

# USER MANUAL

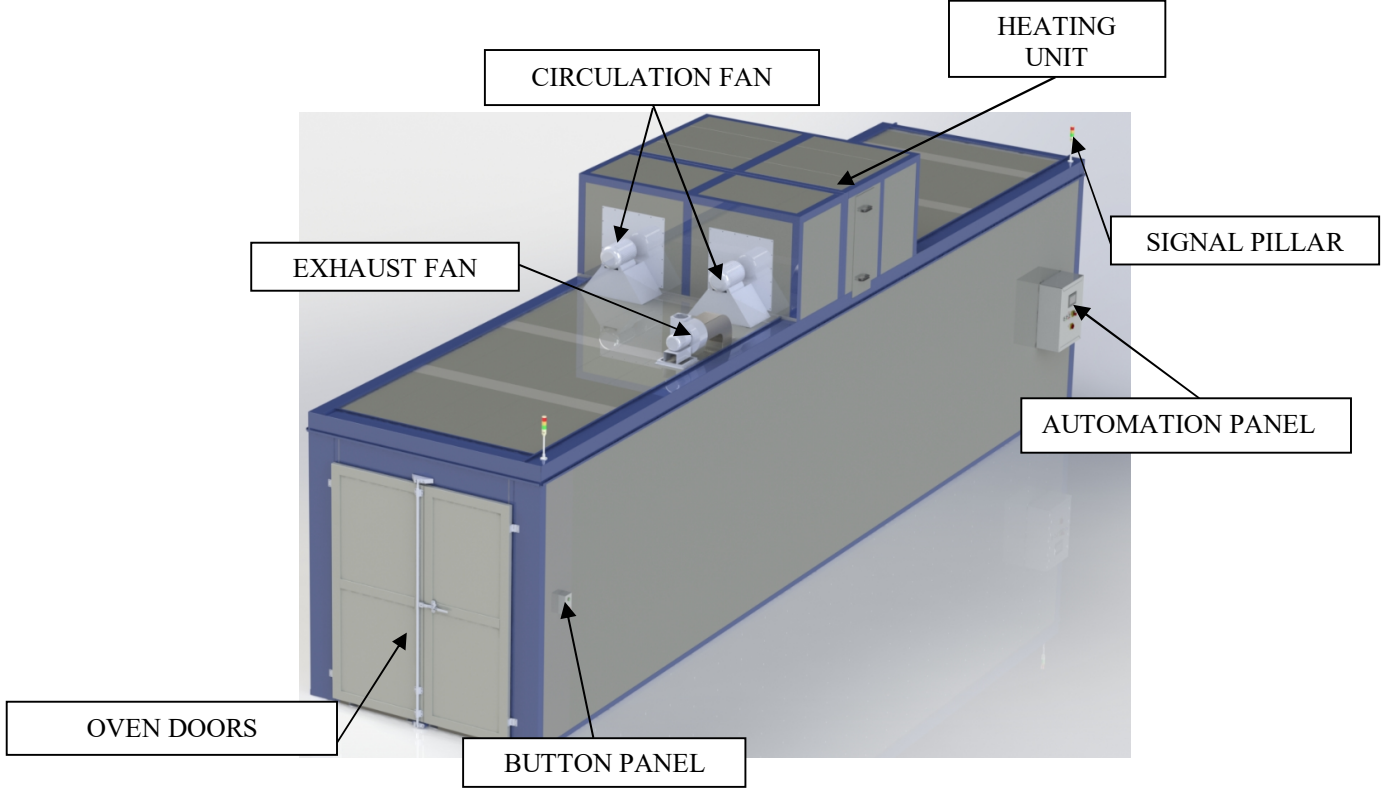
# ELECTRIC HEATED OVEN

COMPANY : KINGSPAN UNIDEK  
PROJECT NO : 21 P 10 082 00



## 1. BOX TYPE OVEN

### 1.1. BOX TYPE OVEN TECHNICAL FEATURES



TYPE OF OVEN	: BOX TYPE
TEMPERATURE (AVERAGE)	: 120°C (MAX)
EXHAUST FAN BRAND	: PITSAN
EXHAUST FAN MODEL	: P4 ALUMINIUM FAN
EXHAUST FAN	: 3.000 M <sup>3</sup> /H
EXHAUST FAN MOTOR POWER	: 1,1 kW
TYPE OF HEATING	: INDIRECT
HEATING CAPACITY	: 180 kW
INNER DIMENSIONS	:
LENGTH	: 11.600 MM
HEIGHT	: 2.550 MM
WIDTH	: 2.400 MM
OUTER DIMENSIONS	:
LENGTH	: 11.800 MM
HEIGHT	: 2.890 MM + HEATING UNIT
WIDTH	: 3120 MM
OVEN INSIDE MATERIAL	: 1 MM AISI 304 STAINLESS STEEL
OVEN OUTSIDE MATERIAL	: 1 MM GALVANISED SHEET

THE BODY OF THE OVEN CONSISTS OF 500 MM SANDWICH TYPE PANELS WHICH ARE COATED WITH ELESTROTATIC POWDER AND ISOLATED WITH 160 MM ISOLATION MATERIAL. FOR A HOMOGENOUS HEAT DISTRIBUTION, THERE ARE STAINLESS STEEL AIR CHANNELS INSIDE. THIS CHANNEL IS MOUNTED UNDER THE OVEN.

THE HEATING IS STEAM EXCHANGER. THE TEMPERATURE IS CONTROLLED WITH A DIGITAL HEAT CONTROLLING UNIT AND ALSO THE OVENING TIME CAN BE ADJUSTED WITH THIS UNIT. THE OPERATOR IS WARNED AT THE END OF THE OPERATION WITH A SIREN.

### 1.2. THE HEATING UNIT

HEATING CAPACITY	: 180 kW
CIRCULATION FAN BRAND	: PİTSAN
CIRCULATION FAN MODEL	: ER 80/56
CIRCULATION FAN FLOW RATE	: 2 PCS × 10.000 M <sup>3</sup> /H
CIRCULATION FAN MOTOR POWER	: 2 PCS × 5,5 kW
HEATING	: ELECTRICAL COILED RESISTANCE
RESISTANCE POWER	: 36 PCS × 5 kW = 180 kW

THE HEATING UNIT IS MOUNTED BEHIND THE OVEN. THE OUTER SURFACE OF THE HEATING UNIT IS COVERED WITH 160 MM ROCK WOOL AND GALVANISED SHEETS.

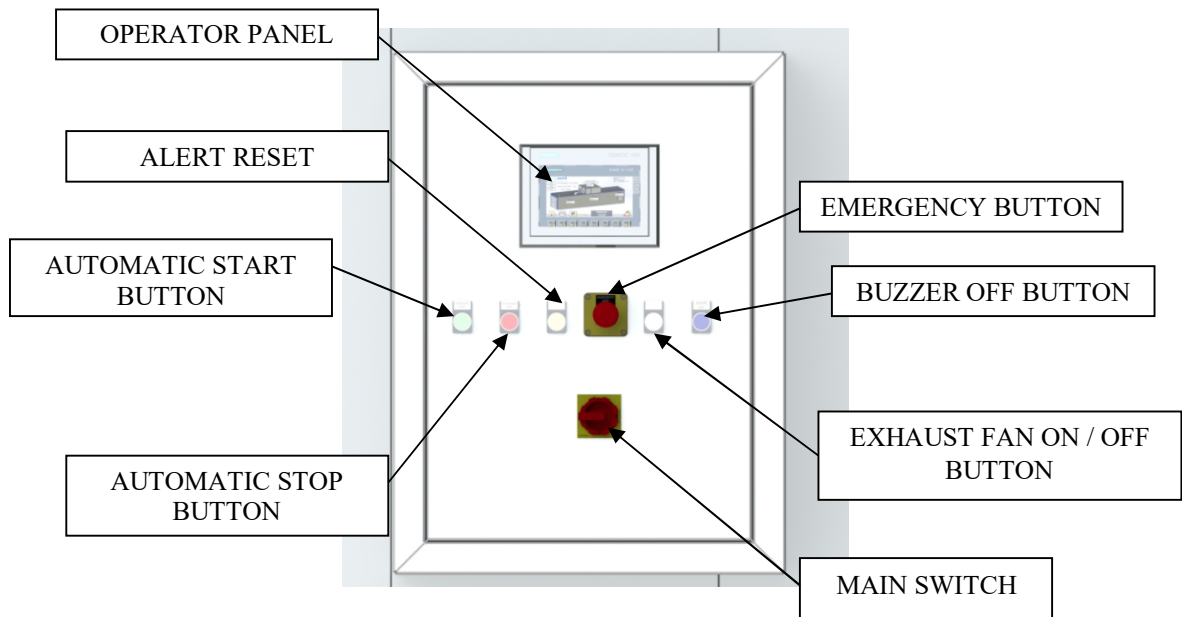
### 1.3. OVEN SPARE PART LIST

NO	PRODUCT NAME	DESCRIPTION	BRAND	MODEL	COMPANY
1.	CIRC. FAN	10.000 M <sup>3</sup> /H	PİTSAN	ER80/56	PİTSAN
2.	CIRC. FAN MOTOR	5,5 kW – 1.450 RPM			
3.	EXHAUST FAN	3.000 M <sup>3</sup> /H	PİTSAN	P4 TYPE	PİTSAN
4.	EXH. FAN MOTOR	1,1 kW – 2.900 RPM			
5.	TERMOKUPL	PT100	EMKO		ELSİSAN
6.	RESISTANCE	1,65 CM 5 kW	TEKNİK İSİSAN		TEKNİK İSİSAN

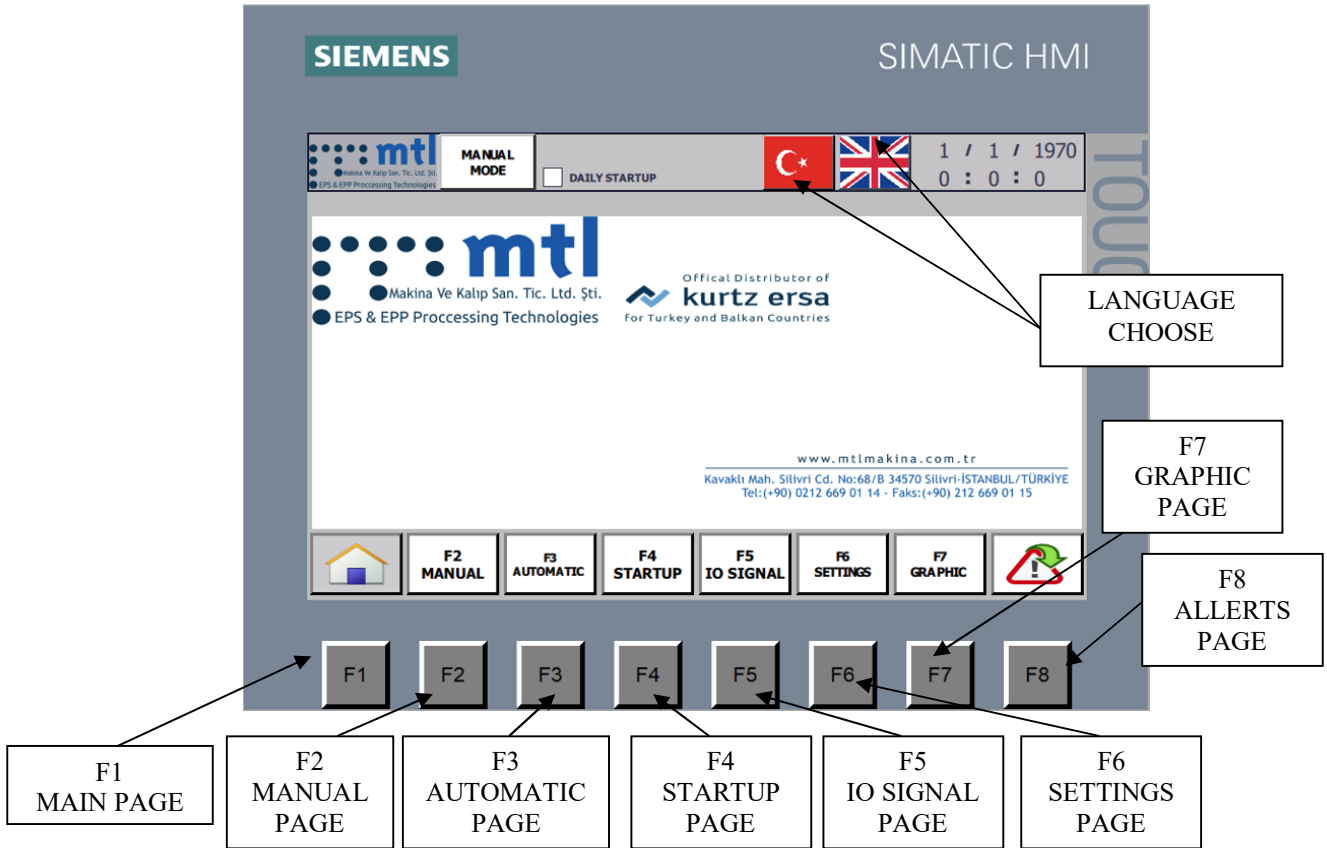
## 2. START – UP OF THE MACHINE & PARAMETER ADJUSTMENTS

### 2.1. START - UP

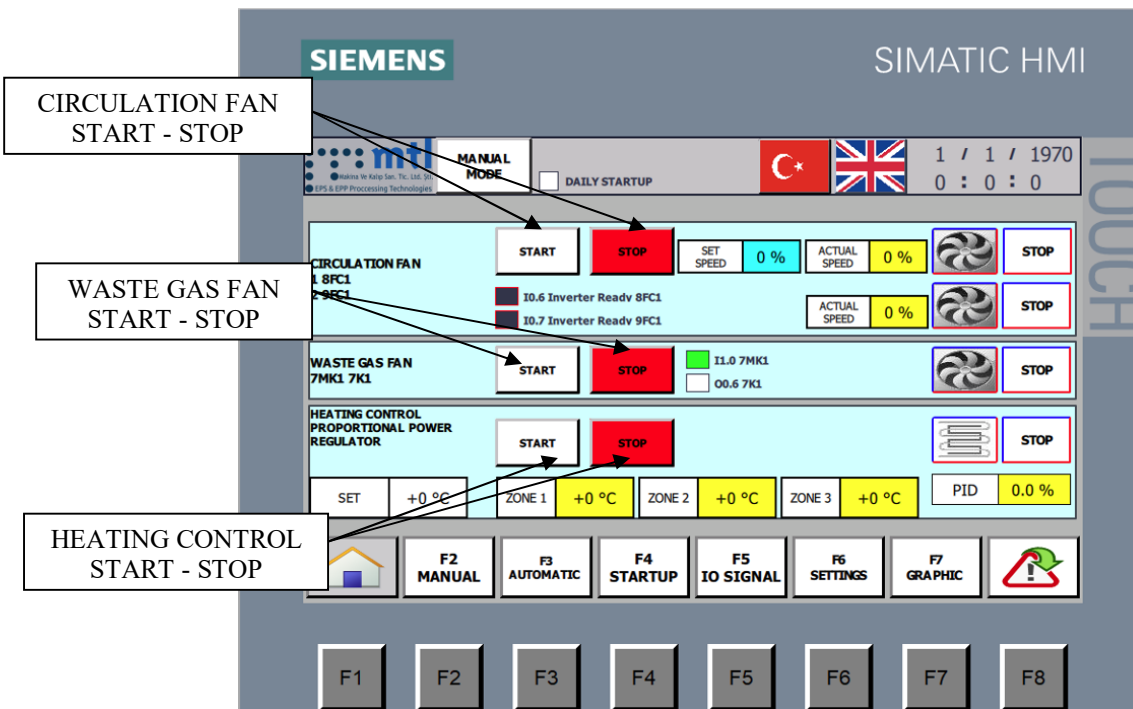
BEFORE STARTING-UP THE MACHINE, VISUALLY CONTROL AIR PRESSURE AND CIRCUMSTANCES, WHICH MIGHT OBSTRUCT THE OPERATION. LATER ON, SWITCH THE MAIN SWITCH ON THE CONTROL PANEL, IN TO POSITION 1.



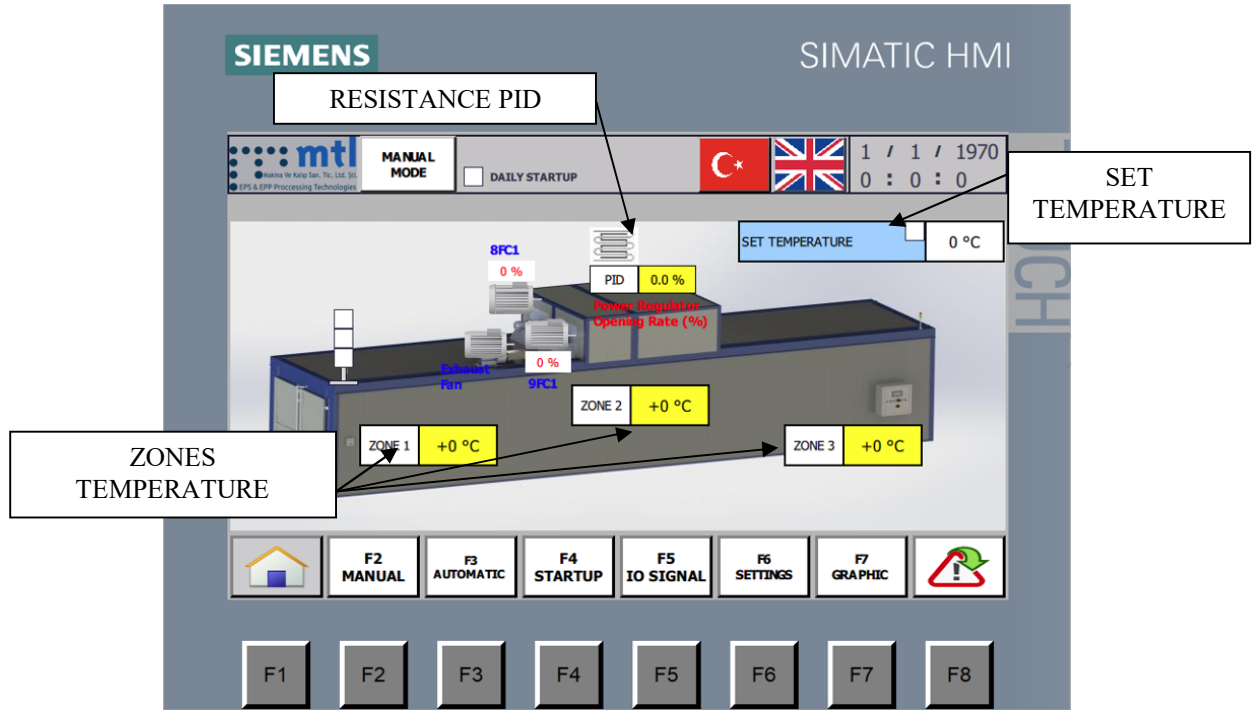
**2.2. PAGES**
  
**2.2.1. MAIN PAGE**



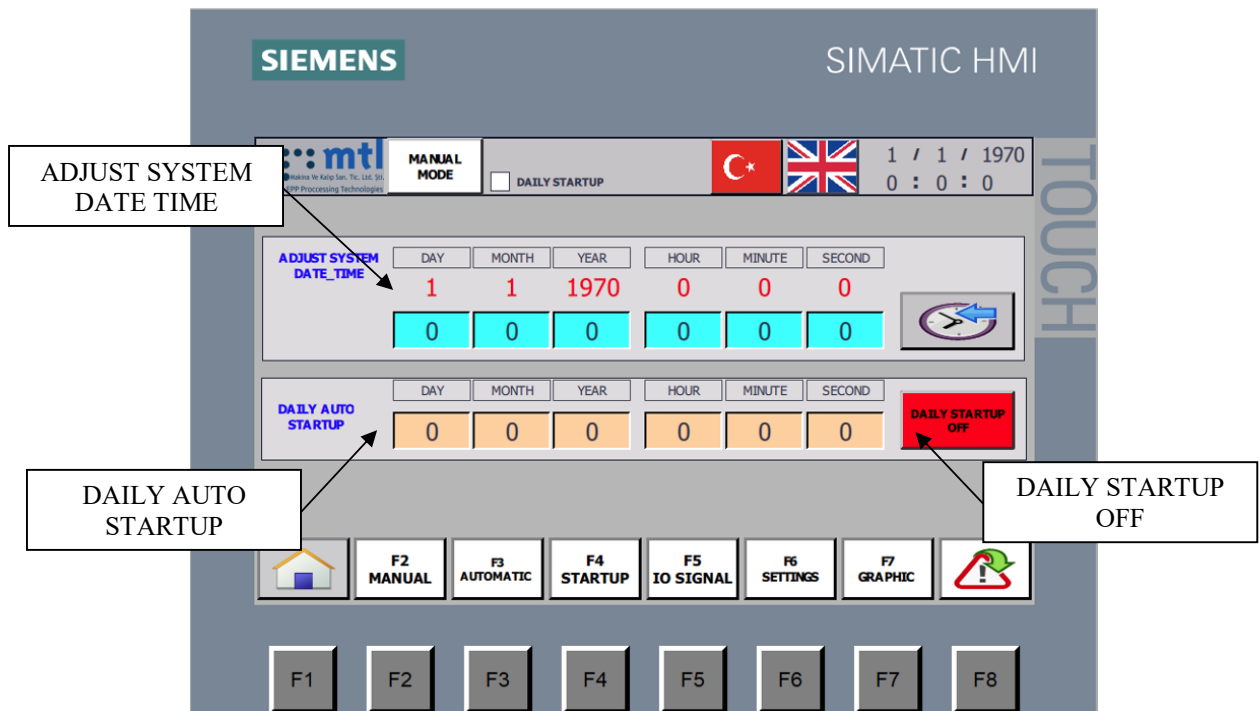
**2.2.2. MANUAL PAGE**



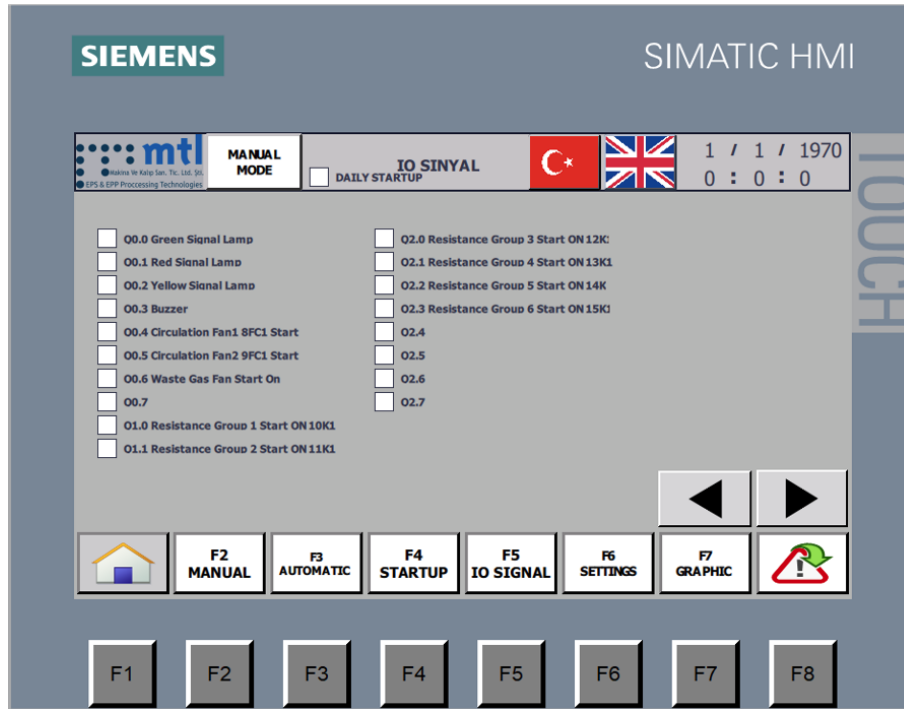
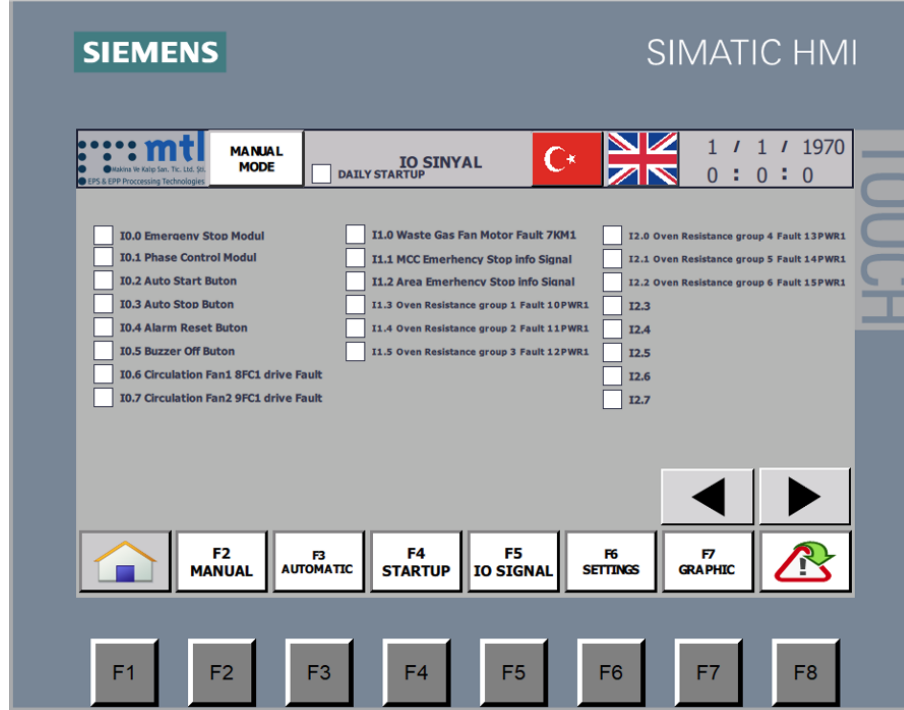
### 2.2.2. AUTOMATIC PAGE



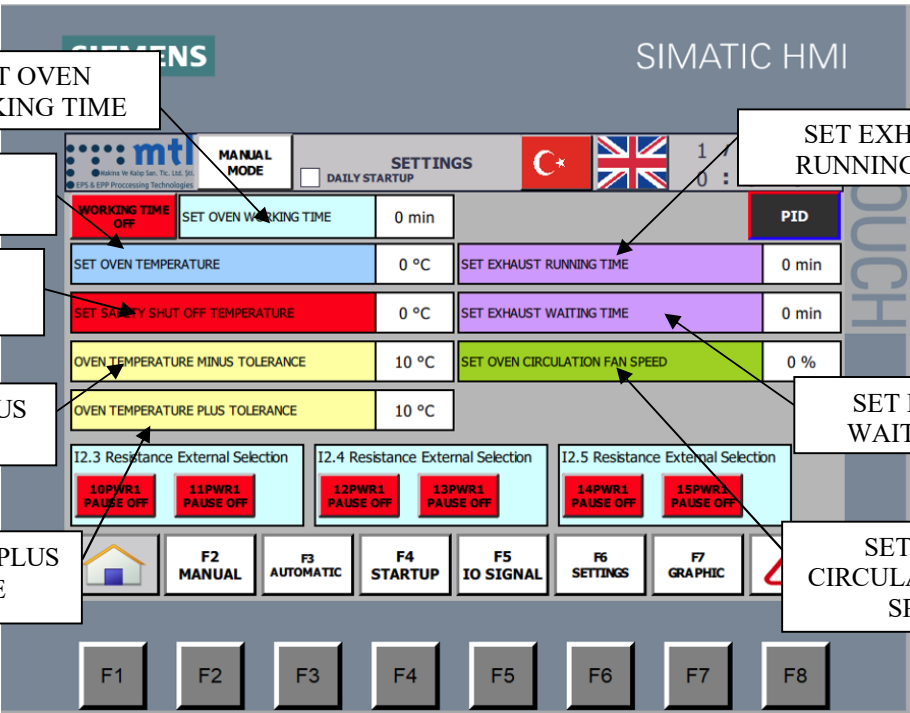
### 2.2.3. STARTUP PAGE



## 2.2.4. IO SIGNAL PAGE



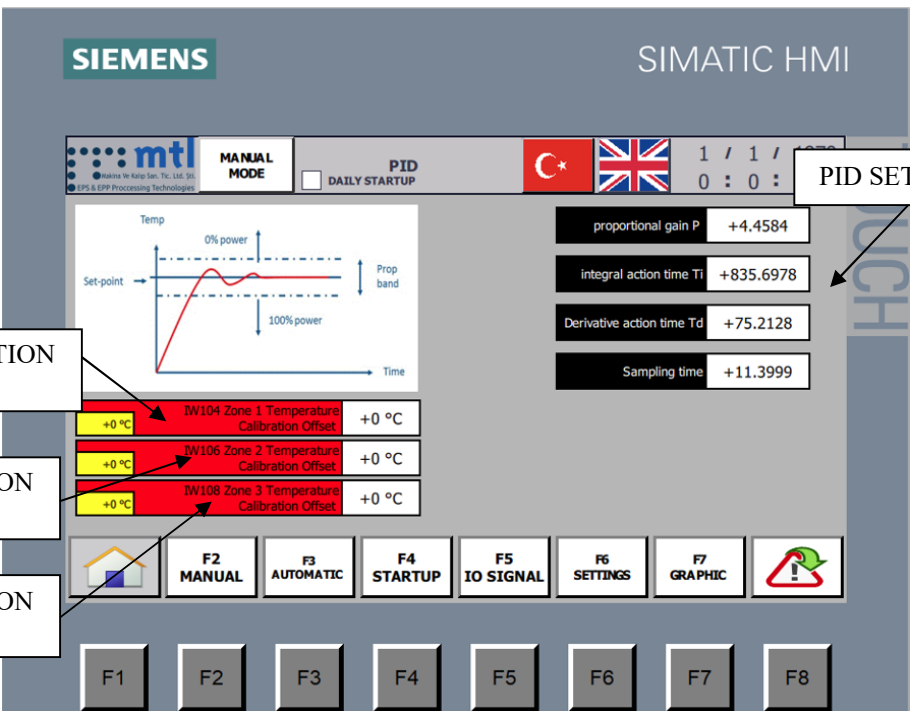
### 2.2.5. SETTINGS PAGE



This screenshot shows the 'SETTINGS' page on the SIMATIC HMI. The interface includes a top navigation bar with 'MANUAL MODE', 'DAILY STARTUP', and language flags. Below this, several parameter settings are displayed in a grid:

- SET OVEN WORKING TIME:** 0 min
- SET OVEN TEMPERATURE:** 0 °C
- SET SAFETY SHUT OFF TEMP.:** 0 °C
- TEMPERATURE MINUS TOLERANCE:** 10 °C
- TEMPERATURE PLUS TOLERANCE:** 10 °C
- SET EXHAUST RUNNING TIME:** 0 min
- SET EXHAUST WAITING TIME:** 0 min
- SET OVEN CIRCULATION FAN SPEED:** 0 %

At the bottom, there are sections for 'Resistance External Selection' (I2.3, I2.4, I2.5) and a row of function keys (F1-F8). Callout boxes point to these specific settings.



This screenshot shows the 'PID' settings page on the SIMATIC HMI. It features a graph on the left showing temperature response over time with '0% power' and '100% power' levels. On the right, PID parameters are listed:

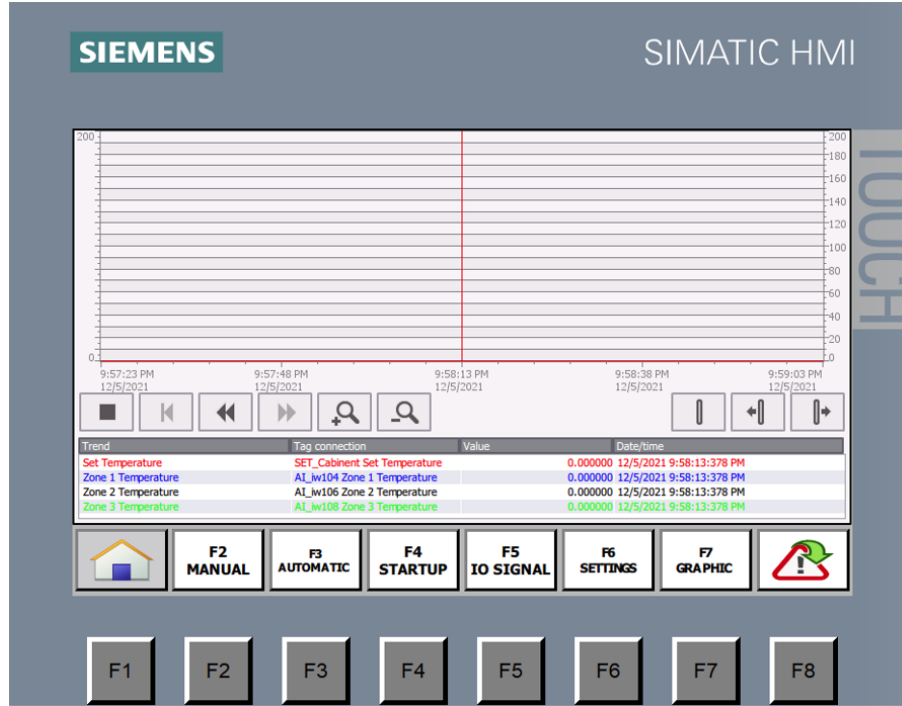
- proportional gain P: +4.4584
- integral action time TI: +835.6978
- Derivative action time Td: +75.2128
- Sampling time: +11.3999

Below the graph, three calibration offset settings are shown:

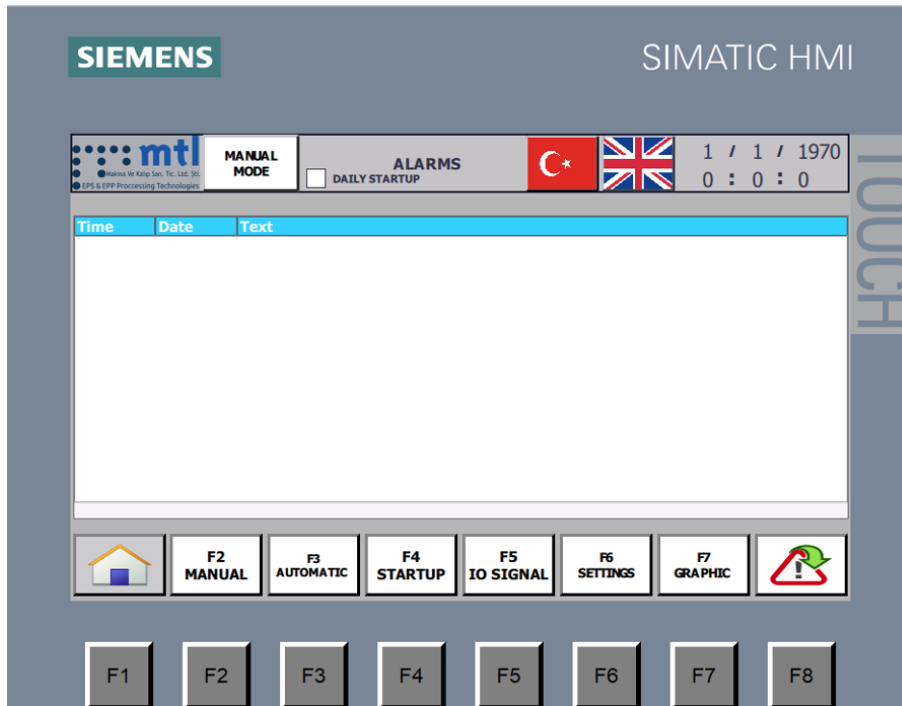
- ZONE 1 CALIBRATION OFFSET:** DW104 Zone 1 Temperature Calibration Offset: +0 °C
- ZONE 2 CALIBRATION OFFSET:** DW106 Zone 2 Temperature Calibration Offset: +0 °C
- ZONE 3 CALIBRATION OFFSET:** DW108 Zone 3 Temperature Calibration Offset: +0 °C

The 'PID SET VALUE' callout points to the 'PID' label in the top navigation bar. The bottom of the screen shows the same function key layout as the previous screenshot.

## 2.2.6. GRAPHIC PAGE



## 2.2.7. ALERTS PAGE



### 3. POSSIBLE PROBLEMS AND SOLUTIONS

ALERT	SOLUTION
<b>RED “STOP” LAMP IS LIT. OVEN DOES NOT START.</b>	REDUCER PROTECTION RELAY INSIDE THE CONTROL PANEL IS POPPED. SET RELAY INTO POSITION 1 AND RESTART. REDUCER HAS A MALFUNCTION, IF IT POPS AGAIN. INFORM THE AUTHORIZED PERSONNEL AND GET THE FAN REDUCER CHECKED.
<b>FAN IS OPERATIONAL BUT NOT FUNCTIONING. (DOES NOT HEAT.)</b>	CHECK “SET” VALUE OF THE TEMPERATURE CONTROL DEVICE. ENSURE PROPER TEMPERATURE VALUE HAS BEEN SET.
<b>EXHAUST FAN DOESN'T OPERATE.</b>	REDUCER PROTECTION RELAY INSIDE THE CONTROL PANEL IS POPPED. SET RELAY INTO POSITION 1 AND RESTART. REDUCER HAS A MALFUNCTION, IF IT POPS AGAIN. INFORM THE AUTHORIZED PERSONNEL AND GET THE FAN REDUCER CHECKED.
<b>OVEN TEMPERATURE REACHES “SET” VALUE TOO SLOW.</b>	CHECK IF THERE ARE ANY TRIPPED FUSES INSIDE THE CONTROL PANEL. IF THERE IS ANY, RESTART THE OVEN. IF IT POPS AGAIN, GET RESISTANCES CHECKED. CHANGE DAMAGED RESISTANCES.

### 4. PERIODIC CONTROLS & MAINTENANCE

CONTROL NO	CONTROLS	MAINTENANCE PERIOD			
		WEEKLY	MONTHLY	QUARTERLY	SIX MONTHLY
1	<b>CLEANING THE OVEN:</b> INTERNAL AND EXTERNAL SURFACES OF THE OVEN MUST BE CLEANED. VARIOUS ADHESIVE DUSTS STACK INSIDE THE OVEN WITH TIME. AND IF THEY ARE NOT CLEANED, THEY ADHERE INSIDE THE OVEN AND THIS DECREASES HEAT TRANSFER RATE, WHICH CAUSES DELAYED HEATING IN OVEN. AS THE RESULT OF THIS, DRIED PAINT QUALITY OVER THE PARTS DECREASES.	X			
2	<b>CLEANING THE FAN BLADES:</b> THERMOBLOCK FAN MUST BE CLEANED BY DETACHING THE FAN BLADES. DO NOT CLEAN THE BLADES WITH PIERCING OR SHARP MATERIALS!				X
3	<b>CLEANING THE EXTERNAL SURFACE OF THE FAN REDUCER:</b> ADHERED DUSTS MUST BE CLEANED OFF WITH PRESSURED AIR AND CLOTHES FROM THE FAN REDUCER.		X		
4	<b>MAINTENANCE OF THE DOOR GASKET:</b> CHECK THE DOOR GASKET. CHANGE THE GASKET WITH A NEW ONE IF DAMAGED OR DEFORMED.				X
5	<b>ADJUSTMENT OF THE DOOR HANDLE GRIP:</b> MILL THE OPPOSING LOCK MECHANISMS LENGTH AND ENSURE IT HOLDS TIGHT, IN CASE OF IT IS NOT TIGHT WHEN COMPLETELY SEALED.				X
6	<b>MAINTENANCE OF THE CONTROL PANEL:</b> CLEAN INSIDE THE CONTROL PANEL WITH PRESSURED AIR, CHECK THE CABLE CONNECTIONS (BY AUTHORIZED ELECTRICIANS), TIGHTENING THE CONNECTIONS IF ANY OF THEM ARE LOOSE.			X	