

**Invitation for Bids (IFB)
For
Supply and Installation of Flow Meters and Data Loggers in the Ararat Valley**

ME&A Clarifications to Comments and Recommendations by Bidders Provided at the Pre-Bid Meeting on February 8, 2018

ANNEX A: TECHNICAL SPECIFICATIONS/STATEMENT OF WORK AND DELIVERABLES

Minimum Technical Specifications

Supply and Installation of Flow Meters and Data Loggers in the Ararat Valley

IV. Minimum Technical Specifications

General

Parameter Name	Parameter Specification ME&A Announced	Comments and recommendations by the potential bidders:		ME&A RESPONSE
		Bidder 1	Bidder 2	
Liquid Types	Most clean liquids or liquids containing small amounts of suspended solids or gas bubbles	No comment	No comment	
Velocity Range	Bi-directional up to 12 m/s (40 f/s)	No comment	Question 1: Why bi-directional? Is that coming from the application needs? Is that coming from the End User? Question 2: Why 12m/s? Is that coming from the application needs? Is that coming from the End User? Recommendation: up to 10m/s	Bi-directional per the requirements of the End User The specification is changed to “Bi-directional up to 10 m/s”
Flow Measurement Accuracy	±1%	No comment	Question 1: Why ±1%? Is that coming from the application needs? Is that coming from the End User? Recommendation: ±1.5% for the flow meter	Per the requirements of the End User The specification is changed to “±1.5%”
Sensitivity	0.0003 M/S (0.001 f/s)	0.0003 M/S – replace with 0.01	No comment	The specification is changed to “0.01 m/s”

Repeatability	0.5% of reading	No comment	No comment	
Number of transducers	Clamp-on: 1 pair or more Internal: 1 pair or more	No comment	No comment	
Pipe Size Range and Types	Clamp on: 70 – 3200 mm (2.76 – 126 in). Type: Steel, cast iron or PVC Internal: 15 – 1800 mm (0.6 – 71 in). Type: Steel or cast iron	15 – 1800 mm (0.6 – 71 in). Type: Steel or cast iron - Replace with 100 – 1500 mm	No comment	The specification is changed to: “Internal: 100 – 1800 mm”
Thickness of Pipe Wall	Clamp-on: 1.5 – 20 mm (0.06 – 0.8 in) Internal: Any	Remove this requirement	Question 1: Why 1.5mm? Is that coming from the application needs? Is that coming from the End User? Recommendation: Clamp-on: 2 – 30 mm Internal: Any	Per requirements of the End User The specification is not changed
Installation	Clamp-on: Non-invasive to the pipe Internal: Flange coupling or welding	No comment	No comment	

Flow Meter Block with Display and Key Pad

Parameter Name	Parameter Specification ME&A Announced	Comments and recommendations by the potential bidders:		ME&A RESPONSE
		Bidder 1	Bidder 2	
Power Requirements	AC: 187-242 V @ 17VA max or DC: 10-28 V DC @ 5W max Protection: Auto resettable fuse, reverse polarity and transient voltage suppression (TVS).	DC: 10-28 V DC @ 5W max – replace 10-28 V with 12/24 V, and remove 5W max	Question 1: Does this requirement means that DC voltage can be within that range? Does it means for example DC: 11-14V DC is acceptable.	The specification is changed to “DC: 12/24 V”
UPS	Built-in or external back-up battery power supply	No comment	No comment	
Display	Two rows or more LCD, LED backlit display Minimum display: Flow rate, flow volume, flow accumulation.	No comment	No comment	
Keypad	Minimum of numbers (0-9) and directions (up, down, left and right), enter keys for setting parameters.	Remove this requirement	No comment	Per requirements of the End User. The specification is not changed
Enclosure	Ingress protection-65 (IP-65) rated as dust tight and protected against water projected by a nozzle (6.3mm) from any direction shall have no harmful effects.	Remove this requirement	No comment	Per requirements of the End User. The specification is not changed
Operating Temperature Range	-20 to 80 C (-4 to 176 F)	-20 to 80 C (-4 to 176 F) – replace 80 C with +60	Question 1: Why 80 C? Is that coming from the application needs? Is that coming from the End User? Question 2: Why flow meter block itself should sustain -20 C? Is that coming from the application needs? Is that coming from the End User? Recommendation: Enclosure should sustain -20 to 50 C	The specification is changed to “-20 to +50 C”
Configuration	Via PC/laptop running specific utility software provide by the flow meter manufacture	No comment	No comment	

Engineering Units	Meters, cubic meters, liters, million liters. Feet, gallons, cubic feet, million gallons, acre-feet.	Remove requirement for Feet, gallons, cubic feet, million gallons, acre-feet.	Question 1: Why it should have Feet, gallons, cubic feet, million gallons, acre-feet engineering units.? Is that coming from the application needs? Is that coming from the End User? Recommendation: Meters, cubic meters, liters, million liters	The specification is changed to “Meters, cubic meters, liters, million liters; OR Feet, gallons, cubic feet, million gallons, acre-feet”
Inputs/Outputs	USB 2.0: For connection of a PC/laptop running the configuration utility	Add RS232, Ethernet to USB 2.0	Question 1: Why it should communicate with configuration utility via USB? Is that coming from the application needs? Is that coming from the End User? Question 2: Why it should support non standard 14400, 56000, 76800 baud rates? Is that coming from the application needs? Is that coming from the End User? Recommendation 1: Flow meter should have ability to be configured from any point in the network, including SCADA center. Recommendation 2: RS485: Modbus RTU - baud rates 4800, 9600,19200, 38400, 57600 and 115200	The specification is changed to “RS232, Ethernet or USB”
	RS485: Modbus RTU command set and network - baud rates 4800, 9600, 14400,19200, 38400, 56000, 57600, 76800 and 115200	Remove rates - baud rates 4800, 9600, 14400,19200, 38400, 56000, 57600, 76800 and 115200	No comment	The specification is changed to “RS485: Modbus RTU command set and network baud rates 4800, 9600, 19200, 38400, 57600 and 115200”
	4-20 mA: 12-bit, internal power, can span negative to positive flow/energy rates	No comment	No comment	
	Input: Allow to reset flow accumulation	No comment	No comment	
	Frequency Output: Open collector, 10-28V DC, 100 mA max, 0-1000 Hz; square wave or turbine meter simulation	No comment	No comment	
	Two Alarm Outputs: Open-collector, 10-28V DC, 100 mA max, configure as rate alarm, signal strength alarm or totalizer pulse (100 ms pulse width up to 1 Hz max)	No comment	No comment	
Data Archiving Option	No less than 12 logs per hours	No comment	No comment	

Time Error per Day	Less than ± 2 seconds	Remove this requirement	No comment	Per requirements of the End User. The specification is not be changed
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Flow Meter Transducer/Sensor

Parameter Name	Parameter Specification ME&A Announced	Comments and recommendations by the potential bidders:		ME&A RESPONSE
		Bidder 1	Bidder 2	
Enclosure	IP 67 rated as dust tight and waterproof up to 1 m depth.	No comment	No comment	
Operation Temperature Range	-20 to 120 C (-4 to 248 F)	No comment	No comment	
Frequency	500 KHz up to 2 MHz	No comment	No comment	
Cable types and Length	Cable: RG59 coaxial, 75 ohm or twinaxial, 78 ohm Length: 300 m (984 ft) max	No comment	Question 1: Why it should be especially RG59 coaxial, 75 ohm or twin axial, 78 ohm? Is that coming from the application needs? Is that coming from the End User? Recommendation: Length: up to 300m	The specification is changed to: "Cable type: PK-50 , PK-75 or similar Length: up to 200 m maximum"

Flow Meter Software

Parameter Name	Parameter Specification ME&A Announced	Comments and recommendations by the potential bidders:		ME&A RESPONSE
		Bidder 1	Bidder 2	
Software Utility	Used to configure, calibrate and troubleshoot. Connection via USB cable; software is compatible with Windows® 2000, Windows XP, Windows Vista and Windows 7	Connection via USB cable – remove this or add RS232 or Ethernet software is compatible with Windows® 2000, Windows XP, Windows Vista and Windows 7 – mention Windows only, without specific version	Question 1: Why it should be compatible with Windows® 2000, Windows XP, Windows Vista and Windows 7? Is that coming from the application needs? Is that coming from the End User? Question 2: Why it should be connected via USB (please check the same question above) Recommendation: Used to configure, calibrate and troubleshoot. Connection through network; software should be compatible with Windows 8, Windows 10 operating systems.	The specification is changed to: "Connection: RS232, Ethernet or USB Software: MS Windows Operating System"

2. DATA LOGGER WITH INTEGRAL GSM/GPRS MODEM

Parameter Name	Parameter Specification ME&A Announced	Comments and recommendations by the potential bidders:		ME&A RESPONSE
		Bidder 1	Bidder 2	
		No comment	<p>Question 1: Why it should have additional data logger in addition to the flow meter? Is that coming from the application needs? Is that coming from the End User?</p> <p>Question 2: Please check the attached drawing "Requested System Layout". Did we understood the system layout as per the Technical Specification / SOW correctly?</p> <p>Recommendation: Use the configuration called "Recommended System Layout" and change the requirements and specifications based on that.</p>	<p>If the flow meter block is capable to server as data logger, then only GSM/GPRS modem is needed in this case. If flow meter set up comes with data logger with built-in GSM/GPRS modem then we will only have two components - flow meter transducers/sensors and data logger with built-in modem.</p> <p>Therefore, the monitoring system could come with several options as follows: (1) flow sensors with flow meter block and data logger with built-in modem (2) flow sensors, data logger, and modem (3) flow sensors and data logger with built-in modem.</p>
Measurement	4-20 mA	Make this requirement as non-mandatory	<p>Question 1: Why modem should communicate with Flow meter through 4-20mA Analog channel? Is that coming from the application needs? Is that coming from the End User?</p> <p>Recommendation: Please check the attached configuration called "Recommended System Layout". The data communication should be by RS485 communication.</p>	The specification is changed to: "4-20 mA or RS485"
Sample Rate	Max sample rate 1 minute, max web update rate 1minute or on change of threshold	Remove this requirement	No comment	The requirement is removed
Power Supply	9-24V DC or 7-8 V battery		<p>Question 1: Does this requirement means that DC voltage can be within that range? Does it mean for example DC: 11-14V DC is acceptable?</p>	The specification is changed to: "12/24V DC or 7-8 V battery"
UPS	Internal battery back-up power	Remove this requirement	No comment	Per requirements of the End

				User. The specification is not changed
Inputs	Analogue 4 inputs and digital 4 inputs	Make this requirement as non-mandatory	Question 1: Why the communication modem should have 4 Analog input and 4 digital input channel? Is that coming from the application needs? Is that coming from the End User? Where and how those should be used? Recommendation: Please check the attached configuration called "Recommended System Layout". The modem should be used only to create network.	The requirement is removed
Outputs	Digital 2 outputs	Make this requirement as non-mandatory	Question 1: Why the communication modem should have 2 digital output channel? Is that coming from the application needs? Is that coming from the End User? Where and how those should be used? Recommendation: Please check the attached configuration called "Recommended System Layout". The modem should be used only to create network.	The specification is changed to "Digital 1 or 2 outputs"
Operating Temperature Range	-20 to 80 C (-4 to 176 F)	-20 to 80 C (-4 to 176 F) – replace 80 C with +60	Question 1: Why 80 C? Is that coming from the application needs? Is that coming from the End User? Question 2: Why communication modem itself should sustain -20 C? Is that coming from the application needs? Is that coming from the End User? Recommendation: Enclosure should sustain -20 to 50 C	The specification is changed to "-20 to +50 C"
GSM/GPRS Modem	Quad-band 850, 900, 1800 and 1900 Direct connect to GSM/GPRS with a SIM card	No comment	No comment	
Communication Ports	RS 232 and/or RS 485 serial ports One USB port for local programming and configuration One ModBus RTU - baud rates 4800, 9600, 14400,19200, 38400, 56000, 57600, 76800 and 115200 bit/second	One USB port for local programming and configuration – remove the USB, just put a requirement for programming possibility	Question 1: Why it should communicate with configuration utility via USB? Is that coming from the application needs? Is that coming from the End User? Question 2: Why it should support non-standard 14400, 56000, 76800 baud rates? Is that coming from the application needs? Is that coming from	The specification is changed to: "RS232, Ethernet, USB, or RS485: Modbus RTU - baud rates 4800, 9600,19200, 38400, 57600 and 115200 for programming and configuration"

			the End User? Recommendation 1: Communication modem should have ability to be configured from any point in the network, including SCADA center. Recommendation 2: RS485: Modbus RTU - baud rates 4800, 9600,19200, 38400, 57600 and 115200	
Data Communication	Enable to upload data to a remote server on a programmable schedule and connect to a remote server database via dynamic domain name or static IP address	Remove this requirement	No comment	Per requirements of the End User. The specification is not changed
Internal data storage	No less than 50,000 readings should the GSM/GPRS connection be lost and uploads readings when the connection is re-established	Replace 50,000 with 10,000	Question 1: Why the communication modem should have internal data storage and in addition to the flow meter store the readings? Is there a requirement for redundancy of the system, if yes for which level of redundancy (RTU IOs, RTU processor, communication, server, etc.)? Is that coming from the application needs? Is that coming from the End User? Recommendation: Please check the attached configuration called "Recommended System Layout". The modem should be used only to create network, the data storage and all remaining activities should be handled by Flow meter as main and only one data logger.	The specification is changed to: "No less than 10,000 readings should the GSM/GPRS connection be lost and uploads readings when the connection is re-established"
Enclosure	IP-65 rated construction	No comment	No comment	
Antenna	External	No comment	No comment	
Software	Utility software for setting up input parameters for both analogue and digital inputs, and is compatible with Windows® 2000, Windows XP, Windows Vista and Windows 7	And is compatible with Windows® 2000, Windows XP, Windows Vista and Windows 7 – mention Windows only, without specific version	Question 1: Why it should be compatible with Windows® 2000, Windows XP, Windows Vista and Windows 7? Is that coming from the application needs? Is that coming from the End User? Question 2: Why modem should have analog and digital inputs (please check the same question above). Recommendation: Used to configure and troubleshoot. Connection through	The specification is changed to: "Utility software for setting up input parameters for both analogue and digital inputs for the data logger. Software compatible with MS Windows Operating System"

			network; software should be compatible with Windows 8, Windows 10 operating systems.	
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