י״ז אדר תשע״ח
04 מרץ 2018

לכל המעוניין

<u>פתור מהיתר למערכת מונים חכמים של חברת MTR Wireless Communications</u>

אני מאשר כי הציודים המשדרים מסוג BSU, RPU, RTU ו-RTI של חברת MTR Wireless Communications עומדים בתנאים הרשומים בתוספת (סעיף 4), לחוק הקרינה הבלתי מייננת, התשס״ו – 2006, כמקור קרינה שהקמתו והפעלתו אינה טעונה היתר.
מפרטי הציודים מצורפים בנספחים א-ד.

לאור זאת ובהתאם לחוק הקרינה הבלתי מייננת, התשס״ו 2006, לא נדרש היתרי הקמה והפעלה של המשרד להגנת הסביבה לצורך הפעלת מוקד שידור זה.

יש לציין כי הרכיבים המצוינים הותקנו החל משנת 2013. פתור זה תקף גם לרכיבים שהותקנו בעבר.

בברכה,

גיל כהן
ראש תחום קרינה בלתי מייננת

<u>העתק</u>: ראש אגף למניעת רעש וקרינה

נספח א

Base Station Unit

The **Base Station Unit** [BSU] manages the two-way RF communications between the remote terminals in the monitored area, and a utilities public carrier based on a WAN network with the MTR Wireless System - a flexible Smart Grid solution for transmitting and receiving meter data for water, electricity, gas and other utilities in the field.

The BSU manages communications with up to 40 RPUs and up to 40,000 end units via RSM, MTR's utility- server based software application.

The Base Station Unit:

- Provides continuous communication with the control center for data transfer of all types using a standard public networks protocol for Internet communication.
- Utilizes public networks, such as a cellular system, Wi-Fi wireless network, or a TCP / IP based wired connection.
- Provides continuous two-way wireless communication with a proprietary protocol using repeaters.
- Provides dual-channel wireless communication in a proprietary protocol with the end units.
- Every BSU unit creates a local LAN cloud and is connected to the WAN of the control center.
- Real time clock RTC synchronizes all units with the control center.
- Updates all parameters from the control center.
- In the event of communication failure with the control center, the system stores the data in local memory of sufficient capacity to store information for several days. When

communication is restored, the system sends all the stored information that had not yet been sent automatically. Each message has a time stamp so that the information enters the correct place in the database.

- The communication frequency is 325Mhz with 100mw ERP.
- Energy input – it is connected to the power grid or receives energy from a solar panel.

The BSU can be powered by the following:

- AC adapter
- Solar panel, ranging from 3W to 30W
- Internal 3.7V 5.3AH rechargeable Li-Ion battery, with 2A charger
- External 7.4V 13 AH rechargeable Li-Ion battery, with 3A charger

Technical Specifications

Transceiver Module

Frequency range	325 MHZ
Modulation type	FM - Two Level FSK
Data rates	100 bit/s to 32Kbit/s
Receiver Bandwidth	12.5 KHz, 18.5 KHz, 25 KHz
Sensitivity for Data	-118 dBm min
Current consumption BSU	80mA max

Transmitter

Power transmit ERP	100mW max
Frequency Deviation	±3KHz to ±12KHz
Current consumption BSU	500mA max. at 3.6V

Power and Environmental Specifications

Input power	5 to 9 V-dc
Humidity	5% to 95%, non-condensing
Operating Temperature	-30°C to +70°C
Storage Temperature	-40°C to +85°C
Ingress Protection	IP66

Cellular Module

Generation	3G; 4G optional
Data Transfer Rate	Downlink:14.4 Mbps, Uplink: 5.76 Mbps
Current consumption	500mA Rx, 2.2A Tx max at 3.6V
Approvals	FCC, CE, PTCRB

נספח ב

Repeater Unit [RPU]

Repeater Units extend BSU control over additional end units.

The RPUs are designed for easy and simple mounting on walls or on solar panel pole mounts.

Repeater Unit

MTR's durable and robust Repeater Units:

- Can support two-way RF communications between the Base Station unit and end units.
- Each RPU can monitor, manage and control up to 1000 end units.
- Up to six RPUs can be concatenated and connected in series, totaling up to 40 RPUs controlled by one BSU.
- Have 1.5 km NLOS [Non Line of Sight] range and +10 km LOS range which give you a low-cost option to extend the range of fixed LAN deployments.
- ***Have a built-in real-time clock [RTC] which synchronizes all units with the Base Station unit.***
- ***Can update customer-defined specifications from the Base Station unit.***
- The RPU can be powered by the following:
  - AC adapter
  - Solar panel, ranging from 3W to 30W
  - Internal 3.7V 5.3AH rechargeable Li-Ion battery, with 2A charger
  - External 7.4V 13 AH rechargeable Li-Ion battery, with 3A charger
- ***Include a USB connection.***
- ***Has a communication frequency of 325MHz with 100 mw ERP.***
- ***Uses standard IP68 waterproof enclosures.***

Technical Specifications

Transceiver Module

Frequency range	325 MHZ
Modulation type	FM - Two Level FSK
Data rates	100 bit/s to 32Kbit/s
Receiver Bandwidth	12.5 KHz, 18.5 KHz, 25 KHz
Sensitivity for Data	-118 dBm min
Current consumption BSU	80mA max

Transmitter

Power transmit ERP	100mW max
Frequency Deviation	±3KHz to ±12KHz
Current consumption BSU	500mA max. at 3.6V

Power and Environmental Specifications

Input power	3.6Ah Lithium Battery
Humidity	5% to 95%, non-condensing
Operating Temperature	-30°C to +70°C
Storage Temperature	-40°C to +85°C
Ingress Protection	IP66

נספח ג

RT3 / Remote Terminal Unit [RTU]

The RT3 based Remote Terminal Unit is a two-way wireless device that includes up to four channels for connecting to external meters and / or sensors. The RTU can be integrated with any sensor that transmits pulse signals from any utilities meter, for example pumps, generators, valves, gas, electricity and light meters.









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The Remote Terminal Unit

- The RTU has four main channels. In each channel there is a 4-pin connection:
  - Digital input - generally for digital square pulses (TTL), including a Pull up option.
  - Analog input – voltage sampling of 0-10V or 4-20ma, connected to a 14 bit ADC.
  - Clock or DC power supply output, at 3 to12V level.
  - Ground.
  - Optional 24 bit ADC, for higher precision measurements.
- An auxiliary connector provides a link to an I2C port.
- On Channel 3, jumpers can enable the connection of an RS485/422/232 communication port instead of the usual I/Os.
- An additional connector provides another RS485/422 communication port.
- Two additional channels provide control for controlling valves, solenoids or relays.
- The unit supports a wide range of I/Os and types of water meters - dry pulse, passive pulse, active pulse, digital water meter such as the Kfir, water meter encoder in various protocols, such as Modbus and others.
- Pressure sensors and flow meters may be connected.
- Daily frequency of data readings to the Base Station unit are customer defined.
- Customer defined settings can freeze up to 24 readings per day.
- Alerts - leak / leak detection, stop indicator, high consumption, and low battery notification.
- Battery life ranges between a 10 year span with valves and up to 20 years maximum (assuming maximum waiting time of ten minutes after the subscription polling to the control center and four transmissions a day).

Supported communication protocols:

- Dali (Lighting)
- 1-10V (Lighting)
- Modbus (Electricity meter)
- SDI 12 (Sensors)
- RS232

- RS485 / RS422
- M-Bus (Water meters)

Power

The RTU can be powered by the following:

- Internal 3.6V 8.5AH primary Lithium battery
- AC adapter
- Solar panel, ranging from 3W to 30W
- Internal 3.7V 5.3AH rechargeable Li-Ion battery, with 2A charger
- External 7.4V 13 AH rechargeable Li-Ion battery, with 3A charger

Capabilities to Connect to Sensors

Sensor Type	Output Signal	Supply Voltage
Pressure Sensor	0-5V / 0- 10V	8-30V
Tesio MP3V5100	0-3V	2.7 – 3.3 V
Humidity & Temp Rotronic	0-1V	5-24V
Humidity & Temp Sensirion	Serial Communication	3.3V
Temp. LM61	Vs + 0-1.1 V	2.7 – 10 V
Radiation Sensor Davis	0-3V	3V
Wind Direction	0-20 Ώ	
Wind Speed	Pulse Interval: 30 ms	
EC Sensor Ponsel	SDI12 / RS485	5-12V
EC Sensor Decagon	SDI12	3.6-15V

Technical Specifications

Transceiver Module

Frequency range	325 MHZ
Modulation type	FM - Two Level FSK
Data rates	100 bit/s to 32Kbit/s
Receiver Bandwidth	12.5 KHz, 18.5 KHz, 25 KHz
Sensitivity for Data	-118 dBm min
Current consumption	35mA max

Transmitter

Power transmit ERP	100mW max
Frequency Deviation	±3KHz to ±12KHz
Current consumption BSU	130mA max. at 3.6V

Power and Environmental Specifications

Input power	3.6Ah Lithium Battery
Humidity	5% to 95%, non-condensing
Operating Temperature	-30°C to +70°C
Storage Temperature	-40°C to +85°C
Ingress Protection	IP66

נספח ד'

Kfir - Smart Water Meters

Kfir Smart Water Meters are digital, two-way communications, water meters based on MTR's RTI register. The meter is the heart of the MTR Smart grid, enabling centralized monitoring, management, command and control of every end-point in a grid. It is a state of the art, no wires, no moving components in the register, totally enclosed secure unit.

Kfir Multi-Jet

Kfir W.T.Waltman

The Smart Water Meter Register features:	Digital reading options:	Triggers alerts on:
No moving parts	Current reading (precision of up to 0.01).	Leaks detect
Real Time clock synchronization	Current flow rate (l/h)	Abnormal flow rate
Interval read control	Last Day Consumption	Meter not Levelled
Alarm threshold control	Last Month Consumption	Physical Tampering
	Back-flow (reverse) Consumption	Magnetic Tampering
	Max recorded daily consumption	Back-flow
	Max recorded flow rate	No consumption
		Low Battery

Transceiver Module

Frequency	325 MHZ
Modulation type	FM - Two Level FSK
Data rates	100 bit/s to 32Kbit/s
Receiver Bandwidth	12.5 KHz, 18.5 KHz, 25 KHz
Sensitivity for Data	-118 dBm min
Current consumption	35mA max

Transmitter

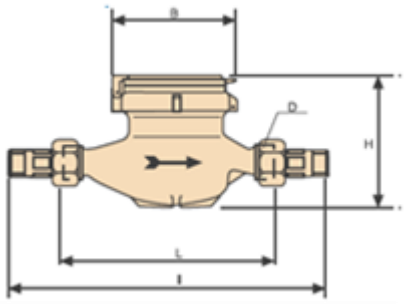
Power transmit ERP	100mW max
Frequency Deviation	±3KHz to ±12KHz
Current consumption BSU	130mA max. at 3.6V

Power and Environmental Specifications

Input power	3.6Ah Lithium Battery
Humidity	100%
Operating Temperature	-30°C to +70°C
Storage Temperature	-40°C to +85°C
Ingress Protection	IP68

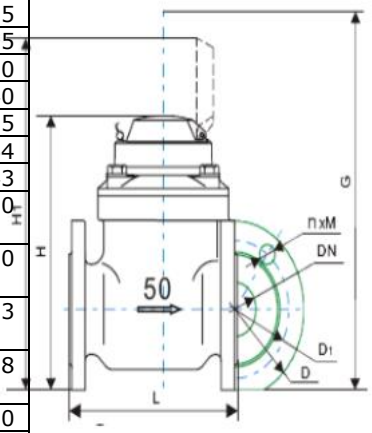
Technical Specifications -Kfir Multi-Jet

Nominal diameter	mm	DN	15	20	25	40
Threading		D	G¾B	G1B	G1¼B	G2B
Length	mm	L	165	190	260	300
Length + connectors	mm	L		285	375	440
Width	mm	B	95	93	95	100
Height	mm	H	122	128	128	153
Weight	kg		1.4	1.5	2.5	3.7
Maximum flow rate	m³/h	Q4	3.125	5	7.875	20
Nominal flow rate	m³/h	Q3	2.5	4	6.3	16
Transition flow rate	l/h	Q2	25	40	63	160
Minimum flow rate	l/h	Q1	15.63	25	39.37	100
Measuring Range		Q3/Q1	R160	R160	R160	R500
Maximum reading	m³		999999.999			
Minimum reading	m³		0.001			



Technical Specifications - Kfir W.T.Waltman

Nominal diameter	mm	DN	50	80	100	150	200
Length	mm	L	200	225	250	300	350
Height	mm	H	256	276	286	345.5	372.5
Working height	mm	H1	328	348	358	417.5	444.5
Height	mm	G	400	400	400	500	500
Outside diameter	mm	D	165	200	220	285	340
Circle diameter	mm	D1	126	160	180	240	295
Meter weight	kg		12	16	18	42	64
Body weight	kg		8.9	11.5	13.9	29.6	43
	m³/h	Q4	50	78.75	125	312.5	500
Nominal flow rate	m³/h	Q3	40	63	100	250	400
Transition flow rate	m³/h	Q2	0.128	0.202	0.32	0.8	1.3
Minimum flow rate	m³/h	Q1	0.08	0.126	0.2	0.5	0.8
Measuring Range		Q3/Q1	R500	R500	R500	R500	R500
Maximum reading	m³		999999.999				
Minimum reading	m³		0.001				



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