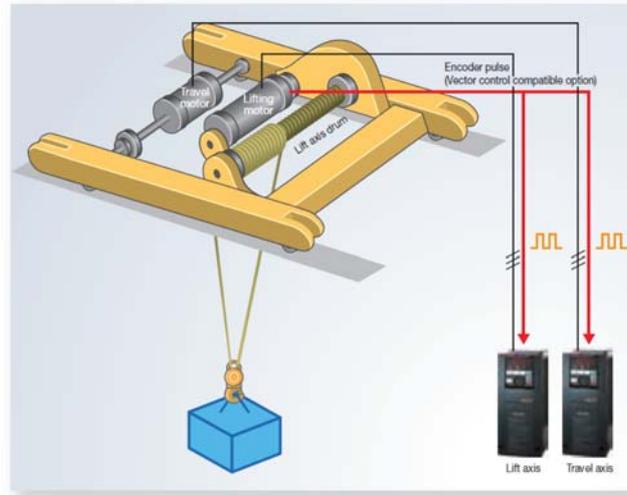


## Explanation of the operation for the wire rope length measurement

### [System configuration]



### [Operation outline]

The inverter calculates the wire rope length automatically based on the cumulative pulse even when the height of cargo is changed by lifting/lowering action.

### [How to use the sample program]

#### <Sample program overview>

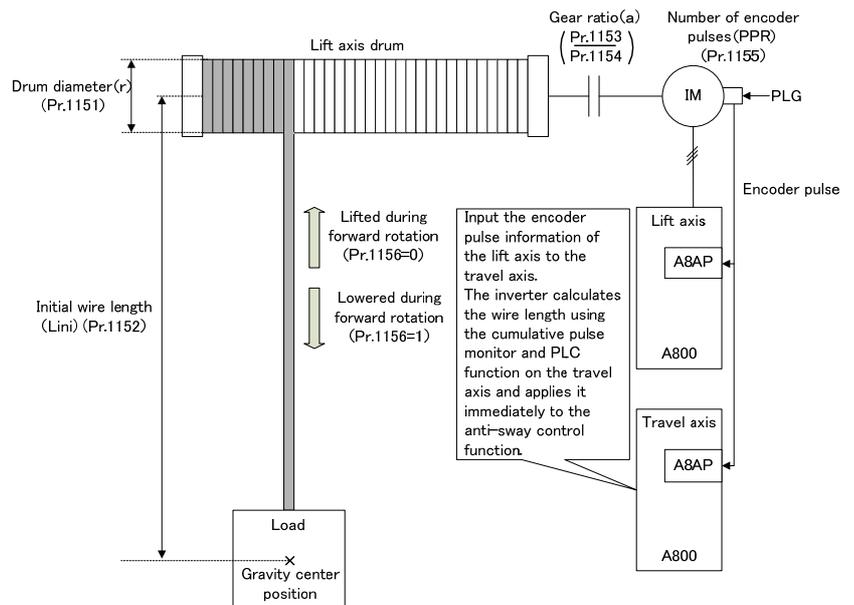
File name	Description	Model	Programming tool
vol2_ropelength_calc_eng_a.fgw	Ladder program	FR-A800	FR Configurator2 (Developer)

#### <Startup procedure>

- ① Decompress the downloaded file to a folder.
- ② Double click the file and start up each programming tool.
- ③ The language setting of the ladder programs is initially set to Japanese.  
To change the language setting, select [Tool] -> [Select language] and set the language to the desired language.
- ④ Write the program to the FR-A800.
- ⑤ After the writing completes, reset the FR-A800.

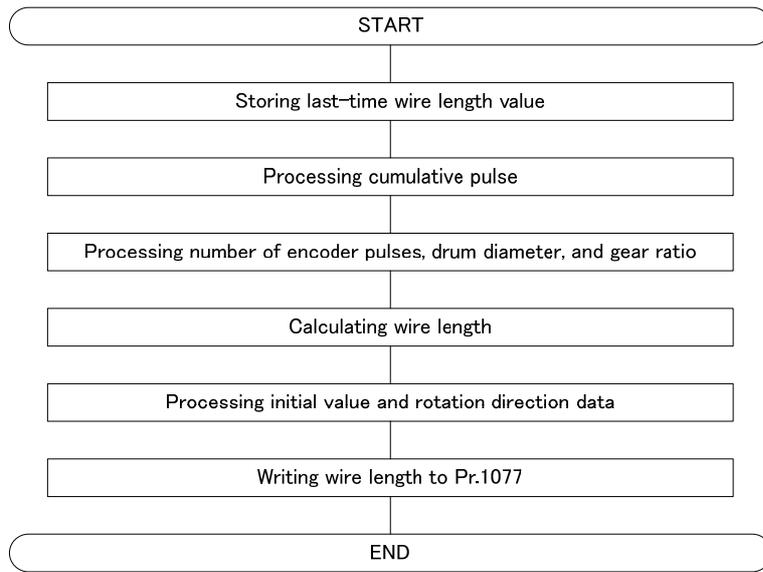
#### <Operation method>

- ① Set Pr.1152 (Initial wire length) and clear the cumulative pulse monitor after stretching the rope with a hoisting attachment.  
Set Pr.1151 (Drum diameter), Pr.1153 (Gear ratio numerator), Pr.1154 (Gear ratio denominator), Pr.1155 (Number of encoder pulses), and Pr.1156 (Rotation direction) according to the usage conditions.
- ② Turn ON the SQ signal to set the PLC function in the RUN state.
- ③ The ladder program can be executed by turning ON the X3 signal (terminal RM).
- ④ Lift or lower the cargo. When the wire length is changed by the lifting/lowering action, the length is calculated automatically and the result is written to Pr.1077.



[Circuit structure of the sample ladders]

<MAIN: scan execution>

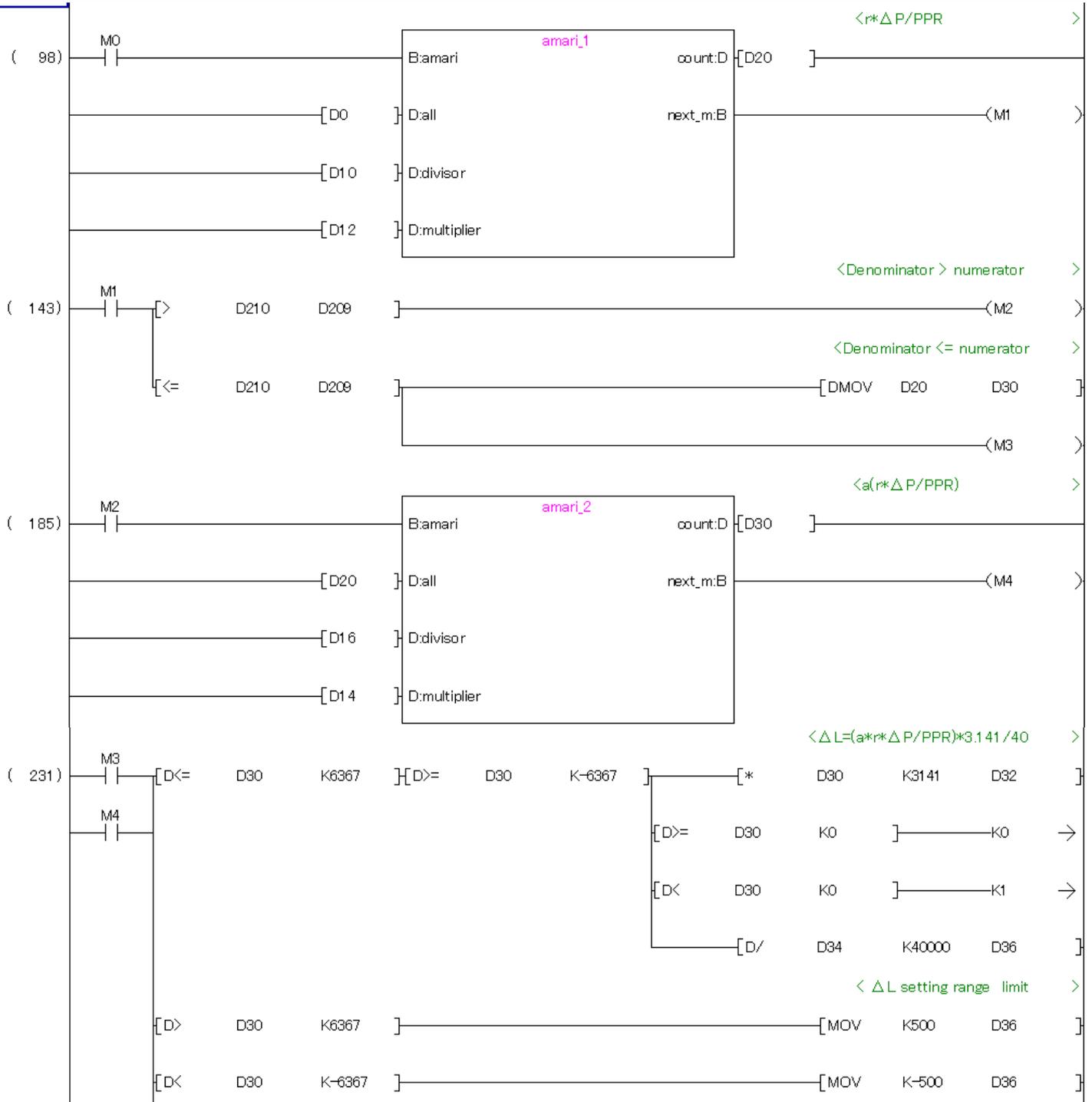


[Devices]

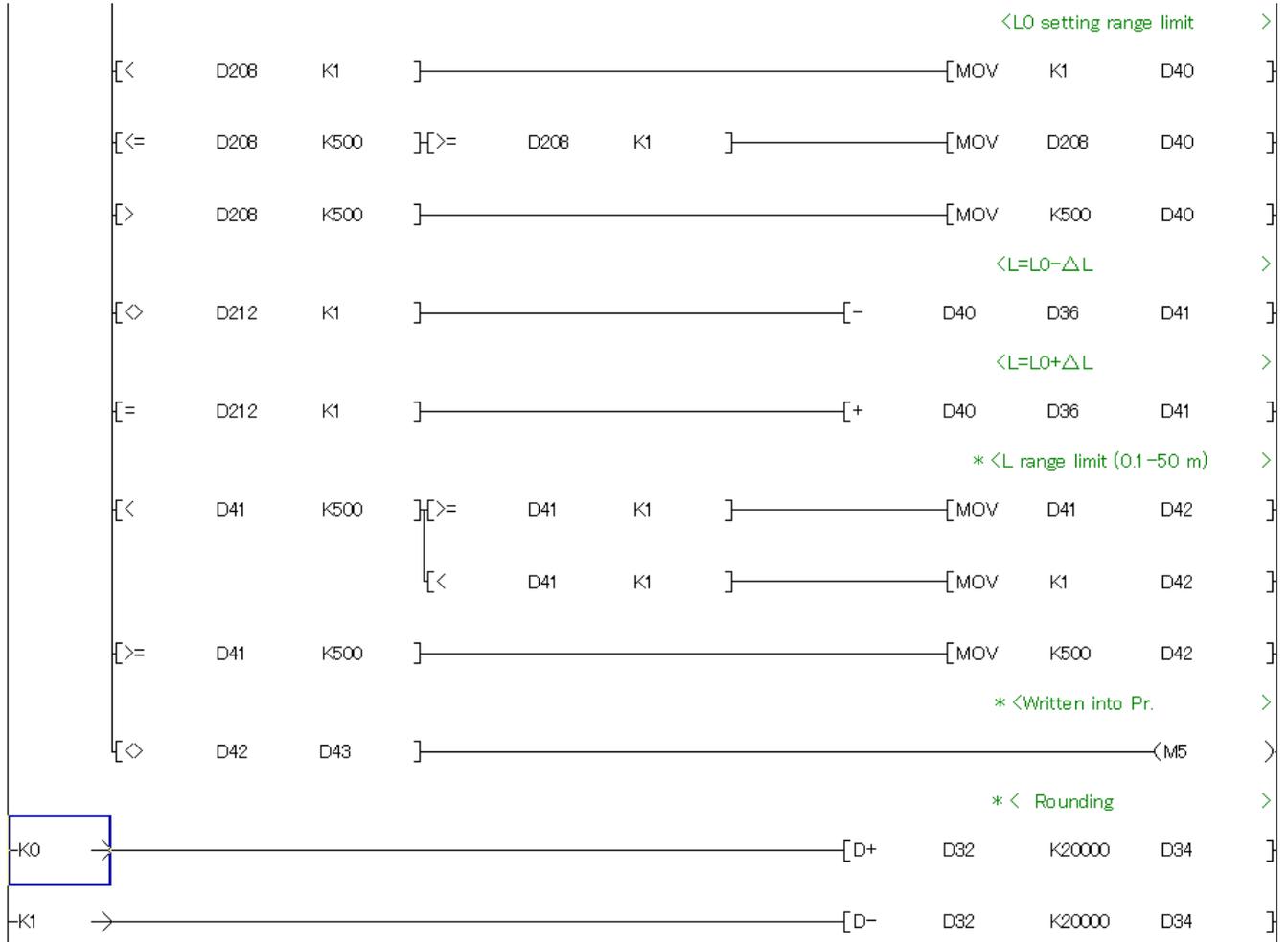
Device No.	Description	Device No.	Description	Type
M0	Completion of cumulative pulse, number of encoder pulses, gear ratio, and reading	D0	Cumulative pulse	32 bits
M1	Calculation completion of drum diameter and PPR	D2	Cumulative pulse upper	16 bits
M2	Gear ratio calculation command	D4	Cumulative pulse lower	16 bits
M3	Command not to calculate the gear ratio	D10	Number of encoder pulses	16 bits
M4	Gear ratio calculation completion	D12	Drum diameter	16 bits
M5	Wire length calculation completion	D14	Gear ratio (numerator)	16 bits
M6	Writing command	D16	Gear ratio (denominator)	16 bits
M7	Writing judgment	D20	During calculation of wire length 1	32 bits
M8	Writing judgment	D30	During calculation of wire length 2	32 bits
		D32	During calculation of wire length 3	16 bits
		D34	During calculation of wire length 4	32 bits
		D36	During calculation of wire length 5	32 bits
		D40	Wire length initial value	16 bits
		D41	During calculation of wire length 6	16 bits
		D42	Wire length calculation result	16 bits
		D43	Wire length calculation storage	16 bits
		D207 (Pr.1151)	Drum diameter	16 bits
		D208 (Pr.1152)	Initial wire length	16 bits
		D209 (Pr.1153)	Gear ratio numerator	16 bits
		D210 (Pr.1154)	Gear ratio denominator	16 bits
		D211 (Pr.1155)	Number of encoder pulses PPR	16 bits
		D212 (Pr.1156)	Rotation direction judgment	16 bits



## Calculating wire length



Processing initial value and rotation direction



Writing wire length to Pr.1077



\*For using the sample program in the actual system, verify sufficiently that the system can be controlled properly.