



TECHNICAL DATASHEET

**650W Flex**

FSP650-50FUB



# FSP650-50FUB

## FEATURES

- 80 Plus Platinum
- Meet Intel ATX V3.1
- Certified IEC 62368-1 3rd
- High Reliability
- Over Current Protection
- Over Temperature Protection
- Over Voltage Protection

## SAFETY STANDARD APPROVAL



## DESCRIPTION

FSP650-50FUB is an industrial level of switching power supply. This power is designed to meet newest Intel ATX 3.1 standard, and high efficiency, in such small size. Therefore, it is suitable for applications in "Industrial Edge Server" equipment.

## GENERAL SPECIFICATIONS

Operating altitude:	5,000 meters
MTBF:	≥ 100,000Hrs, full load at 25°C
Efficiency (115Vac input):	89%; 92%; 90% at 100%; 50%; 20% load

## INPUT SPECIFICATIONS

Input voltage:	90-264 VAC
Input frequency:	47-63 Hz
Input current:	115Vac / 10.0A, 230Vac / 5.0A

## ENVIRONMENTAL SPECIFICATIONS

Operating temperature:	0~50°C
Storage temperature:	-40~+70°C
Operating humidity:	10~85% RH non-condensing
Storage humidity:	10~95% RH non-condensing

## OUTPUT SPECIFICATIONS

Max. output power:	650W
Hold-up time:	115V / 60Hz: 12m Sec. minimum 230V / 50Hz: 12m Sec. minimum
Rise time:	The output voltages shall rise from ≤ 10% of nominal to within the regulation ranges specified in official specification "Section 3.1" within 0.1 ~ 20 ms (0.1 ms ≤ T <sub>2</sub> ≤ 20 ms).

### Protection:

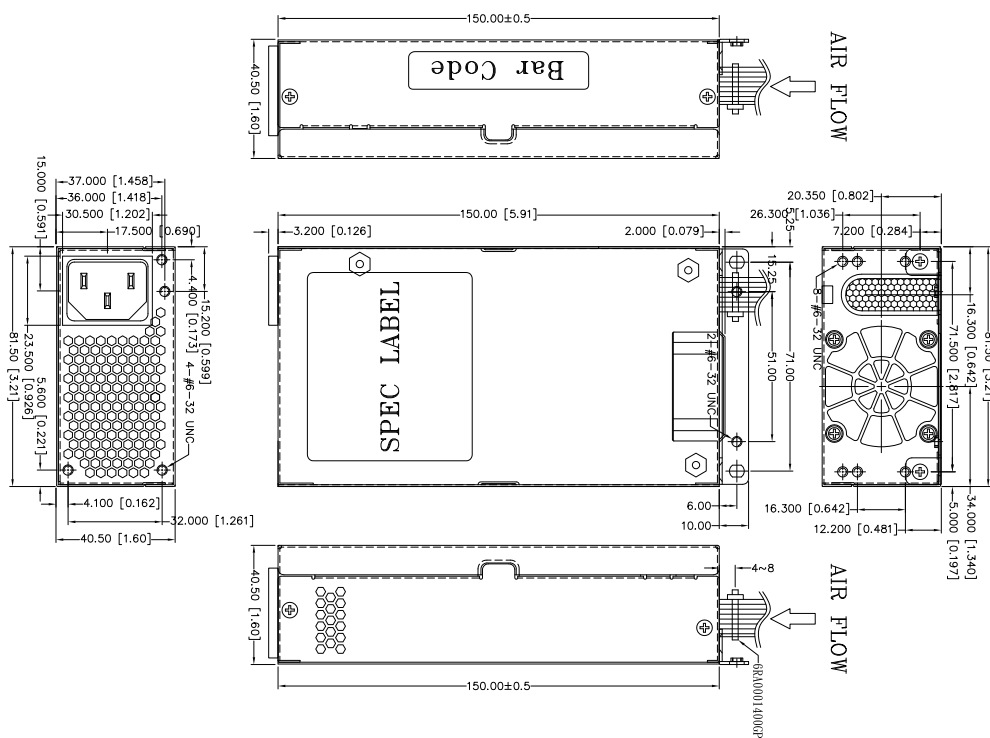
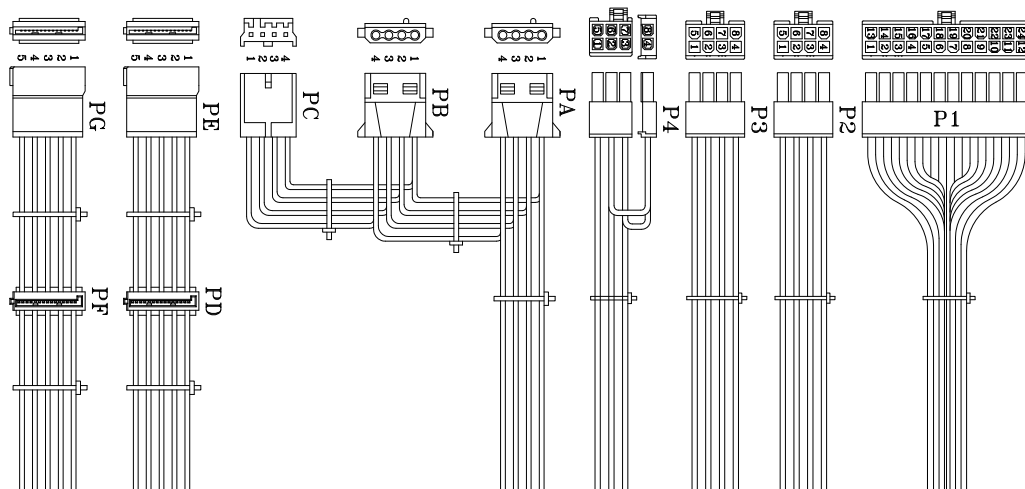
Over voltage:	+3.3Vdc: 3.76V~4.80V +5Vdc: 5.75V~7.00V +12Vdc: 13.50V~15.50V
Over current:	+3.3Vdc: 25A~45A +5Vdc: 25A~45A +12dc: 65A~75A
Short circuit:	Shutdown & latch off without damage PSU

## OUTPUT RATING CHART:

Outputs	+3.3V	+5V	+12V	-12V	+5Vsb
Max. current	14.0A	16.0A	54.17A	0.3A	3.0A
Min. current	0.0A	0.0A	0.0A	0.0A	0.0A
Regulation	± 5%	± 5%	+5/-7%	± 10%	± 5%
Ripple/Noise	50mV	50mV	120mV	120mV	50mV

### MECHANICAL & AC CONNECTOR SPECIFICATIONS

Unit: mm



REF. ID	NO.	SIGNAL	COLOR	GAUGE	MOLEX TYPE	LENGTH
P1	1	+3.3V	ORANGE	20	MOLEX 350±15mm or EQUIV.	
	2	+3.3V	ORANGE	20		
	3	COM	BLACK	20		
	4	+5V	RED	20		
	5	COM	BLACK	20		
	6	+5V	RED	20		
	7	COM	BLACK	20		
	8	COM	BLACK	20		
	9	+5V	PURPLE	20		
	10	+12V	YELLOW	20		
P2	11	+12V	YELLOW	20	MOLEX 390-01-2090 or EQUIV.	
	12	+3.3V	ORANGE	20		
	13	+3.3V	ORANGE	20		
	14	-12V	BLUE	22		
	15	COM	BLACK	20		
	16	PS-ON	GREEN	22		
	17	COM	BLACK	20		
	18	COM	BLACK	20		
	19	COM	BLACK	20		
	20	COM	BLACK	20		
P3	21	+5V	RED	20	MOLEX 350±15mm or EQUIV.	
	22	+5V	RED	20		
	23	+5V	RED	20		
	24	COM	BLACK	20		
	25	COM	BLACK	20		
	26	COM	BLACK	18		
	27	COM	BLACK	18		
	28	COM	BLACK	18		
	29	COM	BLACK	18		
	30	COM	BLACK	18		
P4	31	+12V	YELLOW	18	WST P8-410202X212B 350±15mm or EQUIV.	
	32	+12V	YELLOW	18		
	33	+12V	YELLOW	18		
	34	COM	BLACK	18		
	35	COM	BLACK	18		
	36	COM	BLACK	18		
	37	COM	BLACK	18		
	38	COM	BLACK	18		
	39	COM	BLACK	18		
	40	COM	BLACK	18		
P5	41	+12V	YELLOW	18	WST P8-410202 350±15mm or EQUIV.	
	42	+12V	YELLOW	18		
	43	+12V	YELLOW	18		
	44	+12V	YELLOW	18		
P6	45	+12V	YELLOW	18	WST P8-410202 350±15mm or EQUIV.	
	46	+12V	YELLOW	18		
	47	+12V	YELLOW	18		
	48	+12V	YELLOW	18		
P7	49	+12V	YELLOW	18	WST P8-410202 350±15mm or EQUIV.	
	50	+12V	YELLOW	18		
	51	+12V	YELLOW	18		
	52	+12V	YELLOW	18		
P8	53	+12V	YELLOW	18	WST P8-410202 350±15mm or EQUIV.	
	54	+12V	YELLOW	18		
	55	+12V	YELLOW	18		
	56	+12V	YELLOW	18		
P9	57	+12V	YELLOW	18	WST P8-410202 350±15mm or EQUIV.	
	58	+12V	YELLOW	18		
	59	+12V	YELLOW	18		
	60	+12V	YELLOW	18		
P10	61	+12V	YELLOW	18	WST P8-410202 350±15mm or EQUIV.	
	62	+12V	YELLOW	18		
	63	+12V	YELLOW	18		
	64	+12V	YELLOW	18		
P11	65	+12V	YELLOW	18	WST P8-410202 350±15mm or EQUIV.	
	66	+12V	YELLOW	18		
	67	+12V	YELLOW	18		
	68	+12V	YELLOW	18		
P12	69	+12V	YELLOW	18	WST P8-410202 350±15mm or EQUIV.	
	70	+12V	YELLOW	18		
	71	+12V	YELLOW	18		
	72	+12V	YELLOW	18		
P13	73	+12V	YELLOW	18	WST P8-410202 350±15mm or EQUIV.	
	74	+12V	YELLOW	18		
	75	+12V	YELLOW	18		
	76	+12V	YELLOW	18		
P14	77	+12V	YELLOW	18	WST P8-410202 350±15mm or EQUIV.	
	78	+12V	YELLOW	18		
	79	+12V	YELLOW	18		
	80	+12V	YELLOW	18		
P15	81	+12V	YELLOW	18	WST P8-410202 350±15mm or EQUIV.	
	82	+12V	YELLOW	18		
	83	+12V	YELLOW	18		
	84	+12V	YELLOW	18		
P16	85	+12V	YELLOW	18	WST P8-410202 350±15mm or EQUIV.	
	86	+12V	YELLOW	18		
	87	+12V	YELLOW	18		
	88	+12V	YELLOW	18		
P17	89	+12V	YELLOW	18	WST P8-410202 350±15mm or EQUIV.	
	90	+12V	YELLOW	18		
	91	+12V	YELLOW	18		
	92	+12V	YELLOW	18		
P18	93	+12V	YELLOW	18	WST P8-410202 350±15mm or EQUIV.	
	94	+12V	YELLOW	18		
	95	+12V	YELLOW	18		
	96	+12V	YELLOW	18		
P19	97	+12V	YELLOW	18	WST P8-410202 350±15mm or EQUIV.	
	98	+12V	YELLOW	18		
	99	+12V	YELLOW	18		
	100	+12V	YELLOW	18		
P20	101	+12V	YELLOW	18	WST P8-410202 350±15mm or EQUIV.	
	102	+12V	YELLOW	18		
	103	+12V	YELLOW	18		
	104	+12V	YELLOW	18		
P21	105	+12V	YELLOW	18	WST P8-410202 350±15mm or EQUIV.	
	106	+12V	YELLOW	18		
	107	+12V	YELLOW	18		
	108	+12V	YELLOW	18		
P22	109	+12V	YELLOW	18	WST P8-410202 350±15mm or EQUIV.	
	110	+12V	YELLOW	18		
	111	+12V	YELLOW	18		
	112	+12V	YELLOW	18		
P23	113	+12V	YELLOW	18	WST P8-410202 350±15mm or EQUIV.	
	114	+12V	YELLOW	18		
	115	+12V	YELLOW	18		
	116	+12V	YELLOW	18		
P24	117	+12V	YELLOW	18	WST P8-410202 350±15mm or EQUIV.	
	118	+12V	YELLOW	18		
	119	+12V	YELLOW	18		
	120	+12V	YELLOW	18		
P25	121	+12V	YELLOW	18	WST P8-410202 350±15mm or EQUIV.	
	122	+12V	YELLOW	18		
	123	+12V	YELLOW	18		
	124	+12V	YELLOW	18		
P26	125	+12V	YELLOW	18	WST P8-410202 350±15mm or EQUIV.	
	126	+12V	YELLOW	18		
	127	+12V	YELLOW	18		
	128	+12V	YELLOW	18		
P27	129	+12V	YELLOW	18	WST P8-410202 350±15mm or EQUIV.	
	130	+12V	YELLOW	18		
	131	+12V	YELLOW	18		
	132	+12V	YELLOW	18		
P28	133	+12V	YELLOW	18	WST P8-410202 350±15mm or EQUIV.	
	134	+12V	YELLOW	18		
	135	+12V	YELLOW	18		
	136	+12V	YELLOW	18		
P29	137	+12V	YELLOW	18	WST P8-410202 350±15mm or EQUIV.	
	138	+12V	YELLOW	18		
	139	+12V	YELLOW	18		
	140	+12V	YELLOW	18		
P30	141	+12V	YELLOW	18	WST P8-410202 350±15mm or EQUIV.	
	142	+12V	YELLOW	18		
	143	+12V	YELLOW	18		
	144	+12V	YELLOW	18		
P31	145	+12V	YELLOW	18	WST P8-410202 350±15mm or EQUIV.	
	146	+12V	YELLOW	18		
	147	+12V	YELLOW	18		
	148	+12V	YELLOW	18		
P32	149	+12V	YELLOW	18	WST P8-410202 350±15mm or EQUIV.	
	150	+12V	YELLOW	18		
	151	+12V	YELLOW	18		
	152	+12V	YELLOW	18		
P33	153	+12V	YELLOW	18	WST P8-410202 350±15mm or EQUIV.	
	154	+12V	YELLOW	18		
	155	+12V	YELLOW	18		
	156	+12V	YELLOW	18		
P34	157	+12V	YELLOW	18	WST P8-410202 350±15mm or EQUIV.	
	158	+12V	YELLOW	18		
	159	+12V	YELLOW	18		
	160	+12V	YELLOW	18		
P35	161	+12V	YELLOW	18	WST P8-410202 350±15mm or EQUIV.	
	162	+12V	YELLOW	18		
	163	+12V	YELLOW	18		
	164	+12V	YELLOW	18		
P36	165	+12V	YELLOW	18	WST P8-410202 350±15mm or EQUIV.	
	166	+12V	YELLOW	18		
	167	+12V	YELLOW	18		
	168	+12V	YELLOW	18		
P37	169	+12V	YELLOW	18	WST P8-410202 350±15mm or EQUIV.	
	170	+12V	YELLOW	18		
	171	+12V	YELLOW	18		
	172	+12V	YELLOW	18		
P38	173	+12V	YELLOW	18	WST P8-410202 350±15mm or EQUIV.	
	174	+12V	YELLOW	18		
	175	+12V	YELLOW	18		
	176	+12V	YELLOW	18		
P39	177	+12V	YELLOW	18	WST P8-410202 350±15mm or EQUIV.	
	178	+12V	YELLOW	18		
	179	+12V	YELLOW	18		
	180	+12V	YELLOW	18		
P40	181	+12V	YELLOW	18	WST P8-410202 350±15mm or EQUIV.	
	182	+12V	YELLOW	18		
	183	+12V	YELLOW	18		
	184	+12V	YELLOW	18		
P41	185	+12V	YELLOW	18	WST P8-410202 350±15mm or EQUIV.	
	186	+12V	YELLOW	18		
	187	+12V	YELLOW	18		
	188	+12V	YELLOW	18		
P42	189	+12V	YELLOW	18	WST P8-410202 350±15mm or EQUIV.	
	190	+12V	YELLOW	18		
	191	+12V	YELLOW	18		
	192	+12V	YELLOW	18		
P43	193	+12V	YELLOW	18	WST P8-410202 350±15mm or EQUIV.	
	194	+12V	YELLOW	18		
	195	+12V	YELLOW	18		
	196	+12V	YELLOW	18		
P44	197	+12V	YELLOW	18	WST P8-410202 350±15mm or EQUIV.	
	198	+12V	YELLOW	18		
	199	+12V	YELLOW	18		
	200	+12V	YELLOW	18		
P45	201	+12V	YELLOW	18	WST P8-410202 350±15mm or EQUIV.	
	202	+12V	YELLOW	18		
	203	+12V	YELLOW	18		
	204	+12V	YELLOW	18		
P46	205	+12V	YELLOW	18	WST P8-410202 350±15mm or EQUIV.	
	206	+12V	YELLOW	18		
	207	+12V	YELLOW	18		
	208	+12V	YELLOW	18		
P47	209	+12V	YELLOW	18	WST P8-410202 350±15mm or EQUIV.	
	210	+12V	YELLOW	18		
	211	+12V	YELLOW	18		
	212	+12V	YELLOW	18		
P48	213	+12V	YELLOW	18	WST P8-410202 350±15mm or EQUIV.	
	214	+12V	YELLOW	18		
	215	+12V	YELLOW	18		
	216	+12V	YELLOW	18		
P49	217	+12V	YELLOW	18	WST P8-410202 350±15mm or EQUIV.	
	218	+12V	YELLOW	18		
	219	+12V	YELLOW	18		
	220	+12V	YELLOW	18		
P50	221	+12V	YELLOW	18	WST P8-410202 350±15mm or EQUIV.	
	222	+12V	YELLOW	18		
	223	+12V	YELLOW	18		
	224	+12V	YELLOW	18		
P51	225	+12V	YELLOW	18	WST P8-410202 350±15mm or EQUIV.	
	226	+12V	YELLOW	18		
	227	+12V	YELLOW	18		
	228	+12V	YELLOW	18		
P52	229	+12V	YELLOW	18	WST P8-410202 350±15mm or EQUIV.	
	230	+12V	YELLOW	18		
	231	+12V	YELLOW	18		
	232	+12V	YELLOW	18		
P53	233	+12V	YELLOW	18	WST P8-410202 350±15mm or EQUIV.	
	234	+12V	YELLOW	18		
	235	+12V	YELLOW	18		
	236	+12V	YELLOW	18		
P54	237	+12V	YELLOW	18	WST P8-410202 350±15mm or EQUIV.	
	238	+12V	YELLOW	18		
	239	+12V	YELLOW	18		
	240	+12V	YELLOW	18		
P55	241	+12V	YELLOW	18	WST P8-410202 350±15mm or EQUIV.	
	242	+12V	YELLOW	18		
	243	+12V	YELLOW	18		
	244	+12V	YELLOW	18		
P56	245	+12V	YELLOW	18	WST P8-410202 350±15mm or EQUIV.	
	246	+12V	YELLOW	18		
	247	+12V	YELLOW	18		
	248	+12V	YELLOW	18		
P57	249	+12V	YELLOW	18	WST P8-410202 350±15mm or EQUIV.	
	250	+12V	YELLOW	18		
	251	+12V	YELLOW	18		
	252	+12V	YELLOW	18		
P58	253	+12V	YELLOW	18	WST P8-410202 350±15mm or EQUIV.	
	254	+12V	YELLOW	18		
	255	+12V	YELLOW	18		
	256	+12V	YELLOW	18		
P59	257	+12V	YELLOW	18	WST P8-410202 350±15mm or EQUIV.	
	258	+12V	YELLOW	18		
	259	+12V	YELLOW	18		
	260	+12V	YELLOW	18		
P60	261	+12V	YELLOW	18	WST P8-410202 350±15mm or EQUIV.	
	262	+12V	YELLOW	18		
	263	+12V	YELLOW	18		
	264	+12V	YELLOW	18		
P61	265	+12V	YELLOW	18	WST P8-410202 350±15mm or EQUIV.	
	266	+12V	YELLOW	18		
	267	+12V	YELLOW	18		
	268	+12V	YELLOW	18		
P62	269	+12V	YELLOW	18	WST P8-410202 350±15mm or EQUIV.	
	270	+12V	YELLOW	18		
	271	+12V	YELLOW	18		
	272	+12V	YELLOW	18		
P63	273	+12V	YELLOW	18	WST P8-410202 350±15mm or EQUIV.	
	274	+12V	YELLOW	18		
	275	+12V	YELLOW	18		
	276	+12V	YELLOW	18		
P64	277	+12V	YELLOW	18	WST P8-410202 350±15mm or EQUIV.	
	278	+12V	YELLOW	18		
	279	+12V	YELLOW	18		
	280	+12V	YELLOW	18		
P65	281	+12V	YELLOW	18	WST P8-410202 350±15mm or EQUIV.	
	282	+12V	YELLOW	18		
	283	+12V	YELLOW	18		
	284	+12V	YELLOW	18		