GOVERNMENT OF INDIA
(Ministry of Home Affairs)
DIRECTORATE GENERAL
CENTRAL RESERVE POLICE FORCE
EAST BLOCK-7, SEC-1, R.K. PURAM, NEW DELHI-110066

Email:- comncell@crpf.gov.in Tele Fax:011-26107493

No. B.V-7/2018-19-C (FC) Dated, the August'2018

To

1. DIG (Comn), ITBP
   Block No. 2, CGO Complex
   Lodhi Road, New Delhi-03

2. DIG (Comn), NSG
   Meharam Nagar
   Palam, New Delhi-37

3. DIG (Comn), SSB
   East Block-V, R.K Puram
   New- Delhi-66

4. AIG (Comn), CISF
   Block No. 13, CGO, Complex
   Lodhi Road, New Delhi-03

5. DIG (Prov), BSF
   Block No. 10, CGO Complex
   Lodhi Road, New Delhi-03

6. Liaison Office, Assam Rifle
   Room No-171, North Block, MHA
   New Delhi -01

Subject: Revised QRs/TDs of Fuel Cell (Direct Methanol Fuel Cell).

Please find enclosed here with revised QRs and TDs in respect of Fuel Cell (Direct Methanol Fuel Cell) as per Annexure-A & Annexure-B respectively duly approved by the competent authority for further necessary action.

Encl: (QRs & TDs of Fuel Cell (Direct Methanol Fuel Cell))

{P.R.Jha, DC (Comn)}
For DIGP (Equipment)
Directorate General, CRPF

No. B.V-7/2018-19-C(FC) Dated, the 30 August'2018

Copy to:-

SO(IT), MHA, North Block with request to host the QRs & TDs of Fuel Cell (Direct Methanol Fuel Cell) on MHA website. Soft copy is being sent through email also.

{P.R.Jha, DC (Comn)}
For DIGP (Equipment)
Directorate General, CRPF

Appendix "A"

QRs OF FUEL CELL (DIRECT METHANOL FUEL CELL)

S. N	Description/ Specification	Parameters
A. Fuel Cell (DMFC) System		
01	General	A Compact MIL Grade Fuel Cell (DMFC) for Mobile/Static Use & ideal to Power Communication Systems, Optronics Devices, Sensors, Battery Charging & Powering Small Loads at Remote Locations, BOPs etc.
02	Electrical Parameters	
(a)	Direct Methanol Fuel Cell capacity	3000 WH
(b)	Operating Principle	Direct Methanol Fuel Cell (DMFC) using 99.95% Grade Methanol
(c)	Control unit	Control Unit to control the charger
(d)	Nominal output Voltage	12V DC or 24V DC (working)
03	Physical Parameters	
(a)	Weight	12.5 Kg or less (weight of Methanol Fuel Cell minus the Fuel Cartridge)
(b)	Dimensions	≤ 490 x 220 x 300 mm (L x W x H)
(c)	Ports	(i) Connection for Battery charging cable (ii) Communication port/ remote-control connection (iii) Fuel-cartridge connection
(d)	Port Protection against	(i) Over Current (ii) Over voltage (iii) Short circuit (iv) Reverse polarity (v) Over temp (vi) No fluctuation/ In-surges
04	Special Requirement	
(a)	Button	Auto button, Power on/off button, and Reset button
(b)	Status	Charge status display and Power status display is available

QRs OF FUEL CELL (DIRECT METHANOL FUEL CELL)

S. N	Description/ Specification	Parameters
(c)	Display: The LED display should show following information	
	i)The system status	
	ii)The state of cartridge	
	iii)The warning for interruption	
05	Charging Mode	
(a)	Manual / Auto	The unit should switch on Manually or Automatically and have the capability to only charge the battery if it needs charging (Need/ Demand Based Charging)
(b)	Running time	Minimum 90hrs with 10 litres fuel cartridge at load of 3000 WH
(c)	Hot SWAP facility	The Product should allow changing the fuel cartridge without shutting down the fuel cell system
(d)	Intelligent Antifreeze Mode	The Product should have feature to Intelligently enable the Antifreeze Mode which protects the system from cold temperature.
06	Environmental parameters	
(a)	Operating Temperature	-25 °C to +45 °C
(b)	Storage Temperature	+1°C to + 50 °C
(c)	Humidity	0 to 99% RH
07	Network Support and Firmware Update	
(a)	Firmware	System should be capable to update firmware in order to benefit from latest improvements
(b)	Data Interface Port	It should support for standard RS-232 interface
(c)	Service and fault reports	System should provide the visual and text error messages display
B	**Multi Utility Power Bank (Optional). As per user requirement**	
01	Application	The Multi Utility Power storage and supply system can meet multiple types of power needs in field conditions to run Communication, Navigation and Surveillance Devices or basic power loads of small Military Camps and vehicles. It enables simultaneous use of multiple sensors, devices and utilities. It can be powered by a Fuel Cell, AC Mains or DG Sets.
02	Physical Parameters:	
(a)	Weight	≤16 Kg (weight of Multi Utility Power Bank will be decided by user organisation during procurement)
(b)	Dimensions	420 x 280 x 190 mm (L x W x H) (Dimensions of Multi Utility Power Bank)

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QRs OF FUEL CELL (DIRECT METHANOL FUEL CELL)

03	Electrical Parameters	
(a)	Power Density	1100 Wh (Capacity of Multi Utility Power Bank)
(b)	Discharge current	10 Amp (working)
(c)	Nominal output Voltage	USB, 12 V DC, 24 V DC and 220 V AC (working)
(d)	Charging option	Fuel Cell System, DG Sets and AC
04	Environmental parameters	
(a)	Operating Temperature	-20 °C to +45 °C
(b)	Storage Temperature	-40 °C to + 70 °C
05	Output and Input Ports	
	Port Type	Max Load Capacity
(a)	Output 12 V DC Port (10.0V to 13.0V	100 to 120W (Working)
(b)	Output 24 VDC Port (21.5V to 29.4V)	100 to 120W (Working)
(c)	Output 220 VAC Port	80 to 100W (Working)
(d)	Input 24V DC Port (21.5V to 29.4V)	100 to 150W (Working)
(e)	Input 220 V AC for charging	100 to 150W (Working)
06	Back-up Duration in Different Load Conditions	
	Load Conditions	Backup Durations
(a)	Only 12V Max Load	08 to 09 Hrs
(b)	Only 24V Max Load	07 to 08 Hrs
(c)	Only Inverter 100 W Max Load	07 to 08 Hrs
(d)	12V & 24V Full load together	03 to 04 Hrs.
(e)	12V & Inverter load together	03 to 04 Hrs.

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QRs OF FUEL CELL (DIRECT METHANOL FUEL CELL)

(f)	24V & Inverter load together	03 to 04 Hrs.
g)	All three at Full Load together	01 to 02 Hrs

WO/RM R.S.Dhaka
Assam Rifles

SI/RO.S.K. Awasthi
CISF

Karan Singh, AC(Tele)
ITBP

Pramod Kumar, DC(Comn)
SSB

P.R.Jha, DC(UAV)
CRPF

Harjinder Singh, DIG(Eqpt)
CRPF

D.S.Rawat ,DIG(Comn)
CRPF

Raju Bhargava. IPS, IG(Comn &IT),
CRPF

R.P.Singh. IPS, SDG(Comn)
CRPF

Approved/Not Approved

Rajeev Rai Bhatnagar, IPS
DG, CRPF

Appendix "B"

TDs OF FUEL CELL (DIRECT METHANOL FUEL CELL)

1. Trial /Testing of Fuel cell for mobile/static role will be conducted by a board of officers in the presence of representative of Firm to assess actual performance of Fuel Cell.

2. All parameters/ Specifications mentioned in the QRs will be checked by board of officers by ascertaining/ verifying following checks.

Physical Checks: In this category specifications of the equipment will be checked physically as per QRs.

Functional Check: The vendors will show all features/configuration of the equipment to the board of officers during technical evaluation.

Submission of Certificates: Specifications which cannot be checked due to lack of testing facilities/ expertise, a certificate test from OEM shown against each will be provided by firm during technical evaluation.

S. N	Description/ Specification	Parameters	Trial Procedure
A. Fuel Cell (DMFC) System			
01	General	A Compact MIL Grade Fuel Cell (DMFC) for Mobile/Static Use & ideal to Power Communication Systems, Optronics Devices, Sensors, Battery Charging & Powering Small Loads at Remote Locations, BOPs etc.	The B.O.Os will check physically and ascertain that the product can practically Charge Multiple Types of Batteries fully like – Lead Acid, Li Ion, LiPo and Li Phosphate etc fully automatically/ manually and ensure that Direct Methanol Fuel Cell (DMFC) system is as per requirement and firm will submit certificate of any Govt. Lab or NABL or (ILAC) accredited laboratory.
02	Electrical Parameters		
(a)	Direct Methanol Fuel Cell capacity	3000 WH	The B.O.Os will practically check the capacity of Direct Methanol Fuel Cell (DMFC) produced by the firm with the help of standard testing instruments. If standard testing instruments are not available than firm will produce certificate of any Govt. Lab or NABL or (ILAC) accredited laboratory.
(b)	Operating Principle	Direct Methanol Fuel Cell (DMFC) Using 99.95% Grade Methanol	The B.O.Os will check physically and practically about the working principle (DMFC) and the purity of the Fuel (99.95%) Methanol Fuel Cell (DMFC)/ with the help of standard testing instruments provided by the firm and firm will also produce the OEM certificate.

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TDs OF FUEL CELL (DIRECT METHANOL FUEL CELL)

S. N	Description/ Specification	Parameters	Trial Procedure
(c)	Control unit	Control Unit to control the charger	The B.O.Os will check practically the control unit of Direct Methanol Fuel Cell (DMFC).
(d)	Nominal output Voltage	12V DC or 24V DC (working)	The B.O.Os will check practically.
03	Physical Parameters		
(a)	Weight	12.5 Kg or less (weight of Methanol Fuel Cell minus the Fuel Cartridge)	The B.O.Os will check practically.
(b)	Dimensions	≤ 490 x 220 x 300 mm (L x W x H)	The B.O.Os will check practically.
(c)	Ports	(i) Connection for Battery charging cable (ii) Communication port/ remote-control connection (iii) Fuel-cartridge connection	The B.O.Os will check practically.
(d)	Port Protection against	(i) Over Current (ii) Over voltage (iii) Short circuit (iv) Reverse polarity (v) Over temp (vi) No fluctuation/ In-surges	The B.O.Os will check practically.
04	Special Requirement		
(a)	Button	Auto button, Power on/off button, and Reset button	The B.O.Os will check practically.
(b)	Status	Charge status display and Power status display is available	The B.O.Os will check practically.
(c)	Display: The LED display should show following information		
	(i)	The system status	The B.O.Os will check practically.
	(ii)	The state of cartridge	The B.O.Os will check practically.
	(iii)	The warning for interruption	The B.O.Os will check practically.

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TDs OF FUEL CELL (DIRECT METHANOL FUEL CELL)

S. N	Description/ Specification	Parameters	Trial Procedure
05	Charging Mode		
(a)	Manual / Auto	The unit should switch on Manually or Automatically and have the capability to only charge the battery if it needs charging (Need/ Demand Based Charging)	The B.O.Os will check practically.
(b)	Running time	Minimum 90hrs with 10 litres fuel cartridge at load of 3000 WH	The B.O.Os will check practically.
(c)	Hot SWAP facility	The Product should allow changing the fuel cartridge without shutting down the fuel cell system	The B.O.Os will check practically.
(d)	Intelligent Antifreeze Mode	The Product should have feature to Intelligently enable the Antifreeze Mode which protects the system from cold temperature.	The B.O.Os will check practically and firm will produce OEM certificate.
06	Environmental parameters		
(a)	Operating Temperature	-25 °C to +45 °C	Firm will submit certificate of any Govt. Lab or NABL or (ILAC) accredited laboratory.
(b)	Storage Temperature	+1°C to + 50 °C	
(c)	Humidity	0 to 99% RH	
07	Network Support and Firmware Update		
(a)	Firmware	System should be capable to update firmware in order to benefit from latest improvements	Firm will submit OEM certificate.
(b)	Data Interface Port	It should support for standard RS-232 interface	The B.O.Os will check practically.
(c)	Service and fault reports	System should provide the visual and text error messages display	The B.O.Os will check practically.

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TDs OF FUEL CELL (DIRECT METHANOL FUEL CELL)

S. N	Description/ Specification	Parameters	Trial Procedure
B. Multi Utility Power Bank (Optional). As per user requirement			
01	Application	The Multi Utility Power storage and supply system can meet multiple types of power needs in field conditions to run Communication, Navigation and Surveillance Devices or basic power loads of small Military Camps and vehicles. It enables simultaneous use of multiple sensors, devices and utilities. It can be powered by a Fuel Cell, AC Mains or DG Sets.	The B.O.Os will check physically and practically.
02	Physical Parameters:		
(a)	Weight	≤16 Kg (weight of Multi Utility Power Bank will be decided by user organisation during procurement)	The B.O.Os will check practically.
(b)	Dimensions	420 x 280 x 190 mm (L x W x H) (Dimensions of Multi Utility Power Bank)	The B.O.Os will check practically.
03	Electrical Parameters		
(a)	Power Density	1100 Wh (Capacity of Multi Utility Power Bank)	The B.O.Os will check practically and firm will also produce OEM certificate.
(b)	Discharge current	10 Amp (working)	The B.O.Os will check practically.
(c)	Nominal output Voltage	USB, 12 V DC, 24 V DC and 220 V AC (working)	The B.O.Os will check practically. Ports for 12VDC, 24 VDC, 220VAC, USB.
(d)	Charging option	Fuel Cell System, DG Sets and AC	The B.O.Os will check practically.
04	Environmental parameters		
(a)	Operating Temperature	-20 °C to +45 °C	Firm will submit certificate of any Govt. Lab or NABL or (ILAC) accredited laboratory.
(b)	Storage Temperature	-40 °C to + 70 °C	
05	Output and Input Ports		
	Port Type	Max Load Capacity	
(a)	Output 12 V DC Port (10.0V to 13.0V	100 to 120W (Working)	The B.O.Os will check practically.
(b)	Output 24 VDC Port (21.5V to 29.4V)	100 to 120W (Working)	The B.O.Os will check practically.
(c)	Output 220 VAC Port	80 to 100W (Working)	The B.O.Os will check practically.

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TDs OF FUEL CELL (DIRECT METHANOL FUEL CELL

S. N	Description/ Specification	Parameters	Trial Procedure
(d)	Input 24V DC Port (21.5V to 29.4V)	100 to 150W (Working)	The B.O.Os will check practically.
(e)	Input 220 V AC for charging	100 to 150W (Working)	The B.O.Os will check practically.
06	Back-up Duration in Different Load Conditions		
	Load Conditions	Backup Durations	
(a)	Only 12V Max Load	08 to 09 Hrs	The B.O.Os will check practically.
(b)	Only 24V Max Load	07 to 08 Hrs	The B.O.Os will check practically.
(c)	Only Inverter 100 W Max Load	07 to 08 Hrs	The B.O.Os will check practically.
(d)	12V & 24V Full load together	03 to 04 Hrs.	The B.O.Os will check practically.
(e)	12V & Inverter load together	03 to 04 Hrs.	The B.O.Os will check practically.
(f)	24V & Inverter load together	03 to 04 Hrs.	The B.O.Os will check practically.
g)	All three at Full Load together	01 to 02 Hrs	The B.O.Os will check practically.

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Raju Bhargava. IPS, IG(Comn &IT),
CRPF

R.P.Singh. IPS, SDG(Comn)
CRPF

Approved/Not Approved

Rajeev Rai Bhatnagar, IPS
DG, CRPF