MITSUBISHI ELECTRIC
Changes for the Better

GOT Basics (GT16, GT Designer3)

This course is a training system for those who operate the GOT series (GT 16) and GT Designer3 for the first time.

Introduction Purpose of the Course

GOT is the nickname of Mitsubishi Electric human machine interface, and it is the abbreviation for Graphic Operation Terminal.
In this course, you will learn the steps from introducing the GOT to operating and monitoring a PLC with the GOT, using the GOT1000 Series GT16 and the screen design software GT Designer3.

Introduction Course Structure

The contents of this course are as follows.
We recommend that you start from Chapter 1.

Chapter 1 - GOT Outline

You will learn the advantages of adopting GOT, features of GT16 and GT Designer3, and others.

Chapter 2 - Screen Data Creation

You will learn how to create and save a project data.

Chapter 3 - Screen Data Transfer

You will learn communication between a PC and a GOT and between a GOT and a PLC.

Chapter 4 - Operation Check

Display created screens and check switch operation and lamp display.

Chapter 5 - Final Test

Passing grade: 60% or higher.

Introduction How to Use This e-Learning Tool

Go to the next page		Go to the next page.
Back to the previous page		Back to the previous page.
Move to the desired page		"Table of Contents" will be displayed, enabling you to navigate to the desired page.
Exit the learning		Exit the learning. Window such as "Contents" screen and the learning will be closed.

Introduction Cautions for Use

Safety precautions

When you learn by using actual products, please carefully read the safety precautions in the corresponding manuals.

Precautions in this course

- The displayed screens of the software version that you use may differ from those in this course.

This course is for the following software version:

- GT Designer3 Version 1.16S

Chapter 1 GOT Overview

In this course, you will learn the steps from introducing the GOT to operating and monitoring a PLC with the GOT by using the GOT1000 Series GT16 and the screen design software GT Designer3.

In this chapter, you will learn from what the GOT is to the equipment configuration of the sample system of the learning course.

1.1 GOT

Let's review GOT.
GOT (Graphic Operation Terminal) is the nickname of Mitsubishi Electric human machine interface (HMI).
The GOT is a touch panel type HMI that enables the switch operation, lamp display, data display, message display, and others on the monitoring screen instead of the conventional control panel.

1.2 Advantages of Adopting GOT

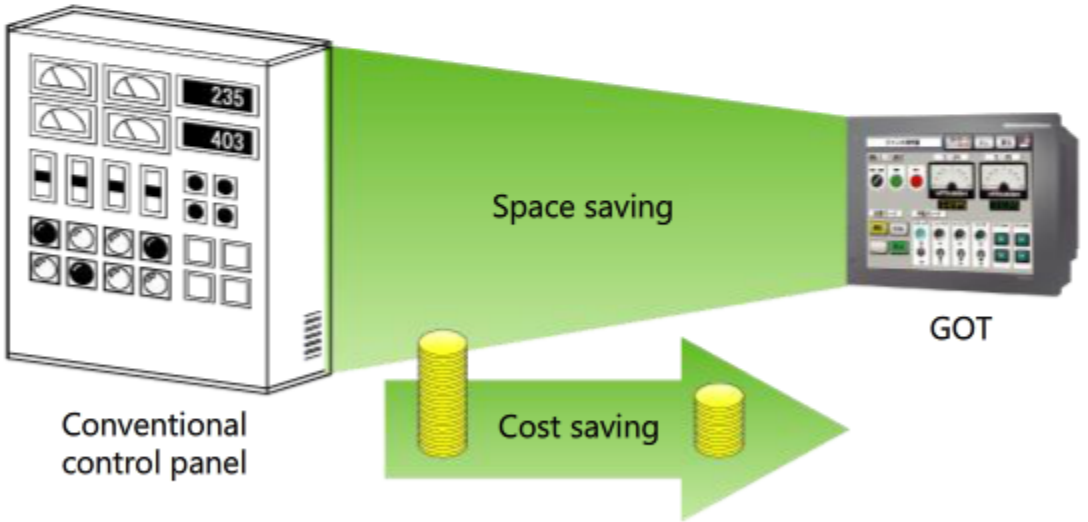
By introducing GOT, you will have the following advantages including downsize of the control panel.

(1) Downsizing Control Panel
By setting functions with software, there is no need to use hardware switches and lamps anymore and the equipment can be downsized.

(2) Saving Wiring Cost
Settings with software substitute for the wiring among parts in the control panel. Therefore the wiring cost can be reduced.

(3) Standardizing Control Panel
Even if the required specifications change, such changes can be reflected only by changing the screen data setting with the software. As a result, the control panel can be standardized.

(4) Added Value as HMI (Human Machine Interface)
Simple and easy settings such as graphic display and alarm display increase the added value of the entire equipment. Since it is easy to display graphics and alarms on a GOT, extra value can be added to the whole equipment.



1.3 Easy Screen Settings

Make the following settings in the screen data.

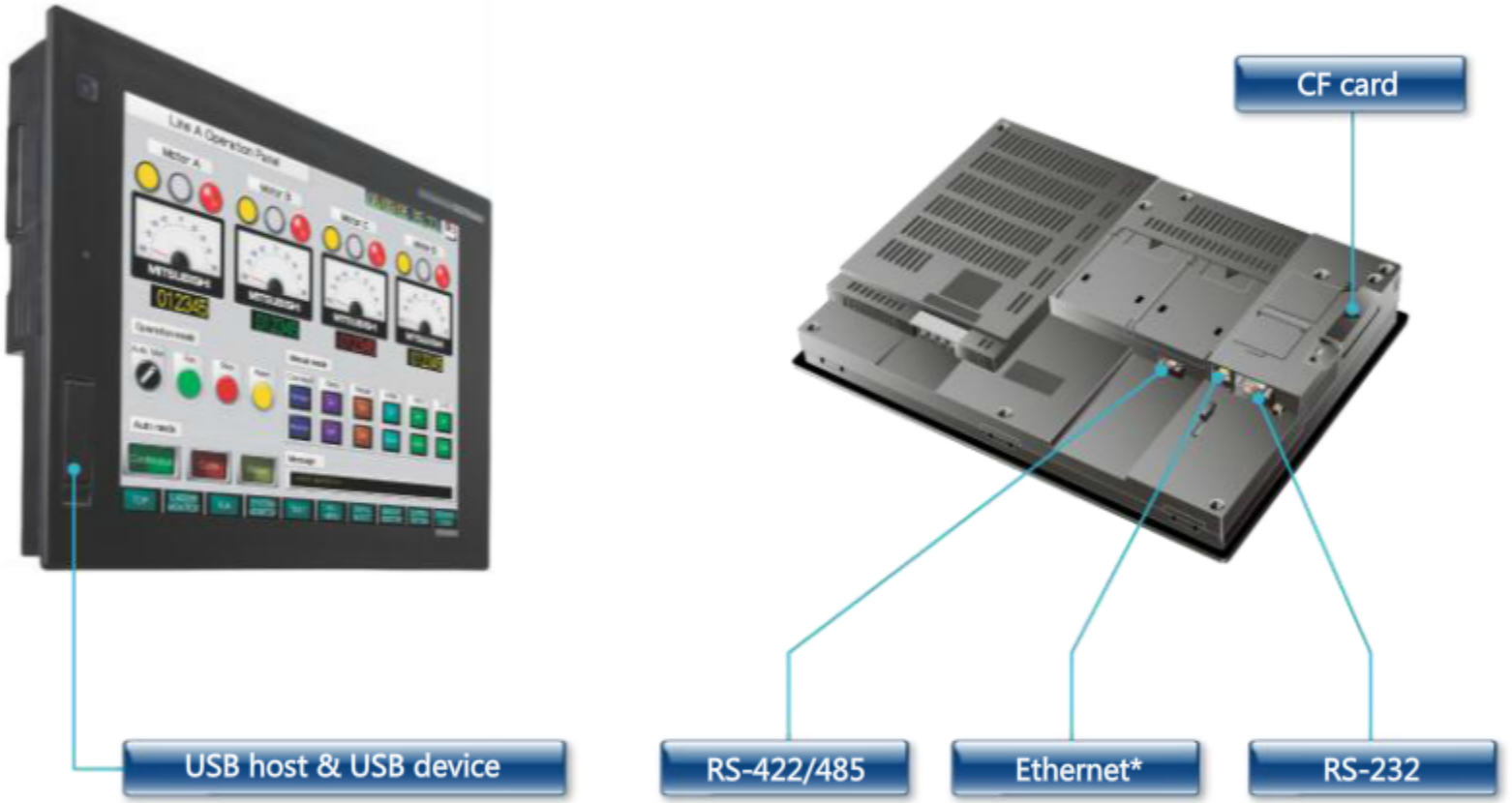
- Specify the shapes of switches and lamps and the positions of these objects when they are displayed on a GOT.
- Specify which switches and lamps on a GOT are linked to which devices of a PLC.

To display the screen data on a GOT, create the data using GT Designer3, the dedicated screen design software.
By using GT Designer3, the screens created on your PC can be displayed on a GOT without any changes.
To use GT Designer3, install the software on your personal computer.
After creating the screen data on GT Designer3, write the data to a GOT.

1.4 GT16 Features

Various communication interfaces including Ethernet are all in one unit

Various interfaces including Ethernet*, RS-232, RS-422/485, and CF card are equipped as standard. You can select an interface depending on the intended use.



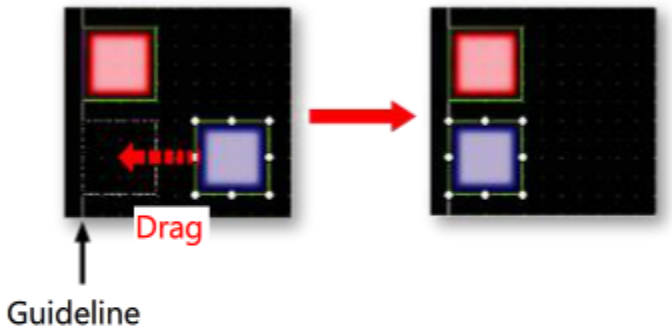
* Ethernet is a registered trademark of Xerox Corp.

1.5 GT Designer3 Features

The ultimate user-friendliness of the advanced screen design software

From creating a new screen data to transferring the data to a GOT, procedure are simple and easy.

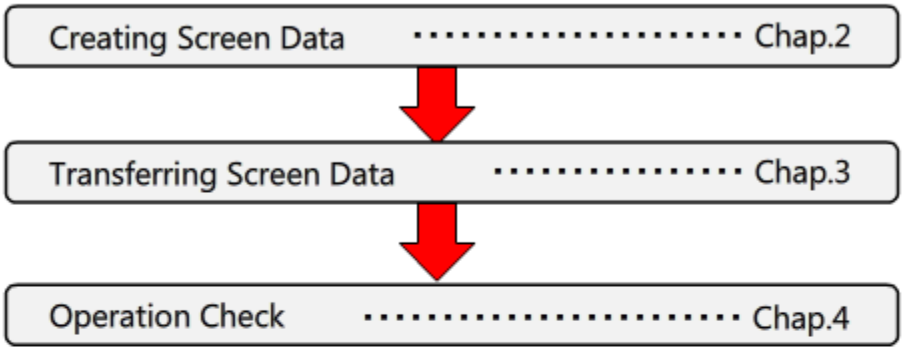
1. When you drag an object, a guideline appears to help you adjust objects easily.



2. Since operating systems required for the screen data are automatically selected, there is no need to worry about which operating systems should be selected.
3. Various high-resolution graphic parts are available in Parts Library and it is easy to create nice screens.
4. The Verify function is available to check whether the data on the GOT main unit and the data on your PC are the same.

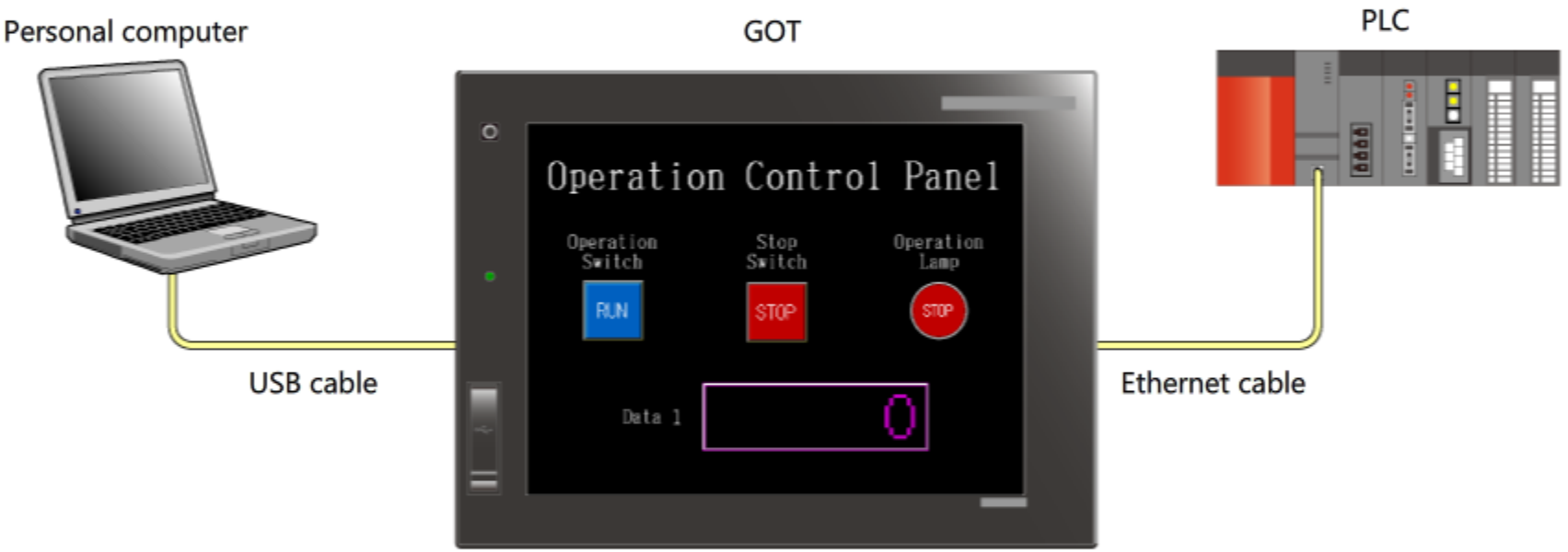
1.6 Procedures to Use GOT

The following is the procedure to use a GOT.



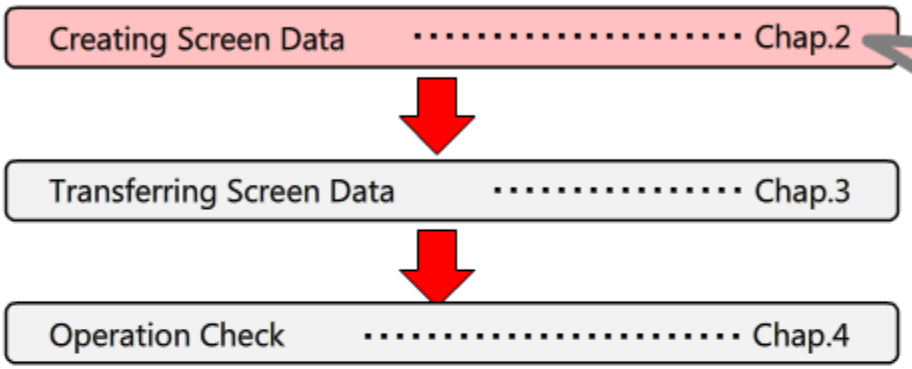
1.7 Equipment Configuration of the Sample System Used in the Learning Course

In this course, you will build a system (hereinafter called "sample system") that you can run and stop the system with a GOT touch switch, display the operation status with lamps, and display data values with numerical display objects.
The following shows the equipment configuration of the sample system.



Chapter 2 Creating Screen Data

In this chapter, you will learn how to create, edit, and save the screen data.



<Chapter 2 Learning Procedure>

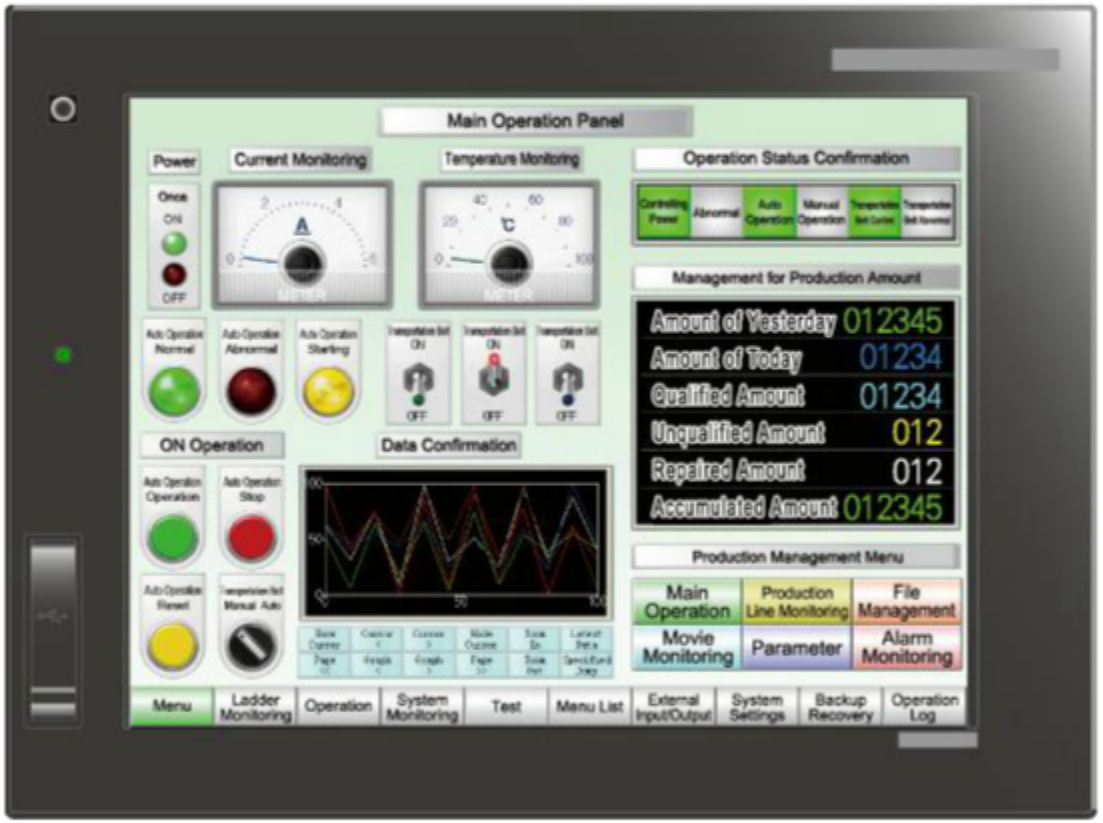
2.1 Equipment Required to Use GOT

In the sample system of this course, the following items are used.

	Name	Application
	PC	Used to write the GOT data
	GT Designer3	Software to create a screen data
	GOT (GT16)	Used to operate and monitor a PLC
	USB cable (GT09-C30USB-5P)	A cable to connect a GOT and a PC
	PLC	Used to run sequence programs
	Ethernet cable	A cable to connect a GOT and a PLC

2.2 GT Designer3

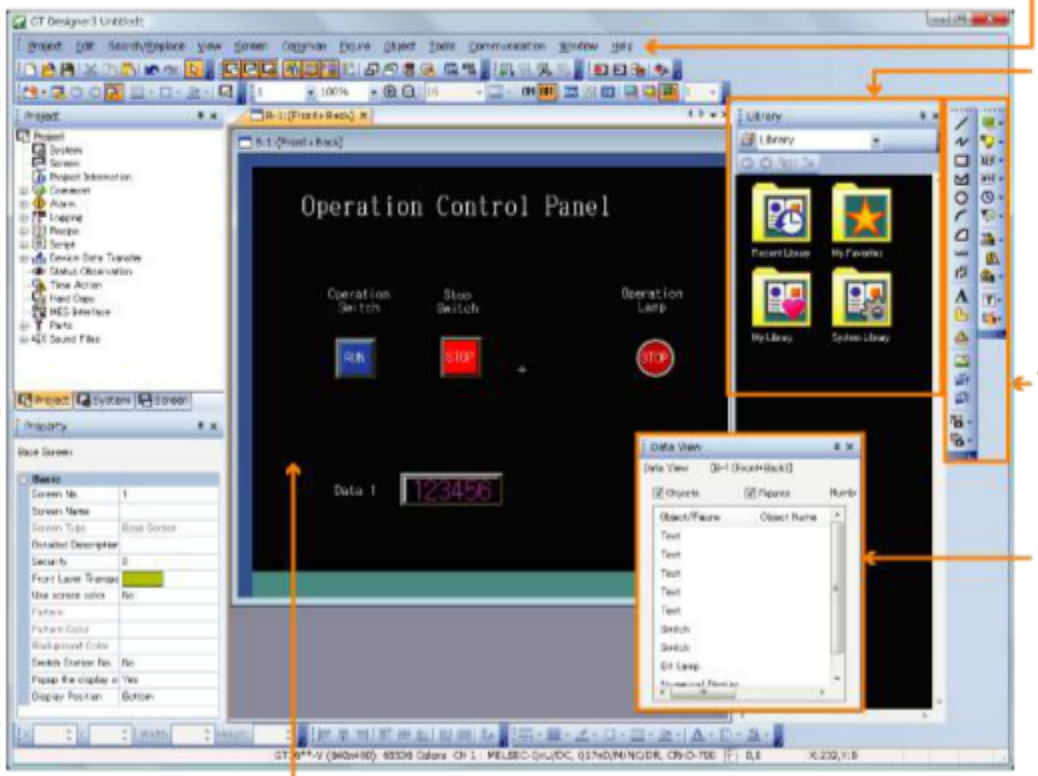
By using GT Designer3, you can create screens reflecting the image of actual control panel.
In addition, the simulation function can be called in GT Designer3 so that you can check operation without using a GOT main unit.



2.2.1 GT Designer3 Screen Configuration

The following is the screen configuration of GT Designer3.
A GOT screen consists of placed frame figures, so-called objects. Some examples of objects are switch figures, lamp figures, and numerical displays. Based on the device of PLC CPU, operations will be assigned to placed objects to enable the GOT functions.

Now, let's go to next page and create a GOT screen.



Menu bar

Title bar

Tool bar

Work tree

The settings of the whole project such as created screens and common settings are shown in the tree format.

Property sheet

Attributes of the selected screen/ object/figure are displayed. Settings can also be made here.

Status bar

Library image list

Displays the Library.
Library images on the list can be pasted on the screen.
(Library image list display method)
[View] – [View Window] – [Library List]

Tool bar

Data view

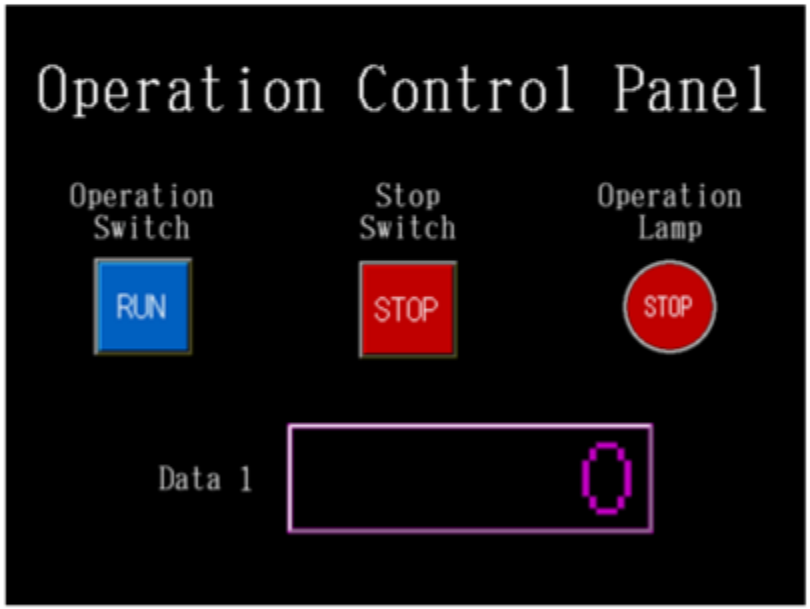
Displays all object functions and figures specified to the screen.
(Data view display method)
[View] – [View Window] – [Data View]

Created screen (editor)

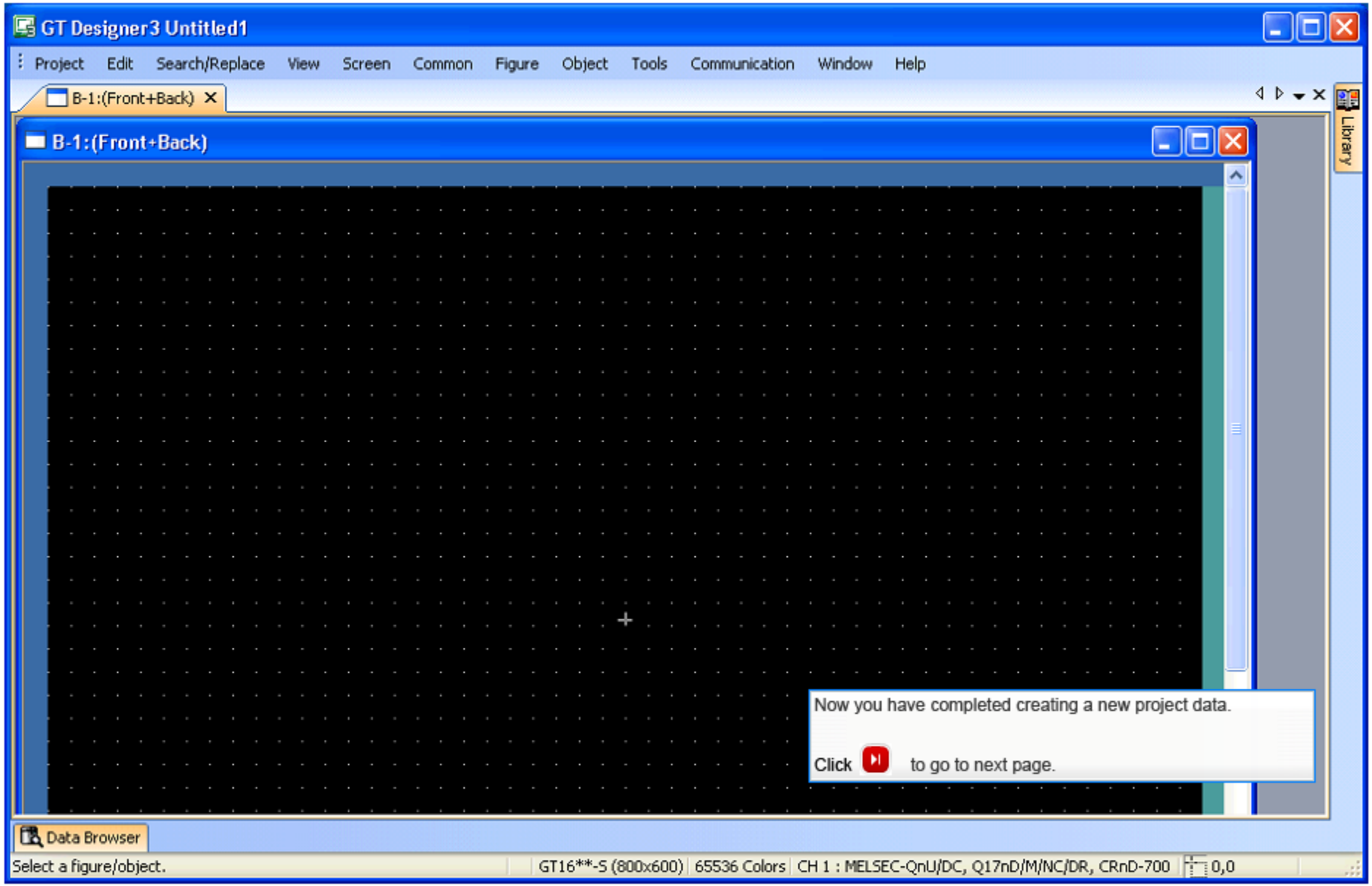
2.3 Creating a Screen

Let's create the following screen for use in the sample system.

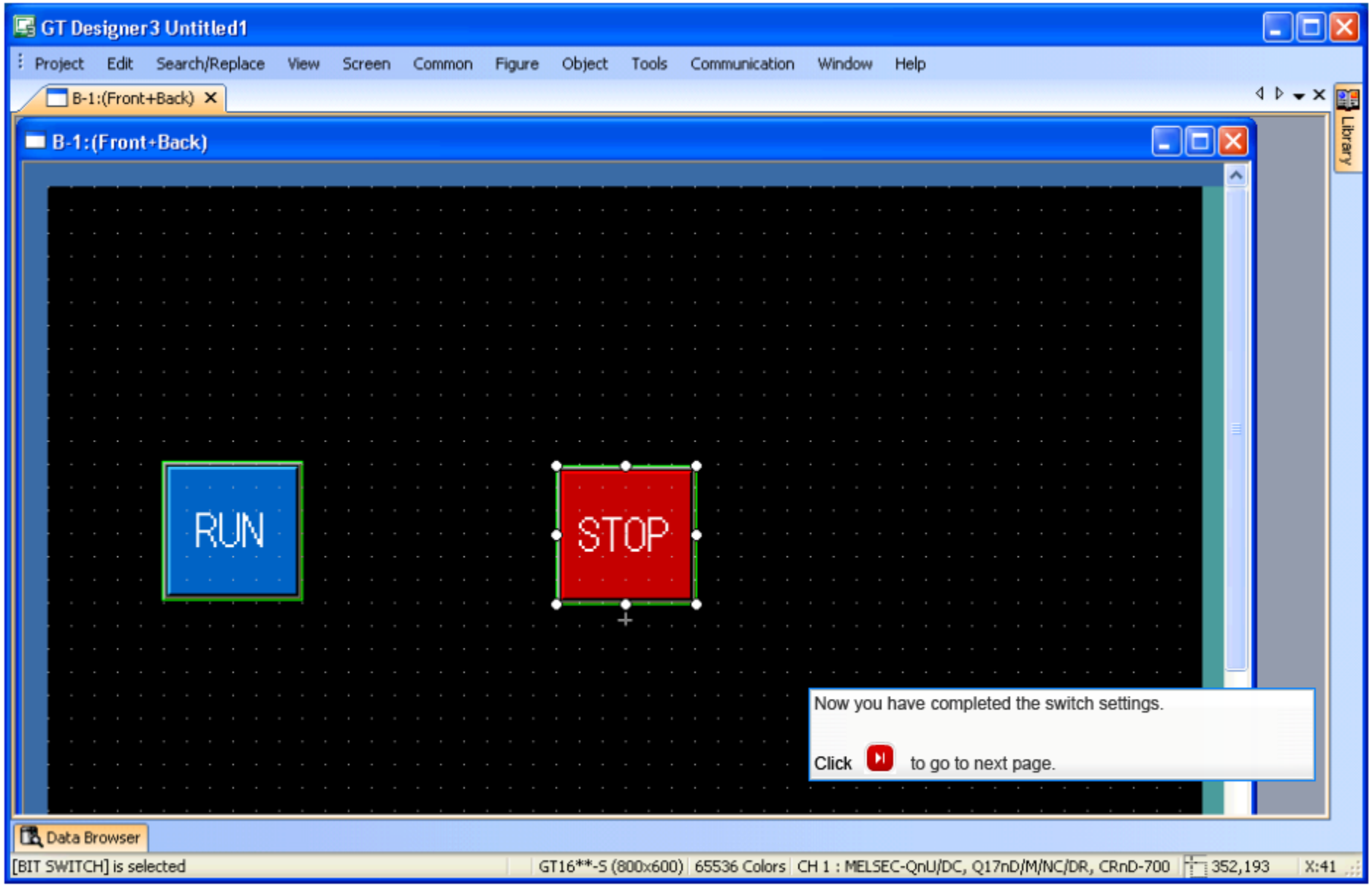
Name	Application
Switch	Touch a switch to turn on/off a bit device.
Lamp	Turn on/off a lamp by turning on/off a bit device.
Numerical Display	Displays the data stored in PLC devices.
Text	Enter descriptions about screens, switches, lamps, and others.



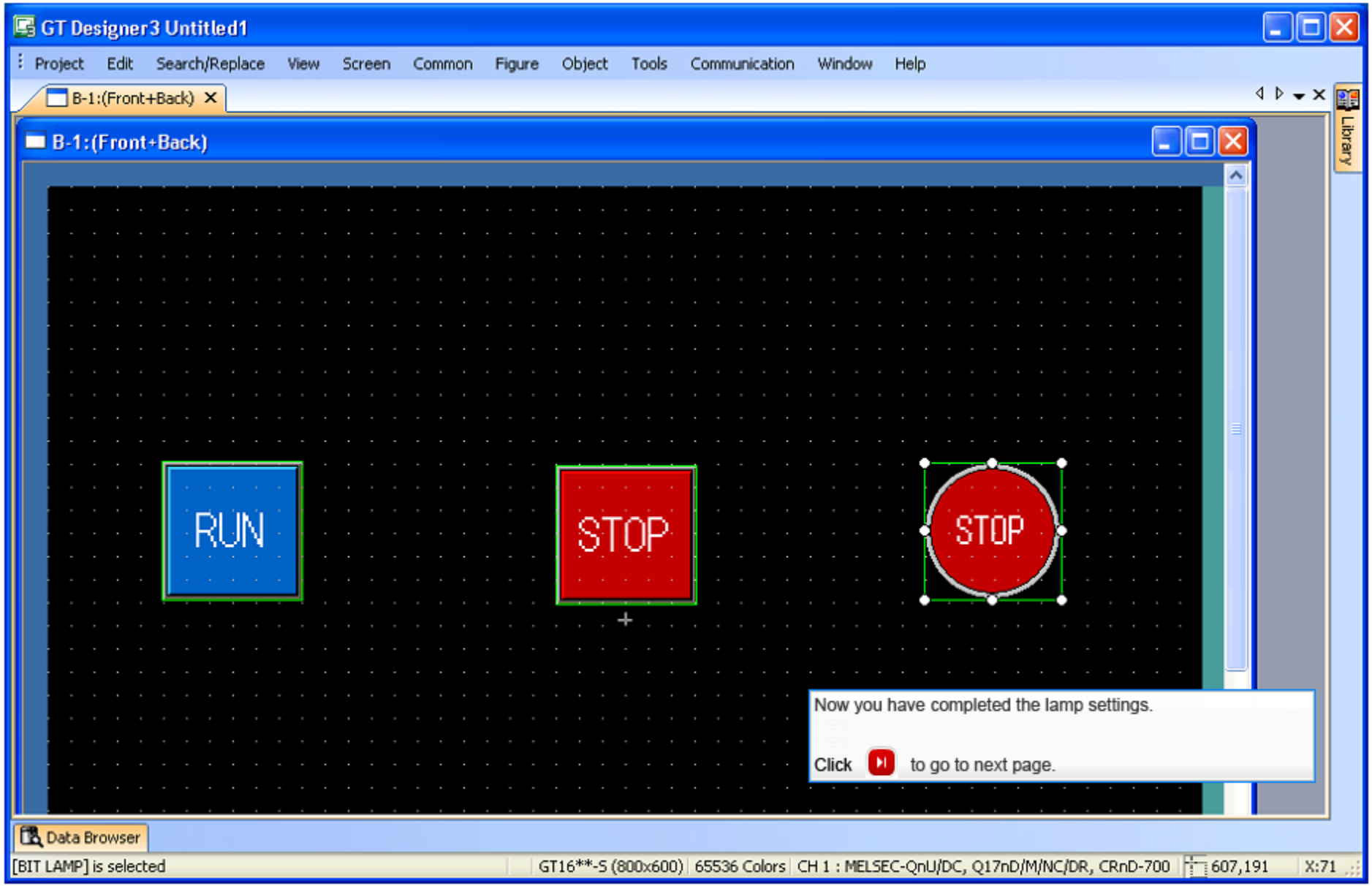
2.4 Creating a Project Data



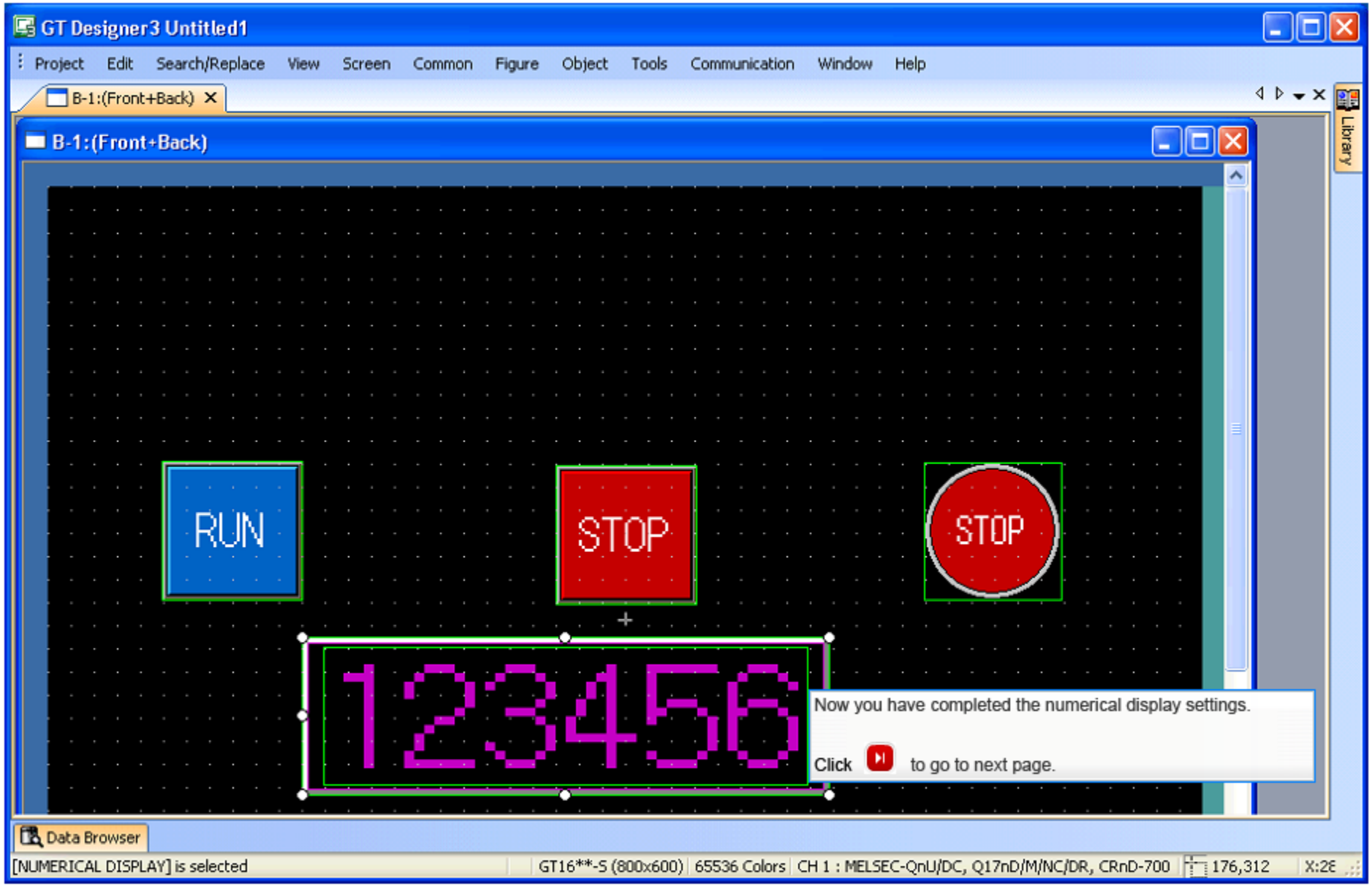
2.4.1 Switch Settings



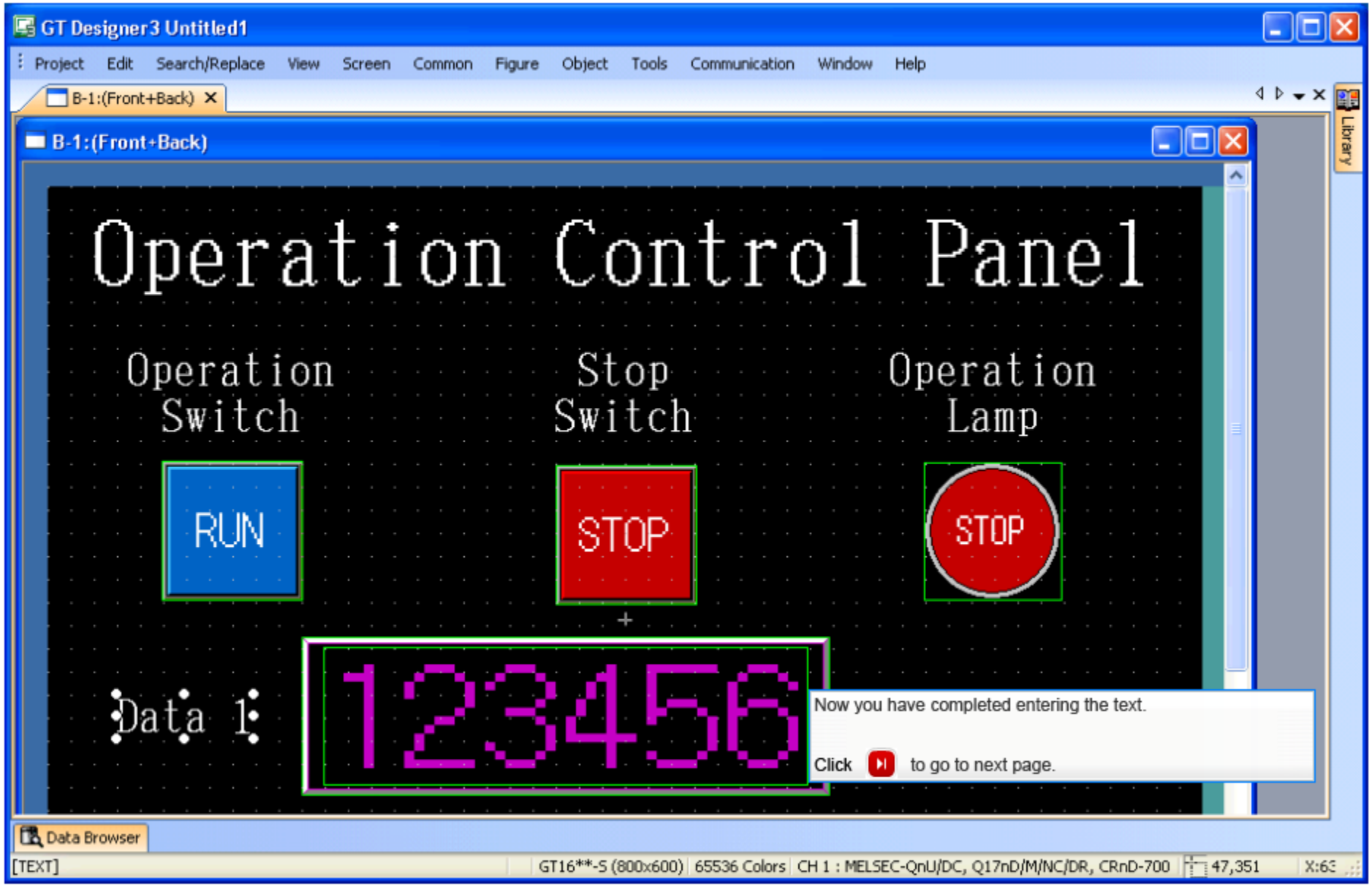
2.4.2 Lamp Settings



2.4.3 Numerical Display Settings



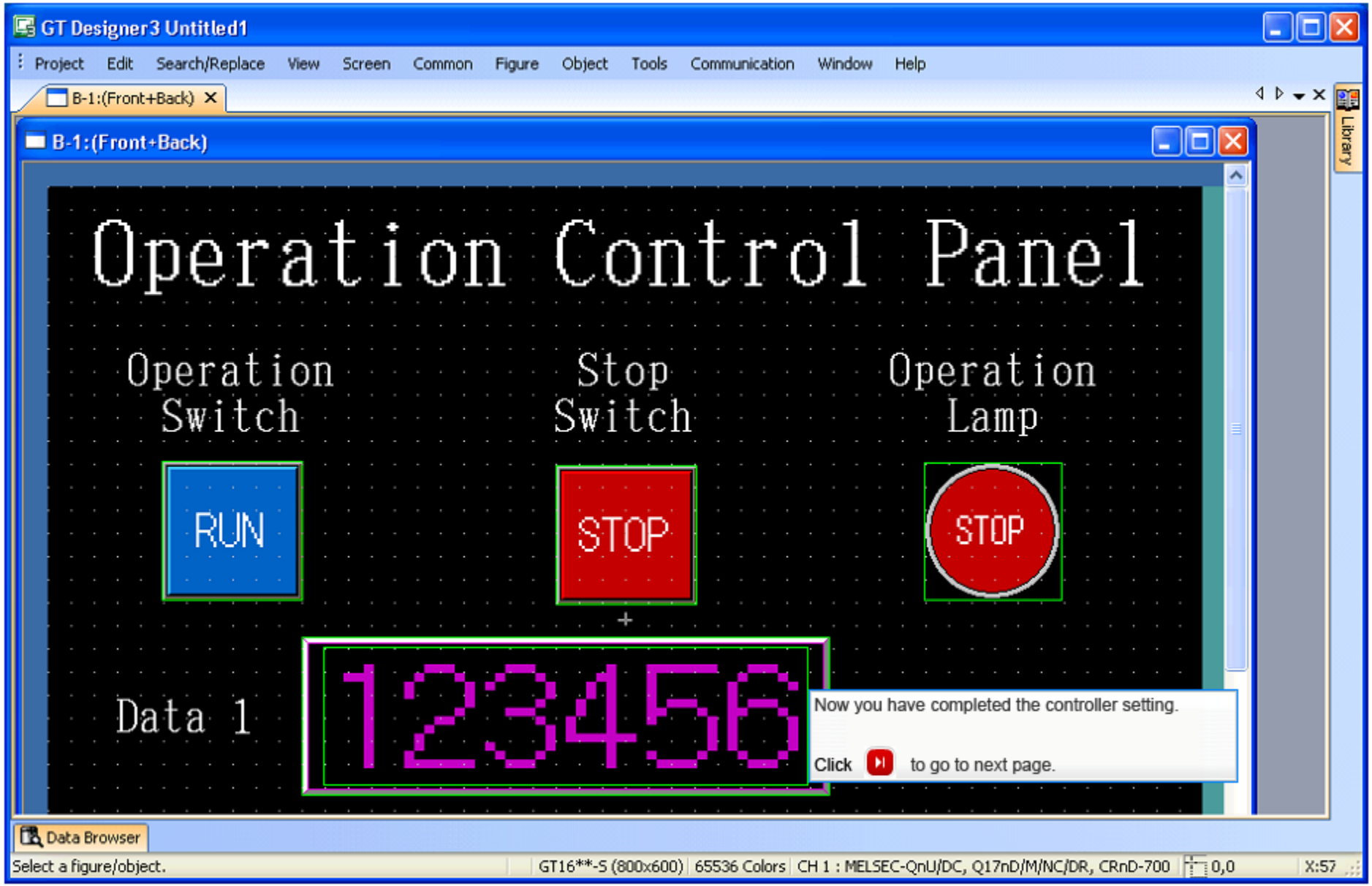
2.4.4 Text Input



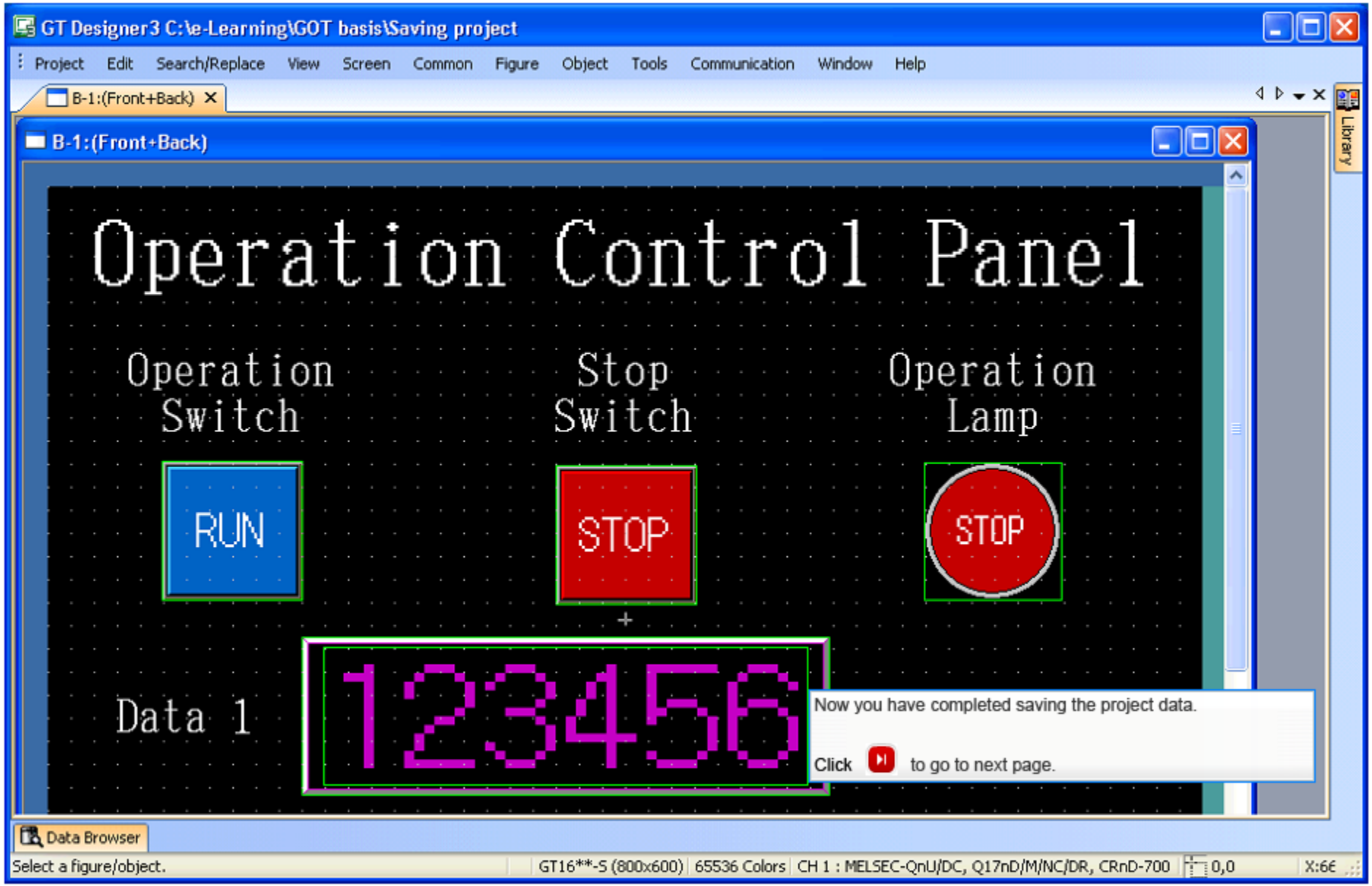
2.5 Specifying a Connection Destination

GOT monitors PLC devices via Ethernet. By using commercial items such as hubs and cables, you can build a network.
In the sample system of this course, a GOT is connected to a PLC CPU with embedded Ethernet port (one-to-one connection).
Let's make communication settings in GT Designer3.

2.5 Specifying a Connection Destination

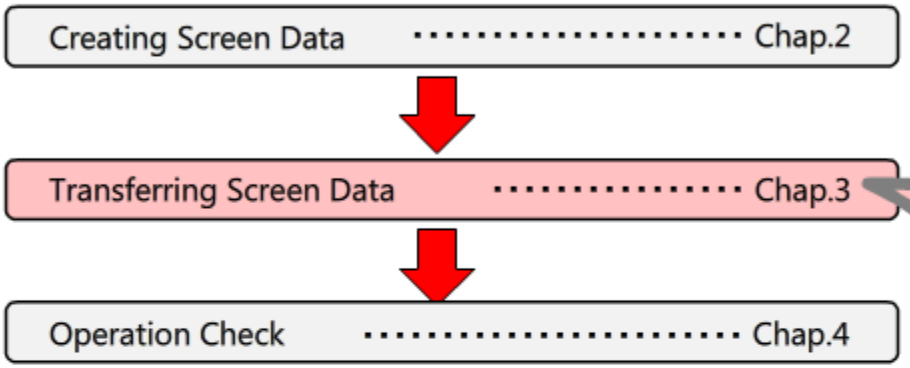


2.6 Saving a Project Data



Chapter 3 Transferring Screen Data

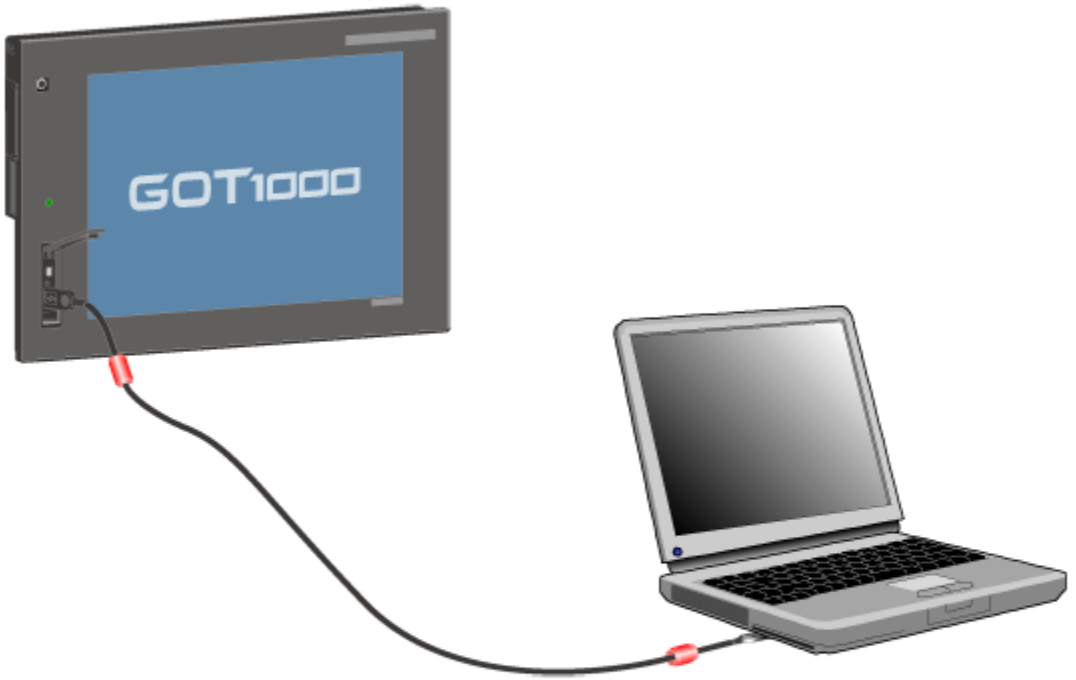
In this chapter, you will learn how to connect a PC and a GOT and the method to check the connection.



<Chapter 3 Learning Procedure>

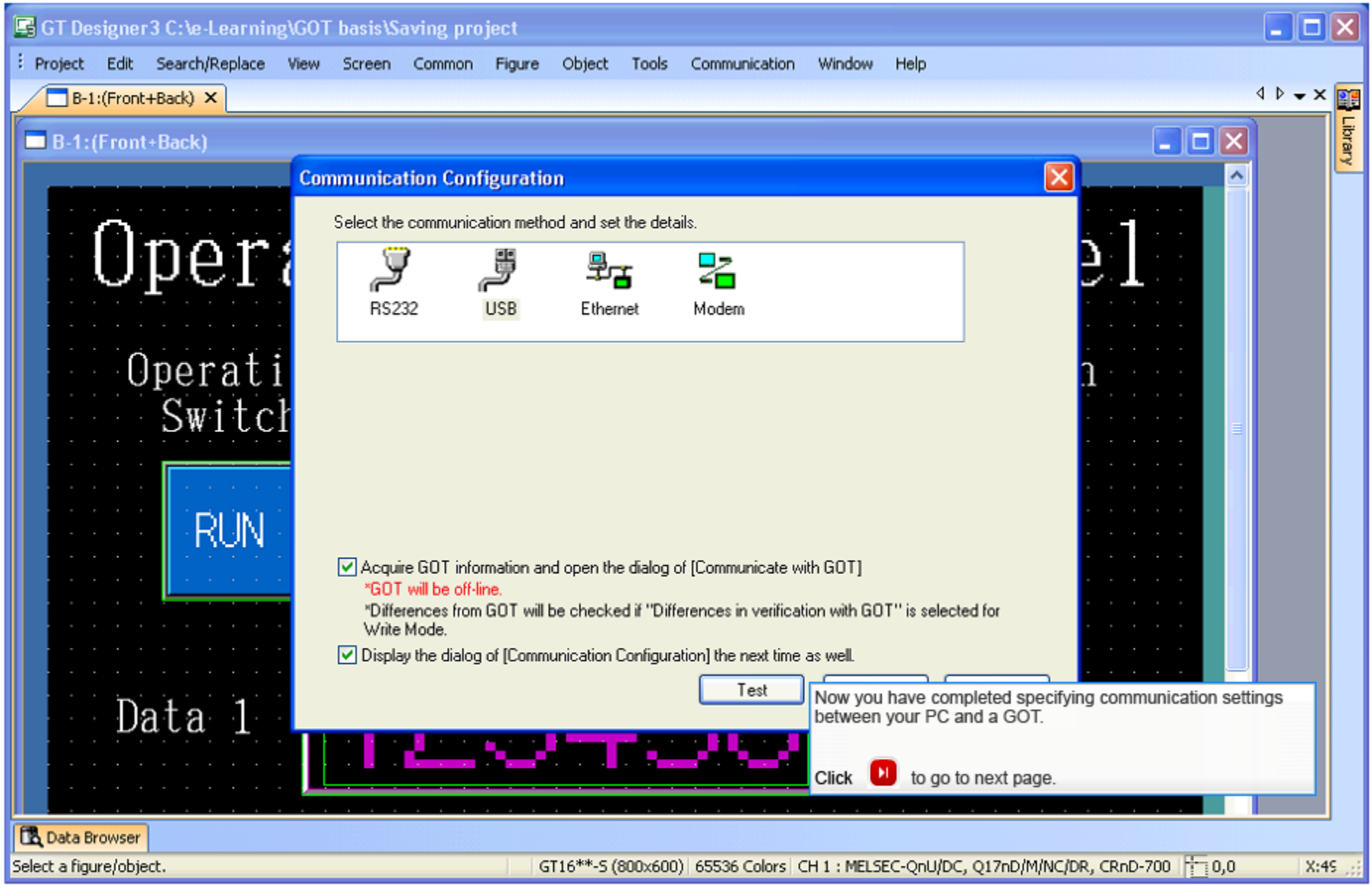
3.1 Connecting a PC and a GOT

By using a USB cable, connect a GOT and a PC.



① Start up a GOT.
② **Insert a USB cable into the USB interface.**

3.2 Communication Settings between a PC and a GOT

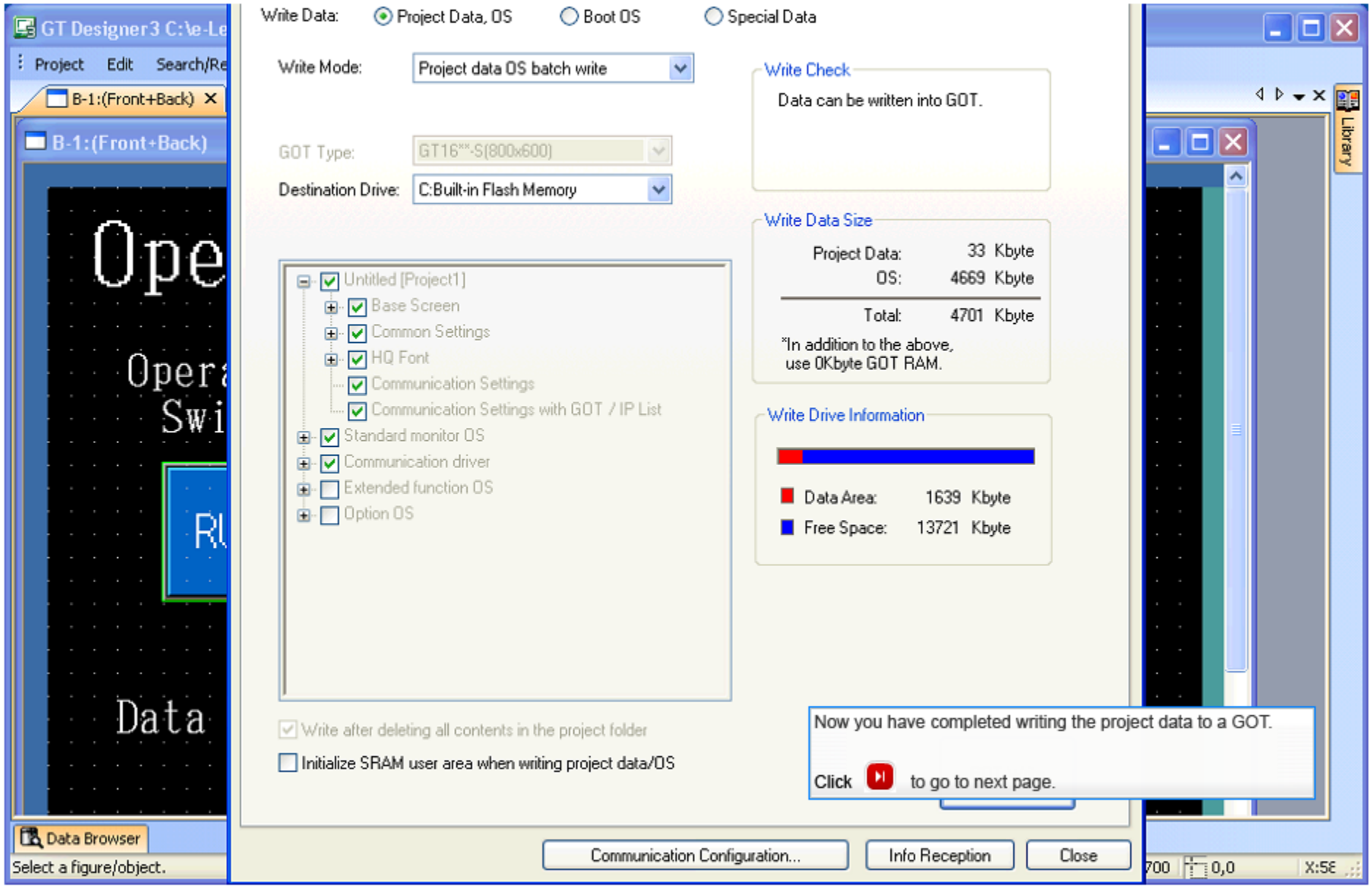


3.3 Writing a Project Data to a GOT

GT Designer3 automatically selects the operating systems that are required depending on the project data settings.
When writing the project data, the selected operating systems are also written to a GOT.
Now, let's write the project data to a GOT.

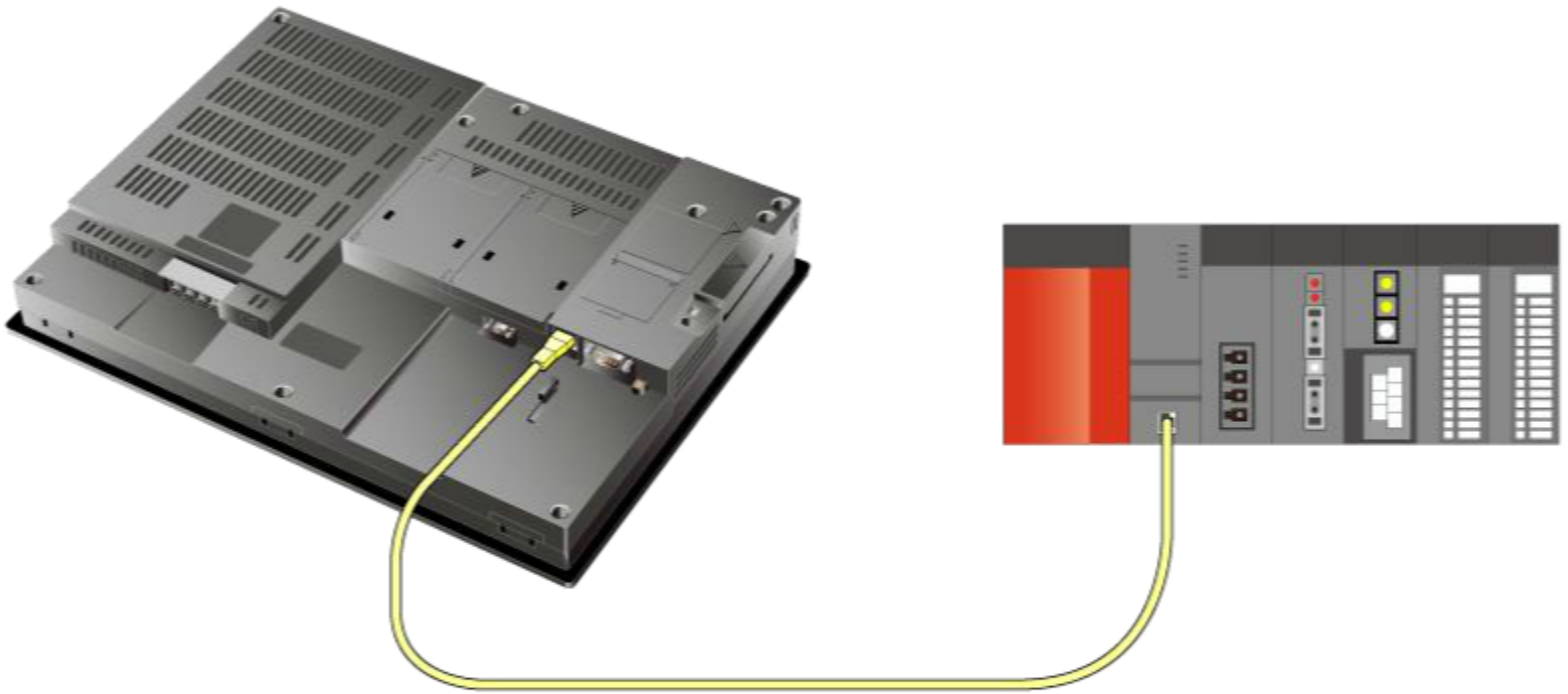
Data type	Outline
OS(Operating system)	Dedicated system files required to use a GOT.
Project data	The data for monitoring screens, which is created by the user.

3.3 Writing a Project Data to a GOT



3.4 Connecting a GOT and a PLC with a Cable

Connect a GOT and a PLC with an Ethernet cable.



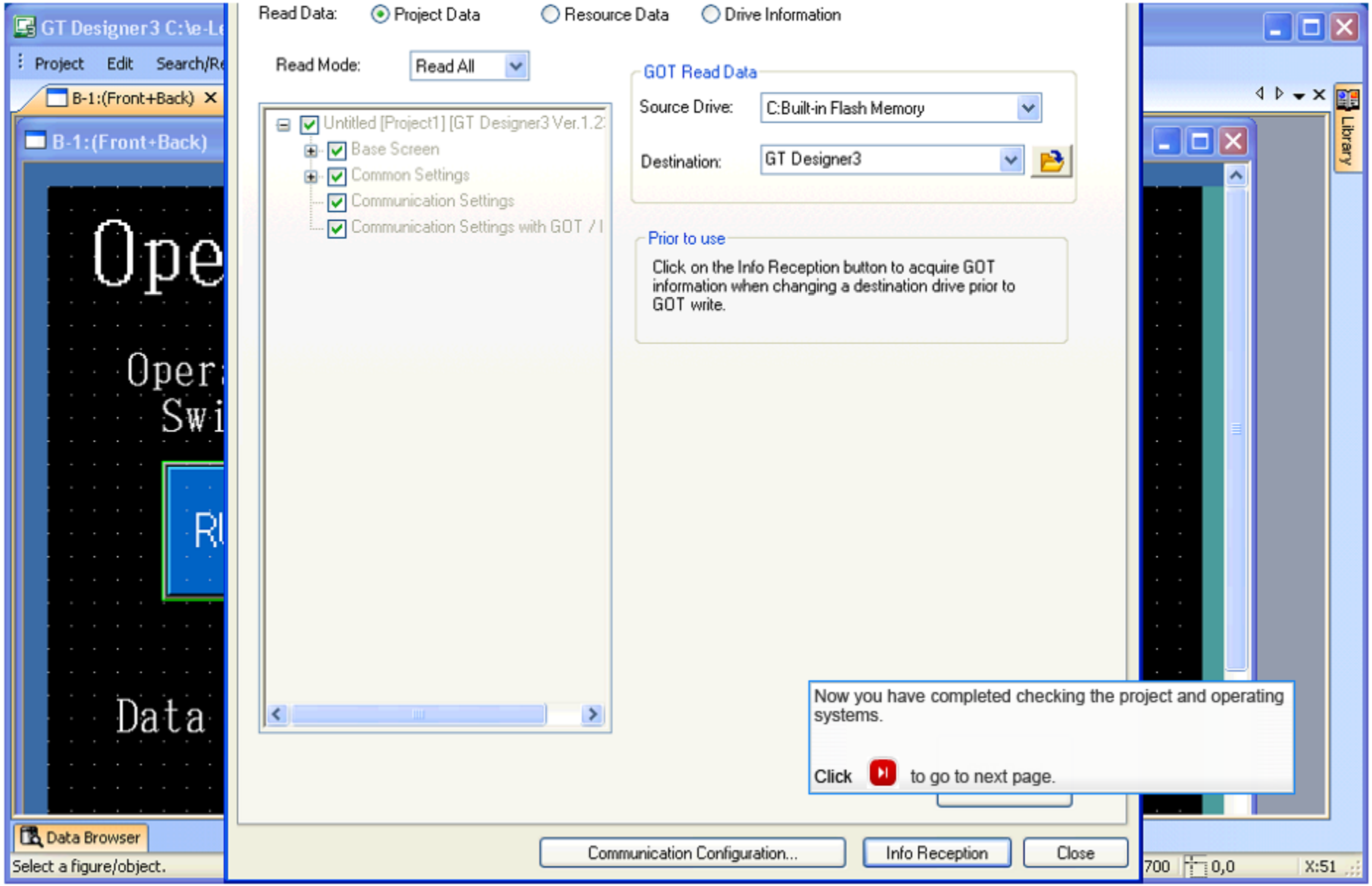
3.5 Checking Connection

Check that a GOT is connected to a PLC correctly in the following procedure.

3.5.1 Checking a Project Data and Operating Systems

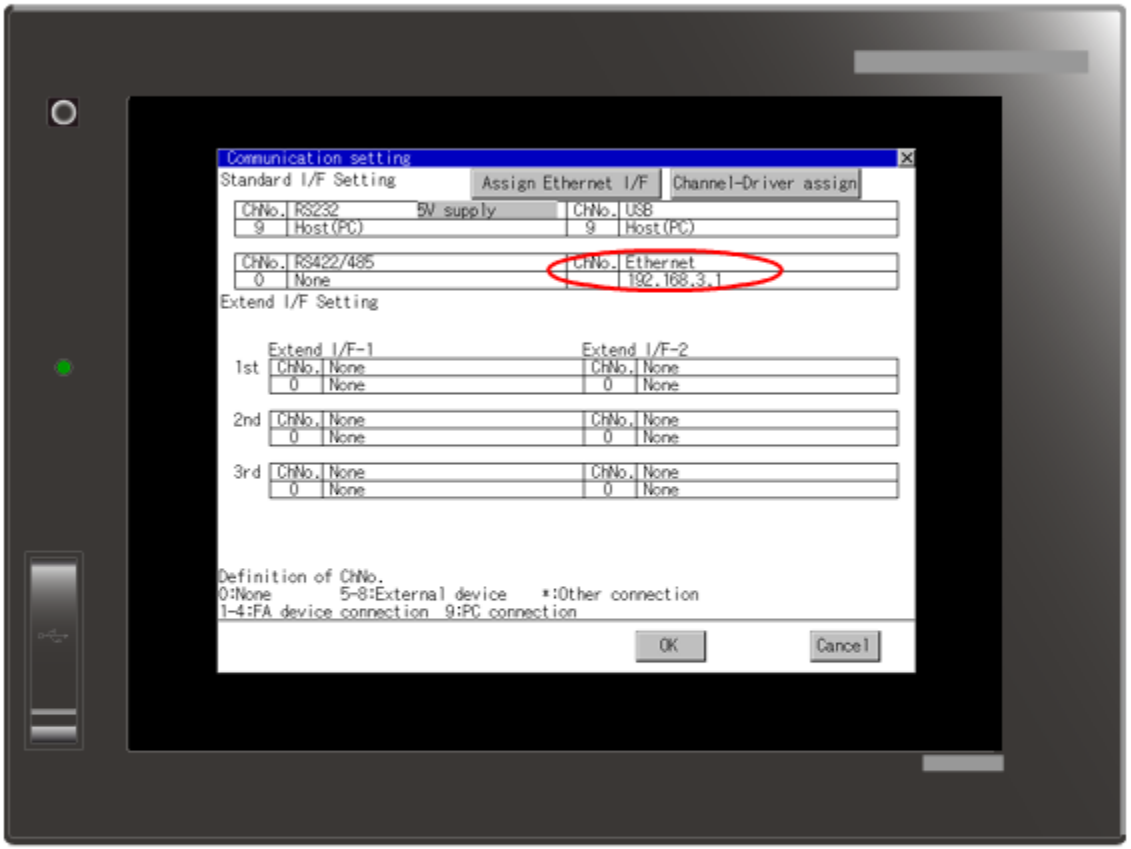
Check that the project data and operating systems are written to a GOT correctly by using [Read from GOT] in GT Designer3.
Now, let's check that the project data and operating systems are written to a GOT correctly on GT Designer3.

3.5.1 Checking a Project Data and Operating Systems



3.5.2 Checking That the Connected Equipment Is Recognized

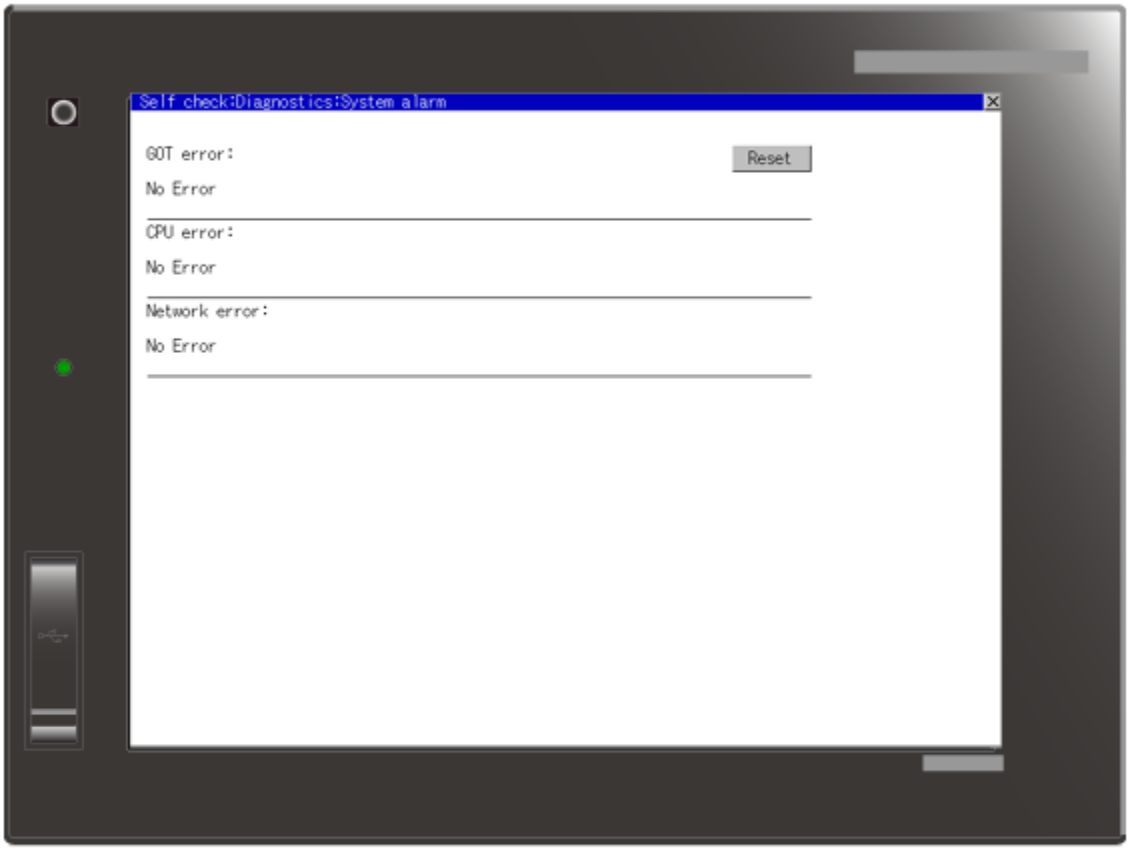
Check that the connected equipment is recognized by the GOT in the utility menu.



The communication setting screen appears.
Check that Ethernet is shown as the standard I/F.

3.5.3 Checking That the Data Can Be Monitored Correctly

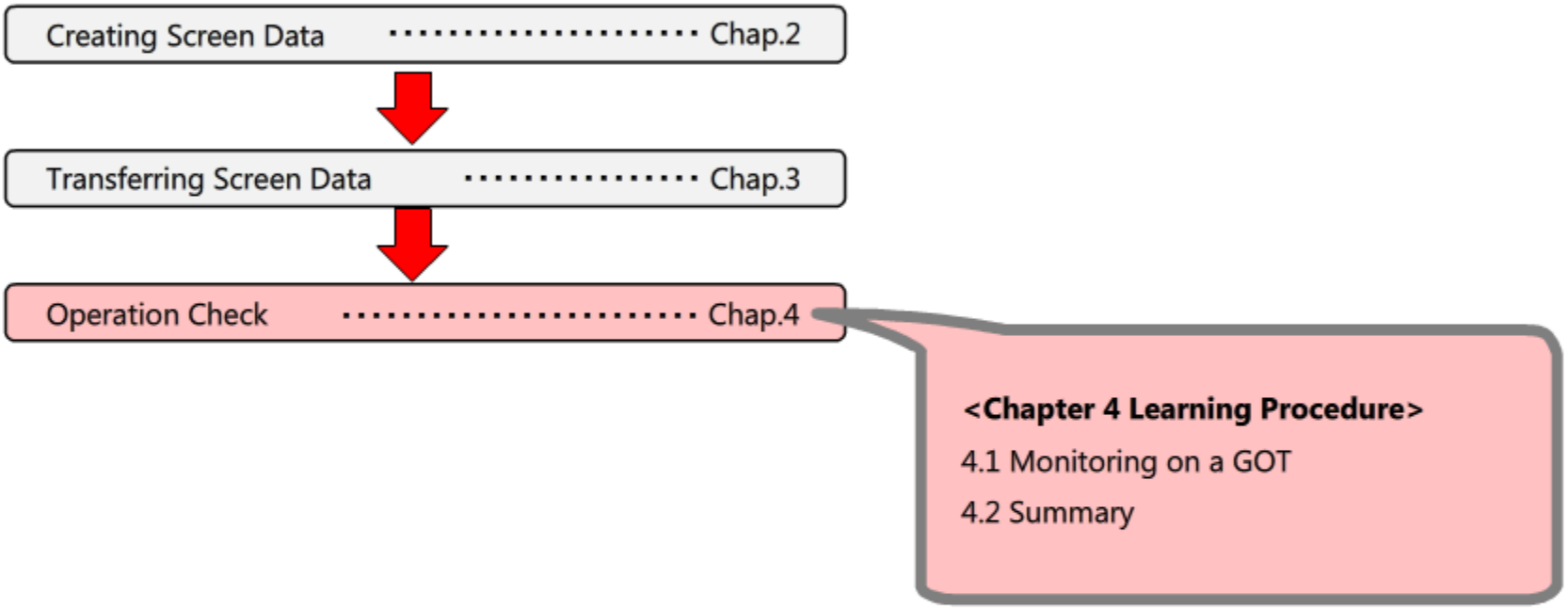
Check that the data can be monitored correctly on the GOT in the utility screen.



The system alarm screen appears.
Check that there are no errors occurring.

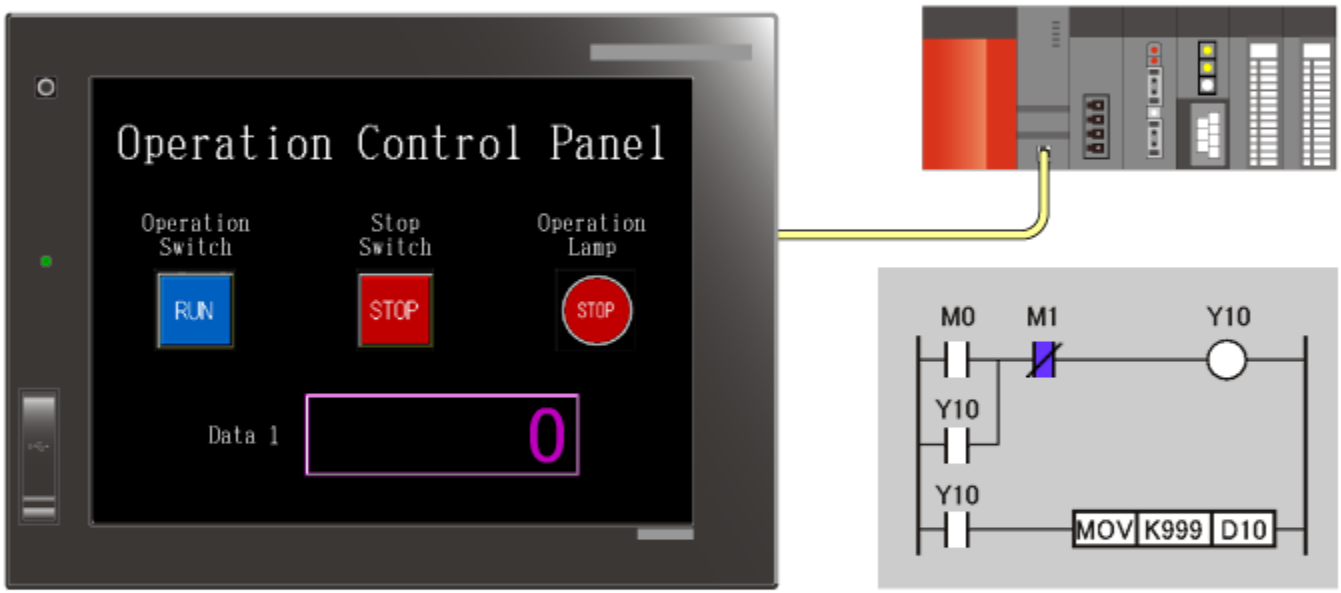
Chapter 4 Operation Check

In this chapter, you will learn how to monitor a PLC on a GOT and the method to check operation.



4.1 Monitoring on a GOT

The GOT and the PLC are connected.
Click switches on the GOT with your mouse and check that devices of the PLC can be monitored.
Click the Reset button to start checking again.



Reset

4.2 Summary

Now you have finished learning the procedure from introducing a GOT to operating and monitoring a PLC on the GOT by using GT16 and GT Designer3.

Finally, let's summarize what you learned in this course.

By introducing a GOT, there will be advantages such as downsizing control panel and reducing wiring cost.

On GT16, various interfaces including Ethernet, RS-232, RS-422/485, and CF card are equipped as standard.
You can select the best connection method depending on the intended use.

In this course, you learned the steps from introducing a GOT to operating and monitoring a PLC on the GOT.

Test Final Test

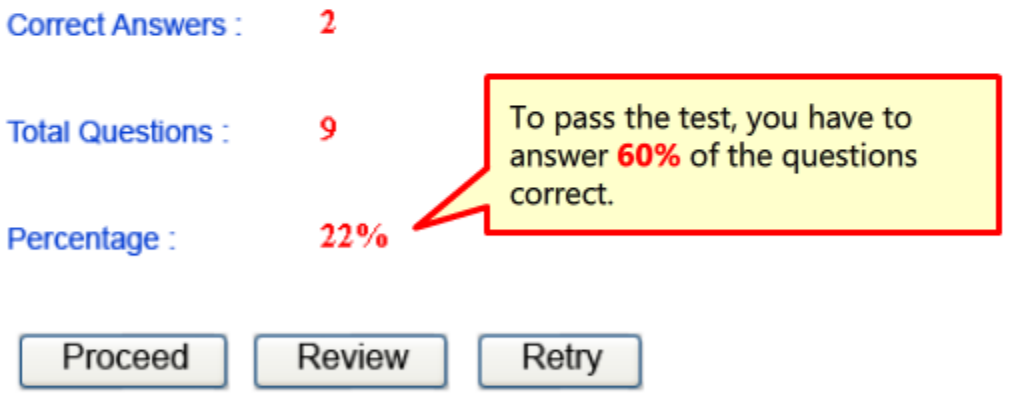
Now that you have completed all of the lessons of the GOT Basics (GT16, GT Designer3) Course, you are ready to take the final test. If you are unclear on any of the topics covered, please take this opportunity to review those topics.
There are a total of 4 questions (11 items) in this Final Test.
You can take the final test as many times as you like.

How to score the test

After selecting the answer, make sure to click the **Answer** button. Your answer will be lost if you proceed without clicking the Answer button. (Regarded as unanswered question.)

Score results

The number of correct answers, the number of questions, the percentage of correct answers, and the pass/fail result will appear on the score page.



- Click the **Proceed** button to exit the test.
- Click the **Review** button to review the test. (Correct answer check)
- Click the **Retry** button to retake the test again.

Test Final Test 1

Select the correct order of procedure for using a GOT.

Procedue 1 (Q1 --Select--)

Procedue 2 (Q2 --Select--)

Procedue 3 (Q3 --Select--)

Answer Back

Test Final Test 2

Select the work to do on GT Designer3 when you create a new project.

- [ ] Creating a sequence program
- [ ] Creating a base screen
- [ ] Make settings of figures and objects

Answer Back

Test Final Test 3

Complete the following sentence about figures and objects to be specified on GOT screens.

1. Figure

A figure is the (--Select--) that are placed on the screen. (--Select--) images such as pictures can also be displayed.

Figures can be used to put descriptions of screens and switches or to make well-organized screens.

2. Object

Make object settings by linking itsThe object display changes depending on the (--Select--) value of the PLC. action and a (--Select--) of a PLC.

Answer Back

Test Final Test 4

Select the correct order of procedure for checking connection between a GOT and a PLC.

Procedue 1 (Q1 --Select--)

Procedue 2 (Q2 --Select--)

Procedue 3 (Q3 --Select--)

Answer Back

Test Score

You have completed the Final Test. You results area as follows.
To end the Final Test, proceed to the next page.

Correct answers : 0

Total questions : 4

Percentage : 0%

Proceed | Review | Retry

You failed the test.

You have completed the GOT Basics (GT16, GT Designer3) Course.

Thank you for taking this course.

We hope you enjoyed the lessons and the information you acquired in this course will be useful in the future.

You can review the course as many times as you want.

Review Close