



# **DISTRIBUTOR TRAINING**

## **CONTROL MODULES**

P015/80C 12/2021

## GC control module

- ➔ Agilent
  - 5890, 6890, 7890, 8860, 8890, Intuvo 9000, etc.
- ➔ Dani
  - Master, 1000
- ➔ Shimadzu
  - GC2010/2014, GC-17A, GC14C
- ➔ Young In Chromass
  - GC 6500, GC 6100
- ➔ Etc.





## HPLC control modules

- Agilent 1100/1200 HPLC
- Knauer Smartline
- Shimadzu LC-10/20 system
- Hitachi LaChrom Elite
- YL Instruments 9100
- GL Sciences LC800
- LabAlliance pumps
- Etc.



# AS control module

- Agilent
- CTC
- Spark Holland
- HTA
- Dani
- Cetac
- Etc.





ADVANCED CHROMATOGRAPHY SOFTWARE

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**CLARITY – LIST OF CURRENTLY CONTROLLED INSTRUMENTS (version 8.3)****GCs (p/n A23)**

	Producer	Name	Interface	Status
	Agilent	4890D, 5890 II, 5890A, 6890	RS232	Ready
	Agilent	6820, 6850, 6850 II, 6890 Plus, 6890N	RS232 or LAN	Ready
New	Agilent	6850, 6890 Plus, 6890A, 6890N, 7820, 7890A, 7890B, 8860, 8890, Intuvo 9000	LAN - ICF	Testing
	Agilent	7890A, 7890B	LAN	Ready
	Ample Technology Center	ATC-6900 GC	LAN	Ready
	Apix <sup>/1,2</sup>	ChromPix2, TwinPix	LAN	Testing
	Dani	GC1000	RS232 + A/D converter	Ready
	Dani <sup>/1,3</sup>	Master GC	RS232 or LAN	Ready
	Ellutia <sup>/1,2</sup>	200 Series	RS232 + A/D converter	Ready
	Ellutia <sup>/1,3</sup>	300 Series	RS232 + A/D converter	Ready
New	Fuli <sup>/1</sup>	GC 9720 Plus, GC 9790 Plus	LAN	Ready
	GOW-MAC	Series 816	LAN	Ready
	NETEL <sup>/1</sup>	Analyte 2900A, Chrom Lite 3000A	A/D converter + RS232	Testing
	Shimadzu	GC14C, GC17A	RS232, OPT-USB + A/D converter	Ready
New	Shimadzu	GC2010, GC2010 Plus, GC2010 Pro, GC2014, GC2014C, GC2014C APC/AFC	RS232	Ready
	Snir <sup>/1,2</sup>	Sion 4210	LAN	Testing
New	YoungIn Chromass <sup>/1</sup>	ChroZen GC	LAN	Testing
	YoungIn Chromass <sup>/1</sup>	YL6100	RS232	Ready
	YoungIn Chromass <sup>/1</sup>	YL6500	LAN	Ready

**HPLC Systems (p/n A24)**

	Producer	Name	Interface	Status
	Agilent	1100 LC, 1200 LC, 1260 Infinity, 1290 Infinity II (see list of particular components)	LAN - ICF	Ready
	Agilent	1100 system	GPIB, LAN	Ready

→ List of currently controlled instruments is **available** at DataApex website

→ Or in **D004** datasheet



# CONTROL MODULES → EFFECTS OF ADDED CONTROL MODULE

The screenshot displays three overlapping windows from a gas chromatography software interface:

- Method Setup Demo1 - #3; 22.04.2020 12:56:19**: The main configuration window. It includes a toolbar with 'New', 'Open...', 'Save', 'Save as...', 'Report setup...', 'Audit trail...', 'Send method by e-mail...', and 'Help'. Below is a 'Select GC' dropdown set to 'GC 1' with an 'Enabled' checkbox. The 'Oven/Zones' tab is active, showing 'Oven Parameters' (On Oven: Max [°C] 80, Equilibration [min] 1) and 'Temperature Zones' (Inj. Front [°C] 50). A table shows 'Heat Rate' and 'Final Temp' for an 'Initial' run. Other parameters include 'On Cryo', 'Quick Cool', 'Post Run', and 'GC Status' (Not Ready).
- Instrument 1 - Device Monitor**: A window showing real-time instrument data. It includes fields for 'Temperature' (Set and Actual in °C), 'Pressure', and 'Flow' (H2, Air, Makeup in mL/min). A schematic diagram of the instrument is also visible.
- Instrument 1 - Chromatogram "Data\535 - Methanol FID Front" (MODIFIED)**: A window displaying a chromatogram plot. The y-axis is 'Current [pA]' ranging from 4.0 to 6.5. The x-axis is 'Time [min]' ranging from 0 to 7. A single sharp peak is observed at 4.91 minutes. Below the plot, the 'Oven/Zones' and 'Temperature Zones' settings are repeated, showing a higher 'Max [°C]' of 200 and 'Inj. Front [°C]' of 100.

- Tab in the **Method Setup**
- Pane in the **Device Monitor**
- Tab in the **Chromatogram**



The screenshot displays the 'System Configuration' window with a tree view on the left and a main configuration area on the right. A 'Method Sending Options' dialog box is open in the center. The dialog has a title bar with a close button. Inside, it contains a section 'After Each Method Change:' with two radio buttons: 'Send Method to Instrument' (selected) and 'Do Not Send Method to Instrument'. Below this is a text block explaining when the method is changed. At the bottom of the dialog are 'OK', 'Cancel', and 'Help' buttons. An orange arrow points from the 'Method Options' button in the main window to the dialog box. The main window also shows a 'Number of Instruments' dropdown set to 1, and a list of instrument controls.

➔ **Option to Send or Do not send method to instruments after method change**



System Configuration

Setup Control Modules

Number of Instruments: 1

Name	Used	S/N
AS		
LC		
GC		
7890		DemoSN
GC 1	Instrument 1	
Detector 1	Instrument 1	
Detector 2	Instrument 1	
Detector		
Colibrick		1284
Colibrick - 1	Instrument 1	
Colibrick - 2	Instrument 1	
Colibrick - 3		
Colibrick - 4		
Balance		
Thermostat		
Valve		
Fraction Collector		
Capillary Electrophoresis		
Auxiliary		

Instrument 1 Instrument 2 Instrument 3 Instrument 4

Name: Instrument 1

Instrument Type: GC

Name	From
AS	
GC	
GC 1	7890
Detector	
Detector 1	7890
Detector 2	7890
Colibrick - 1	Colibrick
Colibrick - 2	Colibrick
Thermostat	
Valve	
Auxiliary	

Data Inputs & Outputs

	Device	Number
Ext. Start Dig. Input:	Colibrick	1
Ready Dig. Output:	Colibrick	1

Miscellaneous Settings

Units Setup Method Options

Add... Remove About... Setup... OK Cancel Help

→ **Ext. Start Dig. Input** – used to start the run

→ **Ready Dig. Output** – controlled by Active sequence





# CONTROL MODULES → ENABLE START FROM CLARITY

Agilent HP5890 Setup

COM: COM1  
Baud Rate: 19200  
Version: HP5890 A

Number of Detectors: [ ]

Digital Acquisition

Channel 1: Detector 1  
Channel 2: Detector 2

This Device Starts the Run in Clarity  
 Clarity Starts This Device

OK Cancel

ICF Setup

- Agilent 1100/1200/1260/1290 LC
- Agilent 1120/1220 LC Systems

> < Auto Configure

This Device Starts the Run in Clarity  
 Clarity Starts This Device

Shutdown pumps when the instrument is closed  
 Shutdown detectors when the instrument is closed  
 Create a real time signal for external fraction collectors  
 Sequence Mode

OK Cancel Help

Agilent 68xx Setup

Connection Setup Devices Setup Detectors Setup

Use Digital Acquisition

Number of Detector channels 2: [ ]

Inversion of signal

Channel 1: Detector 1   
Channel 2: Detector 2

This Device Starts the Run in Clarity  
 Clarity Starts This Device

OK Cancel Apply Help

- Some control modules do not offer the Digital Start Input
- When the run will be started by Clarity or other module, the Clarity Start
- This Device needs to be checked

Data Inputs & Outputs

	Device	Number
Ext. Start Dig. Input:	Colbrick	1
Ready Dig. Output:	5890	1

Miscellaneous Settings

Units Setup Method Options

OK Cancel Help

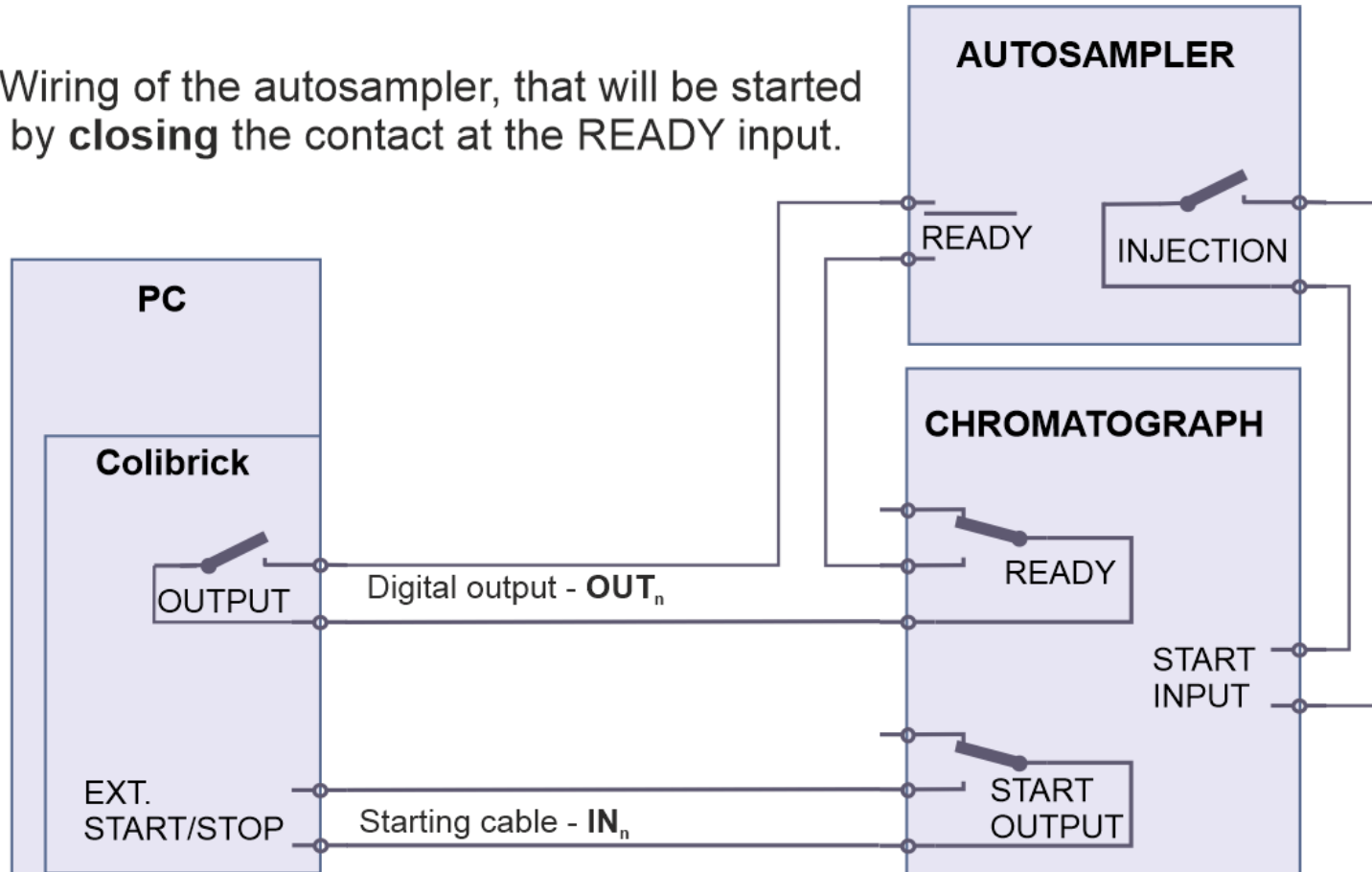


## Typical AS configurations are

- AS + GC set - **ACTIVE** sequence
- AS + LC set - **ACTIVE** sequence
- AS - **PASSIVE** sequence (GC or LC)
- AS - **ACTIVE** sequence + AS Control + A/D card
- AS - **ACTIVE** sequence + AS Control + digital acquisition

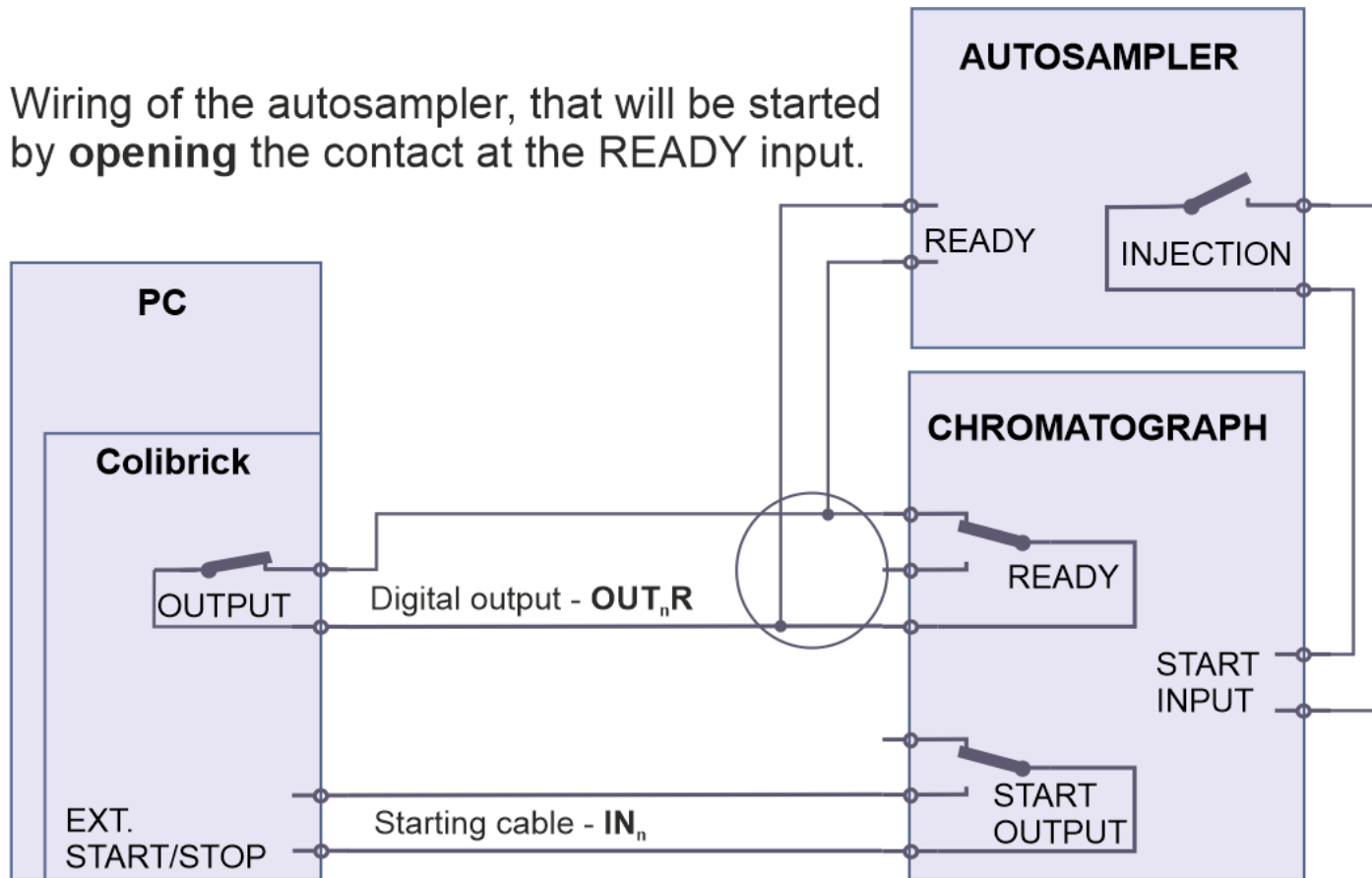
# Active Sequence GC

Wiring of the autosampler, that will be started by **closing** the contact at the READY input.



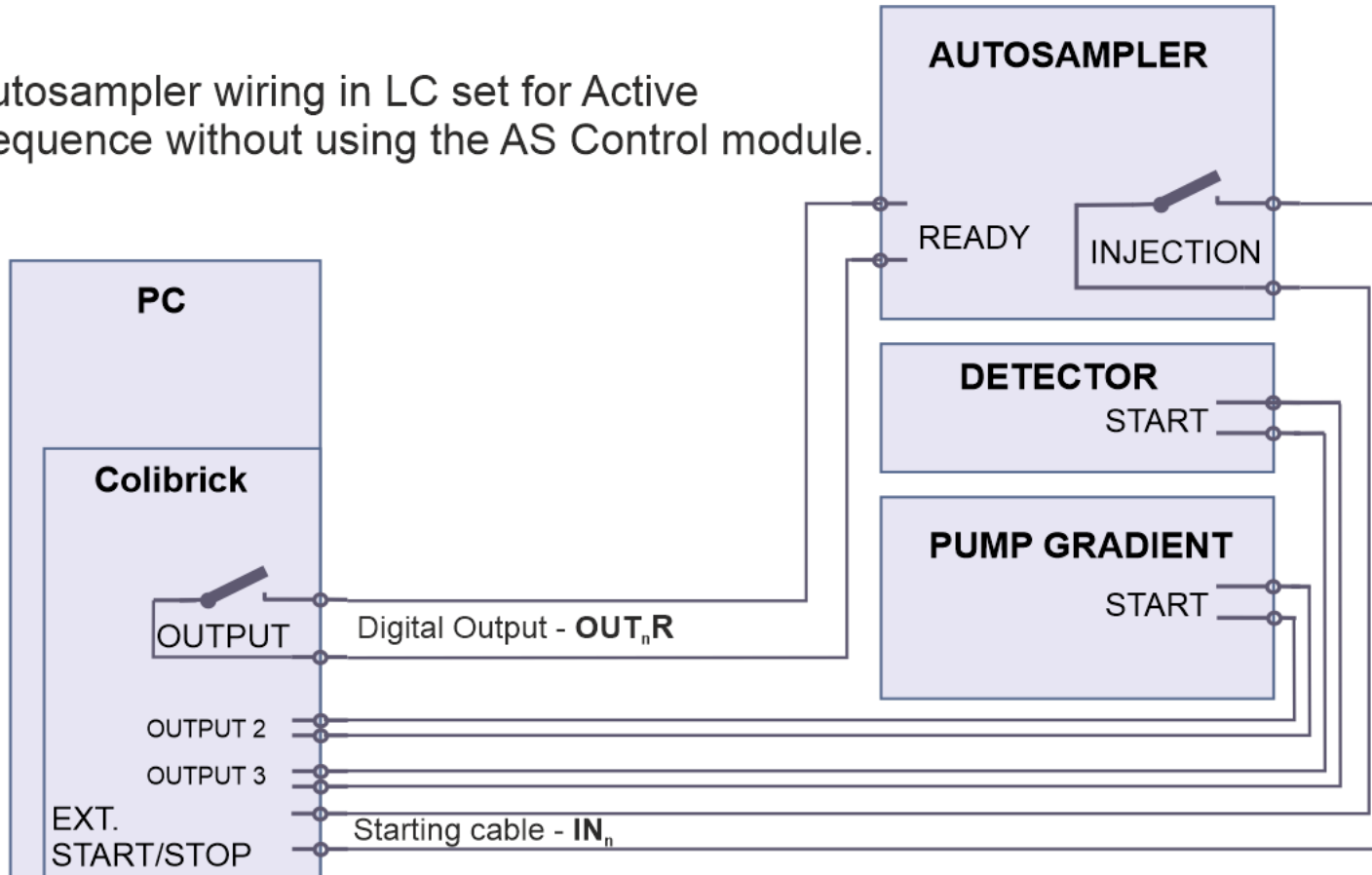
# Active Sequence GC

Wiring of the autosampler, that will be started by opening the contact at the READY input.

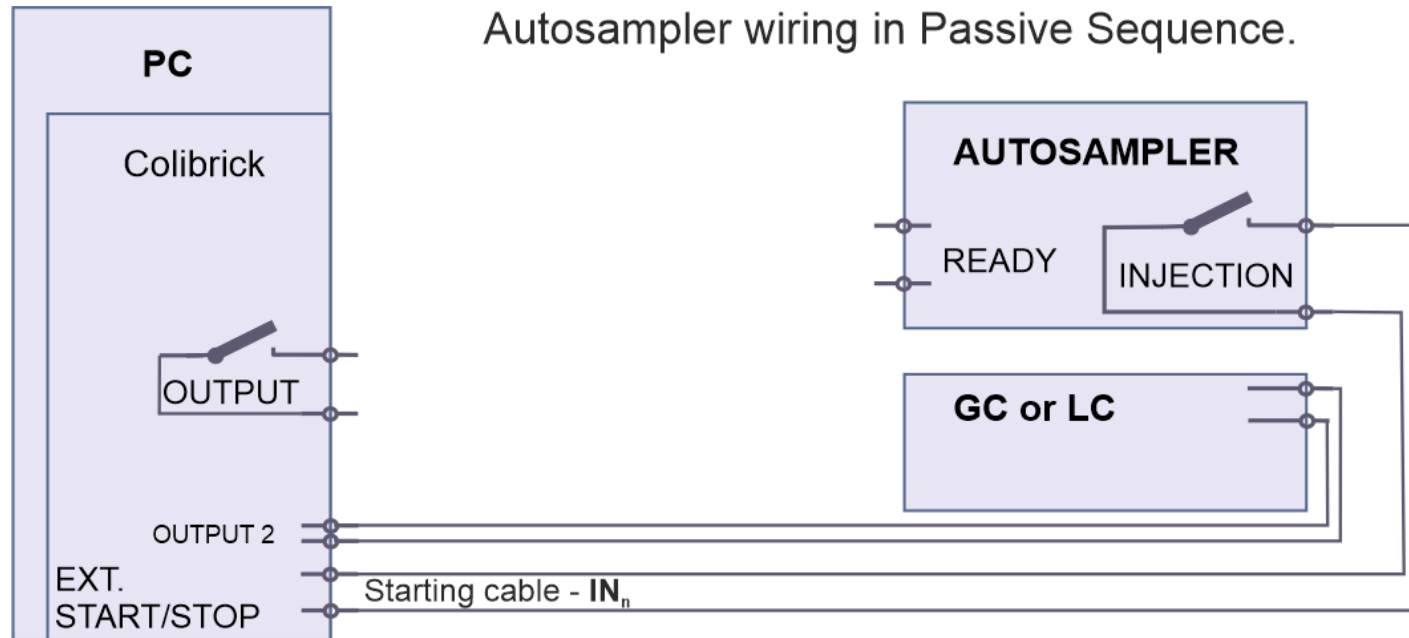


# Active Sequence LC

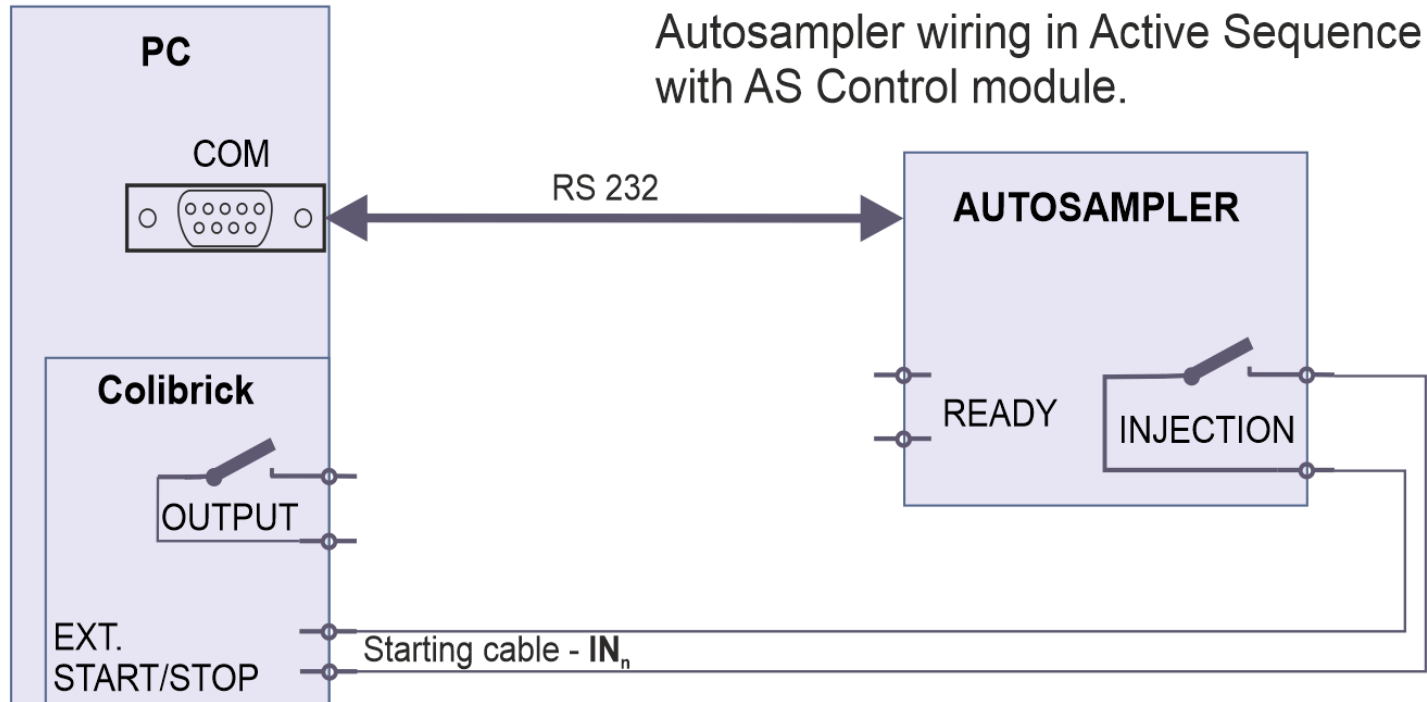
Autosampler wiring in LC set for Active Sequence without using the AS Control module.



# Passive Sequence

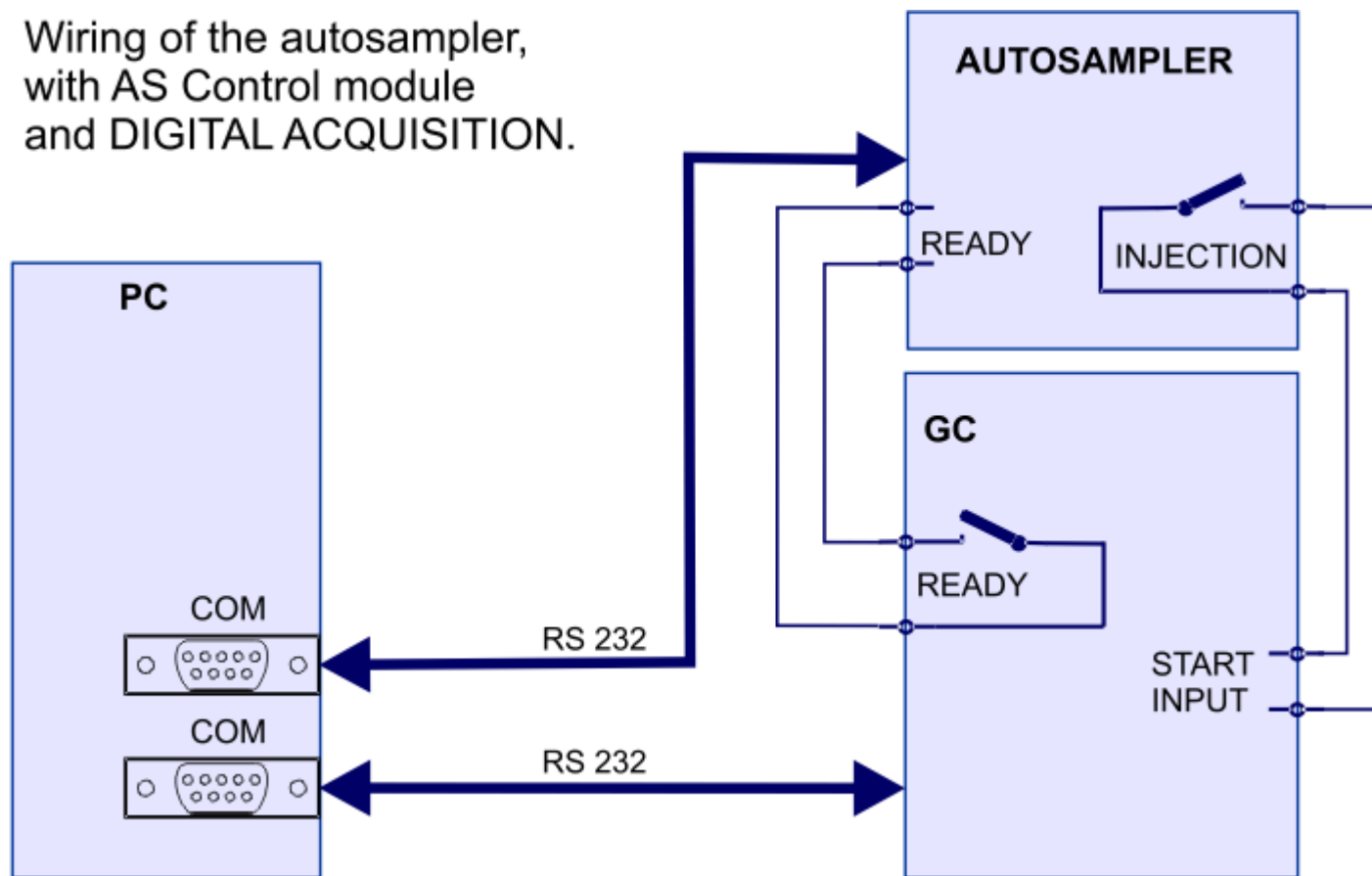


# AS Control – Analog data

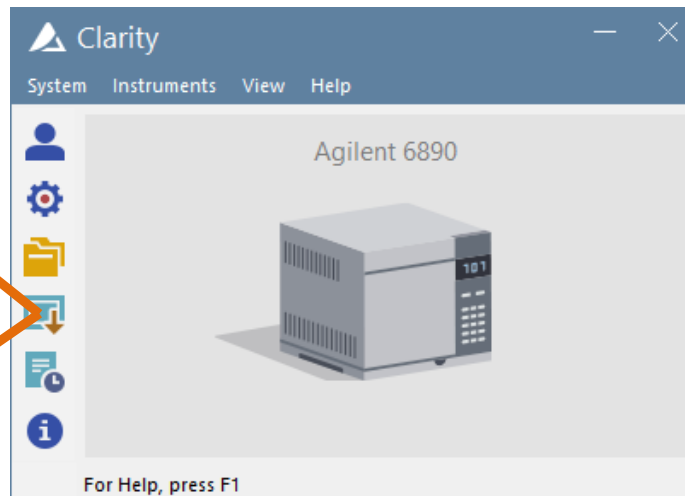
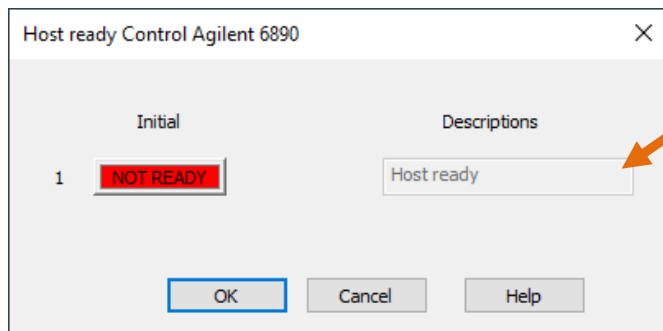
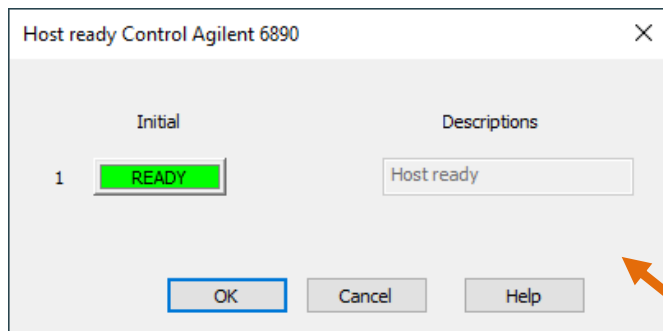


# AS Control – Digital acquisition

Wiring of the autosampler, with AS Control module and DIGITAL ACQUISITION.







- The **Initial state for Digital Output** (Host ready) on 68x0 GC must be set:
- **READY** for **Manual injection** (default)
- **NOT READY** for any **autosampler controlled** using Active Sequence

## Active Sequence – start by Clarity

- ➔ Elemental Analyzers
  - no Start Out contact on the analyzer
- ➔ Sampling by Gas valves
  - the actual sampling is programmed in event table as part of the run
- ➔ Solution:
  - A/D card – connect Start In to Ready out
  - Virtual digital I/O module (simulates connection like a DEMO detector)

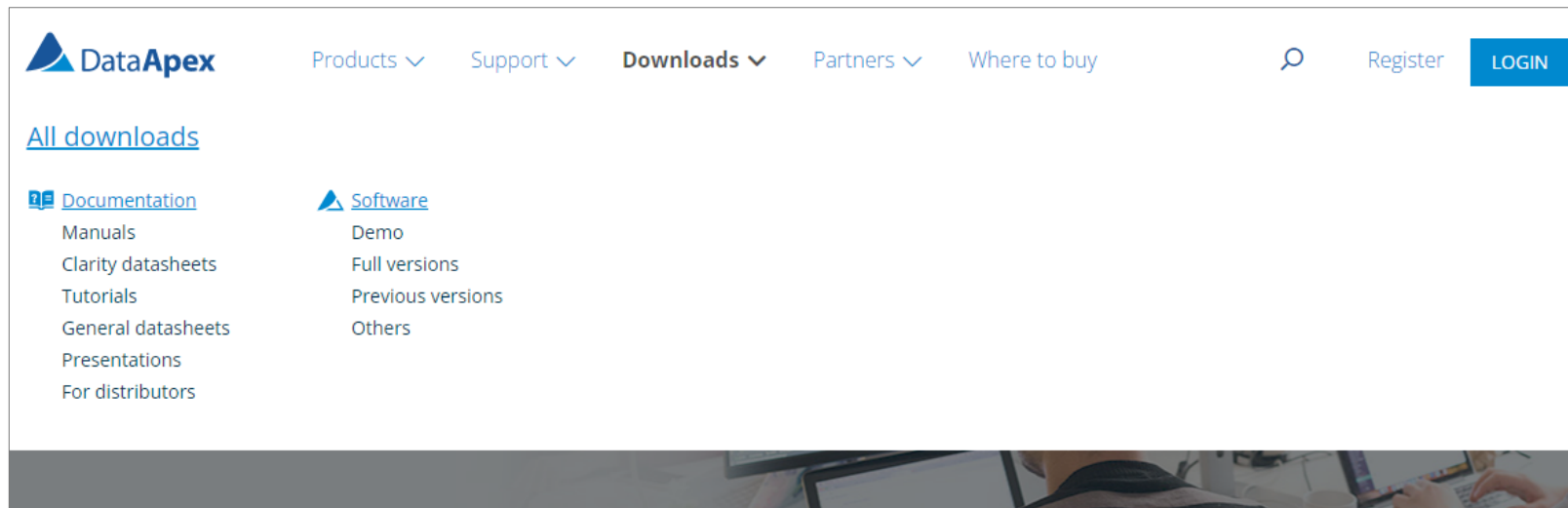
## Overlapped mode in AS

- ➔ Sequence in Clarity sends to autosampler one injection at a time
- ➔ Overlap mode is available for selected AS
  - Prep ahead mode (CTC PAL-xt series)
  - Sequence mode (Spark, CTC PAL3)
  - Overlapped mode (Sykam)
  - Use Optimised Sequence (HTA200H)
- ➔ Important for derivatization and headspace
- ➔ Method Setup – besides Autostop time the correct analysis time must be set in the Autosampler method



# Control modules manuals

- Cables, accesories, wiring and configurations
- Communication, peculiarities and limitations



 Available on [www.dataapex.com](http://www.dataapex.com) or on installation medium in Documentation subfolder.



**...THANK YOU FOR YOUR TIME**



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