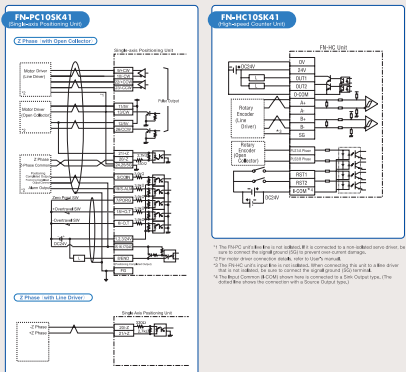
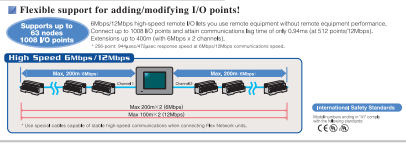


Remote I/O (Flex Network) Circuit Diagrams



Remote I/O System (Flex Network)



Smooth system integration of Pro-face products is assured with a total support network.



Pro-face regional offices and partners offer technical support and repair services around the world. Contact your local Pro-face office for more information about support services available.

Caution: Before operating any of these products, please be sure to read all related manuals thoroughly.

- | | | | |
|---|--|---|---|
| <p>Global Head Office
Pro-face Europe Ltd.
Barnet, Herts. SG8 6BN, UK
Tel: +44 (0)20 8491 1111
Fax: +44 (0)20 8491 1112
www.pro-face.com</p> | <p>China
Pro-face (China) Co., Ltd.
Room 201, No. 1000, Zhongyuan Road
Beijing, 100004, P.R. China
Tel: +86 (0)10 6500 8888
Fax: +86 (0)10 6500 8889
www.pro-face.com.cn</p> | <p>South Korea
Pro-face (Korea) Co., Ltd.
Room 201, No. 1000, Zhongyuan Road
Beijing, 100004, P.R. China
Tel: +82 (0)2 2222 2222
Fax: +82 (0)2 2222 2223
www.pro-face.com.kr</p> | <p>Taiwan
Pro-face (Taiwan) Co., Ltd.
Room 201, No. 1000, Zhongyuan Road
Beijing, 100004, P.R. China
Tel: +886 (0)2 2222 2222
Fax: +886 (0)2 2222 2223
www.pro-face.com.tw</p> |
| <p>Asia Pacific Regional Office
Pro-face (Asia) Co., Ltd.
Room 201, No. 1000, Zhongyuan Road
Beijing, 100004, P.R. China
Tel: +65 (0)6 2222 2222
Fax: +65 (0)6 2222 2223
www.pro-face.com.sg</p> | <p>North East Asian Head Office
Pro-face (North East Asia) Co., Ltd.
Room 201, No. 1000, Zhongyuan Road
Beijing, 100004, P.R. China
Tel: +82 (0)2 2222 2222
Fax: +82 (0)2 2222 2223
www.pro-face.com.jp</p> | <p>European Head Office
Pro-face Europe Ltd.
Barnet, Herts. SG8 6BN, UK
Tel: +44 (0)20 8491 1111
Fax: +44 (0)20 8491 1112
www.pro-face.com</p> | <p>Germany
Pro-face (Germany) Co., Ltd.
Room 201, No. 1000, Zhongyuan Road
Beijing, 100004, P.R. China
Tel: +49 (0)20 8491 1111
Fax: +49 (0)20 8491 1112
www.pro-face.com.de</p> |
| <p>Spain and Portugal
Pro-face (Spain and Portugal) Co., Ltd.
Room 201, No. 1000, Zhongyuan Road
Beijing, 100004, P.R. China
Tel: +34 (0)20 8491 1111
Fax: +34 (0)20 8491 1112
www.pro-face.com.es</p> | <p>Italy
Pro-face (Italy) Co., Ltd.
Room 201, No. 1000, Zhongyuan Road
Beijing, 100004, P.R. China
Tel: +39 (0)20 8491 1111
Fax: +39 (0)20 8491 1112
www.pro-face.com.it</p> | <p>France
Pro-face (France) Co., Ltd.
Room 201, No. 1000, Zhongyuan Road
Beijing, 100004, P.R. China
Tel: +33 (0)20 8491 1111
Fax: +33 (0)20 8491 1112
www.pro-face.com.fr</p> | <p>Sweden
Pro-face (Sweden) Co., Ltd.
Room 201, No. 1000, Zhongyuan Road
Beijing, 100004, P.R. China
Tel: +46 (0)20 8491 1111
Fax: +46 (0)20 8491 1112
www.pro-face.com.se</p> |



Control Takes on a Whole New Form

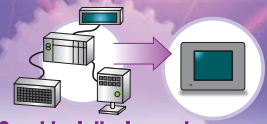


Pro-face's LT Series models combine control, operation and display functions into a single, easy-to-view, low-cost controller. No more need for expensive, complex, bulky production control systems. The LT's built-in controller brings multifunctional, high-quality control to a wide range of systems, such as the processing, textile, printing, parts assembly, agriculture and maritime applications. LT Series of products opens up an entirely new field in factory automation and lets you build safer, more accurate production systems.



All-in-One unit for Control, Operation and Display

Which means...



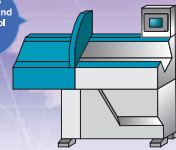
Graphical display and Touch Operation!

Easy-to-read graphic display and convenient touch-sensitive screen.

Less wiring and less space!

Connection is simple and the control panel is compact.

Frees up space around the control panel!



Simple wiring means easier maintenance too.

Software advantages!

Dynamic linkage between HMI and control.

Pro-face's combined HMI and control software is easy to use.



NEW LT Color Now Available!

The new LT color display is easier to see than monochrome monitors, making it easier to monitor status in the workplace and improving control of the production floor.



Improves visibility by color-coding graphics and text.



Makes warnings and alarms easier to understand.



Enables instant device status verification with BMP image display

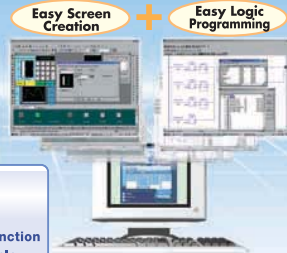


* Type H1-ADP is sold as an option by Pro-face Europe B.V.



GP-PRO/PBIII-C-Package03 LT Design Software

GP-PRO/PBIII-C-Package03



Easy Screen Creation

Easy Logic Programming



- Supports Ladder Monitor
- Variety of Ladder Instructions
- Expanded Alarm Summary
- Improved Keypad Display Function
- Various graphic types Available

Data created with LT Editor can also be used.

See our Web site for LT Series system application examples. <http://www.pro-face.com>

Our complete lineup matches your needs



64 Colors STN LCD

64Colors STN LCD

Item	Type A		Type B+		Type H		
	AD	ADT	AD	ADT	AD	ADT	ADP
DC24V Input Points	16	16	16	16	16	16	16
DC24V Output Points	16	16	16	16	16	16	16
Analog Input (ch)	—	1	2	2	2	2	2
Analog Output (ch)	—	1	1	2	2	2	2
High-speed Counter	—	1	4 ²	4 ²	4 ²	4 ²	4 ²
Pulse Output	—	1	4 ²	4 ²	4 ²	4 ²	4 ²
Thermocouple/J/K Temperature Input	—	—	—	3	—	—	—
PT100 Temperature Input	—	—	—	—	—	—	2
Remote I/O (Flex Network)	—	—	—	—	—	—	—

*1 Compatible with Flex Network units.
*2 Shared with DC24V input.
*3 Shared with DC24V output.



5.7" BLUEmode LCD

BLUE Monochrome LCD

Item	Type A		Type B+		Type B		Type C		Type H		
	AD	ADT	AD	ADT	AD	ADT	AD	ADT	AD	ADT	ADP
DC24V Input Points	16	16	16	16	—	—	—	—	16	16	16
DC24V Output Points	16	16	16	16	—	—	—	—	16	16	16
Analog Input (ch)	—	1	1	1	1	1	1	1	2	2	2
Analog Output (ch)	—	1	1	1	1	1	1	1	1	2	2
High-speed Counter	—	1	1	1	1	1	1	1	4 ²	4 ²	4 ²
Pulse Output	—	1	1	1	1	1	1	1	4 ²	4 ²	4 ²
Thermocouple/J/K Temperature Input	—	—	—	—	—	—	—	—	3	—	—
PT100 Temperature Input	—	—	—	—	—	—	—	—	—	—	2
Remote I/O (Flex Network)	—	—	—	—	—	—	—	—	—	—	—
SIO	—	—	—	—	—	—	—	—	—	—	—

*1 Compatible with Flex Network units.
*2 Shared with DC24V input.
*3 Shared with DC24V output.

Specifications (Common to All Models)

Functional Specifications

Item	Color Type			Blue/Monochrome Type				
	Type A	Type B+	Type H	Type A	Type B+	Type B	Type C	Type H
Model	A1 (Sink Output Type) / A2 (Source Output Type)	B1 (Sink Output Type) / B2 (Source Output Type)	H1 (Sink Output Type) / H2 (Source Output Type)	A1 (Sink Output Type) / A2 (Source Output Type)	B1 (Sink Output Type) / B2 (Source Output Type)	C1 (Sink Output Type) / C2 (Source Output Type)	H1 (Sink Output Type) / H2 (Source Output Type)	H1 (Sink Output Type) / H2 (Source Output Type)
Display Type	STN Color LCD			Mono/Color LCD				
Resolution	320 x 240 pixels			320 x 240 pixels				
Normal Display Area	W118.2mm(4.654") x H85.4mm(3.364")			W115.2mm(4.534") x H85.4mm(3.364")				
Color Condition	45 colors			Black/White				
Backlight	CFL (lifespan more than 50,000 hours when continuous use)			CFL (lifespan more than 50,000 hours when continuous use)				
Contrast Control	—			8 levels (all 50% contrast)				
Language Functions	ASCII Code Page 437, ASCII, Japanese (including Japanese fonts), Chinese (GB2312-80 coded and GB18030 Chinese fonts), Japanese ANK 158 byte, Korean 9497 type (including non-ASCII), and Standard ASCII Type 1 and 2, Korean (KS2001) 1000 coded Hangul fonts, Taiwanese (Big5) coded traditional Chinese fonts.			—				
Control Items	Display Size ¹⁾	8 x 6.6 x 16, 16 x 16, 32 x 48 dots						
	Font Sizes	Both height and width can be expanded 1, 2, 4, or 8 times						
	8 x 8 Data	40 dots x 20 rows						
	8 x 16 Data	40 dots x 10 rows						
	16 x 16 Data	20 dots x 10 rows						
	32 x 32 Data	10 dots x 10 rows						
	Application	1MB FLASH EPROM (approx. 500 screens at 3,2KB/screen)						
	Color Memory	4096 (16M) color memory capacity						
	Variable Data Area	32KB DRAM (user known binary)						
	Program Area	32KB FLASH EPROM						
Touch Panel	No touch measurement for power supply							
Clock Accuracy	±65 seconds/month (at room temperature)							

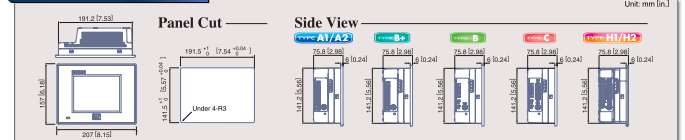
*1 The test uses values depending on the language and font size selected.
*2 4.8 hours (battery life) is 10 years when the battery's ambient temperature is under 40 degree centigrade, 4 years when the battery's ambient temperature is under 50 degree centigrade, and 1.5 years when the battery's ambient temperature is under 60 degree centigrade. When used for backup, the lifetime is approximately 60 days with a full-charged battery, and approximately 6 days with a half-charged battery.

General Specifications

Item	Color Type			Blue/Monochrome Type				
	Type A	Type B+	Type H	Type A	Type B+	Type B	Type C	Type H
Electrical	Input Voltage	DC24V ±5.0%/5V						
	Rated Voltage	DC24V ±5.0%/5V						
	Allowable Voltage Drop	10 mV or less						
	Power Consumption	200W or less						
	In-Rush Current	20A or less						
	Voltage Endurance	AC1000V at 10mA for 1 minute (between charging and PG terminals)						
	Insulation Resistance	Above 10MΩ at DC500V (between charging and PG terminals)						
	Operating Temperature	0°C to 50°C						
	Storage Temperature	-20°C to +60°C						
	Operating Humidity	10% RH to 85% RH (no condensation) with B temperature: 20°C or less						
Environmental	Storage Humidity	10% RH to 85% RH (no condensation) with B temperature: 20°C or less						
	Air Purify (Dust)	0.1 mg/m ³ or less (no condensation) with B						
	Corrosive Gases	Free of corrosive gases						
	Atmospheric Endurance (Operation Altitude)	8000ft to 11,480ft (2500 meters or lower)						
	Vibration Resistance	IEC 60068-2-6 (B) 5000 rpm (1 min)						
	Noise Immunity (EMC noise immunity)	Noise voltage: 1000V/200V Pulse Duration: 1μs, Rise time: 1ns						
	Shock Resistance	Complies with IEC 60068-2-27 (B) 150G/1.5ms						
	Electrostatic Discharge Immunity	Complies with IEC 60068-2-33 (B) 100V/1.5ns						
	Certification	CE, FCC, UL, VCCI, PSE, RoHS, REACH, etc.						
	Structural	Grounding	100Ω or less, or your country's applicable standard					
Rating		Equivalent to IP65 (JIS X 4001) and IEC 60529 TYPE 4X/2						
External Dimensions		100mm (height) (with 10mm thick panel) x 207mm (width) x 102mm (depth)						
Weight	170g (0.38) or less							
Coating Method	Natural or electrocoat							

*1 Coating film for the equipment both on the display surface and inside the panel are within the protection ambient temperature range during use. Use at temperatures outside this range may lead to malfunction.
*2 1000 V type for 0.4A output and PPM output function.
*3 Limited to the front face when installed in a rack. Testing equivalent to IEC 60068 conditions has been performed. However, performance cannot be guaranteed for other types of environment.
*4 The product is subjected to an all-time over an extended period of time, even when using the product designed in the field, or the product is subjected to an extremely low-velocity cutting or all sorts of penetration may result due to peeling of the front face. This occurs, a countermeasure is required. For the prevention of electric deterioration, may also occur with other than these designed. Confirm operation environment prior to installation.
*5 Furthermore, rubber gaskets that have been used for extended periods of time, and those that have been scratched or broken after installation, may not provide sufficient protection.
*6 It is recommended that the rubber gasket be replaced periodically to guarantee consistent protection.

External Dimensions



See our Web site for LT Series system application examples. <http://www.pro-face.com>

TYPE A1 TYPE A2 Integrates easily into compact equipment

16 input points and 16 output points make for easy integration into your current system

TYPE A1 Built-in DIO (Sink output) Type **TYPE A2** Built-in DIO (Source output) Type

Things to remember when comparing I/O points!

	PLC with 50 I/O points	LT Series (Type A1/A2) with 32 I/O points
I/O points used for panel operation and display	12 input points, 12 output points	Built-in graphic display and touch panel replace switches and lamps
I/O points used for equipment control	29 points available	32 points available

Notes:
 *1 Used for switches, such as manual reset (0 points), auto stop, stop, error, buzzer, alarm, reset, jog forward, jog backward, raise, lower, continuous operation, and manual feed/hold/intermittent complete.
 *2 Used for lamps indicating auto operation, motor overload, error, brake error, stop error, pneumatic error, material jam, and nonmaterial.

Equipped with DC24V 32-point input/output

TYPE B Reduces wiring and expands system scalability

Use Flex Network to connect up to 1008 points (63 nodes) over a maximum of 400m (with 6Mbps, 200m x 2 ch).

TYPE B Built-in Remote I/O (Flex Network)

Use the LT's built-in Remote I/O (Flex Network) together with:

- Compact Networking Unit
- High-speed Counter Unit
- Analog Unit
- 320 Units

Maximum 1008 I/O Points Remote I/O (Flex Network) System

TYPE B+ Extend your system with two types of built-in I/O

Further expand your Remote I/O (Flex Network) system with built-in 32-point DIO

TYPE B+ Built-in Remote I/O (Flex Network)

Use the LT's built-in Remote I/O (Flex Network) together with:

- Compact Networking Unit
- High-speed Counter Unit
- Analog Unit
- 320 Units

Equipped with DC24V 32-point input/output

Maximum 1008 I/O Points Remote I/O (Flex Network) System

TYPE C Connect to temperature controllers, inverters, PCs and single-board controllers

Further expansion with the SIO I/F, in addition to the Remote I/O (Flex Network)

TYPE C Built-in SIO + Remote I/O (Flex Network)

Use the LT's built-in Remote I/O (Flex Network) together with:

- Compact Networking Unit
- High-speed Counter Unit
- Analog Unit
- 320 Units

Standard serial interface allows you to easily connect a PC, single-board controller, temperature controller, inverter or other device via an RS-232C or RS-422 cable.

External controllers: PC, Inverter, Temperature controller, Microcomputer board

Maximum 1008 I/O Points Remote I/O (Flex Network) System

Comes equipped with analog I/O, temperature input and pulse output

TYPE H1

TYPE H2

DC24V 16-bit LCD

0.91inch TFT LCD

1.85inch TFT LCD

2.8inch TFT LCD

4.3inch TFT LCD

5.0inch TFT LCD

6.45inch TFT LCD

8.4inch TFT LCD

10.4inch TFT LCD

12.1inch TFT LCD

➤ Control pressure and flow

➤ Set positioning

➤ Monitor temperature, etc.

- H1-AD 32-point DIO + 2-point AD/1-point DA
- H2-AD Built-in 32-point DIO + 2-point AD/2-point DA + 3-point Thermocouple Input
- H1-ADP Built-in 32-point DIO + 2-point AD/2-point DA + 2-point PT100 Input

*1 Limited by software version.

Equipped with DC24V 32-point input/output

Analog input/output

Temperature input

Choose from 3 types to better match your needs!

Function	Type H-AD	Type H-ADT	Type H-ADP
DC24V 16 Input Points (10kpps 16-bit high speed counter x 4 points possible)*1)	○	○	○
DC24V 16 Output Points (Edge pulse line output or 2.5kHz PWM x 4 points possible)*2)	○	○	○
Analog Input (12-bit resolution, no insulation between channels)	○ (2ch)	○ (2ch)	○ (2ch)
Analog Output (12-bit resolution, no insulation between channels)	○ (1ch)	○ (2ch)	○ (2ch)
Thermocouple Temperature Input (2PK no insulation between channels)	—	○ (3ch)	—
PT100 Temperature Input (no insulation between channels)	—	—	○ (2ch)

*1 Each point with matching hardware output is 10kpps single phase 4 ch or dual phase 1 ch + single phase 2 ch.
*2) Rise time input at 4 points with 4-point total frequency maximum. PWM 2.5kHz for each point, combined use of high-speed counter matching output. DC24V output capacity (Output 0.5A x 8 points (1 common)) 0.25A x 8 points (1 common).

Interfaces

1 Graphic Display Screen

Displays application screens and host data.

2 Touch Panel

Switches screens, inputs values, provides switch and lamp functions, and writes data to host equipment.

3 Status LED

Indicates the LT unit's operation status.

Operation mode*	LED	Operation mode*
RUN	Green = Lit	Offline
STOP	Green = Blinking	Offline
Stuck in Manual Selection	Green = Lit	Offline
Major Error (STOP)	Red = Lit	Offline

*1 The basic mode (No. 1) with selected exception code.

4 I/O LED (Type A1/A2/B+/H1/H2)

Indicates the input/output status of DINDOUT.

5 Tool Connector

Connects to a data transfer cable.

6 DIO Connector (Type A1/A2/B+)

Connects external input or output equipment.

7 Remote I/O (Flex Network) System Connector (Type B+/B/C)

Connects IO units, analog units, or other Flex Network units via Flex Network communication cables.

8 Flex Network Status LED (Type B+/B/C)

Indicates the status of Flex Network data communication.

Operation mode*	Operation
Run (Green)	Lit during normal operation.
Errt (Red)	Lit when communication with a connected unit is blocked.

9 Dip Switches (Type B+)

These switches control the DIO connector's Output HxL. Also, they are used to set the S-No. to left-most hex digit.

10 Rotary Switch (Type B+)

Used to set the S-No.'s right-most hex digit.

11 Ready LED (Type H1/H2)

Indicates the LT unit's current status.

Status	LED
IO board error	OFF
IO board is normal	ON

12 Analog Input/Output Connector (Type H1/2)

Connects control units such as sensors, using a screw-clamp type connector.

13 DIO Input/Output Connector (Type H1/2)

Connects external Input/Output units, using a spring-clamp type connector.

14 Temperature Input Interface (Type H1/2)

Connects PT100 or thermocouple sensors using a screw-clamp type connector.

Optional Items

Software	Product Name	Model	Description
Main Unit Options	GP-PRO/FB (C-Package 03)	GP-PRO-030191-030	LT Series development software
	Screen Protection Sheet (Hard Type)	GP-SP-0210	Protects display surface and protects unit from dust (is sheet-type)
	DIO Connector & Cover (Soldered Type)	GLC100-DIOCN01	Type A1(A2)/B+ DIO Connector (2 sets of connectors and covers)
Maintenance Options	DIO Connector (Pressurized Type)	GLC-DIOCN02	Type A1(A2)/B+ DIO Connector (2 sets of connectors)
	Installation Fasteners	GP-IO-AT01	For attaching LT Series units to a shelf (each set of 5)
	Installation Guide	GP-IO-IMP040	For attaching LT Series units to a shelf (each set of 5)
	Flex Network I/F Connector	FN-IC01	Type B+/B/C Flex Network Connector (set of 5)
	DIO Connectors for LT Type H	GLC-DIOCN04	Attaches LT to DIO I/F (set of 5)
	Analog IO Connectors for LT Type H	GLC-IAC001	Attaches LT to Analog I/F (set of 5)
	Temperature Input Connectors for LT Type H	GLC-TM001	Attaches LT to Temperature I/F (set of 5)
	RS-422 Cable	GP-IR0422-C	Interface cables for data transmission between host controllers and LT Series
Peripheral Unit Options	RS-422 Cable	GP-IR0422-L	Interface cables for data transmission between host controllers and LT Series
	Single-axis Teaching Loader	FN-PC101041	Programmer unit for the Flex Network Single-axis positioning unit. Used for parameter entry, as well as positioning check and movement. (Also includes one (PC) DIOCN01)
	Multi-Line Cable	GP-IR0422-S	RS-422 interface cable for multi-type I/O data transmission between host controller and LT Series units.
	RS-422 Connector Terminal Block Conversion Adapter	GP-IR0422-CA	Conversion kit for RS-422 terminal block.
	Data Transfer Cable	GP-PC-C082	Connects LT Series to a PC for downloading GP-PRO/FB (C-Package) data
	USB Data Transfer Cable	GP-PC-U082	Connects LT Series to a PC for downloading GP-PRO/FB (C-Package) data
	DIO Cable	GLC-DIOCN01140S	Connects I/O cable to terminal block. 3m (Type A1/A2/B+)
	DIO Cable	GLC-DIOCN01140S	Connects I/O cable to terminal block. 5m (Type A1/A2/B+)
Flex Network Unit Options	DIO Connector Terminal Block for FN-Y2S3S41	FN-PC10028	Flex Network 48-point DIO connector terminal block. Spring-clamp type (set of 5)
	Flex Network Communication Cable	FN-CABLER-200-31-3MS	Connects distributed Flex Network units (Type B+/B/C)
	Flex Network Communication Cable (1m)	FN-CABLER-100-31-3MS	Connects distributed Flex Network units (Type B+/B/C)
	Flex Network Communication Cable (5m)	FN-CABLER-500-31-3MS	Connects distributed Flex Network units (Type B+/B/C)
Single-axis Motor Drive Connection Cable (1m)	FN-PC10029	Connects the Flex Network Single-axis positioning unit and the sensor and stopping drivers.	
Single-axis Teaching Loader (5m)	FN-PC10028	Connects Single-axis Positioning unit to Single-axis Teaching Loader.	

* Manual. Download the necessary PDF manuals from our web site (<http://www.pro-face.com>) or contact your local Pro-face distributor.