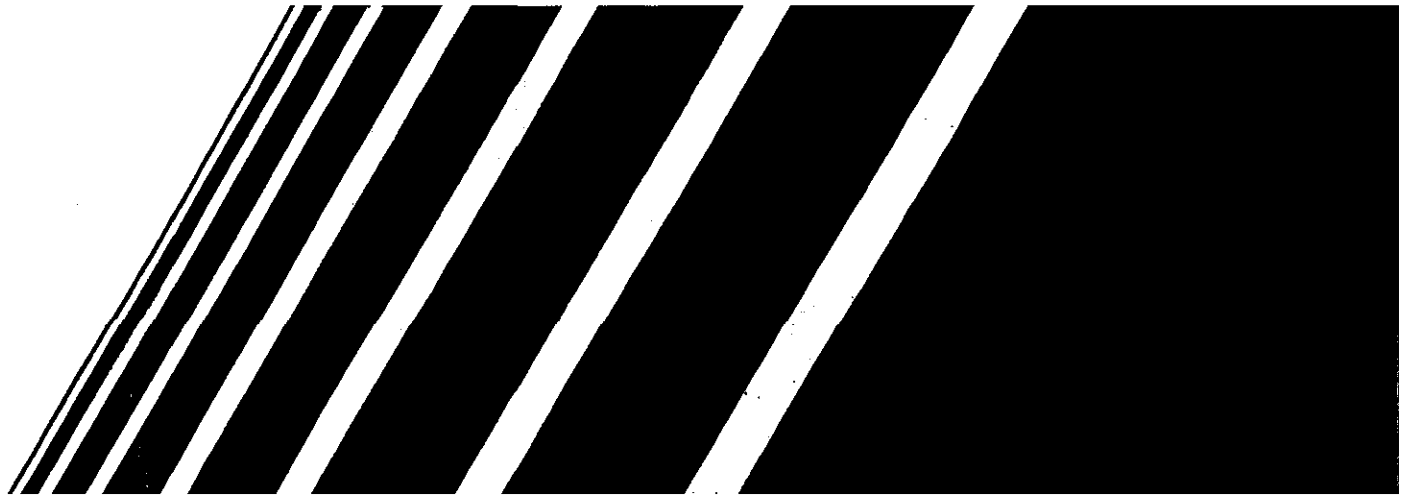
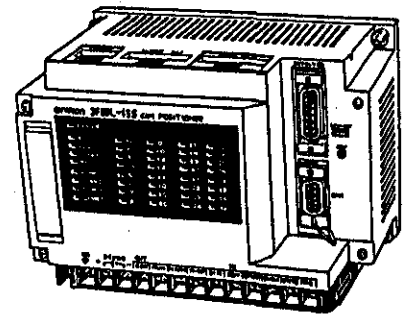


OMRON



USER'S MANUAL



MODEL **3F88L-155**
CAM POSITIONER

3F88L-155

OUTLINE

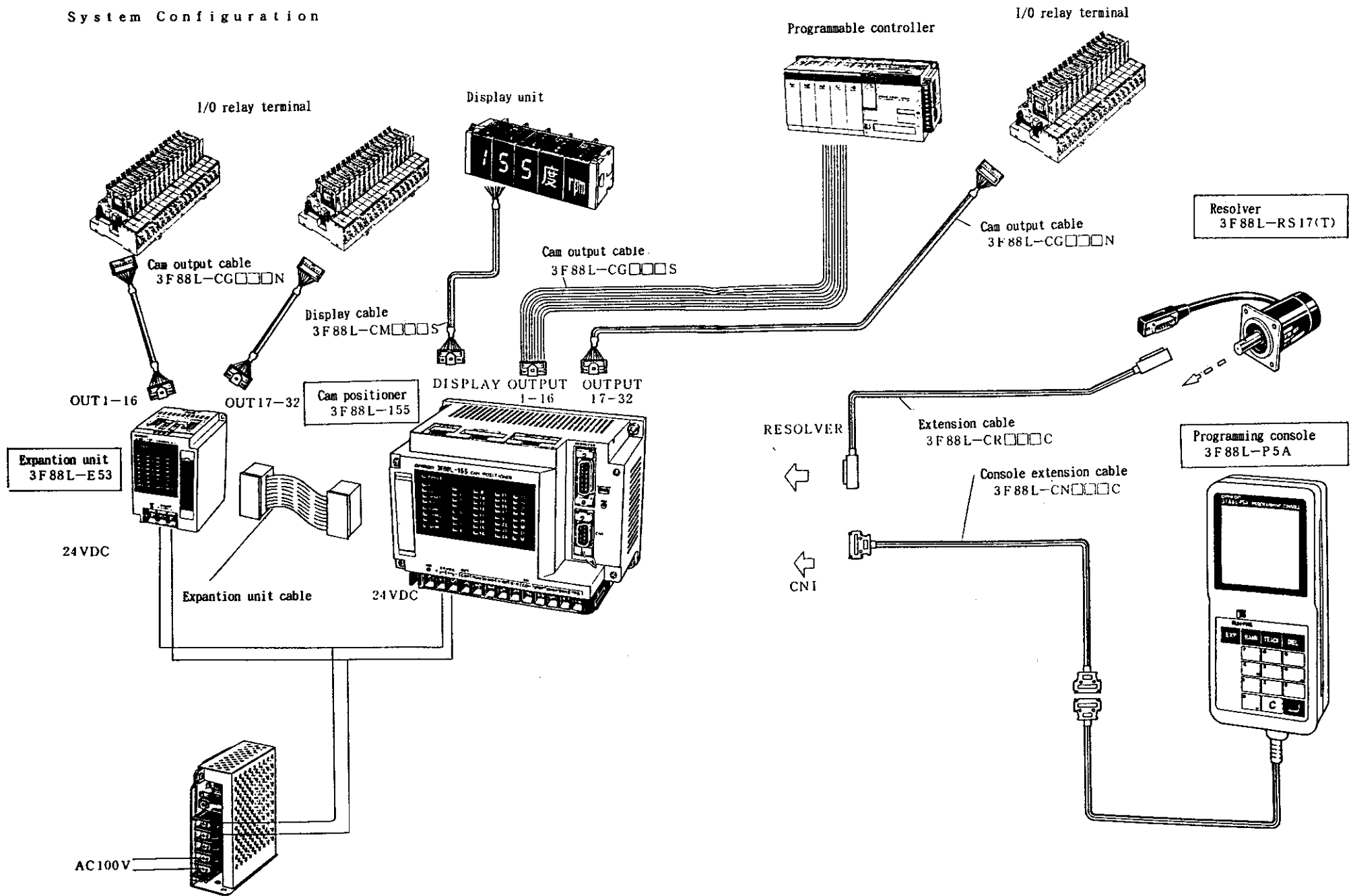
The 3F88L-155 Cam Positioner incorporates an absolute resolver that measures angles. When the resolver detects a preset angle, *ON* or *OFF* output will be obtained. Unlike conventional mechanical cam positioners, the 3F88L-155 has the following features:

- (1) The separate Programming Console allows the user to program the 3F88L-155 with ease.
- (2) It is possible to transfer the user's program to more than one 3F88L-155 Cam Positioner by using the memory of the Programming Console.
- (3) The 3F88L-155 itself incorporates a cam output capacity of 32 points. If the Expansion Unit is connected to the 3F88L-155, a cam output of 64 points is available.
- (4) Through an external signal, it is possible to select one out of a total of four programs to operate the 3F88L-155 (two banks are available when the Expansion Unit is connected to the 3F88L-155).
- (5) The cable connecting the resolver (angle detector) and the 3F88L-155 can be extended up to 100 m, which means the control of the 3F88L-155 from a remote site is possible.

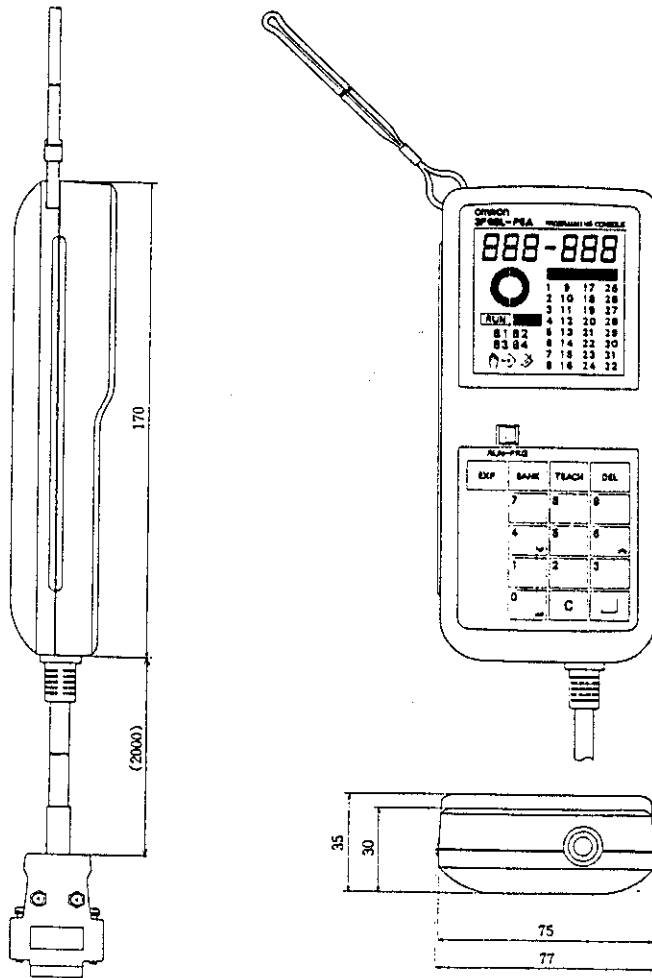
General Specifications

| | |
|-----------------------|---|
| Supply voltage | DC24V \pm 10% |
| Power consumption | 13VA max. |
| Insulation resistance | 20M Ω min. (at 500VDC) bwtween the external terminals and case |
| Dielectric strength | 1000VAC 50/60 Hz for 1 min between the external terminals and case |
| Noise immunity | 528Vp-p (26.4v*20), pulse width : 100ns , rise time : 1 μ s |
| Vibration resistance | 10 to 150 Hz , 1.0mm amplitude or 7G , X, Y and Z directions for 16 minutes each |
| Shock resistance | 30G three times each in X, Y, and Z directions |
| Ambient temperature | Operating : 0 to 55 $^{\circ}$ C Storage : -20 to 75 $^{\circ}$ C |
| Humidity | 35% to 85% (with no condensation) |
| Atmosphere | Must be free from corrosive gas |
| Grounding | Less than 100 Ω |

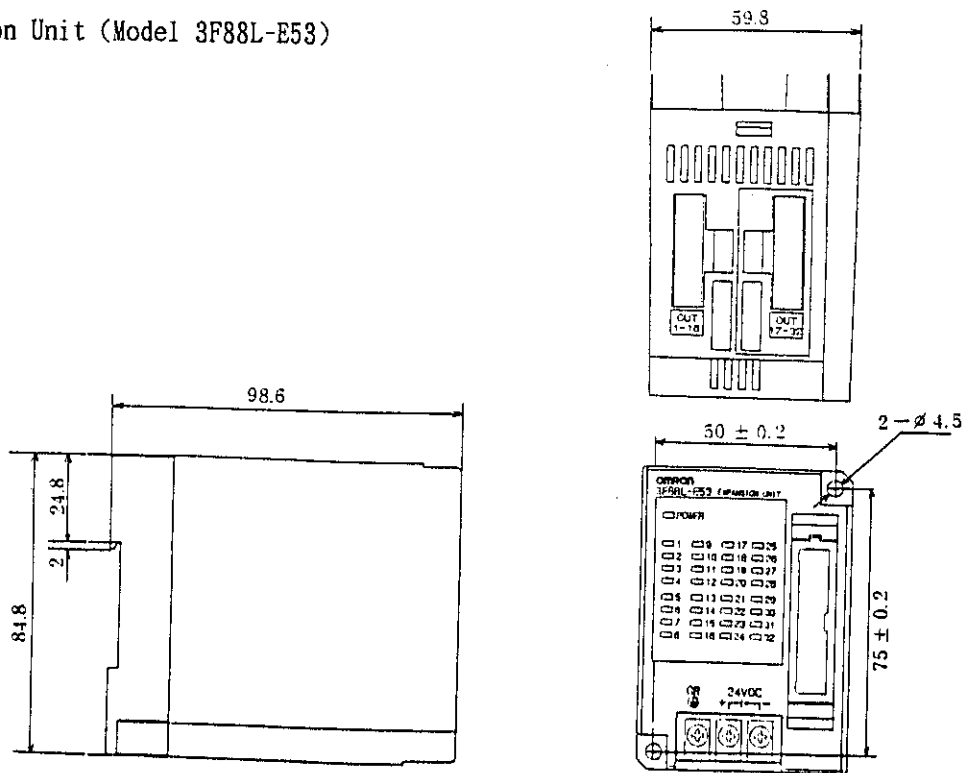
System Configuration



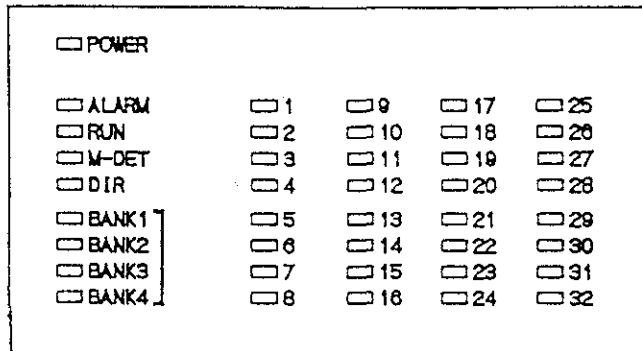
Programming Console (Model 3F88L-P5A)



Expansion Unit (Model 3F88L-E53)

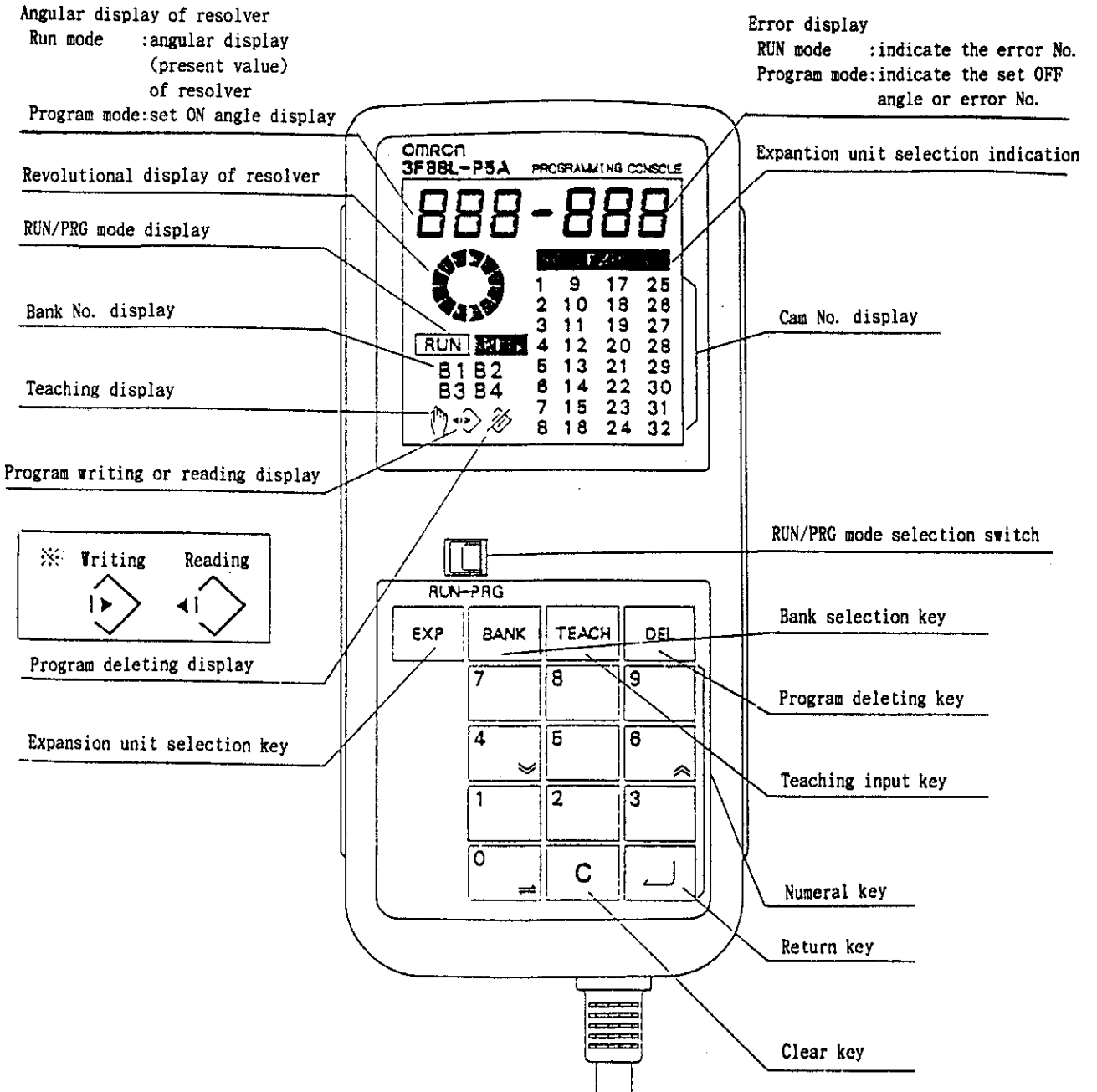


Front of Main Panel

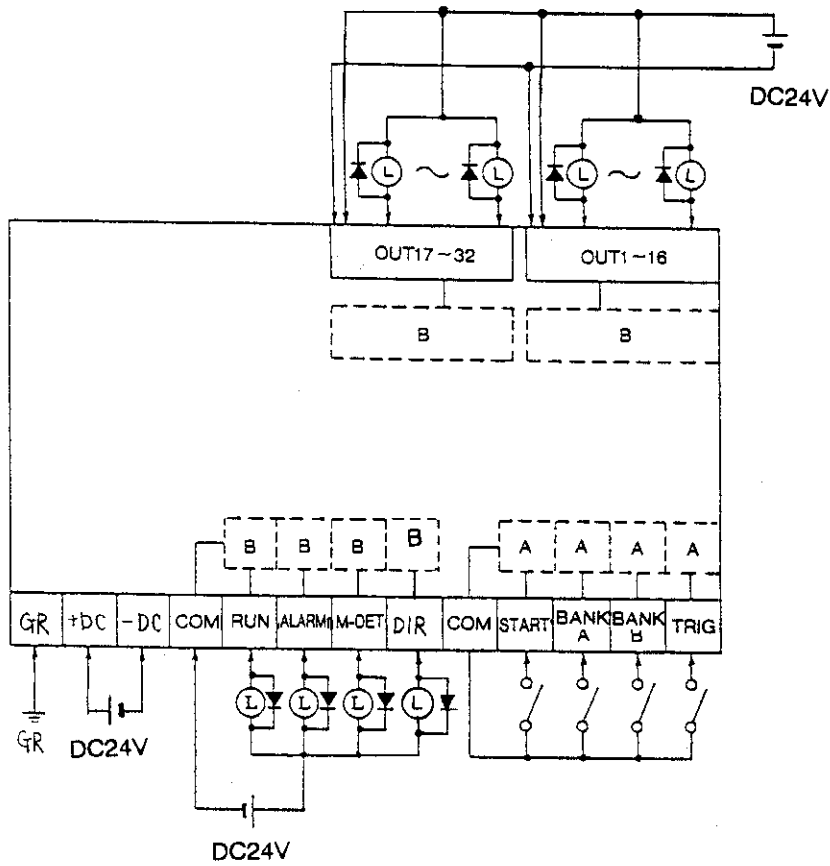


| | |
|---------|---|
| POWER | Control Power input |
| ALARM | Alarm output |
| RUN | RUN output |
| M-DET | Resolver revolution output (OFF for rotation speed of less than 4 rpm.) |
| DIR | Rotation of setting revolution (CW – CCW Switch) |
| BANK1-4 | Select BANK output |
| 1-32 | Cam output |

Programming console Display

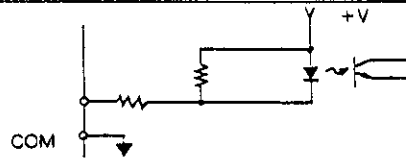


Connection diagram of cam output and each terminal



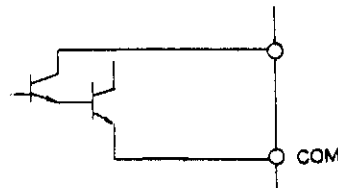
A section details (Input signals)

| Capacity | | Circuit configuration drawing |
|-----------------|----------|-------------------------------|
| Maximum voltage | DC26.4V | |
| Maximum current | 9mA | |
| ON current | 5mA min. | |
| OFF current | 3mA max. | |

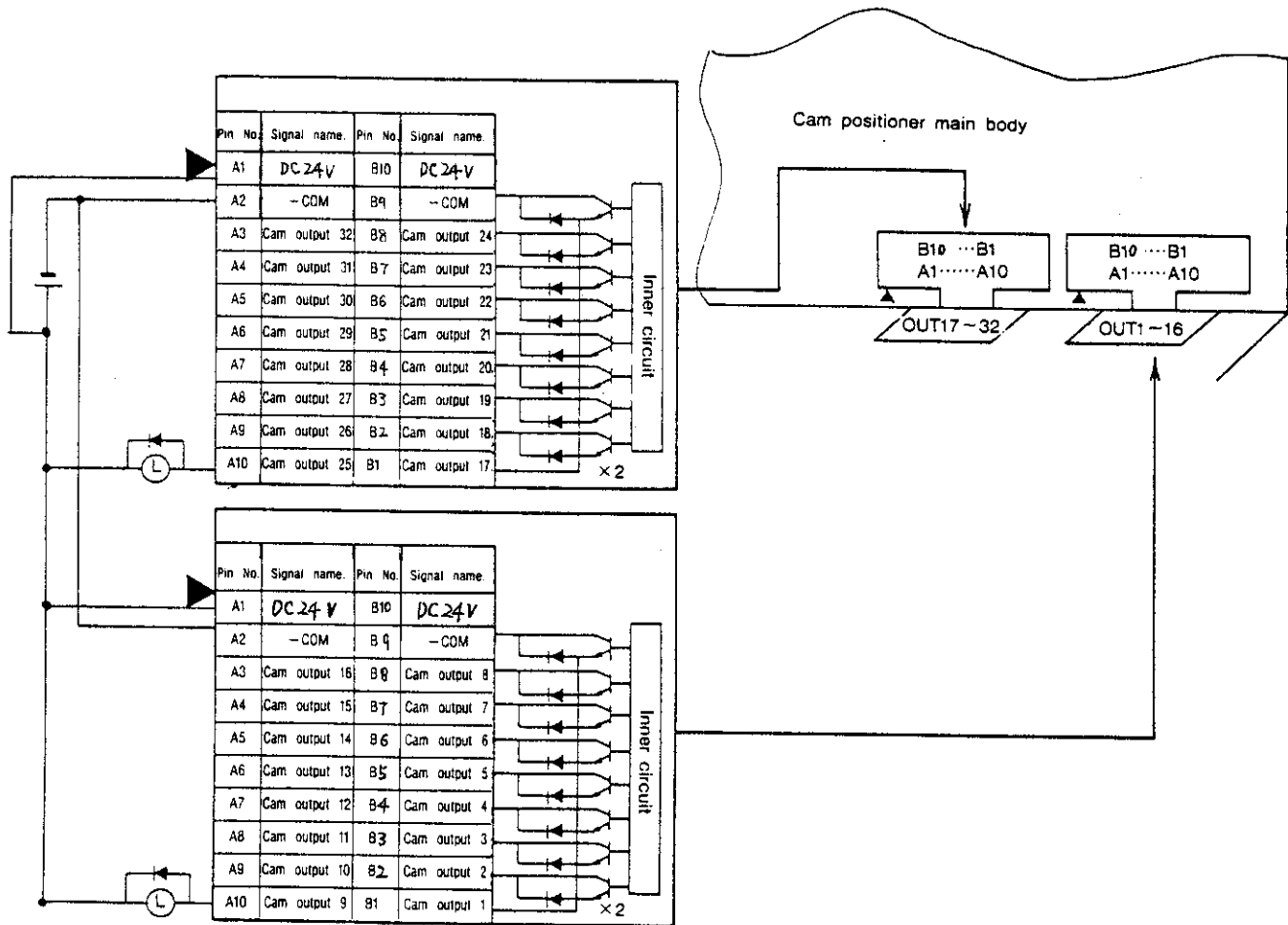


B section details

| Capacity | | Circuit configuration drawing |
|-----------------------------|---------------|-------------------------------|
| Maximum open/close capacity | DC26.4V/300mA | |
| Leak current | 100µA max. | |
| Saturation voltage | 2V max. | |
| Transistor ON delay time | 2µsec | |
| Transistor OFF delay time | 3µsec | |



Connection of cam output



Cable color, connector pin no. and name of output signals are as follows:

| Pin no. | Signal name | | Color | Pin no. | Signal name | | Color |
|---------|---------------|---------------|--------|---------|--------------|---------------|--------|
| A1 | DC24V | | Brown | B10 | DC24V | | Brown |
| A2 | -COM | | Red | B9 | -COM | | Red |
| A3 | Cam output 16 | Cam output 32 | Amber | B8 | Cam output 8 | Cam output 24 | Amber |
| A4 | Cam output 15 | Cam output 31 | Yellow | B7 | Cam output 7 | Cam output 23 | Yellow |
| A5 | Cam output 14 | Cam output 30 | Green | B6 | Cam output 6 | Cam output 22 | Green |
| A6 | Cam output 13 | Cam output 29 | Blue | B5 | Cam output 5 | Cam output 21 | Blue |
| A7 | Cam output 12 | Cam output 28 | Purple | B4 | Cam output 4 | Cam output 20 | Purple |
| A8 | Cam output 11 | Cam output 27 | Grey | B3 | Cam output 3 | Cam output 19 | Grey |
| A9 | Cam output 10 | Cam output 26 | White | B2 | Cam output 2 | Cam output 18 | White |
| A10 | Cam output 9 | Cam output 25 | Black | B1 | Cam output 1 | Cam output 17 | Black |

Note 1 : The above table are looked wires from cable leading side.

Note 2 : "▲" marked side are "A1".

OPERATION

Summary of operations

| | Operation item | Function | Mode | Operation procedure | |
|------------------|----------------------------|-------------------------------|--|--|---|
| Initial settings | 1 | Setting rotation direction | | CCW-CW CCW-CW <input type="checkbox"/> or <input type="checkbox"/> (Shift the Cam Positioner CCW-CW switch) | |
| | 2 | Setting zero position value | PRG | TEACH → 1 → 3 → → Corrected value *1 → Delete → DEL → | |
| | 3 | Zero position correction | PRG | ADJ ← (Press "ADJ" switch on the Cam Positioner) | |
| | 4 | Setting system parameters | ① Effective/ineffective adjustment operation [Fun 11] | PRG | TEACH → 1 → 1 → → 1 → → DEL → Setting to "effective" Setting to "ineffective" |
| | | | ② Effective/ineffective mode change switch (RUN ↔ PRG) | PRG | TEACH → 1 → 1 → → 2 → → DEL → Setting to "effective" Setting to "ineffective" |
| | | | ③ Select system bus module master station [Fun 11] | PRG | TEACH → 1 → 1 → → 3 → → 4 → → DEL → |
| | | | ④ Effective/ineffective latching cam output status just before change from RUN mode to PRG mode. | PRG | TEACH → 1 → 1 → → 5 → → DEL → Setting to "effective" Setting to "ineffective" |
| | 5 | Registration of secret number | PRG | TEACH → DEL × 3 → Secret No. *1 Registration → Delete → DEL → | |
| | 6 | Setting external display mode | PRG | TEACH → 1 → 5 → → Select display → Display selection: 1. Automatic change display 2. Current angle fixed display 3. Number of rotation fixed display | |
| | Programming basic function | 7 | Bank changeover | PRG | BANK BANK |
| 8 | | Program clear | PRG | TEACH → 2 → 0 → → DEL → [Fun 20] | |
| 9 | | Program write | PRG | Cam number *1 → → ON angle *1 → → OFF angle *1 → | |
| 10 | | Program read | PRG | Cam number *1 → | |
| 11 | | Program delete | PRG | Cam number *1 → → DEL → | |

*1: Input 1 to 3 digits numerical data.

| | Operation item | Function | Mode | Operation procedure |
|-------------------------------|------------------------|---|------|---|
| Programming basic function | 2 Program transfer | Transfer programs between the programming console and the Cam Positioner [Fun 14] | PRG | <p>(Transfer type 1: Writing 2: Reading 3: Verify 4: Check protect)</p> |
| | 3 End program | Mode change from PRG to RUN mode | PRG | <p>RUN-PRG</p> |
| Programming support functions | 4 Teaching input | Directly input ON angle and OFF angle via machine actual operation | PRG | |
| | 5 Pulse output program | Program even pitch pulse output in cam number 32. [Fun 12] | PRG | <p>Delete</p> |
| | 6 Cam protect | Prohibit program change such as writing and delete. [Fun 21] | PRG | <p>Delete</p> |
| | 7 Program transfer | Program transfer between the programming console and the Cam Positioner. Input of secret number is required. [Fun 04] | PRG | <p>(Transfer type 1: Writing 2: Reading 3: Verify 4: Check protect)</p> |
| | 8 Display inside data | Display zero position corrected value and number of program blocks | PRG | <p>Display zero position corrected value Number of blocks ... Number of blocks</p> |
| | 9 Adjustment operation | Fine adjust the Cam Positioner program ON/OFF angle during normal operation condition | RUN | |

*1: Input 1 to 3 digits numerical data.

Error Indication

| | |
|-----|--|
| E01 | Power failure during to transfer data from the Cam positioner to Programing console (1) Error clear (Push "C" key) (2) Program clear (Fun20) or program transfer (read) (Fun 04 or Fun 14) |
| E02 | Power failure during to transfer data from the Programing console to Cam positioner (1) Change PRG mode and error clear (Push " C " key) (2) Write user program (3) Program transfer (write) (Fun 04 or Fun 14) |
| E03 | Power failure during Writing zero position correction value (1) Change PRG mode and error clear (Push " C " key) (2) Setting zero position value (Fun 13) |
| E04 | Back up error (Programing console) (1) Error clear (Push "C" key) (2) Program clear (Fun20) or program transfer (read) (Fun 04 or Fun 14) |
| E05 | System error (Change system after power ON) (1) Power OFF and chack system or cable (2) Power ON |
| E10 | Disconnection of resolver cable (1) Change PRG mode and error clear (Push " C " key) (2) Power OFF and chack cable of resolver |
| E13 | Abnormal memory (Cam positioner) Change campositioner |
| E14 | R/D data renwal error (Resolver rotation speed over 800 rpm) (1) Change PRG mode and error clear (Push " C " key) |
| E19 | Abnormal Seacret No. (1) Change PRG mode and error clear (Push " C " key) |
| E21 | Overwrite error of cam No.32 program (Pulse output program,Fun12) (1) Error clear (Push " C " key) (2) Chack user program |
| E22 | Protected cam input prohibition |
| E23 | Overwrite error of program |

| | |
|-----|---|
| E24 | Zero position correction write error |
| E28 | Mis-entry into RUN/PRG mode |
| E31 | Programing console read error |
| E32 | Cam positioner write error |
| E33 | Reference error |
| E38 | Communication error (Campositioner-Programing console) |