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Remote Control - LeCroy Oszilloskop WaveSurfer 3000 mit LabVIEW via LXI LAN-Schnittstelle

Damit LeCroy Oszilloskope der Serie WaveSurfer 3000 mit LabVIEW via LAN gesteuert werden können werden folgende Schritte benötigt.

1. Download des LabVIEW Treibers für Teledyne LeCroy XStream-DSO / MAUI Oszilloskope



Abbildung 1 – Webseite von Teledyne LeCroy/Support/Software Downloads.





Abbildung 2 – Klicken auf Software Utilities.





Abbildung 3 – Suchen nach LabVIEW Drivers und Klicken auf Download.





Abbildung 4 – Unter XStreamDSO klicken auf NI X-Stream LabVIEW Drivers.



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	Tip: If you did not find yo	ur instrument driv	er, try making your s	earch more g	eneric to inc	lude more						
	Instruments.Also, checi	cout the other resi	burces for infaing in	strument anve	ers.							
	Search Results											
	Results 1 - 4 of 4											
	Vendor/Model	Description	Technology	Environme	nt Interface	Certified						
	LeCroy	Oscilloscope	Plug and Play	LabVIEW	Ethernet,	*						
	DDA 5005A XXL	Analyzer	(project style)		488.2							
	DDA 735ZI DDA 76QK				(GPIB)							
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	MSO 104MXs-B MSO 44MXs-B											
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Abbildung 5 - Klicken auf die Oszilloskop-Serie (die Serie WaveSurfer 3000 ist noch nicht aufgelistet).





Abbildung 6 - NI-Webseite mit Treiber in Project-Style von LeCroy Oszilloskopen.



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odels Tested:	WaveRunner	r 6100A, WaveSurfer 454, 1	WavePro 7300A	Learn Ho						
ther Supported Models	s: See Below			Learn Mo	re About Instrumen	t Drivers				
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Plug and Play Driver Ins instrument driver Note: Third Party Softw LeCroy VICP Passport Available for download Oownload Driver a se the chart below to downloa oftware? Learn More. To down Application Development En LabVIEW 8.2.1 Upgrade LabVIEW 2010 Upgrade	stallation Instruction (for Ethernet coll from the Software and Relate ad the right driver nload the require	ctions Learn how to install Required: mmunication) are Utilities at LeCroy's w ed Software rfor your ADE. Not sure if y ed software, visit Drivers a Additional Required Soft NI-VISA 3.4.1	vour Plug and Play ebsite You already have the additional r and Updates. tware Download Driver	equired Now						
Plug and Play Driver Instinstrument driver Note: Third Party Softw LeCroy VICP Passport Available for download Oownload Driver a se the chart below to downloa oftware? Learn More. To down Application Development En LabVIEW 8.2.1 Upgrade LabVIEW 2010 Upgrade LabVIEW 2012 Upgrade	stallation Instruction (for Ethernet could for Ethernet could for Ethernet could for the Software and Relate addition the Software and the right driver nload the require addition the require addition the require addition the require additional the requ	ctions Learn how to install Required: mmunication) are Utilities at LeCroy's w ed Software for your ADE. Not sure if y ed software, visit Drivers a Additional Required Sof NI-VISA 3.4.1 NI-VISA 3.4.1	ebsite vou already have the additional m and Updates. tware Download Driver Download Driver	equired Now Now						

Abbildung 7 – Download Driver Now klicken von gewünschter LabVIEW-version.

Dieser Treiber benötigt NI-VISA 3.4.1 oder höher auf dem Rechner, mit dem die Kommunikation zum Oszilloskop hergestellt werden soll.



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2. Installation des LabVIEW Treibers

jZip - LeCroy Wave Series Oscilloscope,Analyzer-lecroy File Actions View Help I I I I I I I I I I I I I I I I I I I	wave_series.zip	Style	-	
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ctual size: 107 files / 2 MB Archive size: 2 MB				

Abbildung 8 – Oeffnen der heruntergeladenen ZIP-Datei.



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	Files Selected files/folders All files/folders in current folder All files/folders in archive Files in Archive:	Open Explorer window Overwrite existing files Skip older files	Extract Cancel

Abbildung 9 – Auspacken des Treibers unter der gewünschten LabVIEW Version/instr.lib.



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3. Einstellungen der LAN-Karte des Rechners

Der Rechner, auf dem das LabVIEW-Programm laufen soll, muss für die Kommunikation via LAN-Schnittstelle vorbereitet werden.



Abbildung 10 - Klicken auf Adaptereinstellungen ändern.





Abbildung 11 – LAN-Verbindung öffnen.



Verbindung	10 × 10
IPv4-Konnektivitä	ät: Kein Netzwerkzugriff
IPv6-Konnektivitä	ät: Kein Internetzugriff
Medienstatus:	Aktiviert
Dauer:	7 Tage 03:52:30
Übertragungsrati	e: 100,0 MBit/s
Aktivität	
Aktivität ————Ge	esendet — Empfanger
AktivitätGe Ge Pakete:	esendet — Empfanger 2'881 0

Abbildung 12 - Klicken auf Eigenschaften.



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Thoigabo	9.155	
Verbindung herstellen	über:	
Realtek PCIe 0	BE Family Controller	
		Konfigurieren
Diese Verbindung ver	wendet folgende Eleme	nte:
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M Committee M	etwork Security Interme	diate Filter Driver
Symantec N	centrone occomy income	didito i nitor privor
QoS-Paketp	laner	
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Abbildung 13 - (TCP/IPv4) selektieren und klicken auf Eigenschaften.



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agement	Alternative Konfiguration				
IP-Einste Netzwerl den Netz beziehen	Illungen können automatisch k diese Funktion unterstützt. werkadministrator, um die ge I.	zugewiesen Wenden Sie eeigneten IP	werde sich a P-Einst	en, wenr andernfa ellungen	n das ills an zu
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Abbildung 14 – IP-Adresse automatisch beziehen anwählen.

Dieser Schritt ist notwendig, weil die Serie WaveSurfer 3000 keine statischen IP-Adressen vergeben kann.



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4. Vorbereiten des LeCroy WaveSurfer 3000 Oszilloskops

Das Oszilloskop wird über ein Standard-LAN-Kabel direkt mit dem Rechner verbunden. Daraufhin werden die IP-Adressen an den Rechner und das Oszilloskop automatisch vergeben. Die IP-Adresse des Oszilloskops sieht man im folgenden Bild.

📋 File 🛛 🕄	Vertical	🕶 Timebase	Trigger	🖃 Display 🛛 🖊	Cursors 🛛 🖹 Me	asure 🛛 🖬 Mati	h 🗠 Analysis	🗙 Utilities	• Support		
0 mV	nV/div offset								2.00 kS	0.0 ns/div Stop 4.00 GS/s Edge	0 mV Positive
Utilities Control Off GP1B LS1B	Status from TCPIP (VICP) LXI (VXX1)) USBTMC	Remote Host Name : IP Address(s) MAC Address	Hardcopy LCRY(169.26 (s) 00-10	Aux Output 0120N12087 54.39.64 -4c-e0-00-57	Date/Time	Options	Mask Options	n	Remote _Full D _₹ Resa _ and	Control Assistant Show Remote Control Log Log Mode ialog et to Errors Only clear at startup	CLOSE
TELEDYNE	E LECROY									9/5/2014 1:5	07:53 PM

Abbildung 15 – Unter Utilities/Remote die Schnittstelle LXI (VXI11) anwählen. Die IP-Adresse wurde automatisch vergeben.



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📋 File 🛛 🕇 Vertical 🛛 \leftrightarrow	Timebase T	rigger 🛛 🖼 D)isplay 🛛 🗶 (Cursors 🛛 🖹 Mea	sure 🛛 🖬 Math	🗠 Analysis	X Utilities	8 Support		
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	=									
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0 mV offset									4.00 GS/s E	dge Positive
Utilities Status	-									🛞 CLOSE
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Off TCPIP	т с з						4	1	Show Ren Control	note
	MAR Address(s)	00-10-40-0	0-00-57	Clos	e				Log Mode	
(<u>(vxiii)</u>		00-10-40-6	0-00-01			LAN		Ful	l Dialog	4
LSIB USBTMC						Configuration Reset		Re ا	eset to Errors (nd clear at sta	Dnly rtup
TELEDYNE LECROY									9/5/20	14 1:58:20 PM

Abbildung 16 – Mit Show Remote Control Log und Log Mode Full Dialog kann die Kommunikation aufgezeichnet werden.

Zur Unterstützung bei der Programmierung besteht beim Oszilloskop die Möglichkeit, den kompletten Dialog oder nur die Fehler zu registrieren.

Das Oszilloskop ist betriebsbereit zum Ansteuern mit dem X-StreamDSO LabVIEW Treiber via LAN LXI-Schnittstelle.



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Create Project	Open Existing
	Show All
Finite Measurement (NI-DAQmx)	C:\Users\Tameq_CH_Notebook\Documents\Tameq Schweiz G
Feedback Evaporative Cooler	C:\Program Files (x86)\National Instruments\LabVIEW 2012\inst
Blank Project	Newtons4th PPA.lvproj
Blank VI	C:\Program Files (x86)\National Instruments\LabVIEW 2012\inst
Simple State Machine	C:\Users\Tameq_CH_Notebook\Documents\Tameq Schweiz G
Continuous Measurement and Logging (NI-DAQmx)	NewtonsPSM1735Jvproj
Find Drivers and Add-ons	wand Support Welcome to LabVIEW
Connect to devices and expand the Participate in	the discussion forums or Learn to use LabVIEW and upgrade

5. Inbetriebnahme des LabVIEW-Treibers

Abbildung 17 – Starten von LabVIEW.



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ame Examples Private Public	Änderungsdatum 05.09.2014 12:05 05.09.2014 12:05	Typ Dateiordner	Größe
lame Examples Private Public	Änderungsdatum 05.09.2014 12:05 05.09.2014 12:05	Typ Dateiordner	Größe
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	05.09.2014 12:05	Dateiordner	
🔒 LeCroy Wave Series.lvproj	07.04.2014 14:51	LabVIEW Project	5 KB

Abbildung 18 - Oeffnen des LabVIEW-Projektes LeCroy Wave Series.lvproj.

😰 LeCroy Wave Series.lvproj * - Project Explorer
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Items Files
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🖻 🖶 My Computer
Examples
LeCroy Wave Series Acquire Waveform x
LeCroy Wave Series Acquire Multiple Wbl eforms.vi
LeCroy Wave Series Acquire Waveform In Loop.vi
Ecroy Wave Series Edge Iriggered Acquisition.vi
LeCroy Wave Series Transfer Selected Waverorm.vi
LeCroy Wave Series Acquire Waverorm with Preview.vi
LeCroy Waye Series Acquire Timed Sequence vi
LeCroy Wave Series Acquire and Read MyMeasurements vi
LeCroy Wave Series.bin3
ECroy Wave Series, Ivlib
Public
tar and the second s
LeCroy Wave Series Readme.html
수 뭘 Dependencies
📙 🔆 Build Specifications

Abbildung 19 – Oeffnen des Beispiels LeCroy Wave Series Acquire Waveform.vi.



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Abbildung 20 – Oberfläche des vi's zur Aufzeichnung einer Kurve.

In das Feld VISA resource name wird folgender Text eingetragen: TCPIP::169.254.39.64::INSTR, wobei die LAN-Adresse den Oszilloskop-Einstellungen entnommen wurde.





Abbildung 21 – Den VISA resource name entsprechend der LAN-Adresse eingeben.





Abbildung 22 - Run klicken, sobald am Oszilloskop ein Signal anliegt, auf das getriggert werden kann.





Abbildung 23 - Die vom Oszilloskop gelesene Kurve wird dargestellt nach erfolgreichem Ausführen des vi's.





Abbildung 24 – Oberfläche des WaveSurfer 3000 nach erfolgreichem Ausführen des LabVIEW-Beispiels.

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C1 CCIM C05-Sep-2 13:59: AS Interpreter sent: 0 Sector		Log	05-Sep-2	13:59:	AS Interpreter	received: DDR?				
C1 CCIM C1 CCIM C1 CCIM C1 CC Constraint from C1 CCIM C1 CC Constraint from C1 CCIM C1		Log	05-Sep-2	13:59:	AS Interpreter	sent: 0				
500 mV/dv -1.480 V ofst Considu Stop Considu Stop 115 mV 4.00 GS/s Utilities Status Status Status Status Status Status Off Control from Image: Clear Log Export To DestFilename Browse Show Remote Off Control from Image: Clear Log Export To DestFilename Browse Show Remote Off Control from Image: Clear Log Export To DestFilename Browse Show Remote Off Control from Image: Clear Log Export To DestFilename Browse Show Remote Image: Clear Log Image: Clear Log Export To DestFilename Browse Show Remote Control Log Image: Clear Log Image: Clear Log Image: Clear Log Image: Clear Log Image: Clear Log Image: Clear Log Show Remote Control Log Image: Clear Log Image: Clear Log Image: Clear Log Image: Clear Log Image: Clear Log Image: Clear Log Image: Clear Log Image: Clear Log Image: Clear Log Image: Clear Log Image: Clear Log Image: Clear Log Image: Clear Log	C1 DC1M	Log	05-Sep-2	12:50:	AS Interpreter	cont: 0			e 0.0 ns Trigge	r C1DC
-1.480 V ofst 4.00 GS/s Edge Positive Utilities Status Image: Clear tog Export To DestFilename Remote Control Assistant Off TCPIP Image: Clear tog Export To DestFilename Browse Remote Control Assistant Off TCPIP Image: Clear tog Export To DestFilename Browse Show Remote Control Assistant Off TCPIP Image: Close Log Mode Log Mode ILSIB USBTMC USBTMC Export To LAN Reset to Errors Only and clear at startup TELEDYNE LECROY 9/5/2014 2:00:01 PM Status Status Status Status	500 mV/div	A Log	05-5ep-2	12.50	AC Interpreter	_received. CMDD			50.0 ns/div Stop	115 mV
Utilities Status Image: Control from tract File DestFilename tract File Browse Remote Control Assistant Off TCPIP Image: Clear Log Export To Text File NemCmdAssistant.txt Browse Remote Control Assistant Off TCPIP Image: Clear Log Export To Text File NemCmdAssistant.txt Browse Show Remote Control Assistant GPIB LXI Image: Clear Log Close Lan Log Mode I_SIB USBTMC Image: Clear at startup	-1.480 V ofst								4.00 GS/s Edge	Positive
Control from DestFilename Browse Remote Control Assistant Off TCPIP If NAC Address(s): 00-10-4c-e0-00-57 Log Mode GP1B LXI MAC Address(s): 00-10-4c-e0-00-57 Log Mode Full Dialog LSIB USBTMC Reset to Errors Only and clear at startup Story of the startup 9/5/2014 2:00:01 PM	Utilities Status									😵 CLOSE
off TCPIP (VICP) If Show Remote Control Log GPIB LXI (VXIII) If Log Mode LSIB USBTMC LAN Configuration Reset Lan Zeset to Errors Only and clear at startup TELEDYNE LECROY 9/5/2014 2:00:01 PM	Control from	nable	Clear Log		Export Text F	To File \RemCmd	DestFilename Assistant.txt	Browse	Remote Control A	ssistant
GPIB LXI (VXIII) LAN Configuration Reset Log Mode LSIB USBTMC Full Dialog Image: Configuration Reset TELEDYNE LECROY 9/5/2014 2:00:01 PM	Off TCPIP (VICP)	II I			Clo	se			Show Remote Control Log	
LSIB USBTMC LECROY ELECROY		MAC Address(s) :	00-10-4c-e0-	00-57				-	Log Mode	
LSIB OSBINC Reset Reset to Errors Only and clear at startup TELEDYNE LECROY 9/5/2014 2:00:01 PM							LAN Configuration	L ^{FU}	il Dialog	
TELEDYNE LECROY 9/5/2014 2:00:01 PM							Reset		eset to Errors Only and clear at startup	
	TELEDYNE LECROY								9/5/2014 2:	00:01 PM

Abbildung 25 – Die Event Logs nach einem erfolgreichen Durchlauf des LabVIEW Beispiels.