

2604 and 2704 High Performance Controllers/Programmers



Ideal for

- atmosphere heat treatment
- reliability test chambers
- autoclaves
- vacuum furnaces
- ceramic and brick kilns
- melt pressure
- firetube boilers

The 2604 and 2704 are high stability temperature and process controllers. The 2604 has a dual 5 digit display and a 2 line LCD panel. The 2704 has a high visibility graphical user interface, enabling many advanced features including PV/SP trending. Both units are available in a single, dual or triple loop format.

A setpoint programming option is available allowing storage of up to 60 programs. Each program can profile up to three setpoints.

Using internal Toolkit Blocks, customized user configurations and special machine controllers can be created.

The 2604 and 2704 have fixed and modular IO and can use the 2000IO expansion unit to provide further input and output connections. See page 3-33 for more information.

Specifications

Dimensions:

96W x 96H x 150D mm

Control modes:

3 Control loops, PID, On/Off and Motorized Valve, Cascade, Ratio & Override

Setpoint programmer:

60 Programs, 600 segments, 16 Event outputs

Supply voltages:

85-264Vac, 24Vac/dc

Special functions:

Carbon potential, Humidity, Trending (2704), Vacuum (2704), Boiler (2704)

Toolkit blocks:

Maths functions, Logic operations, Timers, Totalizers

Comms:

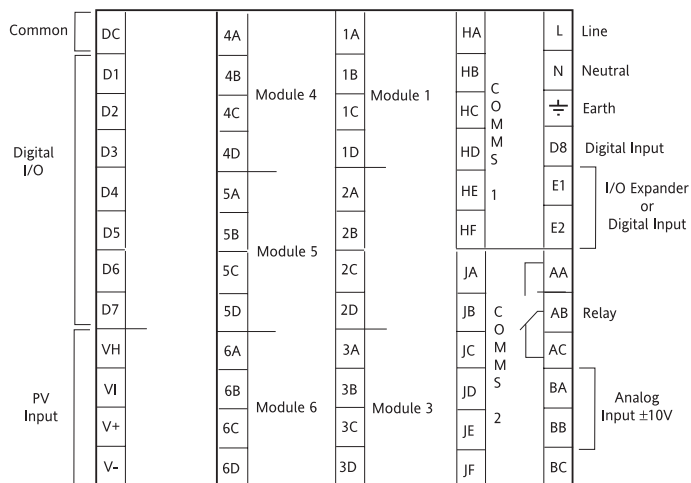
Modbus™, Profibus-DP, DeviceNet®

Data sheet:

Model 2604; HA026669

Model 2704; HA026916

Rear terminal connections Model 2604/2704



Ordering codes



Hardware coding	Controller Type	Supply Voltage	Loop/Programs	Applications	I/O Slot 1	I/O Slot 3	I/O Slot 4	I/O Slot 5	I/O Slot 6	H Comms Slot	J Comms Slot	Manual	Toolkit Functions
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Controller Type	
2604	Standard
2604f	Profibus
2704	Standard
2704f	Profibus

Supply Voltage	
VH	85-264Vac
VL	20-29Vac/dc

Loop/Programs	
First digit	
1-	One loop
2-	Two loops
3-	Three loops
Second digit	
-XX	No programs
-2	Twenty programs
-5	Sixty programs ⁽⁶⁾
-A	Asynchronous ⁽⁶⁾
Third digit	
-XX	No programs
--1	1 Profile
--2	2 Profile
--3	3 Profile

Applications	
XX	Standard
ZC	Zirconia
V1	1 Gauge vacuum ⁽⁵⁾
V3	3 Gauge vacuum ⁽⁵⁾
BC	Boiler ⁽⁵⁾

I/O Slot 1, 3, 4, 5, 6	
XX	None fitted
R4	Change over relay
R2	2 Pin relay
RR	Dual relay
T2	Triac
TT	Dual triac
D4	DC Control
D6	DC retransmission
PV	PV Input (slots 3 & 6 only)
TL	Triple logic input
TK	Triple contact input
TP	Triple logic output
MS	24Vdc transmitter PSU
VU	Potentiometer input
G3	5Vdc transducer PSU
G5	10Vdc transducer PSU
AM	analog input module (not in slot 5)
DP	Dual DC (probe) input ⁽⁴⁾ (slots 3 and 6 only)
DO	Dual 4-20mA OP/24Vdc PSU (Slots 1, 4 & 5 only)
LO	Isolated single logic OP
TD	TDS input ⁽³⁾

H Comms Slot	
XX	Not fitted
A2	232 Modbus
Y2	2 Wire 485 Modbus
F2	4 Wire 485 Modbus
AE	232 Bisynch
YE	2 Wire 485 Bisynch
FE	4 Wire 485 Bisynch
PB	Profibus
DN	DeviceNet

J Comms Slot	
XX	Not fitted
A2	232 Modbus
Y2	2 Wire 485 Modbus
F2	4 Wire 485 Modbus
M1	232 Master
M2	2 Wire 485 Master
M3	4 Wire 485 Master

Manual	
ENG	English
FRA	French
GER	German
ITA	Italian
NED	Dutch
SPA	Spanish

Toolkit Functions	
XX	Standard
U1	Toolkit level 1 ⁽²⁾
U2	Toolkit level 2 ⁽²⁾

- Hardware notes:**
1. Basic controller includes 8 digital registers, 4 timers and 4 totalizers.
 2. Toolkit 1 includes 16 analog, 16 digital, pattern generator, digital programmer analog switch and 4 user values.
 3. Toolkit 2 includes Toolkit 1 plus extra 8 analog, 16 digital and 8 user values.
 4. Dual analog input suitable for Carbon Probes. (Inputs not isolated from each other)
 5. Only available in 2704
 6. 50 programs in 2604

Example ordering code

2704 - VH - 323 - XX - RR - PV - D4 - TP - PV - XX - A2 - XX - ENG - U1

This code describes a 3 loop controller with capability to store 20 three profile programs. Supply voltage is 85-264Vac, Modular hardware: 2 x PV input, 1 x Dual relay, 1 x DC control, 1 x Triple logic output, EIA-232 Comms, 16 analog and 16 digital operation

Config. coding (optional)	Loop Function			Process Inputs			Analog Input	Slot Function					
	Loop 1 Type	Loop 2 Type	Loop 3 Type	Loop 1 PV	Loop 2 PV	Loop 3 PV		Slot 1	Slot 3	Slot 4	Slot 5	Slot 6	

Loop Function	
XXXX	None
S	Standard PID
C	Cascade
R	Ratio
O	Override(7)
_PID	PID control
_ONF	On/Off control
_PIF	PID/OnOff control
_VP1	VP without feedback
_VP2	VP with feedback

Process Inputs (Input Type)	
X	None
J	J Thermocouple
K	K Thermocouple
T	T Thermocouple
L	L Thermocouple
N	N Thermocouple
R	R Thermocouple
S	S Thermocouple
B	B Thermocouple
P	Platinell II
C	C Thermocouple
Z	RTD/Pt100
A	4-20mA linear
Y	0-20mA linear
W	0-5Vdc linear
G	1-5Vdc linear
V	0-10Vdc linear
Custom downloads	
Q	Custom curve
D	D thermocouple
E	E thermocouple
1	Ni/Ni18%Mo
2	Pt20%Rh/Pt40%Rh
3	W/W26%Re (Engelhard)
4	W/W26%Re (Hoskins)
5	W5%Re/W26%Re (Engelhard)
6	W5%Re/W26%Re (Bucose)
7	Pt10%Rh/Pt40%Rh
8	Exergen K80 I.R pyrometer

Analog Input	
XXXX	None
P2-	PV Loop 2
P3-	PV Loop 3
S1-	SP Loop 1
S2-	SP Loop 2
S3-	SP Loop 3
A1-	Aux. PV Loop 1
A2-	Aux. PV Loop 2
A3-	Aux. PV Loop 3
L1-	Ratio Lead PV Loop 1
L2-	Ratio Lead PV Loop 2
L3-	Ratio Lead PV Loop 3
Input range Select third digit from table 1	
Table 1	
A	4-20mA linear
Y	0-20mA linear
W	0-5Vdc linear
G	1-5Vdc linear
V	0-10Vdc linear

Slot Function	
XXX	Unconfigured
1-	Loop no. 1
2-	Loop no. 2
3-	Loop no. 3
Single relay, triac or logic	
-HX	Heat
-CX	Cool
Dual relay or triac	
-HC	PID Heat & Cool
-VH	VP Heat
-VC	VP Cool
-AA	FSH & FSH
-AC	DH & DL
-AD	FSH & DH
-AE	FSL & DL
-AF	FSL & FSL
-AG	FSH & DB
-AH	FSL & DB
-AJ	DB & DB
HHX	Heat output for loops 1 & 2
P12	Prog events 1 & 2
P34	Prog events 3 & 4
P56	Prog events 5 & 6
P78	Prog events 7 & 8
Triple logic output	
-HX	CH1 Heat
-CX	CH1 Cool
-HC	CH 1 Heat, CH2 Cool
HHX	Heat output for loops 1 & 2
HHH	Heat output for loops 1, 2 & 3
DC outputs	
-H	PID Heat
-C	PID Cool
-T	PV retransmission
-S	SP retransmission
For output range select third digit from table 1	
Precision PV input	
-PV	PV input module
-PA	Aux PV input (8)
-PL	Ratio lead input
analog input	
-R	Setpoint
For input range select third digit from table 1	
Aux. & lead PV inputs	
-L	Ratio lead input
-B	Aux. PV input
For input range select third digit from table 1	
Potentiometer input	
-VF	VP heat feedback
-VE	Cool feedback
-RS	Remote SP

- General notes:**
1. Loop 1 defaults to main PV input on microboard. Loop 2 and 3 PV inputs must be fitted in I/O slots 3 or 6, or be assigned to the analog input.
 2. Alarm configuration refers to loop alarms. One selection is allowed per loop. Additional alarms are available for the user to configure.
 3. Thermocouple and RTD inputs assume sensor min and max values with no decimal point.
 4. Linear inputs are ranged 0-100%, no decimal point.
 5. Temperature units will be °C, unless ordered by the USA where °F will be used.
 6. Remote setpoints assume min & max ranges.
 7. VP1 or VP2 not available with Override function.
 8. For Cascade and Override inputs only.

Quick start order code

SPV1 - SPID - SPID - K - Z - A - S1A - 1VH - 2PV - 2HV - 3HC - 3PV

This code configures the hardware specified above:
 Loop 1: Valve position control, Type K input, Heat VP output in slot 1, 4-20mA remote setpoint input
 Loop 2: PID control, RTD input in slot 3, 0-10Vdc Heat output in slot 4.
 Loop 3: PID control, 4-20mA input in slot 6, Logic heat/cool output in slot 5.