

MOOG

Technical Reference IMI220-145C001 Parison Controller



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The Terminals described
herein comply with the
EMC directives.

GENERAL DESCRIPTION

Parison Controller is a stand alone control system for blow moulding machines designed by Moog and at present not suitable for further manufacturing. The new product will be carried out using a PLC application developed under Logos running on the ARGO operating system, and hardware series 400.

The Parison Controller can be configured to run in continuous extrusion with 4 independent profiles available ranging from 1 to 4, each one running with its own profile.

Parison Controller can be configured to run in continuous extrusion with unique profile. 4 thickness regulators are available (from 1 to 4) with one unique profile that drives all of them.

Parison Controller can be configured to run on a managed accumulator machine and with 1 to 3 position-dependent thickness regulators. The thickness regulators follow the accumulator position. Thickness regulators work with independent profiles.

The Parison Controller can be configured to run on a non-managed accumulator machine and with 1 to 4 thickness regulators. The thickness regulators are time-base driven by a single start signal. Thickness regulators work with independent profiles.

The Parison Controller can be configured to manage 0 to 2 extruders.

These functions cannot be activated all simultaneously.

INTERFACE REQUIREMENTS

The system is able to operate in the following languages: English, Italian, German, French, Spanish, Portuguese, Danish, Russian, Turkish, Greece, Chinese, and Japanese.

Each regulator, accumulator and extruder has a work page and a setup page. Work pages can be accessed at level 1 and contain process data. Setup pages are accessible at level 3 and contain setups, calibrations and correction adjustments.

The user sees only data he needs to. Data concerning functions not enabled are hidden.

The user sees only page and menu soft key needed. Objects (parison, accumulator, etc.) not enabled are hidden.

Default parameters for each function are for then the simplest system. In this way we help the small and simple Parison Controller we are using but we also let the user apply the Parison Controller in more complex machines.

The data immission is very easy because a rotary knob is used for increase/decrease values.

FEATURES

Counter production.
Recipe management.
Data saving on the plc or on a removable flash memory.

LIMITATIONS

The number of analog channels limits (4) the total number of thickness regulators, accumulators and extruders with analog control.

PERFORMANCE REQUIREMENTS

The thickness regulators are generally sampled every 2 milliseconds.

If a Parison Controller is used for one continuous extrusion thickness regulator it is possible to make sampling every 1 milliseconds.

IMI220-145C001: Parison Controller.

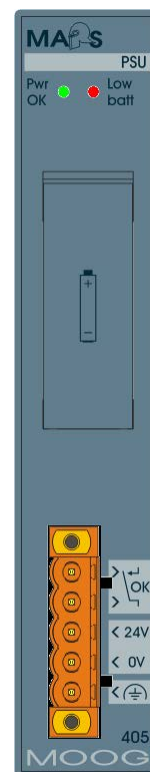
TECHNICAL CHARACTERISTICS	UNIT	IMI220-145C001
Input voltage	Vdc	24
Range	%	± 15
Current consumption	A	0.8 without external load
USB pen drive		yes
Immunity vibration		-
Operating temperature	°C	0...55
REAR SIDE		
Connectors:		
- Power supply		5 pins M, 5.08 mm
- Electronic transducer		3 pins M, 5.08 mm
Module:		
- PSU		IMI220-405A001
- CPU		IMI220-438B001
- Video		IMI220-438B001
- Digital Input		IMI220-411A001
- Digital Output		IMI220-415A001
- Analog Input/Output		IMI220-426A001
Power supply cable section:		
- material		copper
- field of lock (min/max)	mm ²	0.08...2.5
- rigid H05(07) V-U	mm ²	0.5...2.5
- flexible H05(07) V-k	mm ²	0.5...2.5
- flexible with terminal according to DIN 46228/1	mm ²	0.5...2.5
- flexible with insulating collar according to DIN 46228/4	mm ²	0.5...1.5
External dimensions (H x W x D)	mm	228 x 360 x 220
Weight	Kg	5.0



TECHNICAL CHARACTERISTICS	UNIT	IMI220-145C001
FRONTAL SIDE		
LCD		
LCD type		TFT colour 10.4"
Backlight		Led
Resolution	pixel	800 x 600
Stand by		after 15 minutes
Contrast regulation		No
Brightness regulation		Yes (7 different levels)
KEYBOARD		
Keyboard type		membrane
Keys:		
- rotary knob		yes
- total keys		5 + rotary knob push button
- functional keys		0
Rotary knob characteristics:		
- step encoder	Bit	32
USB pen drive:		
- size	Gb	4
Led:		
- Set		green led
- Del		green led
- Edit		green led
- X 10		green led
- Purge		green led
- Shift		green led
- Start		green led
- Die Gap		green led
- Continuous		green led
- Accumulator		green led
- Divergent		green led
- Convergent		green led
- End of filling		green led
- Point out		green led
- End of extrusion		green led

IMI220-405A001: PSU 24 VDC 15 W

TECHNICAL CHARACTERISTICS	UNIT	IMI220-405A001
Input voltage - nominal value - range	Vdc %	24 - 10...+ 20
Reverse polarity protection		yes
Input current @ 24 Vdc - max - min	A A	1 -
Efficiency	% typ.	83
Effect of incorrect connections of power to the supply(ies) - reverse polarity - improper voltage level and/or freq. - improper lead connection		none <15 V OFF, >42 V internal fuse blown -
Maximum interruption time ¹	ms	1
Output voltage - digital supply - analog voltage - analog voltage	Vdc Vdc Vdc	5 + 15 (± 5%) - 15 (- 10%...+ 5%)
Output current - +5 V - +15 V - -15 V	A A A	1.7 + 0.3 - 0.3
Short circuit protection		electronic
Battery back up - life		lithium (3.6 V - 0.75 Ah) 5 years at 25°C
OK relay - type - breaking capacity		single contact N/O 400 mA @ 125 Vac / 1 A @ 30 Vdc
Visual indicator - low bat. - OK voltage		red led green led
Frontal connector		5 pins M. 5.08 mm
Cables section - material - field of lock (min/max) - rigid H05(07) V-U - flexible H05(07) V-k - flexible with terminal according to DIN 46228/1 - flexible with insulating collar according to DIN 46228/4	 mm² mm² mm² mm² mm²	 copper 0.08...2.5 0.5...2.5 0.5...2.5 0.5...2.5 0.5...1.5
Operating temperature - vertical position - horizontal position	°C °C	0...60 0...40
Weight	Kg	0.241

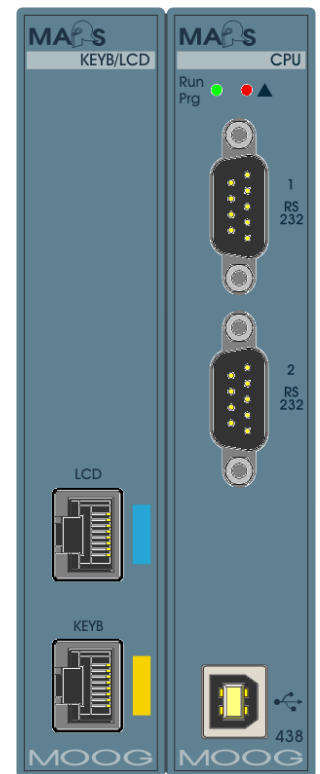


¹ Data to allow evaluation of the maximum values of interruption time which do not affect the normal operation of any PLC system configuration

IMI220-438B001: Main CPU (IMI220-402B001 + USB device) + 2 LVDS Controllers

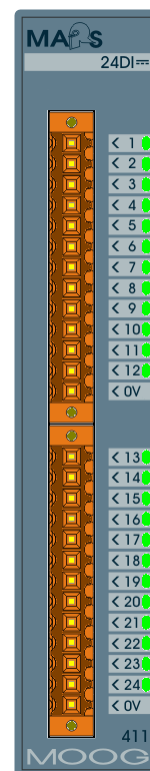
TECHNICAL CHARACTERISTICS	UNIT	IMI220-438B001
CPU side		
See IMI220-402B001 characteristics		
Video side		
Type of visualization		color, graphic mode
Resolution	pixel	800 x 600
External display		Color LCD (VGA)
External keyboard		
- type		passive, max 88 keys max 64 led
- configuration		matrix 11 col., 8 rows
- input current	mA@5V	1
- debouncing		software
Frontal connectors		
- display		type RJ45
- keyboard		type RJ45
Cables section		
- display		Ethernet cable CAT5/6/7 (E)
- keyboard		Ethernet cable CAT5/6/7 (E)
Cables length		
- display (max)	m	15 - 20
- keyboard (max)	m	15 - 20
Operating temperature		
- vertical position	°C	0...60
- horizontal position	°C	0...40
Weight	Kg	0.386

ADMITTED TERMINALS: IMI220-123A001, IMI220-123B001.



IMI220-411A001: 24 DI 24VDC

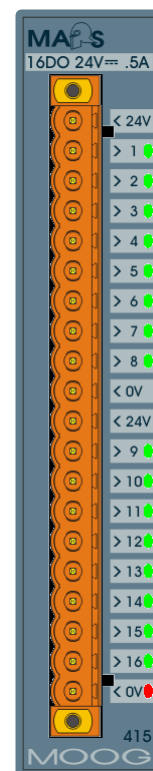
TECHNICAL CHARACTERISTICS	UNIT	IMI220-411A001
Input circuits		24 (sink)
In groups of		24
Input voltage	Vdc	24
- range	%	± 20
- ON level	Vdc	> 11
- OFF level	Vdc	< 11
- frequency	Hz	500
Input current	mA @ 24 Vdc	7
Delay time (typical)	ms	2
- from "0" to "1"	ms	2
- from "1" to "0"		
Interrupt		no
Visual indicator		24 green led (input side)
Galvanic separation		no
Reverse polarity protection		yes
Common points between channels		0V24
Effects of incorrect input terminal connection ²		none
Type of input		type 2
Effects when withdrawing / inserting input module under power		possible damage of the module and CPU program interruption
Additional external load when interconnecting inputs and outputs, if needed		dependent on the output
Signal evaluation		multimeter oscilloscope
- static		
- dynamic		
Frontal connectors		13+13 pins M, 3.5 mm
Cables section		copper
- material		
- field of lock (min/max)	mm ²	0.08...1.5
- rigid H05(07) V-U	mm ²	0.5...1.5
- flexible H05(07) V-k	mm ²	0.5...1.5
- flexible with terminal according to DIN 46228/1	mm ²	0.5...1.5
- flexible with insulating collar according to DIN 46228/4	mm ²	--
Cables length		
- shielded	m	500
- not shielded	m	250
Supply current		
- typical	mA	65
Operating temperature		
- vertical position	°C	0...60
- horizontal position	°C	0...40
Weight	Kg	0.148



² If one of the 0V24 is connected to a 0V24 signal and the other to +24V, then we have a short circuit with fire danger.

IMI220-415A001: 16 DO 24 VDC 0.5 A

TECHNICAL CHARACTERISTICS	UNIT	IMI220-415A001
Output circuits		16 (source)
In groups of		8
Type of output		PNP
Load voltage	Vdc	24
- range	%	± 20
Output current		
- for each channel (max)	A	0.5
- total (max)	A	8
- for group (max)	A	4
- OFF level	mA	0.003
Protection		
- short circuit	A	yes
- short circuit current limit		> 4
- over temperature		yes
- open circuit		yes
- reverse polarity		yes
- protection restoring		automatic
Voltage limitation		
- inductive load (typical)	Vdc	- 25
Galvanic separation		no
Output delay time TQD		
- from "0" to "1"	ms	0.03
- from "1" to "0"	ms	0.08
Output delay time TQT		
- from "0" to "1"	ms	0.06
- from "1" to "0"	ms	0.06
Common points between channels		0V24
Suppressor network against voltage peaks due to inductive kickback		active clamp
Effects of incorrect output terminal connection		protected against sc. at 24V and 0V24
Output behaviour during		
- MPU interruption		automatic turn off
- voltage drop		see note ³
- voltage interruptions		turn off
- power up/down seq.		up/down
Operating mode		non-latching
Effects of multiple overloads on multicircuit modules (twice Inom)		works correctly
Visual indicator		
- outputs (load side)		16 green led
- alarm		1 red led



³ The output follows the power voltage down to 4V, then it turns off.

TECHNICAL CHARACTERISTICS	UNIT	IMI220-415A001
Frontal connector		20 pins M, 5.08 mm
Cables section		
- material		copper
- field of lock (min/max)	mm ²	0.08...2.5
- rigid H05(07) V-U	mm ²	0.5...2.5
- flexible H05(07) V-k	mm ²	0.5...2.5
- flexible with terminal according to DIN 46228/1	mm ²	0.5...2.5
- flexible with insulating collar according to DIN 46228/4	mm ²	0.5...1.5
Cables length		
- shielded	m	500
- not shielded	m	250
Supply current		
- typical	mA	40
Operating temperature		
- vertical position	°C	0...60
- horizontal position	°C	0...40
Weight	Kg	0.153

IMI220-426A001: 8 AI/O 16/16 bit - Output Voltage/Current

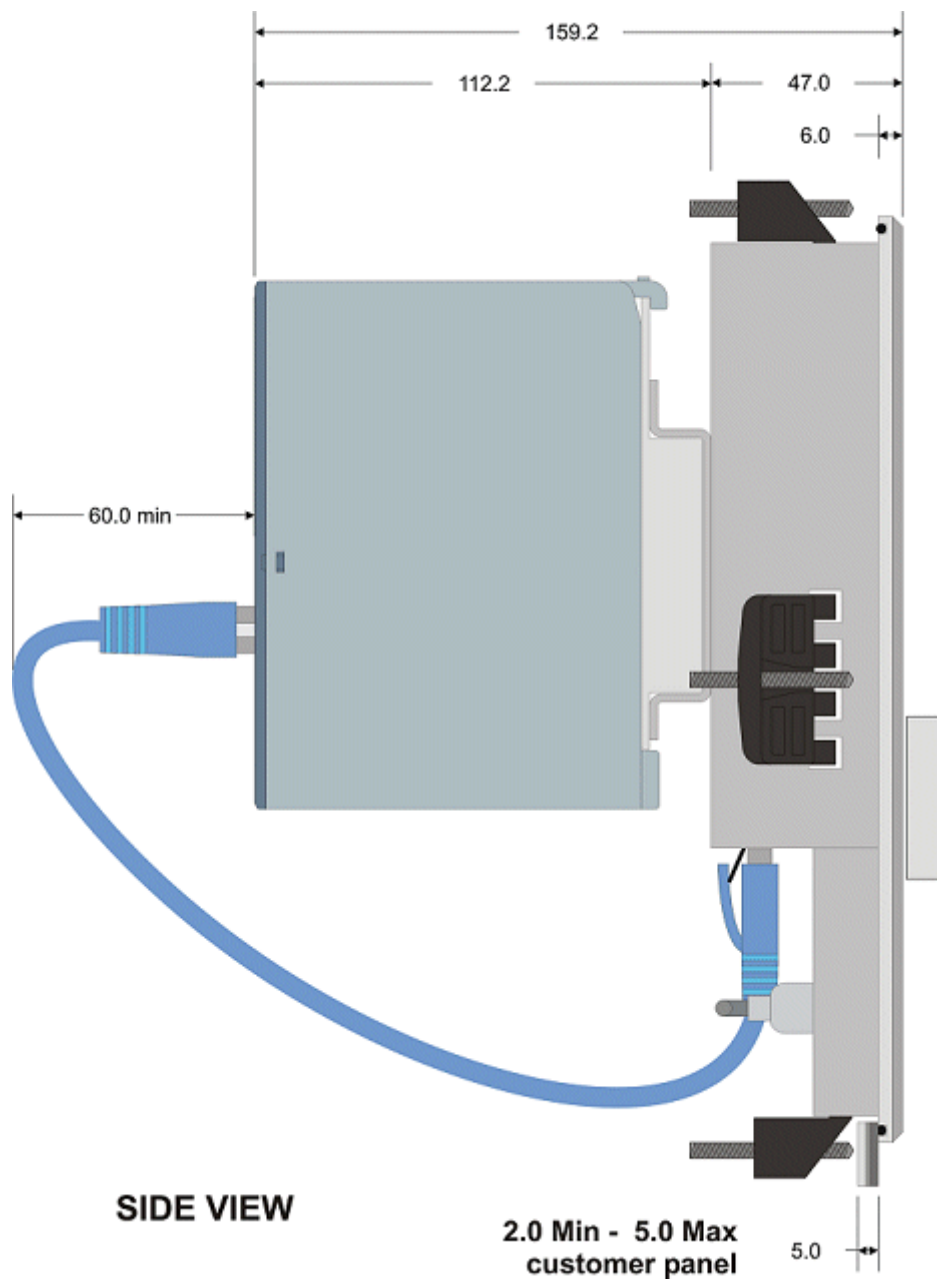
TECHNICAL CHARACTERISTICS	UNIT	IMI220-426A001
AI side		
Static characteristics		
Input circuits		4 differential
Input resistance	MΩ / Ω	5 / 500
Input range		
- voltage (nominal)	V	± 10
- current	mA	± 20 (only 1 & 2 channels)
Programmable digital filters		4
Vref outputs		
- voltage	V	10
- precision	%	± 0.1
- current (max)	mA	100
- short circuit protection		yes
Galvanic separation		no
Analog input Error		
- maximum error @ 25°C	%@FS	± 0.1
- temperature coefficient	%@FS/°C	± 0.005
Maximum error over full temperature range	mV	2.5
Digital resolution	Bit	16
Data format returned to the application program		INT
Value of LSB	mV	0.3
Maximum permanent allowed overload		30 V / 25 mA
Digital output reading under overload condition		FS value (saturation)
Type of input		differential
Common mode characteristic		
- d.c.	dB	60
- 50 Hz	dB	60
- 60 Hz	dB	60
Dynamic characteristics		
Total input system transfer time (min)	ms	0.05
Sample duration time	ms	0.1 - 0.4
Sample repetition time	ms	programmable from the user (min. time slice)
Input filter characteristics		
- type		low pass
- order		1°
- cut off frequency	Hz	800
General characteristics		
Conversion method		successive approximation
Operating mode		according command
Type of protection		RC
Supply current		
- +5V	mA	320
- +15V	mA	35
- -15V	mA	25



TECHNICAL CHARACTERISTICS	UNIT	IMI220-426A001
Common points between channels		Vref, 0V15
Terminal arrangements		4 differential inputs
Effect of incorrect input terminal connection		none
Miscellaneous characteristics		
Crosstalk between channels		
- d.c.	dB	80
- 50 Hz	dB	80
- 60 Hz	dB	80
Repeatability at fixed temperature after specified stabilization time	%@FS	0.003
T max for automatic conversion		
- 4 inputs + 4 filters	ms	0.4
AO side		
Static characteristics		
Output circuits		4 Voltage/Current output
Output resistance	Ω	25
Limitation		
- voltage		RL (min) 100 Ω
- current		RL (max) 100 Ω
Output type		Programmable
Output range		
- voltage	V	± 10
- current (max)	mA	± 100
Analog output Error		
- maximum error @ 25°C	%@FS	± 1
- temperature coefficient	%@FS/°C	± 0.004
Maximum error over full temperature range	mV	14
Digital resolution	Bit	16
Data format returned to the application program		INT
Value of LSB	mV	0.3
Dynamic characteristics		
Total output system transfer time	ms	0.02 (with resistive load)
Settling time for a full range change	ms	0.01 (with resistive load)
Overshoot	%@FS	0.2 (with resistive load)
General characteristics		
Type of protection		SC electronic protection
Supply current		
- +5 V	mA	320
- +15 V	mA	35
- -15 V	mA	25
Common points between channels		0VR
Output response at power up and power down	V	0

TECHNICAL CHARACTERISTICS	UNIT	IMI220-426A001
Miscellaneous characteristics		
Crosstalk between channels		
- d.c.	dB	80
- 50 Hz	dB	80
- 60 Hz	dB	80
Repeatability at fixed temperature after specified stabilization time	%@FS	-
General		
Frontal connectors		18+9 pins M, 3.5 mm
Cables section		
- material		copper
- field of lock (min/max)	mm ²	0.08...1.5
- rigid H05(07) V-U	mm ²	0.5...1.5
- flexible H05(07) V-k	mm ²	0.5...1.5
- flexible with terminal according to DIN 46228/1	mm ²	0.5...1.5
- flexible with insulating collar according to DIN 46228/4	mm ²	--
Operating temperature		
- vertical position	°C	0...60
- horizontal position	°C	0...40
Weight	Kg	0.143





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