EDR Enhanced Query Codes

Application Programming Interface
Addendum to EDR Enhanced Manual

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1. Introduction

EDR Enhanced query codes are used to retrieve extra information from the installed software and hardware. The application programming interface (EDREAPI) and the hardware driver can be queried for current settings, sub-system capabilities and hardware presence. All query codes are defined in a C header file called *query.h*.

Features

The query feature makes the EDREAPI very unique and the following data can be returned.

- API version.
- Driver version.
- Number of installed devices.
- Hardware bus types and driver types.
- Sub-system capabilities.
- Special settings.

Interface

The query function is a single API function. For the DLL & shared object API a serial number, query code and extra parameter needs to be passed. The ActiveX API only needs the query code and extra parameter because the ActiveX control is already linked to a specific device. The returned value will then either contain the result, or and error code if the query failed. The serial number is not always necessary. It depends if the query code is directed at a device, or the middle layer software.

API Function and Shared Object

LONG EDRE_Query(ULONG SerialNumber, ULONG QueryCode, ULONG Param)

ActiveX Function

LONG EDREUTLX.Query(LONG SerialNumber, LONG QueryCode)

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2. General Codes

General codes refer to query codes that are used to retrieve general information from the installed software and hardware.

Get API Version

Three calls are necessary to retrieve the API version.

Query Code	Value	Param	Return
APIMAJOR	1	0	Major number
APIMINOR	2	0	Minor Number
APIBUILD	3	0	Build number

Table 2-1 API Version

Get OS Type

A single call is necessary to retrieve the OS type.

Query Code	Value	Param	Return
APIOS	4	0	OS Type 1 Windows 95 DLL 2 Windows NT DLL 3 Windows 98 DLL 4 Windows 2000 DLL 5 Ethernet Client 6 Linux Shared Object 7 Serial Client 8 USB Host

Table 2-2 OS Type

Get Number of Installed Devices

A single call is necessary to retrieve the number of installed devices.

Query Code	Value	Param	Return
APINUMDEV	5	0	Installed device

Table 2-3 Number of installed device

Get Board/Device Type

A single call is necessary to retrieve the device type.

Query Code	Value	Param	Return
BRDTYPE	10	0	Type of device See boards.h for a list of supported devices.

Table 2-4 Device Type

Get Board/Device Revision

A single call is necessary to retrieve the device revision.

Query Code	Value	Param	Return
BRDREV	11	0	Revision

Table 2-5 Device Revision

Get Manufacturing Date

Three calls are necessary to retrieve the manufacturing date of the device.

Query Code	Value	Param	Return
BRDYEAR	12	0	Year
BRDMONTH	13	0	Month
BRDDAY	14	0	Day

Table 2-6 Manufacturing Date

Get Device Serial Number

A single call is necessary to retrieve the device serial number

Query Code	Value	Param	Return
BRDSERIALNO	15	0	Serial number

Table 2-7 Device serial number

Get Board/Device Bus Type

A single call is necessary to retrieve the device bus type

Query Code	Value	Param	Return
BRDBUSTYPE	16	0	Bus Type

0	None
1	ISA
2	PCI
3	PC104
4	USB Connection
5	Serial Connection
6	Ethernet Client

Table 2-8 Device Bus Type

Get Board/Device Driver Type

A single call is necessary to retrieve the device driver type. This call is almost the same as the OS type in certain cases.

Query Code	Value	Param	Return
BRDDRVTYPE	17	0	Driver Type 1 Windows 95 DLL 2 Windows NT DLL 3 Windows 98 DLL 4 Windows 2000 DLL 5 Ethernet Client 6 Linux Shared Object 7 Serial Client 8 USB Host

Table 2-9 Device Driver Type

Get Driver Version

Three calls are necessary to retrieve the driver version.

Query Code	Value	Param	Return
DRVMAJOR	20	0	Major number
DRVMINOR	21	0	Minor number
DRVBUILD	22	0	Build number

Table 2-10 Device Driver Version

Get Firmware Version

Three calls are necessary to retrieve the firmware version. This only relates to devices that have firmware implemented.

Query Code	Value	Param	Return
FRMMAJOR	22	0	Major number
FRMMINOR	24	0	Minor number
FRMBUILD	25	0	Build number

Table 2-11 Device Firmware Version

3. Analog Input Codes

Analog Input Codes are query codes that are used to query information about the analog input sub-system.

Get A/D Number Of Channels

A single call is needed to retrieve the number of A/D channels.

Query Code	Value	Param	Return
ADNUMCHAN	100	0	Number of channels

Table 3-1 Number Of A/D Channels

Get A/D Number Of Sample and Hold Channels

A single call is needed to retrieve the number of A/D sample and hold channels.

Query Code	Value	Param	Return
ADNUMSH	101	0	Number of sample and hold channels

Table 3-2 Number Of A/D Sample and Hold Channels

Get A/D Maximum Sampling Frequency

A single call is needed to retrieve the maximum A/D sampling frequency.

Query Code	Value	Param	Return
ADMAXFREQ	102	0	Maximum sampling frequency

Table 3-3 A/D Maximum Sampling Frequency

Get A/D Sub-System Activity

A single call is needed to retrieve the activity of the A/D sub-system.

Query Code	Value	Param	Return
ADBUSY	103	0	0 – Idle 1 – Busy

Table 3-4 A/D Sub-System Activity

Get A/D Size of FIFO

A single call is needed to retrieve the size of the A/D FIFO.

Query Code	Value	Param	Return
ADFIFOSIZE	104	0	Size of the A/D FIFO

Table 3-5 Size Of A/D FIFO

Query A/D FIFO Overrun Condition

A single call is needed to query the A/D FIFO overrun condition. This query code only relate to A/D devices that have FIFOs.

Query Code	Value	Param	Return
ADFIFOOVER	105	0	

Table 3-6 A/D FIFO Overrun Condition

Get A/D Buffer Size

A single call is needed to retrieve the size of the A/D buffer.

Query Code	Value	Param	Return
ADBUFFSIZE	106	0	Size of A/D Buffer

Table 3-7 A/D Buffer Size

Query A/D Buffer Overrun Condition

A single call is needed to query the A/D buffer overrun condition.

Query Code	Value	Param	Return
ADBUFFOVER	107	0	

Table 3-8 A/D Buffer Overrun Condition

Query A/D Software Buffer Allocation

A single call is needed to query if the A/D software buffer is allocated.

Query Code	Value	Param	Return
ADBUFFALLOC	108	0	

Table 3-9 A/D Software Buffer Allocation

Get A/D Number Of Samples Available In Buffer

A single call is needed to retrieve the number of A/D samples available in the buffer. ADUNREAD get used extensively when doing A/D streaming. It is used to retrieve the number of available samples in the driver's circular buffer.

Query Code	Value	Param	Return
ADUNREAD	109	0	Number of samples available in buffer

Table 3-10 Number Of A/D Samples Available In Buffer

Query State Of A/D External Clock

A single call is needed to query the state of the A/D external clock line. This query only relate to the PCI30FG series.

Query Code	Value	Param	Return
ADEXTCLK	110	0	

Table 3-11 State Of A/D External Clock

Query State Of A/D External Trigger

A single call is needed to query the state of the A/D external trigger line. This query code only relate to the PCI30FG series.

Query Code	Value	Param	Return
ADEXTTRIG	111	0	

Table 3-12 A/D External Trigger State

Query A/D Burst Mode State

A single call is needed to query if the A/D burst mode is set. This query code only relate to the PCI30FG series.

Query Code	Value	Param	Return
ADBURST	112	0	

Table 3-13 A/D Burst Mode State

Get A/D Range

A single call is needed to retrieve the A/D range.

Query Code	Value	Param	Return
ADRANGE	113	0	A/D range

Table 3-14 A/D Range

Set A/D Clock Source

A single call is needed to set the A/D clock source.

Query Code	Value	Param	Return
ADSETCLKSRC	114	0	

Table 3-15 Set A/D Clock Source

Clear A/D Buffer After Read

A single call is needed to clear the A/D buffer after reading is completed.

Query Code	Value	Param	Return
ADCLRBUF	115	0	

Table 3-16 Clear A/D Buffer

Get A/D Number Of mA Channels

A single call is needed to retrieve the number of A/D mA channels.

Query Code	Value	Param	Return
ADNUMMA	130	0	Number of mA channels

Table 3-17 Number Of A/D mA Channels

Get A/D Number Of Temperature Channels

A single call is needed to retrieve the number of A/D temperature channels.

Query Code	Value	Param	Return
ADNUMTMP	140	0	Number of temperature channels

Table 3-18 Number Of A/D Temperature Channels

Get A/D Ambient Channel

A single call is needed to retrieve A/D ambient channel. To get the number of ambient channels deduct the temperature channels from the A/D channels. For each ambient channel the number can then be queried. Specify this in the *Param* parameter.

Query Code	Value	Param	Return
ADAMBCHAN	141	Channel Index	Example; For 2 ambient channe;s Param=0; Channel 16 Param=1; Channel 32

Table 3-19 A/D Ambient Channel

Set A/D FIFO Interrupt Level

A single call is needed to set the A/D FIFO interrupt level.

Query Code	Value	Param	Return
ADIRQLEVEL	142	0	Set FIFO interrupt level

Table 3-20 Set A/D FIFO Interrupt Level

Release A/D getdata Routine

A single call is needed to release the A/D getdata routine. The EDRE_ADGetData routine can stall and wait for a number of samples if the circular buffer has less available. To release it prematurely use this query code.

Query Code	Value	Param	Return
ADRELGETDATA	143	0	Releases the getdata routine

Table 3-21 Release A/D getdata Routine

4. Analog Output Codes

Analog Output Codes are query codes that are used to query information about the analog output sub-system.

Get D/A Number Of Channels

A single call is needed to retrieve the number of D/A channels.

Query Code	Value	Param	Return
DANUMCHAN	200	0	Number of D/A channels

Table 4-1 Number Of D/A Channels

Get D/A Maximum Output Frequency

A single call is needed to retrieve maximum D/A output frequency.

Query Code	Value	Param	Return
DAMAXFREQ	201	0	Maximum D/A output frequency

Table 4-2 Maximum D/A Output Frequency

Query D/A Sub-System Activity

A single call is needed to query the activity of the D/A sub-system.

Query Code	Value	Param	Return
DABUSY	202	0	0: Idle 1: Busy

Table 4-3 D/A Sub-System Activity

Get D/A FIFO Size

A single call is needed to retrieve the size of the D/A FIFO.

Query Code	Value	Param	Return
DAFIFOSZ	203	0	Size of D/A FIFO

Table 4-4 D/A FIFO Size

Get D/A Buffer Size

A single call is needed to retrieve the size of the D/A buffer.

Query Code	Value	Param	Return
DABUFSZ	204	0	Size of D/A Buffer

Table 4-5 D/A Buffer Size

Get D/A Buffer Space Available

A single call is needed to retrieve the amount of space available in the D/A buffer. This code is used extensively when doing waveform generation and adding to the driver circular buffer. This query code will indicate the space available, in number of samples.

Query Code	Value	Param	Return
DABUFSPACE	205	0	Space available in D/A buffer

Table 4-6 D/A Buffer Space Available

Query D/A Buffer Under Run Status

A single call is needed to query the D/A buffer under run status.

Query Code	Value	Param	Return
DABUFUNDER	206	0	0: False 1: True

Table 4-7 D/A Buffer Under Run Status

5. Counter Timer Codes

Counter Timer Codes are query codes that are used to query information about the counter timer sub-system.

Get Number Of Counter-Timer Channels

A single call is needed to retrieve the number of Counter-Timer channels.

Query Code	Value	Param	Return
CTNUM	300	0	Number of Counter-Timer channels

Table 5-1 Number Of Counter-Timer Channels

Query Counter-Timer Activity

A single call is needed to retrieve activity of the Counter-Timer.

Query Code	Value	Param	Return
CTBUSY	301	Channel number	

Table 5-2 Counter-Timer Activity

Latch Counter

A single call is needed to latch the Counter.

Query Code	Value	Param	Return
CTLATCHALL	302	0	Latch counter – 8254 Compatible

Table 5-3 Latch Counter

6. Digital I/O Codes

Digital I/O Codes are query codes that are used to query information about the digital I/O sub-system.

Get Number Of DIO Ports

A single call is needed to retrieve the number of DIO ports.

Query Code	Value	Param	Return
DIONUMPORT	400	0	Number of DIO ports

Table 6-1 Number of DIO Ports

Query DIO Port Information

A single call is needed to retrieve the information of any DIO port.

Query Code	Value	Param	Return
DIOQRYPORT	401	Port number	Port Type 0 Output 1 Input 2 Input or Output (Configurable) I/O lines are shared 3 Input and Output I/O lines are separate

Table 6-2 DIO Port Information

Get DIO Port Width

A single call is needed to retrieve the Width of any DIO port.

Query Code	Value	Param	Return
DIOPORTWIDTH	402	Port Number	Width of DIO port

Table 6-3 DIO Port Width

Configure DIO Ports

A single call is needed to configure the DIO ports.

Query Code	Value	Param	Return

DIOCFG	407	Port Number	(Only 800 series boards)

Table 6-4 Configure DIO Ports

7. Digital to Synchro & Synchro to Digital Codes

Digital to Synchro & Synchro to Digital Codes are query codes that are used to query information about the onboard power supply of the device.

Control PSU On Board

A single call is needed to control the PSU on board.

Query Code	Value	Param	Return
DSRPSU	450	0	0 - off, 1 - on

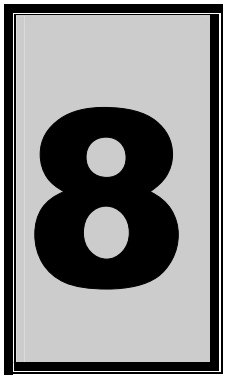
Table 7-1 Control PSU

Query PSU On Board

A single call is needed to query the PSU on board.

Query Code	Value	Param	Return
DSRPSUERR	451	0	

Table 7-2 Query PSU



8. Interrupt Codes

Interrupt Codes are query codes that are used to query information about the interrupt sub-system.

Get Number Of Interrupt Sources

A single call is needed to retrieve the number of interrupt sources.

Query Code	Value	Param	Return
INTNUMSRC	500	0	Number of interrupt sources

Table 8-1 Number Of Interrupt Sources

Get Interrupt Status Register

A single call is needed to retrieve the interrupt status register.

Query Code	Value	Param	Return
INTSTATUS	501	0	Reads the interrupt status register

Table 8-2 Interrupt Status Register

Connect/Disconnect Interrupt To Bus

A single call is needed to connect/disconnect an interrupt to a bus.

Query Code	Value	Param	Return
INTBUSCONNECT	502	0	Connects/Disconnects interrupt to/from a bus

Table 8-3 Connect/Disconnect Interrupts

Query Interrupt Status

A single call is needed to query if a interrupt source is triggered.

Query Code	Value	Param	Return
INTISAVAILABLE	503	0	

Table 8-4 Interrupt Status

Get Number Of Interrupts Triggered

A single call is needed to retrieve the number of interrupts triggered.

Query Code	Value	Param	Return
INTNUMTRIG	504	0	Number of interrupts triggered

Table 8-5 Number Of Interrupts Triggered

9. Serial Device Codes

Serial Device Codes are query codes that are used to query information about the serial device and its sub-systems.

Get Serial Baud Rate

A single call is needed to retrieve the baud rate.

Query Code	Value	Param	Return
SRLGETBAUD	700	0	Baud rate

Table 9-1 Get Serial Baud Rate

Set Serial Baud Rate

A single call is needed to Set the baud rate.

Query Code	Value	Param	Return
SRLSETBAUD	701	New baud rate	

Table 9-2 Set Serial Baud Rate

Get Number Of Packets Sent

A single call is needed to retrieve the number of packets sent on a specific communications port.

Query Code	Value	Param	Return
SRLGETSEND	710	0	Number of packets sent

Table 9-3 Serial Number Of Packets Sent

Get Number Of Packets Received

A single call is needed to retrieve the number of serial packets received.

Query Code	Value	Param	Return
SRLGETRECV	711	0	Number of packets received

Table 9-4 Serial Number Of Packets Received

Get Serial Packet Errors

A single call is needed to retrieve the packet errors on a specific serial communications port.

Query Code	Value	Param	Return
SRLGETERRS	712	0	Number of packet errors on a comm. port

Table 9-5 Serial Packet Errors