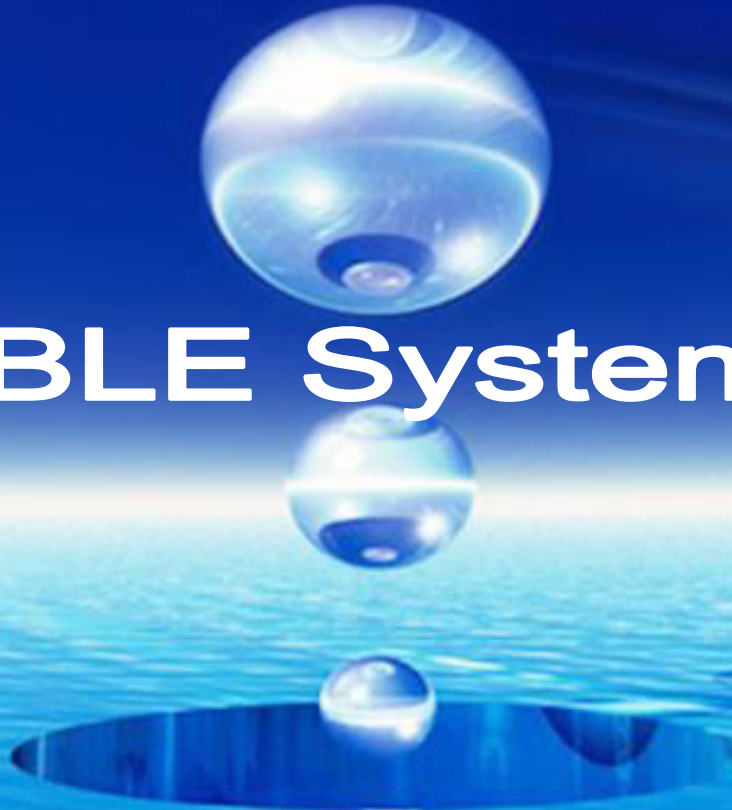




# Nisko Telematics Systems

BLE System



# Nisko BLE protocol basics

- Each unit has a unique MAC address
- Meter id is last 4 bytes of the MAC address
- Units type can be identify via the unit name (NWW,NCC,NUU and NVV)
- Advertising – the unit transmits basic data every TBT second(the default is 2 sec)
- The unit has a specific service (UUID) for programing

- Measure mode (id, reading , flow ,factor...)
- Test mode ( reading in high resolution)
- Valve Status (External Valve unit)
- Zero Calibration mode (Ultrasonic)
- Calibration mode (Ultrasonic)
- IDEL mode (Ultrasonic)

# Parameters

- Logger
- 180 Days Daily Logger
- RTC
- Test Mode
- Meter Params (Gear ratios and flows)
- General Params (CW, CCW, factor, units, pulse output)
- Irrigation (program no, time , amount of water..)
- Alerts parameters (backflow TH, Leak, Max flow..)
- Irrigation Alert parameters (valve open w/o flow...)
- BLE parameters (Tx interval, Pin code..)

# Irrigation Parameters

Byte No.	Field	Size (Byte)	Description	Remarks
0	Op code	1		
1	Program No.	1		
2	Start Date	2	Byte 1 -day Byte 2- month	
4	End Date	2	Byte 1 -day Byte 2- month	
6	Day of the week	2	Bitmap of active days	
8	Interval	1	Cycle in Days	
9	Start Time	2	byte1 - minutes byte2 - hours	
11	Quantity stop condition	2	Counter delta from program beginning	Delta in factor units (1, 10, 100..). FFFF = stop condition not active (LSB first)
13	Time stop condition	2	Delta in minutes from start time	FFFF = stop condition not active (LSB first)
15a	Delta interval	5 bits (msb)	Delta in days to next start	
15b	Status	3 bits (lsb)	Bitmap, program enable/disable, program active/not active now	Bit 0 - enable/disable (1/0) Bit 1 - active/not active (1/0) <u>* bit0=0 &amp; bit1=1 empty program slot</u>
16	Quantity Remain	2		
18	Time Remain	2		

# General Parameters

Byte No.	Field	Size (Byte)	Description	Remarks
0	Opcode	1		
1	Factor	1	Index of factor	
2	CountUnits	0.5	Index of count units	
2	FlowUnits	0.5	Index of flow units	
3	PulseDigit1	0.5	From factor value (0-factor value, 1- factor value x 10,...)	
3	PulseDigit2	0.5	From factor value (0-factor value, 1- factor value x 10,...)	
4	PulseWidth	2	Pulse width in msec	
6	CountDir (lsb bit)	0.125	Positive flow direction(0/1)	
6	LowDisplayRefresh	0.875	In sec	
7	CwCount	4	Upper counter value	
11	CcwCount	2	Back flow counter value	
13	MeterStatus	2	Unit status	
15	DeltaMeas	1	Min analog value of magnet movement detection	
16	LoggerInterval	1	Data logger interval in minutes	
17	SoftwareVerHigh	1		
18	SoftwareVerLow	1		
19	HWVER	1		

# Alert parameters

Byte No.	Field	Size (Byte)	Description	Remarks
1	ResetErrorFlags	2	Clear alerts	bitmap
3	BackflowThreshold	2	Continuing consumption in back flow direction in order to raise the "CCW Alert" flag	In upper display units value
5	LeakSearchTime	1	Time in hours of continues flow in order to raise the "Leak Alert" flag	
6	ResetAlertTime	1	Automatic reset alerts time in sec	
7	MaxFlowRate	4	The upper flow rate limit for "Above Max Flow Alert"	In units value/sec
11	MaxFlowRateDelay	1	The continues time in sec, of flow above max flow needed to raise the "Above Max Flow Alert" flag	
12	TiltDelay	1	Amount of time in sec of tilt sensor alert in order to raise "Tilt Alert" flag	
13	ShockThreshold	1	Minimum continues shock count in order to raise "Shock Alert" flag	
14	Qmin	4	The lowest flow rate of the meter	In units value/sec. used to determent Idle state(no flow)

# Irrigation Alerts

Byte No.	Field	Size (Byte)	Description	Remarks
1	SelOpenNoflowTimeTH	15b	Second till "No Flow Alert"	Alert clears on next event
-	SelOpenNoflowTimeTH AlertEnable	1b	Bit 7 – 0/1 (disable/enable)	
3	SelCloseFlowTimeTH	15b	Second till "Flow Alert"	Alert clears on next event
-	SelCloseFlowTimeTH AlertEnable	1b	Bit 7 – 0/1 (disable/enable)	
5	BelowNominalFlow	4	Minimum flow rate for "Low Flow Alert"	Alert clears on next event
9	BelowNominalFlowDelay	2	The continues time in sec, of flow below nominal flow needed to raise the "Low Flow Alert" flag	
11	BelowNominalFlowOp	7b	Bit0 – Bit2 – Tap override 0/1/2 (NA/Close/Open)	
11	BelowNominalFlowAlertEnable	1b	Bit 7 – 0/1 (disable/enable)	
12	AboveMaxFlowRate	4	Max flow rate for "Max Flow Alert"	Alert clears on next event
16	AboveMaxFlowRateDelay	2	The continues time in sec, of flow below nominal flow needed to raise the "Low Flow Alert" flag	
18	AboveMaxFlowRateOp	7b	Bit0 – Bit2 – Tap override 0/1/2 (NA/Close/Open)	
18	AboveMaxFlowRateAlertEnable	1b	Bit 7 – 0/1 (disable/enable)	





# Alert parameters

Byte No.	Field	Size (Byte)	Description	Remarks
1	ResetErrorFlags	2	Clear alerts	bitmap
3	BackflowThreshold	2	Continuing consumption in back flow direction in order to raise the "CCW Alert" flag	In upper display units value
5	LeakSearchTime	1	Time in hours of continues flow in order to raise the "Leak Alert" flag	
6	ResetAlertTime	1	Automatic reset alerts time in sec	
7	MaxFlowRate	4	The upper flow rate limit for "Above Max Flow Alert"	In units value/sec
11	MaxFlowRateDelay	1	The continues time in sec, of flow above max flow needed to raise the "Above Max Flow Alert" flag	
12	TiltDelay	1	Amount of time in sec of tilt sensor alert in order to raise "Tilt Alert" flag	
13	ShockThreshold	1	Minimum continues shock count in order to raise "Shock Alert" flag	
14	Qmin	4	The lowest flow rate of the meter	In units value/sec. used to determent Idle state(no flow)