

Connect to Multivendor Controller Networks

This Unit allows you to connect to FL-net, an open network based on Ethernet. Multivendor FL-net networks can be built to combine CJ-series PLCs with CNC machines, robots, and PLCs from other manufacturers.



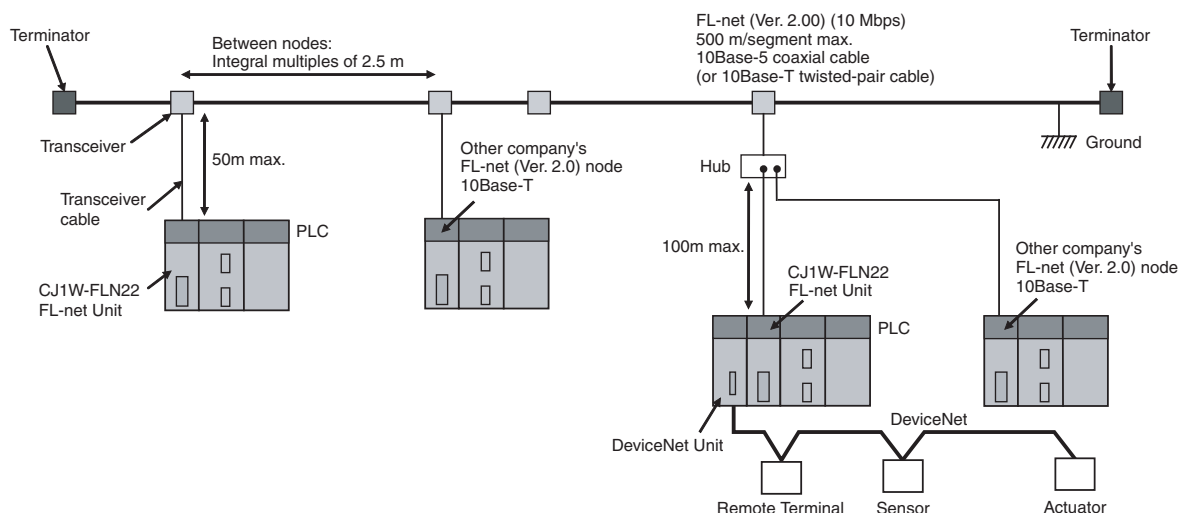
CJ1W-FLN22

Features

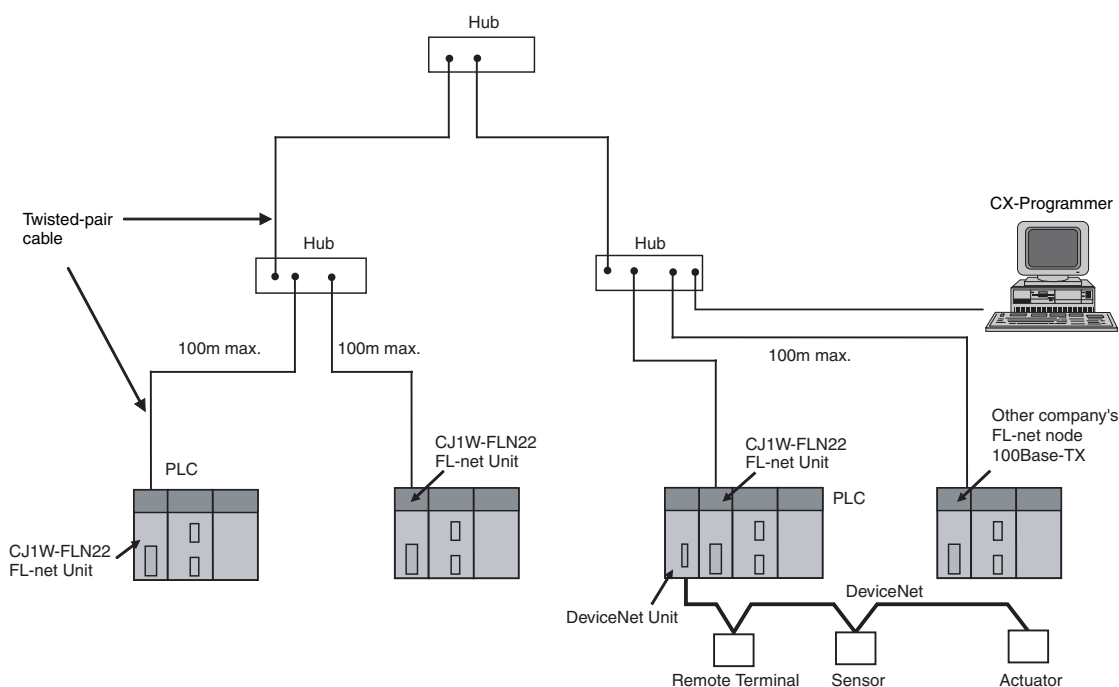
- Conforms to FL-net, a quickly spreading standard.
- FL-net is a multivendor FA network at the controller/machine level that is based on Ethernet. (It uses UDP/IP.)
- FL-net supports message transmissions and cyclic data transmissions. (Message transmissions are also possible using FINS communications.)
- A CJ-series PLC can be used to interface communications between Ethernet information networks, OMRON's Controller Link FA network, and DeviceNet field bus.

System Configuration

10BASE-T



100BASE-TX



Note: Do not combine nodes using a baud rate of 10 Mbps with nodes using a baud rate of 100 Mbps in the same configuration, where possible. If nodes with a baud rate of 10 Mbps are used, use a baud rate of 10 Mbps for all the connected devices in the configuration.

About FL-net

FL-net is an open network that is based on Ethernet and that is being promoted as a standard by the Special Committee for Network. Promotion organized by JEMA (The Japan Electrical Manufacturers' Association). FL-net enables multivendor, multi-model connections at the controller/machine level. FL-net provides the following features.

- Ethernet-based FA Network
 - NL-net defines a new Ethernet-based FL link protocol.
 - The standard UDP/IP communications protocol of Ethernet is used.
 - Cables, hubs, and other network components are easy to obtain.


- Message Transmissions and Cyclic Data Transmissions
- Interlocks between devices, manufacturing instructions, collection of manufacturing results can be achieved on the same network.
- Master-less, Token System
- Prevents data collisions and provides consistent transmission times.
- Nodes can be automatically added to or removed from the network.
- Communications are maintained between all nodes that are capable of communicating even if a power interruption occurs or a fault occurs in network devices or cables.

Ordering Information

International Standards

- The standards are abbreviated as follows: U: UL, U1: UL (Class I Division 2 Products for Hazardous Locations), C: CSA, UC: cULus, UC1: cULus (Class I Division 2 Products for Hazardous Locations), CU: cUL, N: NK, L: Lloyd, and CE: EC Directives.
- Contact your OMRON representative for further details and applicable conditions for these standards.

FL-net Unit

Unit type	Product name	Specifications			No. of unit numbers allocated	Current consumption (A)		Model	Standards
		Communications interface	Communications functions	Max. Units mountable per CPU Units		5V	24V		
CJ1 CPU Bus Unit	FL-net Unit 	100BASE-TX	With FL-net Ver. 2.0 specifications (OPCN-2) Data links and message service	4	1	0.37	—	CJ1W-FLN22	UC1, CE

- Note:**
- There is no accessory for the CJ-series Ethernet Unit.
 - This unit cannot be used with the Machine Automation Controller NJ-series.

Recommended Network Devices

The following products are recommended for use with the FL-net Unit.

Part	Maker	Model number	Specification
Twisted-pair cable	EtherNet compliant cable		
Connector (Modular plug)	STP Plug		
	Panduit Corp	MPS588	—
	UTP Plug		
	Panduit Corp	MP588-C	—

Mountable Racks

Model	NJ system		CJ system (CJ1, CJ2)		CP1H system	NSJ system	
	CPU Rack	Expansion Rack	CPU Rack	Expansion Backplane	CP1H PLC	NSJ Controller	Expansion Backplane
CJ1W-FLN22	Not supported		4 Units (per CPU Unit)		2 Units *	Not supported	4 Units (per CPU Unit)

* A CP1W-EXT01 CJ Unit Adaptor is required.

FL-net Unit Specifications

Item		Specifications	
Model number		CJ1W-FLN22	
Type		100Base-TX (10Base-T is also possible)	
Applicable PLCs		CJ-series PLCs	
Unit classification		CJ-series CPU Bus Unit	
Mounting location		CPU Rack or Expansion Rack	
Number of Units that can be mounted		4 max. (including Expansion Racks)	
Transfer specifications	Media access method	CSMA/CD	
	Modulation	Baseband	
	Transmission paths	Star	
	Baud rate	100 Mbps (100Base-TX)	10 Mbps (10Base-T)
	Transmission media	Unshielded twisted-pair (UTP) cable Categories: 5, 5e Shielded twisted-pair (STP) cable Categories: 100 Ω at 5, 5e	Unshielded twisted-pair (UTP) cable Categories: 3, 4, 5, 5e Shielded twisted-pair (STP) cable Categories: 100 Ω at 3, 4, 5, 5e
	Transmission distance	100 m max. (distance between hub and node)	
	Number of cascade connections with repeater hub	2	4
Current consumption (Unit)		370 mA max. at 5 VDC	
Vibration resistance		Conforms to JIS 0040. 10 to 57 Hz, 0.075-mm amplitude, 57 to 150 Hz, acceleration: 9.8 m/s ² in X, Y, and Z directions for 80 minutes each (Time coefficient; 8 minutes × coefficient factor 10 = total time 80 minutes)	
Shock resistance		Conforms to JIS 0041. 147 m/s ² three times each in X, Y, and Z directions	
Ambient temperature		Operating: 0 to 55°C Storage: -20 to 75°C	
Humidity		10% to 90% (with no condensation)	
Atmosphere		Must be free from corrosive gas.	
Weight		100 g max.	
Dimensions		31 × 90 × 65 mm (W × H × D)	

CX-FLnet

CX-FLnet

The CX-FLnet Support Software is used to make settings for OMRON FL-net Units mounted to Programmable Controllers (PLCs). The CX-FLnet Support Software is installed on a computer running Windows 2000 (Service Pack 4 or higher), XP, Vista, or 7.

The CX-FLnet can be used to make settings for the following FL-net Units:

CJ1W-FLN22, CS1W-FLN22

CX-FLnet Functions

The CX-FLnet provides mainly the following functions.

Function	Description
Online connection	<p>The following two methods can be used for connection.</p> <ul style="list-style-type: none"> • Direct PLC Connection Perform the settings after making a direct serial connection to each PLC to which FL-net Units are mounted. • Connection via a Network Online connection and settings are made from the PLC connected to the computer running CX-FLnet (i.e., the gateway PLC) to each PLC (i.e., the target PLCs) to which FL-net Units are mounted via the FL-net network or other networks (e.g., Ethernet or Controller Link).
Settings	<p>The following settings can be made.</p> <ul style="list-style-type: none"> • CPU Bus Unit Setup Area • Data Link Setup <ul style="list-style-type: none"> - Local Node Setup Area - Other Node Setup Area - Extension Setting - Unit Area Setup (token watchdog timer)
File	<p>Communications settings for the online connection and data link settings can be saved and read in CSV format.</p>
Monitor	<ul style="list-style-type: none"> • Data Link Status • FL-net Unit Status (FA Link active status, transceiver power supply, received message or not, token monitoring timeout setting exceeded, and IP address setting error) • Communications Cycle Time • Message Sequential Status • FL-net Unit Error Log • Status of nodes participating in the FL-net network

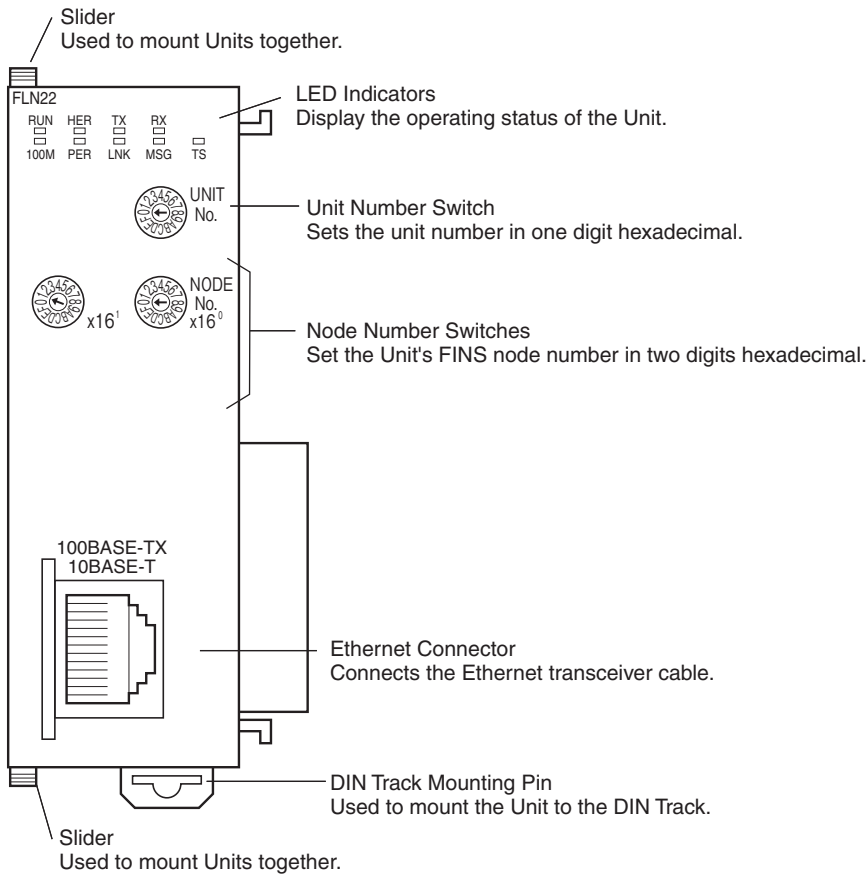
CX-FLnet Availability

The CX-FLnet is available only as a component of the CX-One FA Integrated Tool Package. Refer to the CX-One Setup Manual (W463, provided with the CX-One) for the CX-One installation and uninstallation procedures.

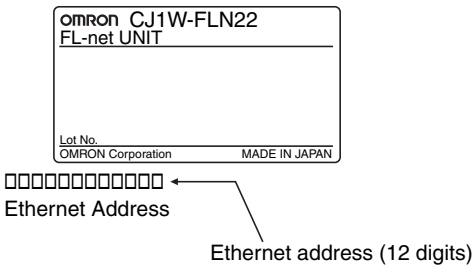
For details on CX-FLnet Support Software Operations refer to the FL-net Units Operation Manual (W440).

External Interface

CJ1W-FLN22, 100BASE-TX



Individual Ethernet addresses are assigned to all communications devices connected to an Ethernet system. With the FL-net Unit, the Ethernet address is shown in 12 digits, hexadecimal, on the right side of the Unit.

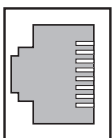


Note: The Ethernet address can also be checked by means of the FINS command CONTROLLER DATA READ.

Ethernet Connectors

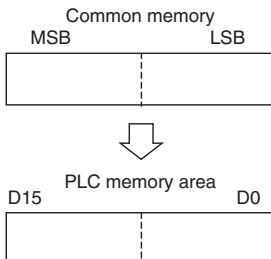
The following standards and specifications apply to the connectors for the Ethernet twisted-pair cable.

- Electrical specifications: Conforming to IEEE802.3 standards.
- Connector structure: RJ45 8-pin Modular Connector (conforming to ISO 8877)



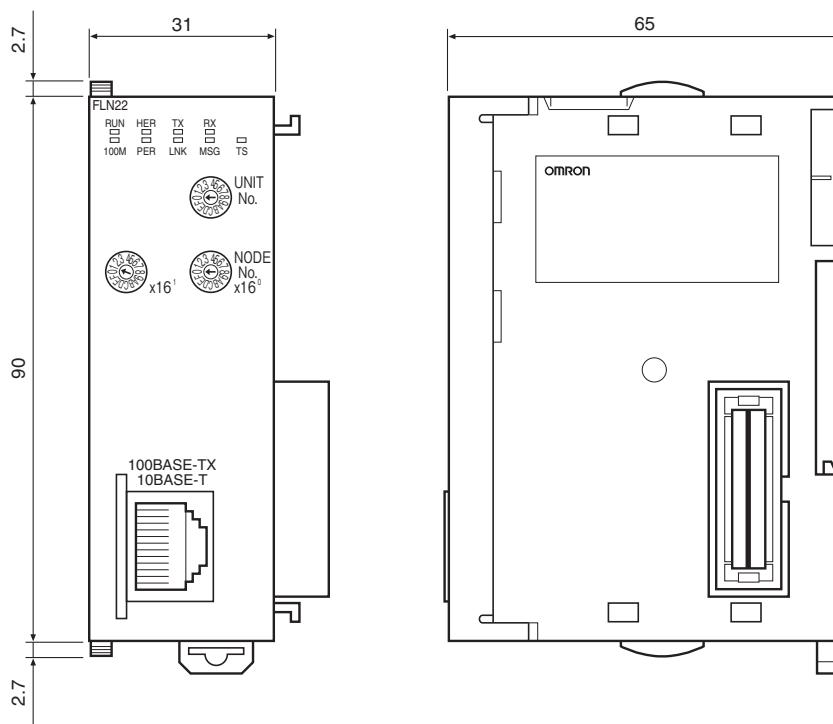
Connector pin	Signal name	Abbr.	Signal direction
1	Transmission data +	TD+	Output
2	Transmission data -	TD-	Output
3	Reception data +	RD+	Input
4	Not used.	—	—
5	Not used.	—	—
6	Reception data -	RD-	Input
7	Not used.	—	—
8	Not used.	—	—
Hood	Frame ground	FG	—

Comparison with Previous Models (CS1W-FLN02, CS1W-FLN12)

Model	CS1W-FLN22 CJ1W-FLN22	CS1W-FLN02/12 (No longer available to order)
Type	100Base-TX (10Base-T is also possible)	10Base-5 (CS1W-FLN02) 10Base-T (CS1W-FLN12)
Switches/indicators	100M indicator provided This indicator indicates when baud rate of 100 Mbps is being used.	No 100M indicator
	No rotary switch for setting the IP address. The IP address is set using the CX-FLnet or FL-net Unit Support Software. Either of the following two methods can be used to set the IP address. 1.192.168.250 + node number 2.Setup area	Rotary switch provided on rear of Unit for setting the IP address. Either of the following four methods can be used to set the IP address 1.192.168.250 + node number 2.Rotary switch on rear of Unit. 3.Rotary switch on rear of Unit + node number 4.Setup area
Data link functions	Total capacity: 8,704 words (Area 1: 512 words, Area 2: 8,192 words) If the total number of words in Area 1 and Area 2 for a single node exceeds 7,677 words, the data for the corresponding node will be refreshed over two scans of the CPU Unit. The data will be split from the 7,678th word counted from the beginning of the combined Area 1 and Area 2.	Total capacity: 8,704 words (Area 1: 512 words, Area 2: 8,192 words) Data link tables that exceed the following conditions, however, cannot be set. Number of words in local node setup area (Area 1 and Area 2) ≤ 7,677 words. Number of words in local node setup area (Area 1 and Area 2) + the number of words in setup area (Area 1 and Area 2) for node with the largest setup area size (except local node) ≤ 7,677 words
	The order of the upper and lower byte in the word data can be swapped for each data when exchanging data between the data link area in the PLC and the FL-net.	The data order cannot be changed and is fixed as shown in the following diagram. 
Simple backup function	Supported.	Not supported.
Support Software	CX-FLnet or FL-net Unit Support Software version 1.60 or higher (CS1W-FLN22 and CJ1W-FLN22 settings cannot be made using Ver. 1.51 or lower)	FL-net Unit Support Software Ver. 1.51 or higher (CS1W-FLN02 and CS1W-FLN12 settings can also be made using Ver. 1.60 or higher)

Dimensions

CJ1W-FLN22



Related Manuals

Name	Cat. No.	Contents
SYSMAC CS/CJ Series CS1W-FLN22 (100Base-TX) and CJ1W-FLN22 (100Base-TX) FL-net Units Operation Manual	W440	Describes the installation and operation of the CS1W-FLN22 and CJ1W-FLN22 FL-net Units. Refer to the Communications Commands Reference Manual (W342) for information on FINS commands that can be addressed to CS/CJ-series CPU Units.
CXONE-AL□□D-V□ CX-One FA Integrated Tool Package Setup Manual	W463	Provides an overview of the CX-One FA Integrated Tool and installation procedures.

Terms and Conditions Agreement

Read and understand this catalog.

Please read and understand this catalog before purchasing the products. Please consult your OMRON representative if you have any questions or comments.

Warranties.

(a) Exclusive Warranty. Omron's exclusive warranty is that the Products will be free from defects in materials and workmanship for a period of twelve months from the date of sale by Omron (or such other period expressed in writing by Omron). Omron disclaims all other warranties, express or implied.

(b) Limitations. OMRON MAKES NO WARRANTY OR REPRESENTATION, EXPRESS OR IMPLIED, ABOUT NON-INFRINGEMENT, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OF THE PRODUCTS. BUYER ACKNOWLEDGES THAT IT ALONE HAS DETERMINED THAT THE PRODUCTS WILL SUITABLY MEET THE REQUIREMENTS OF THEIR INTENDED USE.

Omron further disclaims all warranties and responsibility of any type for claims or expenses based on infringement by the Products or otherwise of any intellectual property right. (c) Buyer Remedy. Omron's sole obligation hereunder shall be, at Omron's election, to (i) replace (in the form originally shipped with Buyer responsible for labor charges for removal or replacement thereof) the non-complying Product, (ii) repair the non-complying Product, or (iii) repay or credit Buyer an amount equal to the purchase price of the non-complying Product; provided that in no event shall Omron be responsible for warranty, repair, indemnity or any other claims or expenses regarding the Products unless Omron's analysis confirms that the Products were properly handled, stored, installed and maintained and not subject to contamination, abuse, misuse or inappropriate modification. Return of any Products by Buyer must be approved in writing by Omron before shipment. Omron Companies shall not be liable for the suitability or unsuitability or the results from the use of Products in combination with any electrical or electronic components, circuits, system assemblies or any other materials or substances or environments. Any advice, recommendations or information given orally or in writing, are not to be construed as an amendment or addition to the above warranty.

See <http://www.omron.com/global/> or contact your Omron representative for published information.

Limitation on Liability: Etc.

OMRON COMPANIES SHALL NOT BE LIABLE FOR SPECIAL, INDIRECT, INCIDENTAL, OR CONSEQUENTIAL DAMAGES, LOSS OF PROFITS OR PRODUCTION OR COMMERCIAL LOSS IN ANY WAY CONNECTED WITH THE PRODUCTS, WHETHER SUCH CLAIM IS BASED IN CONTRACT, WARRANTY, NEGLIGENCE OR STRICT LIABILITY.

Further, in no event shall liability of Omron Companies exceed the individual price of the Product on which liability is asserted.

Suitability of Use.

Omron Companies shall not be responsible for conformity with any standards, codes or regulations which apply to the combination of the Product in the Buyer's application or use of the Product. At Buyer's request, Omron will provide applicable third party certification documents identifying ratings and limitations of use which apply to the Product. This information by itself is not sufficient for a complete determination of the suitability of the Product in combination with the end product, machine, system, or other application or use. Buyer shall be solely responsible for determining appropriateness of the particular Product with respect to Buyer's application, product or system. Buyer shall take application responsibility in all cases.

NEVER USE THE PRODUCT FOR AN APPLICATION INVOLVING SERIOUS RISK TO LIFE OR PROPERTY OR IN LARGE QUANTITIES WITHOUT ENSURING THAT THE SYSTEM AS A WHOLE HAS BEEN DESIGNED TO ADDRESS THE RISKS, AND THAT THE OMRON PRODUCT(S) IS PROPERLY RATED AND INSTALLED FOR THE INTENDED USE WITHIN THE OVERALL EQUIPMENT OR SYSTEM.

Programmable Products.

Omron Companies shall not be responsible for the user's programming of a programmable Product, or any consequence thereof.

Performance Data.

Data presented in Omron Company websites, catalogs and other materials is provided as a guide for the user in determining suitability and does not constitute a warranty. It may represent the result of Omron's test conditions, and the user must correlate it to actual application requirements. Actual performance is subject to the Omron's Warranty and Limitations of Liability.

Change in Specifications.

Product specifications and accessories may be changed at any time based on improvements and other reasons. It is our practice to change part numbers when published ratings or features are changed, or when significant construction changes are made. However, some specifications of the Product may be changed without any notice. When in doubt, special part numbers may be assigned to fix or establish key specifications for your application. Please consult with your Omron's representative at any time to confirm actual specifications of purchased Product.

Errors and Omissions.

Information presented by Omron Companies has been checked and is believed to be accurate; however, no responsibility is assumed for clerical, typographical or proofreading errors or omissions.