LabVIEW - NEXYGEN Interface Driver

LabVIEW®
LabVIEW is a fully featured programming language based on icons and images, produced by National Instruments. It is a graphical programming language with a diagrammatic view of how the data flows through the program. This makes programming very easy as data flow can be visualised. The LabVIEW programming language is expressed in the form of simple graphical icons called block diagrams.

The program consists of two entry screens called the Control Panel and the Diagram. The Control Panel is the User Interface and the Diagram represents the program flow chart. When creating a new program, the user interface is "built" first then the flow diagram is drawn around the front panel items.

LabVIEW - NEXYGEN Interface Driver
AMETEK's novel interface driver extends the modes available from LabVIEW to specifically control LLOYD INSTRUMENTS and CHATILLON materials testing machines.

The LabVIEW - NEXYGEN Interface Driver is designed to allow Universities and Manufacturing organisations, who have already standardised on LabVIEW to incorporate and control their materials testing systems using LabVIEW.

To programme a test with the LabVIEW - NEXYGEN Interface Driver the user has the option of using predefined test procedures (Sub VI's), which they may modify, or alternatively create their own test procedure from sctratch. The interface driver provides 15 Sub VI's(Virtual Instrument's) that can be strung together to form a programme to perform a test:

SUB VI	FUNCTION
Break%	End the Stage or StageHold when the Load falls BY X% of Max Load
BreakSharp	End the Stage or StageHold when the Load quickly falls to zero
Compression	Select Compression Mode
Connect	Creates the Console Object and connects it to the machine
Control	Allow the Software Console to Move the Machine
Error	Report any errors from the Software Console
Quit	Closes the Software Console
Readings	Reports the Last Load and Last Extension Reading
ReleaseConsole	Releases the Console Object
ReturnToZero	Moves the Machine to its "Zero" Position
Stage	Moves the Machine to the specified Limit at the Specified Speed
StageHold	Moves and Holds the Machine at the specified Limit for the Specified Time
Tension	Select Tension Mode
Values	Reports ALL the Load and Extension Readings since it was last Run
Zero	Sets the Machines "Zero" Position and sets the Load Reading to Zero

SPECIFICATION
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Sub VI's are summarised schematic diagrams which have been pre-programmed for you. Sub VI's cannot be used independantly, but when placed on the diagram and 'wired' together, they make a valid and logical test sequence. Each Sub VI contains the required references to the software console so additional programming is not required.

LabVIEW - NEXYGEN Interface Driver Features:

- Ease of use, programming via pictures
- Logical and intuitive for current users of LabVIEW
- Includes 15 Sub VI's for programming tests
- Predefined example programs are provided in the manual which can be easily modified
- 3 software consoles are provided for controlling different machines
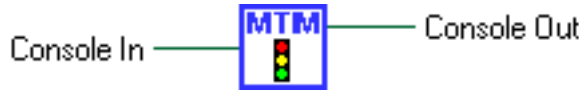- ISO TickIT Accreditation

www.ametek.com
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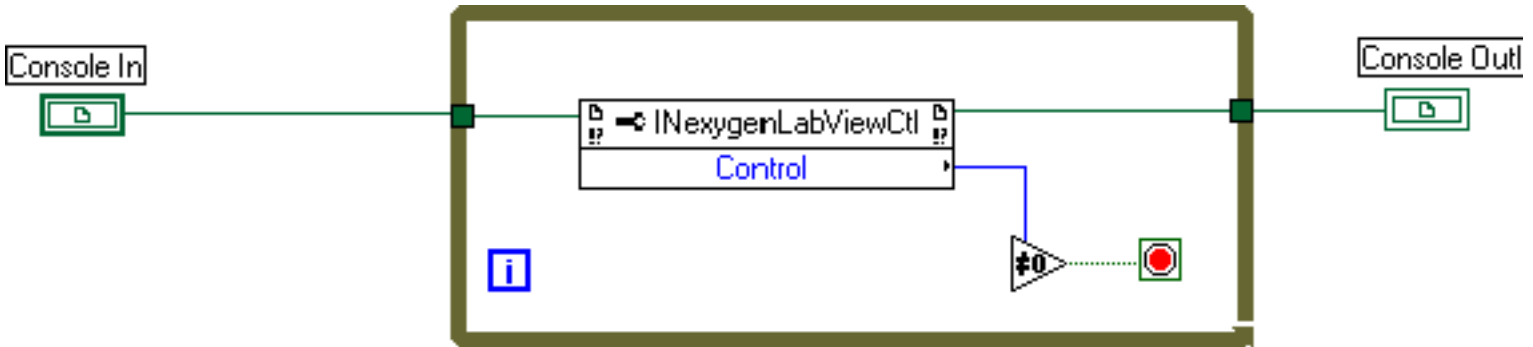www.chatillon.com
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By double clicking on any Sub VI a VI schematic diagram will be revealed, which is summarised by the block diagram.
Example: Control Sub VI

Console In ──────── MTM ──────── Console Out

Control VI Schematic Diagram.

Console In ──────────── INexygenLabViewCtl
Console Out
Control

The user need never see the schematic diagram unless he wishes to alter the machine operation or program a testing sequence from scratch.

Creating a Test Program Using the Sub VI's is Easy and Logical
Example: Pull to Limit Test

Step 1 - The User Interface
Within the User Interface right click the mouse to display the CONTROL palette (shown below) and select the Numeric Icon. Choose the Gauge option and label the Gauge 'Load'. Do the same again and label the second Gauge 'Extension'.

Step 1: Numeric

Step 2 - The Programming Interface
Load and Extension are now also shown on the Programming Interface. To develop the rest of the program right click the mouse for the FUNCTIONS palette (shown to the right). Using the FUNCTIONS palette you can select the appropriate Sub VI's to develop a program. To create a Pull to Limit Test you would select the following Sub VI's:

Step 2: Select a VI

Connect.vi
Control.vi
Tension.vi
Stage.vi
ReleaseConscle.vi

Readings.vi

Load   DBL

Extension   DBL

In order for the test to run the Sub VI's need to be strung together correctly. To do this you use the CONNECT WIRE cursor within the TOOLS palette which looks like a bobbin.


CONNECT WIRE cursor
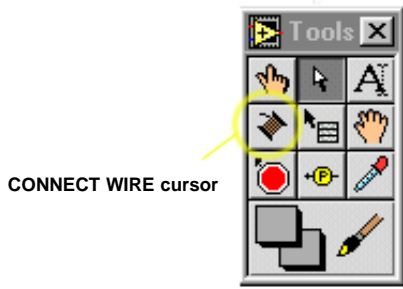
Move the cursor over the Icons and their connectors will be identified. By doing this you can simply join the top corners of the Icons appropriately as shown below.
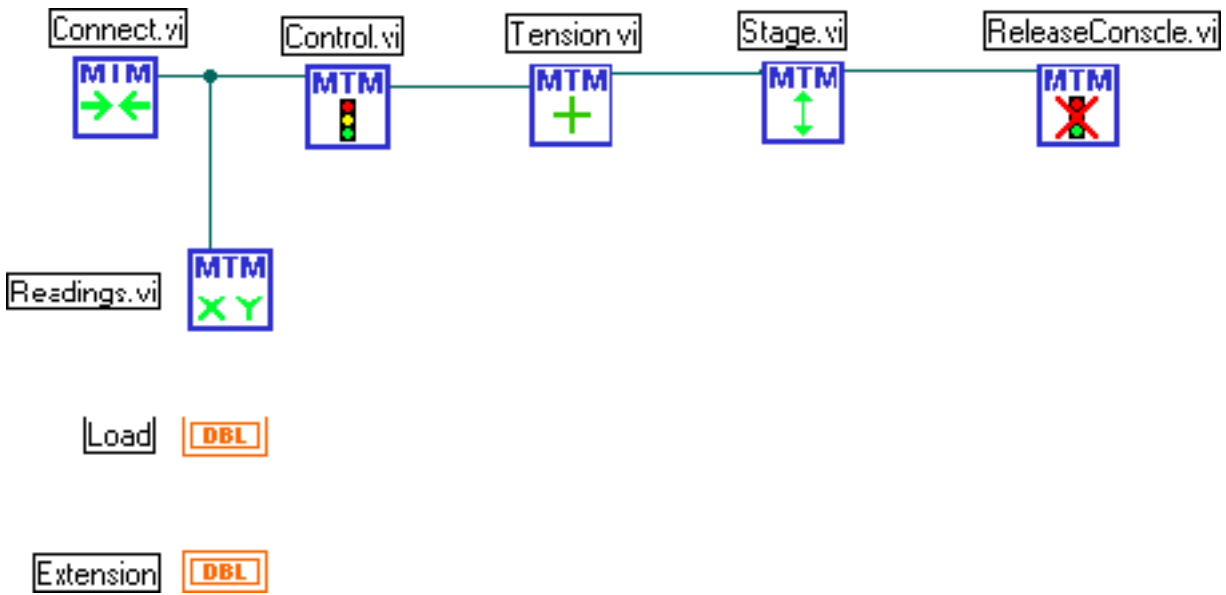
To set the parameters of the test right click over the bottom left corner of the STAGE Icon to select 'CREATE, CONSTANT' and change the travel to 100mm. Right click over the bottom right corner of the STAGE Icon to select 'CREATE CONSTANT' to change the speed to 200mm/min, for example.
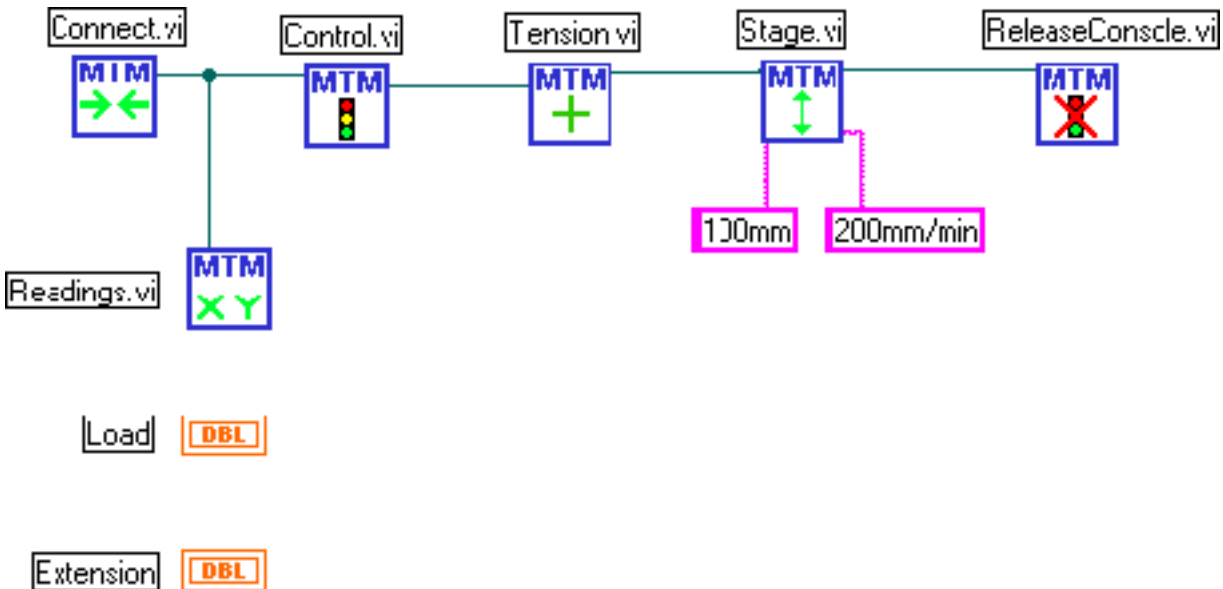
To loop sectioons of the diagram select 'STRUCTURES' and 'WHILE LOOP' from the FUNCTIONS palette (as shown below). In this example you would draw a loop around the bottom three Icons to connect them.

STRUCTURES
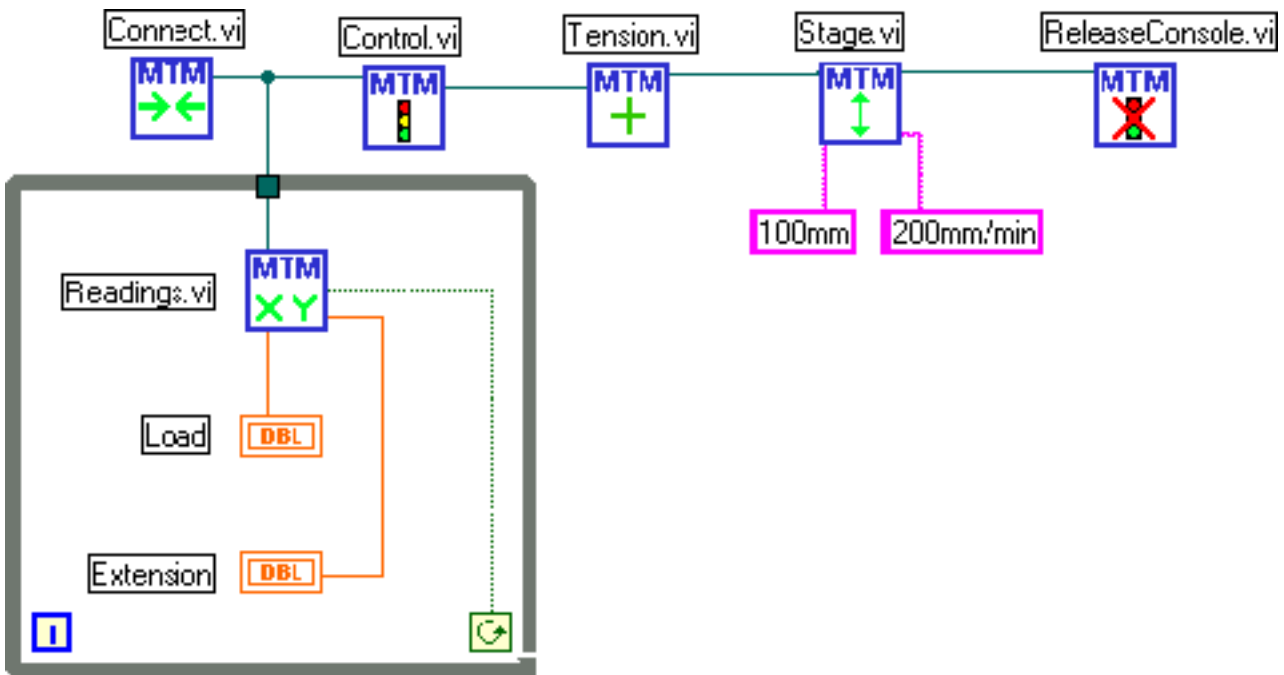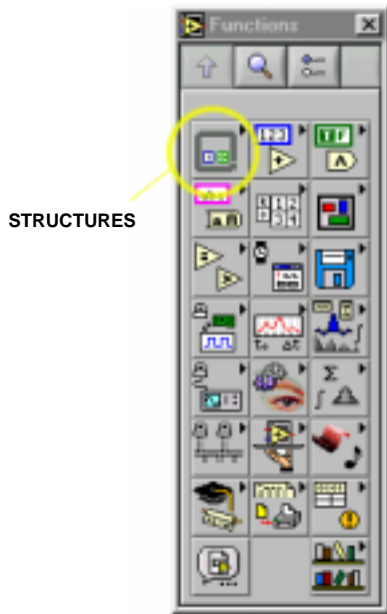
To complete the program you would move the cursor over the small Icon in the bottom right of the 'WHILE LOOP' and right click to select 'STOP IF TRUE'. When run this program would now move the machine to 100mm at 200mm/min, then stop the machine.

Ordering Information

Order No.	Description
40/0733	NEXYGEN™ Software consoles incorporating LabVIEW - NEXYGEN Interface Driver
01/3128	LabVIEW - NEXYGEN Interface Driver User Manual

Consoles provided:

LR Console	for LF500, LRX and LR Series machines
EZ Console	for LF*Plus*, LRX*Plus*, LR*Plus* and EZ Series machines
TCD Console	for TCD Series machines

Predifined Example Programmes:

The following predefined example programmes are provided in the manual, these can be modified to suit individual user needs:

Creating a Pull to Limit Test
Creating a Pull to Break Test
Creating a Single Cycle Test
Creating a Multiple Cycle Test
Plotting Data on an XY Graph
Storing Data to a file
Creating a Creep Test
Creating a Relaxation Test
Stopping a Stage Using and External Switch
Stopping a Stage by a Load Value

Machine Compatibility:

Easy Test (EZ) Series machine with program V3.1 or later.
LF*Plus*, LRX*Plus* or LR*Plus* machine with program V3.1 or later.
LR Series machine which is fitted with EPROM's Version V7.5 or later.
LRX/LF500/TA500 machine which is fitted with EPROM's Version V2.11 or later.
Chatillon TCD frame.

LabVIEW™ Compatibility:

The LabVIEW - NEXYGEN Interface Driver is to be used with LabVIEW version 6*i* or later.

System Requirements (Minimum)

- Pentium 2® Processor, 400MHz
- 128MB RAM
- 250MB Hard Disk Space
- 1 Free COM Port, with 16550 UART
- CD ROM Drive (For Installation)
- Monitor, with resolution 1204 x 768 or higher

ISO TickIT Accreditation

The LabVIEW - NEXYGEN Interface Driver has been developed and endorsed with TickIT approval as part of AMETEK LLOYD INSTRUMENTS' BS EN ISO 9001:1994 registration.

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