

Technical Agreement

for

Shaft Power Meter



HQ: B-7th Floor Bundang Techno-Park,
723, Pangyo, Bundang, Seongnam, Gyeonggi
Korea 13511
Tel +82-(0)31-706-5211
Fax +82-(0)31-706-5214
Email specs@specs.co.kr

Busan: Byucksan Digital valley 704,
303 Daedongro, Sasang, Busan
Korea 46981
Tel +82-(0)51-803-0041
Fax+82-(0)51-804-3364
Email specs@specs.co.kr

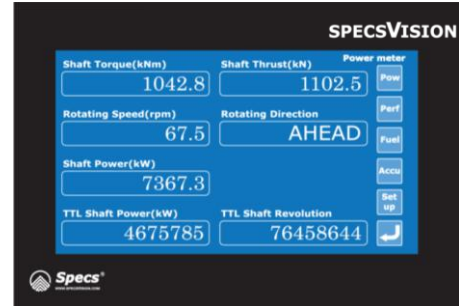
1) General description

Specs Shaft Power Meter system is simple, but it can measure and display shaft torque, thrust, power, RPM, rotating direction, accumulated revolutions and power transferred from main engine to the propeller continuously by adopting strain gauge and proximity sensor technique. It is easy to install both on new building and on operated vessel.



**Shaft Power Meter
on the intermediate shaft**

- Torque
- RPM



Indicator in ECR

- Shaft power
- RPM
- Torque
- Thrust(option)
- Ave. and total power
- Accumulated values
- Total power, total revolution

2) Scope of supply

A. Shaft power meter **1 set per ship-set**

Power meter provides the shaft torque, RPM and power on the indicator.

The torsion meter installed at intermediate shaft and measures shaft torque using strain gauge.

The torsion meter consists of rotor module, stator module and indicator module.

- i. rotor module: installed on shaft, it rotates with shaft. inside coil supplies electric power to strain gauge and measured strain value is transmitted to stator module by wireless.
- ii. stator module: installed near rotor module, it supplies induction power to rotor coil and receiving strain data from rotor module by wireless. Stator module sends strain data to indicator module every second.
- iii. Indicator module: typically installed engine control room console. It received data from stator module and displays Shaft Torque, RPM and Power. And the indicator provides RS422 serial output and 4~20mA analog output to communicate with other device.
- iv. Spare part

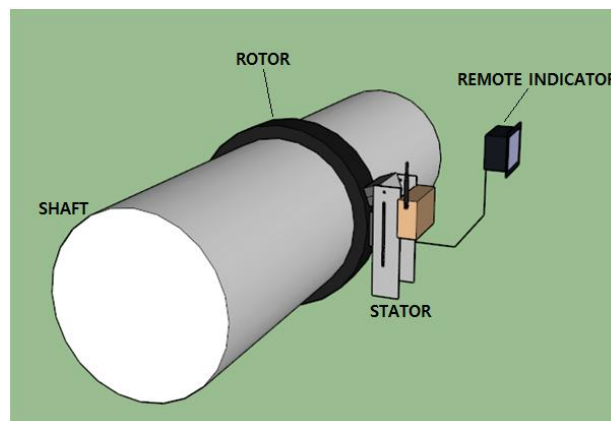


fig 1. System arrangement

3) Technical specification

A. Shaft Specification

Measurable Shaft Diameter range: 200 ~ 1000 mm

B. Equipment Specification

- i. Sensing Element
 - Torque: Strain Gauge
 - Shaft Revolution: 2 of Proximity Sensors
- ii. Remote Indicator:
 - Display: Shaft Torque, RPM, Power, Total revolution, Total Shaft Power
 - Dimension: W200 X H170 X D90 mm
 - Mounting type: Flush mounting, wall mounting or using stand
 - Communication: Serial output (RS-422) , Analog output (4~20mA)

C. Accuracy

- i. Instrumentation Accuracy
 - Shaft torque $\pm 1\%$
 - Shaft RPM $\pm 1\%$
 - Shaft Power $\pm 1\%$
- ii. System Accuracy
 - Shaft Torque $\pm 1\% + ke^1$
 - Shaft RPM $\pm 1\% + ke$
 - Shaft Power $\pm 1\% + ke$
- iii. Data output and Display

Power, Torque, RPM Display	presents average values from torsion meter
Ship Speed	Available ²
Fuel oil flow	Available
Temperature	Available
Accumulated values	Total power, total revolution
Serial output	RS-422 , All display data will be available
Analog output	4-20mA , Torque, power, rpm
- iv. Environmental

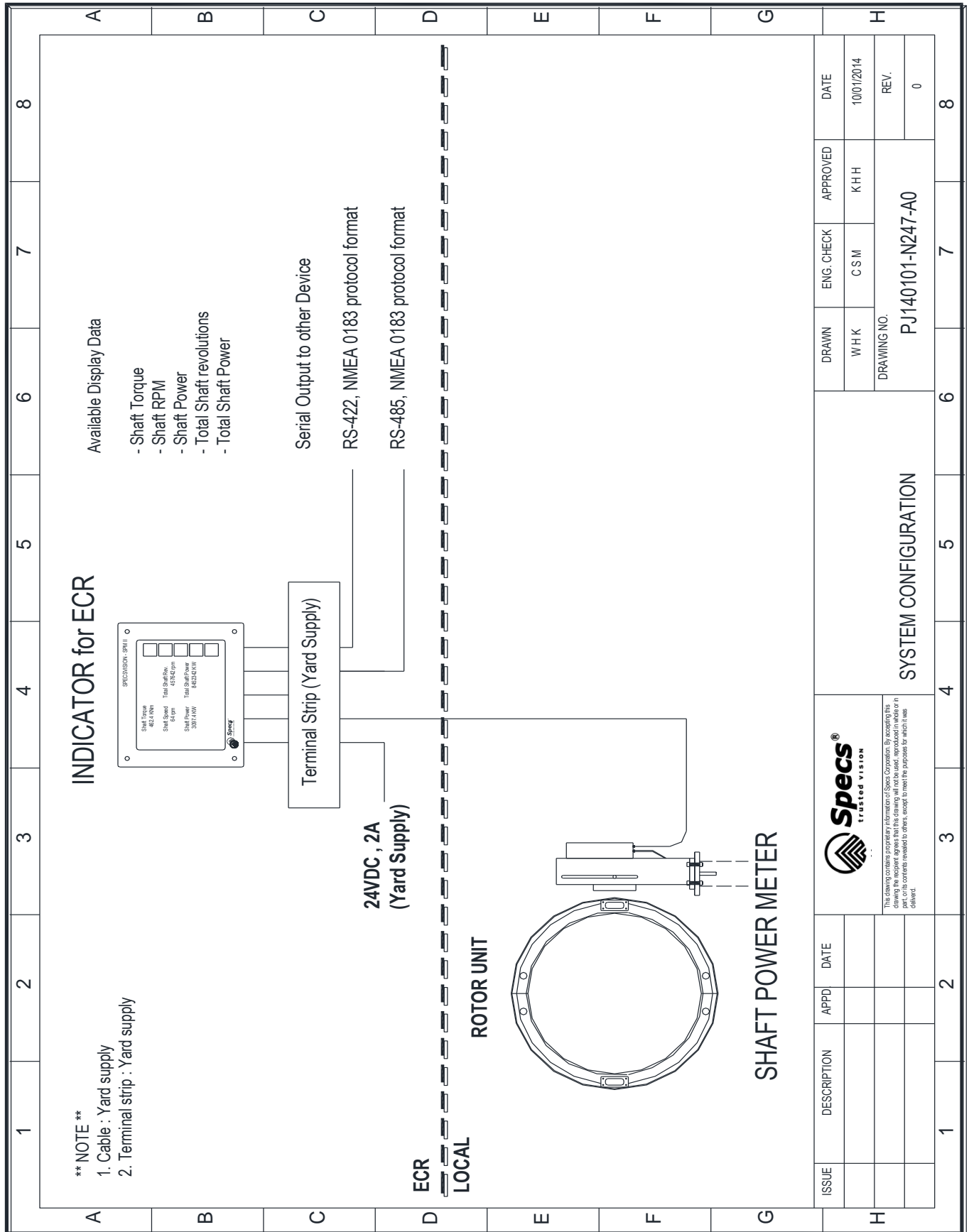
Operating Temperature	-15°C to +55°C
Storage Temperature	-25°C to +70°C
Rotor Stator Air Gap	Radial 5-12mm
Supply Voltage	110-230VAC, or DC 24V

¹ Total error in shaft modulus constant and shaft Diameter measurement

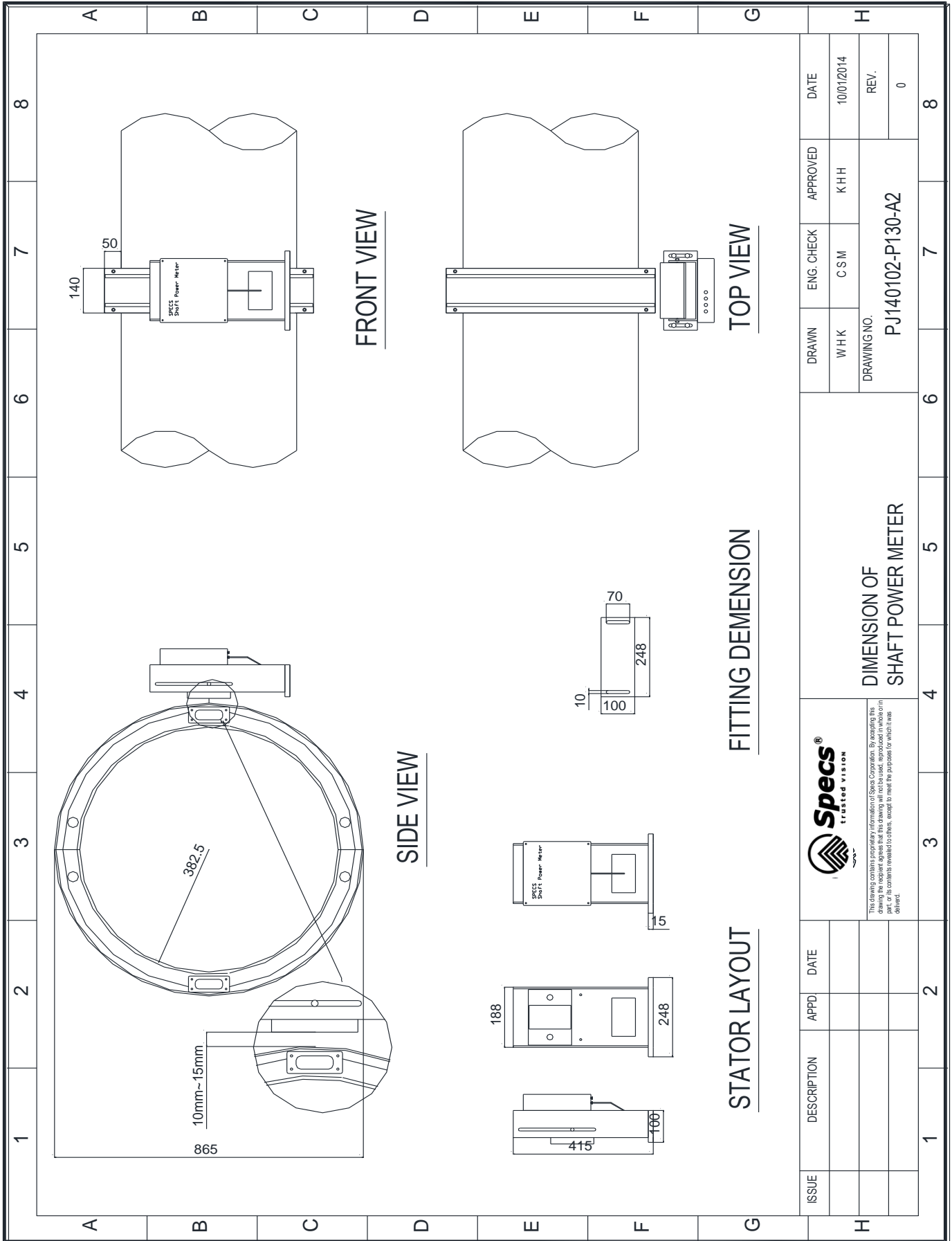
² Display the various of data from ship's system even VDR. If you have any special requirements, or would like to discuss your project with one of our knowledgeable engineers please contact us for more information.

4) Drawings

A. System configuration



B. Torsion meter



ISSUE	DESCRIPTION	APPD	DATE	DIMENSION OF SHAFT POWER METER				DRAWING NO.	APPROVED	DATE
1								PJ140102-P130-A2	KHH	10/01/2014
								REV.		
								0		

C. Indicator

