Solar Energy for Motor Operated Loads

A motor operated load such as a wellhead control panel (WHCP) is the main part of a safety system on an oil production site. The main function of a WHCP is to ensure controlled opening and closing of valves during emergency situations. These panels which are remotely located in extreme environmental conditions operate a few hours every day, which makes the energy requirement low while the power requirement is high. Standard available charge controllers are not designed to supply such a high power demand. TSS' specially designed industrial grade charge controllers meet such a high power requirement with or without metering.

TSS Unique Features

- Pre-designed solution, thus no engineering cost
- Lowest energy consumption – saving costs
- Robust design for use in harsh environmental conditions and high load demands.
- Can also be customized for hazardous operating conditions
- Voltage/Temperature sensor incorporated to ensure longer battery lifetime
- Temperature compensated battery charging
- No need for additional output relay, thus increasing reliability
- Ease of operation and testing with user friendly test buttons
- TSS Solar Energy System can be built inside client’s control panel.

Choice of TSS Charge Controllers

Typical specifications		Sol-Ahr PWM Controller 	MRCC PWM Controller 
Nominal voltage	[Vdc]	24	24
Solar array inputs	[No.]	1	1
Max. continuous array input current	[A]	75	31.5
Max. array input voltage	[V]	80	80
Max. battery input voltage	[V]	60	40
Max. load output current	[A]	80 (cont.) / 100 (1 minute)	24 (cont.) / 40 (1 minute)
Peak load output current	[A]	500 (1 second)	250 (1 second)
Max. terminal connector size	[mm^2]	35	16
Display Availability		✓	✖
Passive Battery Voltage Transducer (4-20mA)		✓	✖
Volt/Temp Sensor		✓	✓
Low Voltage Alarm		✓	✓
Test Switch/Button		✓	✓
High Voltage/Load Disconnect Alarm		✓	✓
Earth Fault Alarm (>100mA)		✓	✖
Battery type		VRLA or NiCd	VRLA
General specifications			
Operating temperature		-20°C to +85°C	-10°C to +85°C
Storage temperature		-30°C to +85°C	-30°C to +85°C
Mounting		Indoor	Indoor
Dimensions (H x W X D)		16.0 x 21.0 x 5.5 cm	17.3 x 10.2 x 6 cm
Unit weight		0.55 kg	0.40 kg

TSS Example System Sizing

	Insolation/day			
Solar Modules	3 kWh/m^2/day	3.75 kWh/m^2/day	4.5 kWh/m^2/day	5.25 kWh/m^2/day
	24 Vdc	24 Vdc	24 Vdc	24 Vdc
1	30 Ah/day	37 Ah/day	50 Ah/day	53 Ah/day
2	60 Ah/day	74 Ah/day	100 Ah/day	106 Ah/day
3	90 Ah/day	111 Ah/day	150 Ah/day	159 Ah/day

*Load per day based on installed modules and location specific insolation

Based on the specific load requirement and space availability, the type and number of solar modules and batteries can be customized. Additionally, a single line diagram and IOM manual would be provided for hassle free self-installation on the site.

TSS-DS-045-R00

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