Chapter 9 Data Sampling Screen

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9.1 Data Sampling Screen



What is the Data Sampling Screen?

Data input from connected devices, collected and displayed on the GP with specific timing, can be used to control production. The collected data can be printed or transferred to a PC by first saving in the CF Card.

(1)	Dute	Title	LineA	LineB	LineC	Line0	
\smile	85/12/16 85/12/16	17:48:58	- 04 55	129	91	200	
	85/12/16	17:41:00	56	134	95	275	
	#5/12/16	17:41:81	57	139	101	284	
				-			
				+	+	-	
				-			
		_	_	-	-		
	Line/	ι L	ineB	Lin	eC	LineD	
	57		100			285	
	Caller		-	_			
2 🗖	Correct		Date	Lines		frend Disp,	



The screen displays all collected data

Date	Time	LineA	LineB	LineC	LineD
05/12/16	17:40:58	54	124	86	255
05/12/16	17:40:59	55	129	91	265
85/12/16	17:41:00	56	134	96	275
05/12/16	17:41:01	57	139	101	284

Touch the [Collect Trigger] button to collect data.



Touch the [Data Erase] button to delete all collected data.



Touch the [Trend Disp.] ON/OFF button to display trend graphs in panel screen.

Trend Disp.

Display all collected data in trend graphs.



9.2 Data Sampling Display

💜 How to collect data

Data from connected devices will be collected/saved to GP using the sampling feature. Data is sampled at each specified time or at a specific time cycle and stored into the backup SRAM in the GP's memory, and the sampled data is displayed in data lists or in trend graphs on the screen. The data can also be printed or saved in the CF Card.



(1) Address Settings/Action Settings: Collect/save the data from the connected device with a specified time or cycle.

(2) SRAM Screen Display: Display SRAM data on the screen.

* The data will be displayed by the sampling data display and historical trend graph.

(3) Write Data: Allow data to be edited or displayed by bar graph or trend graph by writing the sampling data into the LS Area in the GP.

(4) Print: Print the sampling data from the GP.

easily edited from a PC.

(5) Save CSV: Save the sampling data stored in the GP's SRAM to the CF Card as a CSV file.
Hint
CF-Card
Since the data from SRAM is backed up to the CF Card as a CSV format file, it can be

Data Collection Setup

(1) Click [Sampling Settings] from the [Common Settings] menu.



(2) Click "Create" to open the [New Sampling Group] dialog box to set up a sampling group.

	💑 New Sampling Group 🛛 🔀	ci Sanping Lin ci Sampling 1 Address Settings Action Settings Unplay/Save in CSV Print Wate Data
<u>Create</u>	Number 1	Addressing C Sequential C Random Sampling Top Address (PLC1)000000 C (C 32 BR BR Length C 16 BR C 32 BR No. of Sampling Words (1
V V		No. Address 1 (PLC1)00000

(3) [Address Settings] Tab

Set up the PLC address to collect data.



(4) [Action Settings] Tab

Set up which timing will be used for sampling data.

Execution Condition:

Time Specification	-
Time Specification	
Constant Cycle	
Constant Cycle while Bit is ON	
Bit ON	
Bit Change	

ddress Settings Action Settings	Display/Save in CSV Print Write Data
Condition Settings	
Execution Condition	Time Specification
Sampling Permit Bit Address	PLC19:00000
Start Time	이 그 📓 hour - 이 그 📓 min
Sampling Cycle	0 곳 ▦ hou: 0 곳 ▦ min 0 곳 ▦ sec
No. of Times	Times
End Time	0 hour 0 min 0 sec
Data Full Bit Address	× (11)
Data Clear Bit Address	(PLC1)/00000
Backup to SRAM	Extended Settings

Setup Procedure to display all sampled data

(1) [Display/Save in CSV] Settings

Set up the data display format.



(2) Placing [Sampling Data Display]

Place a Sampling Data Display on the screen.



Setup Procedure to display the sampled data in trend graphs

Placing [Historical Trend Graph]

Display a [Historical Trend Graph] on the screen.

😹 Historical Trend Grade	
Petri D PC-0004 PC-0004 Desire Torres Desire To	



Let's collect and display all sampled data in a list

Let's collect and display all sampled data in a list.

[Setup Flow]

1. Create a sampling group in the [Sampling Settings].

2. Place the [Sampling Data Display] on the base screen "9".

[Practice Version]



(1) Set Up Sampling Settings.

Select [Sampling Settings] from the [Common Settings] menu.





The [Sampling List] window will appear as shown on the right.



[Completed Version]



Set [Number] to "1" and [Comment] to "Group", and then click [OK].

💑 New Sampling Group							
Number 1 🕂 🏛 Comment Group	_						
2 OK (0) Cancel							

(3) Address Settings

Set up the address where the data is stored.

Set [Addressing] to Sequential, [Sampling Top Address] to D300, [Bit Length] to 16 bit and [No. of Sampling Word] to 4.

Address Settings	Action Sett	ings Display/Sav	ve in CSV Print	Write Data
Addressing		Sequential	○ Random	
Sampling Top Address		[PLC1]D00300	-	
Bit Length		• 16 Bit	🔿 32 Bit	
No. of Samplin	ig Words	4 🕂 🏢		
No.	Address			
1	[PLC1]D003	300		
2	[PLC1]D003	801		
3	[PLC1]D003	802		
4	[PLC1]D003	803		

(4) Action Settings

Condition Settings: Set up a desired time period to sample data.

(Refer to P9-10 for details.)

Execution condition

Select "Constant Cycle while Bit is ON".

Sampling Permit Bit Address: Set up the bit address which triggers to start sampling data.

Sampling Cycle: Set up a sampling cycle time.

No. of Times: Set up the number of times to take samples.

* Set a range from 1 to 65535.

Address Setting Action Settings Display/Save in CSV Print Write Data							
Condition Settings							
Execution Condition	Constant Cycle while Bit is ON 💌						
Sampling Permit Bit Address	[PLC1]M0220 🗾 🥅						
Sampling Cycle	1 🗧 🔠 📀 sec 🔿 millisecond(s)						
No. of Times	10 📑 🏢 Times						
Data Dall Di Addaras							
Data Full Bit Address							
Data Clear Bit Address	[PLC1]M0223						
Backup to SRAM	Extended Settings						

Data Full Bit Address: Set up the bit address to turn ON after all sampling is completed.

Data Clear Bit Address: Set up the bit address to control the clearing of the sampling data. When this bit address turns ON, the sampling data will be erased. After clearing the data, this bit address will automatically turn OFF.

Backup to SRAM: Select whether or not to save the sampling data to the backup SRAM. If this box is disabled, the sampling data will be deleted when the GP unit's power is turned off or reset.

[Settings] Here, set [Sampling Permit Address] to "M220", [Sampling Cycle] to "1" "Sec", [No. of Times] to "10", deselect [Data Full Bit Address] check box, and enable [Backup to SRAM] check box.



(5) Display/Save in CSV

Display/Save in CSV:

Set whether or not to display the sampling data on the screen or save to the CF card. To display data on the screen or to save data to the CF Card, make sure to enable this box and set the format.

CSV Control Address:

Set whether or not to save the sampling data to the CF card. To save data, set up the bit address to control writing the data to the CF Card.

Z Display/Sav	ve in CSV iettings (≆ Custom Se	I CSV C tting:	ontrol Wor	d Addres Copy fro	m m Print Fr	[PLC1]D	0016	0		•			
Row					Column								
No. of	Item Name (Horizontal) Rov	MS	1	군물	E	item Name (Vertix	:al)		No.	of Charact	ers 14	
E Us	e Sampling Address as Item	Name			No.	of Data Dis	play	Colum	15			4	
	No. of Display 6	Deta	il Settings	Ad	d this Col	umn	Pa	ste this	Colu	mn)
	No. of Display 6 Columns	Deta	il Settings	Ad	d this Col	umn sumn	Pa	ste this iete th	Colu s Col	mn umn	_		
ച	No. of Display 6	Deta 1 Date	il Settings 2 Time	Ad Lo Data1	d this Col by this Col 4 Data2 D	umn 5 6 vata3 Data4	Pa	ste this iete th	Colu s Col	mn umn			
2	No. of Display 6 Columns 1 Item Name (Horizontal)	Deta 1 Date Date	il Settings 2 Time Time	Ad Co Data1 LineA	d this Col by this Col 4 Data2 D LineB L	umn 5 6 Iata3 Data4 ineC LineD	Pa Di	ste this iete thi	r Colu s Col	mn umn			
2 1 Heir Room	No of Display 6 Columns 6 1 Item Name (Horizontal) 2 Show Data	Date Date yy/mm/dd	il Settings 2 Time Time hhomeuse	Ad Co 3 Data1 LineA	d this Col by this Col 4 Data2 D Line8 L	umn 5 6 hata3 Data4 ineC LineD	Pa	ste this iete thi	r Colu s Col	mn umn			,
2 I this Row y this Row	No. of Display 6 Coharase 1 Item Name (Horizontal) 2 Show Data	Deta Date Date gy/mm/dd	il Settings 2 Time hitchnicss	Ad Co 3 Data1 LineA	d this Col by the Co 4 Data2 D LineB L	umn 5 6 hata3 Data4 ineC LineD	Pa	ste this lete thi	r Calu s Cal	mn umn			
2" I this Row this Row to this Row	No. of Display 6 Coharase 1 Item Name (Horizontal) 2 Show Data	Deta 1 Date yy/mm/dd	il Settings 2 Time Time hhommuss	Ad Co 3 Date1 LineA	d this Col py this Co 4 Data2 D LineB L	umn 5 6 seta3 Data4 ineC LineD	Pa	ste this iete thi	r Colu s Col	mm umn			

Simple Settings/Custom Settings: Select a format set mode.

[Simple Settings]: Set up the format easily using a preset format.

[Custom Settings]: Set a custom format.

Here, select [Display/Save in CSV] and set [CSV Control Word Address] to "D160", and select [Custom Settings].

Row Settings: Set up rows of the format.

Select [NO. of Item Name (Horizontal) Rows] to "1", select [Use sampling address as Item Name] to "1", [No. of Calculation Display Rows] to "0", [Item Name (Horizontal)/Text No. of Characters] to "8".

Column Settings: Set up columns of the format.

Disable [Item Name (Vertical)].

*[No. of Data Display Columns] will be automatically determined by the number of data per sample selected.

Type Line A, Line B, Line C, and Line D under the each of item names of Data 1 to 4 shown in the image below.

		1	2	3	4	5	6
		Date	Time	Data1	Data2	Data3	Data4
1	Item Name (Horizontal)	Date	Time	LineA	LineB	LineC	LineD
2	Show Data	yy/mm/dd	hh:mm:ss	****	××××	****	****

Select the entire Columns of Date and Time. Then set up a data format or color styles in the Detail Settings dialog box as desired.

No. of Display Columns 6 Detail Settings Add this Column No. of Display Row 2 1 2 3 4 5 6 1 <th>Style Column No. 1 Date Display Style Date Format Test Color Background Color 0 Ulink None Ulink None Cancel</th>	Style Column No. 1 Date Display Style Date Format Test Color Background Color 0 Ulink None Ulink None Cancel
No. of Display Columns 6 Detail Settings Add this Column No. of Display Row 2 1 2 3 4 5 6 1 2 3 4 5 6 1 1 2 3 4 5 6 1 1 1 2 3 4 5 6 1 <td< td=""><td>Style Column No. 2 Time Display Style Time Format Text Color Background Color OK (Q) Cancel</td></td<>	Style Column No. 2 Time Display Style Time Format Text Color Background Color OK (Q) Cancel
(6) Select/Place Sampling Data Display Open base screen "9".	olliet Deta
Click the [Sampling Data Display] icon from the Toolba	r. 2 1 2 2 2 2 2 2 2 2 2 2 2 2 2
Click on the screen where you want to place the display.	Collect Data

(7) Basic Settings

Sampling Group No.:

Select the group number created in the sampling settings.

Here, select [Sampling Group No.] to "1", [No. of Display Lines] to "11", [No. of Display Columns] to "6", deselect [Edit Data], and set [Show Ruled Line] and [Clear Color] as desired.

< (Basic Settings Display 9 Sampling Group No.	Settings Switch Sett Block No.	ings Specification Address
	No. of Display 11		:Data
I	No. of Display 6 Columns	E Interloc	:k Address
	Display 0 Spacing	Touch	Enable Condition
	Show Ruled Line	C C	en ON C When OFF
I	Without Border	With Border	Border with Item Name Field
	Clear Color	Blink None 💌 🗖	Calculation Part Scroll

(8) Display Settings

Set [Font Type] to "Standard Font", [Size] to "8x16 dot".

Basic Setting Display Settings Switch Settings					
Font Settings]
Font Type	Standard Font	•	Size	8 x 16 dot	-

(9) Switch Settings

Set up Scroll Switches.

In this practice, scroll switch layout will not be included.

Basic Settings Display Settings Switch Settings						
Switch Layout Scroll Up Scroll Down Scroll Left Scroll Right	No. of Samples to Scroll No. of Samples to Scroll No. of Samples to Scroll No. of Samples to Scroll					
	Basic Settings Disp Switch Layout Scroll Up Scroll Down Scroll Left Scroll Right	Basic Settings Display Settings Switch Settings Switch Layout Scroll Up No. of Samples to Scroll Scroll Down No. of Samples to Scroll Scroll Left No. of Samples to Scroll Scroll Right No. of Samples to Scroll				

Click [OK] to adjust the placements.





(10) Operation Check

After data transfer, touch the [Data Sampling] button to start sampling data at a one second cycle and to display all data in the list.

Date	Title	ラインホ	ライン8	5426	ライン0
虧/11/11	14:26:22	- 87	143	224	347
\$5711711	14:26:23	- 88	148	229	357
85/11/11	14:28:24	- 89	152	233	366
15/11/11	14:26:25	14	158	229	377
\$/11/11	14:26:26	91	163	244	387
5/11/11	14:26:27	12	168	249	397
5/11/11	14:26:28	- 93	173	254	6
15/11/11	14:26:29	- 94	178	259	18
15/11/11	14:26:38	- 35	182	263	26
6/11/11	14:26:31	96	187	268	35.
5121	÷ ۱	HUB	545	ic i	ラインロ
96	<u>п</u> . г	189			39
		-	-	- C	free and the st



Open the window screen "2".

[Practice Version]

[Completed Version]



(1) Placing Historical Trend Graph



(2) Selecting Shape

Double click on the [Historical Trend Graph] you placed.

Click [Selected Shape] and choose a shape for the display.

Select the shape and then click [OK].

	Pata ID HT_0000 Comment	Gradh Graph Settings	Display Area Color Promision	Alam Settings	Display Historical Data	83
		Part Palette State	Standard Parts	• Rele	ence	
2	Select Shape					
	No shape					
						×
	Help 원]	Pat No. New Palette	Deate Detere	3	OK Can	• cel

(3) Graph Settings

Select [Pen Recorder] from the [Graph Type

Sampling Group No.: Set the sampling group number of the graph to display.

* Sampling data settings should be configured in the [Sampling Settings] beforehand.

Channel Settings: Set the addresses and number of addresses to be displayed in the graph from the specified sampling group.

\delta Channel I)ata Settings	
No. of Channels	4	
Line	Chart Display Buffer L	ist
Channel No.1	1 :[PLC1]D00300	-
Channel No.2	2 :[PLC1]D00301	
Channel No.3	3 :[PLC1]D00302	
Channel No.4	4 :[PLC1]D00303	
	OK (<u>O)</u>	Cancel

	Graph Settings Display Area Color Alarm Settings Display Historical Data
	Graph Type Mormal Pen Recorder
	Sampling Group No. No. of Channels <u>>>Detail</u> 1 <u>Channel Settings</u> 4
)	Channel No. 1 Input/Display Settings Data Type 16 Bit Bin Input Range Display Range
	Input Sign None Image: Display Sign +/- Min Value 0 Image: Display Sign +/- Max Value 400 Image: Display Sign +/-

Here, set [Sampling Group No.] to "1". Then click [Channel Settings] and set [No. of Channels] to "4", enter [Channel No.1 to No.4] as below.

1

3

- Channel No.1: [PLC1]D00300
- Channel No.2: [PLC1]D00301
- Channel No.3: [PLC1]D00302
- · Channel No.4: [PLC1]D00303

Channel No.: Designate the channel number to set up the Input Range and Display Range settings for.

Input Range: Set the data input range displayed on the trend graph.

Here, for each channel no. 1 – 4, set [Data Type] to "16 Bit BIN", [Input Sign] to "None", [Min Value] to "0", [Max Value] to "400".

(4) Display Area

Display Direction: Select the direction of the graph display.

Data Samples: set the number of data samples that will be displayed in a single line.

* The setting range of no. of data differs depending on the set model's display number of dots.

Scale Divisions: Set scale display.

Here, set [Display Direction] to Bottom Left Corner -> Rightward, [Data Samples] to "9", and [Scale Division] as desired.

(5) Color

Select each channel No. 1 through 4 and set each trend graph's [Line Type], [Line Thickness], [Display Color] as desired.

Set [Border Color], [Scale Color], [Graph Area Color] as desired.

	Graph Settings Display Arel, Color Alarm Settings Display Historical Data
	Channel No. 1
	Channel Color
(1	Line Type 🛛 💳 Solid Line 🔄 🛨 🛄
\sim	Display Color Blink
	🔲 3 💽 None 💌
	Border Color Blink Scale Color Blink
6	□ 7 💌 None 💌 🗖 5 💌 None 💌
E	Graph Area Color Blink
	None 💌

Color

* In this practice, the [Alarm Settings] tab and [Display Historical Data] tab will not be set up.

Click [OK] to adjust the location of the graph.

0K(<u>O</u>)



Graph Settings Display Area Color Alarm Settings Display Historical Data						
Display Direction 🗠 Bottom Left Corner -> Rightward 👤						
Data Samples 🛛	B 🗄 🔜 No	o. of Samples to Scr	oll 🤋 🕂			
Scale Divisions Vertical Major 4 Yertical Minor 6 7						
Horizontal Major Scale	9 🕂 🏢	Horizontal Minor Scale	3			



