16	4.6
116	1.2	69.2	8.35	20	5.4	526.49	0.0021	2.5	122	14.6	34	8.1	7.1e+04	1.2	55.3	6.59	16	4.5
117	1.2	67.3	8.17	19	5.2	521.99	0.0021	2.5	119	14.3	34	8	7.3e+04	1.2	54	6.44	15	4.4
118	1.2	65.4	7.98	18	5.1	517.57	0.0021	2.4	116	14	33	7.8	7.5e+04	1.2	52.6	6.3	15	4.3
119	1.2	63.6	7.78	18	5	513.22	0.0021	2.4	113	13.7	32	7.7	7.8e+04	1.2	51.3	6.18	14	4.2
120	1.2	62.2	7.59	18	4.9	508.95	0.0021	2.4	110	13.4	31	7.6	7.9e+04	1.2	50.2	6.1	14	4.2
121	1.2	61.5	7.52	17	4.9	504.74	0.0021	2.4	109	13.4	31	7.5	8e+04	1.2	49.7	6.09	14	4.1
122	1.2	60.9	7.53	17	4.9	500.60	0.002	2.4	108	13.3	31	7.5	8.1e+04	1.2	49.4	6.09	14	4.1
123	1.2	59.7	7.45	17	4.8	496.54	0.002	2.3	106	13.2	30	7.4	8.2e+04	1.2	48.7	6.03	14	4.1
124	1.2	58.7	7.37	17	4.7	492.53	0.002	2.3	105	13.1	30	7.3	8.4e+04	1.2	48	6	14	4
125	1.2	57.5	7.41	16	4.6	488.59	0.002	2.3	103	13.1	29	7.2	8.5e+04	1.2	47.4	5.97	13	4
126	1.1	55.5	7.28	16	4.5	484.72	0.002	2.3	99.6	12.8	28	7	8.9e+04	1.1	45.9	5.86	13	3.9
127	1.1	53.9	7.2	15	4.4	480.90	0.002	2.2	96.1	12.6	27	6.8	9.2e+04	1.1	44.3	5.76	13	3.8
128	1.1	51.9	6.99	15	4.3	477.14	0.002	2.2	92.4	12.2	26	6.6	9.6e+04	1.1	42.4	5.53	12	3.6

\* 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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