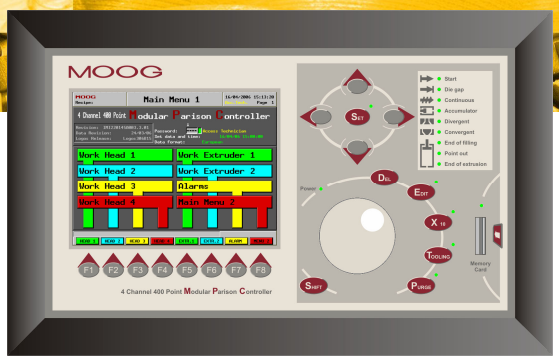
Technical Reference IMI220-145B001

4 Channel 400 Point Modular Parison Controller



OVERVIEW

CE

The Terminals described herein comply with the EMC directives.

GENERAL DESCRIPTION

Modular 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 Modular 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.

Modular 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.

Modular 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 Modular 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 Modular 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 Modular Parison Controller we are using but we also let the user apply the Modular 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.

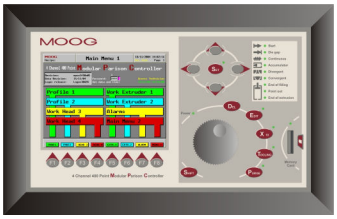
LIMITATIONS

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

IMI220-145B001: 4 Channel 400 Point Modular Parison Controller.

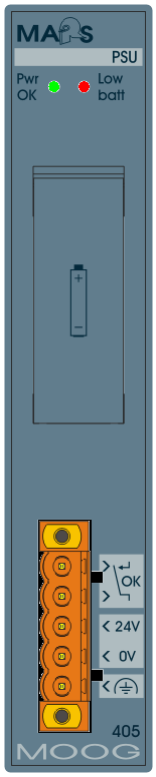


TECHNICAL CHARACTERISTICS	UNIT	IMI220-145B001
Input voltage	Vdc	24
Range	%	± 15
Current consumption	A	0.8 without external load
Memory card		yes
Immunity vibration		-
Environment class: - Frontal side - Rear side (plc)	 IP IP	 45 30
Operating temperature	°C	0...55
REAR SIDE		
Connectors: - Power supply - Electronic transducer		 5 pins M, 5.08 mm 3 pins M, 5.08 mm
Module: - PSU - CPU - Video - Digital Input - Digital Output - Analog Input/Output		 IMI220-405A001 IMI220-436A001 IMI220-436A001 IMI220-411A001 IMI220-415A001 IMI220-426A001
Power supply cable 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
External dimensions (H x W x D)	mm	228 x 360 x 220
Weight	Kg	5.0
INTERFACES		
Serial port - Baud rate RS232	 Bit/s	RS232 used for flash memory 19200

TECHNICAL CHARACTERISTICS	UNIT	IMI220-145B001
FRONTAL SIDE		
LCD		
LCD type		TFT colour 6.5”
Backlight		2 neon lamp
Resolution	pixel	640 x 480
Stand by		after 15 minutes
Contrast regulation		no
Brightness regulation		yes (Min/Max)
KEYBOARD		
Keyboard type		membrane
Keys: - rotary knob - total keys - functional keys		 yes 19 8
Rotary knob characteristics: - step encoder	 Bit	 24
Memory card: - size	 Mb	 64
Led: - Power - Set - Edit - X 10 - Tooling - Purge - Start - Die Gap - Continuous - Accumulator - Divergent - Convergent - End of filling - Point out - End of extrusion		 green led green led green led green led green led green led green led green led green led green led green led green led green led green led green led

IMI220-405A001: PSU 24 VDC 15 W

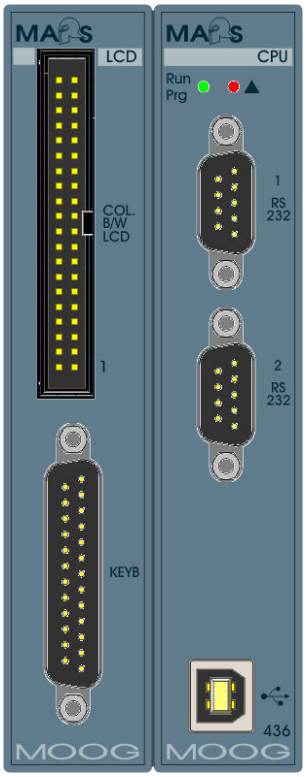
TECHNICAL CHARACTERISTICS	UNIT	IMI220-405A001
Input voltage - nominal value - range	 Vdc %	 24 - 10...+ 20
Reverse polarity protection		yes
Input current @ 24 Vdc - max - min	 A A	 1 -
Efficiency	% typ.	83
Effect of incorrect connections of power to the supply(ies) - reverse polarity - improper voltage 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

IMI220-436A001: Main CPU (IMI220-402A001 + USB device) + Contr. LCD VGA COL HW acc. / Keyb.

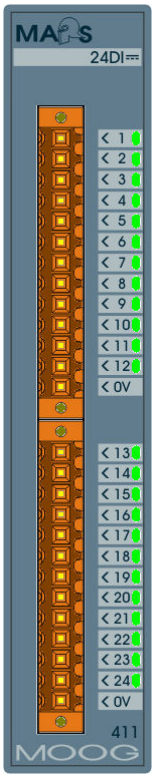
TECHNICAL CHARACTERISTICS	UNIT	IMI220-436A001
CPU side		
Microprocessor		32 bit RISC technology (220 MHz)
CPU performance	MIPS	316
Type of memory - RAM (total) - Flash-EPROM (total) - Flash-EPROM (user)	 Mbytes Mbytes Mbytes	 18 (2 Mbytes battery backed) 8 > 7
Cycle time		user programmable (from 2 ms @ up)
Programming language		IL, LD, ST, as by IEC1131-3
Counting functions- (function block) - timers base associated variables - counters range associated variables		molding integer multiple of cycle time timing value delay turn on delay turn off timer with impulse -32768...32767 (up/down) counter value counter = 0 counter >= set
Digital I/O - theoretical		 10000
Analog I/O (max)		112
Time/date		h/m/s - y/m/d
Boolean instructions		AND, OR, LD, ST, ANDN, ORN, LDN, STN, S, R
Functions set		> 100
Interface		RS232, USB 1.0 (2.0 compatible)
Visual indicator - halt - run, prog		 red led green led (fixed run, blink prog. PLC)
Supply current - typical (+5 V) - stand by	 mA mA	 500 0.005
Voltage range	% 5Vdc	± 5
Baud rate	Bit/s	1000000 (max)
Galvanic separation		no
Signal DCD for Modem		yes
Signal RTS & CTS		yes
Frontal connectors - RS232 - USB		 type D 9 pins M type B
Cable section - RS232	 mm²	 0.14…0.5
Cable length - RS232 - USB	 m m	 15 (115 Kbaud) 5



TECHNICAL CHARACTERISTICS	UNIT	IMI220-436A001
Video side		
Type of visualization		color, graphic mode
Resolution	pixel	800 x 600
External display		Color LCD (VGA)
External keyboard - type - configuration - input current - debouncing	 mA@5V 	 passive, max 88 keys max 64 led matrix 11 col., 8 rows 1 software
Frontal connectors - display - keyboard		 40 pins M, with central polarization type D 25 pins M
Cables section - display - keyboard	 mm²	 flat cable 28 AWG 0.14...0.5
Cables length - display (max) - keyboard (max)	 m m	 3 3
Operating temperature - vertical position - horizontal position	 °C °C	 0...60 0...40
Weight	Kg	0.386

IMI220-411A001: 24 DI 24VDC

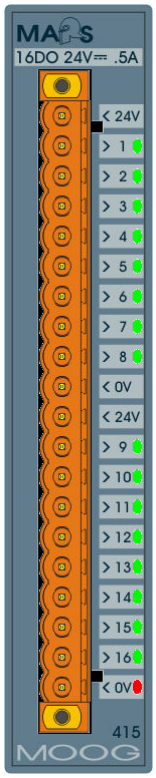
TECHNICAL CHARACTERISTICS	UNIT	IMI220-411A001
Input circuits		24 (sink)
In groups of		24
Input voltage - range - ON level - OFF level - frequency	Vdc % Vdc Vdc Hz	24 ± 20 > 11 < 11 500
Input current - ON level	mA @ 24 Vdc	 7
Delay time (typical) - from “0” to “1” - from “1” to “0”	 ms ms	 2 2
Interrupt		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 - static - dynamic		 multimeter oscilloscope
Frontal connectors		13+13 pins M, 3.5 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...1.5 0.5...1.5 0.5...1.5 0.5...1.5 --
Cables length - shielded - not shielded	 m m	 500 250
Supply current - typical	 mA	 65
Operating temperature - vertical position - horizontal position	 °C °C	 0...60 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 - range	Vdc %	24 ± 20
Output current - for each channel (max) - total (max) - for group (max) - OFF level	 A A A mA	 0.5 8 4 0.003
Protection - short circuit - short circuit current limit - over temperature - open circuit - reverse polarity - protection restoring	 A 	 yes > 4 yes yes yes automatic
Voltage limitation - inductive load (typical)	 Vdc	 - 25
Galvanic separation		no
Output delay time TQD - from “0” to “1” - from “1” to “0”	 ms ms	 0.03 0.08
Output delay time TQT - from “0” to “1” - from “1” to “0”	 ms ms	 0.06 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 - voltage drop - voltage interruptions - power up/down seq.	 	 automatic turn off see note [3] turn off up/down
Operating mode		non-latching
Effects of multiple overloads on multicircuit modules (twice Inom)		works correctly
Visual indicator - outputs (load side) - alarm	 	 16 green led 1 red led

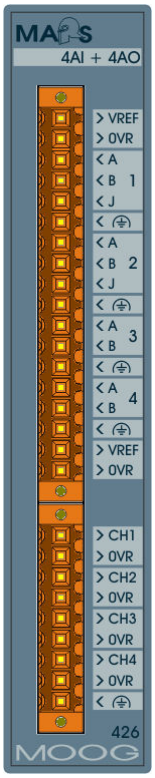


[3] The output follows the power voltage down to 4V, then it turns off.

TECHNICAL CHARACTERISTICS	UNIT	IMI220-415A001
Frontal connector		20 pins M, 5.08 mm
Cables section		
- material		copper
- field of lock (min/max)	mm²	0.08...2.5
- rigid H05(07) V-U	mm²	0.5...2.5
- flexible H05(07) V-k	mm²	0.5...2.5
- flexible with terminal according to DIN 46228/1	mm²	0.5...2.5
- flexible with insulating collar according to DIN 46228/4	mm²	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

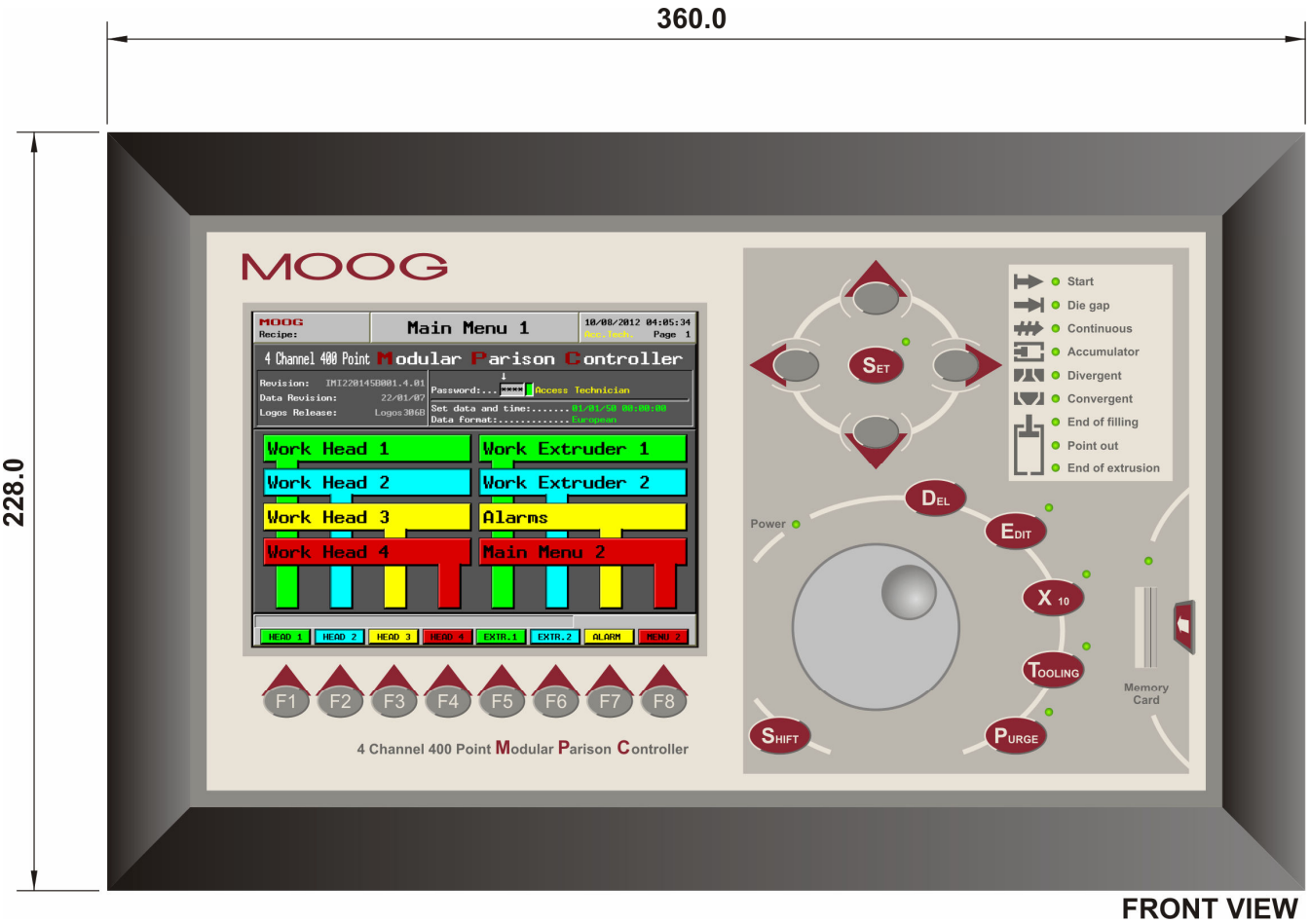
IMI220-426A001: 8 AI/O 16/16 bit - Output Voltage/Current

TECHNICAL CHARACTERISTICS	UNIT	IMI220-426A001
AI side		
Static characteristics		
Input circuits		4 differential
Input resistance	MΩ / Ω	5 / 500
Input range - voltage (nominal) - current	 V mA	 ± 10 ± 20 (only 1 & 2 channels)
Programmable digital filters		4
Vref outputs - voltage - precision - current (max) - short circuit protection	 V % mA	 10 ± 0.1 100 yes
Galvanic separation		no
Analog input Error - maximum error @ 25°C - temperature coefficient	 %@FS %@FS/°C	 ± 0.1 ± 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. - 50 Hz - 60 Hz	 dB dB dB	 60 60 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 - order - cut off frequency	 Hz	 low pass 1° 800
General characteristics		
Conversion method		successive approximation
Operating mode		according command
Type of protection		RC
Supply current - +5V - +15V - -15V	 mA mA mA	 320 35 25

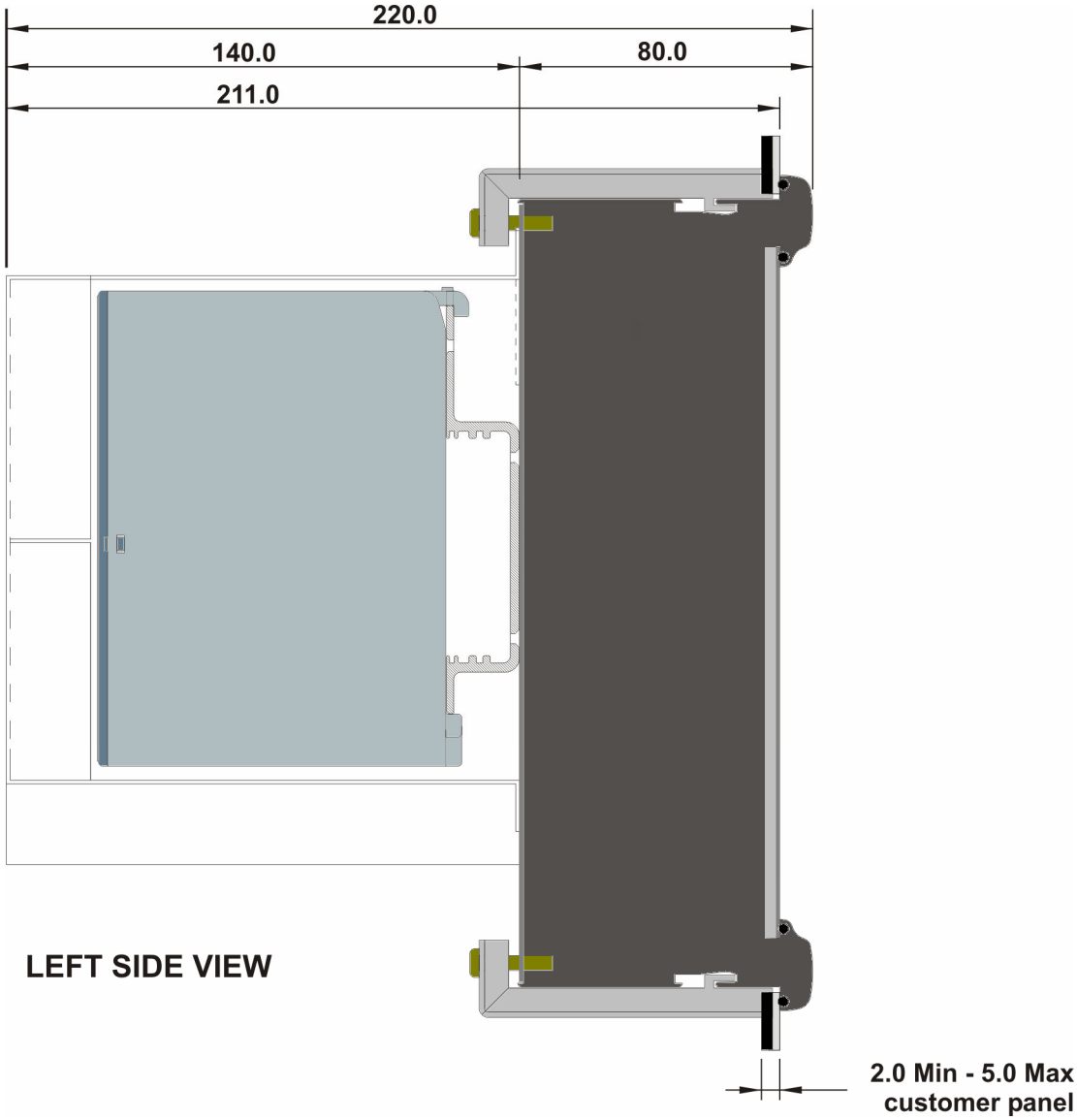


TECHNICAL CHARACTERISTICS	UNIT	IMI220-426A001
Common points between channels		Vref, 0V15
Terminal arrangements		4 differential inputs
Effect of incorrect input terminal connection		none
Miscellaneous characteristics		
Crosstalk between channels - d.c. - 50 Hz - 60 Hz	 dB dB dB	 80 80 80
Repeatability 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 - current		 RL (min) 100Ω RL (max) 100Ω
Output type		Programmable
Output range - voltage - current (max)	 V mA	 ± 10 ± 100
Analog output Error - maximum error @ 25°C - temperature coefficient	 %@FS %@FS/°C	 ± 1 ± 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 - +15 V - -15 V	 mA mA mA	 320 35 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. - 50 Hz - 60 Hz	 dB dB dB	 80 80 80
Repeatability at fixed temperature after specified stabilization time	%@FS	-
General		
Frontal connectors		18+9 pins M, 3.5 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...1.5 0.5...1.5 0.5...1.5 0.5...1.5 --
Operating temperature - vertical position - horizontal position	 °C °C	 0...60 0...40
Weight	Kg	0.143

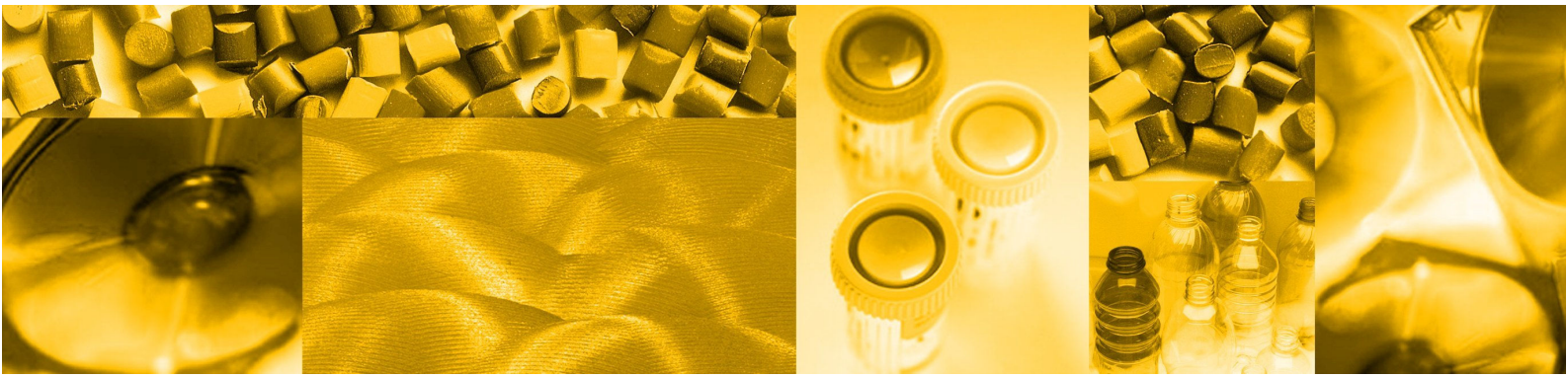

360.0
228.0
MOOG
Main Menu 1
4 Channel 400 Point Modular Parison Controller
Work Head 1
Work Head 2
Work Head 3
Work Head 4
Work Extruder 1
Work Extruder 2
Alarms
Main Menu 2
F1
F2
F3
F4
F5
F6
F7
F8
4 Channel 400 Point Modular Parison Controller
SET
DEL
EDIT
X 10
TOOLING
PURGE
SHIFT
Power
Memory Card
Start
Die gap
Continuous
Accumulator
Divergent
Convergent
End of filling
Point out
End of extrusion

FRONT VIEW


220.0
140.0
80.0
211.0
LEFT SIDE VIEW
2.0 Min - 5.0 Max
customer panel

GENERAL INDEX

Argentina
Australia
Austria
Brazil
China
Finland
France
Germany
India



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MOOG

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