



NDTizer

MKDQ-2514

Data Acquisition System Dedicated to NDT Equipment



Key Features

- Specially designed USB based digitizer for NDT(Ultrasonic, EMAT, Eddy Current) testing
- Up to 250MSPS 14Bit ADC
- Digital Signal Processing Function at Windows & Linux GUI Based SW (Open Source)
- Customizing Service



Applications

➤ Currently Implemented

Field	Description
Defect Detection	Accurate measurement of defect size, depth and location
Thickness Measurement (ToF Algorithms)	Automatic measurement of pipe, plate and material thickness (upto 1 um at sound velocity 5,000 m/s)
PC-based Oscilloscope	Real-time visualization and analysis of NDT(Ultrasonic, EMAT, Eddy Current) waveforms
Sensor Analysis	Supports sensor frequency characterization using FFT

➤ Expandable (Using GUI Open Source)

Field	Description
Flow Measurement	Ultrasonic flowmeter for fluid velocity and flow analysis
Material Characterization	Internal structure analysis of material and composites
Environmental Monitoring	Ultrasonic-based distance, position and anomaly detection



Specifications

Digitizer	
ADC	14Bit, 25MSPS~250MSPS (Digitally Controlled Clock)
Buffer Memory	64k Samples
Amp	-11dB~34dB (Digitally Controlled VGA)
Analog Input	3Vp-p, 0.1~50MHz
Sync In/Out	Digitally Controlled In/Out
Filter	Digital Filter (Digitally Controlled Filter)
Scan	C-SCAN

Miscellaneous	
OS	Windows 10 and later Linux Under development
PC Interface	USB Type-B
Operating Power	< DC 12V 0.5A
Operating Temperature	0~50 °C
Dimensions & Weight	88.1(H) X 250(W) X 300(D)/2.3kg



Product Detail



LED Bar Status Display LED

➤ LED Bar

Indicates the SCAN ratio status

➤ Status Display LED

Red : Indicates that the power is on

Green : Indicates that the PC and USB are connected

Blue : Indicate that the instrument is operational



Power

**USB
Connection
to PC**

**External device
connection**

➤ External device connection

SYNC IN : Connect to SYNC OUT of Scanner

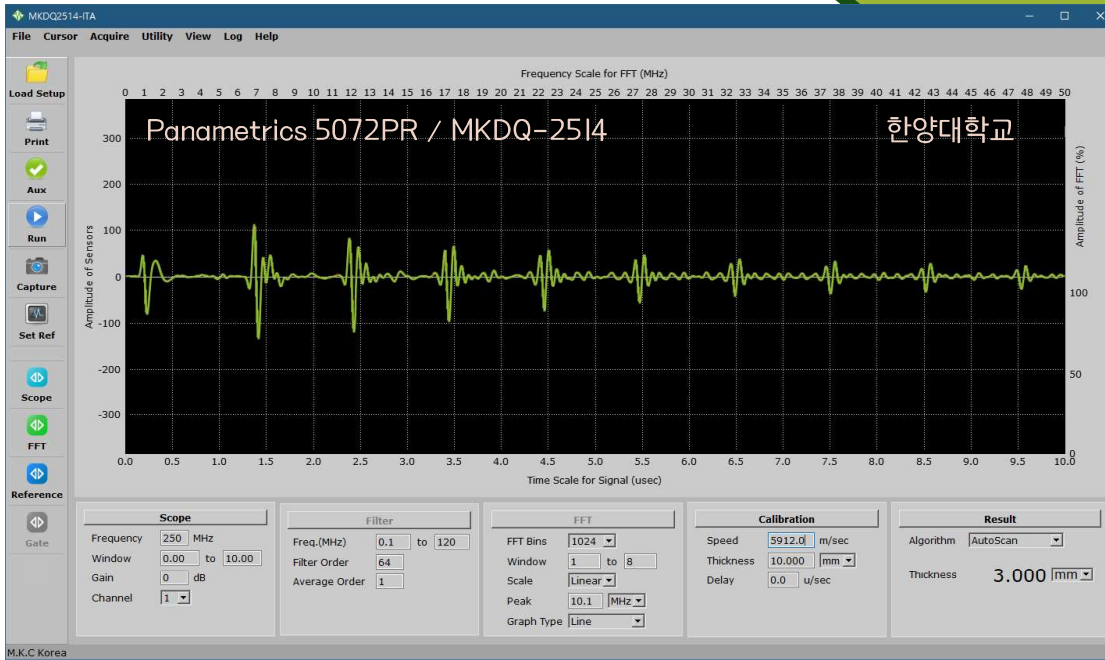
SYNC OUT : Connect to SYNC IN of Scanner

CH1/CH2 : Connect to RF OUT of External Device

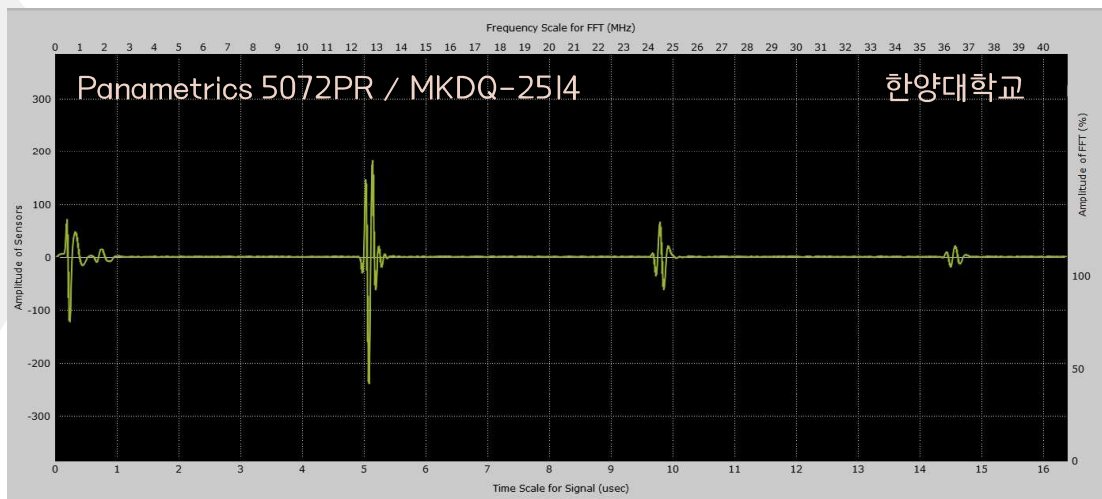


GUI Program

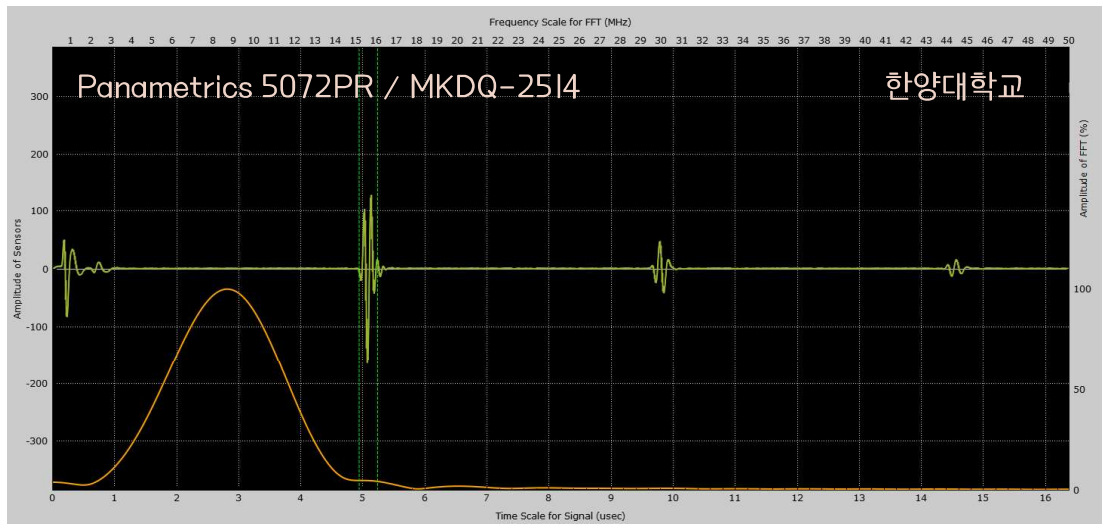
➤ Program execution screen



➤ Signal Display



➤ FFT Display



GUI Open Source

```
MKDQ2514::MKDQ2514(QWidget *parent)
: QMainWindow(parent)
, ui(new Ui::MKDQ2514)
{
    ui->setupUi(this);
    mkdq2514=this;

    /*menu*/
    connect(ui->actionView_Log_Dock, SIGNAL(triggered()), this, SLOT(Show_Dock()));
    connect(ui->actionCapture, SIGNAL(triggered()), this, SLOT(ScreenCapture()));

    connect(ui->actionShow_Hide, SIGNAL(triggered()), this, SLOT(Click_showButton()));
    connect(ui->actionClear, SIGNAL(triggered()), this, SLOT(Clear_LogWindow()));
    connect(ui->actionSave_Log, SIGNAL(triggered()), this, SLOT(Save_LogWindow()));

    connect(ui->actionLoad_Setup, SIGNAL(triggered()), this, SLOT(LoadSetup())); //Load_Setup
    connect(ui->actionSave_Setup, SIGNAL(triggered()), this, SLOT(SaveSetup())); //Save_Setup
    connect(ui->actionSave_Data, SIGNAL(triggered()), this, SLOT(SaveData())); //Save_Data

    connect(ui->actionGraph_Line_Width, SIGNAL(triggered()), this, SLOT(SetGraphLine()));

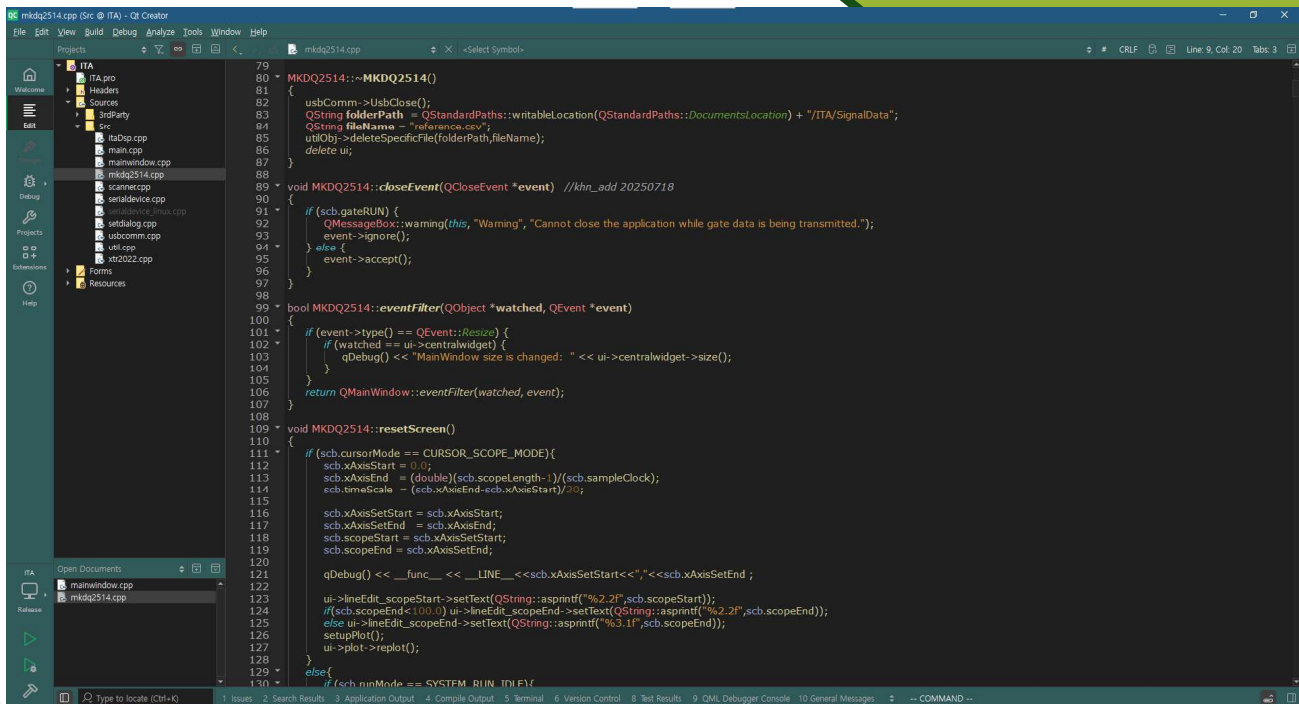
    /*****Toolbars*****/
    connect(ui->actionLoad_Setup_Tool, SIGNAL(triggered()), this, SLOT(LoadSetup()));
    connect(ui->actionPrint_Tool, SIGNAL(triggered()), this, SLOT(on_actionPrint_triggered()));
    connect(ui->actionCapture_Tool, SIGNAL(triggered()), this, SLOT(ScreenCapture()));

    connect(ui->plot, SIGNAL(mousePress(QMouseEvent*)), this, SLOT(mousePress(QMouseEvent*)));
    connect(ui->lineEdit_scopeFreq, &QLineEdit::textChanged, this, &MKDQ2514::onAnyLineEditTextChanged);
    connect(ui->lineEdit_scopeStart, &QLineEdit::textChanged, this, &MKDQ2514::onAnyLineEditTextChanged);
    connect(ui->lineEdit_scopeEnd, &QLineEdit::textChanged, this, &MKDQ2514::onAnyLineEditTextChanged);
    connect(ui->lineEdit_Gain, &QLineEdit::textChanged, this, &MKDQ2514::onAnyLineEditTextChanged);
    connect(ui->lineEdit_filterHFreq, &QLineEdit::textChanged, this, &MKDQ2514::onAnyLineEditTextChanged);
    connect(ui->lineEdit_filterLFreq, &QLineEdit::textChanged, this, &MKDQ2514::onAnyLineEditTextChanged);
    connect(ui->lineEdit_orderFilter, &QLineEdit::textChanged, this, &MKDQ2514::onAnyLineEditTextChanged);
    connect(ui->lineEdit_avgOrder, &QLineEdit::textChanged, this, &MKDQ2514::onAnyLineEditTextChanged);
    connect(ui->lineEdit_calDelay, &QLineEdit::textChanged, this, &MKDQ2514::onAnyLineEditTextChanged);
    connect(ui->lineEdit_calSpeed, &QLineEdit::textChanged, this, &MKDQ2514::onAnyLineEditTextChanged);
    connect(ui->lineEdit_calSpeed2, &QLineEdit::textChanged, this, &MKDQ2514::onAnyLineEditTextChanged);
    connect(ui->lineEdit_calThickness, &QLineEdit::textChanged, this, &MKDQ2514::onAnyLineEditTextChanged);
    connect(ui->lineEdit_fftStart, &QLineEdit::textChanged, this, &MKDQ2514::onAnyLineEditTextChanged);
    connect(ui->lineEdit_fftEnd, &QLineEdit::textChanged, this, &MKDQ2514::onAnyLineEditTextChanged);
    connect(ui->lineEdit_prfFreq, &QLineEdit::textChanged, this, &MKDQ2514::onAnyLineEditTextChanged);
    connect(ui->lineEdit_sigCount, &QLineEdit::textChanged, this, &MKDQ2514::onAnyLineEditTextChanged);
    connect(ui->lineEdit_sigFreq, &QLineEdit::textChanged, this, &MKDQ2514::onAnyLineEditTextChanged);
    connect(ui->lineEdit_sigVolt, &QLineEdit::textChanged, this, &MKDQ2514::onAnyLineEditTextChanged);
    connect(ui->lineEdit_xScanSize, &QLineEdit::textChanged, this, &MKDQ2514::onAnyLineEditTextChanged);
    connect(ui->lineEdit_yScanSize, &QLineEdit::textChanged, this, &MKDQ2514::onAnyLineEditTextChanged);
    connect(ui->lineEdit_xScanInterval, &QLineEdit::textChanged, this, &MKDQ2514::onAnyLineEditTextChanged);
    connect(ui->lineEdit_yScanInterval, &QLineEdit::textChanged, this, &MKDQ2514::onAnyLineEditTextChanged);

    plotParamInit();
    setupPlot();
    groupBoxInit();
    guiInit();
    utilObj->makeBaseDir();
    usbComm->UsbInit();
}
```



➤ Qt Execution Screen



Customizable Open Source GUI, Tailored to Your Needs

The graphical user interface (GUI) is provided as open-source software based on the Qt framework.

Users and developers are free to modify, extend, and integrate the interface to fit their specific system architecture, workflows, or branding needs.

➤ Key Features of Open Source

- Qt Framework Cross-platform compatibility (Windows, Linux, etc.)
- Full Source Code Access Modify and extend as needed
- Easy Customization Adapt UI/UX to your system and workflow
- Open-Source License Flexible use and redistribution
- Well-Documented Codebase Developer-friendly structure and comments

➤ Included in Distribution

- GUI Source Code (.cpp, .ui, .pro)
- Qt Project Files (ready to build)
- README and Users Guide



Scope of Supply

- Main instrument : 1 ea
- Connection cable USB to PC (1.5 m) : 1 ea
- Power cord (1.5 m) : 1 ea
- Instruction manual : 1 ea in USB



main instrument



USB Cable



Power cord



USB

Connectable instruments

► Ultrasonic Pulsar Receiver

- **JSR Ultrasonics** : DPR-300, DPR-500(50MHz)
- **Panametrics** : 5072PR, 5052PR, 5073PR, 5077PR, 5058PR, 5052UA, 5800PR
- **Accu-Tron** : 1010PR, 1035PR, 1050PR, 1035UP, 1050UP
- **mkcndt** : XTR-2022, XTR-2020, Ultraman-3170, Ultraman-300, MKPR-2125
- **UTEX** : UT-320, UT-340
- **Ritec** : RPR-4000, RAM-5000, RAM-5000 SNAP, BR-640

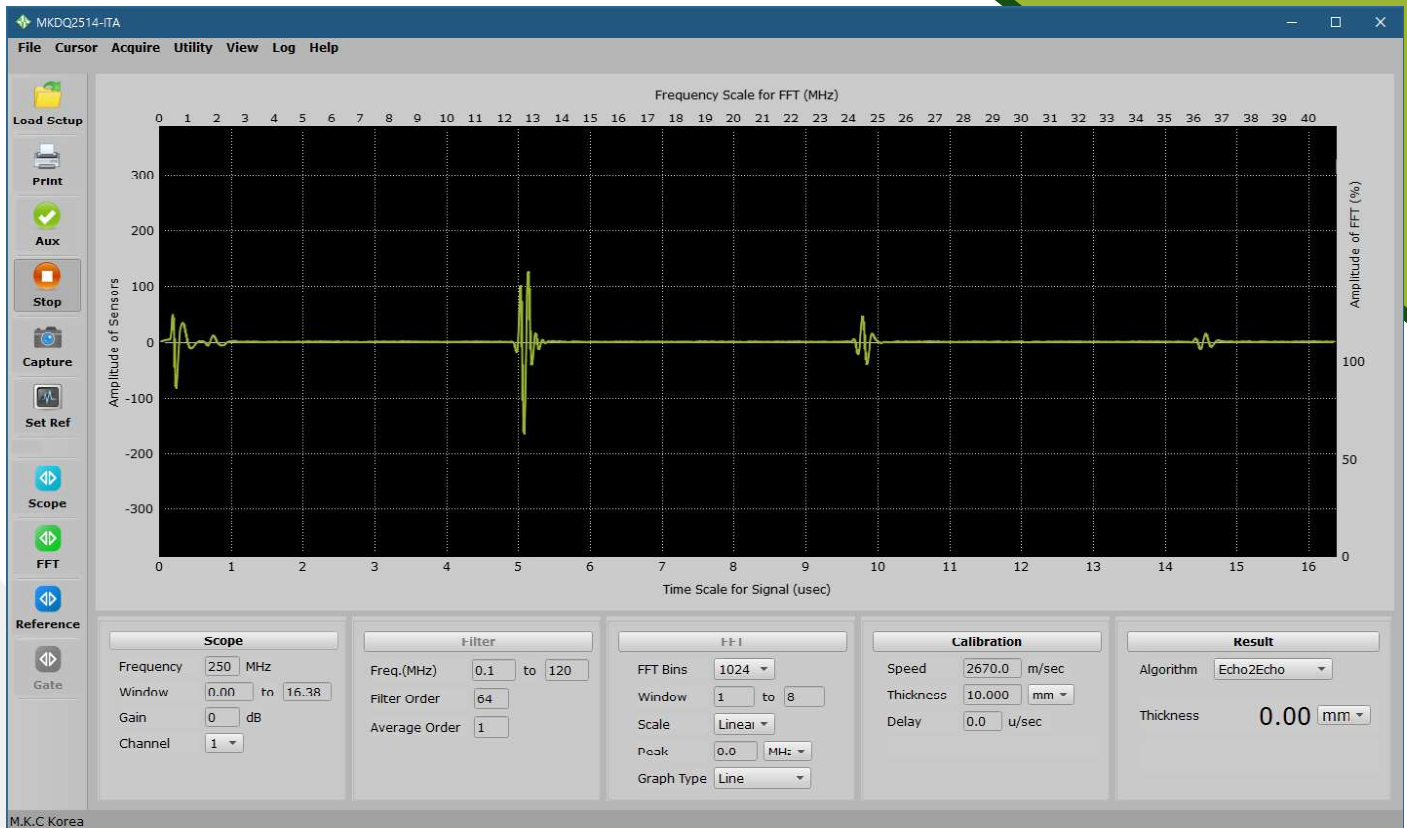
► Eddy Current Instrument

- MKET-7301 (Under deveopment)

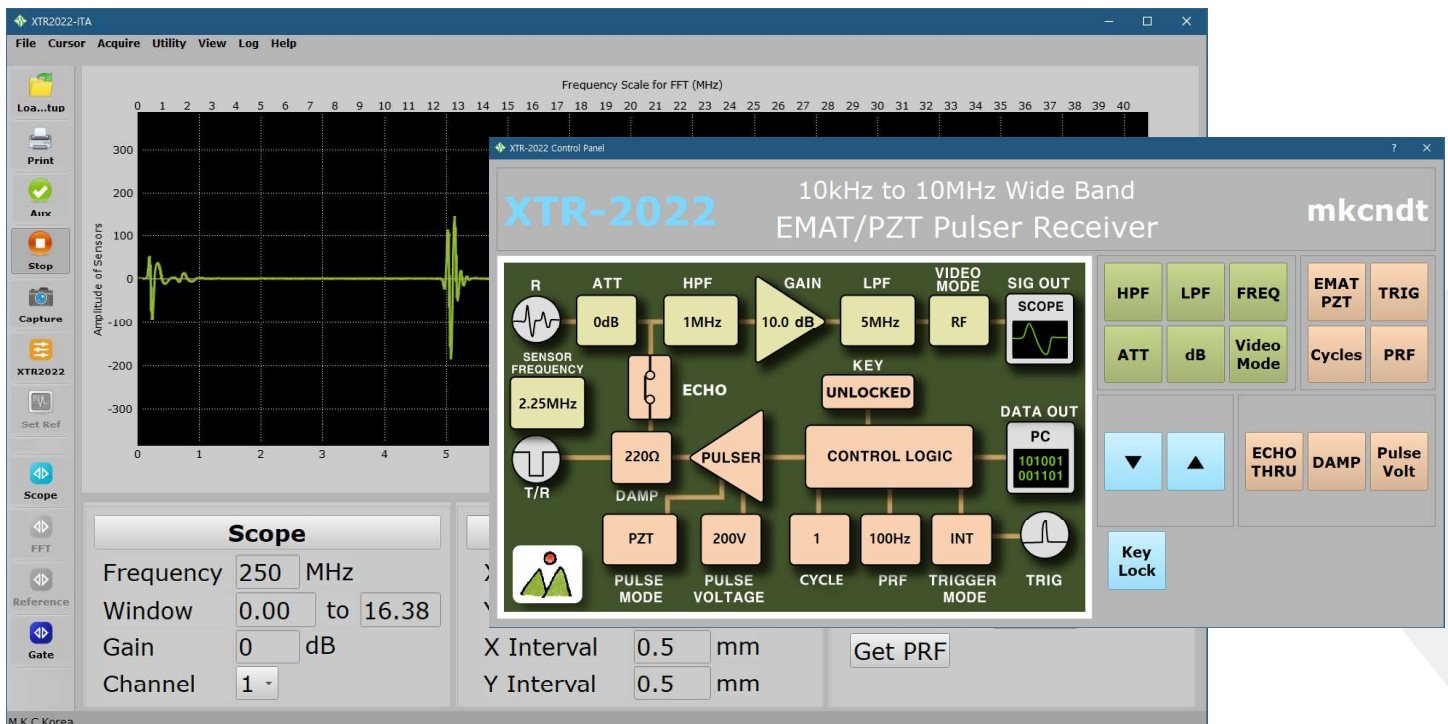


Built-in GUI

➤ Accu-Tron 1010PR : Ultrasonic Pulser receiver program



➤ mkcndt XTR-2022 : Ultrasonic Pulser receiver control program



Community activities

➔ Exchange of information
between members using community

MKC Research

NDT GUI OPENLABNDT SOLUTIONSNDT USERS COMMUNITYLog out

NDT USERS COMMUNITY

A New World of NDT
Built Together

MKC 오픈소스 및 제품 기반의 개발 경험, 기술 정보, 개선 아이디어를
자유롭게 나누는 공간입니다.

※ 제품 문의는 당사로 연락하여 주시기 바랍니다.

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업데이트순 ▼

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*Specifications are subject to change without notice.



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