卒 業 研 究 報 告

題　　目

高速パルススキャニング C-V 測定装置開発

指 導 教 員

河 津　 哲 教授

報 告 者

大 橋　 健 二

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高知工科大学 電子・光システム工学科

目　　次

1. まえがき

近年、IT革命すなわち情報技術革命とういうことが盛んに言われている。コンピュータは低価格化、高性能化し、携帯通信端末は爆発的に普及した。まさに情報技術革命といって相応しい。これは情報産業の基本となる、半導体・集積回路技術の発展によってもたらされたことは周知の通りであり、今後の発展も当然のことであろう。しかしながら最近では「ムーアの法則に限界が見えてきた」とも言われ始め、これからの技術開発は徐々に困難になってきつつある。このような状況となっている原因の一つとして、微量なリーク電流及び担体発生測定が必要となっているにもかかわらず、今までの評価方法では非常に長時間を要したり、測定不可能であるということが挙げられる。

そこで、これらの測定に対応できる新たな測定方法として、高速パルススキャニング C-V 法を用いた測定システムを構築した。このシステムでは高速な A/D・D/A 変換器を用いることによって、数ミリ秒の短時間に数千回の測定を行うことを可能としている。

本研究では今までに行われていなかった高速な半導体評価方法について実験を行い、開発に必要な測定、評価結果をより早く得ることを目的とすると共に、今後の技術開発のブレークスルーとなるような新たな事象の発見を目指している。

2. Pulse Scanning C-V 法

2.1 基本回路

まず、基本的な測定回路の概念図を図 2.1 に示す。この図において、正弦波発振器は静電容量の測定、台形波パルスジェネレータはバイアスを印加するためのものである。また、C_C は台形波パルスジェネレータの直流成分が正弦波発振器に、L は正弦波発振器の高周波が台形波パルスジェネレータに、それぞれ影響を与えないようにするためである。

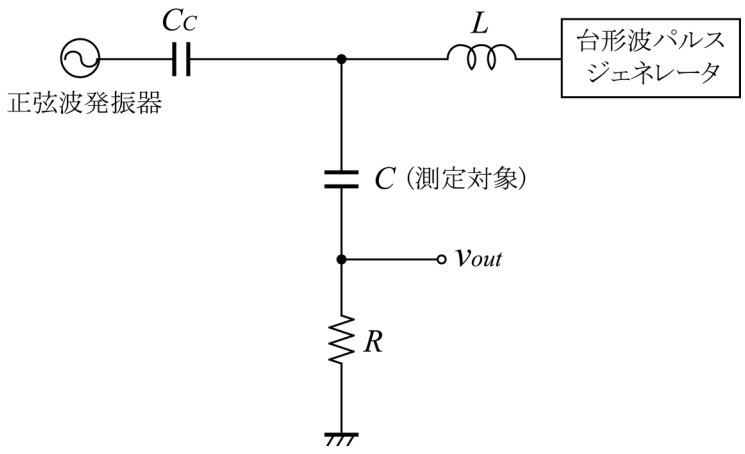


図 2.1 Pulse Scanning C-V 基本測定回路

2.2 静電容量測定原理

次に出力v_{out}について考えるが、台形波パルスジェネレータはバイアスを印加するためのものであるから、ここでは考えない。

まず、正弦波発振器の出力電圧v_iを

$$v_i = V_i \sin \omega t \tag{2.1}$$

と置く。また、C_CとCの合成静電容量C_Sは以下のように与えられる。

$$C_S = \frac{1}{\frac{1}{C_C} + \frac{1}{C}} = \frac{C_C \cdot C}{C_C + C} \tag{2.2}$$

よって、C_S及びRの合成インピーダンスZは

$$|Z| = \sqrt{R^2 + \left(\frac{1}{\omega C_S}\right)^2} \tag{2.3}$$

であるから、流れる電流iは

$$i = \frac{v_i}{Z} = \frac{V_i \cos \omega t}{\sqrt{R^2 + \left(\frac{1}{\omega C_S}\right)^2}} \tag{2.4}$$

となる。ここで、Cが

$$C \ll C_C \tag{2.5}$$

$$\left(\frac{1}{\omega C}\right)^2 \gg R^2 \tag{2.6}$$

の条件を満たすとき、C_Sは(2.2)式より

$$C_S = C \tag{2.7}$$

また、Zは(2.3)式より

$$|Z| = \frac{1}{\omega C} \tag{2.8}$$

となるから、(2.4)式は

$$i = V_i \cos \omega t \cdot \omega C \tag{2.9}$$

と置き換えられる。よって出力電圧v_{out}は

$$v_{out} = Ri = R \cdot V_i \cos \omega t \cdot \omega C \tag{2.10}$$

で与えられる。したがって、Cは正弦波発振器の出力v_iと直列抵抗Rの関数として、

$$C = \frac{v_{out}}{\omega R V_i \cos \omega t} \tag{2.11}$$

を得る。これより、v_{out}はCに比例することが分かる。

2.3 C-V 特性測定原理

2.3.1 pn 接合

ここではまず、図 2.2(b)のように不純物濃度が階段状に変化している、pn 階段接合の空乏層容量について述べる。

図 2.2(a)のように pn 接合に逆方向電圧Vが加えられている場合に、p 形領域と空乏層の境界を原点として n 形領域方向にx軸を取り、p と n の接合面をx_1、空乏層と n 形領域の境界をx_2とし、電位を$V(x)$とすれば、電荷密度ρと電位Vの関係はポアソン方程式

$$\frac{d^2V(x)}{dx^2} = -\frac{\rho}{\varepsilon_s\varepsilon_0} \tag{2.12}$$

で表される。ただし、$0 \le x < x_1$では$\rho = -qN_A$、$x_1 \le x \le x_2$では$\rho = qN_D$である。ここで、N_A, N_Dはイオン化したアクセプタ及びドナーである。また、ε_Sは半導体の比誘電率、ε_0は真空の誘電率である。これを以下のような境界条件

$$\begin{aligned} &x = 0 \ \text{で} \ V(0) = 0, \quad \frac{\partial v(0)}{\partial x} = 0 \\ &x = x_1 \ \text{で} \ V(x) \ \text{は連続} \\ &x = x_2 \ \text{で} \ V(x_2) = \Phi_D + V, \quad \frac{\partial v(x_2)}{\partial x} = 0 \end{aligned} \tag{2.13}$$

で積分すると、

$$\frac{\partial V(x)}{\partial x} = \frac{qN_A}{\varepsilon_S\varepsilon_0}x + C_1 \qquad (0 \le x < x_1) \tag{2.14}$$

$$\frac{\partial V(x)}{\partial x} = -\frac{qN_D}{\varepsilon_S\varepsilon_0}x + C_2 \qquad (x_1 \le x \le x_2) \tag{2.15}$$

となる。ここでそれぞれの境界条件から、$C_1 = 0, C_2 = \frac{qN_D}{\varepsilon_S\varepsilon_0}x_2$となる。そして、$x = x_1$で$V$は連続であるから、式(2.14),(2.15)の$x$を$x_1$として

$$-\frac{qN_A}{\varepsilon_S\varepsilon_0}x_1 = \frac{qN_D}{\varepsilon_S\varepsilon_0}x_1 - \frac{qN_D}{\varepsilon_S\varepsilon_0}x_2 \tag{2.16}$$

となり、

$$qN_Ax_1 = qN_D(x_2 - x_1) \tag{2.17}$$

を得る。これは、p 形領域の空乏層中の負電荷と n 形領域の空乏層中の正電荷量が等しいことを表している。また、空乏層幅と不純物濃度が反比例の関係にあることも分かる。空乏層中の電界$E_x = -\frac{dV}{dx}$を図 2.2(c)に示す。

次に空乏層中の電界分布を求める。式(2.14), (2.15)をもう一度積分して、

$$V(x) = \frac{qN_A}{2\varepsilon_S\varepsilon_0}x^2 + C_3 \qquad (0 \le x < x_1) \tag{2.18}$$

$$V(x) = -\frac{qN_D}{2\varepsilon_S\varepsilon_0}x^2 + \frac{qN_D}{\varepsilon_S\varepsilon_0}x_2 x + C_4 \qquad (x \le x \le x_2) \tag{2.19}$$

を得る。ここで、境界条件と式(2.17)より $C_3 = 0, C_4 = -\frac{qN_D{}^2 x_2{}^2}{2\varepsilon_S\varepsilon_0}(N_A + N_D)$ である。$x = x_2$ で $V(x_2) = \Phi_D + V$ であるから

$$\begin{aligned}\Phi_D + V &= -\frac{qN_D}{2\varepsilon_S\varepsilon_0}x_2{}^2 + \frac{qN_D}{\varepsilon_S\varepsilon_0}x_2{}^2 - \frac{qN_D{}^2 x_2{}^2}{2\varepsilon_S\varepsilon_0(N_A + N_D)} \\ &= \frac{qN_A N_D}{2\varepsilon_S\varepsilon_0(N_A N_D)}x_2{}^2\end{aligned} \tag{2.20}$$

となり、電位 $V(x)$ は図 2.2(d)のように、x の 2 次関数で変化することが分かる。また、全空乏層幅 x_2 と V の関係は式(2.20)より

$$x_2 = \sqrt{\frac{2\varepsilon_S\varepsilon_0(N_A + N_D)}{qN_A N_D}(\Phi_D + V)} \tag{2.21}$$

と求められる。これより空乏層幅は、ほぼ $\sqrt{V}$ に比例して増加することが分かる。

この空乏層には図 2.2(b)のように電荷が存在していることから、V によって容量が変化するコンデンサと考えることができる。空乏層中の電荷量を $\pm Q(V)$ とすると、式(2.21)より、

$$\begin{aligned}Q(V) &= qN_D(x_2 - x_1) = qN_A x_1 = qN_A\frac{N_D}{N_A + N_D}x_2 \\ &= \sqrt{\frac{2q\varepsilon_S\varepsilon_0 N_A N_D}{N_A + N_D}(\Phi_D + V)}\end{aligned} \tag{2.22}$$

となり、C は

$$C = \frac{dQ}{dV} = \sqrt{\frac{q\varepsilon_S\varepsilon_0 N_A N_D}{2(N_A + N_D)(\Phi_D + V)}} \tag{2.23}$$

となる。この式から空乏層容量 C は $\frac{1}{\sqrt{V}}$ に比例して減少することがわかる。このことは空乏層幅が $\sqrt{V}$ に比例して増加することからも明らかである。また、前述したとおり空乏層は不純物濃度が低いほど拡がりやすく、N_A と N_D の差が大きい場合、小さい方の値に依存する。

次に、今回システム評価及び pn 接合 C-V 特性測定実験に用いるバリキャップダイオードについて説明する。バリキャップダイオードは可変容量ダイオードとも呼ばれるもので、バイアス電圧に対する静電容量の変化が非常に大きいのが特徴である。バリキャップダイオードは超階段接合と呼ばれる、図 2.3 に示すような不純物分布となっており、その静電容量 C_V は次式で表される。

$$C_V = C_0\left(1 + \frac{V}{\Phi_D}\right) - \gamma \tag{2.24}$$

ここで、V :逆バイアス電圧、$C_0 : V = 0$ のときの静電容量、Φ_D :拡散電位、γ :接合近傍の不純物濃度で決まる定数 である。

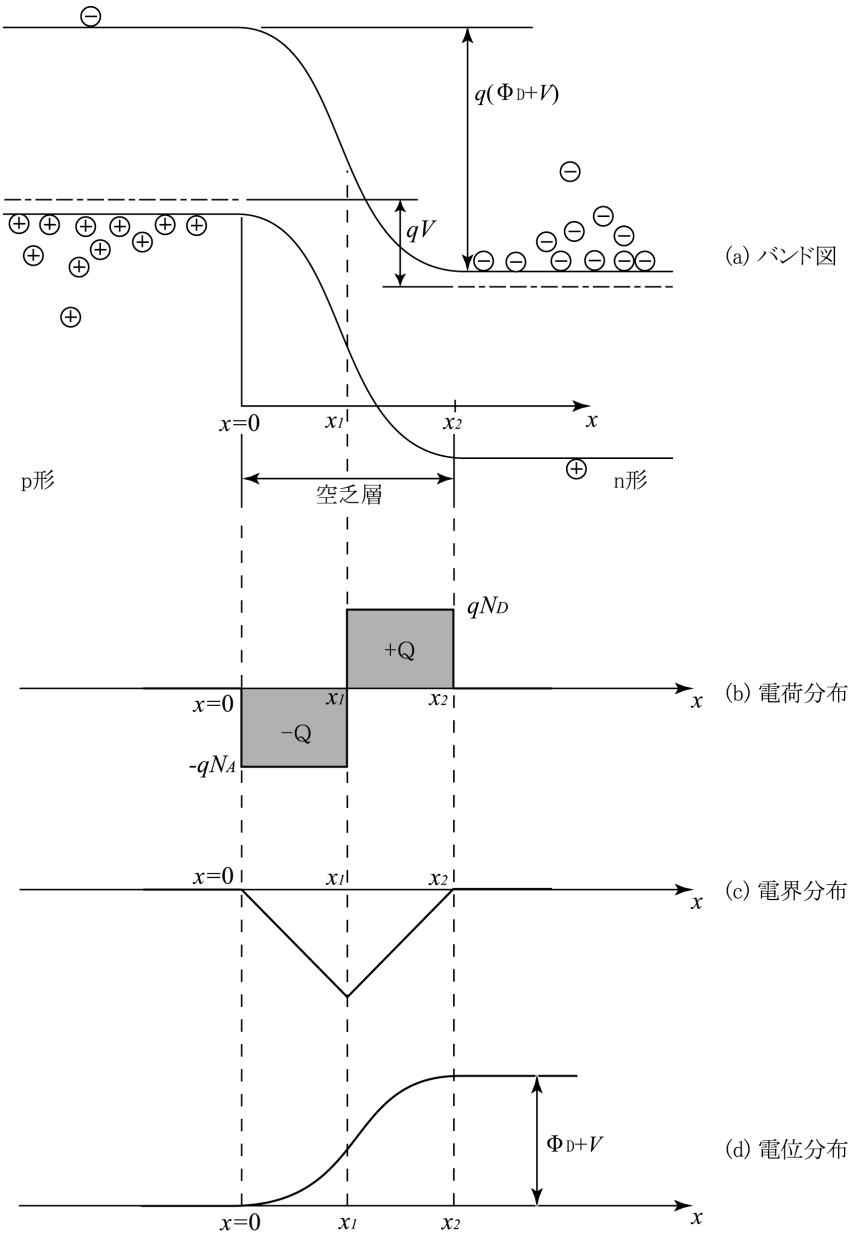


図 2.2 逆方向バイアス時の pn 接合バンド図及び電荷、電界、電位分布

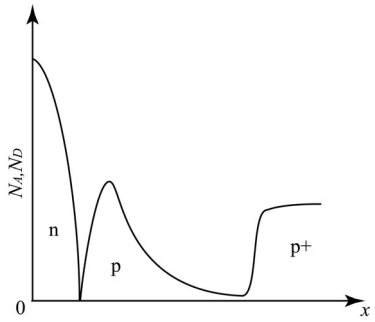


図 2.3 超階段接合の不純物分布

2.3.2 MOS 構造

MOS とは Metal-Oxide-Semiconductor の頭文字をとったもので、図 2.4 に示すような、金属・絶縁膜・半導体が重なった構造になっているものである。

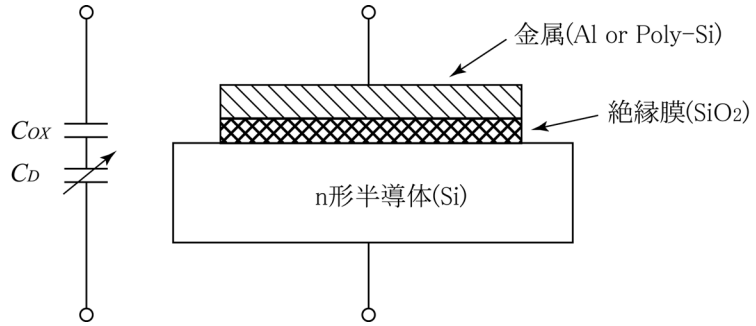


図 2.4 MOS 構造

MOS 構造は、酸化膜が持っている静電容量 C_{ox} と半導体の空乏層容量 C_D を持っており、その合成静電容量 C は

$$C = \frac{1}{\frac{1}{C_{ox}} + \frac{1}{C_D}} \tag{2.25}$$

で与えられる。図 2.5 は、n形基盤を用いた MOS 構造においてゲート電圧 V_G を変化させたときのキャリア分布及び容量の変化を定性的に示したものである。

図 2.5(a)のようにゲートに正電圧を印加すると、SiO_2 との界面に $Q = CV$ に相当する量の電子が集まる。この状態を蓄積状態と呼び、このときは基盤は金属と同じように考えることができる。よって容量は C_{ox} のみとなる。

図 2.5(b)のようにゲートに負の小さい電圧を印加すると、電子は界面から追い払われ、ドナーイオンが固定電荷として残り空乏層が形成される。この時を空乏状態と呼び、容量は C_{ox} と空乏層容量 C_D の直列接続となる。

次に、図 2.5(c)のようにゲート電圧を負の大きな電圧にすると、ドナーイオンだけでは $Q = CV$ を満足する正電荷を供給できなくなり、少数キャリアである正孔が界面に集まってくる。すると界面付近は多数キャリアの電子の濃度より、少数キャリアの正孔の濃度の方が大きくなる。この部分を反転層と呼び、この状態を反転状態と言う。この状態ではゲート電圧をさらに負に増しても、空乏層幅は変化せず、よって容量は一定値となる。ただしこれは高周波信号で計測した場合である。反転層中の正孔は熱励起による電子正孔対の発生によって供給されているため、この速度より遅い低周波信号で計測した場合は空乏層容量 C_D は短絡された状態となり、容量は C_{ox} となる。

これらのようにゲート電圧を変化させたときのバンド図が図 2.6 である。図 2.6(b)は、金属と半導体の仕事関数が等しいとした場合であり、このときは $V_G = 0$ でフラットバンド状態となる。

この一連の C の変化を表したのが図 2.7 である。(a)は低周波、(b)は高周波における場合である。また、(c)はゲート電圧にパルス状の電圧を印加した場合である。ゲート電圧を急激に変化させると、少数キャリア数の増減がこれに追従できず、反転層が形成されるまでの間空乏層が拡がり、容量はさらに減少する。

パルススキャニング C-V 法は、図 2.7(b)と(c)の曲線の関係から、発生した少数キャリアの数を求める方法である。図 2.8 はパルススキャニング C-V 法による C-V 特性の概念図である。急速にゲート電圧を印加すると、少数キャリアの発生が追従しないことから、C-V 曲線は a 点から b 点を経て c 点に到達する。c 点で T_{HOLD} 時間ゲート電圧 $-V_G$ を印加し、急にゲート電圧をゼロに戻すと、今度は c 点から d 点を経て b,a 点の曲線に沿って推移する。また、abde の曲線は少数キャリアがバイアス電圧に追従する場合の C-V 曲線である。

これより、電圧を 0 に戻したとき cdba に沿って推移すれば、d 点における熱平衡状態の少数キャリアの数と、$-V_G$ を T_{HOLD} 時間印加した場合に発生する少数キャリアの数が等しいとすることができる。故に、d 点の電圧から発生する少数キャリアの数を測定できる。

また、ΔV と少数キャリアの数 n との間には

$$q \times n = C_{OX} \times \Delta V \tag{2.26}$$

の関係がある。ここで、q は単位電荷である。

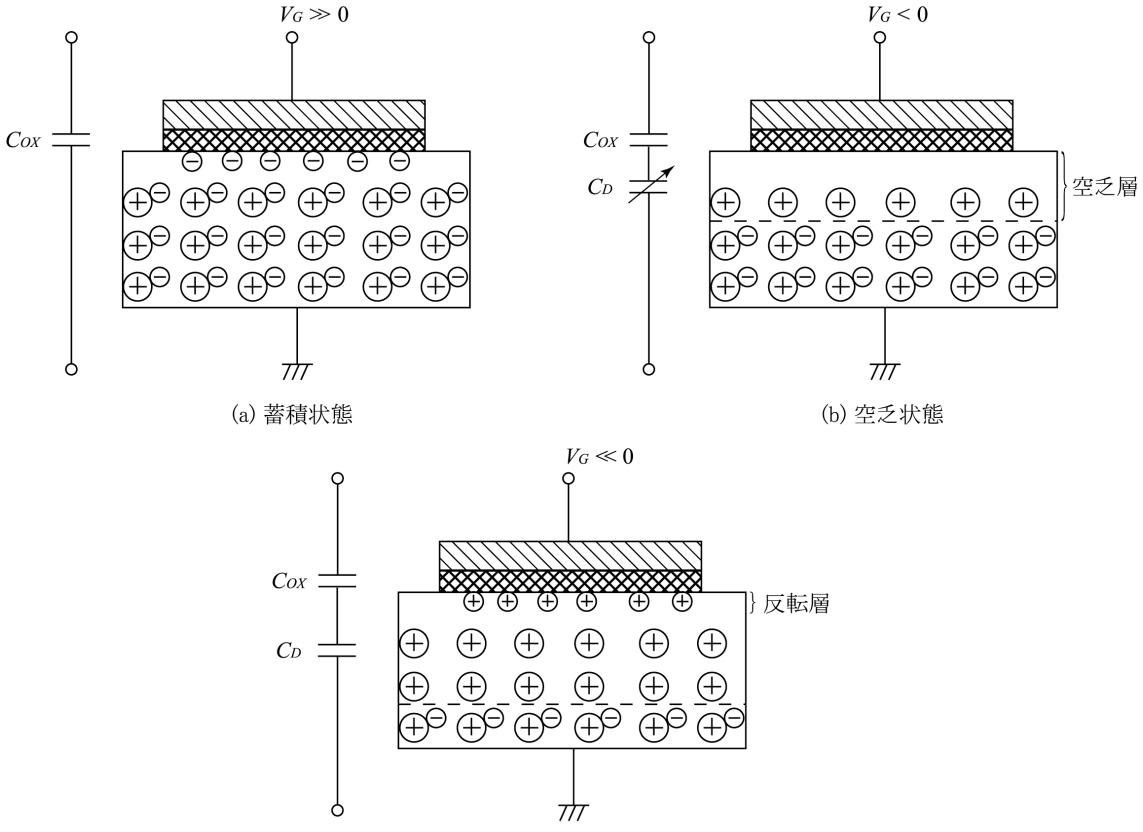
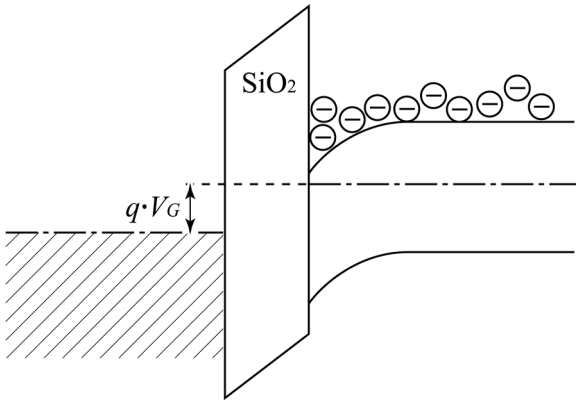
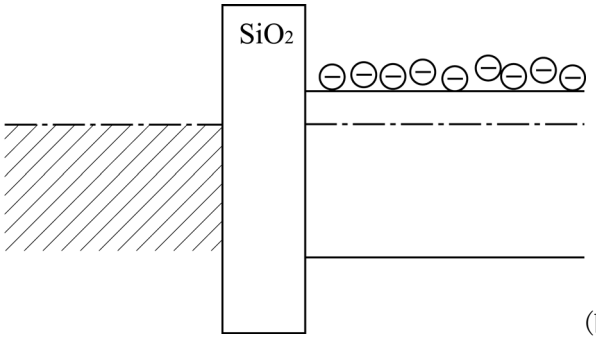


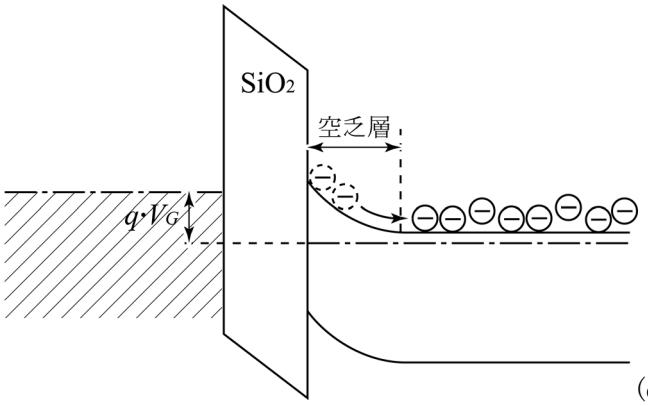
図 2.5 MOS 構造のキャリア分布と容量の変化



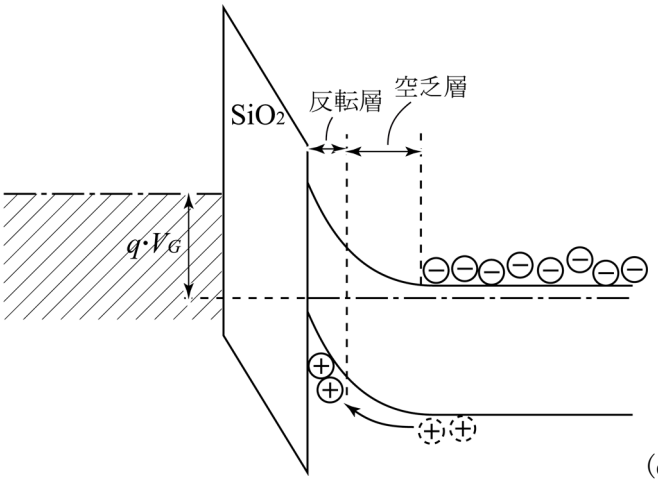
(a) 蓄積状態 $V_G > 0$



(b) フラットバンド状態 $V_G = 0$



(c) 空乏状態 $V_G < 0$



(d) 反転状態 $V_G \ll 0$

図 2.6 MOS 構造バンド図

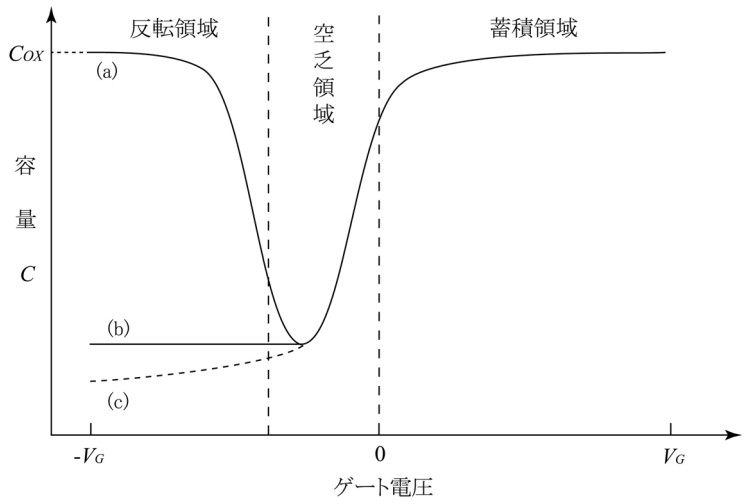


図 2.7 MOS 構造の C-V 特性

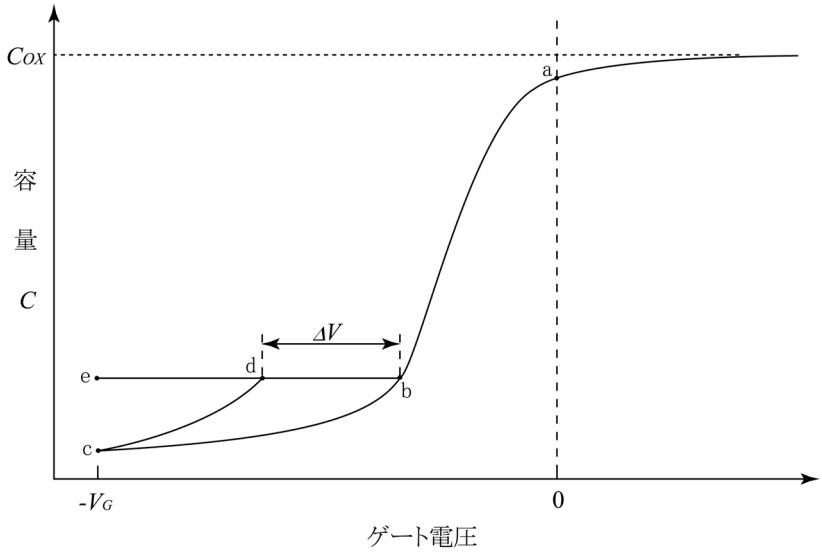


図 2.8 パルススキャニング C-V 法における C-V 特性概念図

3. 測定システム

3.1 概要

図 3.1 に測定システムの簡単なブロック図を示した。矢印は信号及びデータの流れを表す。

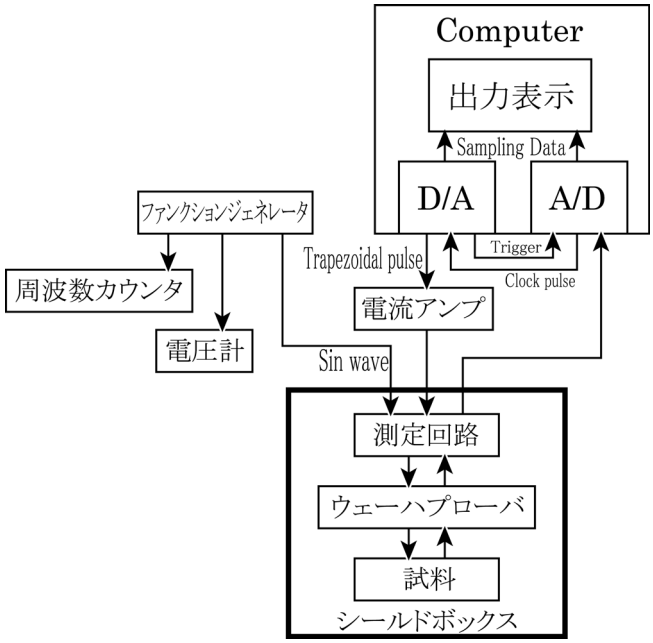


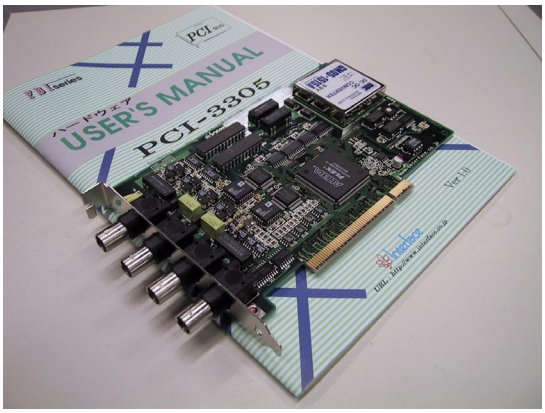
図 3.1 測定システムブロック図

3.2 装置解説

(1) D/A･A/D 変換器

D/A はバイアス印加のための台形パルスを作成、また A/D は測定回路(3 章 3 項参照)から出力される信号を D/A の出力と同期してコンピュータに取り込む。同期させることで、D/A と A/D を関連付けたデータを得ることができる。

今回使用した D/A･A/D 変換器は、それぞれ Interface 社の PCI-3305,PCI-3163 というパソコンの PCI スロットに搭載して使用するボードタイプのものである。図 3.2 にその外観写真を示す。
また、表 3.1 に基本的な仕様を示す。



D/A:PCI-3305　　A/D:PCI-3163

図 3.2　D/A･A/D 変換器

	D/A：PCI-3305	A/D：PCI-3163
分解能	12bit	12bit
サンプリング周波数	最高 5MHz	最高 10MHz
入出力仕様	インピーダンス:1Ω 以下 負荷抵抗:2kΩ 以上 負荷容量:500pF 以下	インピーダンス:10MΩ
レンジ	-10.24～+10.24V 可変	-5～+5V 可変
相対精度	最大±3LSB	最大±3LSB
誤差	最大±0.55%	最大±0.5%

表 3.1　基本仕様

サンプリング周波数が D/A-5MHz,A/D-10MHz の仕様となっているが、今回は D/A と A/D を同期させる必要があるので、システムとしての最高サンプリング周波数は 5MHz となる。このサンプリングクロックは A/D に内蔵された発振器を用い、D/A にも供給される。また、サンプリングのタイミングは D/A と A/D が反対になる。つまり、サンプリングクロックの立ち上がりで D/A がサンプリング、立ち下がりで A/D がサンプリングを行う。これは、D/A の出力が十分安定してから A/D のサンプリングを行わせるためである。また、トリガ信号は D/A から A/D へ送られる。これは A/D が先にサンプリングの準備を行い、D/A がサンプリングを開始したら A/D も開始するというシーケンスを行うためである。

なお、サンプリングに関する設定、データ取得等すべての操作はコンピュータ上から行わなければならない。

(2) 電流アンプ

D/A 変換器の出力インピーダンスが高いため、直接測定回路に入力すると目的の電圧を出力できなくなる。そのため、パワーアンプを用いて電圧はそのままで電流のみを増幅している。使用機

種は Hewlett-Packard 社 6827A である。

(3) ファンクションジェネレータ

容量測定用の正弦波を得るために用いる。使用機種は岩崎通信機 FG-350 である。

(4) 周波数カウンタ

ファンクションジェネレータが出力する正弦波の周波数を確認するために用いる。使用機種は Hewlett-Packard 社 5316A である。

(5) 電圧計

ファンクションジェネレータが出力する正弦波の電圧を確認するために用いる。今回は 1MHz という高周波の電圧を測定するため、それに対応した電圧計が必要となる。使用した FLUKE 8500A は最高 1MHz の交流電圧が測定できる。古い機種のため、正確な値を示していないようであるが、今回の測定では値そのものではなく、電圧が一定かどうかを見るためだけであるから問題ないと判断した。

(6) シールドボックス

暗箱のように内側を黒くした箱で、外部からのノイズ及び光の影響を遮断するために用いる。電気的なノイズはもとより、光によるキャリアジェネレーションを防止し、正確な測定を行うために用いた。図 3.3 に外観写真を示す。

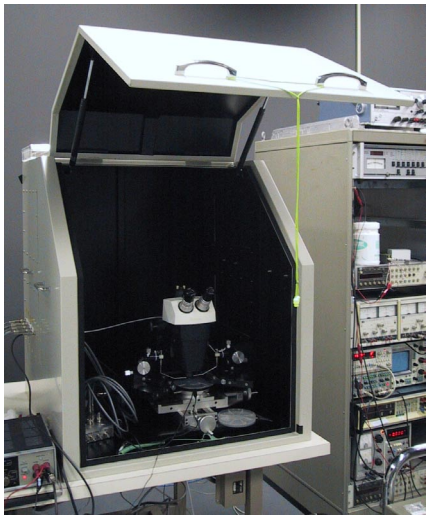


図 3.3 シールドボックス

(7) ウェーハプローバ

ウェーハ状の試料を測定するために用いる。先端に鋭利なタングステン針が付いており、ウェーハの測定個所に接触して測定を行う。写真を図 3.4 に示す。

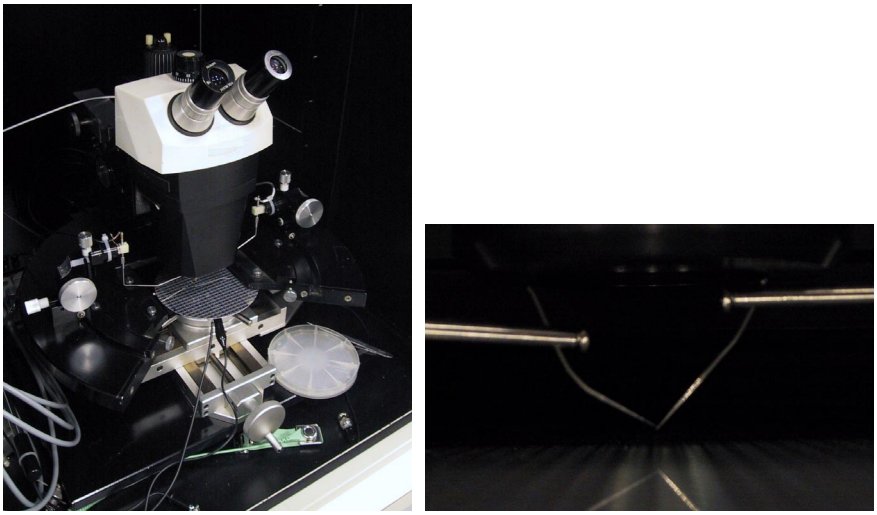


図 3.4 ウェーハプローバ

3.3 測定回路

ここでは実際の測定に使用した回路について述べる。2 章 1 項で示した基本回路(図 2.1)は、実際に測定を行う上では様々な不具合が生じる。それは主に次のようなものである。

1. 出力電圧 v_{out} が非常に小さいため、増幅しなければ A/D に取り込むことができない。併せて、ノイズを極力抑える必要がある。
2. バイアス印加のための台形波によって C_C へ充電電流が発生し、そのために C 測定用の正弦波にパルス状の波形が乗る。
3. 2 と同じく台形波による C への充電電流によって出力電圧が安定しない。
4. リンギングにより各波形が歪む。

まず 1 の問題であるが、C を測るための正弦波の電圧は測定誤差を小さくするため、数十ミリボルトと小さく、しかも R は(2.6)式の条件を満たさなければならない。例えば C を100pF と仮定し、(2.6)式の R^2 が $\left(\frac{1}{\omega C}\right)^2$ よりも 2 桁小さいとした場合、R は約160Ω となる。v_i を $20mV_{p\text{-}p}$, 1MHz としてこのときの v_{out} を概算すると約 $1.8mV_{p\text{-}p}$ となり、数ボルトのレンジしか持たない A/D でデータを取り込むためには 50dB ～ 60dB の電圧増幅を行わなければならない。しかし、小信号であるが故にノイズを抑えなければ直接測定誤差となってしまう。このため、ローノイズの素子を用いるとともに回路を小さくし、シールドの意味と併せ小さなケースに収めた。

次に 2 の問題について考える。図 3.5 に実際にこの問題が起きている状態を観測したオシロスコープの写真を示す。この図から分かるように台形波が変化する部分、つまり立ち上がり及び立ち下がりの部分で正弦波が+及び−方向にシフトしている。台形波の立ち上がり立ち下がりでは時間に関する 1 次関数として電圧が与えられるため、その時間微分値は一定であり、これはつまり C_C に流れる電流が一定であることを表す。時間微分値が 0 となる台形波の上辺の部分ではシフト量は 0 に

戻っている。C_C に流れる電流によって電位差が生じるのであるから、台形波の入力端子から C_C を通ってグランドまでの経路のインピーダンスを下げればよく、低抵抗で C_C をグランドへ繋ぐ。

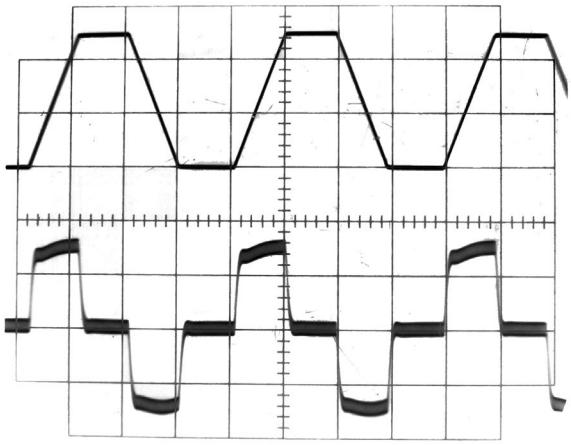


図 3.5 台形波による正弦波の歪み

問題点 3 は、2 と同様の理由により発生するが、対策は別の方法を採らなければならない。得たい信号は 1MHz の正弦波の成分のみであるが、台形波はこれより十分に低い周波数である。従って、出力電圧から低周波成分を取り除く回路を付加する。

次に 4 の問題であるが、リンギングとは高周波を扱う回路において、主にインピーダンスの不整合によって信号が反射を起こす現象である。この現象が起きている様子を図 3.6 に示す。本来一定であるべき信号が反射波によって振動し、徐々に減衰しているのが分かる。

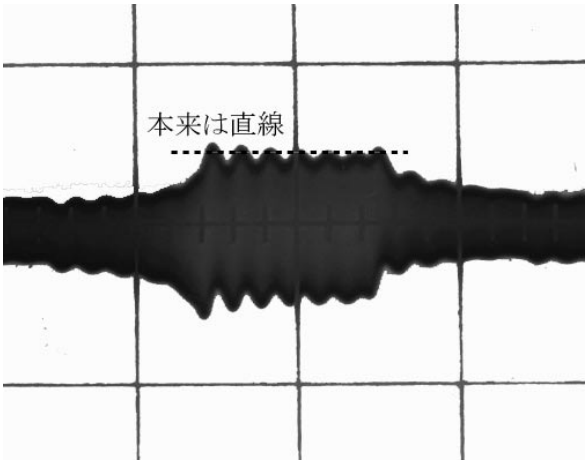


図 3.6 リンギングの例

今回使用するファンクションジェネレータの出力インピーダンスは 50Ω であるから、入力側でも 50Ω に近いインピーダンスに設定することが必要である。また、アッテネータを挿入して信号対反射波の比を大きくすることも必要である。

以上のような問題に対する対策を施した回路図を図 3.7 に示す。また、図 3.7 中のアンプ、ローカットフィルタ(LCF)をまとめた回路を図 3.8 に、それぞれの写真を図 3.9 に示す。

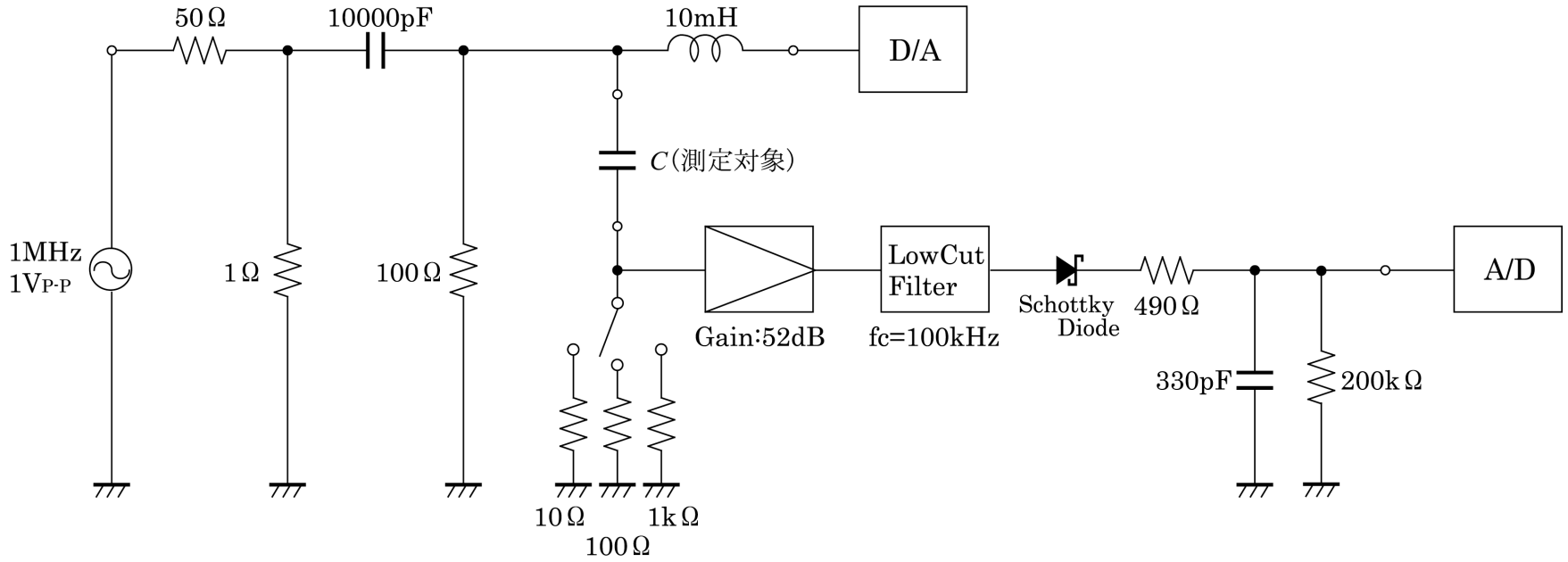


図3.7 測定回路 authorized edition

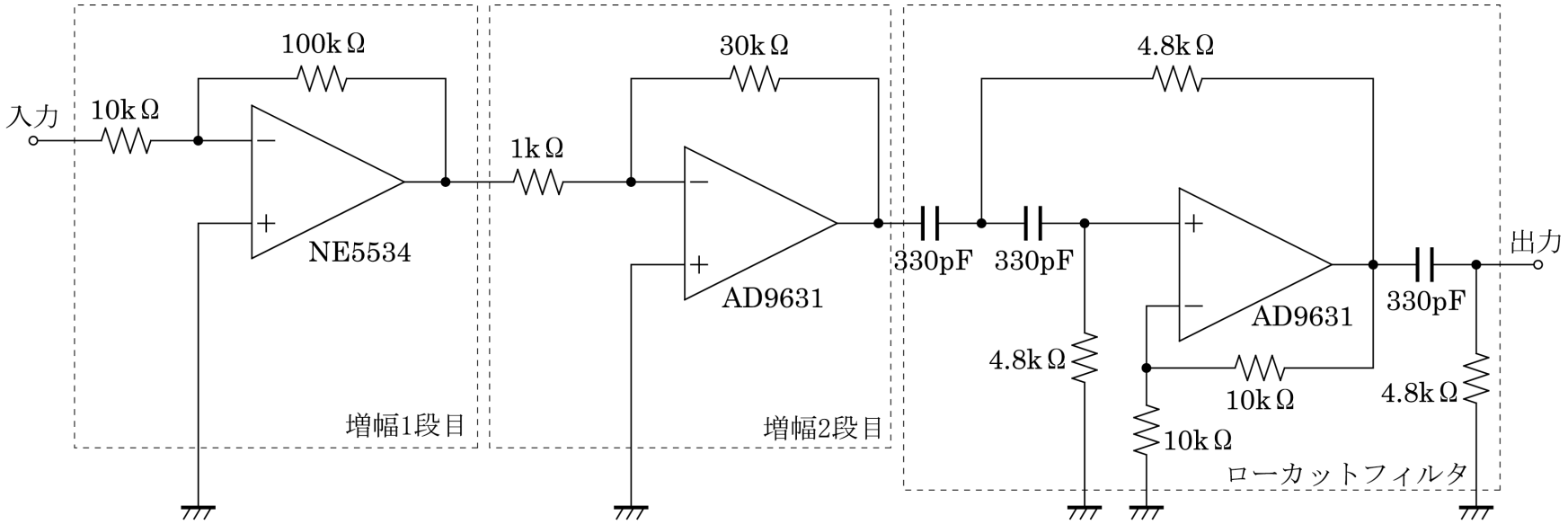
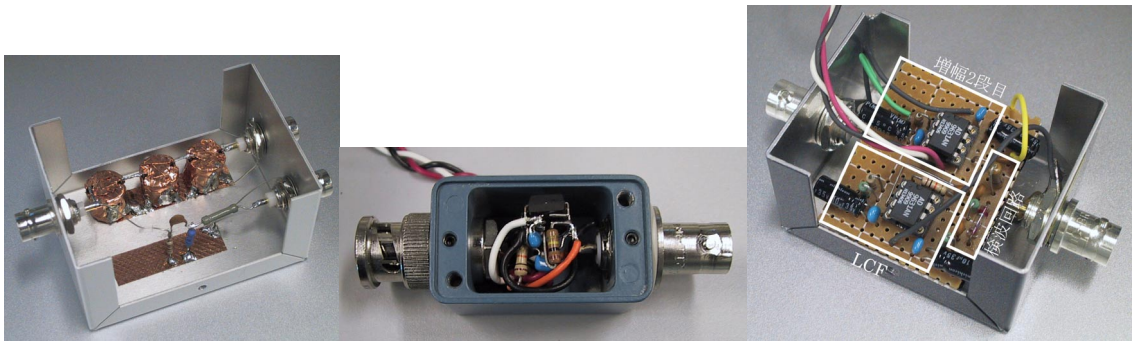

入力
10kΩ
100kΩ
NE5534
増幅1段目
1kΩ
30kΩ
AD9631
増幅2段目
330pF
330pF
4.8kΩ
4.8kΩ
AD9631
10kΩ
10kΩ
330pF
4.8kΩ
出力
ローカットフィルタ

図3.8 アンプ,LCF



(a) 測定回路　　(b) 増幅 1 段目　　(c) 増幅 2 段目,LCF,検波

図 3.9 測定回路,アンプ及び LCF 写真

3.4 計測ソフトウェア

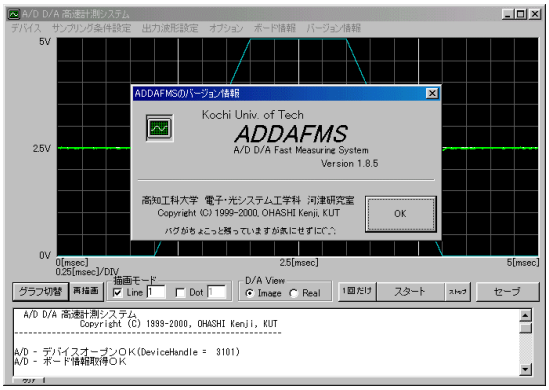
3 章 2 項でも述べたように、サンプリングの設定やデータの取得等 D/A,A/D に関する操作はすべてコンピュータ上から行わなければならない。また、この研究に特化した制御、データ処理を行うためにも、ソフトウェアの開発は必須である。利用した言語は Microsoft 社の Visual Basic 6.0 である。この言語を使用した根拠は、他の言語に比較して短時間で必要十分なソフトウェアが開発可能なことである。

この研究を始めた当初、D/A,A/D 変換器の発売元である Interface 社からはドライバと DLL(Dinamic Link Library)しか提供されておらず(現在では簡単に利用可能な ActiveX コンポーネントが公開されている)、ソフトウェア開発には相当な時間を要した。

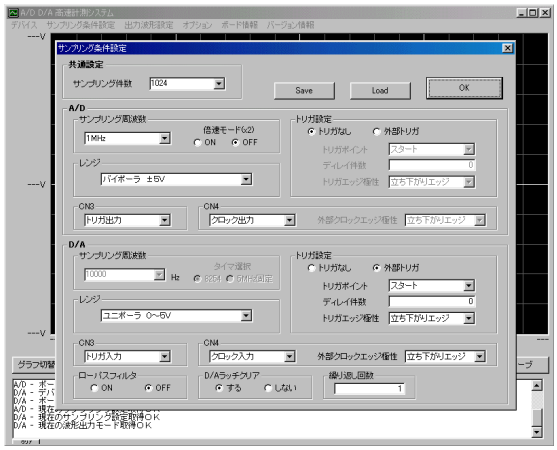
主に

- 詳細なサンプリング条件設定が可能
- D/A 出力データ作成
- ノイズキャンセル
- D/A,A/D 電圧－時間グラフ、D/A 電圧－A/D 電圧グラフの描画
- A/D の 2 チャンネル目を利用した D/A 出力真値表示
- サンプリングデータのファイル書き出し

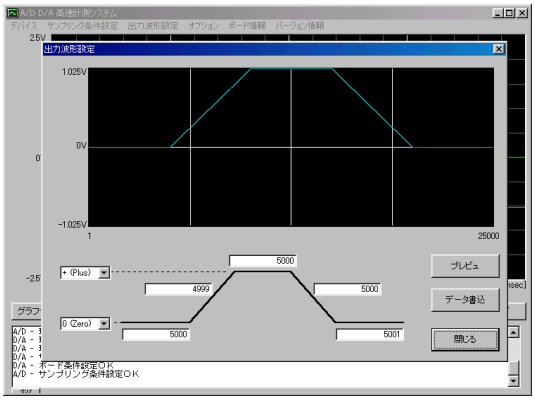
等の機能を持っている。図 3.13 に画面表示の例を示す。また付録にソースファイルを添付する。



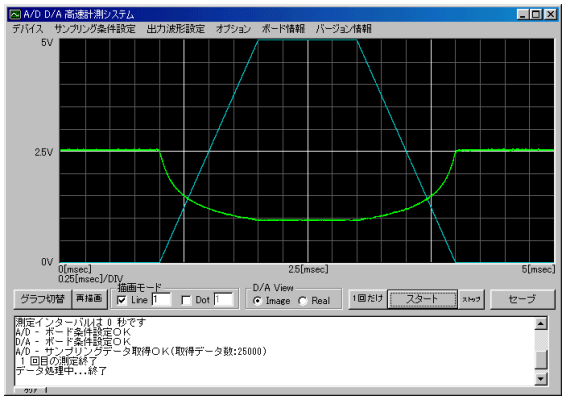
(a) バージョン情報



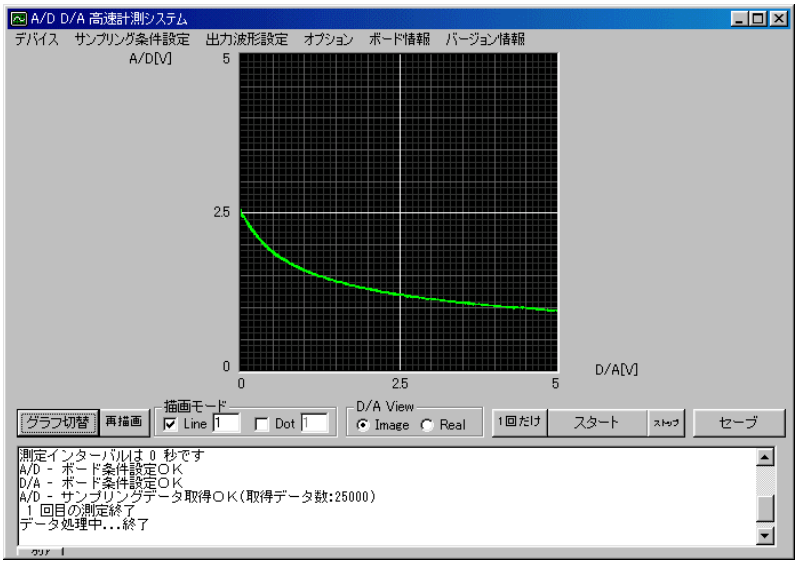
(b) サンプリング条件設定



(c) D/A 出力設定



(d) 電圧-時間グラフ



(e) 電圧-電圧グラフ

図 3.10 計測ソフトウェア実行画面

3.5 測定システム評価

すべての計測装置において、そのシステムで正確な測定が行えるかは大変重要な項目である。今回構築したシステムでもこれを確かめなければならない。そこで、様々な容量のコンデンサを測定して出力電圧との関係を確かめた。このシステムの測定回路はCの容量に合わせてRの値を 3 通りに変更できるため、それぞれの値で測定を行っている。なお、いずれの結果も他の計測器で得られた静電容量に基づいている。

$R=10\Omega$の時の測定結果を図 3.11 に示す。測定には、バイアス電圧に依存せず一定値を示す定容量のコンデンサを用いている。グラフより、この抵抗値では概ね 300pF～2000pF の範囲でリニアな特性が得られることが分かる。

次に$R=100\Omega$の時の測定結果を図 3.12 に示す。この測定にも定容量コンデンサを用いている。グラフから、測定点の全域でリニアな特性となっていることがわかり、30pF～500pF の測定が可能である。

図 3.13 は$R=1\mathrm{k}\Omega$時の測定結果である。この測定に使用したサンプルは、25pF 以上の点ではこれまで通り定容量コンデンサ、それ未満の点ではバリキャップ、もしくは通常のダイオードを用いたものである。また、0pF の点は測定端子を解放して測定している。この結果も全域で直線性が認められるが、0pF の点は若干直線上から外れている。これは測定装置及び使用した配線類の浮遊容量であると考えられる。

以上の結果より、このシステムではRの値を変える、即ちレンジを変更することによって数 pF～2000pF までの測定が可能であると認められる。

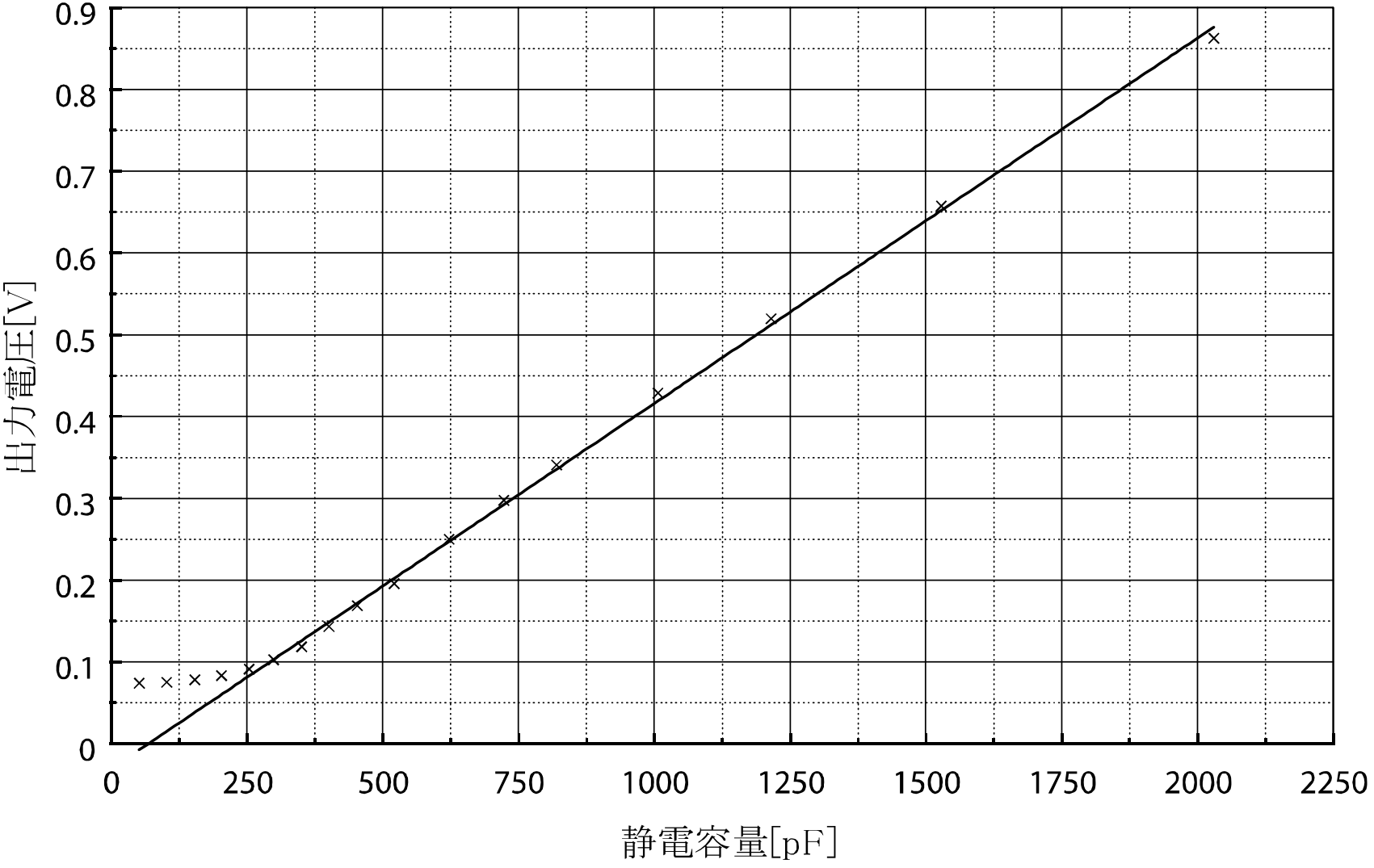


図3.11 測定システム評価 R=10Ω

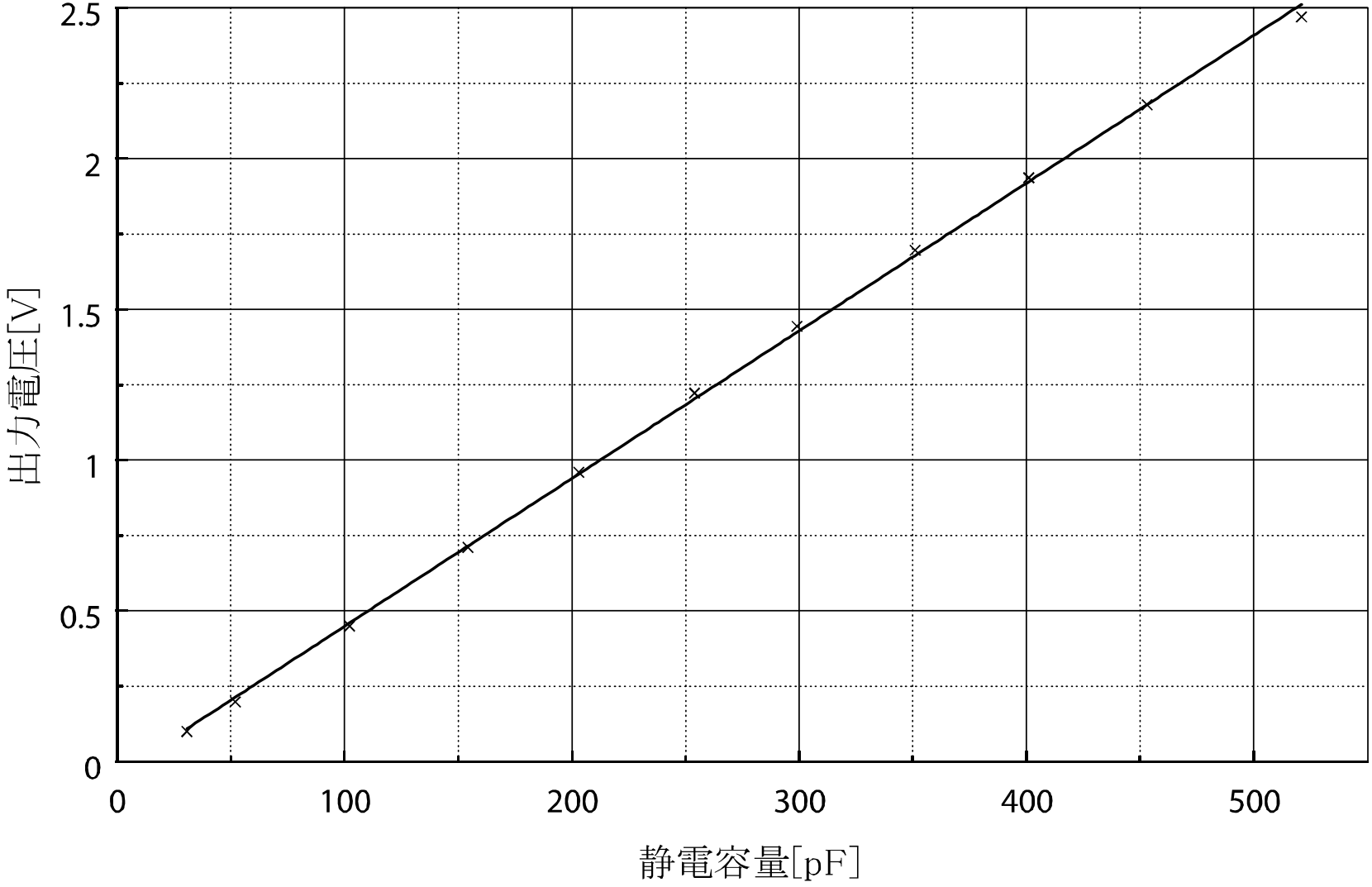


図3.12 測定システム評価 R=100Ω

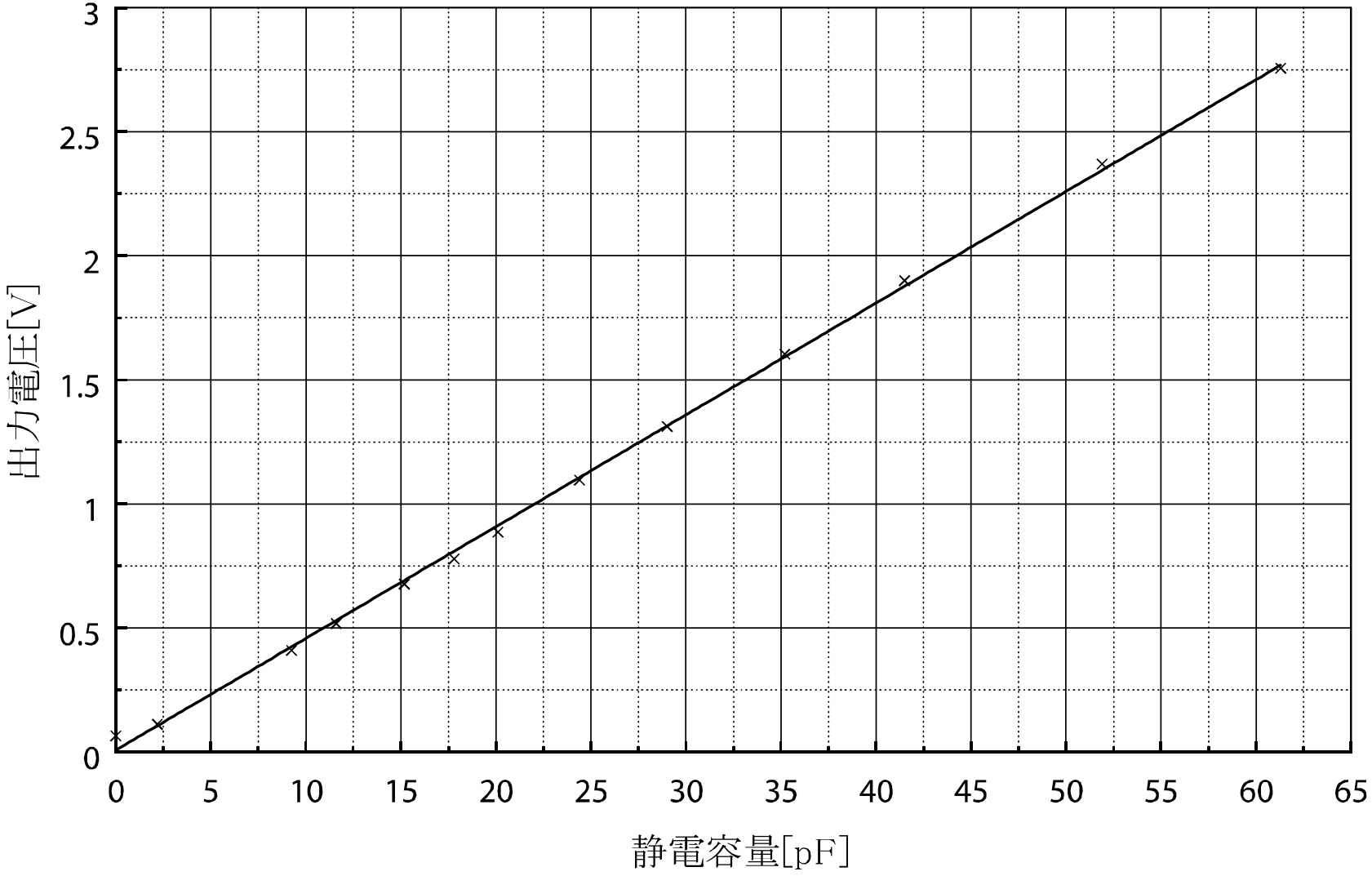


図3.13 測定システム評価 R=1kΩ

4. C-V 特性測定実験

4.1 pn 接合

この実験に用いるのは、図 4.1 に示すような完全に封印されたバリキャップダイオードである。封印されているが故に、この測定において光の影響はない。

このダイオードに、図 4.2 に示すような逆バイアス電圧を加え、そのときの C-V 特性を測定する。ノイズによる誤差を抑えるため同じ測定を 100 回行い、それぞれの測定点の単純平均を求める。

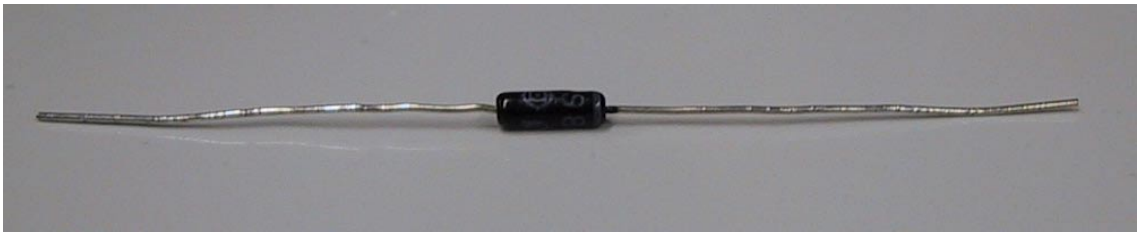


図 4.1 バリキャップダイオード

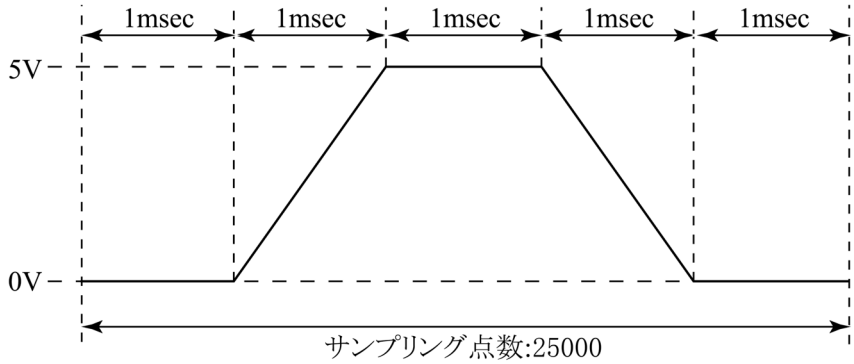


図 4.2 印加バイアス電圧

4.2 MOS Diode

この実験ではウェーハ上に形成された図 4.3 に示すような MOS 構造を用いる。ウェーハ状態の測定であるから、3章2項で述べたシールドボックス及びウェーハプローバを使用する。ゲート部分に針を立て図 4.4 で示す電圧を印加し、光を遮断した場合と微弱な光を照射した場合の C-V 特性を測定する。

pn 接合の場合と同じく、100 回測定を行い、それぞれの測定点で単純平均を求める。

測定する MOS 構造のパラメータは、ゲート電極面積 $A = 0.002\mathrm{cm}^2$,酸化膜膜厚 $t_{ox} = 25\mathrm{nm}$ である。

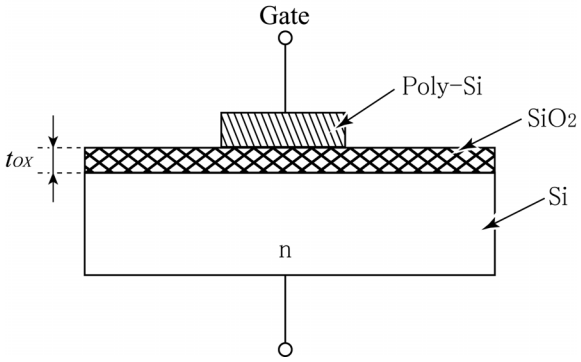


図 4.3 測定する MOS Diode の構造

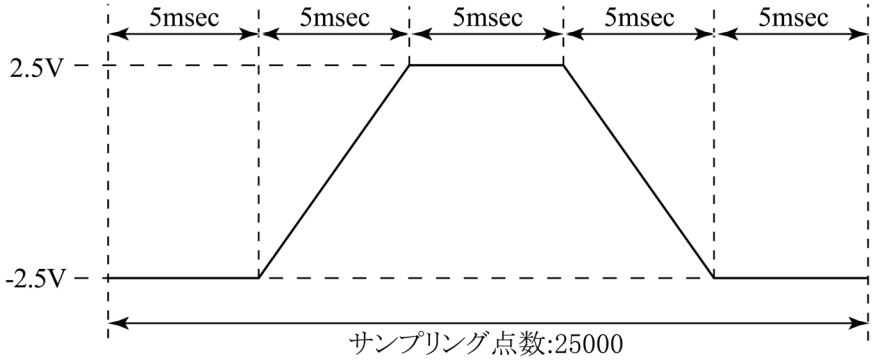


図 4.4 印加ゲート電圧

5. 実験結果

pn 接合の測定結果のグラフを図 5.1 に示す。

光を遮断した場合の MOS Diode の測定結果のグラフを図 5.2 に、微弱な光を照射した場合の測定結果のグラフを図 5.3 に示す。

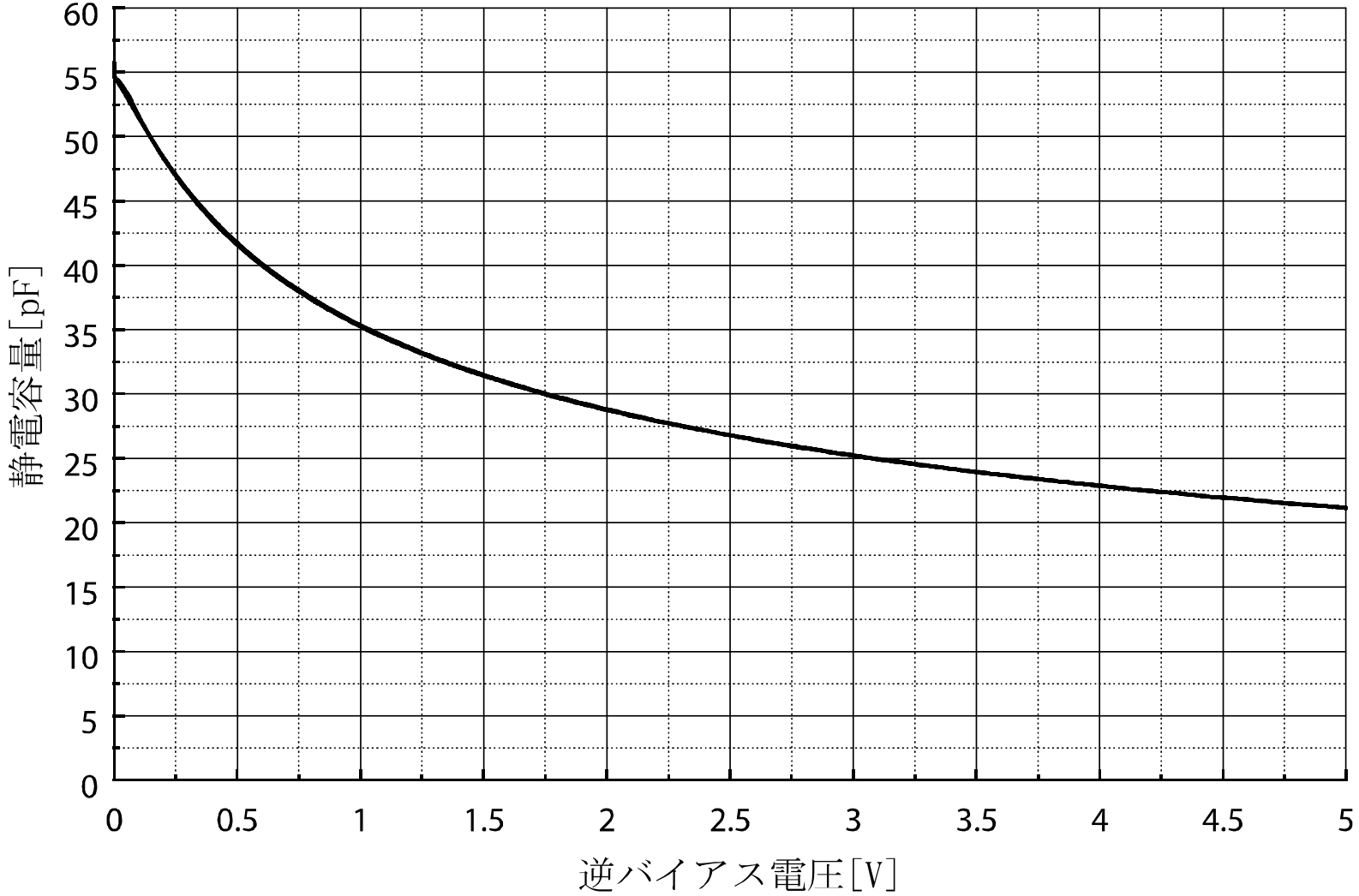


図5.1 pn接合C-V特性

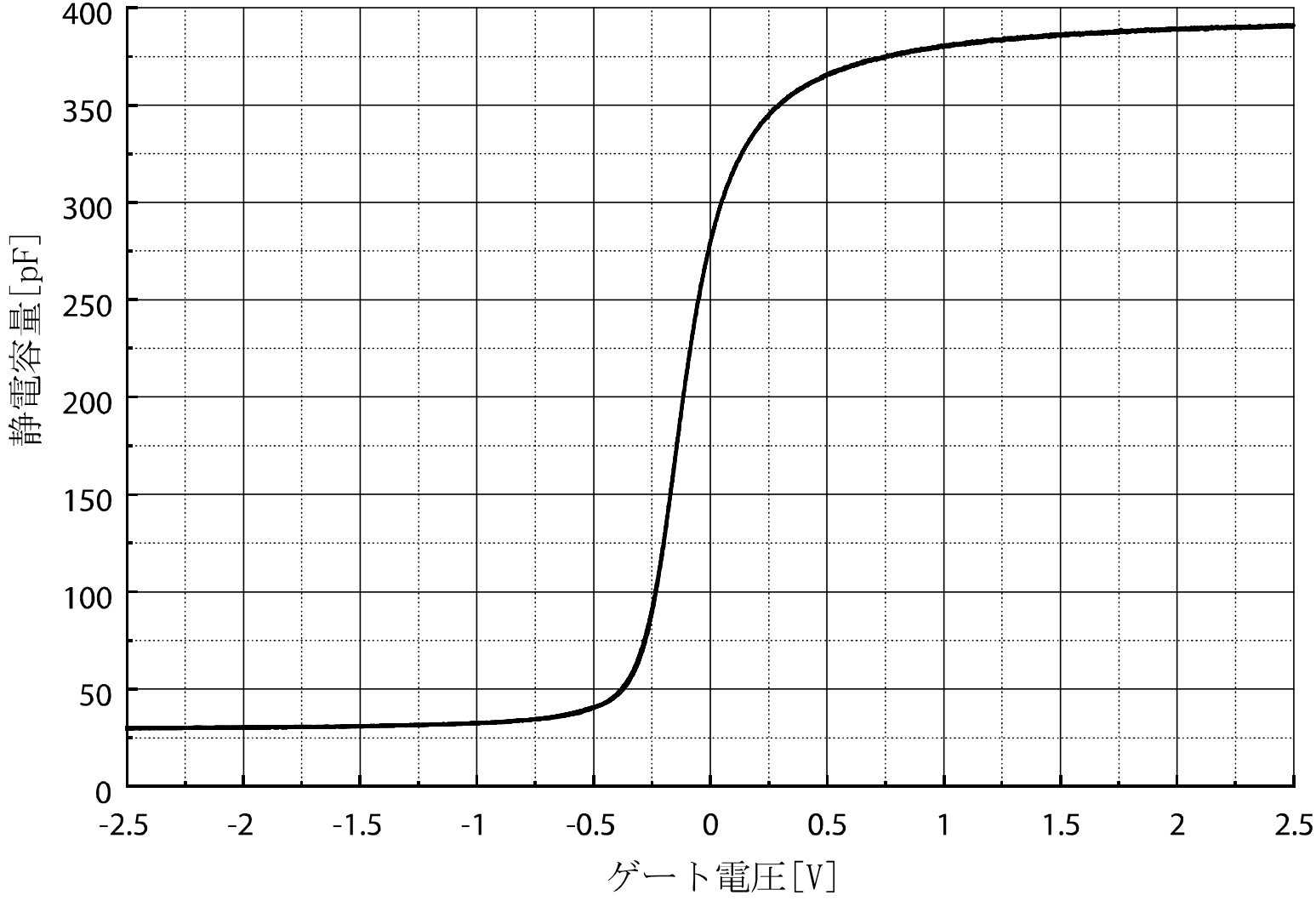


図5.2 無光時のMOS Diode C-V特性

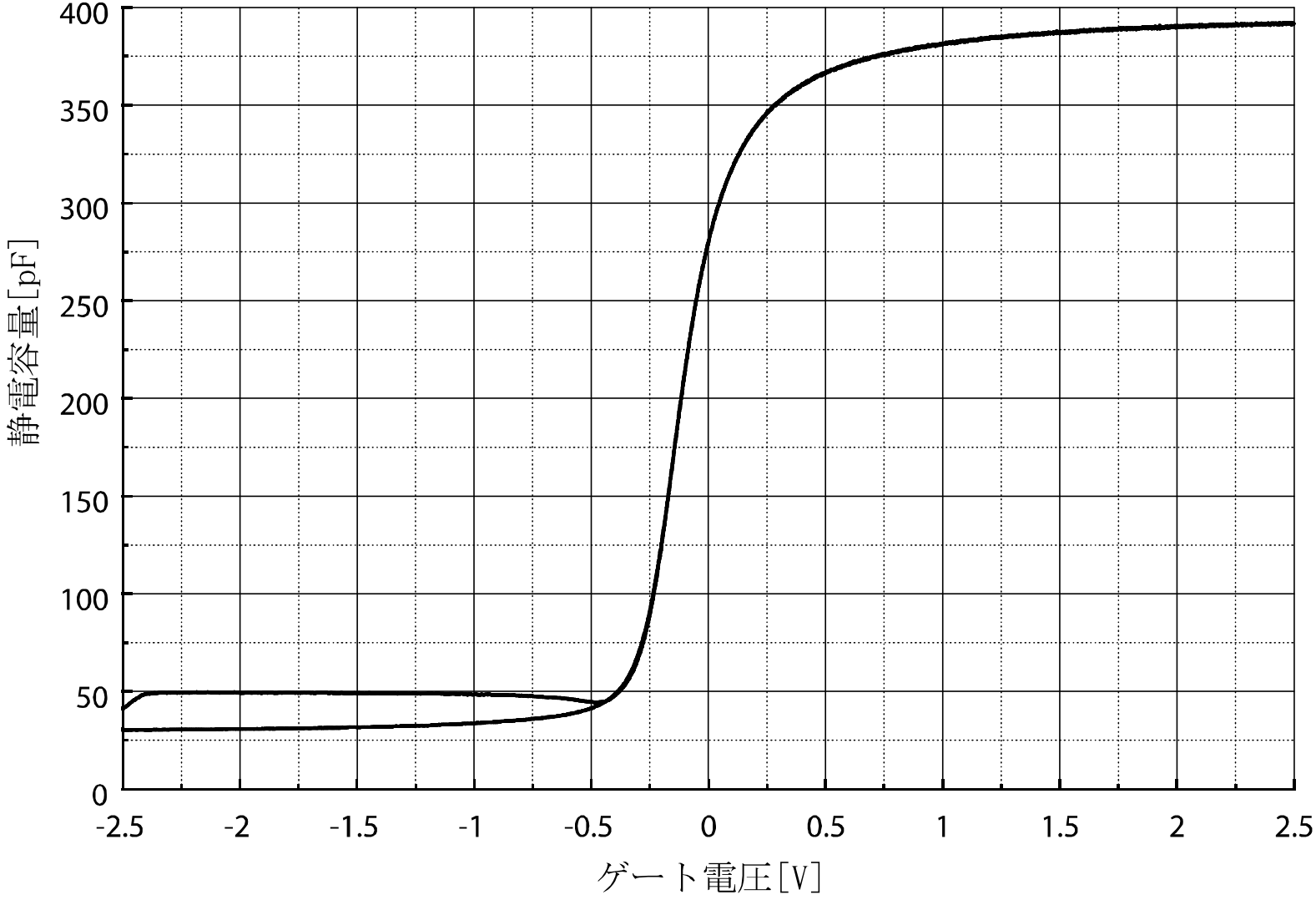


図5.3 微光照射時のMOS Diode C-V特性

6. 考察

pn 接合及び MOS Diode の光を当てない場合の実験結果で、台形波の立ち上がりと立ち下がりにおけるグラフが、どちらも同じ軌跡を描いている。これは、構築したシステムが高速でも正しい値を測定可能であるという証拠である。

また、MOS Diode に微弱な光を当てた場合の結果では、光によるキャリアジェネレーションの効果がはっきりと見て取れる。

これらの結果から、実際のデバイスにおいても正確に C-V 特性の測定が可能な測定システムであることを証明した。

7. まとめ

pn 接合においても、MOS 構造においても、最速 0.2μsec / 点という高速で C-V 特性を測定できるシステムを完成させた。また、このシステムを構築する課程で 1pF 以下、つまり 10^{-16} アンペア相当のリーク電流に対応する容量測定の目途が得られた。大学院では、評価用デバイス設計と VDEC での評価試料の設計を通して測定システムの改良を進めると共に、金属汚染や赤外線が与える影響、結晶欠陥を含む半導体における担体発生のメカニズムについて測定・解析を行う。これに対応できるものとして、この高速パルススキャニング C-V 測定システムを構築した。

8. 謝辞

本研究において、終始御指導と御教示を賜りました高知工科大学工学部電子・光システム工学科 河津 哲教授に謹んで感謝の意を捧げます。

また、ウェーハパターンの設計に関して御指導いただきました高知工科大学工学部電子・光システム工学科 矢野政顕教授に厚くお礼申し上げます。

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参考文献

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(9) Interface USER'S MANUAL PCI-3305
(10) Interface USER'S MANUAL PCI-3163

付録

ソースとなるファイルは以下の２５個のファイルである。

ADDAFMS2.vbp	ADDAFMS2.vbw
SamplingConf.frm	SamplingConf.frx
OptionForm.frm	OptionForm.frx
OpenDevice.frm	OpenDevice.frx
MakeDaData.frm	MakeDaData.frx
Main.frm	Main.frx
Infomation.frm	Infomation.frx
frmSplash.frm	frmSplash.frx
frmAbout.frm	frmAbout.frx
CloseDevice.frm	CloseDevice.frx
FbiDa.bas	FbiAd.bas
DaModule.bas	AdModule.bas
CommonModule.bas	

以下にそれぞれのファイルの内容を添付する。

・ADDAFMS2.vbp

```
Type=Exe
Reference=*\G{00020430-0000-0000-C000-000000000046}#2.0#0#..\..\..\..\WINDOWS\SYSTEM\stdole2.tlb#OLE
Automation
Object={F9043C88-F6F2-101A-A3C9-08002B2F49FB}#1.2#0; COMDLG32.OCX
Reference=*\G{00000200-0000-0010-8000-00AA006D2EA4}#2.0#0#..\..\..\COMMON
FILES\SYSTEM\ADO\msado20.tlb#Microsoft ActiveX Data Objects 2.0 Library
Reference=*\G{7C0FFAB0-CD84-11D0-949A-00A0C91110ED}#1.0#0#..\..\..\..\WINDOWS\SYSTEM\msdatsrc.tlb#Microsof
t Data Source Interfaces
Reference=*\G{56BF9020-7A2F-11D0-9482-00A0C91110ED}#1.0#0#..\..\..\..\WINDOWS\SYSTEM\MSBIND.DLL#Microsoft
Data Binding Collection VB 6.0 (SP4)
Reference=*\G{6B263850-900B-11D0-9484-00A0C91110ED}#1.0#0#..\..\..\..\WINDOWS\SYSTEM\MSSTDFMT.DLL#Microsof
t Data Formatting Object Library 6.0 (SP4)
Form=Main.frm
Module=FbiDa; FbiDa.bas
Module=FbiAd; FbiAd.bas
Module=DaModule; DaModule.bas
Module=AdModule; AdModule.bas
Form=OpenDevice.frm
Form=CloseDevice.frm
Form=Infomation.frm
Form=SamplingConf.frm
Module=CommonModule; CommonModule.bas
Form=MakeDaData.frm
Form=OptionForm.frm
Form=frmAbout.frm
Form=frmSplash.frm
IconForm="frmMain"
Startup="Sub Main"
HelpFile=""
Title="ADDAFMS"
ExeName32="ADDAFMS.exe"
Command32=""
Name="ADDAFMS"
HelpContextID="0"
CompatibleMode="0"
MajorVer=1
MinorVer=8
RevisionVer=6
AutoIncrementVer=0
ServerSupportFiles=0
VersionCompanyName="高知工科大学　電子・光システム工学科　河津研究室"
VersionLegalCopyright="高知工科大学　電子・光システム工学科　河津研究室　　大橋 健二"
VersionProductName="A/D・D/A 高速計測システム"
CompilationType=0
OptimizationType=0
FavorPentiumPro(tm)=0
CodeViewDebugInfo=0
```

```
NoAliasing=0
BoundsCheck=0
OverflowCheck=0
FlPointCheck=0
FDIVCheck=0
UnroundedFP=0
StartMode=0
Unattended=0
Retained=0
ThreadPerObject=0
MaxNumberOfThreads=1
DebugStartupOption=0
```

・ADDAFMS2.vbw

```
frmMain = 5, 13, 738, 666, , 2, 0, 741, 569, C
FbiDa = -166, 14, 557, 658, C
FbiAd = -236, 17, 520, 654, C
DaModule = 1, 87, 747, 656, C
AdModule = 7, 5, 751, 660, C
frmOpenDevice = 20, 56, 738, 608, C, 90, 8, 615, 449, C
frmCloseDevice = 33, 92, 696, 561, C, 23, 24, 475, 398, C
frmInfomation = 162, 26, 687, 467, C, 1, 1, 725, 639, C
frmSamplingConf = 7, 6, 697, 611, C, 5, 3, 716, 604, C
CommonModule = 19, 43, 754, 598, C
frmMakeDaData = 30, 26, 740, 636, C, 3, 4, 720, 525, C
frmOption = 108, 135, 717, 576, C, 146, 83, 672, 524, C
frmAbout = 73, 83, 607, 532, C, 4, 80, 485, 385, C
frmSplash = 155, 48, 689, 497, C, 42, 45, 576, 494, C
```

・SamplingConf.frm

```
VERSION 5.00
Begin VB.Form frmSamplingConf
   BorderStyle     =   3  '固定ﾀﾞｲｱﾛｸﾞ
   Caption         =   "サンプリング条件設定"
   ClientHeight    =   7770
   ClientLeft      =   45
   ClientTop       =   330
   ClientWidth     =   10110
   Icon            =   "SamplingConf.frx":0000
   LinkTopic       =   "Form1"
   MaxButton       =   0   'False
   MinButton       =   0   'False
   ScaleHeight     =   7770
   ScaleWidth      =   10110
   ShowInTaskbar   =   0   'False
   StartUpPosition =   1  'ｵｰﾅｰ ﾌｫｰﾑの中央
   Begin VB.CommandButton LoadButton
      Caption         =   "Load"
      Height          =   375
      Left            =   6480
      TabIndex        =   61
      Top             =   600
      Width           =   1335
   End
   Begin VB.CommandButton SaveButton
      Caption         =   "Save"
      Height          =   375
      Left            =   4800
      TabIndex        =   60
      Top             =   600
      Width           =   1335
   End
   Begin VB.CommandButton Command1
      Caption         =   "OK"
      Default         =   -1  'True
      Height          =   495
      Left            =   8160
      TabIndex        =   0
      Top             =   480
```

```
   Width           =   1695
End
Begin VB.Frame Frame8
   Caption         =   "D/A"
   BeginProperty Font
      Name            =   "ＭＳ Ｐゴシック"
      Size            =   9
      Charset         =   128
      Weight          =   700
      Underline       =   0   'False
      Italic          =   0   'False
      Strikethrough   =   0   'False
   EndProperty
   Height          =   3615
   Left            =   120
   TabIndex        =   41
   Top             =   4080
   Width           =   9855
   Begin VB.Frame Frame16
      Caption         =   "繰り返し回数"
      Height          =   615
      Left            =   5760
      TabIndex        =   58
      Top             =   2880
      Width           =   2055
      Begin VB.TextBox DaRepeatNum
         Alignment       =   1  '右揃え
         Height          =   270
         Left            =   240
         TabIndex        =   59
         Text            =   "1"
         Top             =   240
         Width           =   1575
      End
   End
   Begin VB.Frame Frame15
      Caption         =   "D/A ラッチクリア"
      Height          =   615
      Left            =   3000
      TabIndex        =   55
      Top             =   2880
      Width           =   2535
      Begin VB.OptionButton DaLatch
         Caption         =   "しない"
         Height          =   255
         Index           =   1
         Left            =   1440
         TabIndex        =   57
         Top             =   240
         Width           =   945
      End
      Begin VB.OptionButton DaLatch
         Caption         =   "する"
         Height          =   255
         Index           =   0
         Left            =   360
         TabIndex        =   56
         Top             =   240
         Value           =   -1  'True
         Width           =   855
      End
   End
   Begin VB.Frame Frame14
      Caption         =   "ローパスフィルタ"
      Height          =   615
      Left            =   240
      TabIndex        =   53
      Top             =   2880
      Width           =   2535
      Begin VB.OptionButton DaFilter
         Caption         =   "ON"
         Height          =   255
         Index           =   0
```

```
      Left            =   360
      TabIndex        =   19
      Top             =   240
      Width           =   615
   End
   Begin VB.OptionButton DaFilter
      Caption         =   "OFF"
      Height          =   255
      Index           =   1
      Left            =   1560
      TabIndex        =   20
      Top             =   240
      Value           =   -1  'True
      Width           =   700
   End
End
Begin VB.Frame Frame13
   Caption         =   "サンプリング周波数"
   Height          =   855
   Left            =   240
   TabIndex        =   50
   Top             =   240
   Width           =   4575
   Begin VB.OptionButton DaTimer
      Caption         =   "5MHz 固定"
      Height          =   255
      Index           =   1
      Left            =   3360
      TabIndex        =   17
      Top             =   480
      Width           =   1095
   End
   Begin VB.OptionButton DaTimer
      Caption         =   "8254"
      Height          =   255
      Index           =   0
      Left            =   2640
      TabIndex        =   16
      Top             =   480
      Value           =   -1  'True
      Width           =   735
   End
   Begin VB.ComboBox DaFreq
      Height          =   300
      ItemData        =   "SamplingConf.frx":000C
      Left            =   240
      List            =   "SamplingConf.frx":0034
      TabIndex        =   15
      Top             =   360
      Width           =   1815
   End
   Begin VB.Label Label12
      Caption         =   "Hz"
      Height          =   255
      Left            =   2160
      TabIndex        =   52
      Top             =   480
      Width           =   375
   End
   Begin VB.Label Label11
      Caption         =   "タイマ選択"
      Height          =   255
      Left            =   3120
      TabIndex        =   51
      Top             =   240
      Width           =   1215
   End
End
Begin VB.Frame Frame12
   Caption         =   "トリガ設定"
   Height          =   1815
   Left            =   5040
   TabIndex        =   46
```

```
Top             =   240
Width           =   4575
Begin VB.OptionButton DaTrigSwitch
   Caption         =   "トリガなし"
   Height          =   255
   Index           =   0
   Left            =   360
   TabIndex        =   21
   Top             =   240
   Value           =   -1  'True
   Width           =   1095
End
Begin VB.OptionButton DaTrigSwitch
   Caption         =   "外部トリガ"
   Height          =   255
   Index           =   1
   Left            =   1800
   TabIndex        =   22
   Top             =   240
   Width           =   1095
End
Begin VB.TextBox DaDelayNum
   Alignment       =   1  '右揃え
   Enabled         =   0   'False
   Height          =   270
   Left            =   2160
   MaxLength       =   6
   TabIndex        =   24
   Top             =   960
   Width           =   1935
End
Begin VB.ComboBox DaTrigPoint
   Enabled         =   0   'False
   Height          =   300
   ItemData        =   "SamplingConf.frx":009B
   Left            =   2160
   List            =   "SamplingConf.frx":00A8
   Style           =   2  'ﾄﾞﾛｯﾌﾟﾀﾞｳﾝ ﾘｽﾄ
   TabIndex        =   23
   Top             =   600
   Width           =   1935
End
Begin VB.ComboBox DaTrigEdge
   Enabled         =   0   'False
   Height          =   300
   ItemData        =   "SamplingConf.frx":00D4
   Left            =   2160
   List            =   "SamplingConf.frx":00DE
   Style           =   2  'ﾄﾞﾛｯﾌﾟﾀﾞｳﾝ ﾘｽﾄ
   TabIndex        =   25
   Top             =   1320
   Width           =   1935
End
Begin VB.Label Label10
   Caption         =   "トリガエッジ極性"
   Enabled         =   0   'False
   Height          =   255
   Left            =   720
   TabIndex        =   49
   Top             =   1380
   Width           =   1335
End
Begin VB.Label Label9
   Caption         =   "ディレイ件数"
   Enabled         =   0   'False
   Height          =   255
   Left            =   720
   TabIndex        =   48
   Top             =   1020
   Width           =   1215
End
Begin VB.Label Label5
   Caption         =   "トリガポイント"
```

```
      Enabled         =   0   'False
      Height          =   255
      Left            =   720
      TabIndex        =   47
      Top             =   680
      Width           =   1215
   End
End
Begin VB.Frame Frame11
   Caption         =   "レンジ"
   Height          =   855
   Left            =   240
   TabIndex        =   45
   Top             =   1200
   Width           =   4575
   Begin VB.ComboBox DaRange
      Height          =   300
      ItemData        =   "SamplingConf.frx":0106
      Left            =   600
      List            =   "SamplingConf.frx":0122
      Style           =   2  'ﾄﾞﾛｯﾌﾟﾀﾞｳﾝ ﾘｽﾄ
      TabIndex        =   18
      Top             =   300
      Width           =   3375
   End
End
Begin VB.Frame Frame10
   Caption         =   "CN3"
   Height          =   615
   Left            =   240
   TabIndex        =   44
   Top             =   2160
   Width           =   2535
   Begin VB.ComboBox DaCn3
      Height          =   300
      ItemData        =   "SamplingConf.frx":01EA
      Left            =   240
      List            =   "SamplingConf.frx":01F4
      Style           =   2  'ﾄﾞﾛｯﾌﾟﾀﾞｳﾝ ﾘｽﾄ
      TabIndex        =   26
      Top             =   240
      Width           =   1935
   End
End
Begin VB.Frame Frame9
   Caption         =   "CN4"
   Height          =   615
   Left            =   3000
   TabIndex        =   42
   Top             =   2160
   Width           =   6615
   Begin VB.ComboBox DaCn4
      Height          =   300
      ItemData        =   "SamplingConf.frx":0210
      Left            =   240
      List            =   "SamplingConf.frx":021A
      Style           =   2  'ﾄﾞﾛｯﾌﾟﾀﾞｳﾝ ﾘｽﾄ
      TabIndex        =   27
      Top             =   240
      Width           =   1935
   End
   Begin VB.ComboBox DaCn4Edge
      Enabled         =   0   'False
      Height          =   300
      ItemData        =   "SamplingConf.frx":023A
      Left            =   4560
      List            =   "SamplingConf.frx":0244
      Style           =   2  'ﾄﾞﾛｯﾌﾟﾀﾞｳﾝ ﾘｽﾄ
      TabIndex        =   28
      Top             =   240
      Width           =   1815
   End
   Begin VB.Label Label3
```

```
         Caption         =   "外部クロックエッジ極性"
         Enabled         =   0   'False
         Height          =   255
         Left            =   2640
         TabIndex        =   43
         Top             =   300
         Width           =   1815
      End
   End
End
Begin VB.Frame Frame3
   Caption         =   "共通設定"
   BeginProperty Font
      Name            =   "ＭＳ Ｐゴシック"
      Size            =   9
      Charset         =   128
      Weight          =   700
      Underline       =   0   'False
      Italic          =   0   'False
      Strikethrough   =   0   'False
   EndProperty
   Height          =   855
   Left            =   120
   TabIndex        =   31
   Top             =   120
   Width           =   3975
   Begin VB.ComboBox AdSampleNum
      Height          =   300
      ItemData        =   "SamplingConf.frx":026C
      Left            =   1920
      List            =   "SamplingConf.frx":029A
      TabIndex        =   2
      Top             =   360
      Width           =   1695
   End
   Begin VB.Label Label2
      Caption         =   "サンプリング件数"
      Height          =   255
      Left            =   240
      TabIndex        =   32
      Top             =   420
      Width           =   1455
   End
End
Begin VB.Frame Frame1
   Caption         =   "A/D"
   BeginProperty Font
      Name            =   "ＭＳ Ｐゴシック"
      Size            =   9
      Charset         =   128
      Weight          =   700
      Underline       =   0   'False
      Italic          =   0   'False
      Strikethrough   =   0   'False
   EndProperty
   Height          =   2895
   Left            =   120
   TabIndex        =   1
   Top             =   1080
   Width           =   9855
   Begin VB.Frame Frame7
      Caption         =   "CN4"
      Height          =   615
      Left            =   3000
      TabIndex        =   39
      Top             =   2160
      Width           =   6615
      Begin VB.ComboBox AdCn4Edge
         Enabled         =   0   'False
         Height          =   300
         ItemData        =   "SamplingConf.frx":02F6
         Left            =   4560
         List            =   "SamplingConf.frx":0300
```

```
      Style           =   2  'ﾄﾞﾛｯﾌﾟﾀﾞｳﾝ ﾘｽﾄ
      TabIndex        =   14
      Top             =   240
      Width           =   1815
   End
   Begin VB.ComboBox AdCn4
      Height          =   300
      ItemData        =   "SamplingConf.frx":0328
      Left            =   240
      List            =   "SamplingConf.frx":0332
      Style           =   2  'ﾄﾞﾛｯﾌﾟﾀﾞｳﾝ ﾘｽﾄ
      TabIndex        =   13
      Top             =   240
      Width           =   1935
   End
   Begin VB.Label Label1
      Caption         =   "外部クロックエッジ極性"
      Enabled         =   0   'False
      Height          =   255
      Left            =   2640
      TabIndex        =   40
      Top             =   300
      Width           =   1815
   End
End
Begin VB.Frame Frame6
   Caption         =   "CN3"
   Height          =   615
   Left            =   240
   TabIndex        =   38
   Top             =   2160
   Width           =   2535
   Begin VB.ComboBox AdCn3
      Height          =   300
      ItemData        =   "SamplingConf.frx":0352
      Left            =   240
      List            =   "SamplingConf.frx":035C
      Style           =   2  'ﾄﾞﾛｯﾌﾟﾀﾞｳﾝ ﾘｽﾄ
      TabIndex        =   12
      Top             =   240
      Width           =   1935
   End
End
Begin VB.Frame Frame5
   Caption         =   "レンジ"
   Height          =   855
   Left            =   240
   TabIndex        =   37
   Top             =   1200
   Width           =   4575
   Begin VB.ComboBox AdRange
      Height          =   300
      ItemData        =   "SamplingConf.frx":0378
      Left            =   600
      List            =   "SamplingConf.frx":038E
      Style           =   2  'ﾄﾞﾛｯﾌﾟﾀﾞｳﾝ ﾘｽﾄ
      TabIndex        =   6
      Top             =   300
      Width           =   3375
   End
End
Begin VB.Frame Frame4
   Caption         =   "トリガ設定"
   Height          =   1815
   Left            =   5040
   TabIndex        =   33
   Top             =   240
   Width           =   4575
   Begin VB.ComboBox AdTrigEdge
      Enabled         =   0   'False
      Height          =   300
      ItemData        =   "SamplingConf.frx":0418
      Left            =   2160
```

```
   List            =   "SamplingConf.frx":0422
   Style           =   2  'ﾄﾞﾛｯﾌﾟﾀﾞｳﾝ ﾘｽﾄ
   TabIndex        =   11
   Top             =   1320
   Width           =   1935
End
Begin VB.ComboBox AdTrigPoint
   Enabled         =   0   'False
   Height          =   300
   ItemData        =   "SamplingConf.frx":044A
   Left            =   2160
   List            =   "SamplingConf.frx":0457
   Style           =   2  'ﾄﾞﾛｯﾌﾟﾀﾞｳﾝ ﾘｽﾄ
   TabIndex        =   9
   Top             =   600
   Width           =   1935
End
Begin VB.TextBox AdDelayNum
   Alignment       =   1  '右揃え
   Enabled         =   0   'False
   Height          =   270
   Left            =   2160
   MaxLength       =   6
   TabIndex        =   10
   Top             =   960
   Width           =   1935
End
Begin VB.OptionButton AdTrigSwitch
   Caption         =   "外部トリガ"
   Height          =   255
   Index           =   1
   Left            =   1800
   TabIndex        =   8
   Top             =   240
   Width           =   1095
End
Begin VB.OptionButton AdTrigSwitch
   Caption         =   "トリガなし"
   Height          =   255
   Index           =   0
   Left            =   360
   TabIndex        =   7
   Top             =   240
   Value           =   -1  'True
   Width           =   1095
End
Begin VB.Label Label6
   Caption         =   "トリガポイント"
   Enabled         =   0   'False
   Height          =   255
   Left            =   720
   TabIndex        =   36
   Top             =   680
   Width           =   1215
End
Begin VB.Label Label7
   Caption         =   "ディレイ件数"
   Enabled         =   0   'False
   Height          =   255
   Left            =   720
   TabIndex        =   35
   Top             =   1020
   Width           =   1215
End
Begin VB.Label Label8
   Caption         =   "トリガエッジ極性"
   Enabled         =   0   'False
   Height          =   255
   Left            =   720
   TabIndex        =   34
   Top             =   1380
   Width           =   1335
End
```

```
      End
      Begin VB.Frame Frame2
         Caption         =   "サンプリング周波数"
         Height          =   855
         Left            =   240
         TabIndex        =   29
         Top             =   240
         Width           =   4575
         Begin VB.ComboBox AdFreq
            Height          =   300
            ItemData        =   "SamplingConf.frx":0483
            Left            =   240
            List            =   "SamplingConf.frx":04B7
            Style           =   2  'ﾄﾞﾛｯﾌﾟﾀﾞｳﾝ ﾘｽﾄ
            TabIndex        =   3
            Top             =   360
            Width           =   1935
         End
         Begin VB.OptionButton AdFastMode
            Caption         =   "ON"
            Height          =   255
            Index           =   0
            Left            =   2640
            TabIndex        =   4
            Top             =   480
            Width           =   735
         End
         Begin VB.OptionButton AdFastMode
            Caption         =   "OFF"
            Height          =   255
            Index           =   1
            Left            =   3480
            TabIndex        =   5
            Top             =   480
            Value           =   -1  'True
            Width           =   735
         End
         Begin VB.Label Label4
            Caption         =   "倍速モード(x2)"
            Height          =   255
            Left            =   2880
            TabIndex        =   30
            Top             =   240
            Width           =   1215
         End
      End
   End
   Begin VB.Label ErrorLabel
      Caption         =   "エラーです"
      BeginProperty Font
         Name            =   "ＭＳ Ｐゴシック"
         Size            =   11.25
         Charset         =   128
         Weight          =   400
         Underline       =   0   'False
         Italic          =   0   'False
         Strikethrough   =   0   'False
      EndProperty
      ForeColor       =   &H000000FF&
      Height          =   255
      Left            =   8520
      TabIndex        =   54
      Top             =   120
      Visible         =   0   'False
      Width           =   1095
   End
End
Attribute VB_Name = "frmSamplingConf"
Attribute VB_GlobalNameSpace = False
Attribute VB_Creatable = False
Attribute VB_PredeclaredId = True
Attribute VB_Exposed = False
```

```
Private Sub AdCn3_Click()
    If AdCn3.ListIndex = 0 Then
        AdTrigSwitch(0).Value = True
        Label6.Enabled = False
        Label7.Enabled = False
        Label8.Enabled = False
        AdTrigPoint.Enabled = False
        AdDelayNum.Enabled = False
        AdTrigEdge.Enabled = False
    Else
        AdTrigSwitch(1).Value = True
        Label6.Enabled = True
        Label7.Enabled = True
        Label8.Enabled = True
        AdTrigPoint.Enabled = True
        AdDelayNum.Enabled = True
        AdTrigEdge.Enabled = True
    End If
End Sub

Private Sub AdCn4_Click()
    If AdCn4.ListIndex = 0 Then
        AdFreq.Enabled = True
        Label1.Enabled = False
        AdCn4Edge.Enabled = False
    Else
        AdFreq.Enabled = False
        Label1.Enabled = True
        AdCn4Edge.Enabled = True
    End If
End Sub

Private Sub AdDelayNum_GotFocus()
    AdDelayNum.SelStart = 0
    AdDelayNum.SelLength = Len(AdDelayNum.Text)
End Sub

Private Sub AdDelayNum_KeyPress(KeyAscii As Integer)
    If KeyAscii < Asc(" ") Then
        Exit Sub
    End If
    If (KeyAscii < Asc("0") Or KeyAscii > Asc("9")) And KeyAscii <> Asc("-") Then
        KeyAscii = 0
    End If
End Sub

Private Sub AdSampleNum_KeyPress(KeyAscii As Integer)
    If KeyAscii < Asc(" ") Then
        Exit Sub
    End If
    If KeyAscii < Asc("0") Or KeyAscii > Asc("9") Then
        KeyAscii = 0
    End If
    If Len(AdSampleNum.Text) >= 6 Then
        KeyAscii = 0
    End If
End Sub

Private Sub Command1_Click()
    Dim nRet As Long

    'A/D サンプリング件数を変数へ
    adConfig.ulSmplNum = Val(AdSampleNum.Text)

    'A/D サンプリング周波数を変数へ
    Select Case AdFreq.ListIndex
        Case 0
            adConfig.fSmplFreq = 10000000
        Case 1
            adConfig.fSmplFreq = 8000000
        Case 2
            adConfig.fSmplFreq = 5000000
        Case 3
```

```
        adConfig.fSmplFreq = 4000000
    Case 4
        adConfig.fSmplFreq = 2500000
    Case 5
        adConfig.fSmplFreq = 2000000
    Case 6
        adConfig.fSmplFreq = 1250000
    Case 7
        adConfig.fSmplFreq = 1000000
    Case 8
        adConfig.fSmplFreq = 625000
    Case 9
        adConfig.fSmplFreq = 500000
    Case 10
        adConfig.fSmplFreq = 312500
    Case 11
        adConfig.fSmplFreq = 250000
    Case 12
        adConfig.fSmplFreq = 156250
    Case 13
        adConfig.fSmplFreq = 125000
    Case 14
        adConfig.fSmplFreq = 78125
    Case 15
        adConfig.fSmplFreq = 62500
End Select

'A/D 倍速モードを変数へ
If AdFastMode(0).Value = True Then
    adConfig.ulFastMode = AD_FAST_MODE
Else
    adConfig.ulFastMode = AD_NORMAL_MODE
End If

'A/D レンジを変数へ
Select Case AdRange.ListIndex
    Case 0
        adConfig.SmplChReq(0).ulRange = AD_0_1V
        adVmax = 1#
        adVmin = 0
    Case 1
        adConfig.SmplChReq(0).ulRange = AD_0_2P5V
        adVmax = 2.5
        adVmin = 0
    Case 2
        adConfig.SmplChReq(0).ulRange = AD_0_5V
        adVmax = 5#
        adVmin = 0
    Case 3
        adConfig.SmplChReq(0).ulRange = AD_1V
        adVmax = 1#
        adVmin = -1#
    Case 4
        adConfig.SmplChReq(0).ulRange = AD_2P5V
        adVmax = 2.5
        adVmin = -2.5
    Case 5
        adConfig.SmplChReq(0).ulRange = AD_5V
        adVmax = 5#
        adVmin = -5#
End Select

'A/D トリガを変数へ
If AdTrigSwitch(0).Value = True Then
    adConfig.ulTrigMode = AD_FREERUN
Else
    adConfig.ulTrigMode = AD_EXTTRG
End If

'A/D トリガポイントを変数へ
Select Case AdTrigPoint.ListIndex
    Case 0
        adConfig.ulTrigPoint = AD_TRIG_START
```

```
    Case 1
        adConfig.ulTrigPoint = AD_TRIG_STOP
    Case 2
        adConfig.ulTrigPoint = AD_TRIG_START_STOP
End Select

'A/D ディレイ件数を変数へ
adConfig.lTrigDelay = Val(AdDelayNum.Text)

'A/D トリガエッジ極性を変数へ
Select Case AdTrigEdge.ListIndex
    Case 0
        adConfig.ulTrigEdge = AD_DOWN_EDGE
    Case 1
        adConfig.ulTrigEdge = AD_UP_EDGE
End Select

'A/D クロックエッジ極性を変数へ
Select Case AdCn4Edge.ListIndex
    Case 0
        adConfig.ulEClkEdge = AD_DOWN_EDGE
    Case 1
        adConfig.ulEClkEdge = AD_UP_EDGE
End Select

'A/D CN4が入力(外部クロック入力)ならばサンプリング周波数を0に
If AdCn4.ListIndex = 1 Then
    adConfig.fSmplFreq = 0
    If DaCn4.ListIndex = 1 Then
        horiScaleMode = 0
    Else
        horiScaleAd = 0
    End If
End If

'サンプリング件数のチェック
If adConfig.ulSmplNum > 524288 Then
    ErrorLabel.Visible = True
    Call AdDispErrMessage(AD_ERROR_INVALID_PARAMETER)
    Exit Sub
End If

'チャンネル数
adConfig.ulChCount = 2

adConfig.SmplChReq(0).ulChNo = 1
adConfig.SmplChReq(1).ulChNo = 2




'D/A サンプリング周波数を変数へ
daConfig.fSmplFreq = Val(DaFreq.Text)

'D/A タイマ選択を変数へ
If DaTimer(0).Value = True Then
    daMode.ulSamplingClock = DA_CLOCK_TIMER
Else
    daMode.ulSamplingClock = DA_CLOCK_FIXED
End If

'D/A レンジを変数へ
Select Case DaRange.ListIndex
    Case 0
        daMode.ModeChReq(0).ulRange = DA_RANGE_UNIPOLAR
        daMode.ModeChReq(0).fVolt = 1.025
        frmMain.opReal.Enabled = True
        adConfig.SmplChReq(1).ulRange = AD_0_1V
        daVmax = 1.025
        daVmin = 0
    Case 1
        daMode.ModeChReq(0).ulRange = DA_RANGE_UNIPOLAR
```

```
        daMode.ModeChReq(0).fVolt = 2.5
        frmMain.opReal.Enabled = True
        adConfig.SmplChReq(1).ulRange = AD_0_2P5V
        daVmax = 2.5
        daVmin = 0
    Case 2
        daMode.ModeChReq(0).ulRange = DA_RANGE_UNIPOLAR
        adConfig.SmplChReq(1).ulRange = AD_0_5V
        frmMain.opReal.Enabled = True
        daMode.ModeChReq(0).fVolt = 5#
        daVmax = 5#
        daVmin = 0
    Case 3
        daMode.ModeChReq(0).ulRange = DA_RANGE_UNIPOLAR
        daMode.ModeChReq(0).fVolt = 10#
        adConfig.SmplChReq(1).ulRange = AD_0_5V
        frmMain.opReal.Enabled = False
        frmMain.opReal.Value = False
        MsgBox "A/D の CN2 には何も接続しないでください"
        daVmax = 10#
        daVmin = 0
    Case 4
        daMode.ModeChReq(0).ulRange = DA_RANGE_BIPOLAR
        daMode.ModeChReq(0).fVolt = 1.025
        frmMain.opReal.Enabled = True
        adConfig.SmplChReq(1).ulRange = AD_1V
        daVmax = 1.025
        daVmin = -1.025
    Case 5
        daMode.ModeChReq(0).ulRange = DA_RANGE_BIPOLAR
        daMode.ModeChReq(0).fVolt = 2.5
        frmMain.opReal.Enabled = True
        adConfig.SmplChReq(1).ulRange = AD_2P5V
        daVmax = 2.5
        daVmin = -2.5
    Case 6
        daMode.ModeChReq(0).ulRange = DA_RANGE_BIPOLAR
        daMode.ModeChReq(0).fVolt = 5#
        frmMain.opReal.Enabled = True
        adConfig.SmplChReq(1).ulRange = AD_5V
        daVmax = 5#
        daVmin = -5#
    Case 7
        daMode.ModeChReq(0).ulRange = DA_RANGE_BIPOLAR
        daMode.ModeChReq(0).fVolt = 10#
        adConfig.SmplChReq(1).ulRange = AD_5V
        frmMain.opReal.Enabled = False
        frmMain.opReal.Value = False
        MsgBox "D/A View の Real は使えません。A/D の CN2 には何も接続しないでください。"
        daVmax = 10#
        daVmin = -10#
End Select

'D/A ローパスフィルタを変数へ
If DaFilter(0).Value = True Then
    daMode.ModeChReq(0).ulFilter = DA_FILTER_ON
Else
    daMode.ModeChReq(0).ulFilter = DA_FILTER_OFF
End If

'D/A トリガを変数へ
If DaTrigSwitch(0).Value = True Then
    daConfig.ulTrigMode = DA_FREERUN
Else
    daConfig.ulTrigMode = DA_EXTTRG
End If

'D/A トリガポイントを変数へ
Select Case DaTrigPoint.ListIndex
    Case 0
        daConfig.ulTrigPoint = DA_TRIG_START
    Case 1
        daConfig.ulTrigPoint = DA_TRIG_STOP
```

```
    Case 2
        daConfig.ulTrigPoint = DA_TRIG_START_STOP
End Select

'D/A ディレイ件数を変数へ
daConfig.ulTrigDelay = Val(DaDelayNum.Text)

'D/A トリガエッジ極性を変数へ
Select Case DaTrigEdge.ListIndex
    Case 0
        daConfig.ulTrigEdge = DA_DOWN_EDGE
    Case 1
        daConfig.ulTrigEdge = DA_UP_EDGE
End Select

'D/A 外部クロックエッジ極性を変数へ
Select Case DaCn4Edge.ListIndex
    Case 0
        daConfig.ulEClkEdge = DA_DOWN_EDGE
    Case 1
        daConfig.ulEClkEdge = DA_UP_EDGE
End Select

'D/A CN3 を変数へ
Select Case DaCn3.ListIndex
    Case 0
        daMode.ulExControl = DA_EXTRG_OUT
    Case 1
        daMode.ulExControl = DA_EXTRG_IN
End Select

'D/A CN4 を変数へ
Select Case DaCn4.ListIndex
    Case 0
        daMode.ulExClock = DA_EXCLK_OUT
    Case 1
        daMode.ulExClock = DA_EXCLK_IN
        daConfig.fSmplFreq = 0
        If AdCn4.ListIndex = 1 Then
            horiScaleMode = 0
        Else
            horiScaleAd = 1
        End If
End Select

'D/A リピート回数を変数へ
daConfig.ulSmplRepeat = Val(DaRepeatNum.Text)

'D/A ラッチクリアするしないを変数へ
If DaLatch(0).Value = True Then
    daMode.ulDaLatch = DA_LATCH_CLEAR
Else
    daMode.ulDaLatch = DA_LATCH_NONCLEAR
End If
'D/A の設定を適用
nRet = DaSetSamplingConfig(daDeviceHandle, daConfig)
If nRet <> DA_ERROR_SUCCESS Then
    ErrorLabel.Visible = True
    Call DaDispErrMessage(nRet)
    Exit Sub
End If
nRet = DaSetMode(daDeviceHandle, daMode)
If nRet <> DA_ERROR_SUCCESS Then
    ErrorLabel.Visible = True
    Call DaDispErrMessage(nRet)
    Exit Sub
End If
frmMain.InfoBox.SelStart = Len(frmMain.InfoBox.Text) + 1
frmMain.InfoBox.SelText = vbCrLf & "D/A - サンプリング条件設定ＯＫ"

ulSmplBufferSize = adConfig.ulSmplNum
nRet = DaSetBoardConfig(daDeviceHandle, ulSmplBufferSize, 0, AddressOf DaCallBackProc, 0)
If nRet <> DA_ERROR_SUCCESS Then
```

```
        ErrorLabel.Visible = True
        Call DaDispErrMessage(nRet)
        Exit Sub
    End If
    frmMain.InfoBox.SelStart = Len(frmMain.InfoBox.Text) + 1
    frmMain.InfoBox.SelText = vbCrLf & "D/A - ボード条件設定ＯＫ"

    'A/D の設定を適用
    nRet = AdSetSamplingConfig(adDeviceHandle, adConfig)
    If nRet <> AD_ERROR_SUCCESS Then
        ErrorLabel.Visible = True
        Call AdDispErrMessage(nRet)
        Exit Sub
    End If
    frmMain.InfoBox.SelStart = Len(frmMain.InfoBox.Text) + 1
    frmMain.InfoBox.SelText = vbCrLf & "A/D - サンプリング条件設定ＯＫ"


    '設定済みフラグを立てる
    samplingConfFlag = 1

    'サンプリングデータセットフラグリセット
    'daMakeDataFlag = 0

    'メインウィンドウの目盛りの処理
    'V-t グラフ
    Call DispHoriScale

    If adVmax > daVmax Then
        frmMain.MesureMax.Caption = LTrim(Str(adVmax)) & "V"
        vMaxNum = adVmax
    Else
        frmMain.MesureMax.Caption = LTrim(Str(daVmax)) & "V"
        vMaxNum = daVmax
    End If
    If daMode.ModeChReq(0).ulRange = DA_RANGE_BIPOLAR Or (adConfig.SmplChReq(0).ulRange And &HF0000) Then
        frmMain.MesureCenter.Caption = "0V"
        frmMain.MesureMin.Caption = "-" & frmMain.MesureMax.Caption
        vMinNum = (-1) * vMaxNum
    Else
        frmMain.MesureMin.Caption = "0V"
        vMinNum = 0#
        If adVmax > daVmax Then
            frmMain.MesureCenter.Caption = LTrim(Str(adVmax / 2)) & "V"
        Else
            frmMain.MesureCenter.Caption = LTrim(Str(daVmax / 2)) & "V"
        End If
    End If
    'V-V グラフ
    frmMain.LabelAdMax.Caption = LTrim(Str(adVmax))
    frmMain.LabelAdMin.Caption = LTrim(Str(adVmin))
    frmMain.LabelAdMid.Caption = LTrim(Str((adVmax + adVmin) / 2))
    frmMain.LabelDaMax.Caption = LTrim(Str(daVmax))
    frmMain.LabelDaMin.Caption = LTrim(Str(daVmin))
    frmMain.LabelDaMid.Caption = LTrim(Str((daVmax + daVmin) / 2))

    'A/D データ配列サイズ宣言
    ReDim adData(adConfig.ulSmplNum * 2)

    '閉じる
    Unload Me

End Sub

Private Sub Command2_Click()
    Unload Me
End Sub

Private Sub DaCn3_Click()
    If DaCn3.ListIndex = 0 Then
        DaTrigSwitch(0).Value = True
        Label5.Enabled = False
        Label9.Enabled = False
```

```
        Label10.Enabled = False
        DaTrigPoint.Enabled = False
        DaDelayNum.Enabled = False
        DaTrigEdge.Enabled = False
    Else
        DaTrigSwitch(1).Value = True
        Label5.Enabled = True
        Label9.Enabled = True
        Label10.Enabled = True
        DaTrigPoint.Enabled = True
        DaDelayNum.Enabled = True
        DaTrigEdge.Enabled = True
    End If
End Sub

Private Sub DaCn4_Click()
    If DaCn4.ListIndex = 0 Then
        If DaTimer(0).Value = True Then
            DaFreq.Enabled = True
        End If
        Label3.Enabled = False
        DaCn4Edge.Enabled = False
        Label11.Enabled = True
        DaTimer(0).Enabled = True
        DaTimer(1).Enabled = True
    Else
        DaFreq.Enabled = False
        Label3.Enabled = True
        DaCn4Edge.Enabled = True
        Label11.Enabled = False
        DaTimer(0).Enabled = False
        DaTimer(1).Enabled = False
    End If
End Sub


Private Sub DaDelayNum_GotFocus()
    DaDelayNum.SelStart = 0
    DaDelayNum.SelLength = Len(DaDelayNum.Text)
End Sub

Private Sub DaDelayNum_KeyPress(KeyAscii As Integer)
    If KeyAscii < Asc(" ") Then
        Exit Sub
    End If
    If (KeyAscii < Asc("0") Or KeyAscii > Asc("9")) And KeyAscii <> Asc("-") Then
        KeyAscii = 0
    End If
End Sub

Private Sub DaRepeatNum_GotFocus()
    DaRepeatNum.SelStart = 0
    DaRepeatNum.SelLength = Len(DaRepeatNum.Text)
End Sub

Private Sub DaTimer_Click(Index As Integer)
    Select Case Index
        Case 0
            DaFreq.Enabled = True
            Label12.Enabled = True
        Case 1
            DaFreq.Enabled = False
            Label12.Enabled = False
    End Select
End Sub

Private Sub DaTrigSwitch_Click(Index As Integer)
    If Index = 1 Then
        Label5.Enabled = True
        Label9.Enabled = True
        Label10.Enabled = True
        DaTrigPoint.Enabled = True
        DaDelayNum.Enabled = True
```

```
        DaTrigEdge.Enabled = True
        DaCn3.ListIndex = 1
    Else
        Label5.Enabled = False
        Label9.Enabled = False
        Label10.Enabled = False
        DaTrigPoint.Enabled = False
        DaDelayNum.Enabled = False
        DaTrigEdge.Enabled = False
        DaCn3.ListIndex = 0
    End If

End Sub

Private Sub Form_Load()
    '現在の設定を表示するためのもの

    'A/D
    'サンプリング件数
    AdSampleNum.Text = LTrim(Str(adConfig.ulSmplNum))

    'サンプリング周波数
    Select Case adConfig.fSmplFreq
        Case 10000000
            AdFreq.ListIndex = 0
            AdCn4.ListIndex = 0
            Label1.Enabled = False
            AdCn4Edge.Enabled = False
        Case 8000000
            AdFreq.ListIndex = 1
            AdCn4.ListIndex = 0
            Label1.Enabled = False
            AdCn4Edge.Enabled = False
        Case 5000000
            AdFreq.ListIndex = 2
            AdCn4.ListIndex = 0
            Label1.Enabled = False
            AdCn4Edge.Enabled = False
        Case 4000000
            AdFreq.ListIndex = 3
            AdCn4.ListIndex = 0
            Label1.Enabled = False
            AdCn4Edge.Enabled = False
        Case 2500000
            AdFreq.ListIndex = 4
            AdCn4.ListIndex = 0
            Label1.Enabled = False
            AdCn4Edge.Enabled = False
        Case 2000000
            AdFreq.ListIndex = 5
            AdCn4.ListIndex = 0
            Label1.Enabled = False
            AdCn4Edge.Enabled = False
        Case 1250000
            AdFreq.ListIndex = 6
            AdCn4.ListIndex = 0
            Label1.Enabled = False
            AdCn4Edge.Enabled = False
        Case 1000000
            AdFreq.ListIndex = 7
            AdCn4.ListIndex = 0
            Label1.Enabled = False
            AdCn4Edge.Enabled = False
        Case 625000
            AdFreq.ListIndex = 8
            AdCn4.ListIndex = 0
            Label1.Enabled = False
            AdCn4Edge.Enabled = False
        Case 500000
            AdFreq.ListIndex = 9
            AdCn4.ListIndex = 0
            Label1.Enabled = False
            AdCn4Edge.Enabled = False
```

```
    Case 312500
        AdFreq.ListIndex = 10
        AdCn4.ListIndex = 0
        Label1.Enabled = False
        AdCn4Edge.Enabled = False
    Case 250000
        AdFreq.ListIndex = 11
        AdCn4.ListIndex = 0
        Label1.Enabled = False
        AdCn4Edge.Enabled = False
    Case 156250
        AdFreq.ListIndex = 12
        AdCn4.ListIndex = 0
        Label1.Enabled = False
        AdCn4Edge.Enabled = False
    Case 125000
        AdFreq.ListIndex = 13
        AdCn4.ListIndex = 0
        Label1.Enabled = False
        AdCn4Edge.Enabled = False
    Case 78125
        AdFreq.ListIndex = 14
        AdCn4.ListIndex = 0
        Label1.Enabled = False
        AdCn4Edge.Enabled = False
    Case 62500
        AdFreq.ListIndex = 15
        AdCn4.ListIndex = 0
        Label1.Enabled = False
        AdCn4Edge.Enabled = False
    Case 0
        AdFreq.Enabled = False
        'AdCn4.Enabled = True
        AdCn4.ListIndex = 1
        Label1.Enabled = True
        AdCn4Edge.Enabled = True
    Case Else
        AdFreq.ListIndex = -1
End Select

'A/D 倍速モード
Select Case adConfig.ulFastMode
    Case AD_NORMAL_MODE
        AdFastMode(1).Value = True
    Case AD_FAST_MODE
        AdFastMode(0).Value = True
End Select

'A/D レンジ
Select Case adConfig.SmplChReq(0).ulRange
    Case AD_0_1V
        AdRange.ListIndex = 0
    Case AD_0_2P5V
        AdRange.ListIndex = 1
    Case AD_0_5V
        AdRange.ListIndex = 2
    Case AD_1V
        AdRange.ListIndex = 3
    Case AD_2P5V
        AdRange.ListIndex = 4
    Case AD_5V
        AdRange.ListIndex = 5
    Case Else
        AdRange.ListIndex = -1
End Select


'A/D トリガ
Select Case adConfig.ulTrigMode
    Case AD_FREERUN
        AdTrigSwitch(0).Value = True
        Label6.Enabled = False
        Label7.Enabled = False
```

```
        Label8.Enabled = False
        AdTrigPoint.Enabled = False
        AdDelayNum.Enabled = False
        AdTrigEdge.Enabled = False
        AdCn3.ListIndex = 0
    Case AD_EXTTRG
        AdTrigSwitch(1).Value = True
        Label6.Enabled = True
        Label7.Enabled = True
        Label8.Enabled = True
        AdTrigPoint.Enabled = True
        AdDelayNum.Enabled = True
        AdTrigEdge.Enabled = True
        AdCn3.ListIndex = 1
End Select

'A/D トリガポイント
Select Case adConfig.ulTrigPoint
    Case AD_TRIG_START
        AdTrigPoint.ListIndex = 0
    Case AD_TRIG_STOP
        AdTrigPoint.ListIndex = 1
    Case AD_TRIG_START_STOP
        AdTrigPoint.ListIndex = 2
End Select

'A/D ディレイ件数
AdDelayNum.Text = LTrim(Str(adConfig.lTrigDelay))

'A/D トリガエッジ極性
Select Case adConfig.ulTrigEdge
    Case AD_DOWN_EDGE
        AdTrigEdge.ListIndex = 0
    Case AD_UP_EDGE
        AdTrigEdge.ListIndex = 1
End Select

'A/D 外部クロックエッジ極性
Select Case adConfig.ulEClkEdge
    Case AD_DOWN_EDGE
        AdCn4Edge.ListIndex = 0
    Case AD_UP_EDGE
        AdCn4Edge.ListIndex = 1
End Select


'D/A
'サンプリング周波数
DaFreq.Text = LTrim(Str(daConfig.fSmplFreq))

'D/A タイマ選択
Select Case daMode.ulSamplingClock
    Case DA_CLOCK_TIMER
        DaTimer(0).Value = True
        DaFreq.Enabled = True
    Case DA_CLOCK_FIXED
        DaTimer(1).Value = True
        DaFreq.Enabled = False
End Select

'D/A レンジ
Select Case daMode.ModeChReq(0).ulRange
    Case DA_RANGE_UNIPOLAR
        Select Case daMode.ModeChReq(0).fVolt
            Case 1.025
                DaRange.ListIndex = 0
            Case 2.5
                DaRange.ListIndex = 1
            Case 5#
                DaRange.ListIndex = 2
            Case 10#
                DaRange.ListIndex = 3
            Case Else
```

```
                DaRange.ListIndex = -1
        End Select
    Case DA_RANGE_BIPOLAR
        Select Case daMode.ModeChReq(0).fVolt
            Case 1.025
                DaRange.ListIndex = 4
            Case 2.5
                DaRange.ListIndex = 5
            Case 5#
                DaRange.ListIndex = 6
            Case 10#
                DaRange.ListIndex = 7
            Case Else
                DaRange.ListIndex = -1
        End Select
    End Select

'D/A ローパスフィルタ
Select Case daMode.ModeChReq(0).ulFilter
    Case DA_FILTER_OFF
        DaFilter(1).Value = True
    Case DA_FILTER_ON
        DaFilter(0).Value = True
End Select

'D/A トリガ
Select Case daConfig.ulTrigMode
    Case DA_FREERUN
        DaTrigSwitch(0).Value = True
        Label5.Enabled = False
        Label9.Enabled = False
        Label10.Enabled = False
        DaTrigPoint.Enabled = False
        DaDelayNum.Enabled = False
        DaTrigEdge.Enabled = False
        DaCn3.ListIndex = 0
    Case DA_EXTTRG
        DaTrigSwitch(1).Value = True
        Label5.Enabled = True
        Label9.Enabled = True
        Label10.Enabled = True
        DaTrigPoint.Enabled = True
        DaDelayNum.Enabled = True
        DaTrigEdge.Enabled = True
        DaCn3.ListIndex = 1
End Select

'D/A トリガポイント
Select Case daConfig.ulTrigPoint
    Case DA_TRIG_START
        DaTrigPoint.ListIndex = 0
    Case DA_TRIG_STOP
        DaTrigPoint.ListIndex = 1
    Case DA_TRIG_START_STOP
        DaTrigPoint.ListIndex = 2
End Select

'D/A ディレイ件数
DaDelayNum.Text = LTrim(Str(daConfig.ulTrigDelay))

'D/A トリガエッジ極性
Select Case daConfig.ulTrigEdge
    Case DA_DOWN_EDGE
        DaTrigEdge.ListIndex = 0
    Case DA_UP_EDGE
        DaTrigEdge.ListIndex = 1
End Select

'D/A 外部クロックエッジ極性
Select Case daConfig.ulEClkEdge
    Case DA_DOWN_EDGE
        DaCn4Edge.ListIndex = 0
    Case DA_UP_EDGE
```

```
            DaCn4Edge.ListIndex = 1
    End Select

    'D/A CN3
    Select Case daMode.ulExControl
        Case DA_EXTRG_IN
            DaCn3.ListIndex = 1
            Label5.Enabled = True
            Label9.Enabled = True
            Label10.Enabled = True
            DaTrigPoint.Enabled = True
            DaDelayNum.Enabled = True
            DaTrigEdge.Enabled = True
            DaTrigSwitch(1).Value = True
        Case DA_EXTRG_OUT
            DaCn3.ListIndex = 0
            Label5.Enabled = False
            Label9.Enabled = False
            Label10.Enabled = False
            DaTrigPoint.Enabled = False
            DaDelayNum.Enabled = False
            DaTrigEdge.Enabled = False
            DaTrigSwitch(0).Value = True
    End Select

    'D/A CN4
    Select Case daMode.ulExClock
        Case DA_EXCLK_IN
            Label3.Enabled = True
            DaCn4Edge.Enabled = True
            Label11.Enabled = False
            DaTimer(0).Enabled = False
            DaTimer(1).Enabled = False
            DaCn4.ListIndex = 1
            DaFreq.Enabled = False
        Case DA_EXCLK_OUT
            Label3.Enabled = False
            DaCn4Edge.Enabled = False
            Label11.Enabled = True
            DaTimer(0).Enabled = True
            DaTimer(1).Enabled = True
            DaCn4.ListIndex = 0
            If DaTimer(1).Value = True Then
                DaFreq.Enabled = False
            Else
                DaFreq.Enabled = True
            End If
    End Select

    'D/A リピート回数
    DaRepeatNum = LTrim(Str(daConfig.ulSmplRepeat))

    'D/A ラッチ
    Select Case daMode.ulDaLatch
        Case DA_LATCH_CLEAR
            DaLatch(0).Value = True
        Case DA_LATCH_NONCLEAR
            DaLatch(1).Value = True
    End Select
End Sub

Private Sub AdTrigSwitch_Click(Index As Integer)
    If Index = 1 Then
        Label6.Enabled = True
        Label7.Enabled = True
        Label8.Enabled = True
        AdTrigPoint.Enabled = True
        AdDelayNum.Enabled = True
        AdTrigEdge.Enabled = True
        AdCn3.ListIndex = 1
    Else
        Label6.Enabled = False
        Label7.Enabled = False
```

```
        Label8.Enabled = False
        AdTrigPoint.Enabled = False
        AdDelayNum.Enabled = False
        AdTrigEdge.Enabled = False
        AdCn3.ListIndex = 0
    End If
End Sub

Private Sub LoadButton_Click()
    '設定をレジストリからロードして表示する
    'A/D
    'サンプリング件数
    AdSampleNum.Text = GetSetting(appName, secName, "AdSampleNum")

    'サンプリング周波数
    Select Case GetSetting(appName, secName, "AdFreq")
        Case 0
            AdFreq.ListIndex = 0
            AdCn4.ListIndex = 0
            Label1.Enabled = False
            AdCn4Edge.Enabled = False
        Case 1
            AdFreq.ListIndex = 1
            AdCn4.ListIndex = 0
            Label1.Enabled = False
            AdCn4Edge.Enabled = False
        Case 2
            AdFreq.ListIndex = 2
            AdCn4.ListIndex = 0
            Label1.Enabled = False
            AdCn4Edge.Enabled = False
        Case 3
            AdFreq.ListIndex = 3
            AdCn4.ListIndex = 0
            Label1.Enabled = False
            AdCn4Edge.Enabled = False
        Case 4
            AdFreq.ListIndex = 4
            AdCn4.ListIndex = 0
            Label1.Enabled = False
            AdCn4Edge.Enabled = False
        Case 5
            AdFreq.ListIndex = 5
            AdCn4.ListIndex = 0
            Label1.Enabled = False
            AdCn4Edge.Enabled = False
        Case 6
            AdFreq.ListIndex = 6
            AdCn4.ListIndex = 0
            Label1.Enabled = False
            AdCn4Edge.Enabled = False
        Case 7
            AdFreq.ListIndex = 7
            AdCn4.ListIndex = 0
            Label1.Enabled = False
            AdCn4Edge.Enabled = False
        Case 8
            AdFreq.ListIndex = 8
            AdCn4.ListIndex = 0
            Label1.Enabled = False
            AdCn4Edge.Enabled = False
        Case 9
            AdFreq.ListIndex = 9
            AdCn4.ListIndex = 0
            Label1.Enabled = False
            AdCn4Edge.Enabled = False
        Case 10
            AdFreq.ListIndex = 10
            AdCn4.ListIndex = 0
            Label1.Enabled = False
            AdCn4Edge.Enabled = False
        Case 11
            AdFreq.ListIndex = 11
```

```
        AdCn4.ListIndex = 0
        Label1.Enabled = False
        AdCn4Edge.Enabled = False
    Case 12
        AdFreq.ListIndex = 12
        AdCn4.ListIndex = 0
        Label1.Enabled = False
        AdCn4Edge.Enabled = False
    Case 13
        AdFreq.ListIndex = 13
        AdCn4.ListIndex = 0
        Label1.Enabled = False
        AdCn4Edge.Enabled = False
    Case 14
        AdFreq.ListIndex = 14
        AdCn4.ListIndex = 0
        Label1.Enabled = False
        AdCn4Edge.Enabled = False
    Case 15
        AdFreq.ListIndex = 15
        AdCn4.ListIndex = 0
        Label1.Enabled = False
        AdCn4Edge.Enabled = False
    Case -1
        AdFreq.Enabled = False
        'AdCn4.Enabled = True
        AdCn4.ListIndex = 1
        Label1.Enabled = True
        AdCn4Edge.Enabled = True
        AdFreq.ListIndex = -1
    'Case Else
    '    AdFreq.ListIndex = -1
End Select

'A/D 倍速モード
Select Case GetSetting(appName, secName, "AdFastMode")
    Case True
        AdFastMode(0).Value = True
    Case False
        AdFastMode(1).Value = True
End Select

'A/D レンジ
AdRange.ListIndex = GetSetting(appName, secName, "AdRange")

'A/D トリガ
Select Case GetSetting(appName, secName, "AdTrigSwitch")
    Case True
        AdTrigSwitch(0).Value = True
        Label6.Enabled = False
        Label7.Enabled = False
        Label8.Enabled = False
        AdTrigPoint.Enabled = False
        AdDelayNum.Enabled = False
        AdTrigEdge.Enabled = False
        AdCn3.ListIndex = 0
    Case False
        AdTrigSwitch(1).Value = True
        Label6.Enabled = True
        Label7.Enabled = True
        Label8.Enabled = True
        AdTrigPoint.Enabled = True
        AdDelayNum.Enabled = True
        AdTrigEdge.Enabled = True
        AdCn3.ListIndex = 1
End Select

'A/D トリガポイント
AdTrigPoint.ListIndex = GetSetting(appName, secName, "AdTrigPoint")

'A/D ディレイ件数
AdDelayNum.Text = GetSetting(appName, secName, "AdDelayNum")
```

```
'A/D トリガエッジ極性
AdTrigEdge.ListIndex = GetSetting(appName, secName, "AdTrigEdge")

'A/D　ＣＮ４
Select Case GetSetting(appName, secName, "AdCn4")
    Case 0
        AdCn4.ListIndex = 0
        AdFreq.Enabled = True
        Label1.Enabled = False
        AdCn4Edge.Enabled = False
    Case 1
        AdCn4.ListIndex = 1
        AdFreq.Enabled = False
        Label1.Enabled = True
        AdCn4Edge.Enabled = True
    End Select

'A/D 外部クロックエッジ極性
AdCn4Edge.ListIndex = GetSetting(appName, secName, "AdCn4Edge")

'D/A
'サンプリング周波数
DaFreq.Text = GetSetting(appName, secName, "DaFreq")

'D/A タイマ選択
Select Case GetSetting(appName, secName, "DaTimer")
    Case True
        DaTimer(0).Value = True
        DaFreq.Enabled = True
    Case False
        DaTimer(1).Value = True
        DaFreq.Enabled = False
End Select

'D/A レンジ
DaRange.ListIndex = GetSetting(appName, secName, "DaRange")

'D/A ローパスフィルタ
Select Case GetSetting(appName, secName, "DaFilter")
    Case True
        DaFilter(0).Value = True
    Case False
        DaFilter(1).Value = True
End Select

'D/A トリガ
Select Case GetSetting(appName, secName, "DaTrigSwitch")
    Case True
        DaTrigSwitch(0).Value = True
        Label5.Enabled = False
        Label9.Enabled = False
        Label10.Enabled = False
        DaTrigPoint.Enabled = False
        DaDelayNum.Enabled = False
        DaTrigEdge.Enabled = False
        DaCn3.ListIndex = 0
    Case False
        DaTrigSwitch(1).Value = True
        Label5.Enabled = True
        Label9.Enabled = True
        Label10.Enabled = True
        DaTrigPoint.Enabled = True
        DaDelayNum.Enabled = True
        DaTrigEdge.Enabled = True
        DaCn3.ListIndex = 1
End Select

'D/A トリガポイント
DaTrigPoint.ListIndex = GetSetting(appName, secName, "DaTrigPoint")

'D/A ディレイ件数
DaDelayNum.Text = GetSetting(appName, secName, "DaDelayNum")
```

```
    'D/A トリガエッジ極性
    DaTrigEdge.ListIndex = GetSetting(appName, secName, "DaTrigEdge")

    'D/A 外部クロックエッジ極性
    DaCn4Edge.ListIndex = GetSetting(appName, secName, "DaCn4Edge")

    'D/A CN3
    Select Case GetSetting(appName, secName, "DaCn3")
        Case 1
            DaCn3.ListIndex = 1
            Label5.Enabled = True
            Label9.Enabled = True
            Label10.Enabled = True
            DaTrigPoint.Enabled = True
            DaDelayNum.Enabled = True
            DaTrigEdge.Enabled = True
            DaTrigSwitch(1).Value = True
        Case 0
            DaCn3.ListIndex = 0
            Label5.Enabled = False
            Label9.Enabled = False
            Label10.Enabled = False
            DaTrigPoint.Enabled = False
            DaDelayNum.Enabled = False
            DaTrigEdge.Enabled = False
            DaTrigSwitch(0).Value = True
    End Select

    'D/A CN4
    Select Case GetSetting(appName, secName, "DaCn4")
        Case 1
            Label3.Enabled = True
            DaCn4Edge.Enabled = True
            Label11.Enabled = False
            DaTimer(0).Enabled = False
            DaTimer(1).Enabled = False
            DaCn4.ListIndex = 1
            DaFreq.Enabled = False
        Case 0
            Label3.Enabled = False
            DaCn4Edge.Enabled = False
            Label11.Enabled = True
            DaTimer(0).Enabled = True
            DaTimer(1).Enabled = True
            DaCn4.ListIndex = 0
            If DaTimer(1).Value = True Then
                DaFreq.Enabled = False
            Else
                DaFreq.Enabled = True
            End If
    End Select

    'D/A リピート回数
    DaRepeatNum = GetSetting(appName, secName, "DaRepeatNum")

    'D/A ラッチ
    Select Case GetSetting(appName, secName, "DaLatch")
        Case True
            DaLatch(0).Value = True
        Case False
            DaLatch(1).Value = True
    End Select

End Sub

Private Sub SaveButton_Click()
    Dim nRet As Long
    SaveSetting appName, secName, "AdSampleNum", AdSampleNum.Text
    SaveSetting appName, secName, "AdFreq", AdFreq.ListIndex
    SaveSetting appName, secName, "AdFastMode", AdFastMode(0).Value
    SaveSetting appName, secName, "AdRange", AdRange.ListIndex
    SaveSetting appName, secName, "AdTrigSwitch", AdTrigSwitch(0).Value
    SaveSetting appName, secName, "AdTrigPoint", AdTrigPoint.ListIndex
```

```
    SaveSetting appName, secName, "AdDelayNum", AdDelayNum.Text
    SaveSetting appName, secName, "AdTrigEdge", AdTrigEdge.ListIndex
    SaveSetting appName, secName, "AdCn3", AdCn3.ListIndex
    SaveSetting appName, secName, "AdCn4", AdCn4.ListIndex
    SaveSetting appName, secName, "AdCn4Edge", AdCn4Edge.ListIndex

    SaveSetting appName, secName, "DaFreq", DaFreq.Text
    SaveSetting appName, secName, "DaTimer", DaTimer(0).Value
    SaveSetting appName, secName, "DaRange", DaRange.ListIndex
    SaveSetting appName, secName, "DaTrigSwitch", DaTrigSwitch(0).Value
    SaveSetting appName, secName, "DaTrigPoint", DaTrigPoint.ListIndex
    SaveSetting appName, secName, "DaDelayNum", DaDelayNum.Text
    SaveSetting appName, secName, "Datrigedge", DaTrigEdge.ListIndex
    SaveSetting appName, secName, "DaCn3", DaCn3.ListIndex
    SaveSetting appName, secName, "DaCn4", DaCn4.ListIndex
    SaveSetting appName, secName, "DaCn4Edge", DaCn4Edge.ListIndex
    SaveSetting appName, secName, "DaFilter", DaFilter(0).Value
    SaveSetting appName, secName, "DaLatch", DaLatch(0).Value
    SaveSetting appName, secName, "DaRepeatNum", DaRepeatNum.Text
End Sub
```

・SamplingConf.frx

```
ADDRESS   00 01 02 03 04 05 06 07  08 09 0A 0B 0C 0D 0E 0F  0123456789ABCDEF
-------------------------------------------------------------------------------
00000000  08 00 00 00 6C 74 00 00  00 00 00 00 0C 00 03 00  ....lt..........
00000010  01 00 30 01 00 30 01 00  30 01 00 30 01 00 30 01  ..0..0..0..0..0.
00000020  00 30 01 00 30 01 00 30  01 00 30 01 00 30 01 00  .0..0..0..0..0..
00000030  30 01 00 30 0C 00 07 00  07 00 32 35 30 30 30 30  0..0......250000
00000040  30 07 00 32 30 30 30 30  30 30 07 00 31 32 35 30  0..2000000..1250
00000050  30 30 30 07 00 31 30 30  30 30 30 30 06 00 36 32  000..1000000..62
00000060  35 30 30 30 06 00 35 30  30 30 30 30 06 00 33 31  5000..500000..31
00000070  32 35 30 30 06 00 32 35  30 30 30 30 06 00 31 35  2500..250000..15
00000080  36 32 35 30 06 00 31 32  35 30 30 30 06 00 37 38  6250..125000..78
00000090  31 32 35 30 05 00 36 32  35 30 30 03 00 03 00 01  1250..62500.....
000000A0  00 30 01 00 30 01 00 30  03 00 12 00 08 00 83 58  .0..0..0......ス
000000B0  83 5E 81 5B 83 67 08 00  83 58 83 67 83 62 83 76  タート..ストップ
000000C0  12 00 83 58 83 5E 81 5B  83 67 81 95 83 58 83 67  ..スタート＆スト
000000D0  83 62 83 76 02 00 03 00  01 00 30 01 00 30 02 00  ップ......0..0..
000000E0  10 00 10 00 97 A7 82 BF  89 BA 82 AA 82 E8 83 47  ....立ち下がりエ
000000F0  83 62 83 57 10 00 97 A7  82 BF 8F E3 82 AA 82 E8  ッジ..立ち上がり
00000100  83 47 83 62 83 57 08 00  03 00 01 00 30 01 00 30  エッジ......0..0
00000110  01 00 30 01 00 30 01 00  30 01 00 30 01 00 30 01  ..0..0..0..0..0.
00000120  00 30 08 00 1C 00 1C 00  83 86 83 6A 83 7C 81 5B  .0......ユニポーラ
00000130  83 89 81 40 82 4F 81 60  82 50 81 44 82 4F 82 51  ラ　０～１．０２
00000140  82 54 82 75 18 00 83 86  83 6A 83 7C 81 5B 83 89  ５Ｖ..ユニポーラ
00000150  81 40 82 4F 81 60 82 51  81 44 82 54 82 75 14 00  　０～２．５Ｖ..
00000160  83 86 83 6A 83 7C 81 5B  83 89 81 40 82 4F 81 60  ユニポーラ　０～
00000170  82 54 82 75 16 00 83 86  83 6A 83 7C 81 5B 83 89  ５Ｖ..ユニポーラ
00000180  81 40 82 4F 81 60 82 50  82 4F 82 75 1A 00 83 6F  　０～１０Ｖ..バ
00000190  83 43 83 7C 81 5B 83 89  81 40 81 7D 82 50 81 44  イポーラ　±１．
000001A0  82 4F 82 51 82 54 82 75  16 00 83 6F 83 43 83 7C  ０２５Ｖ..バイポ
000001B0  81 5B 83 89 81 40 81 7D  82 51 81 44 82 54 82 75  ーラ　±２．５Ｖ
000001C0  12 00 83 6F 83 43 83 7C  81 5B 83 89 81 40 81 7D  ..バイポーラ　±
000001D0  82 54 82 75 14 00 83 6F  83 43 83 7C 81 5B 83 89  ５Ｖ..バイポーラ
000001E0  81 40 81 7D 82 50 82 4F  82 75 02 00 03 00 01 00  　±１０Ｖ......
000001F0  30 01 00 30 02 00 0A 00  0A 00 83 67 83 8A 83 4B  0..0......トリガ
00000200  8F 6F 97 CD 0A 00 83 67  83 8A 83 4B 93 FC 97 CD  出力..トリガ入力
00000210  02 00 03 00 01 00 30 01  00 30 02 00 0C 00 0C 00  ......0..0......
00000220  83 4E 83 8D 83 62 83 4E  8F 6F 97 CD 0C 00 83 4E  クロック出力..ク
00000230  83 8D 83 62 83 4E 93 FC  97 CD 02 00 03 00 01 00  ロック入力......
00000240  30 01 00 30 02 00 10 00  10 00 97 A7 82 BF 89 BA  0..0......立ち下
00000250  82 AA 82 E8 83 47 83 62  83 57 10 00 97 A7 82 BF  がりエッジ..立ち
00000260  8F E3 82 AA 82 E8 83 47  83 62 83 57 0E 00 03 00  上がりエッジ....
00000270  01 00 30 01 00 30 01 00  30 01 00 30 01 00 30 01  ..0..0..0..0..0.
00000280  00 30 01 00 30 01 00 30  01 00 30 01 00 30 01 00  .0..0..0..0..0..
00000290  30 01 00 30 01 00 30 01  00 30 0E 00 06 00 02 00  0..0..0..0......
000002A0  36 34 03 00 31 32 38 03  00 32 35 36 03 00 35 31  64..128..256..51
000002B0  32 04 00 31 30 32 34 04  00 32 30 34 38 04 00 34  2..1024..2048..4
000002C0  30 39 36 04 00 38 31 39  32 05 00 31 36 33 38 34  096..8192..16384
000002D0  05 00 33 32 37 36 38 05  00 36 35 35 33 36 06 00  ..32768..65536..
000002E0  31 33 31 30 37 32 06 00  32 36 32 31 34 34 06 00  131072..262144..
```

```
000002F0  35 32 34 32 38 38 02 00  03 00 01 00 30 01 00 30  524288......0..0
00000300  02 00 10 00 10 00 97 A7  82 BF 89 BA 82 AA 82 E8  ......立ち下がり
00000310  83 47 83 62 83 57 10 00  97 A7 82 BF 8F E3 82 AA  エッジ..立ち上がり
00000320  82 E8 83 47 83 62 83 57  02 00 03 00 01 00 30 01  りエッジ......0.
00000330  00 30 02 00 0C 00 0C 00  83 4E 83 8D 83 62 83 4E  .0......クロック
00000340  8F 6F 97 CD 0C 00 83 4E  83 8D 83 62 83 4E 93 FC  出力..クロック入
00000350  97 CD 02 00 03 00 01 00  30 01 00 30 02 00 0A 00  力......0..0....
00000360  0A 00 83 67 83 8A 83 4B  8F 6F 97 CD 0A 00 83 67  ..トリガ出力..ト
00000370  83 8A 83 4B 93 FC 97 CD  06 00 03 00 01 00 30 01  リガ入力......0.
00000380  00 30 01 00 30 01 00 30  01 00 30 01 00 30 06 00  .0..0..0..0..0..
00000390  18 00 14 00 83 86 83 6A  83 7C 81 5B 83 89 81 40  ....ユニポーラ
000003A0  82 4F 81 60 82 50 82 75  18 00 83 86 83 6A 83 7C  ０～１Ｖ..ユニポ
000003B0  81 5B 83 89 81 40 82 4F  81 60 82 51 81 44 82 54  ーラ　０～２．５
000003C0  82 75 14 00 83 86 83 6A  83 7C 81 5B 83 89 81 40  Ｖ..ユニポーラ
000003D0  82 4F 81 60 82 54 82 75  12 00 83 6F 83 43 83 7C  ０～５Ｖ..バイポ
000003E0  81 5B 83 89 81 40 81 7D  82 50 82 75 16 00 83 6F  ーラ　±１Ｖ..バ
000003F0  83 43 83 7C 81 5B 83 89  81 40 81 7D 82 51 81 44  イポーラ　±２．
00000400  82 54 82 75 12 00 83 6F  83 43 83 7C 81 5B 83 89  ５Ｖ..バイポーラ
00000410  81 40 81 7D 82 54 82 75  02 00 03 00 01 00 30 01    ±５Ｖ......0.
00000420  00 30 02 00 10 00 10 00  97 A7 82 BF 89 BA 82 AA  .0......立ち下がり
00000430  82 E8 83 47 83 62 83 57  10 00 97 A7 82 BF 8F E3  りエッジ..立ち上
00000440  82 AA 82 E8 83 47 83 62  83 57 03 00 03 00 01 00  がりエッジ......
00000450  30 01 00 30 01 00 30 03  00 12 00 08 00 83 58 83  0..0..0......スタ
00000460  5E 81 5B 83 67 08 00 83  58 83 67 83 62 83 76 12  ^ート..ストップ.
00000470  00 83 58 83 5E 81 5B 83  67 81 95 83 58 83 67 83  .スタート＆ストッ
00000480  62 83 76 10 00 03 00 01  00 30 01 00 30 01 00 30  bプ......0..0..0
00000490  01 00 30 01 00 30 01 00  30 01 00 30 01 00 30 01  ..0..0..0..0..0.
000004A0  00 30 01 00 30 01 00 30  01 00 30 01 00 30 01 00  .0..0..0..0..0..
000004B0  30 01 00 30 01 00 30 10  00 09 00 05 00 31 30 4D  0..0..0......10M
000004C0  48 7A 04 00 38 4D 48 7A  04 00 35 4D 48 7A 04 00  Hz..8MHz..5MHz..
000004D0  34 4D 48 7A 06 00 32 2E  35 4D 48 7A 04 00 32 4D  4MHz..2.5MHz..2M
000004E0  48 7A 07 00 31 2E 32 35  4D 48 7A 04 00 31 4D 48  Hz..1.25MHz..1MH
000004F0  7A 06 00 36 32 35 6B 48  7A 06 00 35 30 30 6B 48  z..625kHz..500kH
00000500  7A 08 00 33 31 32 2E 35  6B 48 7A 06 00 32 35 30  z..312.5kHz..250
00000510  6B 48 7A 09 00 31 35 36  2E 32 35 6B 48 7A 06 00  kHz..156.25kHz..
00000520  31 32 35 6B 48 7A 09 00  37 38 2E 31 32 35 6B 48  125kHz..78.125kH
00000530  7A 07 00 36 32 2E 35 6B  48 7A                    z..62.5kHz
```

・OptionForm.frm

```
VERSION 5.00
Begin VB.Form frmOption
   BorderStyle     =   3  '固定ﾀﾞｲｱﾛｸﾞ
   Caption         =   "オプション"
   ClientHeight    =   4260
   ClientLeft      =   45
   ClientTop       =   330
   ClientWidth     =   6015
   Icon            =   "OptionForm.frx":0000
   LinkTopic       =   "Form1"
   MaxButton       =   0   'False
   MinButton       =   0   'False
   ScaleHeight     =   4260
   ScaleWidth      =   6015
   ShowInTaskbar   =   0   'False
   StartUpPosition =   1  'ｵｰﾅｰ ﾌｫｰﾑの中央
   Begin VB.Frame Frame1
      Caption         =   "ノイズ低減"
      Height          =   2175
      Left            =   3240
      TabIndex        =   11
      Top             =   240
      Width           =   2535
      Begin VB.TextBox txtMeasureInt
         Alignment       =   1  '右揃え
         Height          =   270
         Left            =   1440
         MaxLength       =   5
         TabIndex        =   16
         Top             =   920
         Width           =   615
      End
```

```
   Begin VB.TextBox txtMeasureTimes
      Alignment       =   1  '右揃え
      Height          =   270
      Left            =   1440
      MaxLength       =   5
      TabIndex        =   13
      Top             =   480
      Width           =   615
   End
   Begin VB.Label Label6
      Caption         =   "秒"
      Height          =   255
      Left            =   2160
      TabIndex        =   18
      Top             =   960
      Width           =   255
   End
   Begin VB.Label Label5
      Caption         =   "回"
      Height          =   255
      Left            =   2160
      TabIndex        =   17
      Top             =   540
      Width           =   255
   End
   Begin VB.Label Label4
      Caption         =   "インターバル"
      Height          =   255
      Left            =   240
      TabIndex        =   15
      Top             =   960
      Width           =   1095
   End
   Begin VB.Label Label3
      Caption         =   "測定回数"
      Height          =   255
      Left            =   360
      TabIndex        =   14
      Top             =   540
      Width           =   735
   End
   Begin VB.Label Label2
      Caption         =   "指定回数測定し、その平均値を求めることによってノイズによる誤差を低減します。"
      Height          =   615
      Left            =   240
      TabIndex        =   12
      Top             =   1440
      Width           =   2175
   End
End
Begin VB.CommandButton Command2
   Cancel          =   -1  'True
   Caption         =   "キャンセル"
   Height          =   375
   Left            =   4560
   TabIndex        =   9
   Top             =   3720
   Width           =   1215
End
Begin VB.CommandButton Command1
   Caption         =   "OK"
   Default         =   -1  'True
   Height          =   375
   Left            =   3120
   TabIndex        =   8
   Top             =   3720
   Width           =   1215
End
Begin VB.Frame Frame2
   Caption         =   "レジストリのお掃除"
   Height          =   975
   Left            =   240
   TabIndex        =   6
```

```
   Top             =   2640
   Width           =   2775
   Begin VB.CommandButton RegClear
      Caption         =   "設定情報を削除"
      Height          =   375
      Left            =   360
      TabIndex        =   7
      Top             =   360
      Width           =   1935
   End
End
Begin VB.Frame frameScale
   Caption         =   "目盛表示"
   Height          =   2175
   Left            =   240
   TabIndex        =   0
   Top             =   240
   Width           =   2775
   Begin VB.Frame frameCal
      BorderStyle     =   0  'なし
      Height          =   735
      Left            =   480
      TabIndex        =   3
      Top             =   960
      Width           =   2055
      Begin VB.OptionButton opDa
         Caption         =   "D/A の周波数で計算"
         Height          =   255
         Left            =   0
         TabIndex        =   5
         Top             =   480
         Width           =   2055
      End
      Begin VB.OptionButton opAd
         Caption         =   "A/D の周波数で計算"
         Height          =   255
         Left            =   0
         TabIndex        =   4
         Top             =   120
         Value           =   -1  'True
         Width           =   2055
      End
   End
   Begin VB.OptionButton opTime
      Caption         =   "時間"
      Height          =   255
      Left            =   240
      TabIndex        =   2
      Top             =   720
      Width           =   1215
   End
   Begin VB.OptionButton opSample
      Caption         =   "サンプル数"
      Height          =   375
      Left            =   240
      TabIndex        =   1
      Top             =   240
      Value           =   -1  'True
      Width           =   1695
   End
   Begin VB.Label Label1
      Caption         =   "サンプリング条件を設定しないと変更できません"
      BeginProperty Font
         Name            =   "ＭＳ Ｐゴシック"
         Size            =   8.25
         Charset         =   128
         Weight          =   400
         Underline       =   0   'False
         Italic          =   0   'False
         Strikethrough   =   0   'False
      EndProperty
      Height          =   300
      Left            =   360
```

```
         TabIndex        =   10
         Top             =   1800
         Width           =   2175
      End
   End
End
Attribute VB_Name = "frmOption"
Attribute VB_GlobalNameSpace = False
Attribute VB_Creatable = False
Attribute VB_PredeclaredId = True
Attribute VB_Exposed = False
Private Sub Command1_Click()
    If opSample.Value = True Then
        horiScaleMode = 0
    Else
        If opAd.Value = True Then
            horiScaleMode = 1
            horiScaleAd = 1
        Else
            horiScaleMode = 1
            horiScaleAd = 0
        End If
    End If

    If txtMeasureTimes.Text = "" Then
        txtMeasureTimes.Text = "1"
    End If
    measureTimes = Val(txtMeasureTimes.Text)

    If txtMeasureInt.Text = "" Then
        txtMeasureInt.Text = "0"
    End If
    measureInt = Val(txtMeasureInt.Text)

    SaveSetting appName, "Option", "HoriScaleMode", horiScaleMode
    SaveSetting appName, "Option", "HoriScaleAd", horiScaleAd
    SaveSetting appName, "Option", "MeasureTimes", txtMeasureTimes.Text
    SaveSetting appName, "Option", "MeasureInt", txtMeasureInt.Text

    If samplingConfFlag = 1 Then
        Call DispHoriScale
    End If
    Unload Me
End Sub

Private Sub Command2_Click()
    Unload Me
End Sub

Private Sub Form_Load()

    If horiScaleMode = 0 Then
        opSample.Value = True
        opAd.Enabled = False
        opDa.Enabled = False
    Else
        opTime.Value = True
    End If

    If horiScaleAd = 1 Then
        opAd.Value = True
    Else
        opDa.Value = True
    End If

    If samplingConfFlag = 0 Then
        frameScale.Enabled = False
        opSample.Enabled = False
        opTime.Enabled = False
        opAd.Enabled = False
        opDa.Enabled = False
    Else
        If adConfig.fSmplFreq = 0 And daMode.ulExClock = DA_EXCLK_IN Then
```

```
            opTime.Enabled = False
            opAd.Enabled = False
            opDa.Enabled = False
        Else
            If adConfig.fSmplFreq = 0 Then
                opAd.Enabled = False
            Else
                opDa.Enabled = False
            End If
        End If
    End If

    txtMeasureTimes.Text = measureTimes
    txtMeasureInt.Text = measureInt

End Sub

Private Sub opSample_Click()
    If opSample.Value = True Then
        opAd.Enabled = False
        opDa.Enabled = False
    End If


End Sub

Private Sub opTime_Click()
    If opTime.Value = True Then
        opAd.Enabled = True
        opDa.Enabled = True
        If adConfig.fSmplFreq = 0 And daMode.ulExClock = DA_EXCLK_IN Then
            opTime.Enabled = False
            opAd.Enabled = False
            opDa.Enabled = False
        Else
            If adConfig.fSmplFreq = 0 Then
                opAd.Enabled = False
            Else
                opDa.Enabled = False
            End If
        End If
    End If
End Sub

Private Sub RegClear_Click()

    nRet = MsgBox("本当に削除してよろしいですか？", vbDefaultButton2 + vbQuestion + vbYesNo)
    If nRet = 7 Then
        Exit Sub
    End If

    On Error GoTo ErrHandler
    DeleteSetting "ADDAFMS"

    nRet = MsgBox("削除しました。", vbExclamation + vbOKOnly + vbDefaultButton1)
ErrHandler:
    Exit Sub
End Sub

Private Sub txtMeasureTimes_GotFocus()
    txtMeasureTimes.SelStart = 0
    txtMeasureTimes.SelLength = Len(txtMeasureTimes.Text)

End Sub
Private Sub txtMeasureInt_GotFocus()
    txtMeasureInt.SelStart = 0
    txtMeasureInt.SelLength = Len(txtMeasureInt.Text)

End Sub

Private Sub txtMeasureTimes_KeyPress(KeyAscii As Integer)
    If KeyAscii < Asc(" ") Then
        Exit Sub
```

```
    End If
    If (KeyAscii < Asc("0") Or KeyAscii > Asc("9")) Then
        KeyAscii = 0
    End If

End Sub
Private Sub txtMeasureInt_KeyPress(KeyAscii As Integer)
    If KeyAscii < Asc(" ") Then
        Exit Sub
    End If
    If (KeyAscii < Asc("0") Or KeyAscii > Asc("9")) Then
        KeyAscii = 0
    End If

End Sub
```

・OptionForm.frx

```
ADDRESS   00 01 02 03 04 05 06 07  08 09 0A 0B 0C 0D 0E 0F  0123456789ABCDEF
----------------------------------------------------------------------------
00000000  08 00 00 00 6C 74 00 00  00 00 00 00              ....lt......
```

・OpenDevice.frm

```
VERSION 5.00
Begin VB.Form frmOpenDevice
   BorderStyle     =   3  '固定ﾀﾞｲｱﾛｸﾞ
   Caption         =   "デバイスオープン"
   ClientHeight    =   3885
   ClientLeft      =   45
   ClientTop       =   330
   ClientWidth     =   5145
   Icon            =   "OpenDevice.frx":0000
   LinkTopic       =   "Form1"
   MaxButton       =   0   'False
   MinButton       =   0   'False
   ScaleHeight     =   3885
   ScaleWidth      =   5145
   ShowInTaskbar   =   0   'False
   StartUpPosition =   1  'ｵｰﾅｰ ﾌｫｰﾑの中央
   Begin VB.CommandButton cmdClose
      Caption         =   "閉じる"
      Height          =   375
      Left            =   3600
      TabIndex        =   7
      Top             =   3360
      Width           =   1335
   End
   Begin VB.CheckBox chkDaAuto
      Caption         =   "起動時自動オープン"
      Height          =   255
      Left            =   2520
      TabIndex        =   6
      Top             =   2640
      Width           =   2295
   End
   Begin VB.CheckBox chkAdAuto
      Caption         =   "起動時自動オープン"
      Height          =   375
      Left            =   2520
      TabIndex        =   5
      Top             =   1200
      Width           =   2175
   End
   Begin VB.TextBox txtDa
      Alignment       =   2  '中央揃え
      BeginProperty Font
         Name            =   "ＭＳ Ｐゴシック"
         Size            =   20.25
         Charset         =   128
         Weight          =   400
```

```
      Underline       =   0   'False
      Italic          =   0   'False
      Strikethrough   =   0   'False
   EndProperty
   Height          =   540
   Left            =   1800
   MaxLength       =   2
   TabIndex        =   2
   Text            =   "1"
   Top             =   1860
   Width           =   615
End
Begin VB.TextBox txtAd
   Alignment       =   2  '中央揃え
   BeginProperty Font
      Name            =   "ＭＳ Ｐゴシック"
      Size            =   20.25
      Charset         =   128
      Weight          =   400
      Underline       =   0   'False
      Italic          =   0   'False
      Strikethrough   =   0   'False
   EndProperty
   Height          =   540
   Left            =   1800
   MaxLength       =   2
   TabIndex        =   1
   Text            =   "1"
   Top             =   420
   Width           =   615
End
Begin VB.CommandButton cmdDaOpen
   Caption         =   "オープン"
   Height          =   495
   Left            =   3000
   TabIndex        =   4
   Top             =   1920
   Width           =   1455
End
Begin VB.CommandButton cmdAdOpen
   Caption         =   "オープン"
   Height          =   495
   Left            =   3000
   TabIndex        =   3
   Top             =   480
   Width           =   1455
End
Begin VB.Label Label2
   Caption         =   "FBIDA"
   BeginProperty Font
      Name            =   "ＭＳ Ｐゴシック"
      Size            =   20.25
      Charset         =   128
      Weight          =   400
      Underline       =   0   'False
      Italic          =   0   'False
      Strikethrough   =   0   'False
   EndProperty
   Height          =   495
   Left            =   480
   TabIndex        =   8
   Top             =   1920
   Width           =   1335
End
Begin VB.Label Label1
   Caption         =   "FBIAD"
   BeginProperty Font
      Name            =   "ＭＳ Ｐゴシック"
      Size            =   20.25
      Charset         =   128
      Weight          =   400
      Underline       =   0   'False
      Italic          =   0   'False
```

```
         Strikethrough   =   0   'False
      EndProperty
      Height          =   495
      Left            =   480
      TabIndex        =   0
      Top             =   480
      Width           =   1335
   End
End
Attribute VB_Name = "frmOpenDevice"
Attribute VB_GlobalNameSpace = False
Attribute VB_Creatable = False
Attribute VB_PredeclaredId = True
Attribute VB_Exposed = False
Private Sub cmdClose_Click()
    Unload Me
End Sub

Public Sub cmdAdOpen_Click()
    SaveSetting appName, "Open", "AdDevice", txtAd.Text
    Call AdOpenSub
End Sub

Public Sub cmdDaOpen_Click()
    SaveSetting appName, "Open", "DaDevice", txtDa.Text
    Call DaOpenSub
End Sub

Private Sub Form_Load()
    txtAd.Text = GetSetting(appName, "Open", "AdDevice", 1)
    txtDa.Text = GetSetting(appName, "Open", "DaDevice", 1)
    chkAdAuto.Value = GetSetting(appName, "Open", "AdAuto", 0)
    chkDaAuto.Value = GetSetting(appName, "Open", "DaAuto", 0)
End Sub

Private Sub Form_Unload(Cancel As Integer)
    SaveSetting appName, "Open", "AdDevice", txtAd.Text
    SaveSetting appName, "Open", "DaDevice", txtDa.Text
    SaveSetting appName, "Open", "AdAuto", chkAdAuto.Value
    SaveSetting appName, "Open", "DaAuto", chkDaAuto.Value
End Sub
```

・OpenDevice.frx

```
ADDRESS   00 01 02 03 04 05 06 07  08 09 0A 0B 0C 0D 0E 0F  0123456789ABCDEF
-------------------------------------------------------------------------------
00000000  08 00 00 00 6C 74 00 00  00 00 00 00              ....lt......
```

・MakeDaData.frm

```
VERSION 5.00
Begin VB.Form frmMakeDaData
   BorderStyle     =   3  '固定ﾀﾞｲｱﾛｸﾞ
   Caption         =   "出力波形設定"
   ClientHeight    =   6435
   ClientLeft      =   45
   ClientTop       =   330
   ClientWidth     =   9870
   Icon            =   "MakeDaData.frx":0000
   LinkTopic       =   "Form1"
   MaxButton       =   0   'False
   MinButton       =   0   'False
   ScaleHeight     =   6435
   ScaleWidth      =   9870
   ShowInTaskbar   =   0   'False
   StartUpPosition =   1  'ｵｰﾅｰ ﾌｫｰﾑの中央
   Begin VB.ComboBox comboLow
      Height          =   300
      ItemData        =   "MakeDaData.frx":000C
      Left            =   360
      List            =   "MakeDaData.frx":0019
```

```
   Style           =   2  'ﾄﾞﾛｯﾌﾟﾀﾞｳﾝ ﾘｽﾄ
   TabIndex        =   15
   Top             =   5520
   Width           =   1095
End
Begin VB.ComboBox comboHigh
   Height          =   300
   ItemData        =   "MakeDaData.frx":003C
   Left            =   360
   List            =   "MakeDaData.frx":0049
   Style           =   2  'ﾄﾞﾛｯﾌﾟﾀﾞｳﾝ ﾘｽﾄ
   TabIndex        =   14
   Top             =   4440
   Width           =   1095
End
Begin VB.CommandButton Close
   Caption         =   "閉じる"
   Height          =   495
   Left            =   8280
   TabIndex        =   13
   Top             =   5760
   Width           =   1455
End
Begin VB.CommandButton WriteData
   Caption         =   "データ書込"
   Enabled         =   0   'False
   Height          =   495
   Left            =   8280
   TabIndex        =   12
   Top             =   4920
   Width           =   1455
End
Begin VB.CommandButton Preview
   Caption         =   "プレビュ"
   Height          =   495
   Left            =   8280
   TabIndex        =   11
   Top             =   4200
   Width           =   1455
End
Begin VB.PictureBox Mie2
   Appearance      =   0  'ﾌﾗｯﾄ
   AutoRedraw      =   -1  'True
   BackColor       =   &H00000000&
   FillColor       =   &H0000FF00&
   ForeColor       =   &H00C0C000&
   Height          =   3375
   Left            =   960
   ScaleHeight     =   3345
   ScaleWidth      =   8625
   TabIndex        =   0
   TabStop         =   0   'False
   Top             =   240
   Width           =   8655
End
Begin VB.TextBox Text5
   Alignment       =   1  '右揃え
   Height          =   270
   Left            =   6240
   MaxLength       =   6
   TabIndex        =   10
   Top             =   5760
   Width           =   1455
End
Begin VB.TextBox Text4
   Alignment       =   1  '右揃え
   Height          =   270
   Left            =   5760
   MaxLength       =   6
   TabIndex        =   9
   Top             =   4800
   Width           =   1455
End
```

```
Begin VB.TextBox Text3
   Alignment       =   1  '右揃え
   Height          =   270
   Left            =   3960
   MaxLength       =   6
   TabIndex        =   8
   Top             =   4200
   Width           =   1455
End
Begin VB.TextBox Text2
   Alignment       =   1  '右揃え
   Height          =   270
   Left            =   2160
   MaxLength       =   6
   TabIndex        =   7
   Top             =   4800
   Width           =   1455
End
Begin VB.TextBox Text1
   Alignment       =   1  '右揃え
   Height          =   270
   Left            =   1680
   MaxLength       =   6
   TabIndex        =   6
   Top             =   5760
   Width           =   1455
End
Begin VB.Line Line7
   BorderStyle     =   3  '点線
   X1              =   1680
   X2              =   1320
   Y1              =   5640
   Y2              =   5640
End
Begin VB.Line Line6
   BorderStyle     =   3  '点線
   X1              =   1320
   X2              =   3960
   Y1              =   4560
   Y2              =   4560
End
Begin VB.Label MesureCenter
   Alignment       =   1  '右揃え
   Caption         =   "0V"
   Height          =   255
   Left            =   75
   TabIndex        =   5
   Top             =   1800
   Width           =   855
End
Begin VB.Label MesureDown
   Alignment       =   1  '右揃え
   Caption         =   "-10V"
   Height          =   255
   Left            =   75
   TabIndex        =   4
   Top             =   3480
   Width           =   855
End
Begin VB.Label MesureUp
   Alignment       =   1  '右揃え
   Caption         =   "10V"
   Height          =   255
   Left            =   75
   TabIndex        =   3
   Top             =   240
   Width           =   855
End
Begin VB.Label SampleMax
   Alignment       =   1  '右揃え
   Caption         =   "1024"
   Height          =   255
   Left            =   8640
```

```
      TabIndex        =   2
      Top             =   3720
      Width           =   1095
   End
   Begin VB.Label Label1
      Caption         =   "1"
      Height          =   255
      Left            =   960
      TabIndex        =   1
      Top             =   3720
      Width           =   135
   End
   Begin VB.Line Line5
      BorderWidth     =   2
      X1              =   6240
      X2              =   7680
      Y1              =   5640
      Y2              =   5640
   End
   Begin VB.Line Line4
      BorderWidth     =   2
      X1              =   5280
      X2              =   6240
      Y1              =   4560
      Y2              =   5640
   End
   Begin VB.Line Line3
      BorderWidth     =   2
      X1              =   4080
      X2              =   5280
      Y1              =   4560
      Y2              =   4560
   End
   Begin VB.Line Line2
      BorderWidth     =   2
      X1              =   4080
      X2              =   3120
      Y1              =   4560
      Y2              =   5640
   End
   Begin VB.Line Line1
      BorderWidth     =   2
      X1              =   1680
      X2              =   3120
      Y1              =   5640
      Y2              =   5640
   End
End
Attribute VB_Name = "frmMakeDaData"
Attribute VB_GlobalNameSpace = False
Attribute VB_Creatable = False
Attribute VB_PredeclaredId = True
Attribute VB_Exposed = False


Private Sub Close_Click()

    SaveSetting appName, "DaData", "1", Text1.Text
    SaveSetting appName, "DaData", "2", Text2.Text
    SaveSetting appName, "DaData", "3", Text3.Text
    SaveSetting appName, "DaData", "4", Text4.Text
    SaveSetting appName, "DaData", "5", Text5.Text
    SaveSetting appName, "DaData", "comboHigh", comboHigh.ListIndex
    SaveSetting appName, "DaData", "comboLow", comboLow.ListIndex

    Unload Me
End Sub

Private Sub Form_Load()
    SampleMax.Caption = LTrim(Str(adConfig.ulSmplNum))

    Select Case daMode.ModeChReq(0).ulRange
        Case DA_RANGE_UNIPOLAR
```

```
            MesureDown.Caption = "0V"
            MesureUp.Caption = LTrim(Str(daMode.ModeChReq(0).fVolt)) & "V"
            MesureCenter.Caption = LTrim(Str(daMode.ModeChReq(0).fVolt / 2)) & "V"
        Case DA_RANGE_BIPOLAR
            MesureCenter.Caption = "0V"
            MesureUp.Caption = LTrim(Str(daMode.ModeChReq(0).fVolt)) & "V"
            MesureDown.Caption = "-" & LTrim(Str(daMode.ModeChReq(0).fVolt)) & "V"
    End Select

    Mie2.Line (0, (Mie2.ScaleHeight - 10) / 2)-(Mie2.ScaleWidth, (Mie2.ScaleHeight - 10) / 2), RGB(255, 255,
255)
    Mie2.Line (Mie2.ScaleWidth / 4, 0)-(Mie2.ScaleWidth / 4, (Mie2.ScaleHeight - 10)), RGB(255, 255, 255)
    Mie2.Line (Mie2.ScaleWidth / 4 * 3, 0)-(Mie2.ScaleWidth / 4 * 3, (Mie2.ScaleHeight - 10)), RGB(255, 255,
255)
    Mie2.Line (Mie2.ScaleWidth / 2, 0)-(Mie2.ScaleWidth / 2, (Mie2.ScaleHeight - 10)), RGB(255, 255, 255)

    Text1.Text = GetSetting(appName, "DaData", "1")
    Text2.Text = GetSetting(appName, "DaData", "2")
    Text3.Text = GetSetting(appName, "DaData", "3")
    Text4.Text = GetSetting(appName, "DaData", "4")
    Text5.Text = GetSetting(appName, "DaData", "5")
    comboHigh.ListIndex = GetSetting(appName, "DaData", "comboHigh", 1)
    comboLow.ListIndex = GetSetting(appName, "DaData", "comboLow", 0)

End Sub

Private Sub Preview_Click()
    Dim nRet As Integer
    Dim dataA As Long
    Dim dataB As Long
    Dim dataC As Long
    Dim dataD As Long
    Dim dataE As Long
    Dim i   As Long
    Dim num As Long
    Dim temp As Single
    Dim temp2 As Long
    Dim temp3 As Long
    Dim upStep As Single
    Dim downStep As Single
    Dim highPosi As Integer
    Dim lowPosi As Integer

    Dim volt0 As Single
    Dim nowX As Single
    Dim nowY As Single
    Dim nextY As Single
    Dim stepX As Single
    Dim stepY As Single

    Dim points(524288) As POINTAPI

    WriteData.Enabled = False
    Preview.Enabled = False

    '設定値(comboHigh,Low)のチェック
    If daMode.ModeChReq(0).ulRange = DA_RANGE_UNIPOLAR Then
        If comboHigh.ListIndex = 2 Or comboLow.ListIndex = 2 Then
            Beep
            nRet = MsgBox("設定値に誤りがあります", vbExclamation + vbOKOnly)
            WriteData.Enabled = False
            Preview.Enabled = True
            Exit Sub
        End If
    End If
    If comboHigh.ListIndex = comboLow.ListIndex Then
        Beep
        nRet = MsgBox("設定値に誤りがあります", vbExclamation + vbOKOnly)
        WriteData.Enabled = False
        Preview.Enabled = True
        Exit Sub
    End If
```

```
If daMode.ModeChReq(0).ulRange = DA_RANGE_UNIPOLAR Then
    Erase daDataTemp
Else
    For i = 0 To 524288
        daDataTemp(i) = 2048
    Next i
End If

'各テキストボックスの値を変数へ
dataA = Val(Text1.Text)
dataB = Val(Text2.Text)
dataC = Val(Text3.Text)
dataD = Val(Text4.Text)
dataE = Val(Text5.Text)

'データチェック
If dataB = 0 Or dataD = 0 Then
    WriteData.Enabled = False
    Preview.Enabled = True
    Beep
    Exit Sub
End If

'データチェック
If dataA + dataB + dataC + dataD + dataE > 524288 Then
    WriteData.Enabled = False
    Preview.Enabled = True
    Beep
    Exit Sub
End If

'highPosi,lowPosi 設定
Select Case comboHigh.ListIndex
    Case 0
        If daMode.ModeChReq(0).ulRange = DA_RANGE_UNIPOLAR Then
            highPosi = 0
        Else
            highPosi = 2048
        End If
    Case 1
        highPosi = 4095
    Case 2
        highPosi = 0
End Select

Select Case comboLow.ListIndex
    Case 0
        If daMode.ModeChReq(0).ulRange = DA_RANGE_UNIPOLAR Then
            lowPosi = 0
        Else
            lowPosi = 2048
        End If
    Case 1
        lowPosi = 4095
    Case 2
        lowPosi = 0
End Select




Select Case daMode.ModeChReq(0).ulRange
    Case DA_RANGE_UNIPOLAR
        upStep = (highPosi - lowPosi) / dataB
        downStep = (highPosi - lowPosi) / dataD

        num = 0
        temp = lowPosi

        For i = 1 To dataA
            daDataTemp(num) = lowPosi
```

```
            num = num + 1
        Next i

        For i = 1 To dataB
            daDataTemp(num) = temp + upStep
            If daDataTemp(num) > 4095 Then
                daDataTemp(num) = 4095
            End If
            If daDataTemp(num) < 0 Then
                daDataTemp(num) = 0
            End If
            temp = temp + upStep
            num = num + 1
        Next i

        For i = 1 To dataC
            daDataTemp(num) = highPosi
            num = num + 1
        Next i

        temp = highPosi

        For i = 1 To dataD
            daDataTemp(num) = temp - downStep
            If daDataTemp(num) < 0 Then
                daDataTemp(num) = 0
            End If
            If daDataTemp(num) > 4095 Then
                daDataTemp(num) = 4095
            End If
            temp = temp - downStep
            num = num + 1
        Next i

        For i = 1 To dataE
            daDataTemp(num) = lowPosi
            num = num + 1
        Next i

    Case DA_RANGE_BIPOLAR
        upStep = (highPosi - lowPosi) / dataB
        downStep = (highPosi - lowPosi) / dataD

        num = 0

        For i = 1 To dataA
            daDataTemp(num) = lowPosi
            num = num + 1
        Next i

        temp = lowPosi

        For i = 1 To dataB
            daDataTemp(num) = temp + upStep
            If upStep > 0 Then
                If daDataTemp(num) > highPosi Then
                    daDataTemp(num) = highPosi
                End If
            Else
                If daDataTemp(num) < highPosi Then
                    daDataTemp(num) = highPosi
                End If
            End If
            temp = temp + upStep
            num = num + 1
        Next i

        For i = 1 To dataC
            daDataTemp(num) = highPosi
            num = num + 1
        Next i

        temp = highPosi
```

```
            For i = 1 To dataD
                daDataTemp(num) = temp - downStep
                If downStep > 0 Then
                    If daDataTemp(num) < lowPosi Then
                        daDataTemp(num) = lowPosi
                    End If
                Else
                    If daDataTemp(num) > lowPosi Then
                        daDataTemp(num) = lowPosi
                    End If
                End If
                temp = temp - downStep
                num = num + 1
            Next i

            For i = 1 To dataE
                daDataTemp(num) = lowPosi
                num = num + 1
            Next i
        End Select


    'プレビュ描画
    Mie2.Cls
    Mie2.Line (0, (Mie2.ScaleHeight - 10) / 2)-(Mie2.ScaleWidth, (Mie2.ScaleHeight - 10) / 2), RGB(255, 255,
255)
    Mie2.Line (Mie2.ScaleWidth / 4, 0)-(Mie2.ScaleWidth / 4, (Mie2.ScaleHeight - 10)), RGB(255, 255, 255)
    Mie2.Line (Mie2.ScaleWidth / 4 * 3, 0)-(Mie2.ScaleWidth / 4 * 3, (Mie2.ScaleHeight - 10)), RGB(255, 255,
255)
    Mie2.Line (Mie2.ScaleWidth / 2, 0)-(Mie2.ScaleWidth / 2, (Mie2.ScaleHeight - 10)), RGB(255, 255, 255)

    volt0 = Mie2.ScaleHeight - 10

    nowX = 0
    nowY = volt0
    stepX = Mie2.ScaleWidth / (adConfig.ulSmplNum - 1)
    stepY = volt0 / 4095

    For i = 0 To adConfig.ulSmplNum - 1
        points(i).Y = volt0 - (daDataTemp(i) * stepY)
        points(i).X = nowX
        nowX = nowX + stepX
    Next i
    If adConfig.ulSmplNum < 16384 Then
        SetFormToTwips (Mie2.hDC)
        j% = Polyline(Mie2.hDC, points(0), adConfig.ulSmplNum)
        ResetFormScale (Mie2.hDC)
    Else
        temp3 = adConfig.ulSmplNum Mod 16383
        temp2 = (adConfig.ulSmplNum - temp3) / 16383

        For i = 1 To temp2
            SetFormToTwips (Mie2.hDC)
            j% = Polyline(Mie2.hDC, points((i - 1) * 16383), 16383)
            ResetFormScale (Mie2.hDC)
        Next i
        SetFormToTwips (Mie2.hDC)
        j% = Polyline(Mie2.hDC, points(16383 * temp2 - 1), temp3 + 1)
        ResetFormScale (Mie2.hDC)
    End If

    WriteData.Enabled = True
    Preview.Enabled = True


End Sub

Private Sub Text1_GotFocus()
    Text1.SelStart = 0
    Text1.SelLength = Len(Text1.Text)
End Sub
```

```
Private Sub Text1_KeyPress(KeyAscii As Integer)
    If KeyAscii < Asc(" ") Then
        Exit Sub
    End If
    If KeyAscii < Asc("0") Or KeyAscii > Asc("9") Then
        KeyAscii = 0
    End If
End Sub

Private Sub Text2_GotFocus()
    Text2.SelStart = 0
    Text2.SelLength = Len(Text2.Text)
End Sub

Private Sub Text2_KeyPress(KeyAscii As Integer)
    If KeyAscii < Asc(" ") Then
        Exit Sub
    End If
    If KeyAscii < Asc("0") Or KeyAscii > Asc("9") Then
        KeyAscii = 0
    End If
End Sub

Private Sub Text3_GotFocus()
    Text3.SelStart = 0
    Text3.SelLength = Len(Text3.Text)
End Sub

Private Sub Text3_KeyPress(KeyAscii As Integer)
    If KeyAscii < Asc(" ") Then
        Exit Sub
    End If
    If KeyAscii < Asc("0") Or KeyAscii > Asc("9") Then
        KeyAscii = 0
    End If
End Sub

Private Sub Text4_GotFocus()
    Text4.SelStart = 0
    Text4.SelLength = Len(Text4.Text)
End Sub

Private Sub Text4_KeyPress(KeyAscii As Integer)
    If KeyAscii < Asc(" ") Then
        Exit Sub
    End If
    If KeyAscii < Asc("0") Or KeyAscii > Asc("9") Then
        KeyAscii = 0
    End If
End Sub

Private Sub Text5_GotFocus()
    Text5.SelStart = 0
    Text5.SelLength = Len(Text5.Text)
End Sub

Private Sub Text5_KeyPress(KeyAscii As Integer)
    If KeyAscii < Asc(" ") Then
        Exit Sub
    End If
    If KeyAscii < Asc("0") Or KeyAscii > Asc("9") Then
        KeyAscii = 0
    End If
End Sub

Private Sub WriteData_Click()
    Dim nRet As Long
    Dim i As Long
    WriteData.Enabled = False
    For i = 0 To 524288
        daData(i) = daDataTemp(i)
    Next i
    nRet = DaSetSamplingData(daDeviceHandle, daData(0), adConfig.ulSmplNum)
```

```
    If nRet <> DA_ERROR_SUCCESS Then
        Erase daData
        Call DaDispErrMessage(nRet)
        WriteData.Enabled = True
        Exit Sub
    End If
    WriteData.Enabled = True
    frmMain.InfoBox.SelStart = Len(frmMain.InfoBox.Text) + 1
    frmMain.InfoBox.SelText = vbCrLf & "D/A - サンプリングデータセットＯＫ"

    daMakeDataFlag = 1

End Sub
```

・MakeDaData.frx

```
ADDRESS   00 01 02 03 04 05 06 07  08 09 0A 0B 0C 0D 0E 0F  0123456789ABCDEF
-------------------------------------------------------------------------------
00000000  08 00 00 00 6C 74 00 00  00 00 00 00 03 00 03 00  ....lt..........
00000010  01 00 30 01 00 30 01 00  30 03 00 09 00 08 00 30  ..0..0..0......0
00000020  20 28 5A 65 72 6F 29 08  00 2B 20 28 50 6C 75 73   (Zero)..+ (Plus
00000030  29 09 00 2D 20 28 4D 69  6E 75 73 29 03 00 03 00  )..- (Minus)....
00000040  01 00 30 01 00 30 01 00  30 03 00 09 00 08 00 30  ..0..0..0......0
00000050  20 28 5A 65 72 6F 29 08  00 2B 20 28 50 6C 75 73   (Zero)..+ (Plus
00000060  29 09 00 2D 20 28 4D 69  6E 75 73 29              )..- (Minus)
```

・Main.frm

```
VERSION 5.00
Object = "{F9043C88-F6F2-101A-A3C9-08002B2F49FB}#1.2#0"; "COMDLG32.OCX"
Begin VB.Form frmMain
   Caption         =   "A/D D/A 高速計測システム"
   ClientHeight    =   6600
   ClientLeft      =   165
   ClientTop       =   735
   ClientWidth     =   10275
   Icon            =   "Main.frx":0000
   LinkTopic       =   "Form1"
   ScaleHeight     =   6600
   ScaleWidth      =   10275
   StartUpPosition =   3  'Windows の既定値
   Begin VB.CommandButton OneTimeButton
      Caption         =   "1 回だけ"
      BeginProperty Font
         Name            =   "ＭＳ Ｐゴシック"
         Size            =   8.25
         Charset         =   128
         Weight          =   400
         Underline       =   0   'False
         Italic          =   0   'False
         Strikethrough   =   0   'False
      EndProperty
      Height          =   375
      Left            =   6360
      TabIndex        =   31
      Top             =   4680
      Width           =   735
   End
   Begin VB.Timer timerInterval
      Enabled         =   0   'False
      Interval        =   1000
      Left            =   120
      Top             =   3360
   End
   Begin VB.Frame DAView
      Caption         =   "D/A View"
      Height          =   495
      Left            =   4440
      TabIndex        =   27
      Top             =   4560
      Width           =   1815
```

```
   Begin VB.OptionButton opReal
      Caption         =   "Real"
      Height          =   180
      Left            =   960
      TabIndex        =   29
      Top             =   240
      Width           =   735
   End
   Begin VB.OptionButton opImg
      Caption         =   "Image"
      Height          =   180
      Left            =   120
      TabIndex        =   28
      Top             =   240
      Value           =   -1  'True
      Width           =   855
   End
End
Begin MSComDlg.CommonDialog CommonDialog1
   Left            =   120
   Top             =   2760
   _ExtentX        =   847
   _ExtentY        =   847
   _Version        =   393216
   CancelError     =   -1  'True
   DefaultExt      =   ".csv"
   Filter          =   "csv ファイル(*.csv)|*.csv|すべてのファイル(*.*)|*.*"
   FilterIndex     =   1
   Flags           =   34830
End
Begin VB.CommandButton SaveButton
   Caption         =   "セーブ"
   Height          =   375
   Left            =   9000
   TabIndex        =   24
   Top             =   4680
   Width           =   1215
End
Begin VB.Frame DrawOption
   Caption         =   "描画モード"
   Height          =   495
   Left            =   1920
   TabIndex        =   22
   Top             =   4560
   Width           =   2415
   Begin VB.TextBox DrawOptionLineWidth
      Height          =   270
      Left            =   760
      MaxLength       =   1
      TabIndex        =   30
      Text            =   "1"
      Top             =   160
      Width           =   375
   End
   Begin VB.CheckBox DrawModeDot
      Caption         =   "Dot"
      Height          =   255
      Left            =   1320
      TabIndex        =   26
      Top             =   200
      Value           =   1  'ﾁｪｯｸ
      Width           =   615
   End
   Begin VB.CheckBox DrawModeLine
      Caption         =   "Line"
      Height          =   255
      Left            =   120
      TabIndex        =   25
      Top             =   200
      Value           =   1  'ﾁｪｯｸ
      Width           =   615
   End
   Begin VB.TextBox DrawOptionDotWidth
```

```
      Height          =   270
      Left            =   1920
      MaxLength       =   1
      TabIndex        =   23
      Text            =   "5"
      Top             =   160
      Width           =   375
   End
End
Begin VB.PictureBox ViewBoxVV
   AutoRedraw      =   -1  'True
   BackColor       =   &H00000000&
   Height          =   4215
   Left            =   3000
   ScaleHeight     =   4155
   ScaleWidth      =   4155
   TabIndex        =   13
   Top             =   0
   Visible         =   0   'False
   Width           =   4215
End
Begin VB.CommandButton GraphSwitch
   Caption         =   "グラフ切替"
   Height          =   375
   Left            =   120
   TabIndex        =   12
   Top             =   4680
   Width           =   1095
End
Begin VB.CommandButton Review
   Appearance      =   0  'ﾌﾗｯﾄ
   Caption         =   "再描画"
   BeginProperty Font
      Name            =   "ＭＳ Ｐゴシック"
      Size            =   8.25
      Charset         =   128
      Weight          =   400
      Underline       =   0   'False
      Italic          =   0   'False
      Strikethrough   =   0   'False
   EndProperty
   Height          =   375
   Left            =   1200
   TabIndex        =   11
   TabStop         =   0   'False
   Top             =   4680
   Width           =   675
End
Begin VB.CommandButton InfoBoxClear
   Appearance      =   0  'ﾌﾗｯﾄ
   Caption         =   "クリア"
   BeginProperty Font
      Name            =   "ＭＳ Ｐゴシック"
      Size            =   5.25
      Charset         =   128
      Weight          =   400
      Underline       =   0   'False
      Italic          =   0   'False
      Strikethrough   =   0   'False
   EndProperty
   Height          =   130
   Left            =   120
   TabIndex        =   10
   TabStop         =   0   'False
   Top             =   6490
   Width           =   615
End
Begin VB.CommandButton StopButton
   Caption         =   "ストップ"
   BeginProperty Font
      Name            =   "ＭＳ Ｐゴシック"
      Size            =   5.25
      Charset         =   128
```

```
      Weight          =   400
      Underline       =   0   'False
      Italic          =   0   'False
      Strikethrough   =   0   'False
   EndProperty
   Height          =   375
   Left            =   8400
   TabIndex        =   9
   Top             =   4680
   Width           =   495
End
Begin VB.CommandButton StartButton
   Caption         =   "スタート"
   Default         =   -1  'True
   Height          =   375
   Left            =   7080
   TabIndex        =   2
   Top             =   4680
   Width           =   1335
End
Begin VB.TextBox InfoBox
   BackColor       =   &H00FFFFFF&
   CausesValidation=   0   'False
   BeginProperty Font
      Name            =   "ＭＳ ゴシック"
      Size            =   9
      Charset         =   128
      Weight          =   400
      Underline       =   0   'False
      Italic          =   0   'False
      Strikethrough   =   0   'False
   EndProperty
   ForeColor       =   &H00000000&
   Height          =   1335
   Left            =   120
   Locked          =   -1  'True
   MultiLine       =   -1  'True
   ScrollBars      =   2  '垂直
   TabIndex        =   0
   TabStop         =   0   'False
   Text            =   "Main.frx":0442
   Top             =   5160
   Width           =   10095
End
Begin VB.PictureBox ViewBox
   AutoRedraw      =   -1  'True
   BackColor       =   &H00000000&
   FillColor       =   &H0000FF00&
   ForeColor       =   &H00C0C000&
   Height          =   4215
   Left            =   960
   ScaleHeight     =   4155
   ScaleWidth      =   9195
   TabIndex        =   1
   Top             =   0
   Width           =   9255
End
Begin VB.Label LabelAdMax
   Alignment       =   1  '右揃え
   Caption         =   "---"
   Height          =   255
   Left            =   2160
   TabIndex        =   21
   Top             =   0
   Visible         =   0   'False
   Width           =   735
End
Begin VB.Label LabelAdMid
   Alignment       =   1  '右揃え
   Caption         =   "---"
   Height          =   255
   Left            =   2160
   TabIndex        =   20
```

```
   Top             =   1920
   Visible         =   0   'False
   Width           =   735
End
Begin VB.Label LabelAdMin
   Alignment       =   1  '右揃え
   Caption         =   "---"
   Height          =   255
   Left            =   2160
   TabIndex        =   19
   Top             =   4080
   Visible         =   0   'False
   Width           =   735
End
Begin VB.Label LabelDaMin
   Caption         =   "---"
   Height          =   255
   Left            =   3000
   TabIndex        =   18
   Top             =   4200
   Visible         =   0   'False
   Width           =   735
End
Begin VB.Label LabelDaMid
   Alignment       =   2  '中央揃え
   Caption         =   "---"
   Height          =   255
   Left            =   4920
   TabIndex        =   17
   Top             =   4200
   Visible         =   0   'False
   Width           =   735
End
Begin VB.Label LabelDaMax
   Alignment       =   1  '右揃え
   Caption         =   "---"
   Height          =   255
   Left            =   6480
   TabIndex        =   16
   Top             =   4200
   Visible         =   0   'False
   Width           =   735
End
Begin VB.Label LabelAD
   Caption         =   "A/D[V]"
   Height          =   255
   Left            =   1560
   TabIndex        =   15
   Top             =   0
   Visible         =   0   'False
   Width           =   615
End
Begin VB.Label LabelDA
   Caption         =   "D/A[V]"
   Height          =   255
   Left            =   7680
   TabIndex        =   14
   Top             =   4080
   Visible         =   0   'False
   Width           =   615
End
Begin VB.Label MesureMax
   Alignment       =   1  '右揃え
   Caption         =   "---V"
   Height          =   255
   Left            =   120
   TabIndex        =   8
   Top             =   0
   Width           =   735
End
Begin VB.Label MesureCenter
   Alignment       =   1  '右揃え
   Caption         =   "---V"
```

```
      Height          =   255
      Left            =   120
      TabIndex        =   7
      Top             =   2040
      Width           =   735
   End
   Begin VB.Label MesureMin
      Alignment       =   1  '右揃え
      Caption         =   "---V"
      Height          =   255
      Left            =   120
      TabIndex        =   6
      Top             =   4080
      Width           =   735
   End
   Begin VB.Label SampleCenter
      Alignment       =   2  '中央揃え
      Caption         =   "---"
      Height          =   255
      Left            =   4920
      TabIndex        =   5
      Top             =   4200
      Width           =   1335
   End
   Begin VB.Label SampleMax
      Alignment       =   1  '右揃え
      Caption         =   "---"
      Height          =   255
      Left            =   8880
      TabIndex        =   4
      Top             =   4200
      Width           =   1335
   End
   Begin VB.Label SampleMin
      Caption         =   "---"
      Height          =   375
      Left            =   960
      TabIndex        =   3
      Top             =   4200
      Width           =   1575
   End
   Begin VB.Menu Device
      Caption         =   "デバイス"
      Begin VB.Menu Open
         Caption         =   "オープン"
         Shortcut        =   ^O
      End
      Begin VB.Menu Close
         Caption         =   "クローズ"
         Shortcut        =   ^C
      End
   End
   Begin VB.Menu Sampling
      Caption         =   "サンプリング条件設定"
   End
   Begin VB.Menu Output
      Caption         =   "出力波形設定"
   End
   Begin VB.Menu Option
      Caption         =   "オプション"
   End
   Begin VB.Menu BoardInfo
      Caption         =   "ボード情報"
   End
   Begin VB.Menu Version
      Caption         =   "バージョン情報"
      NegotiatePosition=   3  '右
   End
End
Attribute VB_Name = "frmMain"
Attribute VB_GlobalNameSpace = False
Attribute VB_Creatable = False
Attribute VB_PredeclaredId = True
```

```
Attribute VB_Exposed = False

Private Sub BoardInfo_Click()
        If adOpenFlag = 1 And daOpenFlag = 1 Then
        frmInfomation.Show 1
    Else
        Beep
        frmMain.InfoBox.SelStart = Len(frmMain.InfoBox.Text) + 1
        frmMain.InfoBox.SelText = vbCrLf & "ボードがオープンされていません"

    End If
End Sub

Private Sub Close_Click()
    frmCloseDevice.Show 1
End Sub



Private Sub DrawModeDot_Click()
    If DrawModeDot.Value = 1 Then
        DrawOptionDotWidth.Enabled = True
    Else
        If DrawModeLine.Value = 0 Then
            DrawModeDot.Value = 1
            DrawOptionDotWidth.Enabled = True
        Else
            DrawOptionDotWidth.Enabled = False
        End If
    End If
    If samplingConfFlag = 1 Then
        Call DispWave(1)
    End If
End Sub

Private Sub DrawModeLine_Click()
    If DrawModeLine.Value = 1 Then
        DrawOptionLineWidth.Enabled = True
    Else
        If DrawModeDot.Value = 0 Then
            DrawModeLine.Value = 1
            DrawOptionLineWidth.Enabled = True
        Else
            DrawOptionLineWidth.Enabled = False
        End If
    End If
    If samplingConfFlag = 1 Then
        Call DispWave(1)
    End If
End Sub

Private Sub DrawOptionDotWidth_Change()
    If samplingConfFlag = 1 And Len(DrawOptionDotWidth.Text) <> 0 Then
        Call DispWave(1)
    End If
End Sub

Private Sub DrawOptionDotWidth_KeyPress(KeyAscii As Integer)
    If KeyAscii < Asc(" ") Then
        Exit Sub
    End If
    If (KeyAscii < Asc("1") Or KeyAscii > Asc("9")) Then
        KeyAscii = 0
    End If
End Sub

Private Sub DrawOptionDotWidth_LostFocus()
    If Len(DrawOptionDotWidth.Text) = 0 Then
        DrawOptionDotWidth.Text = "5"
    End If
End Sub

Private Sub DrawOptionLineWidth_Change()
```

```
    If samplingConfFlag = 1 And Len(DrawOptionLineWidth.Text) <> 0 Then
        Call DispWave(1)
    End If
End Sub

Private Sub DrawOptionLineWidth_KeyPress(KeyAscii As Integer)
    If KeyAscii < Asc(" ") Then
        Exit Sub
    End If
    If (KeyAscii < Asc("1") Or KeyAscii > Asc("9")) Then
        KeyAscii = 0
    End If
End Sub

Private Sub DrawOptionLineWidth_LostFocus()
    If Len(DrawOptionLineWidth.Text) = 0 Then
        DrawOptionLineWidth.Text = "1"
    End If
End Sub

Private Sub GraphSwitch_Click()
    If ViewBox.Visible = True Then
        ViewBox.Visible = False
        MesureMax.Visible = False
        MesureCenter.Visible = False
        MesureMin.Visible = False
        SampleMin.Visible = False
        SampleCenter.Visible = False
        SampleMax.Visible = False

        ViewBoxVV.Visible = True
        LabelAD.Visible = True
        LabelDA.Visible = True
        LabelDaMin.Visible = True
        LabelDaMid.Visible = True
        LabelDaMax.Visible = True
        LabelAdMin.Visible = True
        LabelAdMid.Visible = True
        LabelAdMax.Visible = True

    Else
        ViewBox.Visible = True
        MesureMax.Visible = True
        MesureCenter.Visible = True
        MesureMin.Visible = True
        SampleMin.Visible = True
        SampleCenter.Visible = True
        SampleMax.Visible = True

        ViewBoxVV.Visible = False
        LabelAD.Visible = False
        LabelDA.Visible = False
        LabelDaMin.Visible = False
        LabelDaMid.Visible = False
        LabelDaMax.Visible = False
        LabelAdMin.Visible = False
        LabelAdMid.Visible = False
        LabelAdMax.Visible = False

    End If
    If samplingConfFlag = 1 Then
        Call DispWave(1)
    End If

End Sub

Private Sub InfoBox_Change()
    If LenB(InfoBox.Text) > 10000 Then
        InfoBox.Text = ""
    End If
End Sub

Private Sub OneTimeButton_Click()
```

```
    Dim temp As Integer

    temp = measureTimes
    measureTimes = 1

    Call StartButton_Click

    measureTimes = temp

End Sub

Private Sub opImg_Click()
    If samplingConfFlag = 1 Then
        Call DispWave(1)
    End If
End Sub

Private Sub opReal_Click()
    If samplingConfFlag = 1 Then
        Call DispWave(1)
    End If
End Sub

Private Sub Option_Click()
    frmOption.Show 1
End Sub

Private Sub Review_Click()
    If samplingConfFlag = 1 Then
        Call DispWave(1)
    End If
End Sub

Private Sub SaveButton_Click()
    Dim i As Long
    On Error GoTo ErrHandler
    CommonDialog1.FileName = GetSetting(appName, "Dialog", "Dir")
    CommonDialog1.ShowSave
    SaveSetting appName, "Dialog", "Dir", CommonDialog1.FileName
    Open CommonDialog1.FileName For Output As #1
    Print #1, "D/A Range Max," & daVmax
    Print #1, "D/A Range Min," & daVmin
    Print #1, "A/D Range Max," & adVmax
    Print #1, "A/D Range Min," & adVmin
    Print #1, "Sampling Points," & adConfig.ulSmplNum
    Print #1, "D/A[V],A/D[V],D/A Raw,A/D Raw"
    If frmMain.opImg = True Then
        For i = 0 To adConfig.ulSmplNum - 1
            Print #1, ((daVmax - daVmin) / 4096) * daData(i) + daVmin & "," & ((adVmax - adVmin) / 4096) * adData(i
* 2) + adVmin & _
            "," & daData(i) & "," & adData(i * 2)
        Next i
    Else
        For i = 0 To adConfig.ulSmplNum - 1
            Print #1, ((daVmax - daVmin) / 4096) * adData(i * 2 + 1) + daVmin & "," & ((adVmax - adVmin) / 4096)
* adData(i * 2) + adVmin & _
            "," & adData(i * 2 + 1) & ","; adData(i * 2)
        Next i
    End If
    Close #1

ErrHandler:
    ' キャンセルをクリック
    Exit Sub

End Sub

Private Sub StopButton_Click()
    nRet = AdStopSampling(adDeviceHandle)
    If nRet <> AD_ERROR_SUCCESS Then
        Call AdDispErrMessage(nRet)
    End If
```

```
    DaStopSampling (daDeviceHandle)
    If nRet <> DA_ERROR_SUCCESS Then
        Call DaDispErrMessage(nRet)
    End If

    stopFlag = 1

End Sub

Private Sub Form_Load()
    '２重起動防止
    If App.PrevInstance Then
        szCaption = Me.Caption
        Me.Caption = "dummy"
        App.Title = "dummy"
        AppActivate szCaption
        Unload Me
        End
    End If

    frmMain.Top = Val(GetSetting(appName, "Window", "Top"))
    frmMain.Left = Val(GetSetting(appName, "Window", "Left"))
    frmMain.Height = Val(GetSetting(appName, "Window", "Height"))
    frmMain.Width = Val(GetSetting(appName, "Window", "Width"))
    frmMain.WindowState = Val(GetSetting(appName, "Window", "State"))

    DrawModeLine.Value = Val(GetSetting(appName, "Option", "Line", 1))
    DrawModeDot.Value = Val(GetSetting(appName, "Option", "Dot", 1))
    DrawOptionLineWidth.Text = GetSetting(appName, "Option", "LineValue", 5)
    DrawOptionDotWidth.Text = GetSetting(appName, "Option", "DotValue", 5)
    If GetSetting(appName, "Option", "ViewMode", "True") = True Then
        opImg.Value = True
    Else
        opReal.Value = True
    End If

    horiScaleMode = Val(GetSetting(appName, "Option", "HoriScaleMode"))
    horiScaleAd = Val(GetSetting(appName, "Option", "HoriScaleAd"))

    Call MoveControls

    If Val(GetSetting(appName, "Open", "AdAuto", 0)) = 1 Then
        Call AdOpenSub
    End If

    If Val(GetSetting(appName, "Open", "DaAuto", 0)) = 1 Then
        Call DaOpenSub
    End If

    measureTimes = GetSetting(appName, "Option", "MeasureTimes", 1)
    measureInt = GetSetting(appName, "Option", "MeasureInt", 0)

End Sub

Private Sub Form_QueryUnload(Cancel As Integer, UnloadMode As Integer)
    Dim nRet As Integer

    nRet = MsgBox("終了してよろしいですか？", vbOKCancel + vbDefaultButton2 + vbExclamation)
    If nRet = 2 Then
        Cancel = 1
        Exit Sub
    End If

    If adOpenFlag = 1 Then
        AdClose (adDeviceHandle)
    End If
    If daOpenFlag = 1 Then
        DaClose (daDeviceHandle)
    End If
End Sub

Private Sub Form_Resize()
    If frmMain.WindowState <> 1 Then
```

```
        If frmMain.Width < 10395 Then frmMain.Width = 10395
        If frmMain.Height < 7290 Then frmMain.Height = 7290
        Call MoveControls
        If samplingConfFlag = 1 Then
            Call DispWave(1)
        End If
    End If
End Sub

Private Sub Form_Unload(Cancel As Integer)
    If adOpenFlag = 1 Then
        AdClose (adDeviceHandle)
    End If
    If daOpenFlag = 1 Then
        DaClose (daDeviceHandle)
    End If

    If frmMain.WindowState = 1 Then
        frmMain.WindowState = 0
    End If
    SaveSetting appName, "Window", "State", frmMain.WindowState
    If frmMain.WindowState = 2 Then
        frmMain.WindowState = 0
    End If
    SaveSetting appName, "Window", "Top", frmMain.Top
    SaveSetting appName, "Window", "Left", frmMain.Left
    SaveSetting appName, "Window", "Height", frmMain.Height
    SaveSetting appName, "Window", "Width", frmMain.Width

    SaveSetting appName, "Option", "Line", DrawModeLine.Value
    SaveSetting appName, "Option", "Dot", DrawModeDot.Value
    SaveSetting appName, "Option", "LineValue", DrawOptionLineWidth.Text
    SaveSetting appName, "Option", "DotValue", DrawOptionDotWidth.Text
    SaveSetting appName, "Option", "ViewMode", opImg.Value


End Sub

Private Sub InfoBoxClear_Click()
    InfoBox.Text = ""
End Sub

Private Sub Open_Click()
    frmOpenDevice.Show 1
End Sub

Private Sub Output_Click()
    If samplingConfFlag = 0 Then
        Beep
        frmMain.InfoBox.SelStart = Len(frmMain.InfoBox.Text) + 1
        frmMain.InfoBox.SelText = vbCrLf & "サンプリング条件が未設定です"

        Exit Sub
    End If

    frmMakeDaData.Show 1

End Sub

Private Sub Sampling_Click()
    Dim nRet As Long

    If adOpenFlag = 0 Or daOpenFlag = 0 Then
        Beep
        frmMain.InfoBox.SelStart = Len(frmMain.InfoBox.Text) + 1
        frmMain.InfoBox.SelText = vbCrLf & "ボードがオープンされていません"

        Exit Sub
    End If

    nRet = AdGetSamplingConfig(adDeviceHandle, adConfig)
    If nRet <> AD_ERROR_SUCCESS Then
        Call AdDispErrMessage(nRet)
```

```
        Exit Sub
    Else
        frmMain.InfoBox.SelStart = Len(frmMain.InfoBox.Text) + 1
        frmMain.InfoBox.SelText = vbCrLf & "A/D - 現在のサンプリング設定取得ＯＫ"

    End If

    nRet = DaGetSamplingConfig(daDeviceHandle, daConfig)
    If nRet <> DA_ERROR_SUCCESS Then
        Call DaDispErrMessage(nRet)
        Exit Sub
    Else
        frmMain.InfoBox.SelStart = Len(frmMain.InfoBox.Text) + 1
        frmMain.InfoBox.SelText = vbCrLf & "D/A - 現在のサンプリング設定取得ＯＫ"

    End If

    nRet = DaGetMode(daDeviceHandle, daMode)
    If nRet <> DA_ERROR_SUCCESS Then
        Call DaDispErrMessage(nRet)
        Exit Sub
    Else
        frmMain.InfoBox.SelStart = Len(frmMain.InfoBox.Text) + 1
        frmMain.InfoBox.SelText = vbCrLf & "D/A - 現在の波形出力モード取得ＯＫ"

    End If

    frmSamplingConf.Show 1

End Sub

Private Sub StartButton_Click()

    Dim i As Long
    Dim j As Long
    Dim k As Long
    Dim temp As Long
    Dim temp2 As Long
    Dim adRealSampleNum As Long

    On Error GoTo ErrHandler

    stopFlag = 0

    If daConfig.ulSmplRepeat = 0 Then
        temp2 = 1
    Else
        temp2 = measureTimes
    End If

    ReDim adDataTemp(temp2 - 1, adConfig.ulSmplNum * 2)

    IntervalTimer = measureInt

    frmMain.InfoBox.SelStart = Len(frmMain.InfoBox.Text) + 1
    frmMain.InfoBox.SelText = vbCrLf & " " & temp2 & " 回測定を行います"


    frmMain.InfoBox.SelStart = Len(frmMain.InfoBox.Text) + 1
    frmMain.InfoBox.SelText = vbCrLf & "測定インターバルは " & measureInt & " 秒です"

    Do While i < temp2 And stopFlag = 0

        hEvent(0) = CreateEvent(0, True, False, 0)
        nRet = AdSetBoardConfig(adDeviceHandle, hEvent(0), 0, 0)
        If nRet <> AD_ERROR_SUCCESS Then
            Call AdDispErrMessage(nRet)
            ResetEvent (hEvent(0))
            CloseHandle (hEvent(0))
            Exit Sub
        End If

        frmMain.InfoBox.SelStart = Len(frmMain.InfoBox.Text) + 1
```

```
        frmMain.InfoBox.SelText = vbCrLf & "A/D - ボード条件設定ＯＫ"

        ulSmplBufferSize = adConfig.ulSmplNum
        hEvent(1) = CreateEvent(0, True, False, 0)
        nRet = DaSetBoardConfig(daDeviceHandle, ulSmplBufferSize, hEvent(1), 0, 0)
        If nRet <> DA_ERROR_SUCCESS Then
            Call DaDispErrMessage(nRet)
            ResetEvent (hEvent(0))
            ResetEvent (hEvent(1))
            CloseHandle (hEvent(0))
            CloseHandle (hEvent(1))
            Exit Sub
        End If

        frmMain.InfoBox.SelStart = Len(frmMain.InfoBox.Text) + 1
        frmMain.InfoBox.SelText = vbCrLf & "D/A - ボード条件設定ＯＫ"

        StartButton.Enabled = False
        OneTimeButton.Enabled = False

        nRet = AdStartSampling(adDeviceHandle, AD_FLAG_ASYNC)
        If nRet <> AD_ERROR_SUCCESS Then
            Call AdDispErrMessage(nRet)
            ResetEvent (hEvent(0))
            ResetEvent (hEvent(1))
            CloseHandle (hEvent(0))
            CloseHandle (hEvent(1))
            OneTimeButton.Enabled = True
            StartButton.Enabled = True
            StartButton.SetFocus
            Exit Sub
        End If
        nRet = DaStartSampling(daDeviceHandle, DA_FLAG_ASYNC)
        If nRet <> DA_ERROR_SUCCESS Then
            Call DaDispErrMessage(nRet)
            nRet = AdStopSampling(adDeviceHandle)
            ResetEvent (hEvent(0))
            ResetEvent (hEvent(1))
            CloseHandle (hEvent(0))
            CloseHandle (hEvent(1))
            OneTimeButton.Enabled = True
            StartButton.Enabled = True
            StartButton.SetFocus
            Exit Sub
        End If
        Do Until (WaitForSingleObject(hEvent(0), 0) = 0 And WaitForSingleObject(hEvent(1), 0) = 0)
            DoEvents
        Loop
        ResetEvent (hEvent(0))
        ResetEvent (hEvent(1))
        CloseHandle (hEvent(0))
        CloseHandle (hEvent(1))

        adRealSampleNum = adConfig.ulSmplNum
        nRet = AdGetSamplingData(adDeviceHandle, adData(0), adRealSampleNum)
        If nRet <> AD_ERROR_SUCCESS Then
            Call AdDispErrMessage(nRet)
            OneTimeButton.Enabled = True
            StartButton.Enabled = True
            StartButton.SetFocus
            Exit Sub
        End If
        If adRealSampleNum = 0 Then
            frmMain.InfoBox.SelStart = Len(frmMain.InfoBox.Text) + 1
            frmMain.InfoBox.SelText = vbCrLf & "A/D - サンプリングデータ取得失敗"
            GoTo ErrHandler2
        Else
            frmMain.InfoBox.SelStart = Len(frmMain.InfoBox.Text) + 1
            frmMain.InfoBox.SelText = vbCrLf & "A/D - サンプリングデータ取得ＯＫ(取得データ数:" &
adRealSampleNum & ")"
        End If

        For j = 0 To adRealSampleNum * 2 - 1
```

```
            adDataTemp(i, j) = adData(j)
        Next j

        i = i + 1

        frmMain.InfoBox.SelStart = Len(frmMain.InfoBox.Text) + 1
        frmMain.InfoBox.SelText = vbCrLf & " " & i & " 回目の測定終了"

        If i <> temp2 And measureInt <> 0 Then
            frmMain.InfoBox.SelStart = Len(frmMain.InfoBox.Text) + 1
            frmMain.InfoBox.SelText = vbCrLf & "インターバル　時間待ち"

            frmMain.InfoBox.SelStart = Len(frmMain.InfoBox.Text) + 1
            frmMain.InfoBox.SelText = vbCrLf & "あと " & IntervalTimer & " 秒"
            timerInterval.Enabled = True

            Do Until IntervalTimer = 0
                DoEvents
            Loop
            timerInterval.Enabled = False
            IntervalTimer = measureInt
        End If

    Loop

    stopFlag = 0

    frmMain.InfoBox.SelStart = Len(frmMain.InfoBox.Text) + 1
    frmMain.InfoBox.SelText = vbCrLf & "データ処理中..."

    DoEvents

    For k = 0 To adRealSampleNum * 2
        temp = 0
        For j = 0 To (i - 1)
            temp = temp + adDataTemp(j, k)
        Next j
        adData(k) = temp / i
    Next k

    ReDim adDataTemp(0, 0)

    j = 0
    For k = 0 To adRealSampleNum - 1
        j = j + adData(k * 2)
    Next k

    frmMain.InfoBox.SelStart = Len(frmMain.InfoBox.Text) + 1
    frmMain.InfoBox.SelText = "終了"

    frmMain.InfoBox.SelStart = Len(frmMain.InfoBox.Text) + 1
    frmMain.InfoBox.SelText = vbCrLf & "平均値= " & ((adVmax - adVmin) / 4096) * (j / adRealSampleNum) + adVmin
& " [V] , " & j / adRealSampleNum & "[Digital]"

    Call DispWave(0)

    OneTimeButton.Enabled = True
    StartButton.Enabled = True
    StartButton.SetFocus

    Exit Sub

ErrHandler:
    nRet = MsgBox("エラーが発生しました。メモリ不足かもしれません。" + vbCrLf + "サンプリング件数、測定回数
を減らしてみてください。", vbExclamation + vbOKOnly)
ErrHandler2:
    OneTimeButton.Enabled = True
    StartButton.Enabled = True
    StartButton.SetFocus

End Sub

Private Sub MoveControls()
```

```
    Dim realHeight As Long

    ViewBox.Move 960, 0, frmMain.ScaleWidth - 1020, frmMain.ScaleHeight - 2385
    InfoBox.Move 120, frmMain.ScaleHeight - 1440, frmMain.ScaleWidth - 300, 1335
    MesureMin.Move 120, ViewBox.Height - 135
    MesureCenter.Move 120, MesureMin.Top / 2
    SampleMin.Move 960, ViewBox.Height
    SampleCenter.Move ViewBox.Width / 2 + 320, ViewBox.Height
    SampleMax.Move ViewBox.Width - 370, ViewBox.Height
    StopButton.Move frmMain.ScaleWidth - 1875, InfoBox.Top - 480
    StartButton.Move StopButton.Left - 1320, InfoBox.Top - 480
    OneTimeButton.Move StartButton.Left - 720, InfoBox.Top - 480
    SaveButton.Move StopButton.Left + 600, InfoBox.Top - 480
    InfoBoxClear.Move 120, InfoBox.Top + 1330
    Review.Move 1200, InfoBox.Top - 480
    GraphSwitch.Move 120, InfoBox.Top - 480


    ViewBoxVV.Move (frmMain.ScaleWidth - (frmMain.ScaleHeight - 2385)) / 2, 0, frmMain.ScaleHeight - 2385,
frmMain.ScaleHeight - 2385
    LabelAD.Move ViewBoxVV.Left - 1440, 0
    LabelDA.Move ViewBoxVV.Left + ViewBoxVV.Width + 465, ViewBoxVV.Height - 135
    LabelDaMin.Move ViewBoxVV.Left, ViewBoxVV.Height + 45
    LabelDaMid.Move ViewBoxVV.Left + (ViewBoxVV.Width / 2) - 340, ViewBoxVV.Height + 45
    LabelDaMax.Move ViewBoxVV.Left + ViewBoxVV.Width - 735, ViewBoxVV.Height + 45
    LabelAdMin.Move ViewBoxVV.Left - 840, ViewBoxVV.Height - 180
    LabelAdMid.Move ViewBoxVV.Left - 840, ViewBoxVV.Height / 2 - 100
    LabelAdMax.Move ViewBoxVV.Left - 840, 0
    DrawOption.Move 1920, InfoBox.Top - 600
    DAView.Move 4440, InfoBox.Top - 600



    'V-t グラフのライン
    realHeight = ViewBox.ScaleHeight - 10
    ViewBox.Cls
    frmMain.ViewBox.DrawWidth = 1

    For i = 1 To 4
    ViewBox.Line (0, realHeight / 10 * i)-(ViewBox.ScaleWidth, realHeight / 10 * i), RGB(100, 100, 100)
    Next i
    For i = 6 To 9
    ViewBox.Line (0, realHeight / 10 * i)-(ViewBox.ScaleWidth, realHeight / 10 * i), RGB(100, 100, 100)
    Next i
    For i = 1 To 4
    ViewBox.Line (ViewBox.ScaleWidth / 20 * i, 0)-(ViewBox.ScaleWidth / 20 * i, realHeight), RGB(100, 100, 100)
    Next i
    For i = 6 To 9
    ViewBox.Line (ViewBox.ScaleWidth / 20 * i, 0)-(ViewBox.ScaleWidth / 20 * i, realHeight), RGB(100, 100, 100)
    Next i
    For i = 11 To 14
    ViewBox.Line (ViewBox.ScaleWidth / 20 * i, 0)-(ViewBox.ScaleWidth / 20 * i, realHeight), RGB(100, 100, 100)
    Next i
    For i = 16 To 19
    ViewBox.Line (ViewBox.ScaleWidth / 20 * i, 0)-(ViewBox.ScaleWidth / 20 * i, realHeight), RGB(100, 100, 100)
    Next i
    ViewBox.Line (0, realHeight / 2)-(ViewBox.ScaleWidth, realHeight / 2), RGB(255, 255, 255)
    ViewBox.Line (ViewBox.ScaleWidth / 4, 0)-(ViewBox.ScaleWidth / 4, realHeight), RGB(255, 255, 255)
    ViewBox.Line (ViewBox.ScaleWidth / 4 * 3, 0)-(ViewBox.ScaleWidth / 4 * 3, realHeight), RGB(255, 255, 255)
    ViewBox.Line (ViewBox.ScaleWidth / 2, 0)-(ViewBox.ScaleWidth / 2, realHeight), RGB(255, 255, 255)

    'V-V グラフのライン
    realHeight = ViewBoxVV.ScaleHeight - 10
    ViewBoxVV.Cls
    frmMain.ViewBoxVV.DrawWidth = 1

    For i = 1 To 4
    ViewBoxVV.Line (0, realHeight / 10 * i)-(ViewBoxVV.ScaleWidth, realHeight / 10 * i), RGB(100, 100, 100)
    Next i
    For i = 6 To 9
    ViewBoxVV.Line (0, realHeight / 10 * i)-(ViewBoxVV.ScaleWidth, realHeight / 10 * i), RGB(100, 100, 100)
    Next i
    For i = 1 To 4
```

```
    ViewBoxVV.Line (ViewBoxVV.ScaleWidth / 10 * i, 0)-(ViewBoxVV.ScaleWidth / 10 * i, realHeight), RGB(100,
100, 100)
    Next i
    For i = 6 To 9
    ViewBoxVV.Line (ViewBoxVV.ScaleWidth / 10 * i, 0)-(ViewBoxVV.ScaleWidth / 10 * i, realHeight), RGB(100,
100, 100)
    Next i
    ViewBoxVV.Line (0, realHeight / 2)-(ViewBoxVV.ScaleWidth, realHeight / 2), RGB(255, 255, 255)
    ViewBoxVV.Line (ViewBoxVV.ScaleWidth / 2, 0)-(ViewBoxVV.ScaleWidth / 2, realHeight), RGB(255, 255, 255)

End Sub

Private Sub timerInterval_Timer()
    Dim temp As String
    Dim i As Long
    Dim j As Long

    If stopFlag = 1 Then
        IntervalTimer = 0
        Exit Sub
    End If

    i = Len(frmMain.InfoBox.Text)
    j = i
    Do Until temp = "あ"
        j = j - 1
        temp = Mid(frmMain.InfoBox.Text, j, 1)
    Loop

    frmMain.InfoBox.SelStart = j - 1
    frmMain.InfoBox.SelLength = i - (j - 1)

    IntervalTimer = IntervalTimer - 1

    frmMain.InfoBox.SelText = "あと " & IntervalTimer & " 秒"

End Sub

Private Sub Version_Click()
    frmAbout.Show 1
End Sub
```

・Main.frx

```
ADDRESS   00 01 02 03 04 05 06 07  08 09 0A 0B 0C 0D 0E 0F  0123456789ABCDEF
-------------------------------------------------------------------------------
00000000  3E 04 00 00 6C 74 00 00  36 04 00 00 00 00 01 00  >...lt..6.......
00000010  02 00 20 20 10 00 00 00  00 00 E8 02 00 00 26 00  ..  ......・..&.
00000020  00 00 10 10 10 00 00 00  00 00 28 01 00 00 0E 03  ..........(.....
00000030  00 00 28 00 00 00 20 00  00 00 40 00 00 00 01 00  ..(... ...@.....
00000040  04 00 00 00 00 00 80 02  00 00 00 00 00 00 00 00  ......・.........
00000050  00 00 00 00 00 00 00 00  00 00 00 00 00 00 00 00  ................
00000060  80 00 00 80 00 00 00 80  80 00 80 00 00 00 80 00  ・..・...・・.・...・.
00000070  80 00 80 80 00 00 80 80  80 00 C0 C0 C0 00 00 00  ・.・・..・・・・タタタ...
00000080  FF 00 00 FF 00 00 00 FF  FF 00 FF 00 00 00 FF 00  ・..・...・・・.・...・.
00000090  FF 00 FF FF 00 00 FF FF  FF 00 00 00 00 00 00 00  ・.・・・..・・・.......
000000A0  00 00 00 00 00 00 00 00  00 00 00 00 00 00 00 00  ................
000000B0  00 00 00 00 00 00 00 00  00 00 00 00 00 00 00 00  ................
000000C0  00 00 00 00 00 00 00 00  00 00 00 00 00 00 00 00  ................
000000D0  00 00 00 00 00 00 00 00  00 00 00 77 77 77 77 77  ...........wwwww
000000E0  77 77 77 77 77 77 77 77  70 00 0F 88 88 88 88 88  wwwwwwwwp..・・・・
000000F0  88 88 88 88 88 88 88 88  87 00 0F 88 FF FF FF FF    ・・・・..・・・・
00000100  FF FF FF FF FF FF FF F8  87 00 0F 87 00 00 00 00  ・・・・・・・・..・...
00000110  00 00 00 00 00 00 00 0F  87 00 0F 87 00 20 02 00  ........・.・ ..
00000120  20 02 00 20 02 00 20 0F  87 00 0F 87 02 22 22 22   .. .. .・.・"""
00000130  22 22 22 22 22 22 22 0F  87 00 0F 87 00 20 02 00  """""""・.・.・ ..
00000140  20 02 00 20 02 00 20 0F  87 00 0F 87 00 20 02 00   .. .. .・.・ ..
00000150  20 02 00 20 02 00 20 0F  87 00 0F 87 02 22 22 22   .. .. .・.・"""
00000160  22 22 22 22 22 22 22 0F  87 00 0F 87 0F FF 02 00  """""""・.・.・..
00000170  20 02 0F FF 02 00 20 0F  87 00 0F 87 00 20 F2 00   ..・.. .・.・ ・
00000180  20 02 F0 20 F2 00 20 0F  87 00 0F 87 02 22 2F 22   .・・ .・.・"/"
00000190  22 2F 22 22 2F 22 22 0F  87 00 0F 87 00 20 0F 00  "/""/"".・.・ ..
```

```
000001A0  20 0F 00 20 0F 00 20 0F  87 00 0F 87 00 20 02 F0   .. .. .・.・ .・
000001B0  20 F2 00 20 02 F0 20 0F  87 00 0F 87 02 22 22 2F   ・ .・.・.・""/
000001C0  FF 22 22 22 22 2F FF 0F  87 00 0F 87 00 20 02 00  ・""""/・.・.・ ..
000001D0  20 02 00 20 02 00 20 0F  87 00 0F 87 00 20 02 00   .. .. .・.・ ..
000001E0  20 02 00 20 02 00 20 0F  87 00 0F 87 02 22 22 22   .. .. .・.・"""
000001F0  22 22 22 22 22 22 22 0F  87 00 0F 87 00 20 02 00  """""""・.・.・ ..
00000200  20 02 00 20 02 00 20 0F  87 00 0F 87 00 20 02 00   .. .. .・.・ ..
00000210  20 02 00 20 02 00 20 0F  87 00 0F 87 00 00 00 00   .. .. .・.・...
00000220  00 00 00 00 00 00 00 0F  87 00 0F 88 77 77 77 77  ........・.・www
00000230  77 77 77 77 77 77 77 78  87 00 0F 88 88 88 88 88  wwwwwwwx・.・・・
00000240  88 88 88 88 88 88 88 88  87 00 00 FF FF FF FF FF   ・・・・..・・・・・
00000250  FF FF FF FF FF FF FF FF  F0 00 00 00 00 00 00 00  ・・・・・・・・・・・.....
00000260  00 00 00 00 00 00 00 00  00 00 00 00 00 00 00 00  ................
00000270  00 00 00 00 00 00 00 00  00 00 00 00 00 00 00 00  ................
00000280  00 00 00 00 00 00 00 00  00 00 00 00 00 00 00 00  ................
00000290  00 00 00 00 00 00 00 00  00 00 FF FF FF FF FF FF  ..........・・・・・・
000002A0  FF FF FF FF FF FF C0 00  00 07 80 00 00 03 00 00  ・・・・・・ﾀ...・.....
000002B0  00 01 00 00 00 01 00 00  00 01 00 00 00 01 00 00  ................
000002C0  00 01 00 00 00 01 00 00  00 01 00 00 00 01 00 00  ................
000002D0  00 01 00 00 00 01 00 00  00 01 00 00 00 01 00 00  ................
000002E0  00 01 00 00 00 01 00 00  00 01 00 00 00 01 00 00  ................
000002F0  00 01 00 00 00 01 00 00  00 01 00 00 00 01 00 00  ................
00000300  00 01 00 00 00 01 80 00  00 03 C0 00 00 07 FF FF  ......・...ﾀ...・・
00000310  FF FF FF FF FF FF FF FF  FF FF 28 00 00 00 10 00  ・・・・・・・・・・(.....
00000320  00 00 20 00 00 00 01 00  04 00 00 00 00 00 C0 00  .. ..........ﾀ.
00000330  00 00 00 00 00 00 00 00  00 00 00 00 00 00 00 00  ................
00000340  00 00 00 00 00 00 00 00  80 00 00 80 00 00 00 80  ........・..・...・
00000350  80 00 80 00 00 00 80 00  80 00 80 80 00 00 80 80  ・.・...・.・.・・..・・
00000360  80 00 C0 C0 C0 00 00 00  FF 00 00 FF 00 00 00 FF  ・.ﾀﾀﾀ...・..・...・
00000370  FF 00 FF 00 00 00 FF 00  FF 00 FF FF 00 00 FF FF  ・.・...・.・.・・・..・・
00000380  FF 00 00 00 00 00 00 00  00 00 00 00 00 00 00 00  ・...............
00000390  00 00 00 88 88 88 88 88  88 00 0F 00 00 00 00 00  ...・・・.......
000003A0  00 80 0F 02 00 20 02 00  20 80 0F 02 22 22 22 22  .・... .. ・..""""
000003B0  20 80 0F 0F 00 20 0F FF  20 80 0F 02 F0 20 F2 00   ・... .・ ・..・・
000003C0  F0 80 0F 02 F2 22 F2 22  20 80 0F 02 0F FF 02 00  ・..・・ ・...・..
000003D0  20 80 0F 02 00 20 02 00  20 80 0F 02 22 22 22 22   ・... .. ・..""""
000003E0  20 80 0F 00 00 00 00 00  00 80 0F FF FF FF FF FF   ・.......・.・・・・・
000003F0  FF 00 00 00 00 00 00 00  00 00 00 00 00 00 00 00  ・...............
00000400  00 00 FF FF 00 00 80 01  00 00 00 00 00 00 00 00  ..・・..・.........
00000410  00 00 00 00 00 00 00 00  00 00 00 00 00 00 00 00  ................
00000420  00 00 00 00 00 00 00 00  00 00 00 00 00 00 00 00  ................
00000430  00 00 00 00 00 00 00 00  00 00 80 01 00 00 FF FF  ..........・...・・
00000440  00 00 CC 2D 2D 2D 2D 2D  2D 2D 2D 2D 2D 2D 2D 2D  ..ﾌ-------------
00000450  2D 2D 2D 2D 2D 2D 2D 2D  2D 2D 2D 2D 2D 2D 2D 2D  ----------------
00000460  2D 2D 2D 2D 2D 2D 2D 2D  2D 2D 2D 2D 2D 2D 2D 2D  ----------------
00000470  2D 2D 2D 2D 2D 2D 2D 2D  2D 2D 2D 2D 0D 0A 20 20  ------------..
00000480  41 2F 44 20 44 2F 41 20  8D 82 91 AC 8C 76 91 AA  A/D D/A 高速計測
00000490  83 56 83 58 83 65 83 80  0D 0A 20 20 20 20 20 20  システム..
000004A0  20 20 20 20 20 20 20 20  43 6F 70 79 72 69 67 68          Copyrigh
000004B0  74 20 28 43 29 20 31 39  39 39 2D 32 30 30 30 2C  t (C) 1999-2000,
000004C0  20 4F 48 41 53 48 49 20  4B 65 6E 6A 69 2C 20 4B   OHASHI Kenji, K
000004D0  55 54 0D 0A 2D 2D 2D 2D  2D 2D 2D 2D 2D 2D 2D 2D  UT..------------
000004E0  2D 2D 2D 2D 2D 2D 2D 2D  2D 2D 2D 2D 2D 2D 2D 2D  ----------------
000004F0  2D 2D 2D 2D 2D 2D 2D 2D  2D 2D 2D 2D 2D 2D 2D 2D  ----------------
00000500  2D 2D 2D 2D 2D 2D 2D 2D  2D 2D 2D 2D 2D 0D 0A     -------------..
```

・Infomation.frm

```
VERSION 5.00
Begin VB.Form frmInfomation
   BorderStyle     =   3  '固定ﾀﾞｲｱﾛｸﾞ
   Caption         =   "ボード情報"
   ClientHeight    =   8160
   ClientLeft      =   45
   ClientTop       =   330
   ClientWidth     =   9960
   Icon            =   "Infomation.frx":0000
   LinkTopic       =   "Form1"
   MaxButton       =   0   'False
   MinButton       =   0   'False
   ScaleHeight     =   8160
   ScaleWidth      =   9960
```

```
ShowInTaskbar   =   0   'False
StartUpPosition =   1  'ｵｰﾅｰ ﾌｫｰﾑの中央
Begin VB.Frame Frame2
   Caption         =   "FBIDA1"
   Height          =   3735
   Left            =   240
   TabIndex        =   21
   Top             =   4200
   Width           =   9495
   Begin VB.TextBox Text2
      Height          =   855
      Index           =   0
      Left            =   360
      Locked          =   -1  'True
      MultiLine       =   -1  'True
      TabIndex        =   23
      TabStop         =   0   'False
      Top             =   1320
      Width           =   1695
   End
   Begin VB.TextBox Text2
      Height          =   2295
      Index           =   1
      Left            =   3600
      Locked          =   -1  'True
      MultiLine       =   -1  'True
      TabIndex        =   22
      TabStop         =   0   'False
      Top             =   1080
      Width           =   5055
   End
   Begin VB.Label Label3
      Height          =   255
      Index           =   7
      Left            =   7080
      TabIndex        =   24
      Top             =   360
      Width           =   1215
   End
   Begin VB.Label Label1
      Caption         =   "絶縁 :"
      Height          =   255
      Index           =   13
      Left            =   6480
      TabIndex        =   33
      Top             =   360
      Width           =   1215
   End
   Begin VB.Label Label3
      Height          =   255
      Index           =   0
      Left            =   1320
      TabIndex        =   30
      Top             =   360
      Width           =   1215
   End
   Begin VB.Label Label3
      Height          =   255
      Index           =   1
      Left            =   1320
      TabIndex        =   29
      Top             =   720
      Width           =   1215
   End
   Begin VB.Label Label3
      Height          =   255
      Index           =   2
      Left            =   2040
      TabIndex        =   28
      Top             =   2400
      Width           =   1215
   End
   Begin VB.Label Label3
```

```
   Height          =   255
   Index           =   4
   Left            =   1680
   TabIndex        =   27
   Top             =   3000
   Width           =   1215
End
Begin VB.Label Label3
   Height          =   255
   Index           =   5
   Left            =   1680
   TabIndex        =   26
   Top             =   3240
   Width           =   1215
End
Begin VB.Label Label3
   Height          =   255
   Index           =   6
   Left            =   4440
   TabIndex        =   25
   Top             =   360
   Width           =   1215
End
Begin VB.Label Label1
   Caption         =   "ボード型式 :"
   Height          =   255
   Index           =   19
   Left            =   240
   TabIndex        =   39
   Top             =   360
   Width           =   1215
End
Begin VB.Label Label1
   Caption         =   "識別番号 :"
   Height          =   255
   Index           =   18
   Left            =   240
   TabIndex        =   38
   Top             =   720
   Width           =   1215
End
Begin VB.Label Label1
   Caption         =   "対応サンプリングモード :"
   Height          =   255
   Index           =   17
   Left            =   240
   TabIndex        =   37
   Top             =   1080
   Width           =   1935
End
Begin VB.Label Label1
   Caption         =   "ｻﾝﾌﾟﾘﾝｸﾞﾁｬﾝﾈﾙ数 :"
   Height          =   255
   Index           =   16
   Left            =   240
   TabIndex        =   36
   Top             =   2400
   Width           =   1695
End
Begin VB.Label Label1
   Caption         =   "分解能 :"
   Height          =   255
   Index           =   15
   Left            =   3600
   TabIndex        =   35
   Top             =   360
   Width           =   1215
End
Begin VB.Label Label1
   Caption         =   "対応レンジ :"
   Height          =   255
   Index           =   14
   Left            =   3600
```

```
      TabIndex        =   34
      Top             =   840
      Width           =   1215
   End
   Begin VB.Label Label1
      Caption         =   "デジタル入力 :"
      Height          =   255
      Index           =   12
      Left            =   240
      TabIndex        =   32
      Top             =   3000
      Width           =   1215
   End
   Begin VB.Label Label1
      Caption         =   "デジタル出力 :"
      Height          =   255
      Index           =   11
      Left            =   240
      TabIndex        =   31
      Top             =   3240
      Width           =   1215
   End
End
Begin VB.Frame Frame1
   Caption         =   "FBIAD1"
   Height          =   3735
   Left            =   240
   TabIndex        =   0
   Top             =   120
   Width           =   9495
   Begin VB.TextBox Text1
      Height          =   2295
      Index           =   1
      Left            =   3600
      Locked          =   -1  'True
      MultiLine       =   -1  'True
      TabIndex        =   20
      TabStop         =   0   'False
      Top             =   1080
      Width           =   5055
   End
   Begin VB.TextBox Text1
      Height          =   855
      Index           =   0
      Left            =   360
      Locked          =   -1  'True
      MultiLine       =   -1  'True
      TabIndex        =   11
      TabStop         =   0   'False
      Top             =   1320
      Width           =   1695
   End
   Begin VB.Label Label2
      Height          =   255
      Index           =   7
      Left            =   7080
      TabIndex        =   19
      Top             =   360
      Width           =   1215
   End
   Begin VB.Label Label2
      Height          =   255
      Index           =   6
      Left            =   4440
      TabIndex        =   18
      Top             =   360
      Width           =   1215
   End
   Begin VB.Label Label2
      Height          =   255
      Index           =   5
      Left            =   1680
      TabIndex        =   17
```

```
   Top             =   3240
   Width           =   1215
End
Begin VB.Label Label2
   Height          =   255
   Index           =   4
   Left            =   1680
   TabIndex        =   16
   Top             =   3000
   Width           =   1215
End
Begin VB.Label Label2
   Height          =   255
   Index           =   3
   Left            =   2040
   TabIndex        =   15
   Top             =   2640
   Width           =   1215
End
Begin VB.Label Label2
   Height          =   255
   Index           =   2
   Left            =   2040
   TabIndex        =   14
   Top             =   2400
   Width           =   1215
End
Begin VB.Label Label2
   Height          =   255
   Index           =   1
   Left            =   1320
   TabIndex        =   13
   Top             =   720
   Width           =   1215
End
Begin VB.Label Label2
   Height          =   255
   Index           =   0
   Left            =   1320
   TabIndex        =   12
   Top             =   360
   Width           =   1215
End
Begin VB.Label Label1
   Caption         =   "差動入力ﾁｬﾝﾈﾙ数 :"
   Height          =   255
   Index           =   9
   Left            =   240
   TabIndex        =   10
   Top             =   2640
   Width           =   1695
End
Begin VB.Label Label1
   Caption         =   "デジタル出力 :"
   Height          =   255
   Index           =   8
   Left            =   240
   TabIndex        =   9
   Top             =   3240
   Width           =   1215
End
Begin VB.Label Label1
   Caption         =   "デジタル入力 :"
   Height          =   255
   Index           =   7
   Left            =   240
   TabIndex        =   8
   Top             =   3000
   Width           =   1215
End
Begin VB.Label Label1
   Caption         =   "絶縁 :"
   Height          =   255
```

```
      Index           =   6
      Left            =   6480
      TabIndex        =   7
      Top             =   360
      Width           =   1215
   End
   Begin VB.Label Label1
      Caption         =   "対応レンジ :"
      Height          =   255
      Index           =   5
      Left            =   3600
      TabIndex        =   6
      Top             =   840
      Width           =   1215
   End
   Begin VB.Label Label1
      Caption         =   "分解能 :"
      Height          =   255
      Index           =   4
      Left            =   3600
      TabIndex        =   5
      Top             =   360
      Width           =   1215
   End
   Begin VB.Label Label1
      Caption         =   "ｼﾝｸﾞﾙｴﾝﾄﾞﾁｬﾝﾈﾙ数 :"
      Height          =   255
      Index           =   3
      Left            =   240
      TabIndex        =   4
      Top             =   2400
      Width           =   1695
   End
   Begin VB.Label Label1
      Caption         =   "対応サンプリングモード :"
      Height          =   255
      Index           =   2
      Left            =   240
      TabIndex        =   3
      Top             =   1080
      Width           =   1935
   End
   Begin VB.Label Label1
      Caption         =   "識別番号 :"
      Height          =   255
      Index           =   1
      Left            =   240
      TabIndex        =   2
      Top             =   720
      Width           =   1215
   End
   Begin VB.Label Label1
      Caption         =   "ボード型式 :"
      Height          =   255
      Index           =   0
      Left            =   240
      TabIndex        =   1
      Top             =   360
      Width           =   1215
   End
End
End
Attribute VB_Name = "frmInfomation"
Attribute VB_GlobalNameSpace = False
Attribute VB_Creatable = False
Attribute VB_PredeclaredId = True
Attribute VB_Exposed = False
Private Sub Form_Load()

    'A/D ボードについて
    'ボード型番
    Label2(0).Caption = "PCI-" & Str(adInfo.ulBoardType)
```

```
'ボード識別番号
Label2(1).Caption = Str(adInfo.ulBoardID)

'サンプリングモード
If adInfo.dwSamplingMode And &H1 Then
    Text1(0).Text = Text1(0).Text & "I/O 方式" & vbCrLf
End If
If adInfo.dwSamplingMode And &H2 Then
    Text1(0).Text = Text1(0).Text & "FIFO 方式" & vbCrLf
End If
If adInfo.dwSamplingMode And &H4 Then
    Text1(0).Text = Text1(0).Text & "メモリ方式"
End If

'シングルエンドチャンネル数
Label2(2).Caption = Str(adInfo.ulChCountS)

'作動入力チャンネル数
Label2(3).Caption = Str(adInfo.ulChCountD)

'デジタル入力
Label2(4).Caption = Str(adInfo.ulDi)

'デジタル出力
Label2(5).Caption = Str(adInfo.ulDo)

'分解能
Label2(6).Caption = Str(adInfo.ulResolution) & " bit"

'絶縁
If adInfo.ulIsolation = AD_ISOLATION Then
    Label2(7).Caption = "ON"
Else
    Label2(7).Caption = "OFF"
End If

'レンジ
If adInfo.dwRange And &H1 Then
    Text1(1).Text = Text1(1).Text & "電圧  ユニポーラ  0～1V" & vbCrLf
End If
If adInfo.dwRange And &H2 Then
    Text1(1).Text = Text1(1).Text & "電圧  ユニポーラ  0～2.5V" & vbCrLf
End If
If adInfo.dwRange And &H4 Then
    Text1(1).Text = Text1(1).Text & "電圧  ユニポーラ  0～5V" & vbCrLf
End If
If adInfo.dwRange And &H8 Then
    Text1(1).Text = Text1(1).Text & "電圧  ユニポーラ  0～10V" & vbCrLf
End If
If adInfo.dwRange And &H10 Then
    Text1(1).Text = Text1(1).Text & "電圧  ユニポーラ  1～5V" & vbCrLf
End If
If adInfo.dwRange And &H1000 Then
    Text1(1).Text = Text1(1).Text & "電流  ユニポーラ  0～20mA" & vbCrLf
End If
If adInfo.dwRange And &H2000 Then
    Text1(1).Text = Text1(1).Text & "電流  ユニポーラ  4～20mA" & vbCrLf
End If
If adInfo.dwRange And &H10000 Then
    Text1(1).Text = Text1(1).Text & "電圧  バイポーラ  ±1V" & vbCrLf
End If
If adInfo.dwRange And &H20000 Then
    Text1(1).Text = Text1(1).Text & "電圧  バイポーラ  ±2.5V" & vbCrLf
End If
If adInfo.dwRange And &H40000 Then
    Text1(1).Text = Text1(1).Text & "電圧  バイポーラ  ±5V" & vbCrLf
End If
If adInfo.dwRange And &H80000 Then
    Text1(1).Text = Text1(1).Text & "電圧  バイポーラ  ±10V" & vbCrLf
End If


'D/A ボードについて
```

```
    'ボード型番
    Label3(0).Caption = "PCI-" & Str(daInfo.ulBoardType)

    'ボード識別番号
    Label3(1).Caption = Str(daInfo.ulBoardID)

    'サンプリングモード
    If daInfo.ulSamplingMode And &H1 Then
        Text2(0).Text = Text2(0).Text & "I/O 方式" & vbCrLf
    End If
    If daInfo.ulSamplingMode And &H2 Then
        Text2(0).Text = Text2(0).Text & "FIFO 方式" & vbCrLf
    End If
    If daInfo.ulSamplingMode And &H4 Then
        Text2(0).Text = Text2(0).Text & "メモリ方式"
    End If

    'サンプリングチャンネル数
    Label3(2).Caption = Str(daInfo.ulChCount)

    'デジタル入力
    Label3(4).Caption = Str(daInfo.ulDi)

    'デジタル出力
    Label3(5).Caption = Str(daInfo.ulDo)

    '分解能
    Label3(6).Caption = Str(daInfo.ulResolution) & " bit"

    '絶縁
    If daInfo.ulIsolation = DA_ISOLATION Then
        Label3(7).Caption = "ON"
    Else
        Label3(7).Caption = "OFF"
    End If

    'レンジ
    If daInfo.ulRange And &H1 Then
        Text2(1).Text = Text2(1).Text & "電圧  ユニポーラ  0～1V" & vbCrLf
    End If
    If daInfo.ulRange And &H2 Then
        Text2(1).Text = Text2(1).Text & "電圧  ユニポーラ  0～2.5V" & vbCrLf
    End If
    If daInfo.ulRange And &H4 Then
        Text2(1).Text = Text2(1).Text & "電圧  ユニポーラ  0～5V" & vbCrLf
    End If
    If daInfo.ulRange And &H8 Then
        Text2(1).Text = Text2(1).Text & "電圧  ユニポーラ  0～10V" & vbCrLf
    End If
    If daInfo.ulRange And &H10 Then
        Text2(1).Text = Text2(1).Text & "電圧  ユニポーラ  1～5V" & vbCrLf
    End If
    If daInfo.ulRange And &H1000 Then
        Text2(1).Text = Text2(1).Text & "電流  ユニポーラ  0～20mA" & vbCrLf
    End If
    If daInfo.ulRange And &H2000 Then
        Text2(1).Text = Text2(1).Text & "電流  ユニポーラ  4～20mA" & vbCrLf
    End If
    If daInfo.ulRange And &H10000 Then
        Text2(1).Text = Text2(1).Text & "電圧  バイポーラ  ±1V" & vbCrLf
    End If
    If daInfo.ulRange And &H20000 Then
        Text2(1).Text = Text2(1).Text & "電圧  バイポーラ  ±2.5V" & vbCrLf
    End If
    If daInfo.ulRange And &H40000 Then
        Text2(1).Text = Text2(1).Text & "電圧  バイポーラ  ±5V" & vbCrLf
    End If
    If daInfo.ulRange And &H80000 Then
        Text2(1).Text = Text2(1).Text & "電圧  バイポーラ  ±10V" & vbCrLf
    End If

End Sub
```

・Infomation.frx

```
ADDRESS   00 01 02 03 04 05 06 07  08 09 0A 0B 0C 0D 0E 0F  0123456789ABCDEF
-------------------------------------------------------------------------
00000000  08 00 00 00 6C 74 00 00  00 00 00 00              ....lt......
```

・frmSplash.frm

```
VERSION 5.00
Begin VB.Form frmSplash
   BorderStyle     =   3  '固定ﾀﾞｲｱﾛｸﾞ
   ClientHeight    =   4245
   ClientLeft      =   255
   ClientTop       =   1410
   ClientWidth     =   7380
   ClipControls    =   0   'False
   ControlBox      =   0   'False
   Icon            =   "frmSplash.frx":0000
   KeyPreview      =   -1  'True
   LinkTopic       =   "Form2"
   MaxButton       =   0   'False
   MinButton       =   0   'False
   ScaleHeight     =   4245
   ScaleWidth      =   7380
   ShowInTaskbar   =   0   'False
   StartUpPosition =   2  '画面の中央
   Begin VB.Frame Frame1
      Height          =   4050
      Left            =   150
      TabIndex        =   0
      Top             =   60
      Width           =   7080
      Begin VB.Timer Timer1
         Interval        =   1500
         Left            =   840
         Top             =   3360
      End
      Begin VB.Label Label1
         Caption         =   "A/D D/A Fast Measuring System"
         Height          =   255
         Left            =   3120
         TabIndex        =   6
         Top             =   2280
         Width           =   3615
      End
      Begin VB.Image imgLogo
         Height          =   1905
         Left            =   360
         Picture         =   "frmSplash.frx":000C
         Stretch         =   -1  'True
         Top             =   1080
         Width           =   1815
      End
      Begin VB.Label lblWarning
         Alignment       =   1  '右揃え
         Caption         =   "Copyright (C) 1999-2000, OHASHI Kenji"
         Height          =   195
         Left            =   150
         TabIndex        =   2
         Top             =   3660
         Width           =   6615
      End
      Begin VB.Label lblVersion
         Alignment       =   1  '右揃え
         AutoSize        =   -1  'True
         Caption         =   "ﾊﾞｰｼﾞｮﾝ"
         BeginProperty Font
            Name            =   "ＭＳ Ｐゴシック"
            Size            =   12
            Charset         =   128
            Weight          =   700
```

```
            Underline       =   0   'False
            Italic          =   0   'False
            Strikethrough   =   0   'False
         EndProperty
         Height          =   285
         Left            =   4440
         TabIndex        =   3
         Top             =   2880
         Width           =   1605
      End
      Begin VB.Label lblProductName
         AutoSize        =   -1  'True
         Caption         =   "ADDAFMS"
         BeginProperty Font
            Name            =   "ＭＳ Ｐゴシック"
            Size            =   32.25
            Charset         =   128
            Weight          =   700
            Underline       =   0   'False
            Italic          =   0   'False
            Strikethrough   =   0   'False
         EndProperty
         Height          =   645
         Left            =   3120
         TabIndex        =   5
         Top             =   1680
         Width           =   3000
      End
      Begin VB.Label lblLicenseTo
         Alignment       =   1  '右揃え
         Caption         =   "高知工科大学　電子・光システム工学科　河津研究室"
         Height          =   255
         Left            =   120
         TabIndex        =   1
         Top             =   240
         Width           =   6855
      End
      Begin VB.Label lblCompanyProduct
         AutoSize        =   -1  'True
         Caption         =   "Kochi Univ. of Tech"
         BeginProperty Font
            Name            =   "ＭＳ Ｐゴシック"
            Size            =   18
            Charset         =   128
            Weight          =   700
            Underline       =   0   'False
            Italic          =   0   'False
            Strikethrough   =   0   'False
         EndProperty
         Height          =   360
         Left            =   2520
         TabIndex        =   4
         Top             =   1200
         Width           =   3195
      End
   End
End
Attribute VB_Name = "frmSplash"
Attribute VB_GlobalNameSpace = False
Attribute VB_Creatable = False
Attribute VB_PredeclaredId = True
Attribute VB_Exposed = False

Option Explicit


Private Sub Form_Load()
    lblVersion.Caption = "Ver. " & App.Major & "." & App.Minor & "." & App.Revision
End Sub

Private Sub Timer1_Timer()
    Timer1.Enabled = False
    Timetimer = 1
```

```
End Sub
```

・frmSplash.frx

```
ADDRESS   00 01 02 03 04 05 06 07  08 09 0A 0B 0C 0D 0E 0F  0123456789ABCDEF
-------------------------------------------------------------------------------
00000000  08 00 00 00 6C 74 00 00  00 00 00 00 3E 04 00 00  ....lt......>...
00000010  6C 74 00 00 36 04 00 00  00 00 01 00 02 00 20 20  lt..6.........
00000020  10 00 00 00 00 00 E8 02  00 00 26 00 00 00 10 10  ......・..&.....
00000030  10 00 00 00 00 00 28 01  00 00 0E 03 00 00 28 00  ......(.......(.
00000040  00 00 20 00 00 00 40 00  00 00 01 00 04 00 00 00  .. ...@.........
00000050  00 00 80 02 00 00 00 00  00 00 00 00 00 00 00 00  ..・.............
00000060  00 00 00 00 00 00 00 00  00 00 00 00 80 00 00 80  ............・..・
00000070  00 00 00 80 80 00 80 00  00 00 80 00 80 00 80 80  ...・・.・...・.・.・・
00000080  00 00 80 80 80 00 C0 C0  C0 00 00 00 FF 00 00 FF  ..・・・.タタタ...・..・
00000090  00 00 00 FF FF 00 FF 00  00 00 FF 00 FF 00 FF FF  ...・・・.・...・.・.・・
000000A0  00 00 FF FF FF 00 00 00  00 00 00 00 00 00 00 00  ..・・・...........
000000B0  00 00 00 00 00 00 00 00  00 00 00 00 00 00 00 00  ................
000000C0  00 00 00 00 00 00 00 00  00 00 00 00 00 00 00 00  ................
000000D0  00 00 00 00 00 00 00 00  00 00 00 00 00 00 00 00  ................
000000E0  00 00 00 00 00 00 00 77  77 77 77 77 77 77 77 77  .......wwwwwwwww
000000F0  77 77 77 77 70 00 0F 88  88 88 88 88 88 88 88 88  wwwwp..・・・・・・
00000100  88 88 88 88 87 00 0F 88  FF FF FF FF FF FF FF FF  ・・・..・・・・・・・・
00000110  FF FF FF F8 87 00 0F 87  00 00 00 00 00 00 00 00  ・・・・..・.......
00000120  00 00 00 0F 87 00 0F 87  00 20 02 00 20 02 00 20  ....・.・ .. ..
00000130  02 00 20 0F 87 00 0F 87  02 22 22 22 22 22 22 22  .. .・.・"""""""
00000140  22 22 22 0F 87 00 0F 87  00 20 02 00 20 02 00 20  """.・.・ .. ..
00000150  02 00 20 0F 87 00 0F 87  00 20 02 00 20 02 00 20  .. .・.・ .. ..
00000160  02 00 20 0F 87 00 0F 87  02 22 22 22 22 22 22 22  .. .・.・"""""""
00000170  22 22 22 0F 87 00 0F 87  0F FF 02 00 20 02 0F FF  """.・.・・.. ..・
00000180  02 00 20 0F 87 00 0F 87  00 20 F2 00 20 02 F0 20  .. .・.・ ・ .・
00000190  F2 00 20 0F 87 00 0F 87  02 22 2F 22 22 2F 22 22  ・ .・.・"/""/""
000001A0  2F 22 22 0F 87 00 0F 87  00 20 0F 00 20 0F 00 20  /""."・.・ .. ..
000001B0  0F 00 20 0F 87 00 0F 87  00 20 02 F0 20 F2 00 20  .. .・.・ .・・
000001C0  02 F0 20 0F 87 00 0F 87  02 22 22 2F FF 22 22 22  .・.・.・""/・"""
000001D0  22 2F FF 0F 87 00 0F 87  00 20 02 00 20 02 00 20  "/・.・.・ .. ..
000001E0  02 00 20 0F 87 00 0F 87  00 20 02 00 20 02 00 20  .. .・.・ .. ..
000001F0  02 00 20 0F 87 00 0F 87  02 22 22 22 22 22 22 22  .. .・.・"""""""
00000200  22 22 22 0F 87 00 0F 87  00 20 02 00 20 02 00 20  """.・.・ .. ..
00000210  02 00 20 0F 87 00 0F 87  00 20 02 00 20 02 00 20  .. .・.・ .. ..
00000220  02 00 20 0F 87 00 0F 87  00 00 00 00 00 00 00 00  .. .・.・.......
00000230  00 00 00 0F 87 00 0F 88  77 77 77 77 77 77 77 77  ....・.・wwwwwww
00000240  77 77 77 78 87 00 0F 88  88 88 88 88 88 88 88 88  wwwx・.・・・・・・
00000250  88 88 88 88 87 00 00 FF  FF FF FF FF FF FF FF FF  ・・・..・・・・・・・・・・
00000260  FF FF FF FF F0 00 00 00  00 00 00 00 00 00 00 00  ・・・・・.........
00000270  00 00 00 00 00 00 00 00  00 00 00 00 00 00 00 00  ................
00000280  00 00 00 00 00 00 00 00  00 00 00 00 00 00 00 00  ................
00000290  00 00 00 00 00 00 00 00  00 00 00 00 00 00 00 00  ................
000002A0  00 00 00 00 00 00 FF FF  FF FF FF FF FF FF FF FF  ......・・・・・・・・・・
000002B0  FF FF C0 00 00 07 80 00  00 03 00 00 00 01 00 00  ・・タ...・.........
000002C0  00 01 00 00 00 01 00 00  00 01 00 00 00 01 00 00  ................
000002D0  00 01 00 00 00 01 00 00  00 01 00 00 00 01 00 00  ................
000002E0  00 01 00 00 00 01 00 00  00 01 00 00 00 01 00 00  ................
000002F0  00 01 00 00 00 01 00 00  00 01 00 00 00 01 00 00  ................
00000300  00 01 00 00 00 01 00 00  00 01 00 00 00 01 00 00  ................
00000310  00 01 80 00 00 03 C0 00  00 07 FF FF FF FF FF FF  ..・...タ...・・・・・・
00000320  FF FF FF FF FF FF 28 00  00 00 10 00 00 00 20 00  ・・・・・・(....... .
00000330  00 00 01 00 04 00 00 00  00 00 C0 00 00 00 00 00  ..........タ.....
00000340  00 00 00 00 00 00 00 00  00 00 00 00 00 00 00 00  ................
00000350  00 00 00 00 80 00 00 80  00 00 00 80 80 00 80 00  ....・..・...・・.・.
00000360  00 00 80 00 80 00 80 80  00 00 00 80 80 80 00 C0  ..・.・.・・..・・・.タタ
00000370  C0 00 00 00 FF 00 00 FF  00 00 00 FF FF 00 FF 00  タ...・..・...・・.・.
00000380  00 00 FF 00 FF 00 FF FF  00 00 FF FF FF 00 00 00  ..・.・.・・・..・・・...
00000390  00 00 00 00 00 00 00 00  00 00 00 00 00 00 00 88  ...............・
000003A0  88 88 88 88 88 00 0F 00  00 00 00 00 00 80 0F 02  ・・・.......・..
000003B0  00 20 02 00 20 80 0F 02  22 22 22 22 20 80 0F 0F  . .. ・.. """" ・..
000003C0  00 20 0F FF 20 80 0F 02  F0 20 F2 00 F0 80 0F 02  . .・ ・.. ・・・・..
000003D0  F2 22 F2 22 20 80 0F 02  0F FF 02 00 20 80 0F 02  ・・ ・... ・.. ・..
000003E0  00 20 02 00 20 80 0F 02  22 22 22 22 20 80 0F 00  . .. ・.. """" ・..
000003F0  00 00 00 00 00 80 0F FF  FF FF FF FF FF 00 00 00  .....・.・・・・・・...
00000400  00 00 00 00 00 00 00 00  00 00 00 00 00 00 FF FF  ..............・・
00000410  00 00 80 01 00 00 00 00  00 00 00 00 00 00 00 00  ..・.............
```

```
00000420  00 00 00 00 00 00 00 00  00 00 00 00 00 00 00 00  ................
00000430  00 00 00 00 00 00 00 00  00 00 00 00 00 00 00 00  ................
00000440  00 00 00 00 00 00 80 01  00 00 FF FF 00 00        ......･...・・..
```

・frmAbout.frm

```
VERSION 5.00
Begin VB.Form frmAbout
   BorderStyle     =   3  '固定ﾀﾞｲｱﾛｸﾞ
   Caption         =   "ﾊﾞｰｼﾞｮﾝ情報"
   ClientHeight    =   2625
   ClientLeft      =   2340
   ClientTop       =   1935
   ClientWidth     =   5880
   ClipControls    =   0   'False
   Icon            =   "frmAbout.frx":0000
   LinkTopic       =   "Form2"
   MaxButton       =   0   'False
   MinButton       =   0   'False
   ScaleHeight     =   1811.822
   ScaleMode       =   0  'ﾕｰｻﾞｰ
   ScaleWidth      =   5521.624
   ShowInTaskbar   =   0   'False
   StartUpPosition =   1  'ｵｰﾅｰ ﾌｫｰﾑの中央
   Begin VB.PictureBox picIcon
      AutoSize        =   -1  'True
      ClipControls    =   0   'False
      Height          =   540
      Left            =   240
      Picture         =   "frmAbout.frx":000C
      ScaleHeight     =   337.12
      ScaleMode       =   0  'ﾕｰｻﾞｰ
      ScaleWidth      =   337.12
      TabIndex        =   1
      Top             =   240
      Width           =   540
   End
   Begin VB.CommandButton cmdOK
      Cancel          =   -1  'True
      Caption         =   "OK"
      Default         =   -1  'True
      Height          =   705
      Left            =   4440
      TabIndex        =   0
      Top             =   1800
      Width           =   1380
   End
   Begin VB.Label Label4
      Caption         =   "バグがちょこっと残っていますが気にせずに(^_^;"
      BeginProperty Font
         Name            =   "ＭＳ Ｐゴシック"
         Size            =   8.25
         Charset         =   128
         Weight          =   400
         Underline       =   0   'False
         Italic          =   0   'False
         Strikethrough   =   0   'False
      EndProperty
      Height          =   255
      Left            =   600
      TabIndex        =   8
      Top             =   2400
      Width           =   3495
   End
   Begin VB.Label Label3
      Caption         =   "Kochi Univ. of Tech"
      BeginProperty Font
         Name            =   "ＭＳ Ｐゴシック"
         Size            =   12
         Charset         =   128
         Weight          =   400
         Underline       =   0   'False
```

```
      Italic          =   0   'False
      Strikethrough   =   0   'False
   EndProperty
   Height          =   255
   Left            =   1320
   TabIndex        =   7
   Top             =   120
   Width           =   2775
End
Begin VB.Label Label2
   Alignment       =   2  '中央揃え
   Caption         =   "高知工科大学　電子・光システム工学科　河津研究室"
   Height          =   255
   Left            =   165
   TabIndex        =   6
   Top             =   1800
   Width           =   4095
End
Begin VB.Label Label1
   Caption         =   "A/D D/A Fast Measuring System"
   Height          =   255
   Left            =   1920
   TabIndex        =   5
   Top             =   840
   Width           =   3255
End
Begin VB.Line Line1
   BorderColor     =   &H00808080&
   BorderStyle     =   6  '実線 (ふちどり)
   Index           =   1
   X1              =   84.515
   X2              =   5408.938
   Y1              =   1024.974
   Y2              =   1024.974
End
Begin VB.Label lblTitle
   Caption         =   "ADDAFMS"
   BeginProperty Font
      Name            =   "ＭＳ Ｐゴシック"
      Size            =   24
      Charset         =   128
      Weight          =   400
      Underline       =   0   'False
      Italic          =   -1  'True
      Strikethrough   =   0   'False
   EndProperty
   ForeColor       =   &H00000000&
   Height          =   480
   Left            =   1920
   TabIndex        =   3
   Top             =   360
   Width           =   2325
End
Begin VB.Line Line1
   BorderColor     =   &H00FFFFFF&
   BorderWidth     =   2
   Index           =   0
   X1              =   98.6
   X2              =   5408.938
   Y1              =   1035.327
   Y2              =   1035.327
End
Begin VB.Label lblVersion
   Caption         =   "ﾊﾞｰｼﾞｮﾝ"
   BeginProperty Font
      Name            =   "ＭＳ Ｐゴシック"
      Size            =   9.75
      Charset         =   128
      Weight          =   400
      Underline       =   0   'False
      Italic          =   0   'False
      Strikethrough   =   0   'False
   EndProperty
```

```
      Height          =   225
      Left            =   3600
      TabIndex        =   4
      Top             =   1080
      Width           =   1965
   End
   Begin VB.Label lblDisclaimer
      Caption         =   "Copyright (C) 1999-2000, OHASHI Kenji, KUT"
      ForeColor       =   &H00000000&
      Height          =   345
      Left            =   480
      TabIndex        =   2
      Top             =   2040
      Width           =   3735
   End
End
Attribute VB_Name = "frmAbout"
Attribute VB_GlobalNameSpace = False
Attribute VB_Creatable = False
Attribute VB_PredeclaredId = True
Attribute VB_Exposed = False
Option Explicit

Private Sub cmdOK_Click()
  Unload Me
End Sub

Private Sub Form_Load()
    Me.Caption = App.Title & "のバージョン情報"
    lblVersion.Caption = "Version " & App.Major & "." & App.Minor & "." & App.Revision
End Sub
```

・frmAbout.frx

```
ADDRESS   00 01 02 03 04 05 06 07  08 09 0A 0B 0C 0D 0E 0F  0123456789ABCDEF
-------------------------------------------------------------------------------
00000000  08 00 00 00 6C 74 00 00  00 00 00 00 3E 04 00 00  ....lt......>...
00000010  6C 74 00 00 36 04 00 00  00 00 01 00 02 00 20 20  lt..6.........
00000020  10 00 00 00 00 00 E8 02  00 00 26 00 00 00 10 10  ..........&.....
00000030  10 00 00 00 00 00 28 01  00 00 0E 03 00 00 28 00  ......(.......(.
00000040  00 00 20 00 00 00 40 00  00 00 01 00 04 00 00 00  .. ...@.........
00000050  00 00 80 02 00 00 00 00  00 00 00 00 00 00 00 00  ................
00000060  00 00 00 00 00 00 00 00  00 00 00 00 80 00 00 80  ................
00000070  00 00 00 80 80 00 80 00  00 00 80 00 80 00 80 80  ................
00000080  00 00 80 80 80 00 C0 C0  C0 00 00 00 FF 00 00 FF  ................
00000090  00 00 00 FF FF 00 FF 00  00 00 FF 00 FF 00 FF FF  ................
000000A0  00 00 FF FF FF 00 00 00  00 00 00 00 00 00 00 00  ................
000000B0  00 00 00 00 00 00 00 00  00 00 00 00 00 00 00 00  ................
000000C0  00 00 00 00 00 00 00 00  00 00 00 00 00 00 00 00  ................
000000D0  00 00 00 00 00 00 00 00  00 00 00 00 00 00 00 00  ................
000000E0  00 00 00 00 00 00 00 77  77 77 77 77 77 77 77 77  .......wwwwwwwww
000000F0  77 77 77 77 70 00 0F 88  88 88 88 88 88 88 88 88  wwwwp...........
00000100  88 88 88 88 87 00 0F 88  FF FF FF FF FF FF FF FF   ...............
00000110  FF FF FF F8 87 00 0F 87  00 00 00 00 00 00 00 00  ................
00000120  00 00 00 0F 87 00 0F 87  00 20 02 00 20 02 00 20  ......... .. ..
00000130  02 00 20 0F 87 00 0F 87  02 22 22 22 22 22 22 22  .. ......"""""""
00000140  22 22 22 0F 87 00 0F 87  00 20 02 00 20 02 00 20  """...... .. ..
00000150  02 00 20 0F 87 00 0F 87  00 20 02 00 20 02 00 20  .. ...... .. ..
00000160  02 00 20 0F 87 00 0F 87  02 22 22 22 22 22 22 22  .. ......"""""""
00000170  22 22 22 0F 87 00 0F 87  0F FF 02 00 20 02 0F FF  """......... ...
00000180  02 00 20 0F 87 00 0F 87  00 20 F2 00 20 02 F0 20  .. ...... .. ..
00000190  F2 00 20 0F 87 00 0F 87  02 22 2F 22 22 2F 22 22  .. ......"/""/""
000001A0  2F 22 22 0F 87 00 0F 87  00 20 0F 00 20 0F 00 20  /""...... .. ..
000001B0  0F 00 20 0F 87 00 0F 87  00 20 02 F0 20 F2 00 20  .. ...... .. ..
000001C0  02 F0 20 0F 87 00 0F 87  02 22 22 2F FF 22 22 22  .. ......""/."""
000001D0  22 2F FF 0F 87 00 0F 87  00 20 02 00 20 02 00 20  "/....... .. ..
000001E0  02 00 20 0F 87 00 0F 87  00 20 02 00 20 02 00 20  .. ...... .. ..
000001F0  02 00 20 0F 87 00 0F 87  02 22 22 22 22 22 22 22  .. ......"""""""
00000200  22 22 22 0F 87 00 0F 87  00 20 02 00 20 02 00 20  """...... .. ..
00000210  02 00 20 0F 87 00 0F 87  00 20 02 00 20 02 00 20  .. ...... .. ..
00000220  02 00 20 0F 87 00 0F 87  00 00 00 00 00 00 00 00  .. ............
00000230  00 00 00 0F 87 00 0F 88  77 77 77 77 77 77 77 77  ........wwwwwwww
```

```
00000240  77 77 77 78 87 00 0F 88  88 88 88 88 88 88 88 88  wwwx............
00000250  88 88 88 88 87 00 00 FF  FF FF FF FF FF FF FF FF  ................
00000260  FF FF FF FF F0 00 00 00  00 00 00 00 00 00 00 00  ................
00000270  00 00 00 00 00 00 00 00  00 00 00 00 00 00 00 00  ................
00000280  00 00 00 00 00 00 00 00  00 00 00 00 00 00 00 00  ................
00000290  00 00 00 00 00 00 00 00  00 00 00 00 00 00 00 00  ................
000002A0  00 00 00 00 00 00 FF FF  FF FF FF FF FF FF FF FF  ................
000002B0  FF FF C0 00 00 07 80 00  00 03 00 00 00 01 00 00  ................
000002C0  00 01 00 00 00 01 00 00  00 01 00 00 00 01 00 00  ................
000002D0  00 01 00 00 00 01 00 00  00 01 00 00 00 01 00 00  ................
000002E0  00 01 00 00 00 01 00 00  00 01 00 00 00 01 00 00  ................
000002F0  00 01 00 00 00 01 00 00  00 01 00 00 00 01 00 00  ................
00000300  00 01 00 00 00 01 00 00  00 01 00 00 00 01 00 00  ................
00000310  00 01 80 00 00 03 C0 00  00 07 FF FF FF FF FF FF  ................
00000320  FF FF FF FF FF FF 28 00  00 00 10 00 00 00 20 00  ......(....... .
00000330  00 00 01 00 04 00 00 00  00 00 C0 00 00 00 00 00  ................
00000340  00 00 00 00 00 00 00 00  00 00 00 00 00 00 00 00  ................
00000350  00 00 00 00 80 00 00 80  00 00 00 80 80 00 80 00  ................
00000360  00 00 80 00 80 00 80 80  00 00 80 80 80 00 C0 C0  ................
00000370  C0 00 00 00 FF 00 00 FF  00 00 00 FF FF 00 FF 00  ................
00000380  00 00 FF 00 FF 00 FF FF  00 00 FF FF FF 00 00 00  ................
00000390  00 00 00 00 00 00 00 00  00 00 00 00 00 00 00 88  ................
000003A0  88 88 88 88 88 00 0F 00  00 00 00 00 00 80 0F 02  ................
000003B0  00 20 02 00 20 80 0F 02  22 22 22 22 20 80 0F 0F  . .. ...""" ...
000003C0  00 20 0F FF 20 80 0F 02  F0 20 F2 00 F0 80 0F 02  . .. .... ......
000003D0  F2 22 F2 22 20 80 0F 02  0F FF 02 00 20 80 0F 02  ."." ....... ...
000003E0  00 20 02 00 20 80 0F 02  22 22 22 22 20 80 0F 00  . .. ...""" ...
000003F0  00 00 00 00 00 80 0F FF  FF FF FF FF FF 00 00 00  ................
00000400  00 00 00 00 00 00 00 00  00 00 00 00 00 00 FF FF  ................
00000410  00 00 80 01 00 00 00 00  00 00 00 00 00 00 00 00  ................
00000420  00 00 00 00 00 00 00 00  00 00 00 00 00 00 00 00  ................
00000430  00 00 00 00 00 00 00 00  00 00 00 00 00 00 00 00  ................
00000440  00 00 00 00 00 00 80 01  00 00 FF FF 00 00        ..............
```

・CloseDevice.frm

```
VERSION 5.00
Begin VB.Form frmCloseDevice
   BorderStyle     =   3  '固定ﾀﾞｲｱﾛｸﾞ
   Caption         =   "デバイスクローズ"
   ClientHeight    =   3195
   ClientLeft      =   45
   ClientTop       =   330
   ClientWidth     =   4680
   Icon            =   "CloseDevice.frx":0000
   LinkTopic       =   "Form1"
   MaxButton       =   0   'False
   MinButton       =   0   'False
   ScaleHeight     =   3195
   ScaleWidth      =   4680
   ShowInTaskbar   =   0   'False
   StartUpPosition =   1  'ｵｰﾅｰ ﾌｫｰﾑの中央
   Begin VB.CommandButton Command1
      Caption         =   "クローズ"
      Height          =   855
      Left            =   2640
      TabIndex        =   1
      Top             =   360
      Width           =   1695
   End
   Begin VB.CommandButton Command2
      Caption         =   "クローズ"
      Height          =   855
      Left            =   2640
      TabIndex        =   0
      Top             =   1800
      Width           =   1695
   End
   Begin VB.Label Label1
      Caption         =   "FBIAD1"
      BeginProperty Font
         Name            =   "ＭＳ Ｐゴシック"
```

```
         Size            =   26.25
         Charset         =   128
         Weight          =   400
         Underline       =   0   'False
         Italic          =   0   'False
         Strikethrough   =   0   'False
      EndProperty
      Height          =   495
      Left            =   360
      TabIndex        =   3
      Top             =   480
      Width           =   2175
   End
   Begin VB.Label Label2
      Caption         =   "FBIDA1"
      BeginProperty Font
         Name            =   "ＭＳ Ｐゴシック"
         Size            =   26.25
         Charset         =   128
         Weight          =   400
         Underline       =   0   'False
         Italic          =   0   'False
         Strikethrough   =   0   'False
      EndProperty
      Height          =   495
      Left            =   360
      TabIndex        =   2
      Top             =   2040
      Width           =   2055
   End
End
Attribute VB_Name = "frmCloseDevice"
Attribute VB_GlobalNameSpace = False
Attribute VB_Creatable = False
Attribute VB_PredeclaredId = True
Attribute VB_Exposed = False
Private Sub Command1_Click()
    Dim nRet As Long
    If adOpenFlag = 1 Then
        nRet = AdClose(adDeviceHandle)
        If nRet <> AD_ERROR_SUCCESS Then
            Call AdDispErrMessage(nRet)
            Exit Sub
        Else
            adOpenFlag = 0
            samplingConfFlag = 0
            daMakeDataFlag = 0

            frmMain.InfoBox.SelStart = Len(frmMain.InfoBox.Text) + 1
            frmMain.InfoBox.SelText = vbCrLf & "A/D - デバイスクローズＯＫ"

        End If
    Else
        Beep
        frmMain.InfoBox.SelStart = Len(frmMain.InfoBox.Text) + 1
        frmMain.InfoBox.SelText = vbCrLf & "A/D - デバイスがオープンされていません"
    End If

End Sub

Private Sub Command2_Click()
    Dim nRet As Long
    If daOpenFlag = 1 Then
        nRet = DaClose(daDeviceHandle)
        If nRet <> DA_ERROR_SUCCESS Then
            Call DaDispErrMessage(nRet)
            Exit Sub
        Else
            daOpenFlag = 0
            samplingConfFlag = 0
            daMakeDataFlag = 0

            frmMain.InfoBox.SelStart = Len(frmMain.InfoBox.Text) + 1
```

```
            frmMain.InfoBox.SelText = vbCrLf & "D/A - デバイスクローズＯＫ"

        End If
    Else
        Beep
        frmMain.InfoBox.SelStart = Len(frmMain.InfoBox.Text) + 1
        frmMain.InfoBox.SelText = vbCrLf & "D/A - デバイスがオープンされていません"

    End If
End Sub
```

・CloseDevice.frx

```
ADDRESS   00 01 02 03 04 05 06 07  08 09 0A 0B 0C 0D 0E 0F  0123456789ABCDEF
--------------------------------------------------------------------------
00000000  08 00 00 00 6C 74 00 00  00 00 00 00              ....lt......
```

・FbiDa.bas

```
Attribute VB_Name = "FbiDa"
Public Const DA_FLAG_SYNC = 1
Public Const DA_FLAG_ASYNC = 2

Public Const DA_FLAG_BIN = 1
Public Const DA_FLAG_CSV = 2

Public Const DA_STATUS_STOP_SAMPLING = 1
Public Const DA_STATUS_WAIT_TRIGGER = 2
Public Const DA_STATUS_NOW_SAMPLING = 3

Public Const DA_EVENT_STOP_TRIGGER = 1
Public Const DA_EVENT_STOP_FUNCTION = 2
Public Const DA_EVENT_STOP_SAMPLING = 3
Public Const DA_EVENT_RESET_IN = 4
Public Const DA_EVENT_CURRENT_OFF = 5

Public Const DA_ADJUST_BIOFFSET = 1
Public Const DA_ADJUST_UNIOFFSET = 2
Public Const DA_ADJUST_BIGAIN = 3
Public Const DA_ADJUST_UNIGAIN = 4

Public Const DA_ADJUST_UP = 1
Public Const DA_ADJUST_DOWN = 2
Public Const DA_ADJUST_STORE = 3
Public Const DA_ADJUST_STANDBY = 4
Public Const DA_ADJUST_NOT_STORE = 5

Public Const DA_DATA_PHYSICAL = 1
Public Const DA_DATA_BIN8 = 2
Public Const DA_DATA_BIN12 = 3
Public Const DA_DATA_BIN16 = 4
Public Const DA_DATA_BIN24 = 5

Public Const DA_CONV_SMOOTH = 1
Public Const DA_CONV_AVERAGE1 = &H100
Public Const DA_CONV_AVERAGE2 = &H200

Public Const DA_IO_SAMPLING = 1
Public Const DA_FIFO_SAMPLING = 2
Public Const DA_MEM_SAMPLING = 4

Public Const DA_TRIG_START = 1
Public Const DA_TRIG_STOP = 2
Public Const DA_TRIG_START_STOP = 3

Public Const DA_FREERUN = 1
Public Const DA_EXTTRG = 2
Public Const DA_EXTTRG_DI = 3

Public Const DA_DOWN_EDGE = 1
Public Const DA_UP_EDGE = 2
```

```
Public Const DA_0_1V = &H1
Public Const DA_0_2P5V = &H2
Public Const DA_0_5V = &H4
Public Const DA_0_10V = &H8
Public Const DA_1_5V = &H10
Public Const DA_0_20mA = &H1000
Public Const DA_4_20mA = &H2000
Public Const DA_1V = &H10000
Public Const DA_2P5V = &H20000
Public Const DA_5V = &H40000
Public Const DA_10V = &H80000

Public Const DA_ISOLATION = 1
Public Const DA_NOT_ISOLATION = 2

Public Const DA_RANGE_UNIPOLAR = 1
Public Const DA_RANGE_BIPOLAR = 2

Public Const DA_MODE_CUT = 1
Public Const DA_MODE_SYNTHE = 2

Public Const DA_REPEAT_NONINTERVAL = 1
Public Const DA_REPEAT_INTERVAL = 2

Public Const DA_COUNTER_CLEAR = 1
Public Const DA_COUNTER_NONCLEAR = 2

Public Const DA_LATCH_CLEAR = 1
Public Const DA_LATCH_NONCLEAR = 2

Public Const DA_CLOCK_TIMER = 1
Public Const DA_CLOCK_FIXED = 2

Public Const DA_EXTRG_IN = 1
Public Const DA_EXTRG_OUT = 2

Public Const DA_EXCLK_IN = 1
Public Const DA_EXCLK_OUT = 2

Public Const DA_FILTER_OFF = 1
Public Const DA_FILTER_ON = 2

Type DASMPLCHREQ
    ulChNo As Long
    ulRange As Long
End Type

Type DASMPLREQ
    ulChCount As Long
    SmplChReq(0 To 255) As DASMPLCHREQ
    ulSamplingMode As Long
    fSmplFreq As Single
    ulSmplRepeat As Long
    ulTrigMode As Long
    ulTrigPoint As Long
    ulTrigDelay As Long
    ulEClkEdge As Long
    ulTrigEdge As Long
    ulTrigDI As Long
End Type

Type DABOARDSPEC
    ulBoardType As Long
    ulBoardID As Long
    ulSamplingMode As Long
    ulChCount As Long
    ulResolution As Long
    ulRange As Long
    ulIsolation As Long
    ulDi As Long
    ulDo As Long
End Type
```

```
Type DAMODECHREQ
    ulRange As Long
    fVolt As Single
    ulFilter As Long
End Type

Type DAMODEREQ
    ModeChReq(0 To 1) As DAMODECHREQ
    ulPulseMode As Long
    ulSyntheOut As Long
    ulInterval As Long
    fIntervalCycle As Single
    ulCounterClear As Long
    ulDaLatch As Long
    ulSamplingClock As Long
    ulExControl As Long
    ulExClock As Long
End Type

Public Const DA_ERROR_SUCCESS = 0
Public Const DA_ERROR_NOT_DEVICE = &HC0000001
Public Const DA_ERROR_NOT_OPEN = &HC0000002
Public Const DA_ERROR_INVALID_HANDLE = &HC0000003
Public Const DA_ERROR_ALREADY_OPEN = &HC0000004
Public Const DA_ERROR_NOT_SUPPORTED = &HC0000009
Public Const DA_ERROR_NOW_SAMPLING = &HC0001001
Public Const DA_ERROR_STOP_SAMPLING = &HC0001002
Public Const DA_ERROR_START_SAMPLING = &HC0001003
Public Const DA_ERROR_SAMPLING_TIMEOUT = &HC0001004
Public Const DA_ERROR_INVALID_PARAMETER = &HC0001021
Public Const DA_ERROR_ILLEGAL_PARAMETER = &HC0001022
Public Const DA_ERROR_NULL_POINTER = &HC0001023
Public Const DA_ERROR_SET_DATA = &HC0001024
Public Const DA_ERROR_FILE_OPEN = &HC0001041
Public Const DA_ERROR_FILE_CLOSE = &HC0001042
Public Const DA_ERROR_FILE_READ = &HC0001043
Public Const DA_ERROR_FILE_WRITE = &HC0001044
Public Const DA_ERROR_INVALID_DATA_FORMAT = &HC0001061
Public Const DA_ERROR_INVALID_AVERAGE_OR_SMOOTHING = &HC0001062
Public Const DA_ERROR_INVALID_SOURCE_DATA = &HC0001063
Public Const DA_ERROR_NOT_ALLOCATE_MEMORY = &HC0001081
Public Const DA_ERROR_NOT_LOAD_DLL = &HC0001082
Public Const DA_ERROR_CALL_DLL = &HC0001083

Declare Function DaOpen Lib "FbiDa.DLL" (ByVal lpszName As String) As Long
Declare Function DaClose Lib "FbiDa.DLL" (ByVal hDeviceHandle As Long) As Long
Declare Function DaGetDeviceInfo Lib "FbiDa.DLL" (ByVal hDeviceHandle As Long, ByRef pDaBoardSpec As
DABOARDSPEC) As Long
Declare Function DaSetBoardConfig Lib "FbiDa.DLL" (ByVal hDeviceHandle As Long, ByVal ulSmplBufferSize As Long,
ByVal hEvent As Long, ByVal lpEventProc As Long, ByVal dwUser As Long) As Long
Declare Function DaGetBoardConfig Lib "FbiDa.DLL" (ByVal hDeviceHandle As Long, ByRef ulSmplBufferSize As Long,
ByRef ulDaSmplEventFactor As Long) As Long
Declare Function DaSetSamplingConfig Lib "FbiDa.DLL" (ByVal hDeviceHandle As Long, ByRef pDaSmplConfig As
DASMPLREQ) As Long
Declare Function DaGetSamplingConfig Lib "FbiDa.DLL" (ByVal hDeviceHandle As Long, ByRef pDaSmplConfig As
DASMPLREQ) As Long
Declare Function DaSetMode Lib "FbiDa.DLL" (ByVal hDeviceHandle As Long, ByRef pDaMode As DAMODEREQ) As Long
Declare Function DaGetMode Lib "FbiDa.DLL" (ByVal hDeviceHandle As Long, ByRef pDaMode As DAMODEREQ) As Long
Declare Function DaSetSamplingData Lib "FbiDa.DLL" (ByVal hDeviceHandle As Long, ByRef pSmplData As Any, ByVal
dwSmplDataNum As Long) As Long
Declare Function DaClearSamplingData Lib "FbiDa.DLL" (ByVal hDeviceHandle As Long) As Long
Declare Function DaStartSampling Lib "FbiDa.DLL" (ByVal hDeviceHandle As Long, ByVal fdwSyncFlag As Long) As
Long
Declare Function DaStartFileSampling Lib "FbiDa.DLL" (ByVal hDeviceHandle As Long, ByVal pszPathName As String,
ByVal ulFileFlag As Long, ByVal ulSmplNum As Long) As Long
Declare Function DaStopSampling Lib "FbiDa.DLL" (ByVal hDeviceHandle As Long) As Long
Declare Function DaGetStatus Lib "FbiDa.DLL" (ByVal hDeviceHandle As Long, ByRef ulDaSmplStatus As Long, ByRef
ulDaSmplCount As Long, ByRef ulDaAvailCount As Long, ByRef ulDaAvailRepeat As Long) As Long
Declare Function DaOutputDA Lib "FbiDa.DLL" (ByVal hDeviceHandle As Long, ByVal nCh As Long, ByRef lpDaSmplChReq
As DASMPLCHREQ, ByRef pData As Any) As Long
Declare Function DaInputDI Lib "FbiDa.DLL" (ByVal hDeviceHandle As Long, ByRef pdwData As Long) As Long
Declare Function DaOutputDO Lib "FbiDa.DLL" (ByVal hDeviceHandle As Long, ByVal dwData As Long) As Long
```

```
Declare Function DaAdjustVR Lib "FbiDa.DLL" (ByVal hDeviceHandle As Long, ByVal ulAdjustCh As Long, ByVal ulSelVolume As Long, ByVal ulControl As Long, ByVal v As Long) As Long
Declare Function DaDataConv Lib "FbiDaDc.DLL" (ByVal uSrcFormCode As Long, ByRef pSrcData As Any, ByVal uSrcSmplDataNum As Long, ByRef pSrcSmplReq As DASMPLREQ, ByVal uDestFormCode As Long, ByRef pDestData As Any, ByVal puDestSmplDataNum As Long, ByRef pDestSmplReq As DASMPLREQ, ByVal uEffect As Long, ByVal uCount As Long, ByVal lpfnConv As Long) As Long
Declare Function DaWriteFile Lib "FbiDaDc.DLL" (ByVal pszPathName As String, ByRef pSmplData As Any, ByVal ulFormCode As Long, ByVal ulSmplNum As Long, ByVal ulChCount As Long) As Long
```

・FbiAd.bas

```
Attribute VB_Name = "FbiAd"
Public Const AD_FLAG_SYNC = 1
Public Const AD_FLAG_ASYNC = 2

Public Const AD_FLAG_BIN = 1
Public Const AD_FLAG_CSV = 2

Public Const AD_STATUS_STOP_SAMPLING = 1
Public Const AD_STATUS_WAIT_TRIGGER = 2
Public Const AD_STATUS_NOW_SAMPLING = 3

Public Const AD_EVENT_SMPLNUM = 1
Public Const AD_EVENT_STOP_TRIGGER = 2
Public Const AD_EVENT_STOP_FUNCTION = 3
Public Const AD_EVENT_STOP_TIMEOUT = 4
Public Const AD_EVENT_STOP_SAMPLING = 5

Public Const AD_INPUT_SINGLE = 1
Public Const AD_INPUT_DIFF = 2

Public Const AD_ADJUST_BIOFFSET = 1
Public Const AD_ADJUST_UNIOFFSET = 2
Public Const AD_ADJUST_BIGAIN = 3
Public Const AD_ADJUST_UNIGAIN = 4

Public Const AD_ADJUST_UP = 1
Public Const AD_ADJUST_DOWN = 2
Public Const AD_ADJUST_STORE = 3
Public Const AD_ADJUST_STANDBY = 4
Public Const AD_ADJUST_NOT_STORE = 5

Public Const AD_DATA_PHYSICAL = 1
Public Const AD_DATA_BIN8 = 2
Public Const AD_DATA_BIN12 = 3
Public Const AD_DATA_BIN16 = 4
Public Const AD_DATA_BIN24 = 5

Public Const AD_CONV_SMOOTH = 1
Public Const AD_CONV_AVERAGE1 = &H100
Public Const AD_CONV_AVERAGE2 = &H200

Public Const AD_IO_SAMPLING = 1
Public Const AD_FIFO_SAMPLING = 2
Public Const AD_MEM_SAMPLING = 4

Public Const AD_TRIG_START = 1
Public Const AD_TRIG_STOP = 2
Public Const AD_TRIG_START_STOP = 3

Public Const AD_FREERUN = 1
Public Const AD_EXTTRG = 2
Public Const AD_EXTTRG_DI = 3
Public Const AD_LEVEL_P = 4
Public Const AD_LEVEL_M = 5
Public Const AD_LEVEL_D = 6
Public Const AD_INRANGE = 7
Public Const AD_OUTRANGE = 8
Public Const AD_ETERNITY = 9
Public Const AD_START_P1 = &H10
Public Const AD_START_M1 = &H20
Public Const AD_START_D1 = &H40
```

```
Public Const AD_START_P2 = &H80
Public Const AD_START_M2 = &H100
Public Const AD_START_D2 = &H200
Public Const AD_STOP_P1 = &H400
Public Const AD_STOP_M1 = &H800
Public Const AD_STOP_D1 = &H1000
Public Const AD_STOP_P2 = &H2000
Public Const AD_STOP_M2 = &H4000
Public Const AD_STOP_D2 = &H8000
Public Const AD_ANALOG_FILTER = &H10000

Public Const AD_DOWN_EDGE = 1
Public Const AD_UP_EDGE = 2

Public Const AD_LOW_PULSE = 1
Public Const AD_HIGH_PULSE = 2

Public Const AD_NORMAL_MODE = 1
Public Const AD_FAST_MODE = 2

Public Const AD_0_1V = &H1
Public Const AD_0_2P5V = &H2
Public Const AD_0_5V = &H4
Public Const AD_0_10V = &H8
Public Const AD_1_5V = &H10
Public Const AD_0_20mA = &H1000
Public Const AD_4_20mA = &H2000
Public Const AD_1V = &H10000
Public Const AD_2P5V = &H20000
Public Const AD_5V = &H40000
Public Const AD_10V = &H80000

Public Const AD_ISOLATION = 1
Public Const AD_NOT_ISOLATION = 2

Type ADSMPLCHREQ
    ulChNo As Long
    ulRange As Long
End Type

Type ADSMPLREQ
    ulChCount As Long
    SmplChReq(0 To 255) As ADSMPLCHREQ
    ulSamplingMode As Long
    ulSingleDiff As Long
    ulSmplNum As Long
    ulSmplEventNum As Long
    fSmplFreq As Single
    ulTrigPoint As Long
    ulTrigMode As Long
    lTrigDelay As Long
    ulTrigCh As Long
    fTrigLevel1 As Single
    fTrigLevel2 As Single
    ulEClkEdge As Long
    ulATrgPulse As Long
    ulTrigEdge As Long
    ulTrigDI As Long
    ulFastMode As Long
End Type

Type ADBOARDSPEC
    ulBoardType As Long
    ulBoardID As Long
    dwSamplingMode As Long
    ulChCountS As Long
    ulChCountD As Long
    ulResolution As Long
    dwRange As Long
    ulIsolation As Long
    ulDi As Long
    ulDo As Long
End Type
```

```
Public Const AD_ERROR_SUCCESS = 0
Public Const AD_ERROR_NOT_DEVICE = &HC0000001
Public Const AD_ERROR_NOT_OPEN = &HC0000002
Public Const AD_ERROR_INVALID_HANDLE = &HC0000003
Public Const AD_ERROR_ALREADY_OPEN = &HC0000004
Public Const AD_ERROR_NOT_SUPPORTED = &HC0000009
Public Const AD_ERROR_NOW_SAMPLING = &HC0001001
Public Const AD_ERROR_STOP_SAMPLING = &HC0001002
Public Const AD_ERROR_START_SAMPLING = &HC0001003
Public Const AD_ERROR_SAMPLING_TIMEOUT = &HC0001004
Public Const AD_ERROR_INVALID_PARAMETER = &HC0001021
Public Const AD_ERROR_ILLEGAL_PARAMETER = &HC0001022
Public Const AD_ERROR_NULL_POINTER = &HC0001023
Public Const AD_ERROR_GET_DATA = &HC0001024
Public Const AD_ERROR_FILE_OPEN = &HC0001041
Public Const AD_ERROR_FILE_CLOSE = &HC0001042
Public Const AD_ERROR_FILE_READ = &HC0001043
Public Const AD_ERROR_FILE_WRITE = &HC0001044
Public Const AD_ERROR_INVALID_DATA_FORMAT = &HC0001061
Public Const AD_ERROR_INVALID_AVERAGE_OR_SMOOTHING = &HC0001062
Public Const AD_ERROR_INVALID_SOURCE_DATA = &HC0001063
Public Const AD_ERROR_NOT_ALLOCATE_MEMORY = &HC0001081
Public Const AD_ERROR_NOT_LOAD_DLL = &HC0001082
Public Const AD_ERROR_CALL_DLL = &HC0001083

Declare Function AdOpen Lib "FbiAd.DLL" (ByVal lpszName As String) As Long
Declare Function AdClose Lib "FbiAd.DLL" (ByVal hDeviceHandle As Long) As Long
Declare Function AdGetDeviceInfo Lib "FbiAd.DLL" (ByVal hDeviceHandle As Long, ByRef BoardSpec As ADBOARDSPEC)
As Long
Declare Function AdSetBoardConfig Lib "FbiAd.DLL" (ByVal hDeviceHandle As Long, ByVal hEvent As Long, ByVal
lpEventProc As Long, ByVal dwUser As Long) As Long
Declare Function AdGetBoardConfig Lib "FbiAd.DLL" (ByVal hDeviceHandle As Long, ByRef ulAdSmplEventFactor As
Long) As Long
Declare Function AdSetSamplingConfig Lib "FbiAd.DLL" (ByVal hDeviceHandle As Long, ByRef pAdSmplConfig As
ADSMPLREQ) As Long
Declare Function AdGetSamplingConfig Lib "FbiAd.DLL" (ByVal hDeviceHandle As Long, ByRef pAdSmplConfig As
ADSMPLREQ) As Long
Declare Function AdGetSamplingData Lib "FbiAd.DLL" (ByVal hDeviceHandle As Long, ByRef pSmplData As Any, ByRef
ulSmplNum As Long) As Long
Declare Function AdClearSamplingData Lib "FbiAd.DLL" (ByVal hDeviceHandle As Long) As Long
Declare Function AdStartSampling Lib "FbiAd.DLL" (ByVal hDeviceHandle As Long, ByVal ulSyncFlag As Long) As
Long
Declare Function AdStartFileSampling Lib "FbiAd.DLL" (ByVal hDeviceHandle As Long, ByVal pszPathName As String,
ByVal ulFileFlag As Long) As Long
Declare Function AdTriggerSampling Lib "FbiAd.DLL" (ByVal hDeviceHandle As Long, ByVal ulChNo As Long, ByVal
ulRange As Long, ByVal ulSingleDiff As Long, ByVal ulTriggerMode As Long, ByVal ulTrigEdge As Long, ByVal
ulSmplNum As Long) As Long
Declare Function AdMemTriggerSampling Lib "FbiAd.DLL" (ByVal hDeviceHandle As Long, ByVal ulChCount As Long,
ByRef lpSmplChReq As ADSMPLCHREQ, ByVal ulSmplNum As Long, ByVal ulRepeatCount As Long, ByVal ulTrigEdge As
Long, ByVal fSmplFreq As Single, ByVal ulEClkEdge As Long, ByVal ulFastMode As Long) As Long
Declare Function AdStopSampling Lib "FbiAd.DLL" (ByVal hDeviceHandle As Long) As Long
Declare Function AdGetStatus Lib "FbiAd.DLL" (ByVal hDeviceHandle As Long, ByRef ulAdSmplStatus As Long, ByRef
ulAdSmplCount As Long, ByRef ulAdAvailCount As Long) As Long
Declare Function AdInputAD Lib "FbiAd.DLL" (ByVal hDeviceHandle As Long, ByVal ulCh As Long, ByVal ulSingleDiff
As Long, ByRef lpAdSmplChReq As ADSMPLCHREQ, ByRef lpData As Any) As Long
Declare Function AdInputDI Lib "FbiAd.DLL" (ByVal hDeviceHandle As Long, ByRef dwData As Long) As Long
Declare Function AdOutputDO Lib "FbiAd.DLL" (ByVal hDeviceHandle As Long, ByVal dwData As Long) As Long
Declare Function AdAdjustVR Lib "FbiAd.DLL" (ByVal hDeviceHandle As Long, ByVal ulAdjustCh As Long, ByVal
ulSingleDiff As Long, ByVal ulSelVolume As Long, ByVal ulControl As Long, ByVal ulTap As Long) As Long
Declare Function AdDataConv Lib "FbiAdDC.DLL" (ByVal uSrcFormCode As Long, ByRef pSrcData As Any, ByVal
uSrcSmplDataNum As Long, ByRef pSrcSmplReq As ADSMPLREQ, ByVal uDestFormCode As Long, ByRef pDestData As Any,
ByRef puDestSmplDataNum As Long, ByRef pDestSmplReq As ADSMPLREQ, ByVal uEffect As Long, ByVal uCount As Long,
ByVal lpfnConv As Long) As Long
Declare Function AdReadFile Lib "FbiAdDC.DLL" (ByVal pszPathName As String, ByRef pSmplData As Any, ByVal
uFormCode As Long) As Long
```

・DaModule.bas

```
Attribute VB_Name = "DaModule"
```

```
Public daDeviceHandle As Long
Public daChannel As Long
Public daOpenFlag As Long
Public daConfig As DASMPLREQ
Public daInfo As DABOARDSPEC
Public daMode As DAMODEREQ
Public daData(524288) As Integer
Public daDataTemp(524288) As Integer

Public szTemp As String

Public Sub DaDispErrMessage(ByVal uErrCode As Long)
    Beep
    Select Case uErrCode
        Case DA_ERROR_SUCCESS
            frmMain.InfoBox.SelStart = Len(frmMain.InfoBox.Text) + 1
            frmMain.InfoBox.SelText = vbCrLf & "D/A - 正常終了"

        Case DA_ERROR_NOT_DEVICE
            frmMain.InfoBox.SelStart = Len(frmMain.InfoBox.Text) + 1
            frmMain.InfoBox.SelText = vbCrLf & "D/A - ドライバ（デバイス）が呼び出せません"

        Case DA_ERROR_NOT_OPEN
            frmMain.InfoBox.SelStart = Len(frmMain.InfoBox.Text) + 1
            frmMain.InfoBox.SelText = vbCrLf & "D/A - ドライバ（デバイス）がオープンできません"

        Case DA_ERROR_INVALID_HANDLE
            frmMain.InfoBox.SelStart = Len(frmMain.InfoBox.Text) + 1
            frmMain.InfoBox.SelText = vbCrLf & "D/A - 無効なデバイスハンドルです"

        Case DA_ERROR_ALREADY_OPEN
            frmMain.InfoBox.SelStart = Len(frmMain.InfoBox.Text) + 1
            frmMain.InfoBox.SelText = vbCrLf & "D/A - すでにオープンされているデバイスです"

        Case DA_ERROR_NOT_SUPPORTED
            frmMain.InfoBox.SelStart = Len(frmMain.InfoBox.Text) + 1
            frmMain.InfoBox.SelText = vbCrLf & "D/A - サポートされていません"

        Case DA_ERROR_NOW_SAMPLING
            frmMain.InfoBox.SelStart = Len(frmMain.InfoBox.Text) + 1
            frmMain.InfoBox.SelText = vbCrLf & "D/A - アナログ出力実行中です"

        Case DA_ERROR_STOP_SAMPLING
            frmMain.InfoBox.SelStart = Len(frmMain.InfoBox.Text) + 1
            frmMain.InfoBox.SelText = vbCrLf & "D/A - アナログ出力停止中です"

        Case DA_ERROR_START_SAMPLING
            frmMain.InfoBox.SelStart = Len(frmMain.InfoBox.Text) + 1
            frmMain.InfoBox.SelText = vbCrLf & "D/A - サンプリングを実行できませんでした"

        Case DA_ERROR_SAMPLING_TIMEOUT
            frmMain.InfoBox.SelStart = Len(frmMain.InfoBox.Text) + 1
            frmMain.InfoBox.SelText = vbCrLf & "D/A - サンプリング出力においてタイムアウトが発生しました"

        Case DA_ERROR_INVALID_PARAMETER
            frmMain.InfoBox.SelStart = Len(frmMain.InfoBox.Text) + 1
            frmMain.InfoBox.SelText = vbCrLf & "D/A - 無効なパラメータです"

        Case DA_ERROR_ILLEGAL_PARAMETER
            frmMain.InfoBox.SelStart = Len(frmMain.InfoBox.Text) + 1
            frmMain.InfoBox.SelText = vbCrLf & "D/A - サンプリング設定が正しくありません"

        Case DA_ERROR_NULL_POINTER
            frmMain.InfoBox.SelStart = Len(frmMain.InfoBox.Text) + 1
            frmMain.InfoBox.SelText = vbCrLf & "D/A - NULL ポインタを指定しました"

        Case DA_ERROR_SET_DATA
            frmMain.InfoBox.SelStart = Len(frmMain.InfoBox.Text) + 1
            frmMain.InfoBox.SelText = vbCrLf & "D/A - サンプリングデータのセットができませんでした"

        Case DA_ERROR_FILE_OPEN
            frmMain.InfoBox.SelStart = Len(frmMain.InfoBox.Text) + 1
```

```
            frmMain.InfoBox.SelText = vbCrLf & "D/A - ファイルのオープンに失敗しました"

        Case DA_ERROR_FILE_CLOSE
            frmMain.InfoBox.SelStart = Len(frmMain.InfoBox.Text) + 1
            frmMain.InfoBox.SelText = vbCrLf & "D/A - ファイルのクローズに失敗しました"

        Case DA_ERROR_FILE_READ
            frmMain.InfoBox.SelStart = Len(frmMain.InfoBox.Text) + 1
            frmMain.InfoBox.SelText = vbCrLf & "D/A - ファイルの読み込みに失敗しました"

        Case DA_ERROR_FILE_WRITE
            frmMain.InfoBox.SelStart = Len(frmMain.InfoBox.Text) + 1
            frmMain.InfoBox.SelText = vbCrLf & "D/A - ファイルの書き込みに失敗しました"

        Case DA_ERROR_INVALID_DATA_FORMAT
            frmMain.InfoBox.SelStart = Len(frmMain.InfoBox.Text) + 1
            frmMain.InfoBox.SelText = vbCrLf & "D/A - データのフォーマットが無効です"

        Case DA_ERROR_INVALID_AVERAGE_OR_SMOOTHING
            frmMain.InfoBox.SelStart = Len(frmMain.InfoBox.Text) + 1
            frmMain.InfoBox.SelText = vbCrLf & "D/A - 平均またはスムージングの指定が正しくありません"

        Case DA_ERROR_INVALID_SOURCE_DATA
            frmMain.InfoBox.SelStart = Len(frmMain.InfoBox.Text) + 1
            frmMain.InfoBox.SelText = vbCrLf & "D/A - データ変換元として指定されたデータが正しくありません"

        Case DA_ERROR_NOT_ALLOCATE_MEMORY
            frmMain.InfoBox.SelStart = Len(frmMain.InfoBox.Text) + 1
            frmMain.InfoBox.SelText = vbCrLf & "D/A - メモリが確保できません"

        Case DA_ERROR_NOT_LOAD_DLL
            frmMain.InfoBox.SelStart = Len(frmMain.InfoBox.Text) + 1
            frmMain.InfoBox.SelText = vbCrLf & "D/A - DLL ファイルの読み込みに失敗しました"

        Case DA_ERROR_CALL_DLL
            frmMain.InfoBox.SelStart = Len(frmMain.InfoBox.Text) + 1
            frmMain.InfoBox.SelText = vbCrLf & "D/A - DLL の呼び出しに失敗しました"

        Case Else
            frmMain.InfoBox.SelStart = Len(frmMain.InfoBox.Text) + 1
            frmMain.InfoBox.SelText = vbCrLf & "D/A - 予期しないエラーが発生しました"

   End Select
End Sub
```

・AdModule.bas

```
Attribute VB_Name = "AdModule"

Public adDeviceHandle As Long
Public adChannel As Long
Public adOpenFlag As Long
Public adConfig As ADSMPLREQ
Public adInfo As ADBOARDSPEC
Public adData() As Integer
Public adDataTemp() As Integer


Public Sub AdDispErrMessage(ByVal uErrCode As Long)
    Beep
    Select Case uErrCode
        Case AD_ERROR_SUCCESS
            frmMain.InfoBox.SelStart = Len(frmMain.InfoBox.Text) + 1
            frmMain.InfoBox.SelText = vbCrLf & "A/D - 正常終了"

        Case AD_ERROR_NOT_DEVICE
            frmMain.InfoBox.SelStart = Len(frmMain.InfoBox.Text) + 1
            frmMain.InfoBox.SelText = vbCrLf & "A/D - ドライバ（デバイス）が呼び出せません"

        Case AD_ERROR_NOT_OPEN
            frmMain.InfoBox.SelStart = Len(frmMain.InfoBox.Text) + 1
            frmMain.InfoBox.SelText = vbCrLf & "A/D - ドライバ（デバイス）がオープンできません"
```

```
Case AD_ERROR_INVALID_HANDLE
    frmMain.InfoBox.SelStart = Len(frmMain.InfoBox.Text) + 1
    frmMain.InfoBox.SelText = vbCrLf & "A/D - 無効なデバイスハンドルです"

Case AD_ERROR_ALREADY_OPEN
    frmMain.InfoBox.SelStart = Len(frmMain.InfoBox.Text) + 1
    frmMain.InfoBox.SelText = vbCrLf & "A/D - すでにオープンしているデバイスです"

Case AD_ERROR_NOT_SUPPORTED
    frmMain.InfoBox.SelStart = Len(frmMain.InfoBox.Text) + 1
    frmMain.InfoBox.SelText = vbCrLf & "A/D - サポートされていません"

Case AD_ERROR_NOW_SAMPLING
    frmMain.InfoBox.SelStart = Len(frmMain.InfoBox.Text) + 1
    frmMain.InfoBox.SelText = vbCrLf & "A/D - サンプリング実行中です"

Case AD_ERROR_STOP_SAMPLING
    frmMain.InfoBox.SelStart = Len(frmMain.InfoBox.Text) + 1
    frmMain.InfoBox.SelText = vbCrLf & "A/D - サンプリング停止中です"

Case AD_ERROR_START_SAMPLING
    frmMain.InfoBox.SelStart = Len(frmMain.InfoBox.Text) + 1
    frmMain.InfoBox.SelText = vbCrLf & "A/D - サンプリングを実行できませんでした"

Case AD_ERROR_SAMPLING_TIMEOUT
    frmMain.InfoBox.SelStart = Len(frmMain.InfoBox.Text) + 1
    frmMain.InfoBox.SelText = vbCrLf & "A/D - サンプリング中にタイムアウトが発生しました"

Case AD_ERROR_INVALID_PARAMETER
    frmMain.InfoBox.SelStart = Len(frmMain.InfoBox.Text) + 1
    frmMain.InfoBox.SelText = vbCrLf & "A/D - パラメータが不正です"

Case AD_ERROR_ILLEGAL_PARAMETER
    frmMain.InfoBox.SelStart = Len(frmMain.InfoBox.Text) + 1
    frmMain.InfoBox.SelText = vbCrLf & "A/D - サンプリング設定が正しくありません"

Case AD_ERROR_NULL_POINTER
    frmMain.InfoBox.SelStart = Len(frmMain.InfoBox.Text) + 1
    frmMain.InfoBox.SelText = vbCrLf & "A/D - NULL ポインタを指定しました"

Case AD_ERROR_GET_DATA
    frmMain.InfoBox.SelStart = Len(frmMain.InfoBox.Text) + 1
    frmMain.InfoBox.SelText = vbCrLf & "A/D - サンプリングデータの取得ができませんでした"

Case AD_ERROR_FILE_OPEN
    frmMain.InfoBox.SelStart = Len(frmMain.InfoBox.Text) + 1
    frmMain.InfoBox.SelText = vbCrLf & "A/D - ファイルのオープンに失敗しました"

Case AD_ERROR_FILE_CLOSE
    frmMain.InfoBox.SelStart = Len(frmMain.InfoBox.Text) + 1
    frmMain.InfoBox.SelText = vbCrLf & "A/D - ファイルのクローズに失敗しました"

Case AD_ERROR_FILE_READ
    frmMain.InfoBox.SelStart = Len(frmMain.InfoBox.Text) + 1
    frmMain.InfoBox.SelText = vbCrLf & "A/D - ファイルの読み込みに失敗しました"

Case AD_ERROR_FILE_WRITE
    frmMain.InfoBox.SelStart = Len(frmMain.InfoBox.Text) + 1
    frmMain.InfoBox.SelText = vbCrLf & "A/D - ファイルの書き込みに失敗しました"

Case AD_ERROR_INVALID_DATA_FORMAT
    frmMain.InfoBox.SelStart = Len(frmMain.InfoBox.Text) + 1
    frmMain.InfoBox.SelText = vbCrLf & "A/D - データ形式が無効です"

Case AD_ERROR_INVALID_AVERAGE_OR_SMOOTHING
    frmMain.InfoBox.SelStart = Len(frmMain.InfoBox.Text) + 1
    frmMain.InfoBox.SelText = vbCrLf & "A/D - 平均またはスムージングの設定が正しくありません"

Case AD_ERROR_INVALID_SOURCE_DATA
    frmMain.InfoBox.SelStart = Len(frmMain.InfoBox.Text) + 1
    frmMain.InfoBox.SelText = vbCrLf & "A/D - データ変換元として指定されたデータが正しくありません"
```

```
        Case AD_ERROR_NOT_ALLOCATE_MEMORY
            frmMain.InfoBox.SelStart = Len(frmMain.InfoBox.Text) + 1
            frmMain.InfoBox.SelText = vbCrLf & "A/D - メモリが確保できません"

        Case AD_ERROR_NOT_LOAD_DLL
            frmMain.InfoBox.SelStart = Len(frmMain.InfoBox.Text) + 1
            frmMain.InfoBox.SelText = vbCrLf & "A/D - DLL がロードできませんでした"

        Case AD_ERROR_CALL_DLL
            frmMain.InfoBox.SelStart = Len(frmMain.InfoBox.Text) + 1
            frmMain.InfoBox.SelText = vbCrLf & "A/D - DLL の呼び出しに失敗しました"

        Case Else
            frmMain.InfoBox.SelStart = Len(frmMain.InfoBox.Text) + 1
            frmMain.InfoBox.SelText = vbCrLf & "A/D - 予期しないエラーが発生しました"

    End Select
End Sub
```

・CommonModule.bas

```
Attribute VB_Name = "CommonModule"
Declare Function CreateEvent Lib "kernel32" Alias "CreateEventA" (ByVal lpEventAttributes As Long, ByVal
ManualReset As Long, ByVal bInitialState As Long, ByVal lpName As String) As Long
Declare Function WaitForSingleObject Lib "kernel32" (ByVal hHandle As Long, ByVal dwMilliseconds As Long) As
Long
Declare Function CloseHandle Lib "kernel32" (ByVal hObject As Long) As Long
Declare Function WaitForMultipleObjects Lib "kernel32" (ByVal nCount As Long, ByRef lpHandles As Long, ByVal
bWaitAll As Long, ByVal dwMilliseconds As Long) As Long
Declare Function ResetEvent Lib "kernel32" (ByVal hEvent As Long) As Long

Public Const appName = "ADDAFMS"
Public Const secName = "SAMPLCONF"
Public samplingConfFlag As Long
Public daMakeDataFlag As Long
Public endCheck As Long
Public adVmax As Single
Public adVmin As Single
Public daVmax As Single
Public daVmin As Single
Public vMaxNum As Single
Public vMinNum As Single
Public hEvent(1) As Long
Public horiScaleMode As Integer  '横軸目盛モード  0=サンプル数  1=時間
Public horiScaleAd As Integer '1=A/D 時間  0=D/A 時間
Public measureTimes As Integer
Public measureInt As Integer
Public stopFlag As Integer

Public Timetimer As Long
Public IntervalTimer As Integer


Public Type POINTAPI
    X As Long
    Y As Long
End Type

Declare Function Polyline Lib "gdi32" (ByVal hDC As Long, lpPoints As POINTAPI, ByVal nCount As Long) As Long



'----Windows API コールで twip をつかうため
Private Const MM_TEXT = 1
Private Const MM_ANISOTROPIC = 8

Private Const LOGPIXELSX = 88
Private Const LOGPIXELSY = 90

Private Declare Function SetMapMode Lib "gdi32" (ByVal hDC As Long, ByVal nMapMode As Long) As Long
Private Declare Function SetViewportExtEx Lib "gdi32" (ByVal hDC As Long, ByVal nX As Long, ByVal nY As Long,
lpSize As Long) As Long
```

```
Private Declare Function SetWindowExtEx Lib "gdi32" (ByVal hDC As Long, ByVal nX As Long, ByVal nY As Long,
lpSize As Long) As Long
Private Declare Function GetDeviceCaps Lib "gdi32" (ByVal hDC As Long, ByVal nIndex As Long) As Long

Public Sub SetFormToTwips(hDC)
Dim i, extX, extY, l
i = SetMapMode(hDC, MM_ANISOTROPIC)
extX = 14400 / GetDeviceCaps(hDC, LOGPIXELSX)
extY = 14400 / GetDeviceCaps(hDC, LOGPIXELSY)
l = SetViewportExtEx(hDC, 10, 10, 0)
l = SetWindowExtEx(hDC, extX, extY, 0)
End Sub

Public Sub ResetFormScale(hDC)
Dim i
i = SetMapMode(hDC, MM_TEXT)
End Sub

Sub AdCallBackProc(ByVal dwUser As Long)
    Call DispWave(0)
End Sub

Public Sub DispHoriScale()
    Dim temp As Single
    Dim unit As String

    If horiScaleMode = 0 Then
        frmMain.SampleMin.Caption = "1"
        frmMain.SampleCenter.Caption = LTrim(Str((adConfig.ulSmplNum + 1) / 2))
        frmMain.SampleMax.Caption = LTrim(Str(adConfig.ulSmplNum))
    Else
        If horiScaleAd = 1 Then
            If adConfig.ulFastMode = AD_NORMAL_MODE Then
                temp = 1 / adConfig.fSmplFreq * adConfig.ulSmplNum
            Else
                temp = 1 / (adConfig.fSmplFreq * 2) * adConfig.ulSmplNum
            End If
            If Int(temp) > 0 Then
                unit = "[sec]"
            Else
                If Int(temp * 1000) > 0 Then
                    unit = "[msec]"
                    temp = temp * 1000
                Else
                    unit = "[μsec]"
                    temp = temp * 1000000
                End If
            End If
            frmMain.SampleMin.Caption = "0" + unit + " " + LTrim(CStr(temp / 20)) + unit + "/DIV"
            frmMain.SampleCenter.Caption = LTrim(CStr(temp / 2)) + unit
            frmMain.SampleMax.Caption = LTrim(CStr(temp)) + unit

        Else
            If daMode.ulSamplingClock = DA_CLOCK_TIMER Then
                temp = 1 / daConfig.fSmplFreq * adConfig.ulSmplNum
            Else
                temp = 1 / 5000000 * adConfig.ulSmplNum
            End If
            If Int(temp) > 0 Then
                unit = "[sec]"
            Else
                If Int(temp * 1000) > 0 Then
                    unit = "[msec]"
                    temp = temp * 1000
                Else
                    unit = "[μsec]"
                    temp = temp * 1000000
                End If
            End If
            frmMain.SampleMin.Caption = "0" + unit + " " + LTrim(CStr(temp / 20)) + unit + "/DIV"
            frmMain.SampleCenter.Caption = LTrim(CStr(temp / 2)) + unit
            frmMain.SampleMax.Caption = LTrim(CStr(temp)) + unit
        End If
```

```
    End If

End Sub

Public Sub AdOpenSub()
    On Error GoTo ErrorHandler

    Dim nRet As Long
    Dim tmp As String

    If adOpenFlag = 1 Then
        Beep
        frmMain.InfoBox.SelStart = Len(frmMain.InfoBox.Text) + 1
        frmMain.InfoBox.SelText = vbCrLf & "A/D - すでにオープンされています"
        Exit Sub
    End If

    tmp = "FBIAD" + GetSetting(appName, "Open", "AdDevice", 1)

    nRet = AdOpen(tmp)
    If nRet = -1 Then
        Call AdDispErrMessage(nRet)
    Else
        frmMain.InfoBox.SelStart = Len(frmMain.InfoBox.Text) + 1
        frmMain.InfoBox.SelText = vbCrLf & "A/D - デバイスオープンＯＫ(DeviceHandle = " & Str(nRet) & ")"
        adOpenFlag = 1
        adDeviceHandle = nRet

        'ボード情報取得
        nRet = AdGetDeviceInfo(adDeviceHandle, adInfo)
        If nRet <> AD_ERROR_SUCCESS Then
            Call AdDispErrMessage(nRet)
        Else
            frmMain.InfoBox.SelStart = Len(frmMain.InfoBox.Text) + 1
            frmMain.InfoBox.SelText = vbCrLf & "A/D - ボード情報取得ＯＫ"
        End If
    End If
    Exit Sub

ErrorHandler:
    Beep
    frmMain.InfoBox.SelStart = Len(frmMain.InfoBox.Text) + 1
    frmMain.InfoBox.SelText = vbCrLf & "A/D - 実行時エラーです"

End Sub

Public Sub DaOpenSub()

    On Error GoTo ErrorHandler

    Dim nRet As Long
    Dim tmp As String

    If daOpenFlag = 1 Then
        Beep
        frmMain.InfoBox.SelStart = Len(frmMain.InfoBox.Text) + 1
        frmMain.InfoBox.SelText = vbCrLf & "D/A - すでにオープンされています"
        Exit Sub
    End If

    tmp = "FBIDA" + GetSetting(appName, "Open", "DaDevice", 1)

    nRet = DaOpen(tmp)
    If nRet = -1 Then
        Call DaDispErrMessage(nRet)
    Else
        frmMain.InfoBox.SelStart = Len(frmMain.InfoBox.Text) + 1
        frmMain.InfoBox.SelText = vbCrLf & "D/A - デバイスオープンＯＫ(DeviceHandle = " & Str(nRet) & ")"
        daOpenFlag = 1
        daDeviceHandle = nRet

        'ボード情報取得
        nRet = DaGetDeviceInfo(daDeviceHandle, daInfo)
```

```
        If nRet <> DA_ERROR_SUCCESS Then
            Call DaDispErrMessage(nRet)
        Else
            frmMain.InfoBox.SelStart = Len(frmMain.InfoBox.Text) + 1
            frmMain.InfoBox.SelText = vbCrLf & "D/A - ボード情報取得ＯＫ"
        End If
    End If
    Exit Sub

ErrorHandler:
    Beep
    frmMain.InfoBox.SelStart = Len(frmMain.InfoBox.Text) + 1
    frmMain.InfoBox.SelText = vbCrLf & "D/A - 実行時エラーです"

End Sub

Public Sub DispWave(Review)
    Dim adRealSampleNum As Long
    Dim nRet As Long
    Dim i   As Long
    Dim num As Long
    Dim temp2 As Long
    Dim temp3 As Long

    Dim adVolt0 As Double
    Dim daVolt0 As Double
    Dim nowX As Double
    Dim nowY As Double
    Dim nextY As Double
    Dim stepX As Double
    Dim stepY As Double

    Dim points(524288) As POINTAPI
    Dim points2(10) As POINTAPI

    Dim realHeight As Long
    realHeight = frmMain.ViewBox.ScaleHeight - 10

    '波形描画
    If frmMain.ViewBox.Visible = True Then

        frmMain.ViewBox.Cls
        frmMain.ViewBox.DrawWidth = 1

        For i = 1 To 9
        frmMain.ViewBox.Line (0, realHeight / 10 * i)-(frmMain.ViewBox.ScaleWidth, realHeight / 10 * i), RGB(100,
100, 100)
        Next i
        For i = 1 To 19
        frmMain.ViewBox.Line (frmMain.ViewBox.ScaleWidth / 20 * i, 0)-(frmMain.ViewBox.ScaleWidth / 20 * i,
realHeight), RGB(100, 100, 100)
        Next i
        frmMain.ViewBox.Line (0, realHeight / 2)-(frmMain.ViewBox.ScaleWidth, realHeight / 2), RGB(255, 255,
255)
        frmMain.ViewBox.Line (frmMain.ViewBox.ScaleWidth / 4, 0)-(frmMain.ViewBox.ScaleWidth / 4, realHeight),
RGB(255, 255, 255)
        frmMain.ViewBox.Line (frmMain.ViewBox.ScaleWidth / 4 * 3, 0)-(frmMain.ViewBox.ScaleWidth / 4 * 3,
realHeight), RGB(255, 255, 255)
        frmMain.ViewBox.Line (frmMain.ViewBox.ScaleWidth / 2, 0)-(frmMain.ViewBox.ScaleWidth / 2, realHeight),
RGB(255, 255, 255)

    Else

        realHeight = frmMain.ViewBoxVV.ScaleHeight - 10
        frmMain.ViewBoxVV.Cls

        frmMain.ViewBoxVV.ForeColor = &H323232
        frmMain.ViewBoxVV.DrawWidth = Screen.TwipsPerPixelX
        SetFormToTwips (frmMain.ViewBoxVV.hDC)
        For i = 1 To 49
        points2(0).X = 0
        points2(0).Y = realHeight / 50 * i
        points2(1).X = frmMain.ViewBoxVV.ScaleWidth
```

```
        points2(1).Y = realHeight / 50 * i
        j% = Polyline(frmMain.ViewBoxVV.hDC, points2(0), 2)
        points2(0).X = frmMain.ViewBoxVV.ScaleWidth / 50 * i
        points2(0).Y = 0
        points2(1).X = frmMain.ViewBoxVV.ScaleWidth / 50 * i
        points2(1).Y = realHeight
        j% = Polyline(frmMain.ViewBoxVV.hDC, points2(0), 2)
        Next i
        ResetFormScale (frmMain.ViewBoxVV.hDC)

        frmMain.ViewBoxVV.DrawWidth = 1
        For i = 1 To 4
        frmMain.ViewBoxVV.Line (0, realHeight / 10 * i)-(frmMain.ViewBoxVV.ScaleWidth, realHeight / 10 * i),
RGB(100, 100, 100)
        Next i
        For i = 6 To 9
        frmMain.ViewBoxVV.Line (0, realHeight / 10 * i)-(frmMain.ViewBoxVV.ScaleWidth, realHeight / 10 * i),
RGB(100, 100, 100)
        Next i
        For i = 1 To 4
        frmMain.ViewBoxVV.Line (frmMain.ViewBoxVV.ScaleWidth / 10 * i, 0)-(frmMain.ViewBoxVV.ScaleWidth / 10
* i, realHeight), RGB(100, 100, 100)
        Next i
        For i = 6 To 9
        frmMain.ViewBoxVV.Line (frmMain.ViewBoxVV.ScaleWidth / 10 * i, 0)-(frmMain.ViewBoxVV.ScaleWidth / 10
* i, realHeight), RGB(100, 100, 100)
        Next i
        frmMain.ViewBoxVV.Line (0, realHeight / 2)-(frmMain.ViewBoxVV.ScaleWidth, realHeight / 2), RGB(255,
255, 255)
        frmMain.ViewBoxVV.Line (frmMain.ViewBoxVV.ScaleWidth / 2, 0)-(frmMain.ViewBoxVV.ScaleWidth / 2,
realHeight), RGB(255, 255, 255)

    End If

If frmMain.ViewBox.Visible = True Then

    realHeight = frmMain.ViewBox.ScaleHeight - 10
    'D/A 描画処理
    Select Case daMode.ModeChReq(0).ulRange
        Case DA_RANGE_BIPOLAR
            daVolt0 = (realHeight / 2) * ((daVmin / vMinNum) + 1)
            stepY = (realHeight - ((realHeight - daVolt0) * 2)) / 4096
        Case DA_RANGE_UNIPOLAR
            If vMinNum = 0 Then
                daVolt0 = realHeight
                stepY = ((daVmax / vMaxNum) * daVolt0) / 4096
            Else
                daVolt0 = realHeight / 2
                stepY = ((daVmax / vMaxNum) * daVolt0) / 4096
            End If
    End Select

    nowX = 0
    stepX = frmMain.ViewBox.ScaleWidth / (adConfig.ulSmplNum - 1)

    frmMain.ViewBox.ForeColor = &HC0C000
    frmMain.ViewBox.DrawWidth = Screen.TwipsPerPixelX * Val(frmMain.DrawOptionLineWidth.Text)
    If frmMain.opImg.Value = True Then
        For i = 0 To adConfig.ulSmplNum - 1
            points(i).Y = daVolt0 - (daData(i) * stepY)
            points(i).X = nowX
            nowX = nowX + stepX
        Next i
    Else
        For i = 0 To adConfig.ulSmplNum - 1
            points(i).Y = daVolt0 - (adData(i * 2 + 1) * stepY)
            points(i).X = nowX
            nowX = nowX + stepX
        Next i
    End If


    If adConfig.ulSmplNum < 16384 Then
```

```
        SetFormToTwips (frmMain.ViewBox.hDC)
        j% = Polyline(frmMain.ViewBox.hDC, points(0), adConfig.ulSmplNum)
        ResetFormScale (frmMain.ViewBox.hDC)
    Else
        temp3 = adConfig.ulSmplNum Mod 16383
        temp2 = (adConfig.ulSmplNum - temp3) / 16383

        For i = 1 To temp2
            SetFormToTwips (frmMain.ViewBox.hDC)
            j% = Polyline(frmMain.ViewBox.hDC, points((i - 1) * 16383), 16383)
            ResetFormScale (frmMain.ViewBox.hDC)
        Next i
        SetFormToTwips (frmMain.ViewBox.hDC)
        j% = Polyline(frmMain.ViewBox.hDC, points(16383 * temp2 - 1), temp3 + 1)
        ResetFormScale (frmMain.ViewBox.hDC)
    End If


    'A/D 描画処理

    If adConfig.SmplChReq(0).ulRange And &HF0000 Then
            adVolt0 = (realHeight / 2) * ((adVmin / vMinNum) + 1)
            stepY = (realHeight - ((realHeight - adVolt0) * 2)) / 4096
    Else
            If vMinNum = 0 Then
                adVolt0 = realHeight
                stepY = ((adVmax / vMaxNum) * adVolt0) / 4096
            Else
                adVolt0 = realHeight / 2
                stepY = ((adVmax / vMaxNum) * adVolt0) / 4096
            End If
    End If

    nowX = 0
    stepX = frmMain.ViewBox.ScaleWidth / (adConfig.ulSmplNum - 1)

    frmMain.ViewBox.ForeColor = &HFF00&
    frmMain.ViewBox.DrawWidth = Screen.TwipsPerPixelX * Val(frmMain.DrawOptionLineWidth.Text)
    For i = 0 To adConfig.ulSmplNum - 1
        points(i).Y = adVolt0 - (adData(i * 2) * stepY)
        points(i).X = nowX
        nowX = nowX + stepX
    Next i
    If adConfig.ulSmplNum < 16384 Then
        SetFormToTwips (frmMain.ViewBox.hDC)
        j% = Polyline(frmMain.ViewBox.hDC, points(0), adConfig.ulSmplNum)
        ResetFormScale (frmMain.ViewBox.hDC)
    Else
        temp3 = adConfig.ulSmplNum Mod 16383
        temp2 = (adConfig.ulSmplNum - temp3) / 16383

        For i = 1 To temp2
            SetFormToTwips (frmMain.ViewBox.hDC)
            j% = Polyline(frmMain.ViewBox.hDC, points((i - 1) * 16383), 16383)
            ResetFormScale (frmMain.ViewBox.hDC)
        Next i
        SetFormToTwips (frmMain.ViewBox.hDC)
        j% = Polyline(frmMain.ViewBox.hDC, points(16383 * temp2 - 1), temp3 + 1)
        ResetFormScale (frmMain.ViewBox.hDC)
    End If

Else
    realHeight = frmMain.ViewBoxVV.ScaleHeight - 10
    stepX = frmMain.ViewBoxVV.ScaleWidth / 4096
    stepY = realHeight / 4096
    frmMain.ViewBoxVV.ForeColor = &HFF00&
    frmMain.ViewBoxVV.DrawWidth = Screen.TwipsPerPixelX * Val(frmMain.DrawOptionLineWidth.Text)

    If frmMain.DrawModeLine.Value = 1 Then
        If frmMain.opImg.Value = True Then
            For i = 0 To adConfig.ulSmplNum - 1
                points(i).X = daData(i) * stepX
                points(i).Y = realHeight - (adData(i * 2) * stepY)
```

```
            Next i
        Else
            For i = 0 To adConfig.ulSmplNum - 1
                points(i).X = adData(i * 2 + 1) * stepX
                points(i).Y = realHeight - (adData(i * 2) * stepY)
            Next i
        End If

        If adConfig.ulSmplNum < 16384 Then
            SetFormToTwips (frmMain.ViewBoxVV.hDC)
            j% = Polyline(frmMain.ViewBoxVV.hDC, points(0), adConfig.ulSmplNum)
            ResetFormScale (frmMain.ViewBoxVV.hDC)
        Else
            temp3 = adConfig.ulSmplNum Mod 16383
            temp2 = (adConfig.ulSmplNum - temp3) / 16383

            For i = 1 To temp2
                SetFormToTwips (frmMain.ViewBoxVV.hDC)
                j% = Polyline(frmMain.ViewBoxVV.hDC, points((i - 1) * 16383), 16383)
                ResetFormScale (frmMain.ViewBoxVV.hDC)
            Next i
            SetFormToTwips (frmMain.ViewBoxVV.hDC)
            j% = Polyline(frmMain.ViewBoxVV.hDC, points(16383 * temp2 - 1), temp3 + 1)
            ResetFormScale (frmMain.ViewBoxVV.hDC)
        End If
    End If
    If frmMain.DrawModeDot.Value = 1 Then
        frmMain.ViewBoxVV.DrawWidth = Val(frmMain.DrawOptionDotWidth.Text)
        If frmMain.opImg.Value = True Then
            For i = 0 To adConfig.ulSmplNum - 1
                frmMain.ViewBoxVV.PSet (daData(i) * stepX, realHeight - (adData(i * 2) * stepY))
            Next i
        Else
            For i = 0 To adConfig.ulSmplNum - 1
                frmMain.ViewBoxVV.PSet (adData(i * 2 + 1) * stepX, realHeight - (adData(i * 2) * stepY))
            Next i
        End If
        frmMain.ViewBoxVV.DrawWidth = 1
    End If
End If

End Sub

Sub DaCallBackProc(ByVal dwUser As Long)
    Call DispWave(0)
End Sub

'最初に実行されるプロシージャ
Private Sub Main()
    '2 重起動防止
    If App.PrevInstance Then
        Exit Sub
    End If

    ' 見出し画面を表示。
    frmSplash.Show
    frmSplash.Refresh
    frmSplash.Timer1.Enabled = True
    Do While Timetimer = 0
        DoEvents
    Loop
    ' メイン フォームを表示し、見出し画面をアンロード。
    frmMain.Show
    Unload frmSplash
End Sub
```