Pixie Switcher Message Reference

Introduction

Pixie Switcher products can generate diagnostic messages. These are provided for informational and educational purposes. It is not necessary to understand them in order to use Pixie Switcher products. If not needed, messages should be turned off using the ***M*** command in order to maximize sleep time.

Messages beginning with the letters A, N or Z indicate the state of the ZigBee stack. Messages beginning with the letter D indicate the state of the Switcher device. All values use hexadecimal notation.

Each message is preceded by a sequence number followed by an approximate seconds counter (with two hexadecimal places) in square braces. The seconds counter does not increment during sleep.

Refer to the following for more information about the ZigBee stack.

ZigBee for Applications Developers, white paper downloadable from *www.flexipanel.com*.

ZigBee Specification, downloadable from *www.zigbee.org*.

Message Reference

ADAC

ADAC confirms the result of an attempt to send a message. A status code of zero indicates success.

This message is generated when an APSDE-DATA.confirm message is received from the ZigBee stack.

ADAI

ADAI indicates that a message was received for the endpoint and cluster ID shown. Endpoint 0 is the ZigBee Device Object, used for ZigBee settings.

This message is generated when an APSDE-DATA.indication message is received from the ZigBee stack.

ADAR

ADAR reports that a request is being made to set a value on the remote device and endpoint indicated. Endpoint numbers are as follows:

00	ZigBee Device Object (used for binding)
01-18	Input endpoints
21-28	Output endpoints
30-38	Non-bindable endpoints

This message is generated when an APSDE-DATA.request message is sent to the ZigBee stack.

DBDI

DBDI indicates the result of a bind operation. The status codes are as follows:

00 – Success
01 – Not supported
02 – Timed out
03 – No matching profile / cluster

DCDI

DCDI indicates that a countdown timer has started. It indicates the number of seconds (in hex) until it will complete, and the endpoint to which it applies. Countdown timers are used for time delay switches and failsafe alarms. Countdown times are approximate only in order to maintain low power operation.

DEPI

DEPI indicates an endpoint message was received. The status codes are as follows:

00 – Off
FF – On
F0 – Toggle

DEPR

DEPR indicates an endpoint operation is being requested. The status codes are as for DEPI.

DERI

DERI indicates an error occurred. The status codes are as follows:

01	Configuration command not understood
02	Endpoint not of bindable type
>40	Fatal error, halts execution
41	ZigBee stack error
42	Memory allocation error
>80	Contact FlexiPanel quoting status code

DESI

DESI reports the current endpoint states, in order. For input endpoints, this represents the last recorded state of the input pin. For output endpoints, this represents the value being output on the pin. On is represented as a 1 and Off is represented as a 0.

DETI

DETI reports the current endpoint types, in order. Refer to table 1.

Table 1. Endpoint Types	
Code	***Function***
T	Toggling input
N	*On* input
F	*Off* input
L	Latching input
H	Toggling latch input
G	Programmable input, set to *toggle* or unassigned
n	Programmable input, set to *on* †
f	Programmable input, set to *off* †
t	Programmable input, set to *latch* †
h	Programmable input, set to toggling *latch* †
d	Programmable input, set to *time delay* †
D	Time delay input
0	Output, initially off
1	Output, initially on
P	Pulsing output
R	Power control output
M	Time delay setpoint input
S	Failsafe alarm input
A	Failsafe alarm output, initially off
B	Failsafe alarm output, initially on
U	Unassigned
† Code used for DETI only. To set an endpoint as programmable with DETS, always use code ***G***	

DETS

DEMS is prompting for new endpoint information. Enter the endpoint of each of EP1 – EP8 in sequence, using the codes shown in table 1.

DBMI

DBMI indicates the bind switch mode. The possible modes are as follows:

00 – Normal mode
01 – Reed switch mode

In normal mode, a one-second gap is permitted between successive presses of the bind switch.

In reed switch mode, a five-second gap is permitted between successive presses of the bind switch, and the status LED stays lit when the bind switch is closed. It is intended for use with reed switches in potted devices.

DBRC

DBRC reports a binding table entry. Each source table entry is linked to one destination table entry for every device it is bound to. The data are presented in the following order:

(1) Neighbor table index number
(2) Source or destination entry type
(2) Short address
(3) Endpoint
(4) Cluster ID
(5) Link to binding record of next destination, or FF.

Unused records are not displayed.

DBTC

DBTC reports the number of entries in use in the binding table.

DNRC

DNRC reports details about a neighbor record in the neighbor table. The data are presented in the following order:

(1) Neighbor table index number
(2) Long address
(3) Short address
(4) PAN ID
(5) Logical channel
(6) Device info (by digit, from left):

Digits 1&2:	LQI
Digit 3:	Stack profile
Digit 4:	Depth
Digit 5, bits 0&1:	Device type
	0 = Coordinator
	1 = Router
	2 = End device
Digit 5, bits 2&3:	Relationship
	0 = Parent
	1 = Child
	2 = Sibling
	3 = None
Digit 6:	ZigBee version
Digit 8, bit 0:	RxOnWhenIdle
Digit 8, bit 1:	bInUse
Digit 8, bit 2:	PermitJoining
Digit 8, bit 3:	PotentialParent

Omitted records are empty.

DNTC

DNTC reports neighbor table information. The data are presented in the following order:

(1) Index of parent in the table
(2) Network depth
(3) Cskip value

(4) Address next end device will be allocated
(5) Address next router will be allocated
(6) Number of children
(7) Number of child routers

In the case of end devices, only (1) is reported.

DPVC

DPVC reports the input supply voltage in hex milliVolts.

DRRC

DRRC reports a routing table entry. The data are presented in the following order:

(1) Neighbor table index number
(2) Destination short address
(3) Routing table entry status
  00 – Active
  01 – Discovery underway
  02 – Discovery failed
  03 – Inactive
(4) Next hop short address

Unused records are not displayed.

DRTC

DRTC reports the number of entries in use in the routing table.

DIFC

DIFC indicates the firmware version. It is generated on reset, power-up and in response to an ***I*** command. The message has the following format:

DIFC WWWW=x.x-y.y-z.z

WWWW = PXSC for coordinator
PXSR for router
PXFE for fast end device
PXSE for sleepy end device
PLFE for fast end device(Lite)
PLSE for sleepy end device (Lite)
PLFV for fast end device (Alt)

x.x = ZigBee Specification version

y.y = Microchip stack version

z.z = Pixie Switcher version

Note that the PAFE version is a special alternate for Pixie Lite where failsafes are disabled but diagnostic messages are enabled.

DSLI

DSLI indicates the sleep state is changing. The status codes are as follows:

00 – Going to sleep
01 – Waking

DSSI

DSSI indicates the signal strength of the last received transmission. The value is in dBm, in hex, plus 110. For example:

DSSI dBxx=47

47 = 71 decimal
= 71 – 110 = –39 dBm

DSTI

DSTI indicates the device state is changing. The possible states are shown in table 2.

Table 2. Pixie Switcher Device States

Status code	***State***	***Status LED***
00	Normal	Off
01	Initializing	On
02	Fatal Error	• • – • ***(F)***
03	Yes, operation succeeded	– • – – ***(Y)***
04	No, operation failed	• – ***(N)***
06	Report RSSI, tens digit	†
07	Report RSSI, ones digit	†
08	Getting programmable input endpoint setting	• – – • ***(P)***
09	Confirm *Toggle* programmable input	•
0A	Confirm *Off* programmable input	• •
0B	Confirm *On* programmable input	• • •
0C	Confirm *Toggle Latch* programmable input	• • • •
0D	Confirm *Latch* programmable input	• • • • •
0E	Confirm *Timer* programmable input	• • • • • •
0F	Battery Low	–• • • ***(B)***
10	Non-fatal error display	• – • ***(R)***
40	Permit node to join	• – – – ***(J)***
41	Binding / unbind endpoint 1	•
42	Binding / unbind endpoint 2	• •
43	Binding / unbind endpoint 3	• • •
44	Binding / unbind endpoint 4	• • • •
45	Binding / unbind endpoint 5	• • • • •
46	Binding / unbind endpoint 6	• • • • • •
47	Binding / unbind endpoint 7	• • • • • • •
48	Binding / unbind endpoint 8	• • • • • • • •
81	Looking for network Starting network (coordinators)	• –• • ***(L)***

† One slow flash for each ten plus one quick flash for each unit

DUFI

DUFMI indicates the battery undervolt and failsafe alarm setpoints. Three four-hex-digit values are quoted as follows: (a) Retransmit period, in hex seconds, (b) quiet time, in hex seconds, (c) undervolt level, in milliVolts.

DVBI

DVBI indicates the diagnostic message mode. The possible modes are as follows:

00 – Quiet (important messages only)
01 – Verbose (diagnostic messages generated)

DWKI

DWKI indicates the wakeup mode selected, as described in table 3.

Table3. Wakeup mode options

Mode	Function
0x00	No wakeup on watchdog (default)
0x01	Wakeup every 250ms approx
0x02	Wakeup every 500ms approx
0x03	Wakeup every second approx
0x04	Wakeup every 2s approx
0x05	Wakeup every 4s approx
0x06	Wakeup every 8s approx
0x07	Wakeup every 15s approx
0x08	Wakeup every 30s approx
0x09	Wakeup every minute approx
0x0A	Wakeup every 2 minutes approx
0x0B	Wakeup every 4 minutes approx
0x0C	Wakeup every 8 minutes approx
0x0D	Wakeup every 15 minutes approx
0x0E	Wakeup every 30 minutes approx
0x0F	Wakeup every hour approx
0x10	Wakeup every 2 hours approx
0x11	Wakeup every 3 hours approx
0x12	Wakeup every 6 hours approx
0x13	Wakeup every 12 hours approx
0x14	Wakeup every 24 hours approx

NJNC

NJNC confirms the result of an attempt to join a network. A status code of zero indicates success. A status code of CA indicates no network could be found.

This message is generated when an NMLE-JOIN.confirm message is received from the ZigBee stack.

NJNR

NJNR reports that a request is being made to join the PAN network indicated. The ReJn parameter indicates whether this is a join or a rejoin.

This message is generated when an NMLE-JOIN.request message is sent to the ZigBee stack.

NNFC

NNFC confirms network formation, indicating PAN ID and channel if successful, or error status return code if an error occurred.

This message is generated when an NMLE-NETWORK-FORMATION.confirm message is received from the ZigBee stack.

NNFR

NNFR reports that a request is being made to form a network.

This message is generated when an NMLE-NETWORK-FORMATION.request message is sent to the ZigBee stack.

NNDC

NNDC reports on an attempt to discover a network, indicating the number of PAN networks found if successful or the error status return code if an error occurred.

This message is generated when an NMLE-NETWORK-DISCOVERY.confirm message is received from the ZigBee stack.

NNDR

NNDR reports that a request is being made to discover a network.

This message is generated when an NMLE-NETWORK-DISCOVERY.request message is sent to the ZigBee stack.

NPJC

NPJC confirms the result of a request to permit joining. A status code of zero indicates success.

This message is generated when an NMLE-PERMIT-JOIN.confirm message is received from the ZigBee stack.

NJNI

NJNI indicates that a device has joined the network.

This message is generated when an NMLE-JOIN.indication message is received from the ZigBee stack.

NJNR

NJNR indicates that a request is being made to join a PAN network.

This message is generated when an NMLE-NETWORK-JOIN.request message is sent to the ZigBee stack.

NLVI

NLVI indicates that a device with the MAC address shown has left the network. If it is this device, the MAC address will match the device MAC address.

This message is generated when an NMLE-LEAVE.indication message is received from the ZigBee stack.

NPJR

NPJR indicates that a request is being made to permit joining for the duration shown, in hex seconds. A duration of zero indicates that joining should be disabled. A duration of FF indicates that joining should be permanently enabled.

This message is generated when an NMLE-NETWORK-PERMIT-JOIN.request message is sent to the ZigBee stack.

NRSR

NRSR indicates that a request has been made to reset the ZigBee stack. This will erase all neighbor and routing table information.

NRSC

NRSC confirms that the ZigBee stack has reset. Neighbor, binding and routing table data will have been erased.

This message is generated when an NMLE-RESET.confirm message is received from the ZigBee stack.

NSRC

NSRC confirms the result of an attempt to start operating as a router. A status code of zero indicates success.

This message is generated when an NMLE-START-ROUTER.confirm message is received from the ZigBee stack.

NSRR

NSRR indicates that a request is being made to start operating as a router.

This message is generated when an NMLE-START-ROUTER.request message is sent to the ZigBee stack.

NSYC

NSYC indicates the result of a request for data from the parent. The status codes are as follows:

00 – Request complete OK
C6 – No response from parent

NSYR

NSYR indicates that data is being requested from the parent.

This message is generated when an NMLE-SYNC.request message is sent to the ZigBee stack.

ZBDR

ZBDR reports that a request is being made to bind the endpoint indicated.

This message is generated when a ZDO-END-DEVICE-BIND.request message is sent to the ZigBee stack. This stack request is only made to bind nodes on the coordinator, which manages device binding itself. Other devices will send an ADAR data request to the coordinator to bind the endpoint.

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