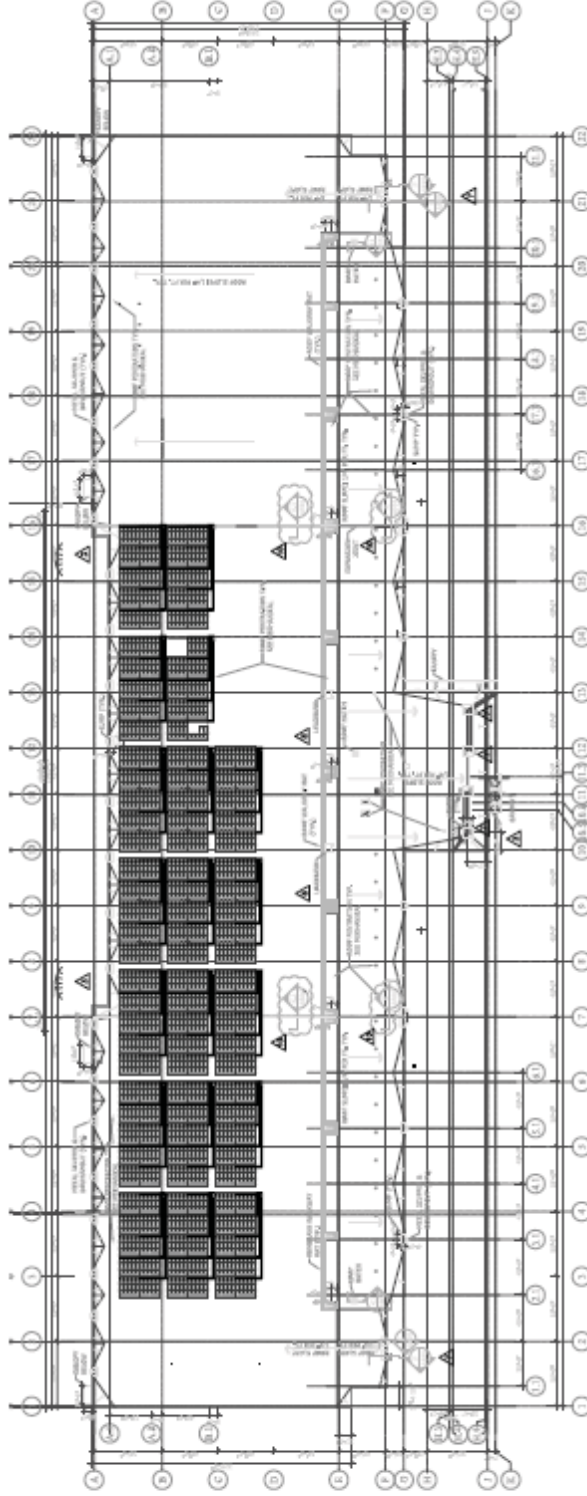


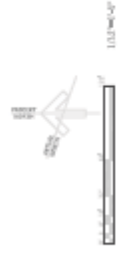
APPENDIX F | ANALYSIS III INFORMATION

*SOLAR LAYOUT, WIRE/CONDUIT SIZING, PRODUCT, AND WEATHER
DATA FOR THE ENERGY EFFICIENT TECHNOLOGY ANALYSIS CAN BE
FOUND ON THE FOLLOWING PAGES.*

SOLAR PANEL LAYOUT



OVERALL ROOF PLAN



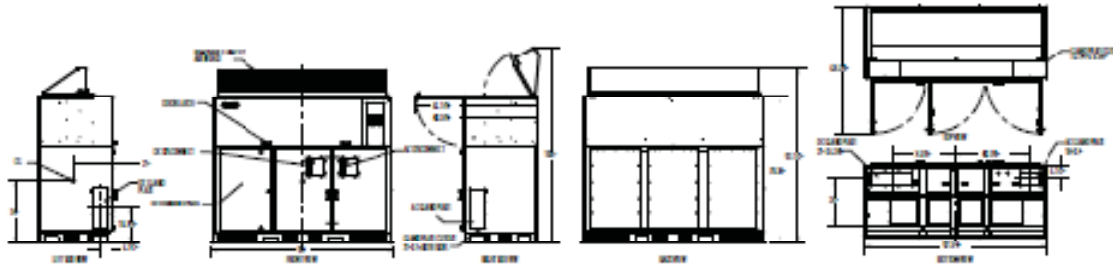
WIRE AND CONDUIT SIZING DATA SHEET

DC Wires - Combiner Boxes to Inverters															
From Combiner	To Inverter	# of Arrays	Amps	Volts	Distance of Run	Total Cable Length (DC+ & DC-)	Total Cable Resistance	Cable Size	Diameter (in.)	Area of Cable Size (sq. in.)	No. of Cables	Area of #4 AWG Ground	Max Total Diameter	Total Area	Conduit Size
AF01	1	10	74	370	515	1030	0.0485	300	0.630	0.312	2	0.042	1.492	0.666	2"
AF02	1	10	74	370	410	820	0.0610	4/0	0.528	0.219	2	0.042	1.288	0.480	1-1/2"
AF03	1	10	74	370	310	620	0.0806	3/0	0.470	0.173	2	0.042	1.172	0.388	1-1/2"
AF04	1	10	74	370	210	420	0.1190	2/0	0.418	0.137	2	0.042	1.068	0.316	1-1/4"
AF05	1	10	74	370	160	320	0.1563	1	0.332	0.087	2	0.042	0.896	0.216	1"
AF06	1	10	74	370	230	460	0.1087	2/0	0.418	0.137	2	0.042	1.068	0.316	1-1/4"
AF07	1	10	74	370	330	660	0.0758	4/0	0.528	0.219	2	0.042	1.288	0.480	1-1/2"
BF01	2	10	74	370	550	1100	0.0455	300	0.630	0.312	2	0.042	1.492	0.666	2"
BF02	2	10	74	370	450	900	0.0556	250	0.575	0.260	2	0.042	1.382	0.562	2"
BF03	2	10	74	370	350	700	0.0714	4/0	0.528	0.219	2	0.042	1.288	0.480	1-1/2"
BF04	2	10	74	370	250	500	0.1000	2/0	0.418	0.137	2	0.042	1.068	0.316	1-1/4"
BF05	2	10	74	370	200	400	0.1250	1/0	0.372	0.109	2	0.042	0.976	0.260	1-1/4"
BF06	2	10	74	370	270	540	0.0926	3/0	0.470	0.173	2	0.042	1.172	0.388	1-1/2"
BF07	2	10	74	370	370	740	0.0676	4/0	0.528	0.219	2	0.042	1.288	0.480	1-1/2"
CF01	3	10	74	370	590	1180	0.0424	350	0.681	0.364	2	0.042	1.594	0.770	2"
CF02	3	10	74	370	490	980	0.0510	300	0.630	0.312	2	0.042	1.492	0.666	2"
CF03	3	10	74	370	390	780	0.0641	4/0	0.528	0.219	2	0.042	1.288	0.480	1-1/2"
CF04	3	10	74	370	290	580	0.0862	3/0	0.470	0.173	2	0.042	1.172	0.388	1-1/2"
CF05	3	10	74	370	240	480	0.1042	2/0	0.418	0.137	2	0.042	1.068	0.316	1-1/4"

Conduit Standards			
Size	Diameter (in.)	Area (sq. in.)	LF of Conduit
1"	1.049	0.86	160
1-1/4"	1.380	1.50	1130
1-1/2"	1.610	2.04	2720
2"	2.067	3.36	2595

INVERTER PRODUCT DATA

DIMENSIONS



Preliminary

(complete design documentation including wiring calculations available upon request)

ELECTRICAL SPECIFICATIONS

MODEL	PVP260kW	PVP260kW-LV
Continuous Output Power (kW)	260kW	260kW
Weighted CEC Efficiency (%)	96.5% (est)	96.5% (est)
Maximum DC Input Voltage (VDC)	600	600
DC Peak Power Tracking Range (V)	295 - 500	265 - 500
DC Imp Nominal Current (A)	918	1022
AC Nominal Voltage (V)	480	180
AC Operating Range (V)	472 - 528	472 - 528
AC Frequency Range (Hz)	59.3 - 60.5	59.3 - 60.5
AC Maximum Continuous Current (A)	301	101
Standby losses (W)	<75 (est)	<75 (est)
Harmonic Distortion (%THD)	<3%	<3%
Power Factor	>.99	>.99

MECHANICAL SPECIFICATIONS

MODEL	PVP260kW	PVP260kW-LV
Enclosure	NEMA 4	NEMA 4
Construction	Powder Coated Steel	Powder Coated Steel
Mounting	Pad Mount	Pad Mount
Weight (lbs)	4,800	4,800
Cooling	Forced Convection	Forced Convection
Temperature Range (°C)	-30 to 50	-30 to 50
Isolation Transformer	Yes	Yes

OPTIONS

- Fused sub-array combiners
- Sub-combiner monitoring
- Integrated revenue grade meter
- Positive ground
- Third party integrated data monitoring solutions
- Preventative maintenance program
- 20-Year extended warranty

AGENCY APPROVALS (PENDING)

UL 1741, IEEE1547, IEEE929, IEEE1547, FCC Class A for conducted and radiated



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81001

NEC HANDBOOK - CONDUCTOR PROPERTIES CHART

TABLES

Table 8 Conductor Properties

Size (AWG or kcmil)	Conductors										Direct-Current Resistance at 75°C (167°F)					
	Area			Stranding		Overall				Copper						
	Circular		Quantity	Diameter		Diameter		Area		Uncoated		Coated		Aluminum		
	mm ²	mils		mm	in.	mm	in.	mm ²	in. ²	ohm/ km	ohm/ kFT	ohm/ km	ohm/ kFT	ohm/ km	ohm/ kFT	
18	0.823	1620	1	—	—	1.02	0.040	0.823	0.001	25.5	7.77	26.5	8.08	42.0	12.8	
18	0.823	1620	7	0.39	0.015	1.16	0.046	1.06	0.002	26.1	7.95	27.7	8.45	42.8	13.1	
16	1.31	2580	1	—	—	1.29	0.051	1.31	0.002	16.0	4.89	16.7	5.08	26.4	8.05	
16	1.31	2580	7	0.49	0.019	1.46	0.058	1.68	0.003	16.4	4.99	17.3	5.29	26.9	8.21	
14	2.08	4110	1	—	—	1.63	0.064	2.08	0.003	10.1	3.07	10.4	3.19	16.6	5.06	
14	2.08	4110	7	0.62	0.024	1.85	0.073	2.68	0.004	10.3	3.14	10.7	3.26	16.9	5.17	
12	3.31	6530	1	—	—	2.05	0.081	3.31	0.005	6.34	1.93	6.57	2.01	10.45	3.18	
12	3.31	6530	7	0.78	0.030	2.32	0.092	4.25	0.006	6.50	1.98	6.73	2.05	10.69	3.25	
10	5.261	10380	1	—	—	2.588	0.102	5.26	0.008	3.984	1.21	4.148	1.26	6.561	2.00	
10	5.261	10380	7	0.98	0.038	2.95	0.116	6.76	0.011	4.070	1.24	4.226	1.29	6.679	2.04	
8	8.367	16510	1	—	—	3.264	0.128	8.37	0.013	2.506	0.764	2.579	0.786	4.125	1.26	
8	8.367	16510	7	1.23	0.049	3.71	0.146	10.76	0.017	2.551	0.778	2.653	0.809	4.204	1.28	
6	13.30	26240	7	1.56	0.061	4.67	0.184	17.09	0.027	1.608	0.491	1.671	0.510	2.652	0.808	
4	21.15	41740	7	1.96	0.077	5.89	0.232	27.19	0.042	1.010	0.308	1.053	0.321	1.666	0.508	
3	26.67	52620	7	2.20	0.087	6.60	0.260	34.28	0.053	0.802	0.245	0.833	0.254	1.320	0.403	
2	33.62	66360	7	2.47	0.097	7.42	0.292	43.23	0.067	0.634	0.194	0.661	0.201	1.045	0.319	
1	42.41	83690	19	1.69	0.066	8.43	0.332	55.80	0.087	0.505	0.154	0.524	0.160	0.829	0.253	
1/0	53.49	105600	19	1.89	0.074	9.45	0.372	70.41	0.109	0.399	0.122	0.415	0.127	0.660	0.201	
2/0	67.43	133100	19	2.13	0.084	10.62	0.418	88.74	0.137	0.3170	0.0967	0.329	0.101	0.523	0.159	
3/0	85.01	167800	19	2.39	0.094	11.94	0.470	111.9	0.173	0.2512	0.0766	0.2610	0.0797	0.413	0.126	
4/0	107.2	211600	19	2.68	0.106	13.41	0.528	141.1	0.219	0.1996	0.0608	0.2050	0.0626	0.328	0.100	
250	127	—	37	2.09	0.082	14.61	0.575	168	0.260	0.1687	0.0515	0.1753	0.0535	0.2778	0.0847	
300	152	—	37	2.29	0.090	16.00	0.630	201	0.312	0.1409	0.0429	0.1463	0.0446	0.2318	0.0707	
350	177	—	37	2.47	0.097	17.30	0.681	235	0.364	0.1205	0.0367	0.1252	0.0382	0.1984	0.0605	
400	203	—	37	2.64	0.104	18.49	0.728	268	0.416	0.1053	0.0321	0.1084	0.0331	0.1737	0.0529	
500	253	—	37	2.95	0.116	20.65	0.813	336	0.519	0.0845	0.0258	0.0869	0.0265	0.1391	0.0424	
600	304	—	61	2.52	0.099	22.68	0.893	404	0.626	0.0704	0.0214	0.0732	0.0223	0.1159	0.0353	
700	355	—	61	2.72	0.107	24.49	0.964	471	0.730	0.0603	0.0184	0.0622	0.0189	0.0994	0.0303	
750	380	—	61	2.82	0.111	25.35	0.998	505	0.782	0.0563	0.0171	0.0579	0.0176	0.0927	0.0282	
800	405	—	61	2.91	0.114	26.16	1.030	538	0.834	0.0528	0.0161	0.0544	0.0166	0.0868	0.0265	
900	456	—	61	3.09	0.122	27.79	1.094	606	0.940	0.0470	0.0143	0.0481	0.0147	0.0770	0.0235	
1000	507	—	61	3.25	0.128	29.26	1.152	673	1.042	0.0423	0.0129	0.0434	0.0132	0.0695	0.0212	
1250	633	—	91	2.98	0.117	32.74	1.289	842	1.305	0.0338	0.0103	0.0347	0.0106	0.0554	0.0169	
1500	760	—	91	3.26	0.128	35.86	1.412	1011	1.566	0.02814	0.00858	0.02814	0.00883	0.0464	0.0141	
1750	887	—	127	2.98	0.117	38.76	1.526	1180	1.829	0.02410	0.00735	0.02410	0.00756	0.0397	0.0121	
2000	1013	—	127	3.19	0.126	41.45	1.632	1349	2.092	0.02109	0.00643	0.02109	0.00662	0.0348	0.0106	

Notes:

1. These resistance values are valid **only** for the parameters as given. Using conductors having coated strands, different stranding type, and, especially, other temperatures changes the resistance.
2. Formula for temperature change: $R_2 = R_1 [1 + \alpha (T_2 - 75)]$ where $\alpha_{Cu} = 0.00323$, $\alpha_{AL} = 0.00330$ at 75°C.
3. Conductors with compact and compressed stranding have about 9 percent and 3 percent, respectively, smaller bare conductor diameters than those shown. See Table 5A for actual compact cable dimensions.
4. The IACS conductivities used: bare copper = 100%, aluminum = 61%.
5. Class B stranding is listed as well as solid for some sizes. Its overall diameter and area is that of its circumscribing circle.

FPN: The construction information is per NEMA WC8-1992 or ANSI/UL 1581-1998. The resistance is calculated per National Bureau of Standards Handbook 100, dated 1966, and Handbook 109, dated 1972.

NEC HANDBOOK - CONDUCTOR CONDUIT SIZING CHART

ANNEX C

Annex C: Tables

Table C.1 Continued

Conductor Size (AWG kcmil)		Metric Designator (Trade Size)									
		16 (½)	21 (¾)	27 (1)	35 (1¼)	41 (1½)	53 (2)	63 (2½)	78 (3)	91 (3½)	103 (4)
Type RHH*, RHW*, RHW-2*, TW, THW, THHW, THW-2	6	1	3	4	8	11	18	32	48	63	81
	4	1	1	3	6	8	13	24	36	47	60
	3	1	1	3	5	7	12	20	31	40	52
	2	1	1	2	4	6	10	17	26	34	44
	1	1	1	1	3	4	7	12	18	24	31
	1/0	0	1	1	2	3	6	10	16	20	26
	2/0	0	1	1	1	3	5	9	13	17	22
	3/0	0	1	1	1	2	4	7	11	15	19
	4/0	0	0	1	1	1	3	6	9	12	16
	250	0	0	1	1	1	3	5	7	10	13
	300	0	0	1	1	1	2	4	6	8	11
	350	0	0	0	1	1	1	4	6	7	10
	400	0	0	0	1	1	1	3	5	7	9
	500	0	0	0	1	1	1	3	4	6	7
	600	0	0	0	1	1	1	2	3	4	6
	700	0	0	0	0	1	1	1	3	4	5
	750	0	0	0	0	1	1	1	3	4	5
	800	0	0	0	0	1	1	1	3	3	5
	900	0	0	0	0	0	1	1	2	3	4
	1000	0	0	0	0	0	1	1	2	3	4
1250	0	0	0	0	0	1	1	1	2	3	
1500	0	0	0	0	0	1	1	1	1	2	
1750	0	0	0	0	0	0	1	1	1	2	
2000	0	0	0	0	0	0	1	1	1	1	
THHN, THWN, THWN-2	<14	(12)	22	35	61	84	138	241	364	476	608
	12	9	16	26	45	61	101	176	266	347	443
	10	5	10	16	28	38	63	111	167	219	279
	8	3	6	9	16	22	36	64	96	126	161
	6	2	4	7	12	16	26	46	69	91	116
	4	1	2	4	7	10	16	28	43	56	71
	3	1	1	3	6	8	13	24	36	47	60
	2	1	1	3	5	7	11	20	30	40	51
	1	1	1	1	4	5	8	15	22	29	37
	1/0	1	1	1	3	4	7	12	19	25	32
2/0	0	1	1	2	3	6	10	16	20	26	
3/0	0	1	1	1	3	5	8	13	17	22	
4/0	0	1	1	1	2	4	7	11	14	18	
250	0	0	1	1	1	3	6	9	11	15	
300	0	0	1	1	1	3	5	7	10	13	
350	0	0	1	1	1	2	4	6	9	11	
400	0	0	0	1	1	1	4	6	8	10	
500	0	0	0	1	1	1	3	5	6	8	
600	0	0	0	1	1	1	2	4	5	7	
700	0	0	0	1	1	1	2	3	4	6	
750	0	0	0	0	1	1	1	3	4	5	
800	0	0	0	0	1	1	1	3	4	5	
900	0	0	0	0	1	1	1	3	3	4	
1000	0	0	0	0	1	1	1	2	3	4	
FEP, FEPB, PFA, PFAH, TFE	14	12	21	34	60	81	134	234	354	462	590
	12	9	15	25	43	59	98	171	258	337	430
	10	6	11	18	31	42	70	122	185	241	309
	8	3	6	10	18	24	40	70	106	138	177
	6	2	4	7	12	17	28	50	75	98	126
	4	1	3	5	9	12	20	35	53	69	88
	3	1	2	4	7	10	16	29	44	57	73
	2	1	1	3	6	8	13	24	36	47	60

(Continues)

TRANTER SUPERCHANGER® PLATE AND FRAME HEAT EXCHANGER



Customer: _____ Date: 3/23/2009
 Proposal No.: _____
 Email: _____ Item No.: _____
 Cust. Reference: _____ Run No.: 0
 Technician: _____
 Model: GXD-060-H-5-HP-485 Units Required: 1

Intended End Use: Heat exchanger to cool Water 12 F using 43 F Water with pressure drop at or below 7.8 psi on hot side and at or below 7.8 psi on cold side.

PERFORMANCE		Hot Side	Cold Side
Flow Rate (Total)	GPM	2160.00	3240.00
Inlet Temperature	F	55.00	43.00
Outlet Temperature	F	40.00	50.99
Pressure Drop	psi	3.54	7.78
Total Heat Exchanged	Btu/h		12974270
U-Value	BTU/(h·ft²·F)		943
Total Heat Transfer Area	ft²		2911.42
LMTD	F		4.73

FLUID DATA		Hot Side	Cold Side
Fluid Name		Water	Water
Specific Gravity	-	1.00	1.00
Specific Heat	Btu/(lb·F)	1.00	1.00
Thermal Conductivity	Btu/(h·ft·F)	0.34	0.33
Viscosity (avg.)	cP	1.27	1.37

CONSTRUCTION			
Plate Material (Material/Thickness)		304 SS/0.5 mm.	
Gasket Material (Hot/Cold)	NBR		NBR
Connection Material	SA-516-70 Carbon Steel		SA-516-70 Carbon Steel
Connection (Inlet/Outlet)	S1->S3		S2->S4
Connection Size (Hot/Cold Inlet)	8" 150# STUD		8" 150# STUD
Connection Size (Hot/Cold outlet)	8" 150# STUD		8" 150# STUD
Frame/Finish	SA-516-70 Carbon Steel		Enamel - RAL 5012 (Royal Blue)
Tightening Bolts/Nuts/Finish	SA-193-B7 Carbon Steel / 8/2H Tie Nuts material / Zinc Plated		
A-Dimension / C-Dimension		72.556 in/183 in	

Design/Test Pressure	psi	100.00/130.00
Design Temperature	F	150.00
ASME Stamp / CE Stamp		Yes
Total Weight Empty/Flooded (Per Unit)	lbs	8,747/10,774
No. of Plates		485
Pass Arrangement (Hot/Cold)		1
Channel Arrangement (Hot/Cold)		0HS+242HD
Flow Direction		CounterCurrent

Remarks:

The performance guarantee is based on the accuracy of the data presented above, and the customer's ability to supply product and operating conditions in conformance with the above.

Tranter, Inc. P.O. Box 2889 Wichita Falls, TX 76308
 Phn: (940) 723-7125 Fax: (940) 723-1131

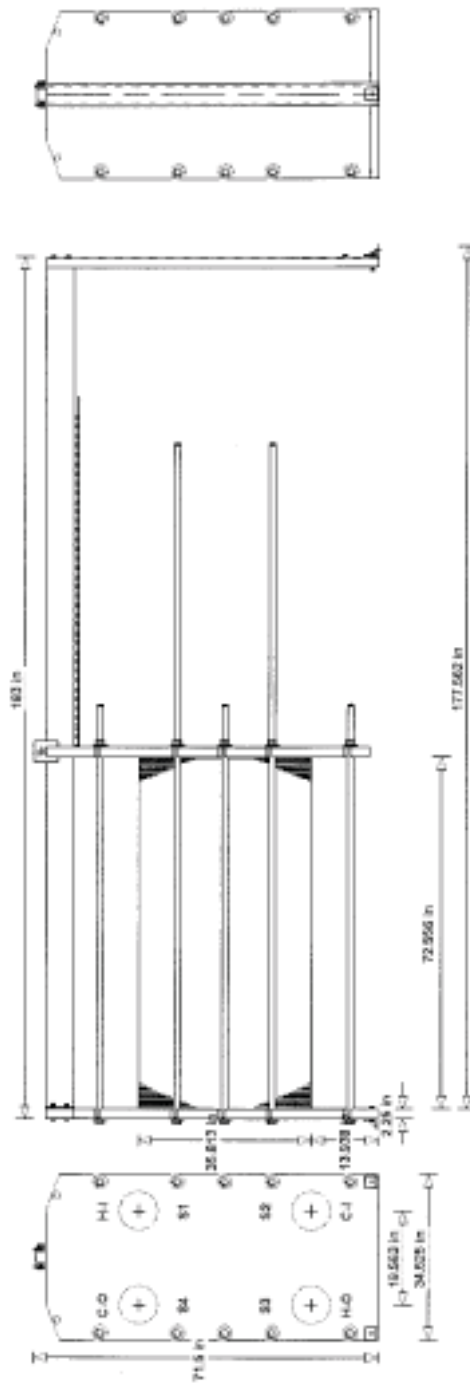
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SUPERCCHANGER ASSEMBLY
GXD-060-H-5-HP-485



Sizing Number:
000000



Dimensions are for reference purposes only and are not to be used for construction.
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WEATHER DATA

WASHINGTON, D.C.

CONTINUED

MST	MONTHS												TOTAL									
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC										
40	306	286	325	46	1					23	105	347	1439	632	574	656	106	0	66	286	705	3033
39	301	282	325	43	1					21	92	342	1407	616	567	656	93	7	58	262	695	2954
38	286	275	310	41						17	78	332	1347	586	550	649	83	5	36	174	667	2690
37	269	264	309	32						6	59	330	1271	562	543	638	67	3	30	138	658	2566
36	248	250	305	26						4	46	324	1205	528	523	631	58		23	107	653	2445
35	225	242	300	23						4	34	319	1147	487	507	614	54		6	85	644	2393
34	207	235	285	17						2	26	311	1083	437	491	595	45					2170
33	181	224	275	11							17	302	1010	394	470	582	37					2039
32	167	201	269	9							14	295	955	359	427	554	33					1907
31	147	179	264	6							11	282	889	316	390	541	26					1510
30	120	141	237	3							6	260	767	272	327	502	15					1186
29	99	120	219								3	231	672	225	200	473	4					904
28	70	96	192								2	204	564	167	228	434	1					230
27	54	84	179								1	187	505	132	200	410						304
26	42	70	165								1	167	445	107	164	378						277
25	34	47	153								1	148	383	84	120	338						253
24	25	38	138									135	338	72	95	306						223
23	18	28	182									127	275	54	72	245						192
22	11	22	78									117	228	36	56	207						158
21	6	12	58									106	179	26	32	147						113
20	3	6	45									98	152	16	21	127						90
19	2	5	37									84	128	12	17	100						60
18	1	24										69	96	7	5	71						58
17												60	72	3								45
16												49	57									32
15												39	42									22
14												35	36									12
13												22	23									9
12												15	15									8
11												10	10									7
10												6	6									6
9												5	5									5
8												3	3									3
7																						
6																						
5																						
4																						
3																						
2																						
1																						
0																						