Document Information	
Title	Communication Specification and Data Format
Document number	Revision 2.1B
Device	XT-2150
Versions	S1z1-1131B9 and X1z1-1131B9
Released	11/24/2014

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New Features implemented in this firmware version

- Fixed issue with losing sign when GPS longitude is between -1 and 0.

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Device Message Formats

$$<UID>,<EV#>,<D>,<T>,<LT>,<LN>,<AL>,<SP>,<HD>,<SV>,<HP>,<BV>,<CQ>,<MI>,<GS>,<GT>,<AC>,<DC>,<OC>,<OT1>,<IN2S>,<IG> [,<SEQ>]##	
4001	Wired ignition on periodic time based reporting
4002	Wired ignition off periodic time based reporting
4003	Virtual ignition on periodic time based reporting
4004	Virtual ignition off periodic time based reporting
4005	Main battery disconnect periodic time based reporting
6001	Direction change alert
6002	Speed threshold alert
6005	Mileage threshold exceeded alert
6006	Acceleration threshold alert
6007	Deceleration threshold alert
6008	Main battery threshold alert
6009	Main battery disconnect alert
6010	Main battery reconnect alert
6011	Wired ignition on alert
6012	Wired ignition off alert
6013	Virtual ignition on alert
6014	Virtual ignition off alert
6016	Idle threshold alert
6017	Towing detected alert
6018	Towing stopped alert
6019	Input2 high alert
6020	Input2 low alert
6030	Moving detected
6031	Moving stopped
6032	Park time threshold alert
6044	Output port manual override alert

$$<UID>,<EV#>,<D>,<T>,<LT>,<LN>,<AL>,<SP>,<HD>,<SV>,<HP>,<BV>,<CQ>,<MI>,<GS>,<XY>,<GT>,<AC>,<DC>,<OC>[,<SEQ>]##	
6004	Geofence crossing alert

$$<UID>,<EV#>,<D>,<T>,<LT>,<LN>,<AL>,<SP>,<HD>,<SV>,<HP>,<BV>,<CQ>,<MI>,<GS>,<FW>,<PF>,<GT>,<AC>,<DC>,<OC>,<OT1>,<IN2S>,<IG>[,<SEQ>]##	
4006	Periodic reporting while device powered (heartbeat)
6015	Alert message on power-up/reset and GPS lock

$$<UID>,4050,<GSM>,<GPR>,<PDP>,<HD>,<HON>,<PU>,<R>,<%GPS>,<%GPSQ>,<%GSM>,<%GPR>,<%PDP>,<LV>,<HV>,<DBO>,<ABI>,<DBI>,<SO>,<SI>,<SS>[,<SEQ>]##	
4050	Diagnostic data (reference 7050 command for field definitions)

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Syntax Field Definitions

Parameter	Type/Format	Description
UID	15 digits	Unit ID (Serial Number/Device IMEI)
EV#	4 digits	Event Code
D	YYYY/MM/DD	UTC Date
T	HH:MM:SS	UTC Time
LT	00.00000 – 90.00000	Latitude
LN	000.00000 – 180.00000	Longitude
AL		Altitude (meters)
SP		Speed (mph)
HD		Heading (degrees)
SV		Number of satellites used for position fix
HP		HDOP (Horizontal dilution of precision)
BV		Battery Voltage
CQ		Cellular receive signal strength
MI		Miles driven since last reset or power-cycle
GS		GPS status • 0: Not Locked • 1: Locked • 2: Communications Failure • 3: GPS Off (Power Saving)
GT		GPS lost lock time (minutes)
AC		Acceleration
DC		Deceleration
OC		Manual Override Count
OT1		Output Status
IN2S		Input 2 Status
IG		Ignition Status
XY		Geofence violation • X: Geofence ID • Y=1: Outside Fence Violation • Y=0: Inside Fence Violation
FW	String Ex: “S1z2-1145BA2”	Firmware Version
PF	String	Profile Name
SEQ	3 digits (000 – 255)	Unique message indicator included on UDP+ACK protocol(s)

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Server Acknowledgement Format

- *Server response message format in UDP+ACK protocol(s) for acknowledging receipt of device message. There is no response for non-ACK protocol(s).*

+XT:UDP_ACK,<EV#>,<SEQ>##	
EV#	Echo of 4 digit event code contained in the received message
SEQ	Echo of sequence number contained in the received message

Server Command Format

- *Server command message format in UDP+Commands protocol(s) for sending allowed commands to the device.*
- *Server commands are allowed for 1003,1005,1007,3xxx and 7xxx device commands*

+XT:<UID>,<CMD>,<PARAMS>##	
UID	Unit ID (Serial Number/Device IMEI)
CMD	4 digit command code
PARAMS	Fields associated with <CMD>

Server Configuration Commands

1001 Configure backend server settings.

Type	Syntax	Response
Set	+XT:1001,<PP>,<IP>,<TU>[[[,<PR>],<PRT>],<PRH>]	$$<UID>,1001,<PP>,<IP>,<TU>,<PR>,<PRT>,<PRH>##

Parameter	Type	Description
<PP>	Numeric	Remote host port • Valid range is 1-65535 • Default value is 10000
<IP>	Dotted Decimal or String	Remote host IP address or fully-qualified-domain-name • Maximum 39 characters allowed • Default value is “10.10.10.10”
<TU>	Numeric	Device communication/messaging protocol • 1: TCP • 2: UDP • 3: UDP with server acknowledgements (*see Appendix A*) • 4: UDP with server command support • 5: UDP with each message deleted after it is sent • 6: UDP with server acknowledgements and server command support (*see Appendix A*)
<PR>	Numeric	PDP reset interval specifies the number of server connections/sessions which the device will make before it deactivates the current PDP session and activates a new one. • Valid range is 1-255 • Default value is 0 (disabled)
<PRT>	Numeric	PDP active timeout specifies the number of minutes that a PDP session is allowed to remain active before it is deactivated. • Valid range is 30-43200 • Default value is 0 (disabled)
<PRH>	Numeric	PDP reset heartbeat specifies whether the device should send a heartbeat message to the server whenever a new PDP session is activated. • 0: disable • 1: enable • Default value is 0 (disabled)

1002 Configure APN (Access Point Name) for GPRS.

Type	Syntax	Response
Set	+XT:1002,<USN>,<PWD>,<NAME>	$$<UID>,1002,<USN>,<PWD>,<NAME>##

Parameter	Type	Description
<USN>		Username • Maximum 25 characters allowed • Default value is “usn”
<PWD>		Password • Maximum 25 characters allowed • Default value is “pwd”
<NAME>		APN operator name • Maximum 35 characters allowed

- Default value is “apn”

1003 Query device network settings.

- *This query command provides the information contained in the 1001, 1002, 1008, 1011, 1012, 1013 and 1014 commands.*
- *The output of this command can be used as the input to the 1010 command.*

Type	Syntax	Response
Read	+XT:1003	$$<UID>,1003,<PP>,<IP>,<USN>,<PWD>,<NAME>,<SM>,<TU>,<DCE>,<DCT>,<PR>,<PRT>,<PRH>##

Parameter	Type	Description
<PP>	Numeric	Remote host port • Valid range is 1-65535 • Default value is 10000
<IP>	Dotted Decimal or String	Remote host IP address or fully-qualified-domain-name • Maximum 39 characters allowed • Default value is “10.10.10.10”
<USN>		Username • Maximum 25 characters allowed • Default value is “usn”
<PWD>		Password • Maximum 25 characters allowed • Default value is “pwd”
<NAME>		APN operator name • Maximum 35 characters allowed • Default value is “apn”
<SM>	Numeric	Remote phone number (SMS) • Maximum 19 characters allowed • Default value is “sms”
<TU>	Numeric	Device communication/messaging protocol • 1: TCP • 2: UDP • 3: UDP with server acknowledgements (*see Appendix A*) • 4: UDP with server command support • 6: UDP with server acknowledgements and server command support (*see Appendix A*) • Default value is 1
<DCE>	Numeric	Enable DNS cache • 0: disabled • 1: enabled • Default value is 0 (disabled)
<DCT>	Numeric	Configure cache entry TTL (time-to-live) • Valid range is 1-999999 seconds • Default value is 3600 (1 hour)
<PR>	Numeric	PDP reset interval specifies the number of server connections/sessions which the device will make before it deactivates the current PDP session and activates a new one. • Valid range is 1-255 • Default value is 0 (disabled)
<PRT>	Numeric	PDP active timeout specifies the number of minutes that a PDP session is allowed to remain active before it is deactivated. • Valid range is 30-43200 • Default value is 0 (disabled)

<PRH>	Numeric	PDP reset heartbeat specifies whether the device should send a heartbeat message to the server whenever a new PDP session is activated. • 0: disable • 1: enable • Default value is 0 (disabled)

1004 Configure remote FTP server settings.

Type	Syntax	Response
Set	+XT:1004,<DIR>,<FUSN>,<FPWD>,<FIP>	$$<UID>,1004,<DIR>,<FUSN>,<FPWD>,<FIP>##

Parameter	Type	Description
<DIR>	String	Directory to change to after device logs into the remote server. • Maximum 15 characters allowed • Default value is “dir” • Multiple directory levels in <DIR> are not supported
<FUSN>	String	Username • Maximum 24 characters allowed • Default value is “usn”
<FPWD>	String	Password • Maximum 12 characters allowed • Default value is “pwd”
<FIP>	Dotted Decimal or String	FTP server IP address or fully-qualified-domain-name • Maximum 39 characters allowed • Default value is “10.10.10.10”

1005 Query remote FTP server settings.

Type	Syntax	Response
Read	+XT:1005	$$<UID>,1005,<DIR>,<FUSN>,<FPWD>,<FIP>##

Parameter	Type	Description
<DIR>	String	Directory to change to after device logs into the remote server. • Maximum 15 characters allowed • Default value is “dir” • Multiple directory levels in <DIR> are not supported
<FUSN>	String	Username • Maximum 24 characters allowed • Default value is “usn”
<FPWD>	String	Password • Maximum 12 characters allowed • Default value is “pwd”
<FIP>	Dotted Decimal or String	FTP server IP address or fully-qualified-domain-name • Maximum 39 characters allowed • Default value is “10.10.10.10”

1006 Device firmware update command.

- *1000, 3000, and 7000 series settings may be reset to defaults after a main firmware update.*

- *Reference release notes for hardware/firmware download compatibility.*

Type	Syntax	Response
Execute	+XT:1006,<bb>,<filename>	Sent upon receipt of command $$<UID>,1006,1,<bb>,<filename>## Sent upon completion of update $$<UID>,1006,2,<FWM>##

Parameter	Type	Description
<bb>	Numeric	Firmware type. • 1: Main firmware
<filename>	String	Firmware filename • Maximum 25 characters allowed
<FWM>	String	Main firmware version

1007 Query revisions of device firmware.

Type	Syntax	Response
Read	+XT:1007	$$<UID>,1007,<FWM>,<PF>,<GV>##

Parameter	Type	Description
<FWM>	String	Main firmware version
<PF>	String	Configuration profile name
<GV>	2 characters	Specifies the device cellular type

1008 Configure remote phone number (SMS).

Type	Syntax	Response
Set	+XT:1008,<SM>	$$<UID>,1008,<SM>##

Parameter	Type	Description
<SM>	Numeric	Remote phone number (SMS) • Maximum 19 characters allowed • Default value is “sms”

1010 Configure device network settings.

- *This configuration command allows setting the features specified in the 1001, 1002, 1008, 1011, 1012, 1013 and 1014 commands.*

Type	Syntax	Response
Set	+XT:1010,<PP>,<IP>,<USN>,<PWD>,<NAME>,<SM>,<TU>,<DCE>,<DCT>[[[,<PR>],<PRT>],	$$<UID>,1010,<PP>,<IP>,<USN>,<PWD>,<NAME>,<SM>,<TU>,<DCE>,<DCT>,<PR>,<PRT>,<PRH>##

<PRH>]

Parameter	Type	Description
<PP>	Numeric	Remote host port • Valid range is 1-65535 • Default value is 10000
<IP>	Dotted Decimal or String	Remote host IP address or fully-qualified-domain-name • Maximum 39 characters allowed • Default value is “10.10.10.10”
<USN>		Username • Maximum 25 characters allowed • Default value is “usn”
<PWD>		Password • Maximum 25 characters allowed • Default value is “pwd”
<NAME>		APN operator name • Maximum 35 characters allowed • Default value is “apn”
<SM>	Numeric	Remote phone number (SMS) • Maximum 19 characters allowed • Default value is “sms”
<TU>	Numeric	Device communication/messaging protocol • 1: TCP • 2: UDP • 3: UDP with server acknowledgements (*see Appendix A*) • 4: UDP with server command support • 6: UDP with server acknowledgements and server command support (*see Appendix A*)
<DCE>	Numeric	Enable DNS cache • 0: disabled • 1: enabled • Default value is 0 (disabled)
<DCT>	Numeric	Configure cache entry TTL (time-to-live) • Valid range is 1-999999 seconds • Default value is 3600 (1 hour)
<PR>	Numeric	PDP reset interval specifies the number of server connections/sessions which the device will make before it deactivates the current PDP session and activates a new one. • Valid range is 1-255 • Default value is 0 (disabled)
<PRT>	Numeric	PDP active timeout specifies the number of minutes that a PDP session is allowed to remain active before it is deactivated. • Valid range is 30-43200 • Default value is 0 (disabled)
<PRH>	Numeric	PDP reset heartbeat specifies whether the device should send a heartbeat message to the server whenever a new PDP session is activated. • 0: disable • 1: enable • Default value is 0 (disabled)

1011 Configure PDP reset interval.

Type	Syntax	Response
Set	+XT:1011,<PR>	$$<UID>,1011,<PR>##

Parameter	Type	Description
<PR>	Numeric	PDP reset interval specifies the number of server connections/sessions which the device will make before it deactivates the current PDP session and activates a new one. • Valid range is 1-255 • Default value is 0 (disabled)

1012 Configure PDP active timeout.

Type	Syntax	Response
Set	+XT:1012,<PRT>	$$<UID>,1012,<PRT>##

Parameter	Type	Description
<PRT>	Numeric	PDP active timeout specifies the number of minutes that a PDP session is allowed to remain active before it is deactivated. • Valid range is 30-43200 • Default value is 0 (disabled)

1013 Configure DNS cache

Type	Syntax	Response
Set	+XT:1013,<DCE>,<DCT>	$$<UID>,1013,<DCE>,<DCT>##

Parameter	Type	Description
<DCE>	Numeric	Enable DNS cache • 0: disabled • 1: enabled • Default value is 0 (disabled)
<DCT>	Numeric	Configure cache entry TTL (time-to-live) • Valid range is 1-999999 seconds • Default value is 3600 (1 hour)

1014 Configure PDP reset heartbeat.

- The 4006 alert will be sent to the server any time a PDP session is activated.

Type	Syntax	Response
Set	+XT:1014,<PRH>	$$<UID>,1014,<PRH>##

Parameter	Type	Description
<PRH>	Numeric	PDP reset heartbeat specifies whether the device should send a heartbeat message to the server whenever a new PDP session is activated. • 0: disable • 1: enable • Default value is 0 (disabled)

3001 Configure periodic reporting interval.

- *The device will send a 4001 event at the configured periodic interval (ONI) for wired ignition.*
- *The device will send a 4003 event at the configured periodic interval (ONI) for virtual battery or virtual GPS ignition types.*
- *The device will send a 6011 event when ignition on is detected and the alert is enabled (ONA) for wired ignition.*
- *The device will send a 6013 event when ignition on is detected and the alert is enabled (ONA) for virtual battery and virtual GPS ignition types.*
- *Review the 3012 command for defaults on supported ignition types.*

Type	Syntax	Response
Set	+XT:3001,<ONI>,<ONA>,<MaxSP>	$$<UID>,3001,<ONI>,<ONA>,<MaxSP>##

Parameter	Type	Description
<ONI>	Numeric	Periodic interval setting in minutes • Valid range is 0.5-43200.0 • Only 0.5 minute increments are allowed • Default value is 0 (disabled)
<ONA>	Numeric	Enable alert • 0: Disabled • 1: Enabled • Default value is 0 (disabled)
<MaxSP>	Numeric	Enable use of maximum speed within specified interval • 0: Disabled • 1: Enabled • Default value is 0 (disabled)

3002 Configure periodic reporting interval.

- *The device will send a 4002 event at the configured periodic interval (OFI) for wired ignition.*
- *The device will send a 4004 event at the configured periodic interval (OFI) for virtual battery or virtual GPS ignition types.*
- *The device will send a 6012 event when ignition off is detected and the alert is enabled (OFA) for wired ignition.*
- *The device will send a 6014 event when ignition off is detected and the alert is enabled (OFA) for virtual battery and virtual GPS ignition types.*
- *Review the 3012 command for defaults on supported ignition types.*

Type	Syntax	Response
Set	+XT:3002,<OFI>,<OFA>	$$<UID>,3002,<OFI>,<OFA>##

Parameter	Type	Description
<OFI>		Periodic interval setting in minutes • Valid range is 10-43200 • Only 5 minute increments are allowed • Default value is 0 (disabled)
<OFA>		Enable alert • 0: disabled • 1: enabled

- Default value is 0 (disabled)

3003 Configure direction change threshold.

- *The device will send a 6001 event when the direction change exceeds the configured threshold.*

Type	Syntax	Response
Set	+XT:3003,<DCT>,<DCTSTS>	$$<UID>,3003,<DCT>,<DCTSTS>##

Parameter	Type	Description
<DCT>		Heading threshold degrees • Valid range is 10-180 • Only 5 degree increments are allowed • Default value is 0 (disabled)
<DCTST>		Direction change alert threshold in MPH • Valid range is 0-150 • Only 1 MPH increments are allowed • Default value is 5

3004 Configure speed threshold.

- *The device will send a 6002 event when the speed exceeds the configured threshold.*

Type	Syntax	Response
Set	+XT:3004,<SPT>	$$<UID>,3004,<SPT>##

Parameter	Type	Description
<SPT>		Speed threshold mph • Valid range is 20-150 • Default value is 0 (disabled)

3006 Configure mileage threshold.

- *The device will send a 6005 event each time the mileage exceeds a multiple of the configured threshold.*
- *A 6005 event is sent when the mileage wraps from 65000 to zero.*
- *A power-cycle or reset command will reset the mileage to zero.*

Type	Syntax	Response
Set	+XT:3006,<MT>	$$<UID>,3006,<MT>##

Parameter	Type	Description
<MT>		Mileage threshold configures the mileage interval when the device will send the 6005 event. • Valid range is 10-65000 (miles) • Only 5 mile increments are allowed • Default value is 0 (disabled)

3007 Configure acceleration and deceleration thresholds.

- *The device will send a 6006 event when the acceleration threshold is exceeded*

- *The device will send a 6007 event when the deceleration threshold is exceeded*

Type	Syntax	Response
Set	+XT:3007,<AT>,<DT>	$$<UID>,3007,<AT>,<DT>##

Parameter	Type	Description
<AT>		Acceleration threshold in mph/s • Valid range is 1-20 • Default value is 0 (disabled)
<DT>		Deceleration threshold in mph/s • Valid range is 1-20 • Default value is 0 (disabled)

3008 Configure low battery thresholds.

- *The device will send a 6008 event when battery voltage is below the configured threshold for 10 minutes*
- *The alert is reset when the battery voltage reaches 0.9 VDC above the threshold*
- *If voltage threshold is disabled, GPS is always on regardless of power saving mode*
- *If power-saving mode 3 is used in combination with virtual ignition based on GPS (ref. 3012), GPS remained powered for approximately 20 minutes after ignition off.*

Type	Syntax	Response
Set	+XT:3008,<BT>,<PS>	$$<UID>,3008,<BT>,<PS>##

Parameter	Type	Description
<BT>		Main battery voltage threshold • Valid range is 6-24 VDC • Only 0.1 VDC increments are allowed • Default value is 0 (disabled)
<PS>		GPS power saving mode • 1: GPS is always on • 2: enable GPS power saving mode when battery voltage is below threshold • 3: enable GPS power saving mode when ignition is off • Default value is 0 (disabled)

3009 Configure main battery disconnect reporting

- *The device will send a 6009 event when the main battery is disconnected for 2 minutes when the alert (DA) is enabled.*
- *The device will send a 6010 event when the main battery is reconnected when the alert (DA) is enabled.*
- *The device will send a 6004 event at the periodic interval (DI) while the main battery is disconnected.*
- *When the main battery is disconnected the device will not send 4001, 4002, 4003, 4004, 4006, or 4050 events.*

Type	Syntax	Response
Set	+XT:3009,<DI>,<DA>	$$<UID>,3009,<DI>,<DA>##

Parameter	Type	Description

<DI>	Disconnected battery periodic reporting interval in minutes • Valid range is 10-43200 • Only 5 minute increments are allowed • Default value is 0 (disabled)
<DA>	Main battery disconnect and reconnect alert setting • 0: disabled • 1: enabled • Default value is 0 (disabled)

3010 Configure device heartbeat and power-up/reset reporting

- *The device will send a 4006 event and a 4050 event at the periodic interval (PI).*
- *The device will send a 6015 event and a 4050 event upon power-up/reset & GPS lock when the alert (PA) is enabled.*

Type	Syntax	Response
Set	+XT:3010,<PI>,<PA>	$$<UID>,3010,<PI>,<PA>##

Parameter	Type	Description
<PI>		Periodic heartbeat report interval in minutes • Valid range is 10-43200 • Only 5 minute increments are allowed • Default value is 0 (disabled)
<PA>		Power-up/Reset and GPS lock alert enable/disable setting • 0: disabled • 1: enabled • Default value is 0 (disabled)

3011 Configure buzzer pattern

- *When enabled, buzzer pattern will sound for 10 seconds with each ignition on event.*
- *Command is only applicable to devices with buzzer hardware.*
- *Command is only applicable with wired ignition type (ref. 3012).*

Type	Syntax	Response
Set	+XT:3011,<BZ>	$$<UID>,3011,<BZ>##

Parameter	Type	Description
<BZ>		Buzzer enable setting • 0: disabled • 1: pattern 1 enabled • 2: pattern 2 enabled • Default value is 0 (disabled)

3012 Configure device ignition detection

Type	Syntax	Response
Set	+XT:3012,<IGT>	$$<UID>,3012,<IGT>##

Parameter	Type	Description
<IGT>		Ignition Type • 1: Wired • 2: Virtual based on battery voltage • 3: Virtual based on GPS speed

3013 Configure device idle alert period

- *The device will send a 6016 event at the idle reporting interval.*

Type	Syntax	Response
Set	+XT:3013,<IDT>	$$<UID>,3013,<IDT>##

Parameter	Type	Description
<IDT>		Idle time in minutes • Valid range is 2-43200 • 1 minute increments are allowed • Default value is 0 (disabled)

3014 Configure device towing alert and thresholds

- *The device will send a 6017 event when towing is detected.*
- *The device will send a 6018 event when towing was detected and the vehicle has stopped.*
- *Towing alerts only apply once Ignition Off has been detected.*

Type	Syntax	Response
Set	+XT:3014,<TW>,<TSTS>,<TSPS>,<TSTT>,<TSPT>	$$<UID>,3014,<TW>,<TSTS>,<TSPS>,<TSTT>,<TSPT>##

Parameter	Type	Description
<TW>		Enable alert • 0: disabled • 1: enabled • Default value is 0 (disabled)
<TSTS>		Towing start speed threshold (mph) • Valid range is 3-150 MPH • Default value is 0 (20 MPH)
<TSPS>		Towing stop speed threshold (mph) • Valid range is 1-150 MPH • Default value is 0 (5 MPH) • The maximum value must also be a minimum of 3 MPH less than the <TSTS> setting
<TSTT>		Towing start time threshold (seconds) • Valid range is 1-900 seconds • Default value is 0 (10 seconds)
<TSPT>		Towing stop time threshold (seconds) • Valid range is 1-900 seconds • Default value is 0 (120 seconds)

3015 Input Pin (2) configuration

- *The device will send a 6019 event for a low-to-high transition.*
- *The device will send a 6020 event for a high-to-low transition.*

Type	Syntax	Response
Set	+XT:3015,<IN2>	$$<UID>,3015,<IN2>##

Parameter	Type	Description
<IN2>		Input Pin (2) port setting • 0: alert disabled • 1: low-to-high transition enabled • 2: high-to-low transition enabled • 3: both low-to-high and high-to-low transitions enabled

3019 Configure device moving alert and thresholds

- *The device will send a 6030 event when moving is detected.*
- *The device will send a 6031 event when moving was detected and the vehicle has stopped.*
- *This feature does not work with Virtual GPS Ignition Type.*
- *Moving alerts only apply once Ignition On has been detected.*

Type	Syntax	Response
Set	+XT:3019,<MW>,<MSTS>,<MSPS>,<MSTT>,<MSPT>	$$<UID>,3019,<MW>,<MSTS>,<MSPS>,<MSTT>,<MSPT>##

Parameter	Type	Description
<MW>		Enable alert • 0: disabled • 1: enabled • Default value is 0 (disabled)
<MSTS>		Moving start speed threshold (mph) • Valid range is 3-150 MPH • Default value is 0 (20 MPH)
<MSPS>		Moving stop speed threshold (mph) • Valid range is 1-150 MPH • Default value is 0 (5 MPH) • The maximum value must also be a minimum of 3 MPH less than the <TSTS> setting
<MSTT>		Moving start time threshold (seconds) • Valid range is 1-900 seconds • Default value is 0 (10 seconds)
<MSPT>		Moving stop time threshold (seconds) • Valid range is 1-900 seconds • Default value is 0 (120 seconds)

3020 Configure device Park Time threshold

- *The device will send a 6032 event when park time exceeds the threshold.*
- *This feature does not work with Virtual GPS Ignition Type.*

Type	Syntax	Response
Set	+XT:3020,<PT>	$$<UID>,3020,<PT>##

Parameter	Type	Description
<PT>		Park time threshold in minutes • Valid range is 10-43200 minutes • 1 minute increments allowed • Default value is 0 (disabled)

3029 Reset Manual Output Override Counter

- *Output port manual override sets the output port open for 24 hours*
- *The device will send a 6044 event and activate output override when Input Pin (1) is detected in the following pattern three times: High for 3-9 seconds, Low for 3-9 seconds*
- *This feature only works with wired ignition type (ref. 3012)*

Type	Syntax	Response
Set	+XT:3029,<OCT>	$$<UID>,3029,<OCT>##

Parameter	Type	Description
<OCT>		Maximum allowed output overrides • Valid range is 0-9 • Default value is 0 (disabled)

3031 Configure device quick fence

- When the quick fence is violated no alert is sent directly. This feature indirectly suppresses Movement and/or Towing alerts.

Type	Syntax	Response
Set	+XT:3031,<RA>,<MA>	$$<UID>,3031,<RA>,<MA>##

Parameter	Type	Description
<RA>		Fence Radius in meters • Valid range is 10-65000 meters • Default value is 0 (10 meters)
<MA>		Quick fence enable setting • 0: Disabled • 1: Enabled for Movement • 2: Enabled for Towing • 3: Enabled for Movement and Towing

3040 Composite Configuration Command

- *Configures all 30xx commands in a single command.*
- *The read option for this command can be invoked by sending '+XT:3050' to the device.*

Type	Syntax	Response
Set	+XT:3040,<ONI>,<ONA>,<MaxSP>,<OFI>,<OFA>,<DCT>,DCTSTS>,<SPT>,<MT>,<AT>,<DT>,<BT>,<PS>,<DI>,<DA>,<PI>,<PA>,<BZ>,<IGT>,<IDT>,<TW>,<TSTS>,<TSPS>,<TSTT>,<TSPT>,<IN2>,<MW>,<MSTS>,<MSPS>,<MSTT>,<MSPT>,<PT>,<OCT>,<RA>,<MA>	$$<UID>,3040,<ONI>,<ONA>,<MaxSP>,<OFI>,<OFA>,<DCT>,DCTSTS>,<SPT>,<MT>,<AT>,<DT>,<BT>,<PS>,<DI>,<DA>,<PI>,<PA>,<BZ>,<IGT>,<IDT>,<TW>,<TSTS>,<TSPS>,<TSTT>,<TSPT>,<IN2>,<MW>,<MSTS>,<MSPS>,<MSTT>,<MSPT>,<PT>,<OCT>,<RA>,<MA>8

		##
Read	+XT:3050	$$<UID>,3050,<ONI>,<ONA>,<MaxSP>,<OFI>,<OFA>,<DCT>,DCTSTS>,<SPT>,<MT>,<AT>,<DT>,<BT>,<PS>,<DI>,<DA>,<PI>,<PA>,<BZ>,<IGT>,<IDT>,<TW>,<TSTS>,<TSPS>,<TSTT>,<TSPT>,<IN2>,<MW>,<MSTS>,<MSPS>,<MSTT>,<MSPT>,<PT>,<OCT>,<RA>,<MA>##

Parameter	Type	Description
<ONI>		Periodic interval setting in minutes • Valid range is 0.5-43200.0 • Only 0.5 minute increments are allowed • Default value is 0 (disabled)
<ONA>		Enable alert • 0: Disabled • 1: Enabled • Default value is 0 (disabled)
<MaxSP>		Enable use of maximum speed within specified interval • 0: Disabled • 1: Enabled • Default value is 0 (disabled)
<OFI>		Periodic interval setting in minutes • Valid range is 10-43200 • Only 5 minute increments are allowed • Default value is 0 (disabled)
<OFA>		Enable alert • 0: disabled • 1: enabled • Default value is 0 (disabled)
<DCT>		Heading threshold degrees • Valid range is 10-180 • Only 5 degree increments are allowed • Default value is 0 (disabled)
<DCTST>		Direction change alert threshold in MPH • Valid range is 0-150 • Only 1 MPH increments are allowed • Default value is 5
<SPT>		Speed threshold mph • Valid range is 20-150 • Default value is 0 (disabled)
<MT>		Mileage threshold configures the mileage interval when the device will send the 6005 event. • Valid range is 10-65000 (miles) • Only 5 mile increments are allowed • Default value is 0 (disabled)
<AT>		Acceleration threshold in mph/s • Valid range is 1-20 • Default value is 0 (disabled)
<DT>		Deceleration threshold in mph/s • Valid range is 1-20 • Default value is 0 (disabled)
<BT>		Main battery voltage threshold • Valid range is 6-24 VDC • Only 0.1 VDC increments are allowed • Default value is 0 (disabled)
<PS>		GPS power saving mode • 1: GPS is always on • 2: enable GPS power saving mode when battery voltage is below threshold

	• 3: enable GPS power saving mode when ignition is off • Default value is 0 (disabled)
<DI>	Disconnected battery periodic reporting interval in minutes • Valid range is 10-43200 • Only 5 minute increments are allowed • Default value is 0 (disabled)
<DA>	Main battery disconnect and reconnect alert setting • 0: disabled • 1: enabled • Default value is 0 (disabled)
<PI>	Periodic heartbeat report interval in minutes • Valid range is 10-43200 • Only 5 minute increments are allowed • Default value is 0 (disabled)
<PA>	Power-up/Reset and GPS lock alert enable/disable setting • 0: disabled • 1: enabled • Default value is 0 (disabled)
<BZ>	Buzzer enable setting • 0: disabled • 1: pattern 1 enabled • 2: pattern 2 enabled • Default value is 0 (disabled)
<IGT>	Ignition Type • 1: Wired • 2: Virtual Battery • 3: Virtual GPS
<IDT>	Idle time in minutes • Valid range is 2-43200 • 1 minute increments are allowed • Default value is 0 (disabled)
<TW>	Enable alert • 0: disabled • 1: enabled • Default value is 0 (disabled)
<TSTS>	Towing start speed threshold (mph) • Valid range is 3-150 MPH • Default value is 0 (20 MPH)
<TSPS>	Towing stop speed threshold (mph) • Valid range is 1-150 MPH • Default value is 0 (5 MPH) • The maximum value must also be a minimum of 3 MPH less than the <TSTS> setting
<TSTT>	Towing start time threshold (seconds) • Valid range is 1-900 seconds • Default value is 0 (10 seconds)
<TSPT>	Towing stop time threshold (seconds) • Valid range is 1-900 seconds • Default value is 0 (120 seconds)
<IN2>	Input Pin (2) port setting • 0: alert disabled • 1: low-to-high transition enabled • 2: high-to-low transition enabled • 3: both low-to-high and high-to-low transitions enabled
<MW>	Enable alert • 0: disabled • 1: enabled

	• Default value is 0 (disabled)
<MSTS>	Moving start speed threshold (mph) • Valid range is 3-150 MPH • Default value is 0 (20 MPH)
<MSPS>	Moving stop speed threshold (mph) • Valid range is 1-150 MPH • Default value is 0 (5 MPH) • The maximum value must also be a minimum of 3 MPH less than the <TSTS> setting
<MSTT>	Moving start time threshold (seconds) • Valid range is 1-900 seconds • Default value is 0 (10 seconds)
<MSPT>	Moving stop time threshold (seconds) • Valid range is 1-900 seconds • Default value is 0 (120 seconds)
<PT>	Park time threshold in minutes • Valid range is 10-43200 minutes • 1 minute increments allowed • Default value is 0 (disabled)
<OCT>	Maximum allowed output overrides • Valid range is 0-9 • Default value is 0 (disabled)
<RA>	Fence Radius in meters • Valid range is 10-65000 meters • Default value is 0 (10 meters)
<MA>	Quick fence enable setting • 0: Disabled • 1: Enabled for Movement • 2: Enabled for Towing • 3: Enabled for Movement and Towing

5001 Configure rectangular geofence

- *The device will send a 6004 event when a geofence crossing is detected.*
- *The response includes only 3-digit decimal degree resolution.*
- *A power-up/reset with GPS lock and a location within a mode (M) 2 or 3 geofence will result in an event being sent.*
- *Only the upper-left and lower-right corners need to be supplied. The upper-right and lower-left corners are calculated to complete the rectangle and stored in the configuration. They are also present in the response or query.*
- *<TLLAT> and <TLLON> is the latitude and longitude of the top-left-corner of the geofence.*
- *<BRLAT> and <BRLON> is the latitude and longitude of the bottom-right-corner of the geofence.*

Type	Syntax	Response
Set	+XT:5001,<ID>,<M>,<TLLAT>,<TLLON>,<BRLAT>,<BRLON>	$$<UID>,5001,<ID>,<M>,<TLLAT>,<TLLON>,<TRLAT>,<TRLON>,<BRLAT>,<BRLON>,<BLLAT>,<BLLON>##

Parameter	Type	Description
<ID>		Fence index • Valid range is 0-9
<M>		Detection mode • 0: Disabled • 1: Crossing-Out Detection

	• 2: Crossing-In Detection • 3: Crossing-Out and Crossing-In Detection
<TLLAT>	Top-Left point latitude with up to 5-digit decimal degrees resolution • Valid range is 00.00000-90.00000
<TLLON>	Top-Left point longitude with up to 5-digit decimal degrees resolution • Valid range is 000.00000-180.00000
<BRLAT>	Bottom-Right point latitude with up to 5-digit decimal degrees resolution • Valid range is 00.00000-90.00000
<BRLON>	Bottom-Right point longitude with up to 5-digit decimal degrees resolution • Valid range is 000.00000-180.00000

5002 Delete geofence

- If <ID> field is not specified then all geofences are deleted.

Type	Syntax	Response
Set	+XT:5002[,<ID>]	$$<UID>,5002[,<ID>]##

Parameter	Type	Description
<ID>		Fence index • Valid range is 0-9

5003 Configure polygonal geofence

- *The device will send a 6004 event when a geofence crossing is detected.*
- *The response includes only 4-digit decimal degree resolution.*
- *A power-up/reset with GPS lock and a location within a mode (M) 2 or 3 geofence will result in an event being sent.*

Type	Syntax	Response
Set	+XT:5003,<ID>,<M>,<LT1>,<LT2>,<LT2>,<LN2>,<LT3>,<LN3>[,<LT4>,<LN4>[,<LT5>,<LN5>[,<LT6>,<LN6>[,<LT7>,<LN7>]]]]	$$<UID>,5003,<ID>,<M>,<LT1>,<LT2>,<LT2>,<LN2>,<LT3>,<LN3>[,<LT4>,<LN4>[,<LT5>,<LN5>[,<LT6>,<LN6>[,<LT7>,<LN7>]]]]##

Parameter	Type	Description
<ID>		Fence index • Valid range is 0-9
<M>		Detection mode • 0: Disabled • 1: Crossing-Out Detection • 2: Crossing-In Detection • 3: Crossing-Out and Crossing-In Detection
<LT**n**>		Latitude of point (n) in fence • Valid range is 00.00000-90.00000
<LN**n**>		Longitude of point (n) in fence • Valid range is 000.00000-180.00000

5004 Configure circular geofence

- *The device will send a 6004 event when a geofence crossing is detected.*
- *The response includes only 4-digit decimal degree resolution.*

- A power-up/reset with GPS lock and a location within a mode (M) 2 or 3 geofence will result in an event being sent.

Type	Syntax	Response
Set	+XT:5004,<ID>,<M>,<LT>,<LN>,<RA>	$$<UID>,5004,<ID>,<M>,<LT>,<LN>,<RA>##

Parameter	Type	Description
<ID>		Fence index • Valid range is 0-9
<M>		Detection mode • 0: Disabled • 1: Crossing-Out Detection • 2: Crossing-In Detection • 3: Crossing-Out and Crossing-In Detection
<LT>		Latitude of point (n) in fence • Valid range is 00.00000-90.00000
<LN>		Longitude of point (n) in fence • Valid range is 000.00000-180.00000
<RA>		Radius of geofence in meters • Valid range is 10-65000 • Default value is 0 (10 meters)

5050 Query geofence

- *The response format is dependent on the geofence type.*
- *The response includes only 3-digit decimal degree resolution.*

Type	Syntax	Response
Read	+XT:5050,<ID>	*For rectangular fences* $$<UID>,5050,<ID>,<M>,<LT1>,<LN1>,<LT2>,<LN2>,<LT3>,<LN3>,<LT4>,<LN4>## *For polygonal fences* $$<UID>,5050,<ID>,<M>,<LT1>,<LN1>,<LT2>,<LN2>,<LT3>,<LN3>[<LT4>,<LN4>[,<LT5>,<LN5>[,<LT6>,<LN6>[,<LT7>,<LN7>]]]] *For circular fences* $$<UID>,5050,<ID>,<M>,<LT1>,<LN1>,<RA>

Parameter	Type	Description
<ID>		Fence index • Valid range is 0-9
<M>		Detection mode • 0: Disabled • 1: Crossing-Out Detection • 2: Crossing-In Detection • 3: Crossing-Out and Crossing-In Detection
<LT**n**>		Latitude of point (n) in fence • Valid range is 00.00000-90.00000
<LN**n**>		Longitude of point (n) in fence • Valid range is 000.00000-180.00000
<RA>		Radius of geofence in meters

- Valid range is 10-65000
- Default value is 0 (10 meters)

5501 Configure wired ignition detection

- *Device will declare ignition on when Ignition Sense pin is detected high for the configured on time.*
- *Device will declare ignition off when Ignition Sense pin is detected low for the configured off time.*
- *Command is only applicable with wired ignition type (ref. 3012).*

Type	Syntax	Response
Set	+XT:5501,<WON>,<WOF>	$$<UID>,5501,<WON>,<WOF>##

Parameter	Type	Description
<WON>		Wired ignition on time in seconds • Valid range is 1-900 • Default value is 10 • Specifying a value of 0 configures the default
<WOF>		Wired ignition off time in seconds • Valid range is 1-900 • Default value is 10 • Specifying a value of 0 configures the default

5502 Configure virtual ignition detection based on battery voltage

- *Device will declare ignition on when voltage is above the configured threshold for the configured on time.*
- *Device will declare ignition off when voltage is below the configured threshold by at least the configured hysteresis for the configured off time.*
- *Command is only applicable with virtual ignition type based on battery (ref. 3012).*

Type	Syntax	Response
Set	+XT:5502,<VBT>,<VBH>,<VBON>,<VBOF>	$$<UID>,5502,<VBT>,<VBH>,<VBON>,<VBOF>##

Parameter	Type	Description
<VBT>		Battery based virtual ignition on threshold • Valid range is 10.0-20.0 VDC • 0.1 VDC increments allowed • Default value is 13.0 • Specifying a value of 0 configures the default
<VBH>		Battery based virtual ignition off hysteresis • Valid range is 0.1-9.0 VDC • 0.1 VDC increments allowed • Default value is 0.1 • Specifying a value of 0 configures the default
<VBON>		Battery based virtual ignition on time in seconds • Valid range is 1-900 • Default value is 3 • Specifying a value of 0 configures the default
<VBOF>		Battery based virtual ignition off time in seconds • Valid range is 1-900 • Default value is 300 • Specifying a value of 0 configures the default

5503 Configure virtual ignition detection based on GPS speed

- *Device will declare ignition on when speed is above the configured threshold for the configured on time.*
- *Device will declare ignition off when speed is below the configured threshold by at least the configured hysteresis for the configured off time.*
- *Command is only applicable with virtual ignition type based on GPS speed (ref. 3012).*

Type	Syntax	Response
Set	+XT:5503,<VGT>,<VGH>,<VGON>,<VGOF>	$$<UID>,5503,<VGT>,<VGH>,<VGON>,<VGOF>##

Parameter	Type	Description
<VGT>		GPS based virtual ignition on threshold in MPH • Valid range is 5-150 • 1 MPH increments allowed • Default value is 20 • Specifying a value of 0 configures the default
<VGH>		GPS based virtual ignition off hysteresis in MPH • Valid range is 2-150 • <VGT> - <VGH> must be at least 3 MPH • 1 MPH increments allowed • Default value is 15 • Specifying a value of 0 configures the default
<VGON>		GPS based virtual ignition on time in seconds • Valid range is 1-900 • Default value is 10 • Specifying a value of 0 configures the default
<VGOF>		GPS based virtual ignition off time in seconds • Valid range is 1-900 • Default value is 300 • Specifying a value of 0 configures the default

5540 Composite Ignition Configuration Command

- *Configures all 55xx commands in a single command.*
- *The read option for this command can be invoked by sending '+XT:5550' to the device.*

Type	Syntax	Response
Set	+XT:5540,<WON>,<WOF>,<VBT>,<VBH>,<VBON>,<VBOF>,<VGT>,<VGH>,<VGON>,<VGOF>	$$<UID>,5540,<WON>,<WOF>,<VBT>,<VBH>,<VBON>,<VBOF>,<VGT>,<VGH>,<VGON>,<VGOF>##
Read	+XT:5550	$$<UID>,5550,<WON>,<WOF>,<VBT>,<VBH>,<VBON>,<VBOF>,<VGT>,<VGH>,<VGON>,<VGOF>##

Parameter	Type	Description
<WON>		Wired ignition on time in seconds • Valid range is 1-900 • Default value is 10 • Specifying a value of 0 configures the default
<WOF>		Wired ignition off time in seconds • Valid range is 1-900

	• Default value is 10 • Specifying a value of 0 configures the default
<VBT>	Battery based virtual ignition on threshold • Valid range is 10.0-20.0 VDC • 0.1 VDC increments allowed • Default value is 13.0 • Specifying a value of 0 configures the default
<VBH>	Battery based virtual ignition off hysteresis • Valid range is 0.1-9.0 VDC • 0.1 VDC increments allowed • Default value is 0.1 • Specifying a value of 0 configures the default
<VBON>	Battery based virtual ignition on time in seconds • Valid range is 1-900 • Default value is 3 • Specifying a value of 0 configures the default
<VBOF>	Battery based virtual ignition off time in seconds • Valid range is 1-900 • Default value is 300 • Specifying a value of 0 configures the default
<VGT>	GPS based virtual ignition on threshold in MPH • Valid range is 5-150 • 1 MPH increments allowed • Default value is 20 • Specifying a value of 0 configures the default
<VGH>	GPS based virtual ignition off hysteresis in MPH • Valid range is 2-150 • <VGT> - <VGH> must be at least 3 MPH • 1 MPH increments allowed • Default value is 15 • Specifying a value of 0 configures the default
<VGON>	GPS based virtual ignition on time in seconds • Valid range is 1-900 • Default value is 10 • Specifying a value of 0 configures the default
<VGOF>	GPS based virtual ignition off time in seconds • Valid range is 1-900 • Default value is 300 • Specifying a value of 0 configures the default

7001 Read and report vehicle position immediately

Type	Syntax	Response
Read	+XT:7001,<X>	$$<UID>,7001,<D>,<T>,<LT>,<LN>,<AL>,<SP>,<HD>,<SV>,<HP>,<BV>,<GS>,<OT1>,<CQ>,<MI>,<IG>,<GT>,<AC>,<DC>,<OC>,<OT2>,<MN>,<IN2S>[,<SEQ>]##

Parameter	Type	Description
<X>		Response transport • 1: TCP or UDP socket. • 2: SMS
<OT1>		Output pin configuration • 0: Short circuit with cellular override enabled

	• 1: Open circuit • 2: Short circuit
<X>	Response transport • 1: TCP or UDP socket. • 2: SMS
<OT2>	Delayed output pin configuration • 0: Short circuit with cellular override enabled • 1: Open circuit • 2: Short circuit • If no output pin configuration is pending, <OT2> response field is set to <OT1>
<MN>	Time delay in minutes • Valid range is 5-1440 minutes • 1 minute increments allowed • Default value is 0 (disabled) • If no output pin configuration is pending, <MN> response field is set to 0

7003 Device reset

Type	Syntax	Response
Exec	+XT:7003	$$<UID>,7003##

7004 Device clear and restore saved profile

- *All data and configuration settings are reset.*
- *Saved profile is restored if present.*

Type	Syntax	Response
Exec	+XT:7004	$$<UID>,7004,<PF>##

7005 Configure output port

- *If output pin is configured as (0) and there is no cellular coverage for 10 minutes the output port is set to an open circuit. The output port will revert back to short circuit after 10 minutes of continuous cellular coverage.*

Type	Syntax	Response
Set	+XT:7005,<OT1>,<X>[,<OT2>,<MN>]	$$<UID>,7005,<D>,<T>,<LT>,<LN>,<AL>,<SP>,<HD>,<SV>,<HP>,<BV>,<GS>,<OT1>,<CQ>,<MI>,<IG>,<GT>,<AC>,<DC>,<OC>,<OT2>,<MN>[,<SEQ>]##

Parameter	Type	Description
<OT1>		Output pin configuration • 0: Short circuit with cellular override enabled • 1: Open circuit • 2: Short circuit
<X>		Response transport • 1: TCP or UDP socket. • 2: SMS
<OT2>		Delayed output pin configuration • 0: Short circuit with cellular override enabled • 1: Open circuit • 2: Short circuit • If no output pin configuration is pending, <OT2> response field is set to <OT1>

<MN>	Time delay in minutes • Valid range is 5-1440 minutes • 1 minute increments allowed • Default value is 0 (disabled) • If no output pin configuration is pending, <MN> response field is set to 0
<OC>	Number of manual output overrides utilized

7006 Set virtual odometer

- *Virtual odometer is reset to zero on a power cycle, reset or memory erase.*

Type	Syntax	Response
Set	+XT:7006,<VO>	$$<UID>,7006,<VO>##

Parameter	Type	Description
<VO>		Virtual odometer setting in miles • Valid range is 0-65000 • 1 mile increments allowed

7007 GPS reset

Type	Syntax	Response
Exec	+XT:7007	$$<UID>,7007##

7008 Device save profile

- *Saves entire device configuration to memory.*
- *If <PF> is specified as Unknown, FacDflt or Cleared the device will respond with an error.*

Type	Syntax	Response
Exec	+XT:7008,<PF>	$$<UID>,7008,<PF>##

Parameter	Type	Description
<PF>	String	Profile name • Maximum of 7 characters

7009 Device clear profile

Type	Syntax	Response
Exec	+XT:7009	$$<UID>,7009,Cleared##

7010 Device read profile

- *If no profile is saved in memory the device will respond with Cleared.*

Type	Syntax	Response

Read	+XT:7010	$$<UID>,7010,<PF>##

7012 Read and report vehicle position with wait for GPS lock

- *The device will send a 7012 acknowledgement response after receiving the command.*
- *If GPS is locked when command is received, command acknowledgement response will not be sent.*
- *The device will send a 7012 event with additional data once GPS is locked.*
- *The device will wait up to 20 minutes for GPS lock.*
- *If the device does not get GPS lock, the device will respond with the last known location*

Type	Syntax	Response
Read	+XT:7012,<X>	$$<UID>,7012,<msg#>,<X>## $$<UID>,7012,<msg#>,<D>,<T>,<LT>,<LN>,<AL>,<SP>,<HD>,<SV>,<HP>,<BV>,<GS>,<OT1>,<CQ>,<MI>,<IG>,<GT>,<AC>,<DC>,<OC>,<OT2>,<MN>,<IN2S>[,<SEQ>]##

Parameter	Type	Description
<X>		Response transport • 1: TCP or UDP socket. • 2: SMS
<msg#>		Response type • 1: command acknowledgment • 2: GPS lock event
<OT1>		Output pin configuration • 0: Short circuit with cellular override enabled • 1: Open circuit • 2: Short circuit
<X>		Response transport • 1: TCP or UDP socket. • 2: SMS
<OT2>		Delayed output pin configuration • 0: Short circuit with cellular override enabled • 1: Open circuit • 2: Short circuit • If no output pin configuration is pending, <OT2> response field is set to <OT1>
<MN>		Time delay in minutes • Valid range is 5-1440 minutes • 1 minute increments allowed • Default value is 0 (disabled) • If no output pin configuration is pending, <MN> response field is set to 0

7013 Reset Manual Override count to zero

Type	Syntax	Response
Read	+XT:7013	$$<UID>,7013##

7050 Query device diagnostics

- Counter and percent values are accumulated since last clear.

Type	Syntax	Response
Read	+XT:7050,<X>	$$<UID>,7050,<GSM>,<GPR>,<PDP>,<HD>,<HON>,<PU>,<R>,<%GPS>,<%GPSQ>,<%GSM>,<%GPR>,<%PDP>,<LV>,<HV>,<CX>,<DBO>,<ABI>,<DBI>,<SO>,<SI>,<SS>##

Parameter	Type	Description
<X>		Query mode • 1: Query without clear • 2: Clear diagnostic status after read
<GSM>		GSM registration state • 0: Not registered • 1: Home • 2: Searching • 3: Denied • 4: Unknown • 5: Roaming
<GPR>		GPRS registration state • 0: Not registered • 1: Home • 2: Searching • 3: Denied • 4: Unknown • 5: Roaming
<HON>		Hours on • Valid range is 0-1000
<PU>		Power-up counter • Valid range is 0-255
<R>		Reset counter • Valid range is 0-255
<%GPS>		GPS lost percentage
<%GPSQ>		GPS lost percentage based on 5-satellite quality factor
<%GSM>		GSM lost percentage
<%GPR>		GPRS lost percentage
<%PDP>		PDP context lost percentage
<LV>		Low voltage detected (seconds below 9 VDC) • Valid range is 0-60000
<HV>		High voltage detected (seconds above 16 VDC) • Valid range is 0-60000
<CX>		Context activation counter • Valid range is 0-1000
<DBO>		Data bytes sent • Valid range is 0-10000000 • Only bytes associated with records sent to the server are counted. Other network traffic is ignored.
<ABI>		Acknowledgement bytes received • Valid range is 0-10000000 • Only bytes from valid acknowledgement messages are counted.
<DBI>		DOTA bytes received • Valid range is 0-10000000 • Only bytes received as part of update files are counted.
<SO>		SMS messages sent • Valid range is 0-1000
<SI>		SMS messages received • Valid range is 0-1000

<SS>	SMS spam messages received • Valid range is 0-1000

Appendix A. UDP with ACK Description

- The UDP with ACK feature provides an application-layer acknowledgement and retry protocol for UDP messaging.
- Operation

  The UDP with ACK consists of two progressive timing back-offs:

  - UDP ack timeouts {15 seconds, 30 seconds}
  - UDP hold-off intervals {2 minutes, 4 minutes, 8 minutes, 16 minutes, 32 minutes, 64 minutes}

  The UDP ack timeouts indicate how long the device will listen for the appropriate acknowledgement from the server after a UDP message has been sent. The UDP hold-off intervals indicate how long the device will wait before allowing the retransmission of pending UDP messages.

  - The device does not receive any acknowledgements sent by the server during the UDP hold-off period. The device only listens during the acknowledgement timeout periods.

  In normal operation, the device will save an event occurrence, send a UDP message to the server and wait for the appropriate acknowledgement back from the server.

  If no acknowledgement is received within the first 15 second timeout, the same message will be retransmitted with a 30 second timeout. If no acknowledgement is received within the second 30 second timeout, the device enters the appropriate UDP hold-off period. If the device reaches the maximum 64 minute hold-off period the hold-off repeats at 64 minute intervals.

  If a correct acknowledgement is received from the server the device will delete the event from memory and proceed to the next event (if present). The timeout and hold-off are reset.
- The sequence number only increments after a successful acknowledgement from the server. The sequence number resets to zero upon: wrapping after reaching 255, power-up/reset of the device, message transmission on a protocol without acknowledgements.
- The sequence number is not unique to the event number.
- 7001,1 command responses also include the sequence number field and utilize the acknowledgement process. These commands force a reset of any existing hold-off periods.
- The device listens for the server acknowledgement on the same port as the one used to transmit.

Appendix B. Connector Pins

Cable Harness Description				
Wire Color	**Pin Name**	**Type**	**Function**	**Port Characteristics**
	BAT_TS	Input	Backup Battery temperature sense	•
	BAT-		Backup Battery negative terminal	•
	BAT+		Backup battery positive terminal	•
	IN1	Input	Ignition Sense/Wake Pin	• 8-24 V • < 5 V • Internally pulled low
	IN2	Input	General Purpose Input	• 2.4-24 V • < 0.2 V • Internally pulled high
	GND		Ground	
	OUT	Output	Output Port	• > 1 MOhm to GND • < 1 Ohm to GND • 250 mA max sink current
	UART_RX	Input	Serial Receive	• 3.3 V logic interface • 115200 8n1 no flow-control
	UART_TX	Output	Serial Transmit	• 3.3 V logic interface • 115200 8n1 no flow-control
	VIN	Input	Main Battery Supply	• 6-24 V

XIRGO TECHNOLOGIES

Revision History

Revision	Comments	Date
1.0A	New format based on **XT-2150-G-S1z2 revision 1.0 BA1	09/26/2014
2.0A		
2.1A	No protocol changes	11/20/2014
2.1B	Updated supported firmware versions	11/24/2014