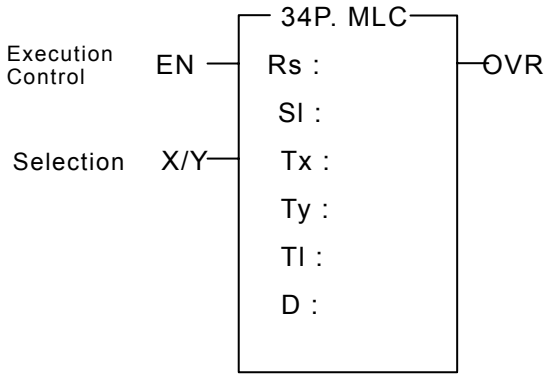
| FUN34 P MLC | Multiple Linear Conversion (MLC) | FUN34 P MLC |
|---|---|---|




Rs：Starting address of the source data
SI ：Quantity of source data, 1~64
Tx ：Starting address of X table
Ty ：Starting address of Y table
TI ：Quantity of table, 2~255
D ：Starting address to store the result

| Operand \ Range | HR | IR | ROR | DR | K |
|---|---|---|---|---|---|
| | R0 \| R3839 | R3840 \| R3903 | R5000 \| R8071 | D0 \| D3999 | |
| Rs | ○ | ○ | ○ | ○ | |
| SI | ○ | | ○ | ○ | 1~64 |
| Tx | ○ | | ○ | ○ | |
| Ty | ○ | | ○* | ○ | |
| TI | ○ | | ○ | ○ | 2～255 |
| D | ○ | | ○ | ○ | |

- When the analog input module being used for the analog measurement, the raw reading value of the analog input can be converted into the engineering range through this instruction for display or for proceeding control operation.
- For process measurement calibration, making the linear conversion for the engineering process variable, which the measurement value from the PLC's can be corrected by the value from the standard meter's through this instruction.
- When execution control "EN"=1or from 0→1( P instruction), this instruction will perform the multiple linear conversion operation according to the selection of X/Y input; where Rs is the starting address of the source data, SI is the quantity of source data for conversion, Tx is the starting address of X conversion parameter table, Ty is the starting address of Y conversion parameter table, TI is the quantity of X/Y table, D is the starting address to store the converted result.
- When executing and selection X/Y=0, it will compare the source data with the entities of Tx table to find the corresponding location in Tx table (The entities in Tx table must be in ascending sequence), and then calculate the linear conversion according to the located section of Tx and Ty table;
  When executing and selection X/Y=1, it will compare the source data with the entities of Ty table to find the corresponding location in Ty table (The entities in Ty table can either be in ascending or descending sequence), and then calculate the linear conversion according to the located section of Ty and Tx table.
- When the source data is out of all entities of table, OVR=1.
- It wouldn't execute this instruction if illegal SI or TI.

| FUN34 P MLC | Multiple Linear Conversion (MLC) | FUN34 P MLC |
|---|---|---|

Expression:

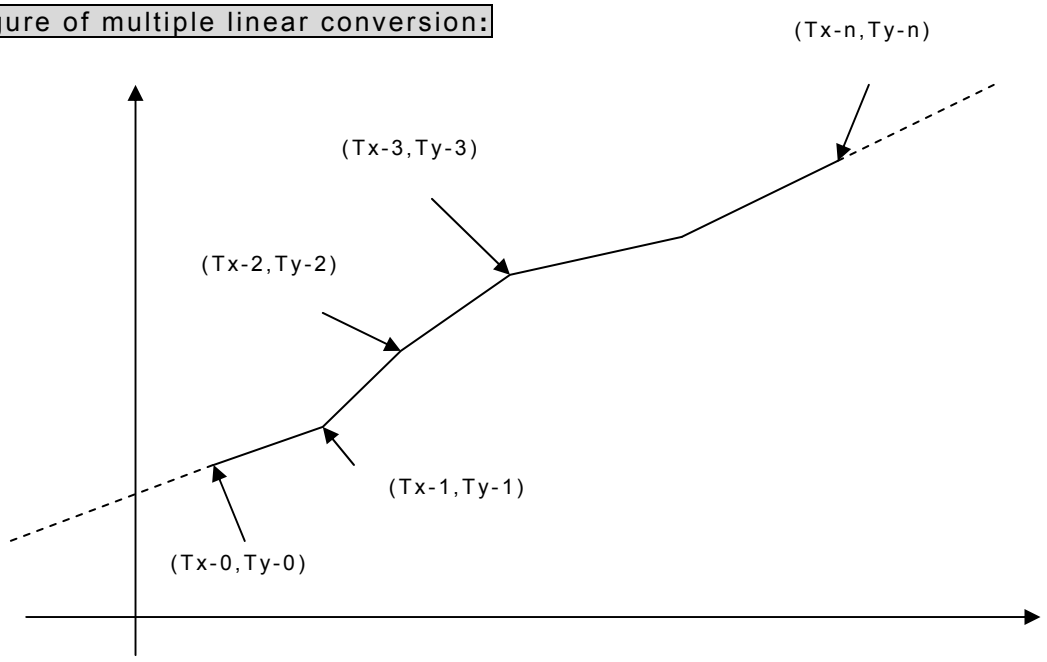
. The entities of Tx conversion parameter table must be in ascending sequence to have correct linear conversion; the entities of Ty conversion parameter table can either be in ascending or descending sequence. When executing this instruction, it will search the located section by comparing entities of the table with source data, and then calculate the linear conversion according to the following expression:

$Vy = (Vx - Tx_n) \times (Ty_n+1 - Ty_n / Tx_n+1 - Tx_n) + Ty_n$ if X/Y=0

$Vx = (Vy - Ty_n) \times (Tx_n+1 - Tx_n / Ty_n+1 - Ty_n) + Tx_n$ if X/Y=1

.Value of Vy、Vx、Tx_n、Tx_n+1、Ty_n、Ty_n+1 must be -32768～32767

Figure of multiple linear conversion:



| FUN34 P MLC | Multiple Linear Conversion (MLC) | FUN34 P MLC |
|---|---|---|

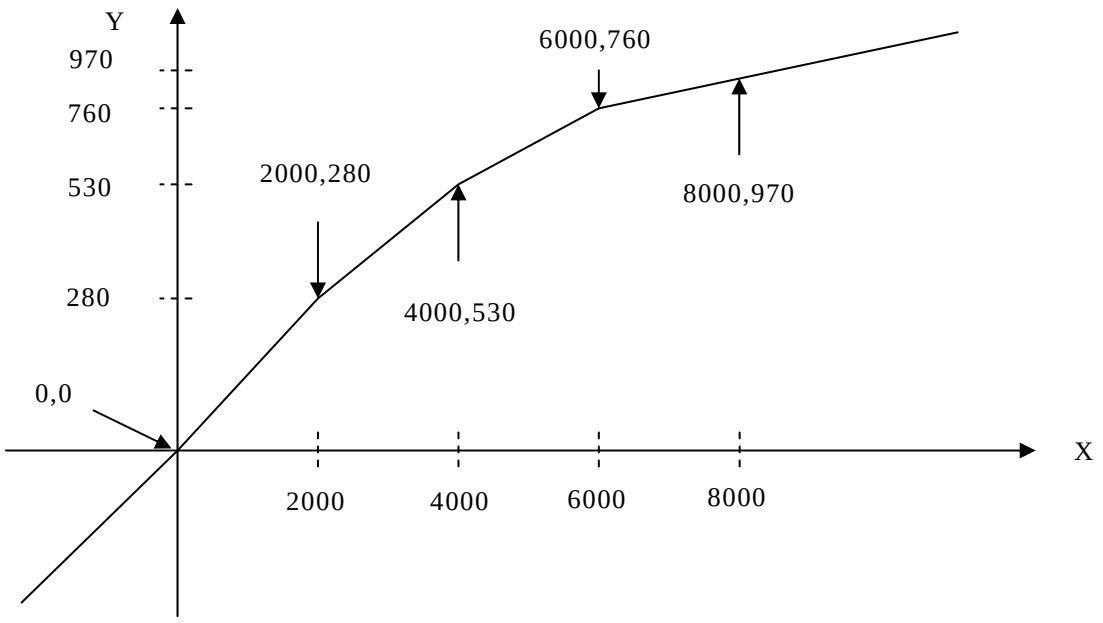
Example 1 :

Description：When M10=1、M11=0, R0 is the starting address of source data、R99 is the quantity of source data, R1000 is the starting address of Tx conversion parameter table, R2000 is the starting address of Ty conversion parameter table、R199 is the quantity of table; the source data R0~R5 will be calculated the linear conversion according to Tx and Ty table between four sections, then store the results into D0～D5.

Status Monitoring

| Ref. No. | Status | Data | Ref. No. | Status | Data | Ref. No. | Status | Data | Ref. No. | Status | Data |
|---|---|---|---|---|---|---|---|---|---|---|---|
| R1000 | Decimal | 0 | R2000 | Decimal | 0 | R0 | Decimal | 1000 | D0 | Decimal | 140 |
| R1001 | Decimal | 2000 | R2001 | Decimal | 280 | R1 | Decimal | 2500 | D1 | Decimal | 342 |
| R1002 | Decimal | 4000 | R2002 | Decimal | 530 | R2 | Decimal | 5600 | D2 | Decimal | 714 |
| R1003 | Decimal | 6000 | R2003 | Decimal | 760 | R3 | Decimal | 7500 | D3 | Decimal | 917 |
| R1004 | Decimal | 8000 | R2004 | Decimal | 970 | R4 | Decimal | 8000 | D4 | Decimal | 970 |
| R199 | Decimal | 5 | | | | R5 | Decimal | 10000 | D5 | Decimal | 1180 |
| M10 | Enable | ON | M11 | Enable | OFF | R99 | Decimal | 6 | | | |

StatusPage0 StatusPage01 StatusPage2



| FUN34 P MLC | Multiple Linear Conversion (MLC) | FUN34 P MLC |
|---|---|---|

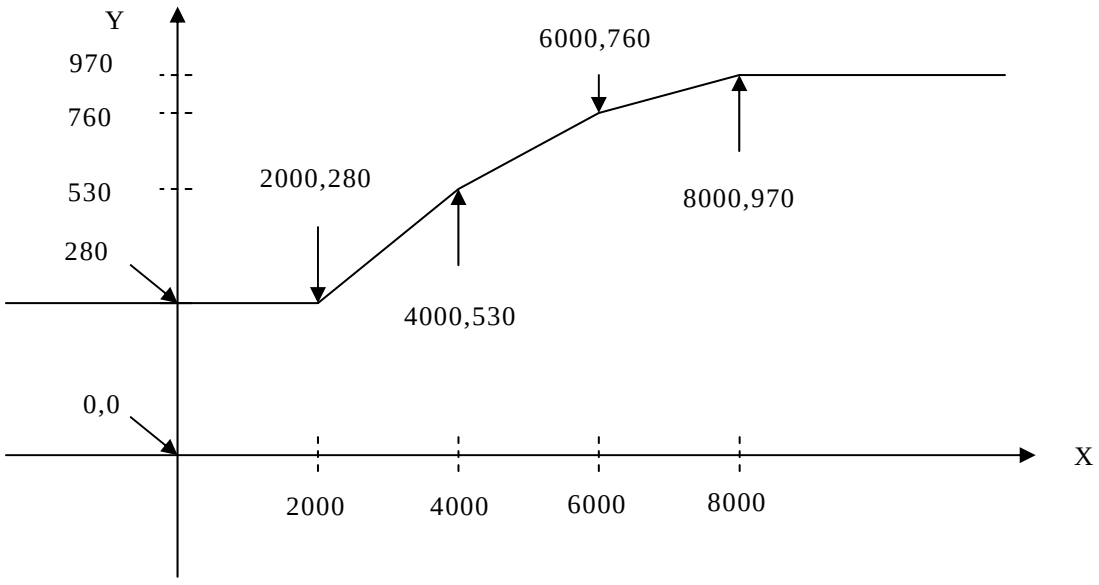
Example 2 :

Description：When M10=1、M11=0, R0 is the starting address of source data、R99 is the quantity of source data, R1000 is the starting address of Tx conversion parameter table, R2000 is the starting address of Ty conversion parameter table、R199 is the quantity of table; the source data R0~R5 will be calculated the linear conversion according to Tx and Ty table between five sections, then store the results into D0～D5.The result value is 280 if source data ≦ 2000; the result value is 970 if source data ≧ 8000.

Status Monitoring

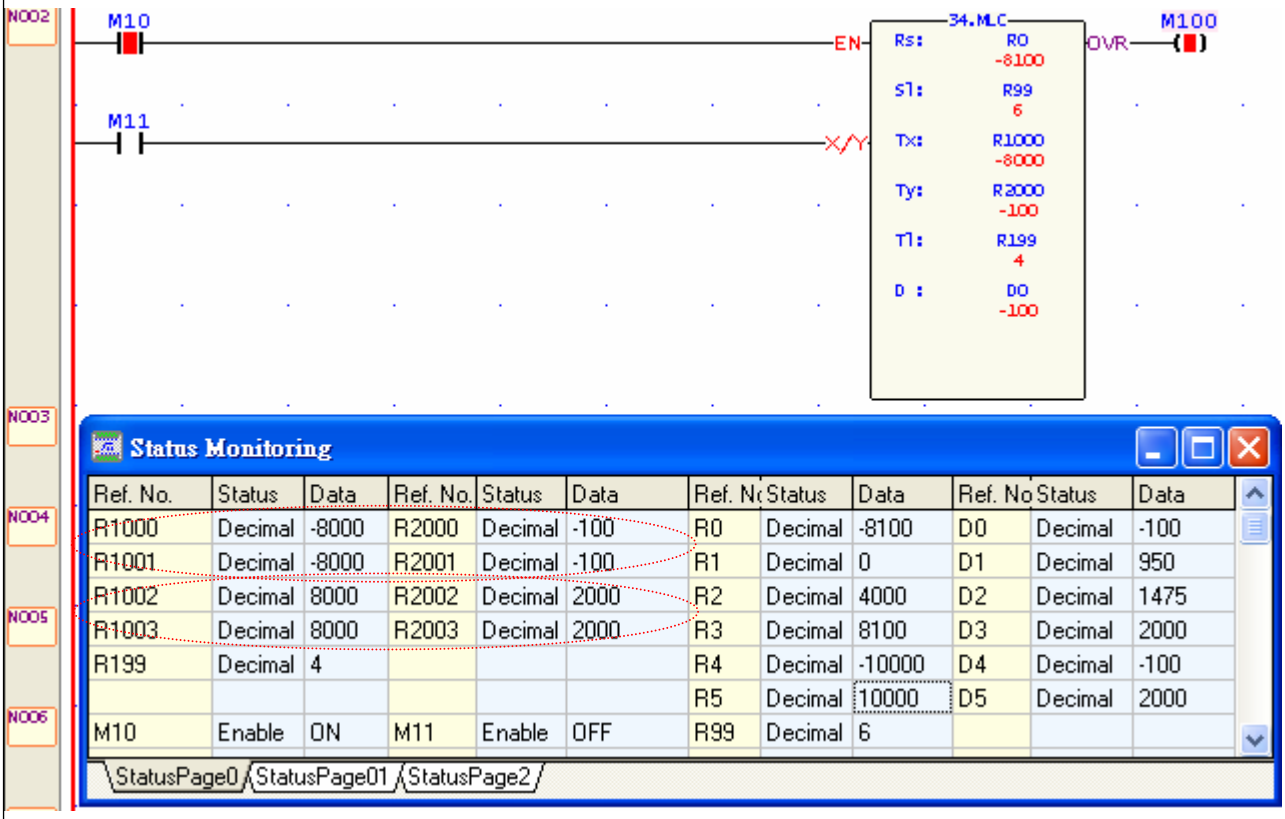
| Ref. No. | Status | Data | Ref. No. | Status | Data | Ref. No | Status | Data | Ref. No | Status | Data |
|---|---|---|---|---|---|---|---|---|---|---|---|
| R1000 | Decimal | 2000 | R2000 | Decimal | 280 | R0 | Decimal | 1000 | D0 | Decimal | 280 |
| R1001 | Decimal | 2000 | R2001 | Decimal | 280 | R1 | Decimal | 2000 | D1 | Decimal | 280 |
| R1002 | Decimal | 4000 | R2002 | Decimal | 530 | R2 | Decimal | 3800 | D2 | Decimal | 505 |
| R1003 | Decimal | 6000 | R2003 | Decimal | 760 | R3 | Decimal | 7500 | D3 | Decimal | 917 |
| R1004 | Decimal | 8000 | R2004 | Decimal | 970 | R4 | Decimal | 8000 | D4 | Decimal | 970 |
| R1005 | Decimal | 8000 | R2005 | Decimal | 970 | R5 | Decimal | 10000 | D5 | Decimal | 970 |
| R199 | Decimal | 6 | R99 | Decimal | 6 | M10 | Enable | ON | M11 | Enable | OFF |

StatusPage0 StatusPage01 StatusPage2



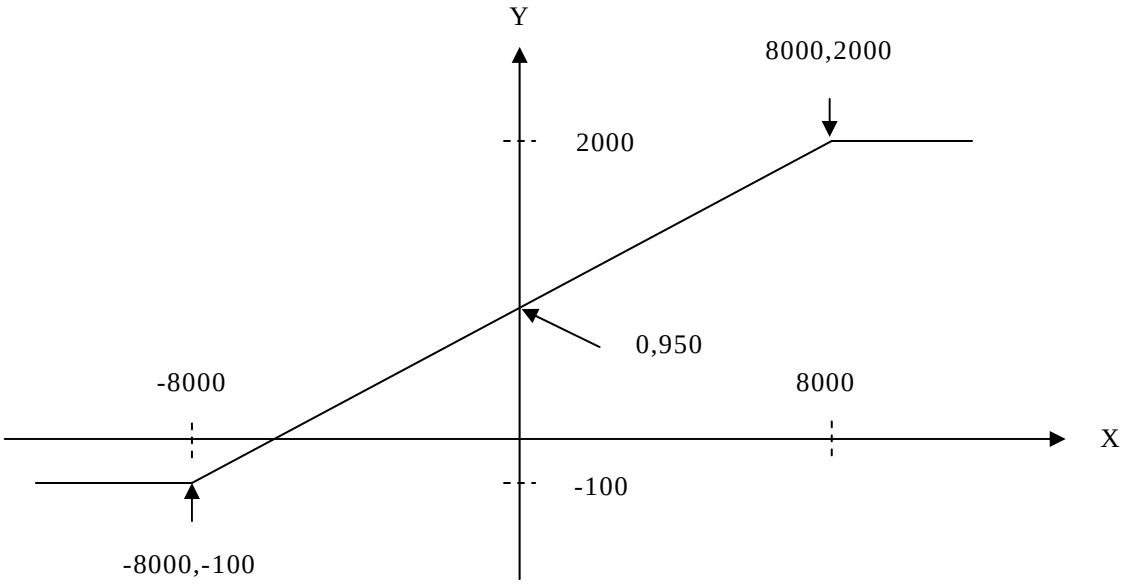
| FUN34 P MLC | Multiple Linear Conversion (MLC) | FUN34 P MLC |
|---|---|---|

Example 3 :



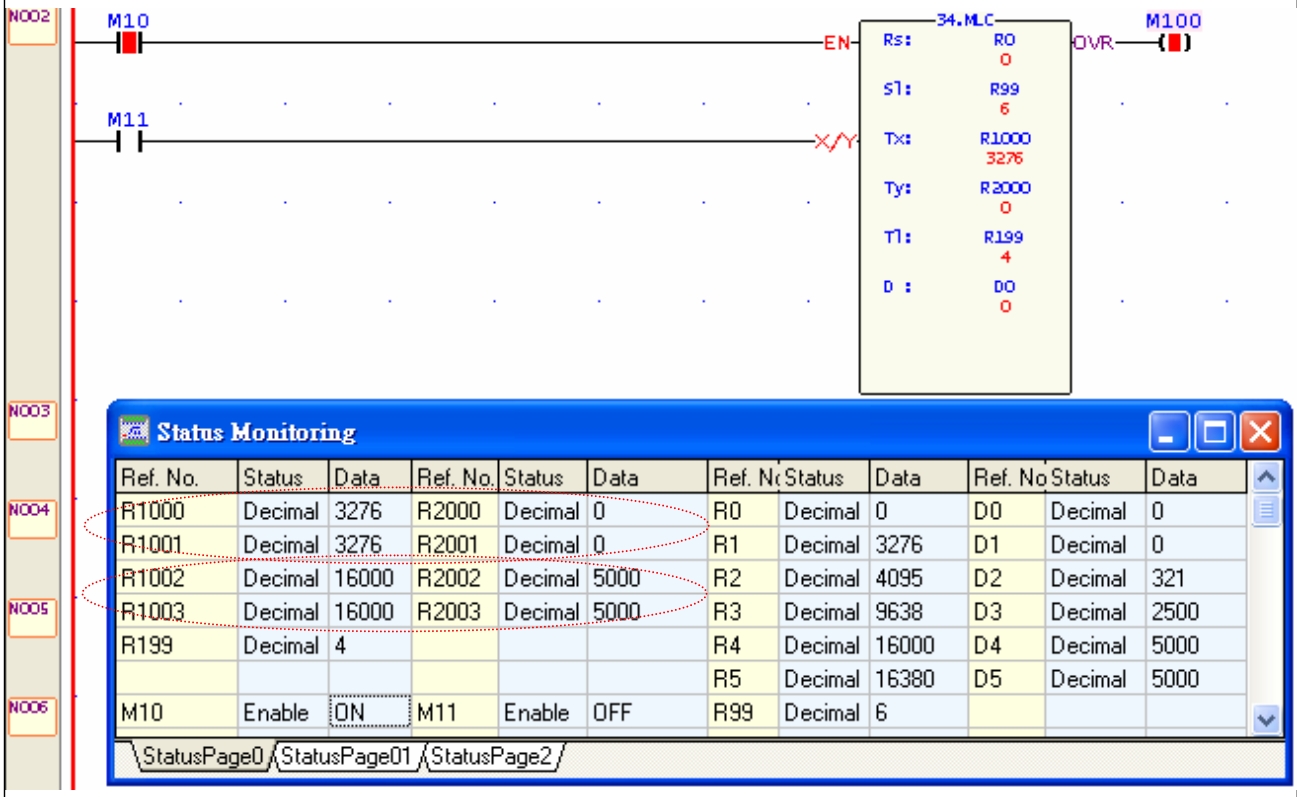

| Ref. No. | Status | Data | Ref. No. | Status | Data | Ref. No | Status | Data | Ref. No | Status | Data |
|---|---|---|---|---|---|---|---|---|---|---|---|
| R1000 | Decimal | -8000 | R2000 | Decimal | -100 | R0 | Decimal | -8100 | D0 | Decimal | -100 |
| R1001 | Decimal | -8000 | R2001 | Decimal | -100 | R1 | Decimal | 0 | D1 | Decimal | 950 |
| R1002 | Decimal | 8000 | R2002 | Decimal | 2000 | R2 | Decimal | 4000 | D2 | Decimal | 1475 |
| R1003 | Decimal | 8000 | R2003 | Decimal | 2000 | R3 | Decimal | 8100 | D3 | Decimal | 2000 |
| R199 | Decimal | 4 | | | | R4 | Decimal | -10000 | D4 | Decimal | -100 |
| | | | | | | R5 | Decimal | 10000 | D5 | Decimal | 2000 |
| M10 | Enable | ON | M11 | Enable | OFF | R99 | Decimal | 6 | | | |

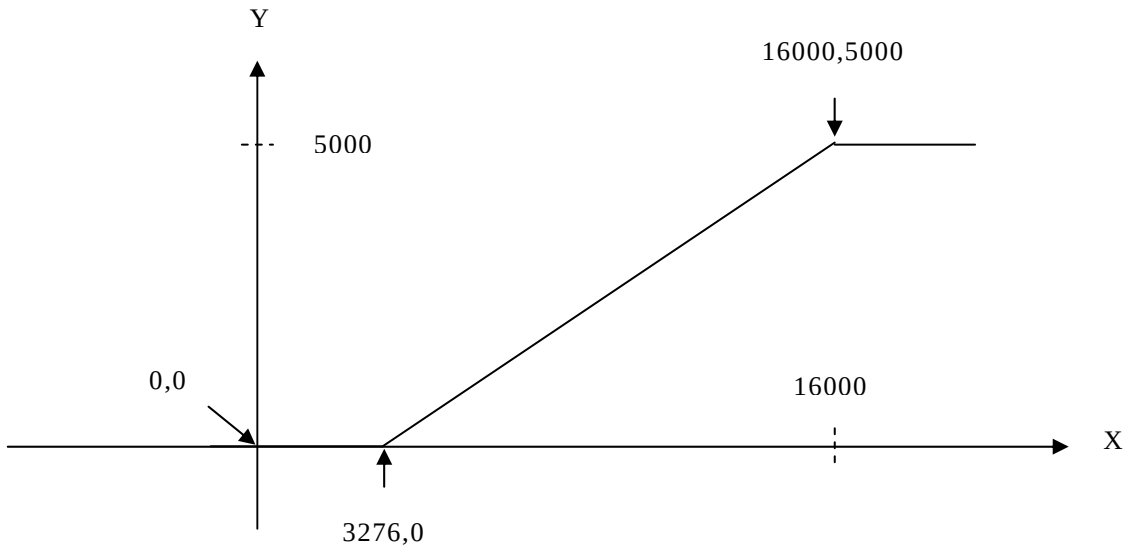
Description：When M10=1、M11=0, R0 is the starting address of source data、R99 is the quantity of source data, R1000 is the starting address of Tx conversion parameter table, R2000 is the starting address of Ty conversion parameter table、R199 is the quantity of table; the source data R0~R5 will be calculated the linear conversion according to Tx and Ty table between three sections, then store the results into D0～D5.The result value is -100 if source data ≦ -8000; the result value is 2000 if source data ≧ 8000.



| FUN34 P MLC | Multiple Linear Conversion (MLC) | FUN34 P MLC |
|---|---|---|

Example 4 :




| Ref. No. | Status | Data | Ref. No. | Status | Data | Ref. No | Status | Data | Ref. No | Status | Data |
|---|---|---|---|---|---|---|---|---|---|---|---|
| R1000 | Decimal | 3276 | R2000 | Decimal | 0 | R0 | Decimal | 0 | D0 | Decimal | 0 |
| R1001 | Decimal | 3276 | R2001 | Decimal | 0 | R1 | Decimal | 3276 | D1 | Decimal | 0 |
| R1002 | Decimal | 16000 | R2002 | Decimal | 5000 | R2 | Decimal | 4095 | D2 | Decimal | 321 |
| R1003 | Decimal | 16000 | R2003 | Decimal | 5000 | R3 | Decimal | 9638 | D3 | Decimal | 2500 |
| R199 | Decimal | 4 | | | | R4 | Decimal | 16000 | D4 | Decimal | 5000 |
| | | | | | | R5 | Decimal | 16380 | D5 | Decimal | 5000 |
| M10 | Enable | ON | M11 | Enable | OFF | R99 | Decimal | 6 | | | |

Description：When M10=1、M11=0, R0 is the starting address of source data、R99 is the quantity of source data, R1000 is the starting address of Tx conversion parameter table, R2000 is the starting address of Ty conversion parameter table、R199 is the quantity of table; the source data R0~R5 will be calculated the linear conversion according to Tx and Ty table between three sections, then store the results into D0～D5.The result value is 0 if source data ≦ 3276; the result value is 5000 if source data ≧ 16000.