Chapter 7

Data Sampling Screen

Data Sampling Screen	7-2
Collect Data	7-3
Let's Display Sampled Data in List	7-5
Let's Display Sampled Data in Trend Graph	7-11
Let's Display Historical Data in Trend Graph	7-15



Data Sampling Screen

Instruction

The data sampling screen is used to manage/control production by collecting and displaying data in a device/PLC on the GP screen at a specified timing. The collected data can be printed out or saved in a CF card and moved to a computer.



1) Display sampled data in a list .

Touching	Collect Data	starts sampling data
Touching	Delete Data	deletes data.
$(\rightarrow$ See pa	age 7-2.)	

Date	Time	Line A	Line B	Line C	Line D
07/12/03	19:09:23	0	0	0	0
07/12/03	19:89:33	1	23	34	34
07/12/03	19:89:34	1	23	34	34
07/12/03	19:89:43	1	8	555	43
07/12/03	19:89:44	1	8	555	43
07/12/03	19:89:54	11	3454	555	43
87/12/83	19:89:55	11	3454	555	43
07/12/03	19:09:56	11	3454	555	43
07/12/03	19:89:57	11	3454	555	43
07/12/03	19:09:58	11	3454	555	43

Display sampled data in a trend graph.
 (→ See page 7-11.)



Display historical data in a trend graph.
 (→ See page 7-15.)





Collect Data

Instruction

To collect or save data in a device/PLC into a GP unit, use the Sampling feature. This feature allows you to save data in the GP backup SRAM at a specified time or cycle and display the saved data in a list or a trend graph on the screen. Also the data can be printed out or saved in a CF card.



1) Address Settings/Action Settings:

Collects or saves data in a device/PLC at a specified time or cycle.

2) SRAM \rightarrow Screen Display:

Displays data in the SRAM on the screen.

* Use Sampling Data Display and Historical Trend Graph.

3) Write Data:

Allows data to be edited or displayed in a bar graph or trend graph by writing sampling data into the LS area in the GP.

- 4) **Print:** Prints out sampling data from the GP.
- 5) Save in CSV:

Saves sampling data from the SRAM to a memory device in the CSV format.







✓Practice Let's Display Sampled Data in List

<practice screen=""></practice>	<completed screen=""></completed>	
Easts Sampling Screen	Data Samping Screen	11:20:04
Galliet, Data	Data True Data Data <thdata< th=""> Data Data <thd< td=""><td>Gollect Date</td></thd<></thdata<>	Gollect Date
Defete Data	84/57(94)11:53:81 17 64 251 222 84/57(94)11:53:82 18 64 551 222 84/57(94)11:53:82 66 71 252 211 84/57(94)11:53:84 66 71 252 211 84/57(94)11:53:84 66 71 251 255	Defete Data
	90 80 269 244	
	Sam San San Fina Car San	Test Balance

- [Setup Procedure]
- 1. In the Sampling settings, create a Sampling Group.
- 2. Place the Sampling Data Display on the base screen "7".

(1) Select Sampling

On the [Common Settings] menu, select [Sampling]. Or click the [Sampling] icon on the tool bar.



(2) Create Sampling Group

1)

Sampling Group L Language	ist ASCII	-			
Language	ASCII				
		<u> </u>	Font Type	Standard Font	×
Create Edit	Copy	Paste	Delete	Change Attri	butes
Number C	Comment	Words	Execution	Cond Occurrences	Number of Block Backup

The Sampling Group List will open.

Oliale [One ata]	GI Sampling List 🖾	
Click [Create].	Sampling Group List	
	Language ASCII 💌 Font Type Standard Font 💌	
	1 Create dk Copy Paste Delete Change Altributes	
	Number Comment Words Execution Cond Occurrences Number of Block B	lackup

2) Set [Group] to "1" and [Comment] to "Group" . Click [OK].

💰 New Sa	mpling Group	×
Group	1 🕂 🏢	
Comment	Group	
(2 OK (1) Cancel	

(3) Address Settings

Set an address in which sampling data are stored.

Here, make settings as below.Addressing:SequentialSampling Start Address: D300Bit Length:16 BitSampling Words:4

(4) Mode Settings

Execution Condition:

Set a timing to collect data at. $(\rightarrow \text{See page 7-7.})$

Here, select [Constant Cycle while Bit is ON].

Sampling Permit Bit Address:

Set a bit address which is a trigger to start sampling

Sampling Cycle:

Set the time of the sampling cycle.

Number of Times:

Select the number of times sampling will occur.

* The setting range is from 1 to 65535.

Data Full Bit Address:

Set a bit address that turns on when the specified number of data samplings are completed.

Data Clear Bit Address:

Set a bit address to control to clear sampled data. When this address turns on, sampled data will be cleared. After clearing is completed, the address turns off.

< Settings >

Here, make settings as below.
Sampling Permit Bit Address: M220
Sampling Cycle: 1 Second
Number of Times: 10
Data Full Bit Address: Not Checked
Data Clear Bit Address: M223

Address Mode	Display/Sa	ave in CS\	/ Print	Write Dal	ta
Addressing	🖲 Sequ	ential	C Randor	n	
Sampling Start Address		[PLC1]D	00300	-	
Bit Length	Bit Length		16 Bit		1
Sampling Wo	4				
Number	Address				
1	[PLC1]D0030	00			
2	[PLC1]D0030	01			
3	[PLC1]D0030)2			
4	[PLC1]D0030	03			
4	[PECT]D0030	J3			





(5) Display/Save in CSV Settings

1) Display/Save in CSV:

Specify whether to display sampling data on the GP screen or to save the data in a memory device.

When you display data on the screen or save data in a memory device, you must check and set the format.

Basic Settings/Custom Settings:

Select a format setting mode.

[Basic Settings]

Allows you to configure settings easily by using a preset format.

[Custom Settings]

Allows you to set a customized format.

Here, check [Display/Save in CSV] and select [Custom Settings].

CSV Control Word Address:

Specify whether or not to save sampling data in a memory device. If save, set a control address to write data to a CF card.

Here, set it to "D160".

Save in:

Select either [CF Card] or [USB Storage] to save data in.

 Enter "Line A", "Line B", "Line C", and "Line D" in Item Name (Horizontal) from Data 1 to Data 4 respectively.

		1	2	3	4	4	5		6		7	
		Item Name (Vertical)	Date	Time	Data1		Data2		Data3		Data4	
1	Item Name (Horizontal)		Date	Time	[PLC1]D	000300	[PLC1]D	00301	(PLC1)DO	0302	[PLC1]D	00303
2	Show Data		yy/mm/dd	hh:mm		****		XXXX		****		****
			1		2	3	4	5	6			
			Date	Tir	me	Data1	Data2	Data3	Data4			
	1	Item Name (Horizontal)	Date	Tir	me	Line A	Line B	Line C	Line D			
	2	Show Data	yy/mm	/dd hh	:mm:ss	****	****	××××	****			

al most compagneeded of the	while bu	na j							
Display/Save in CSV	CSV C	onitiol Word	Addres	1	[PI	.C1JD00	7160	Ŧ	
C Basic Settings Custom Se	ttings		Save in	6	CF Car	d	C U	SB Storag	•
Copy from Print Format.									
Row			Column						ר
Item Name (Horizontal) Bows	1	1	EB	em Nam	e (Vertic	a)			
Use Sampling Address as Item	Name	_	N	lumber	of Chara	cters	14		
Data Display Columns 4								6	
Calculation Results	0	之間					1.		3
Item Name [Horizontal]/Text	8								-
Number of Characters	14	10							J
Display Columns 6	Detaile	d settings	Ad	d this C	olumn		Paste th	is Column	
(2)				ou tras i	00,000		Canada da	ns Colum	2
Displacione	1	2	3	4	5	6			
2	Date	Time	Data1	Data2	Data3	Data4			
1 Item Name (Horizontal)	Date	Time	Line A	Line B	Line C	Line D			
Add this Row 2 Show Data	yy/mm/dd	hhummuss	10000		100104	2000			

3) Row: Set rows in the format.

Set [Item Name (Horizontal) Rows] to "1", check off [Use Sampling Address as Item Name], set [Calculation Results] to "0" and [Item Name (Horizontal)/Text Number of Characters] to "8".

 * Please be sure to enter item names (Procedure 2) before setting [Item Name (Horizontal) /Text Number of Characters]. If the number of characters of [Item Name (Horizontal)] is 9 or more, you can not set "8".

Column: Set columns in the format.

Check off [Item Name (Vertical)].

- * [Data Display Column] is set automatically depending on the number of data to be collected at once.
- Specify each column of "Date" and "Time". Set a format and a color by opening [Detailed Settings].

Display Columns 6	Detaile	ed set	tinas		d this C py this (olumo Solumo		Paste this Column Delete this Column
	1		2	3	4	5	6	
	Date	Tire	e	Data1	Data2	Data3	Data4	
1 Item Name (Horizontal)	Date	Tire	e	Line A	Line B	Line C	Line D	
2 Show Data	yy/mm/dd	hh	nm: 55	10000	10000	1000	1000	

(P Date Set	
Style	
Colema 1 Data Display Data Famila Anton Vol • Test Color • • • Back ground • • • • • • • • • • • • • • • • • • •	074
OK.gt	

Display Columns 6 Detailed settings)	Add this Column Copy this Column			Paste this Column Delete this Column			
Γ		1		2		3	- 4	5	6	
Γ		Date		Time	D	ta1	Data2	Data3	Data4	
1	Item Name (Horizontal)	Date		Time	Li	юA	Line B	Line C	Line D	
2	Show Data	yy/mm/i	d	hhemmess		****				



(6) Select/Place Sampling Data Display

- 1) Open the base screen "7".
- 2) Click the [Sampling Data Display] icon on the tool bar.



 Click the screen where to place the sampling data display.



Data Sampling Screen	-
È	

(7) Basic Settings

Group Number:

Specify the group number, which has been created in the sampling settings.

Group Number:1Display Rows:11Display Columns:6Edit Data:Not CheckedData Border / Clear Color: Set as you like.

Group Number	Block	Number Specification Address
1 📑 🏛		<u>_</u>
		🗌 Edit Data 🚽 🚽
Display Rows 1	1 🗦 🧮	Interlock
Display Columns 6		Interlock Address
Display Columns		
Display Spacing 🛛 🗍		Touch Enable Condition
		When ON C When OFF
Data Border		
0	0	•
Na Davidas	Chaw Da	Border with Item
INO BOIDER	Show Bo	Name Fields
Clear Color	Blink	

(8) Display Settings

Select "Standard Font" for [Font Type] and "8 x 16 Pixels" for [Size].

Basile Displa	y witch			
Font Font Type	Standard Font	▼ Size	8 x 16 Pixels	•

(9) Switch Settings

1) Set scroll switches.

No settings of scroll switch placement are required with this practice project data.

	Basic Display Switc		
(1)	Switch Layout		
Ý	🔲 Scroll Up	Samples to Scroll	0 🛨
	🔲 Scroll Down	Samples to Scroll	0 👘
re	C Scroll Left	Samples to Scroll	0 🚔
	🔲 Scroll Right	Samples to Scroll	0 🚍

2) Click [OK] and adjust the position of the sampling data display.



8- 8-81	11:35:88	Line n DE-	58	Line C 747	191	Gallect
and the second	DECE)	11 ST	63	262	217	-
1222228	1129日乾	54	68	- 251	- 777	Belete
15522-24	11:38:88		14	282	211	
and the second		dist.	11. 1910 -		era -	_

✓Practice Let's Display Sampled Data in Trend Graph





(2) Select Shape

- Double-click the placed historical trend 1) graph.
- 2) Click [Select Shape] and select a shape of the graph.
- 3) After selecting a shape, click [OK].



(3) Graph Settings

1) Select the "Normal" graph type.

2) **Group Number:**

Specify the sampling group number to display in a graph.

Please be sure to make the data sampling settings in the Sampling settings beforehand.

Channel Number:

From the specified sampling groups, specify the number of addresses of lines to display and their addresses.



(Graph Display Area Color Limit Colors Display Historical Data Switch 👤
1	Graph Type
2	Group Number Mumber of Channels
3	Channel Number 1 Input/Display Settings Data Type Input Range Input Sign None Min. 0 400 Max.

Here, set [Group Number] to "1". Click [Channel Settings] and set [Number of Channels] to "4". Make settings for [Channel Number] as follows:

- Channel Number 1:
 - Channel Number 2:
 - Channel Number 3:
 - Channel Number 4:
- [PLC1]D00300 [PLC1]D00301 [PLC1]D00302
- [PLC1]D00303

3) **Channel Number:**

> Specify a channel number to set up the Input/Display Settings for.

Input Range:

Set the input range of data to display in a trend graph.

- Here, make settings as below.
- Data Type: 16 Bit Bin
- Input Sign: None
- Min.: 0

Max.: 400

Channel Numbe	er 1		•
−Input/Display Se Data Type	etting: 1 2 3 4 16 Bit Bin	_	<u>}</u>
Input Range			Di Soloct from the
Input Sign	None	•	
Min.	0		Min Min
Max.	400	∃ ≣	Max.

(4) Display Area Settings	
 Display Direction: Select a graph display dire Data Samples: Set the number of data sar displayed on a single line. * The range of data samp on the number of display set model. Samples to Scroll: Set the number of sets of o 	ction. mples to be les depends ying dots of the data to scroll when the graph fills the display area.
Scale Divisions: Set scale display.	
Here, make settings as below Display Direction: Data Samples: Samples to Scroll: Scale Divisions:	r. Bottom Left Corner -> Rightward 9 5 Set as you like.

(5) Color Settings

- Select each channel from 1 to 4, set [Line Type], [Line Thickness], and [Display Color] as you like.
- 2) Set [Border Color], [Scale Color], and [Graph Area Color] as you like.
- Click [OK] and adjust the position of the graph.



Display Color	Blink None 💌							
Border Color 7 Graph Area Color 144	Blink None 💌 Blink None 💌	Scale Color	Blink					
M	M1.	,						

Graph | Display Area, Color | Limit Colors | Display Historical Data | Switch

•

<u><<Basic</u>

- =

▼ Line Thickness 1

3

Channel Number

Channel Color

1

Line Type - Solid Line

Practice Let's Display Historical Data in Trend Graph



- [Setup Procedure]
- 1. Open the base screen "103".
- 2. Set the Historical Trend Graph.

(1) Display Historical Data

Double-click the placed graph. Open the [Display Historical Data] tab.

Display Historical Data:

Specify whether or not to display historical data. If you check the box, the [Switch] tab will be added.

Graph Display Area Color Limit Colors Display Historical Data Switch						
🔽 Display Historical Data						
Show Cursor						
✓ Cursor Information Storage Address						
[#INTERNALJUSR00100 🧰 - [#INTERNALJUSR00107 📋						
🖵 Status Address						

Show Cursor:

Specify whether or not to show a cursor on the graph display.

Cursor Information Storage Address:

Specify whether or not to store graph data on which the cursor points into an address. Data to be stored uses words for date and time (four words) and the number of channels from the set address.

Status Address:

Specify whether or not to store the operating conditions or error information of the historical display mode into a specified address.

<Settings>

Here, check [Display Historical Data] and [Show Cursor]. Check [Cursor Information Storage Address] and set it to "USR100". Check off [Status Address].

(2) Switch Settings

1) Select whether or not to place each switch. Check all and set [Samples to Scroll].

Display Historical Data:

Places a switch to change to the mode to display historical data.

Scroll for Old Data:

Places a switch to scroll backward from the currently displayed data to the older data.

Set "1" for [Samples to Scroll].

Scroll for New Data:

Places a switch to scroll forward from the currently displayed data to the newer data. Set "1" for [Samples to Scroll].

Zoom Display:

Places a switch to zoom in 2 times, 4 times, and 8 times every time it is touched.

🖇 Historical Trend Graph

Zoom Out Display:

Places a switch to zoom out the zoomed display to 1/2, 1/4, and 1/8.

٨

- 2) Click [Select Shape] and select a shape for switches.
- 3) Select a font type and a text color for switches.

Set labels as below.

Display Historical Data:	Display
Scroll for Old Data:	Back
Scroll for New Data:	Fwd
Zoom Display:	Zoom In
Zoom Out Display:	Zoom Out

4) Select a switch color.

In the Sampling settings, check [Use Memory Card as Backup Area]. If it is not checked, [Zoom In] and [Zoom Out] features will not work. Back up to internal memory (Historical Data) Use Memory Card as Backup Area Save in CF Card OUSB Storage Backup Count 100 IMM Maximum Historical Data When Backup Count is exceeded Overwrite oldest data IMM	·	One Point
 Back up to internal memory (Historical Data) Use Memory Card as Backup Area Save in CF Card USB Storage Backup Count 100 Backup Count is exceeded Overwrite oldest data 	In the S I If it is no	Sampling settings, check [Use Memory Card as Backup Area]. ot checked, [Zoom In] and [Zoom Out] features will not work.
When Backup Count is exceeded 2000 Times Overwrite oldest data Image: Count is exceeded		 Back up to internal memory (Historical Data) Use Memory Card as Backup Area Save in CF Card USB Storage Backup Count
	 	When Backup Count is exceeded 2000 Times Overwrite oldest data Image: Count is exceeded

Parts ID	Display Area Color Limit Colors Display Historical Data Switch Take D
Comment	Switch Layout Display Historical Data
	Scroll for Old Data Samples to Scroll 1
	V Zoon Display V Zoon Out Display
Select Shape	Switch Label
No Shape	Display ASCI Display
	Text Color
ABC .	Switch Color
Select Shape	Display Color 1 Blink None 1
$\overline{\mathbb{O}}$	Pattern None 💌
e	
Help (H)	OK (Q) Cancel

(3) Time Display Settings Color | Limit Colors | Display Historical Data | Switc Time Display 4 > Time Display Position Most Recent Time 🔽 Oldest Time ۲ 1) You can add date and time to be displayed Display Position ☑ Selected Time in graph data by these settings. The date and Middle Click Search Status - 6 time are displayed under the graph display. Font **Most Recent Time:** 8 x 8 Pixels Size Font Type Standard Font 💌 -Displays the most resent time. Normal Text Attribute Oldest Time: Displays the oldest time. 🔽 Date yy/mm/dd -Hours hh:mm:ss • Here, check both [Most Resent Time] and 🔽 7-segment Display [Oldest Time]. Numeral Value Color 7 Blink None -7 Blink Shadow Color -Selected Time: Plate Color None E2 -Blink Displays the time on which the cursor points while the cursor is shown.

Display Position:

Select a reference point from [Right Axis], [Middle], and [Left Axis].

Search Status:

Specify whether or not to set an address to check the search status of Selected Time.

Here, make settings as below.

Selected Time:	Checked
Display Position:	Middle
Search Status:	Not Checked

Set [Font].

Check [Date], [Hours], and [7-segment Display]. Select display formats for [Date] and [Hours].

Set colors as you like.

Click [OK] and adjust the position of the graph.



Switches and Date/Time Displays can be also created individually and placed on the base screen.



(4) Mode Settings of Sampling Settings

Open [Common Settings] -> [Sampling]

Back up to internal memory (Historical Data):

Select whether or not to save sampled data to the backup SRAM. If data is not saved, the data will be deleted when the power of the GP unit is turned off or reset.

Use Memory Card as Backup Area:

Select whether or not to write data saved in the backup SRAM to the location specified in [Save in]. Data is saved in Bin format.

Save in:

Select either [CF Card] or [USB Storage] to save data in.

Backup Count:

Specify the number of times (the number of files to be created) to write the backup data from 1 to 500.

When Backup Count is exceeded:

Select an action when the number of backup files exceeds the value set in the Backup Count.

Status Address:

Specify whether or not to store the saved operation status and error information in a specified address.

< Settings >

Here, make settings as below.

Back up to internal memory:CheckedUse Memory Card as Backup Area:CheckedSave in:CF CardBackup Count:100When Backup Count is exceeded:Overwrite oldest dataStatus Address:Not Checked

Execution Condition	Constant Cycle while Bit is ON
Sampling Permit Bit Address Sampling Cycle	[FLC1]M0220
Number of Times	20 크 🔳
🔲 Dala Full Bit Address	× =
Data Clear Bit Address	[PLC1]M0223
	Extended
Back up to internal memory (Historical Data)
Use Memory Card as Backup Save in @ CF Card @ 0	Area To maximize backup performance, make sure there are 5 seconds or USB Storage more between samples.

