JUMO ILPT100

Profile generator for tumblers, mixers and kneaders

B 70.0107
Operating Instructions

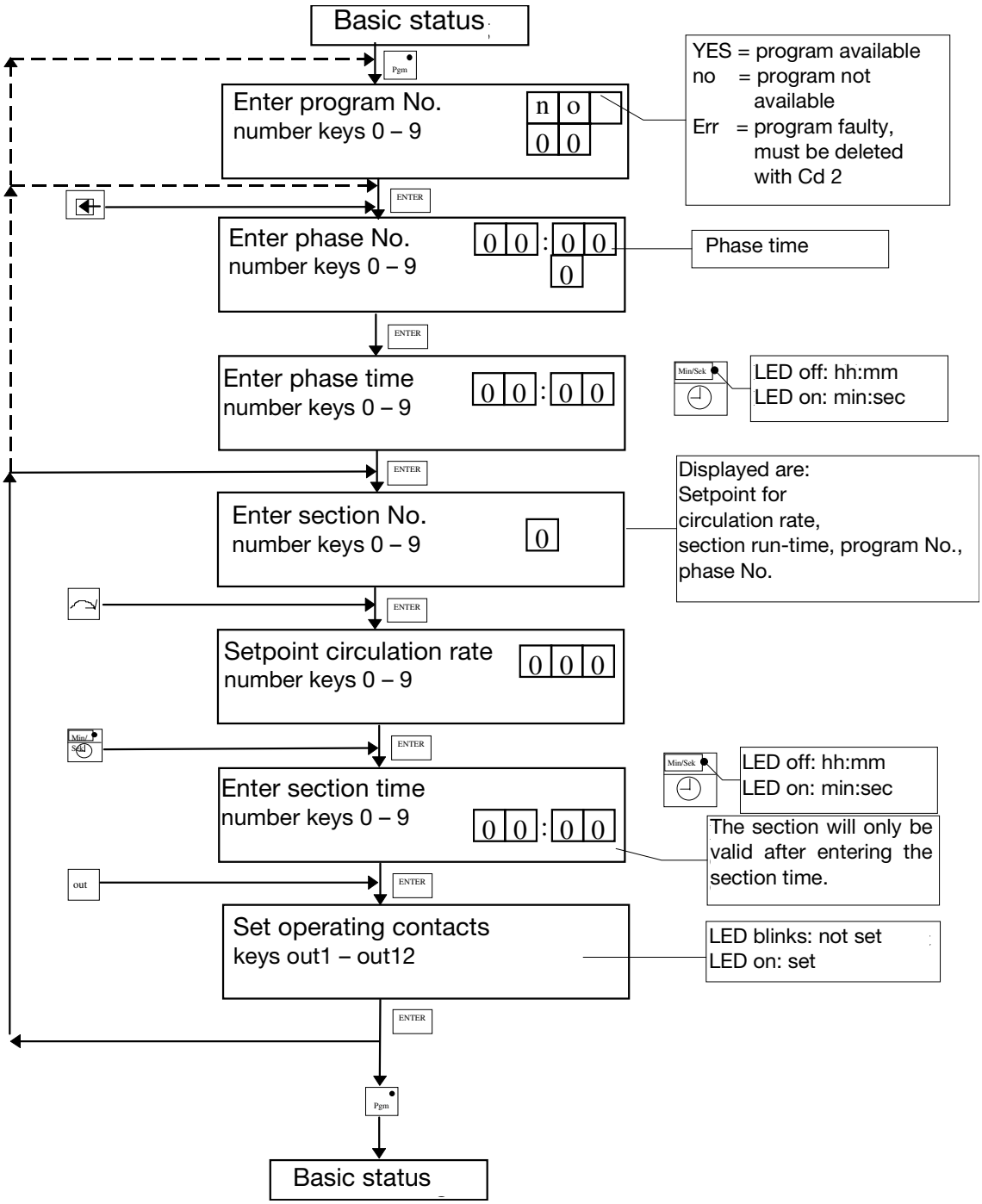
9.00/00387068

Contents

1.1 Profile program entry

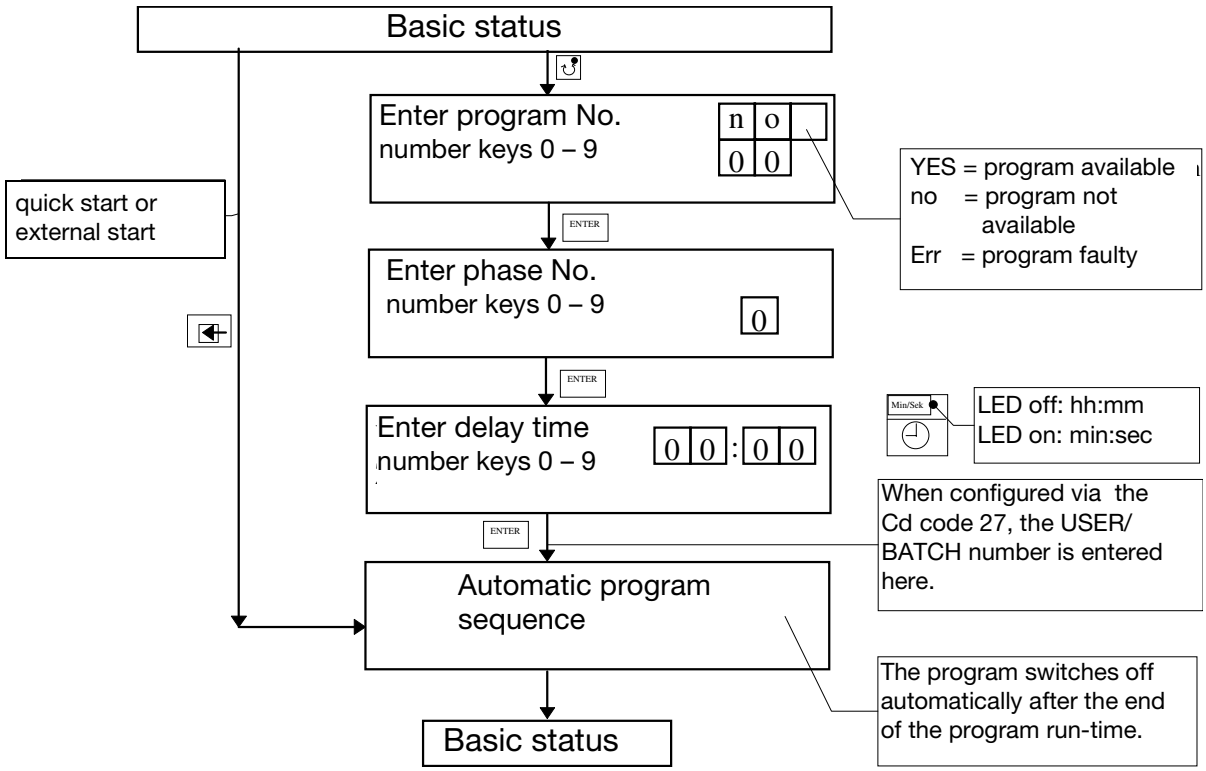
1.1.1 Entering setpoints and operating contacts

The program entry is always initiated with the “Pgm” key, which is also used to terminate it. A blinking display requests you to enter a value or a switching state. The “ENTER” key is used to acknowledge each entry. The program entry can be locked through an external input (default setting: logic input 2).



1.2 Automatic operation

1.2.1 Starting and cancelling the profile program



Display in automatic operation

- boiler temperature process value
- boiler vacuum process value
- circulation rate setpoint
- residual program run-time
- program No.
- phase No.
- section No.
- energized operating contacts: illuminated diodes in the number keys indicate that the output is activated.

Temporary alterations

alter circulation speed

alter residual phase time

alter operating contacts

total section run-time **(cannot be altered)**

The “Hand” key is used to pause the profile program sequence at any time. The LED in the “Hand” key lights up.

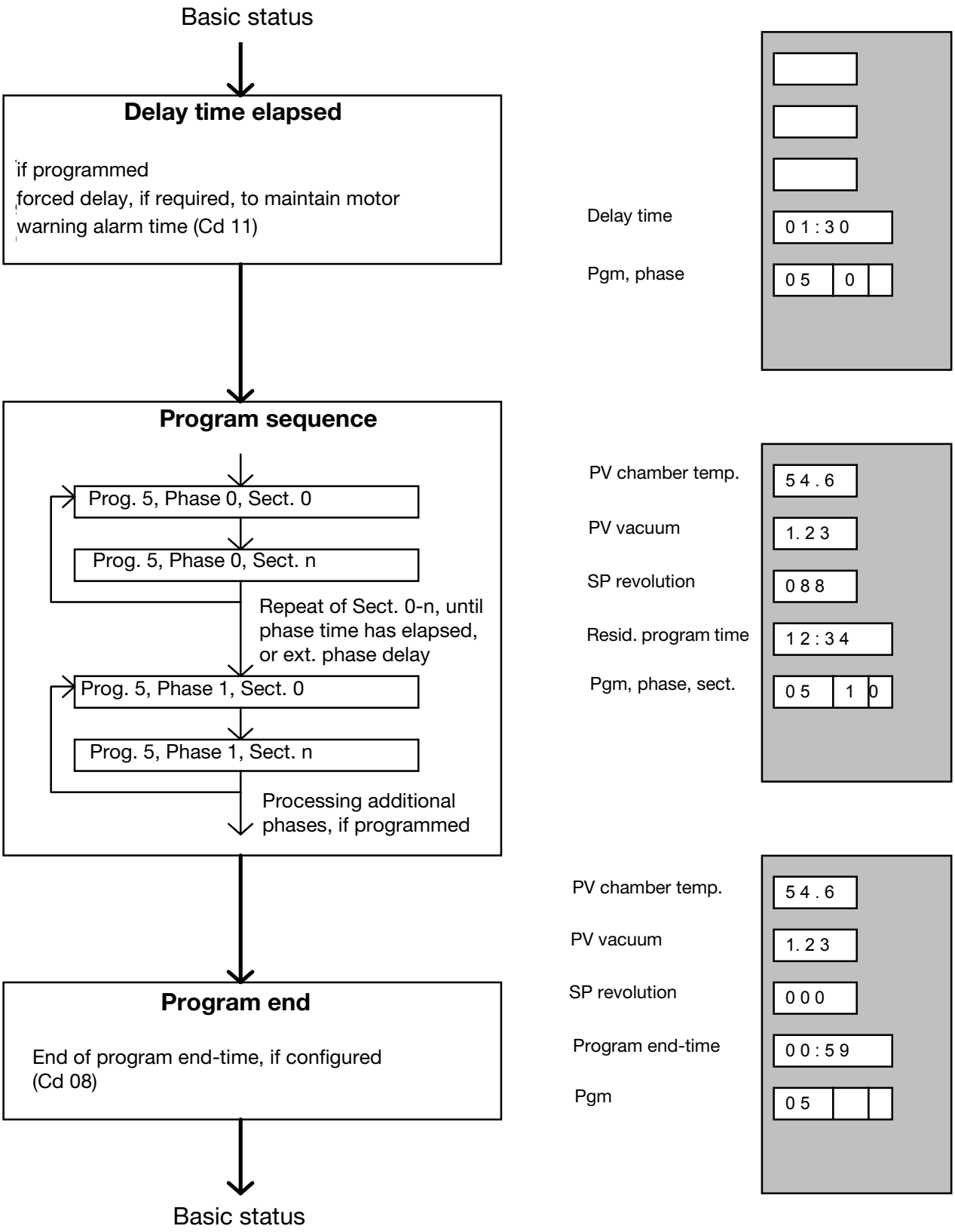
The profile program sequence can also be paused externally, via a logic input. In this operating status, the LED in the “Hand” key will blink.

⇨ The key will stop the program at any time.

⇨ The program can also be cancelled via a logic input (default setting: logic input 4)

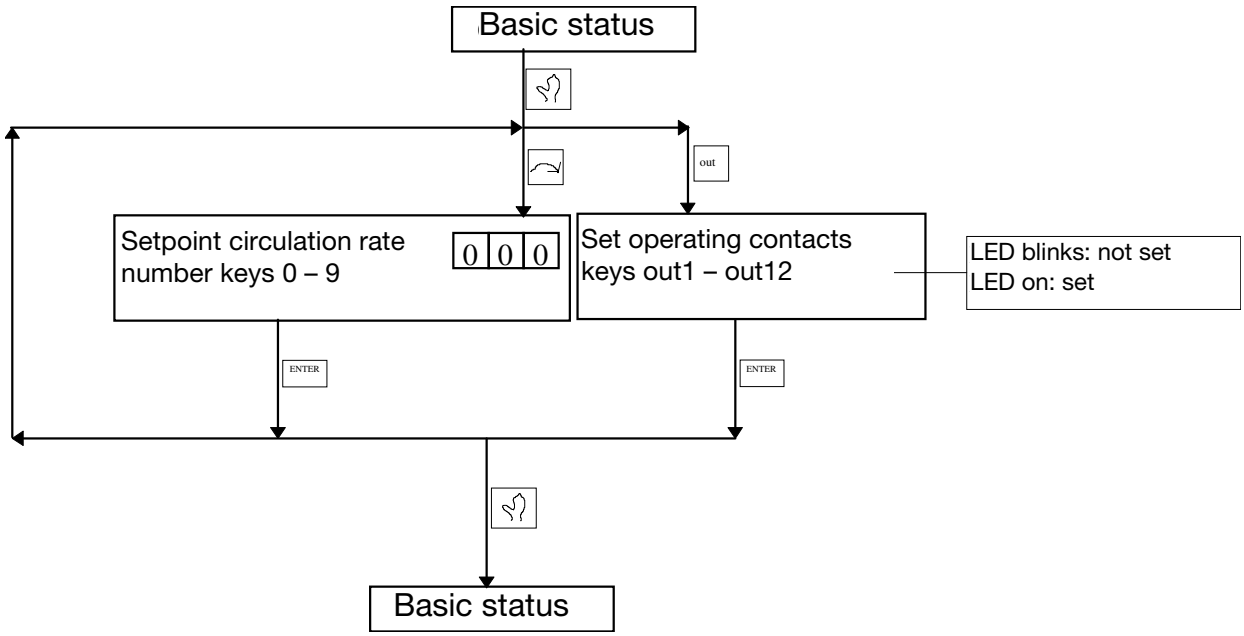
In automatic operation and in the basic status, the process value of the revolutions determined can be indicated in the lower display (the LED in the key is illumimated), by using the key.

1.2.2 Profile program sequence



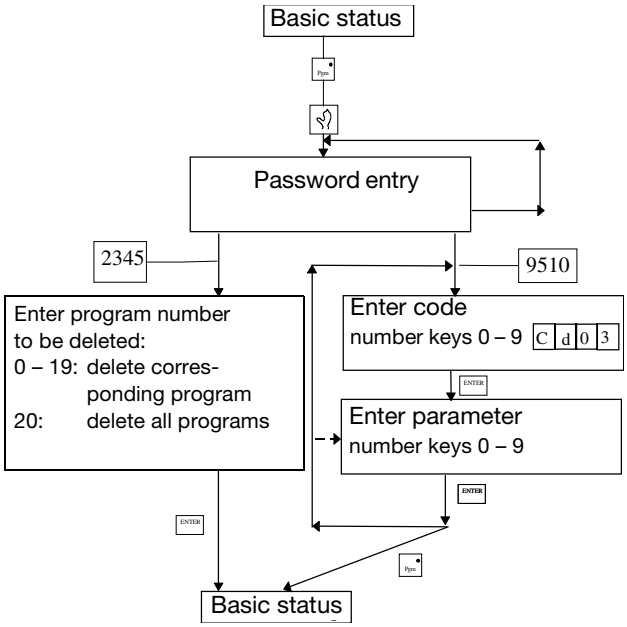
1.3 Manual operation

1.3.1 Starting and cancelling manual operation



In manual operation, the process value of the revolutions determined is shown automatically in the lower display. The key has no function here, the LED is illuminated.

1.4 Special functions



One code number often conceals several parameters. These are then shown one below another. In this case, too, the ENTER key is used for stepping on. With the limit comparators (Cd code 34 – 36), for example, the following assignment has to be made:

Display 1: LK1 temperature

Display 2: LK2 temperature

Display 3: LK1 vacuum

Display 4: LK2 vacuum

The relay assignment table (Cd 50) consists of 30 lines with two columns each. The lines are differentiated by the numbers 1 – 30. The first column (display 1) indicates the source function, the second column (display 2) the target relay according to the table on page 8.

1.5 Cd functions

Code No.	Function	Default
Cd-03	display range start (2)	
Cd-04	display range end (2)	
Cd-05	mode of circulation rate	
	0 = entry in 0 – 100 % for 0 – 10 V	default
	1 = entry in 0 – x rpm	
Cd-06	max. value of circulation rate	default 999
	in rpm	
	max. value corresponds to 10 V at the analog output	
Cd-07	display process value revolutions	
	0 = no function	
	1 = pulses at the count input	default
	2 = integral for the speed value	
Cd-08	profile program end-time 0 – 255 sec	default 60
Cd-09	accept factory default setting enter 15 and confirm with ENTER	
Cd-10	switch-off time of oper. function prior to section change 0 – 300 sec	default 5
Cd-11	warning alarm time for motor run (min : sec) 00:00 not active	default 0
Cd-12	warning duration 0 – 255 sec	default 0
Cd 17	display temperature at the terminals	
Cd-25	display software version	
Cd-27	batch and user number	
	0 = no number entry	default
	1 = entry of batch number	
	2 = entry of user number	
	3 = entry of batch and user number	

Cd 33	comparative values for limit comparators	
	0 = no function (limit comparator not activated)	
	1 = process value for temperature	
	2 = process value for vacuum	
	3 = process value for count input	
Cd-34	4 LK functions	
	0 = comparator (lk 7)	default
	2 = inverse comparator (lk 8)	
Cd-35	4 LK limit values (-19.9 to 99.9 °C)	default 0
Cd-36	4 LK differentials (00.0 to 09.9)	default 0
Cd-45	display and keypad test: enter value 1 and confirm, cancel with PGM + ENTER	
Cd-50	table of assignment for logic outputs -> relays	

1.6 Relay assignment table

(S)ource number	Meaning	Default relay output (**T**arget)
1	operating function 1	1
2	operating function 2	2
3	operating function 3	3
4	operating function 4	4
5	operating function 5	5
6	operating function 6	6
7	operating function 7	7
8	operating function 8	8
9	operating function 9	9
10	operating function 10	10
11	operating function 11	11
12	operating function 12	12
13	combination alarm	13
14	LK temperature 1	14
15	LK temperature 2	15
16	LK vacuum 1	16
17	LK vacuum 2	17
18	preliminary contact, motor	18
19	profile program end signal	19
20	signal for automatic	20

1.7 Profile program transmission via the service channel

1.7.1 Telegram structure

The program data are transmitted via the service channel, as "Explicit Message" in the "Request / Response Service" with Service 3 = "Upload/download value of one object" (see “JUMO-LON protocol and software concept" of 26.10.95, Lotz / Schöppner / Reus / Schlitzer / Helker).

The data structure to be transmitted is arranged as follows :

```
struct TServ        {
                        unsigned free1          : 4;
                        unsigned Service        : 4
                        unsigned Class_ID       : 8;
                        unsigned SubClass       : 8;
                        unsigned ClassInstance  : 8;
                        unsigned Object_ID      : 8;
                        unsigned SubObject      : 8;
                        unsigned ObjectInstance : 8;
                        unsigned Number         : 6;
                        unsigned Error          : 1;
                        unsigned Rd_Wr          : 1; /* 0 = read data || 1 = write data */
                        unsigned int    UserDat [32];
                    };
```

Arrangement of telegram to read one section:

	Service	Cl-ID	SubCl	Cl-Inst	Ob-ID	SubOb	Ob-Inst	Number	Error	**RdWr**	Userdat
Request:	3	62	1	1	12	1	1	1	0	**0**	YYYYY
Response:	3	62	1	1	12	1	1	X	Y	**0**	YYYYY

Arrangement of telegram to transmit one section:

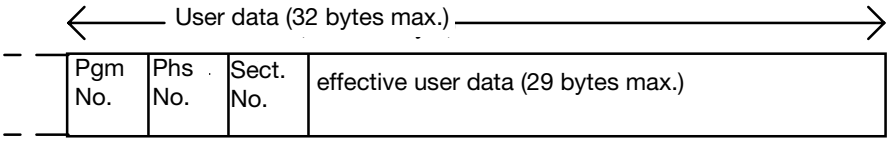
	Tel-typ	Cl-ID	SubCl	Cl-Inst	Ob-ID	SubOb	Ob-Inst	Number	Error	**RdWr**	Userdat
Request:	3	62	1	1	12	1	1	1	0	**1**	YYYYY
Response:	3	62	1	1	12	1	1	X	Y	**1**	

Y : Error flag 0 or 1 is set in response by device. If Y = 1, X contains the error code.

YYYYY : Length and arrangement of user data for program transmission are described in detail below.

1.7.2 Structuring the user data for transmission of profile program

As can be seen from the above description, a telegram Class 62 and Object-ID 12 is necessary to transmit one program section. The importance of the user data is summarized in Fig. 1. Here, the different functions of the first three bytes have to be particularly noted (Pgm No., Phs No., Sect. No.).



0-19	0-9	0-9	transmit one Pgm section (read and write)
0-19	-1	any	delete one program (write only)
0-19	0-9	10	transmit phase time (read and write)
-1	any	any	delete all programs (write only)

Fig. 1

For the transmission of program sections, the area of the effective user data is is filled with section data as follows:

For Sect. No. 0 – 9 (6 bytes) :

```
unsigned long    V_circ;     /* circulation rate */
unsigned long    SectTime;   /* section run-time; bit 15 = 1 = h/min */
unsigned int     Operctc[2]; /* operating contacts 0 – 12 */
```

For Sect. No. 10 (2 bytes) :

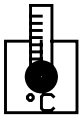
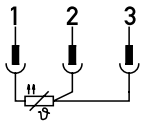
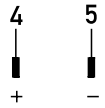
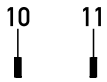
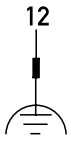
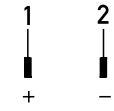
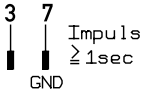
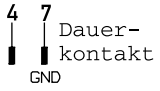
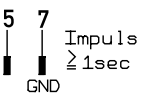
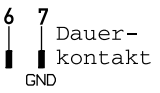
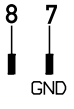
```
unsigned long    PhsTime;    /* phase run-time; bit 15 = 1 = h/min */
```

A valid phase time can only be transmitted to the LPT-100 if at least one section in the corresponding phase was created first.

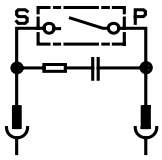
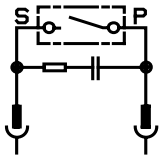
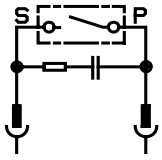
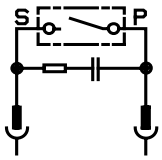
If an error is detected during transmission of a program section or the phase time, this will be indicated in the response telegram by Error = 1. The error code will then be saved in the structure variable “Number”.

In the event of an error, the user data of the LON response must not be evaluated!

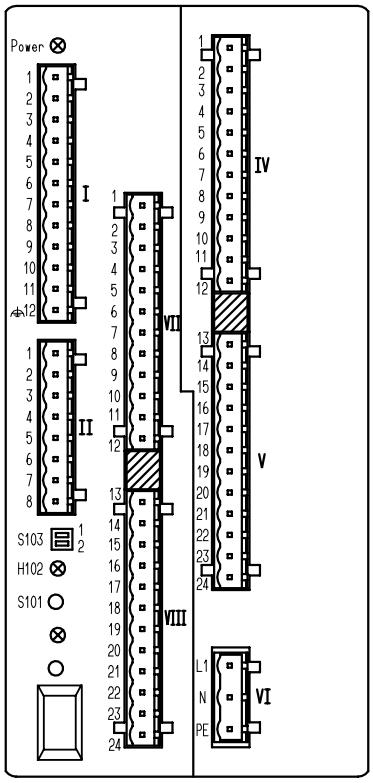
1.8 Connection diagram

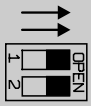
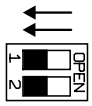
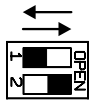
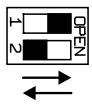
Connection for	**Terminals strip I**				
Measurement inputs		Chamber temperature	Vacuum		
					
Resistance thermometer in 3-wire circuit		I 1 I 2 I 3			
Standard signal 0(4) – 20 mA			I 4 I 5		
not to be used		I 6 I 7 I 8 I 9			
LON interface	I 10 I 11	twisted pair cable			
Technical earth	I 12	to connect screening against interference to termimal “PE“ of the supply.			
Connection for	**Terminals strip II**				
Setpoint output 0 — 10 V	II 1 II 2	circulation rate 0 – 100%			
Logic input 1	II 3 II 7	floating contact GND	phase fast forward		
Logic input 2	II 4 II 7	floating contact GND	programming inhibit		
Logic input 3	II 5 II 7	floating contact GND	external start		
Logic input 4	II 6 II 7	floating contact GND	external stop		
Count input	II 8 II 7	tumbler speed (floating contact), 2 Hz max. GND			

Operation

Connection for	Terminals assignment			
Relay outputs	**Terminals strip IV**			
Contact life: 10^6 operations at rated load Rating: 230 V 3A (resistive load) connectors must only plugged and unplugged when not powered!	Relay 1	IV 1 IV 2	(P) common (S) n.o. make	 RC protection circuit (metal film resistor 56R 0.5W, metallized-plastic capacitor 22nF / 1000V)
	Relay 2	IV 3 IV 4	(P) common (S) n.o. make	
	Relay 3	IV 5 IV 6	(P) common (S) n.o. make	
	Relay 4	IV 7 IV 8	(P) common (S) n.o. make	
	Relay 5	IV 9 IV10	(P) common (S) n.o. make	
	Relay 6	IV11 IV12	(P) common (S) n.o. make	
	Terminals strip V			
	Relay 7	V13 V14	(P) common (S) n.o. make	 RC protection circuit (metal film resistor 56R 0.5W, metallized-plastic capacitor 22nF / 1000V)
	Relay 8	V15 V16	(P) common (S) n.o. make	
	Relay 9	V17 V18	(P) common (S) n.o. make	
	Relay 10	V19 V20	(P) common (S) n.o. make	
	Relay 11	V21 V22	(P) common (S) n.o. make	
	Relay 12	V23 V24	(P) common (S) n.o. make	
	Terminals strip VII			
	Relay 13	VII 1 VII 2	(P) common (S) n.o. make	 RC protection circuit (metal film resistor 56R 0.5W, metallized-plastic capacitor 22nF / 1000V)
	Relay 14	VII 3 VII 4	(P) common (S) n.o. make	
	Relay 15	VII 5 VII 6	(P) common (S) n.o. make	
	Relay 16	VII 7 VII 8	(P) common (S) n.o. make	
	Relay 17	VII 9 VII10	(P) common (S) n.o. make	
	Relay 18	VII 11 VII 12	(P) common (S) n.o. make	
	Terminals strip VIII			
	Relay 19	VIII 13 VIII 14	(P) common (S) n.o. make	 RC protection circuit (metal film resistor 56R 0.5W, metallized-plastic capacitor 22nF / 1000V)
	Relay 20	VIII 15 VIII 16	(P) common (S) n.o. make	
	Relay 21	VIII 17 VIII 18	(P) common (S) n.o. make	
	Relay 22	VIII 19 VIII 20	(P) common (S) n.o. make	
	Relay 23	VIII 21 VIII 22	(P) common (S) n.o. make	
	Relay 24	VIII 23 VIII 24	(P) common (S) n.o. make	

Process unit



Switch S 103 Termination resistance	Setting
open, no bus termination	
50 Ohm	
100 Ohm	 or 

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