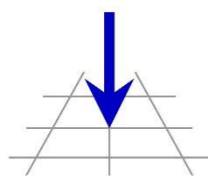


ControlTech - robot



PRECISE
AUTOMATION



DOBOT



KOLABORATIVNÍ ROBOTY



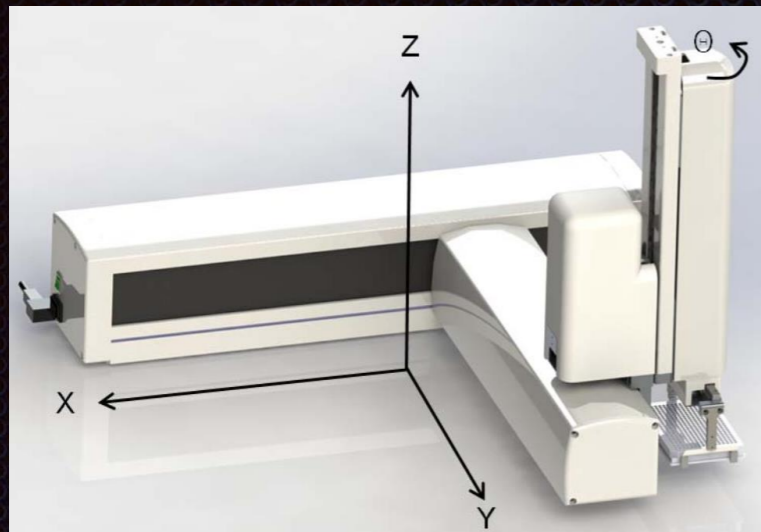
ControlTech

intelligentní senzorický systém

Recovers smoothly from interruptions

KOLABORATIVNÍ ROBOTY

KARTÉZSKÝ

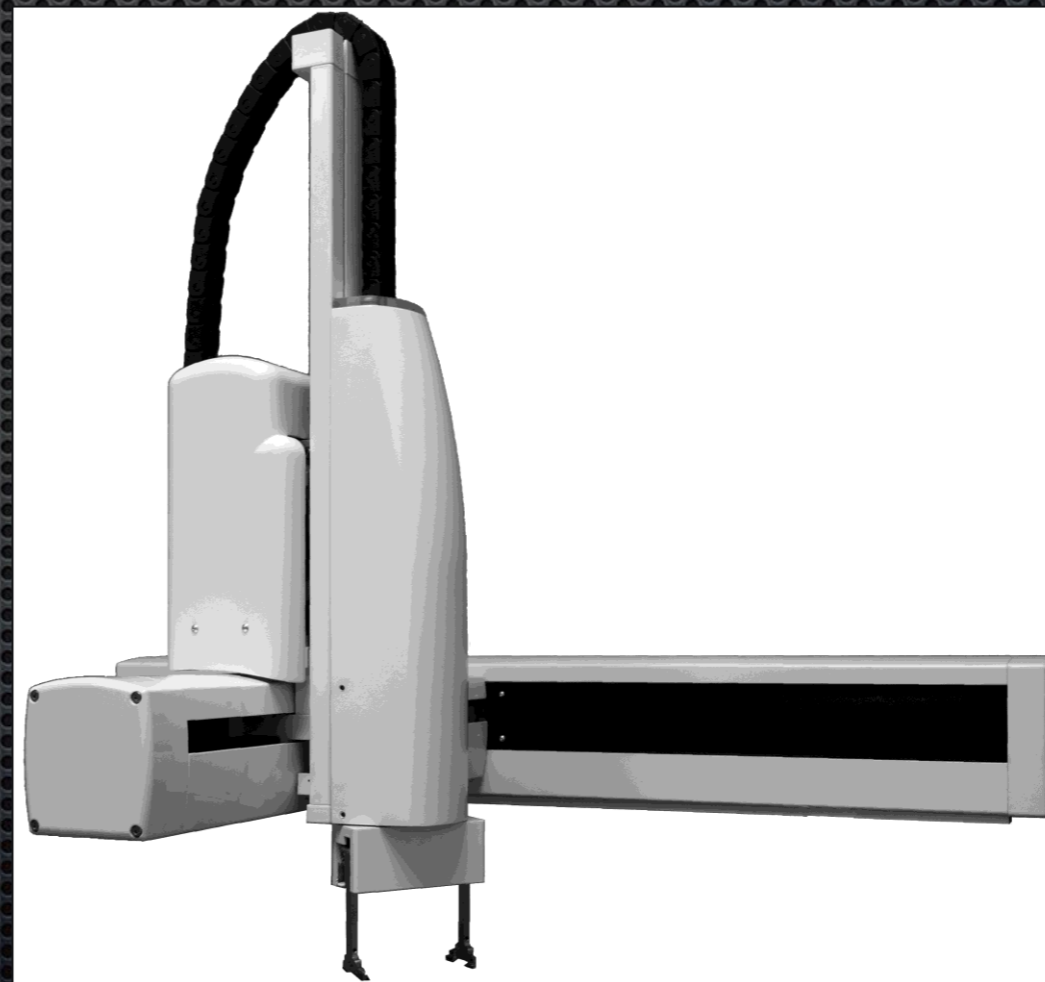


Dvě základní konfigurace

XZ



XYZ



KOLABORATIVNÍ ROBOTY

KARTÉZSKÝ



- 2 kg užitečné zatížení
 - 3 kg bez gripperu
- 1.5 m/s max rychlost
- 229 mm Z trasa
- 350 mm Y trasa
- 500 nebo 1085 mm X trasa
- $\pm 100 \mu\text{m}$ přesnost opakování

KOLABORATIVNÍ ROBOTY

KARTÉZSKÝ

Precise Servo Gripper

0-23 N síla stisku

57 mm trasa

Spring-loaded

pružina zabráňující

vypadávání dílů



PrecisePlace XYZ

bez gripperu

500mm X

300mm Y

225mm Z

1000mm X

300mm Y

225mm Z



Theta Axis Removed with End-of-Arm Facilities for
Customer Tooling (ex. Pneumatic, Vacuum, Dispense)

KOLABORATIVNÍ ROBOTY

KARTÉZSKÝ

Digitální I/O

- Na koncovém uzávěru
- 4 vstupy, 4 výstupy
- Další 12 vstupů a 8 výstupů s GIO na zadním krytu

Interní vzduchový rozvod od koncového uzávěru k
pneumatickému gripperu.



SCARA ROBOT PreciseFlex 3400

Kompaktní stolní robot

První kolaborativní SCARA robot
na trhu

Schopný pracovat v úzkém
a omezeném prostoru



SCARA ROBOT PreciseFlex 3400



- 3 kg užitečné zatížení
- 1 m/s max. rychlost
- Dosah 731 mm
- „Easy to teach“
jednoduché učení
- Snadno přemístitelný

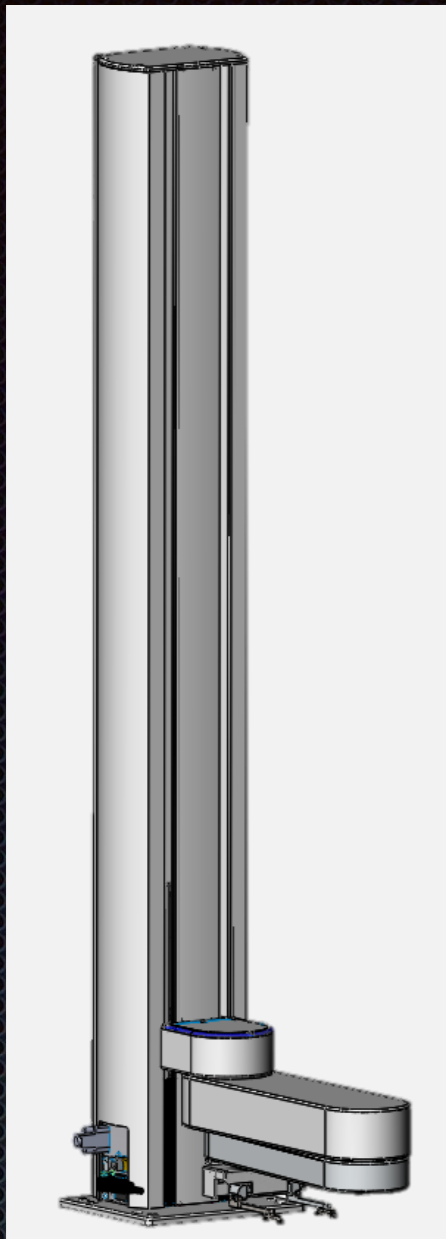
SCARA ROBOT PreciseFlex 3400

Linear Rail – 1 m, 1,5 m a 2 m délky



SCARA ROBOT PreciseFlex 3400

Servo
Pneumatic
Vac
Gripper Options
Dosah 731mm



1160mm Z

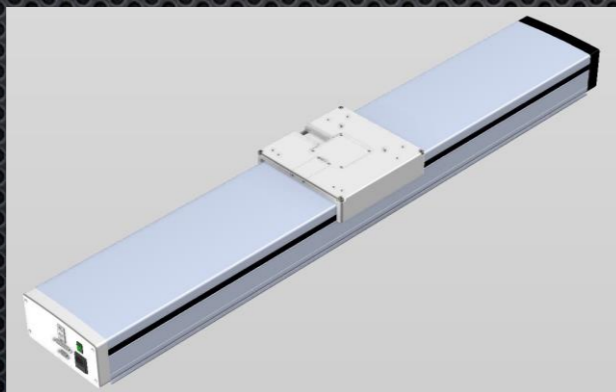


750mm Z

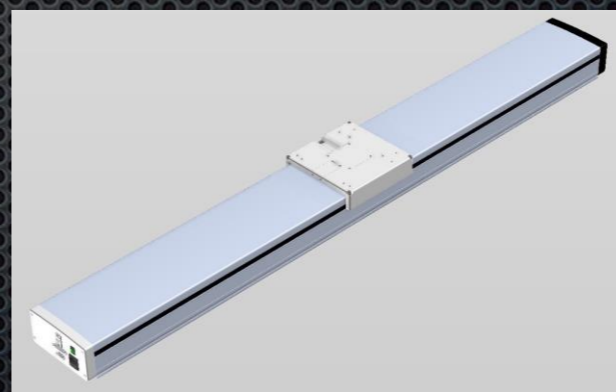


400mm Z

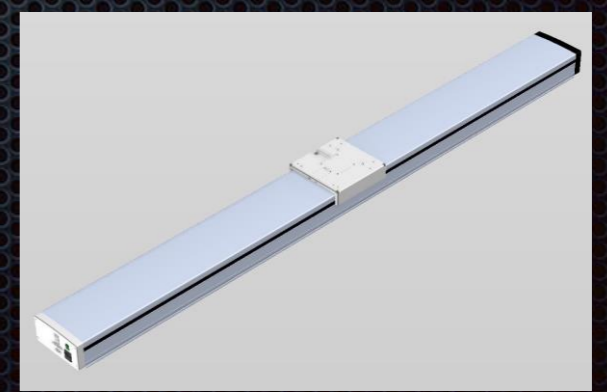
Linear
Rail



1m



1.5m



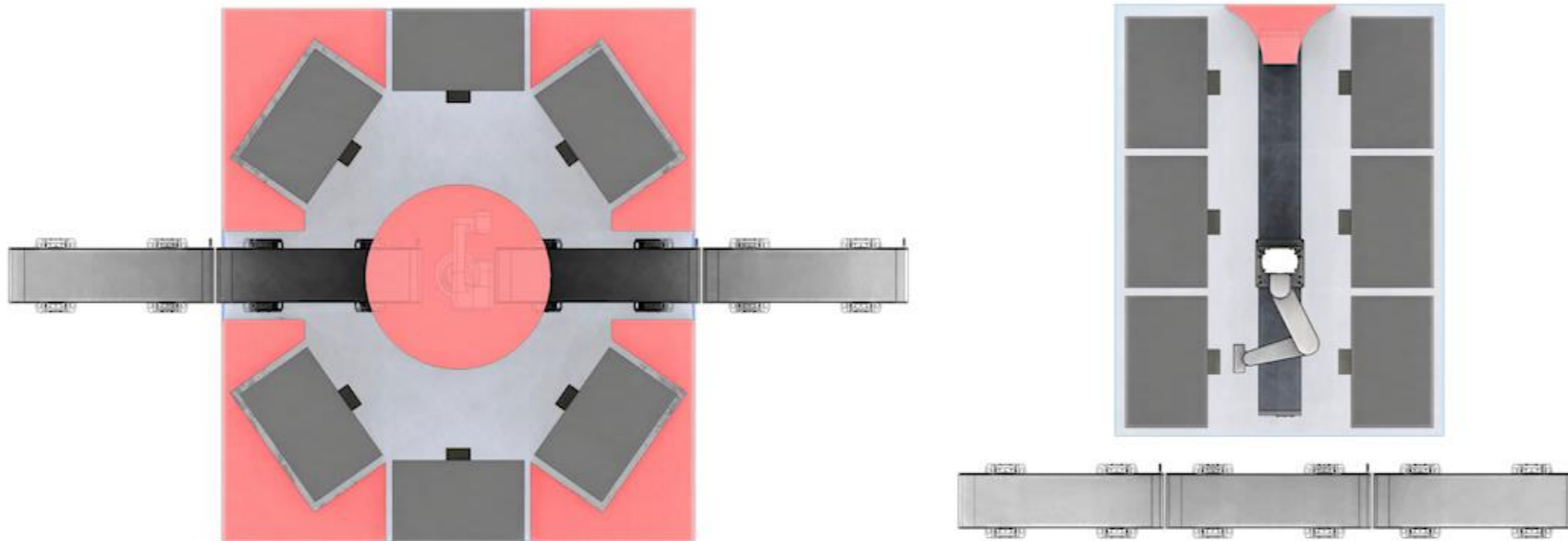
2m

SCARA ROBOT PreciseFlex 3400



SCARA ROBOT PreciseFlex 3400

Both robots service the same locations

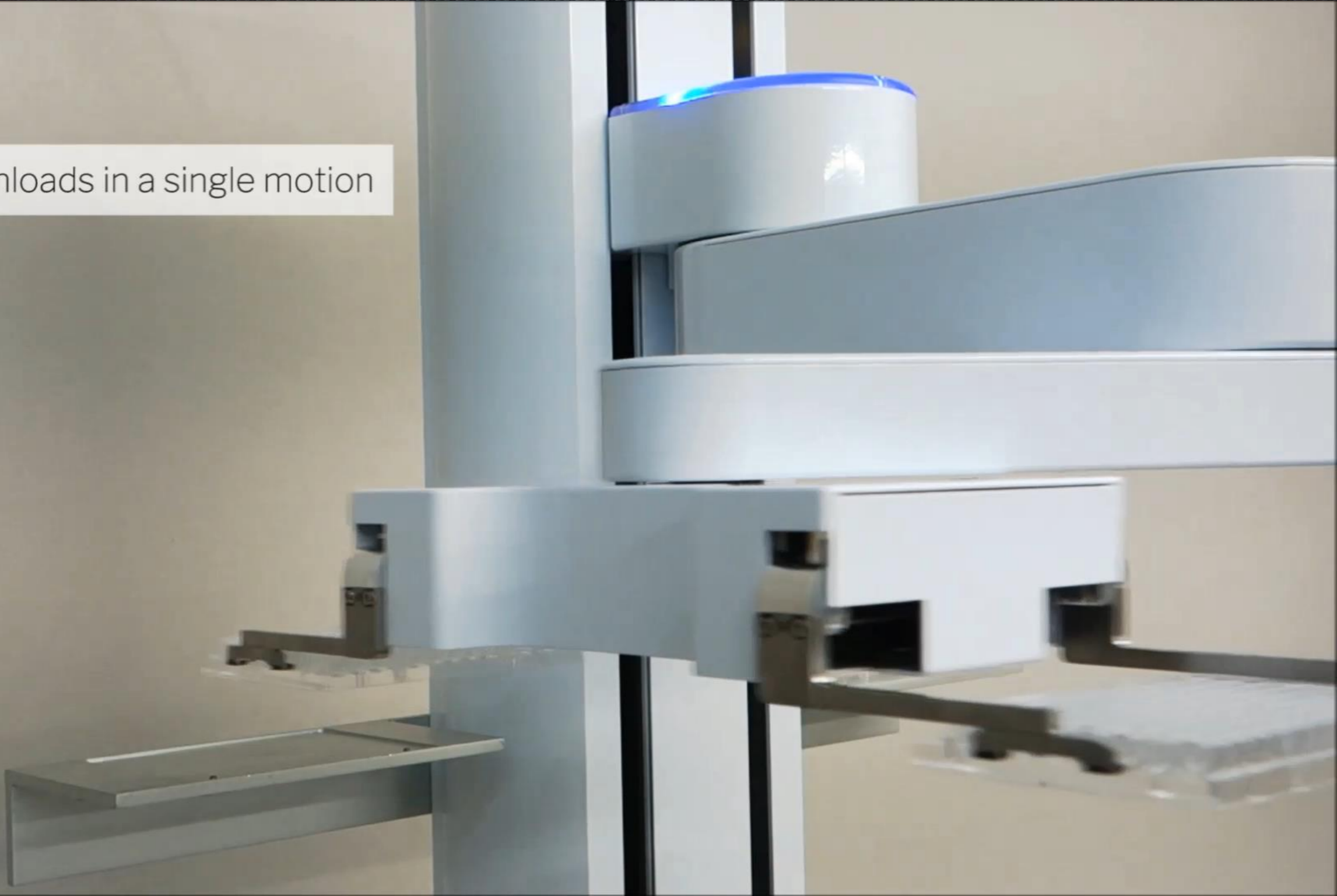



but the **PreciseFlex** wastes less space

SCARA Specialties: Compact, efficient motions

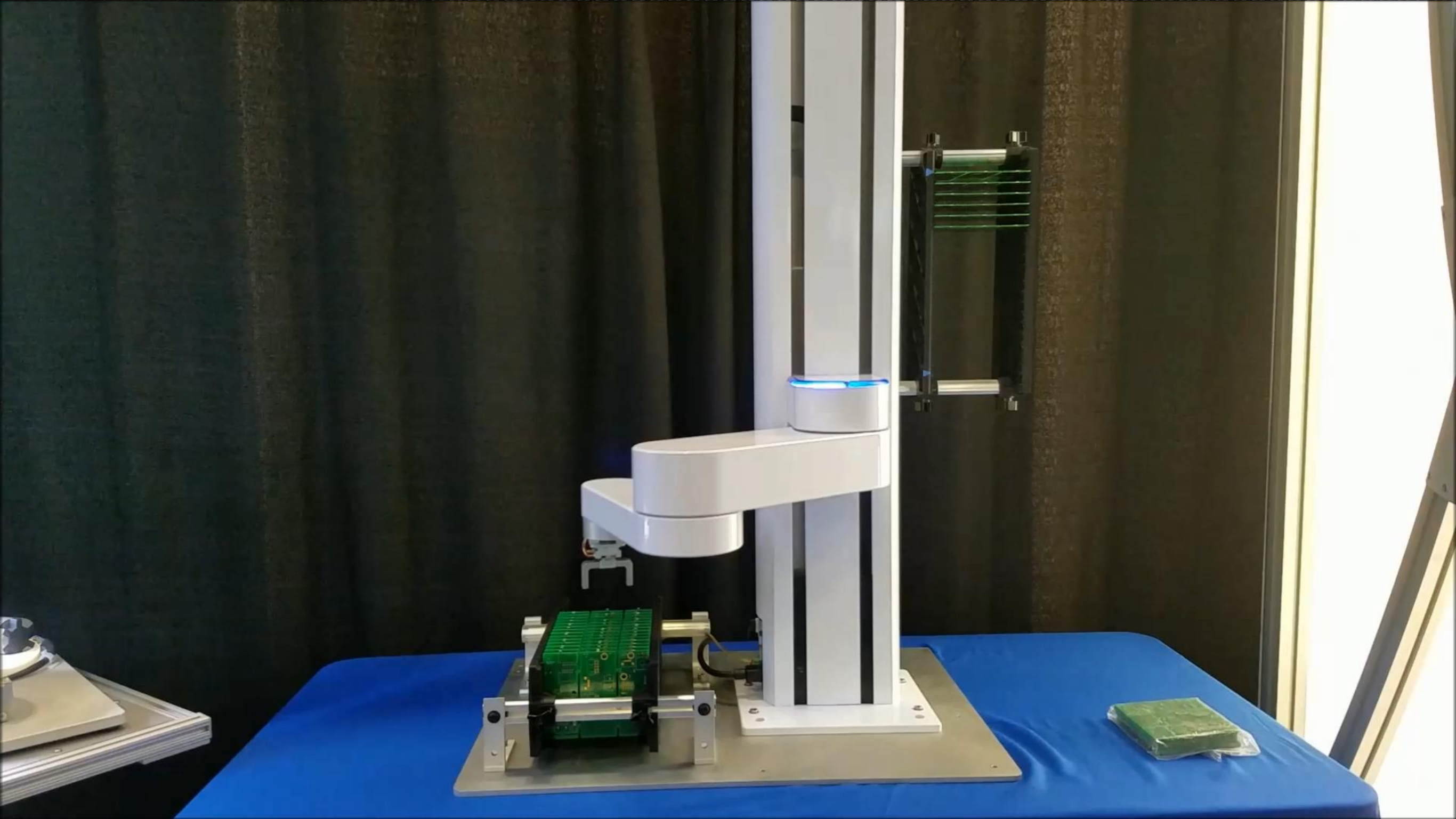


Loads and unloads in a single motion






Easily services existing ICT
fixtures with no modifications







Large Work Envelope and Small Footprint
Precise Automation



ŠESTI-OŠÝ ROBOT PAVP6 a PAVS



ŠESTI-OSÝ ROBOT PAVP6



**Denso VP-6242 robot s vestavěnou
řídící jednotkou PreciseAutomation**

- **2 kg užitečné zatížení**
- **470 mm radius dosahu**
- **800 mm/s max. rychlost**

ŠESTI-OŠÝ ROBOT PAVS serie

Denso VS-G robot (6556 a 6577)
s externím řídicím boxem
PreciseAutomation

- 4-5 kg užitečné zatížení
- 650 mm radius PAVS 650
- 650 mm radius PAVS 850
- 750 mm/s max. rychlost





...line%20v1.0/index.asp

Shoe Trace Demo Web GUI

Before you run the dispensing program for the first time, you must go through the calibration process. Still has some bugs

free mode active

40%

about threads

ESTOP

Setup & Calibration

1. Turn free mode on <input type="button" value="free mode on"/>	2. Teach calibration points Origin # <input type="button" value="teach"/> <input type="button" value="clear"/> X Point # <input type="button" value="teach"/> <input type="button" value="clear"/> Y Point # <input type="button" value="teach"/> <input type="button" value="clear"/> <input type="button" value="Clear All"/>	3. Turn free mode off <input type="button" value="free mode off"/>
		4. Choose clearance & build trace clearance: <input type="text" value="5.0 mm"/> <input type="button" value="clear and build trace"/>

PAVP6 6-Axis Robot
Customizable GUI and Integrated Web Server



KOLABORATIVNÍ ROBOTY

- **Programování**
 - Guidance Motion
 - Guidance Programming Language
 - TCP/IP Command Server



PROGRAMOVÁNÍ ROBOTA

The screenshot shows the Precise Automation software interface. At the top, there is a navigation bar with a red "E-Stop" button, system information "System: PrecisePlace 0120S XZ B03", and the project name "Project: ExamplePickAndPlace". The Precise Automation logo is in the top right. Below the navigation bar, there are status indicators for "Project Idle", "Project Modified" (highlighted in yellow), and "Flash Idle".

The main interface is divided into two panels. The left panel, titled "GuidanceMotion Quick Start", contains a tree view of the project structure:

- Operator Control
- Virtual Pendant
- Project Management
- Loaded Project: ExamplePickAn
 - COMMENT (Description)
 - MOVE (Point0_Safe)** (highlighted in blue)
 - GRIPPER (open_to_grip)
 - MOVE (Point1_Move)
 - GRIPPER (close)

The right panel, titled "MOVE THE ROBOT", is for configuring a specific move. The "Name" field is set to "Point0_Safe". The "Location Type" section has radio buttons for Cartesian, Joint (selected), Same As Ref Step, and Relative To Pallet. Below this is a table for joint coordinates:

J1	J2	J3	J4	J5	J6	
379.993	8.006	119.923	0.000	0.000	0.000	Record

Below the table, there are options for "Motions to Perform": Approach, Move To (checked), and Depart. The "Approach/Depart Height" is set to 0.00. At the bottom, there are buttons for "Jog Above", "Jog To", "Free", and dropdown menus for "Jog Med Spd" and "Jog Joint".

PROGRAMOVÁNÍ ROBOTA

Project Manager

PC (0) : C:\Program Files\Precise Autom

- CIDLO_TEST
- FM_Input_Triggered
- FM_Recover_PAVP6
- Pallet_demo
- PAVP6_Restart
- Pf400_exercise_rev118_recover
- PnP_Input_Triggered
- PnP_Simple
- PnP_Step_Recovery
- PP120S_recover_demo
- Reference_Frame_Ex
- Simple_Jar_Demo
- SPEL_01
- SPEL_LIS_001
- SPEL01
- SPEL02
- SPEL02_a
- SPEL02_b
 - GModule.gpo
 - Main.gpl
- SPEL02_priprava_v_kancelari
- Tcp_cmd_server_pa
- TEST_CT_1
- TEST_CT_1_cpy
- TEST_PV_20180326
- TEST_PV20180328
- TEST_PV20180328_estop
- TEST_PV20180328_estop_AR
- TEST_PV20180328_estop_cpy1
- TEST_PV20180328_estop_cpy2
- TEST002
- TEST003
- TEST004

GModule.gpo Main.gpl

Motion Objects [view source](#)

- Motion Location
 - KUZEL_PRIBLIZENI
 - KUZEL_PRIBLIZENI_B
 - KUZEL_UCHOPENI
 - KUZEL_UMISTENI
 - Location_A
 - Location_B
 - Safe_Location
 - VALEC_PRIBLIZENI_A
 - VALEC_PRIBLIZENI_B
 - VALEC_UCHOPENI
 - VALEC_UMISTENI
- Motion Profile
 - Gripper_Motion
 - Quick_Motion
 - Slow_Motion
- Motion Frame
- GPL Variable

MotionLocation: KUZEL_PRIBLIZENI

Identity	
Name	KUZEL_PRIBLIZENI
Text	
Motion	
Config	1
RefFrame	
Type	Cartesian
Robot Angles	
Angle01	0
Angle02	0
Angle03	0
Angle04	0
Angle05	0
Angle06	0
Angle07	0
Angle08	0
Angle09	0
Angle10	0
Angle11	0
Angle12	0
Robot Cartesian Coordinates	
Pitch	90
Roll	180
X	93.16493
Y	395.0899
Yaw	-1.927325
Z	108.066
Robot Clearance	
ZClearance	1E+32
ZWorld	False

Name
Name of the selected variable.

Add Delete Record

Jog To ... Set Memory

PROGRAMOVÁNÍ ROBOTA

The image shows a screenshot of a robot programming IDE. The main window displays a code editor with the following code:

```
1 'Created: 3/26/2018 6:46:24 PM
2 Module GPL
3
4 Dim SIGNAL_A As Integer = 20001
5 Dim SIGNAL_B As Integer = 20002
6 Dim SIGNAL_C As Integer = 20003
7
8 Public Sub MAIN
9     Dim opakovani As Integer
10    Dim signal_state As Boolean
11    Dim err As New Exception
12    Dim Caught As Boolean = True
13    Dim state As String = "01"
14    Dim ukon As Integer
15
16    zacatek:
17
18    Controller.PowerEnabled = 1
19    Robot.Attached = 1
20    Robot.Home ()
21
22    Move.Loc(Safe_Location, Slow_Motion)
23
24    opakovani = 1
25    Signal.DIO(800015) = False
26
27    While (Not Signal.DIO(810002))
28        Controller.SleepTick(1)
29    End While
30    Signal.DIO(800015) = True
31
32    Do
33        Try
```

The right-hand side of the IDE features a 'GPL Object Browser' window. It lists various objects and methods available in the GPL environment, including:

- Controller
- Exception
- File
- Function
- IPEndPoint
- Latch
- Location
- Math
- Modbus
- Move
 - Approach(location_1,profile_1)
 - Arc(location_1,location_2,profile_1)
 - Circle(location_1,location_2,profile_1)
 - Delay(seconds)
 - Extra(axis_position)
 - ForceOverlap(mode,criterion)
 - Loc(location_1,profile_1)
 - OneAxis(axis,position,rel,profile)
 - Rel(location,profile)
 - SetJogCommand(jog_mode,jog_axis)
 - SetRealTimeMod(changes_array)
 - SetSpeeds(speed_array,profile_1)
 - SetTorques(torques_array)
 - StartJogMode()
 - StartRealTimeMod(coordinates,char)
 - StartSpeedDAC(scale_factor,dac_o)
 - StartTorqueCntrl(motor_mask,adc_m)
 - StartVelocityCntrl(mode,adc_mask)
 - StopSpecialModes
 - Trigger(mode,trigger_pt,channel)
 - WaitForEOM

The 'Approach(location_1,profile_1)' method is currently selected in the browser. Below the list, a detailed description is provided:

Approach(location_1,profile_1)
Member Of: Move [Click for help.](#)
Description: Moves to the clearance position for a specified Location.

KOLABORATIVNÍ ROBOTY A SAFETY



PRECISE AUTOMATION VISION SYSTEM



060525 Vision Servo

Čtečky čárových kódů



Keyence
BL-600 and BL-1300



Microscan MS-3 and MS-4



Cognex DataMan
50L and 60L



EUROIMMUN AG
Publikováno 29. 7. 2016

<https://youtu.be/SmOySrNQAXk>



TTP Labtech
Publikováno 19. 9. 2016

<https://youtu.be/fsG3-Y-xTwE>



Biosero
Publikováno 15. 3. 2018

<https://youtu.be/ACaPU2dUUbA>



CyBiosWorld
Publikováno 1. 3. 2016

<https://youtu.be/luTriGj0lrl>



HighRes Biosolutions



<https://vimeo.com/highresbio/colabflex>



<https://news.sky.com/story/uk-lab-makes-dna-for-synthetic-biology-10231939>



<http://money.cnn.com/video/technology/2015/04/17/bayer-technology-automation.cnnmoney/index.html>



DRV70L



DRV90L



DRS40L Series



DRS50L Series



DRS60L Series



DRS70L Series



Delta SCARA Robot DRS40L



- **Dosah ramene: 400 mm**
- **Maximální nosnost 3 Kg**
- **Standardní čas cyklu 0.42 (při zatížení 1 Kg)**
- **Opakovatelnost ± 0.01**
- **Hmotnost 16 Kg**



Delta SCARA Robot DRS60L



- **Dosah ramene: 600 mm**
- **Maximální nosnost 6 Kg**
- **Standardní čas cyklu 0.39 sec (při zatížení 1 Kg)**
- **Opakovatelnost ± 0.015 mm**
- **Hmotnost 20 Kg**

Human Machine Interface
HMI



Handheld Teach Pendant
DTS



PAD



PC



Machine Vision System
DMV



Robot Controller
DCS



+ Extensions: up to 6 axes of control



Servo Drive ASDA-A2
Servo Motor ECMA



DRS40L

SCARA Robot



DRS60L





Delta Vertical Articulated Robot DRV70L/DRV90L

- **Dosah ramene 700 a 900 mm**
- **Maximální nosnost 7 Kg**
- **Standardní čas cyklu 0.31 sec.
(při zatížení 1 Kg)**
- **Opakovatelnost
 ± 0.02 a ± 0.03 mm**



DOBOT



DOBOT
Share Creating Pleasure

DOBOT-M1

ControlTech



Opakovatelnost
0.02mm



Rychlost
200°/s



Nosnost
1.5kg



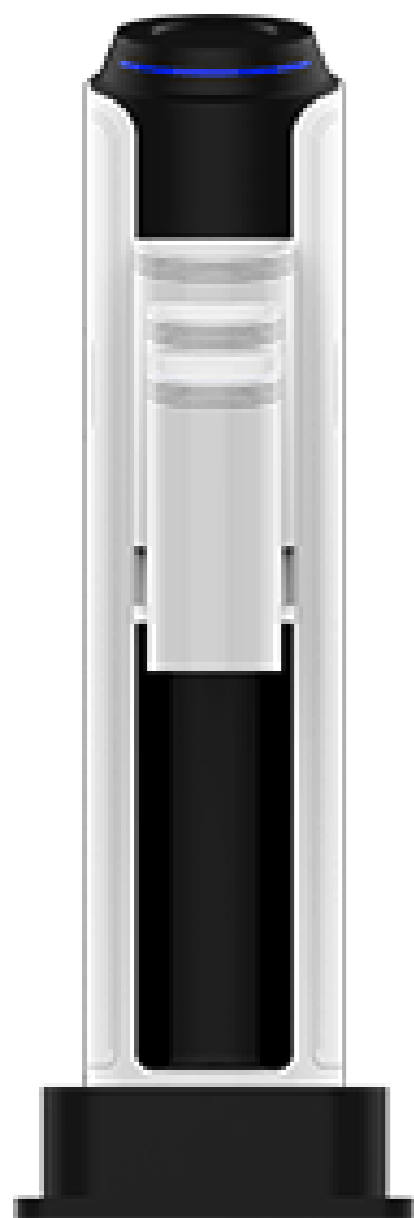
Dosah
400mm



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ControlTech



Řízené osy	4	Nosnost	1.5kg	
Max. dosah	400mm	Opakovatelnost	0.02mm	
Rozsah pohybu	J1	$\pm 90^\circ$	J1	200°/s
	J2	$\pm 135^\circ$	J2	200°/s
	Z	250mm	J1+J2	2000mm/s
	R	$\pm 360^\circ$	Z	1000mm/s
Čas cyklu	0.45s	Zdroj	100-240VAC. 50-60Hz	
I/O	24V vstup ×8, 24V výstup ×8	Operační systém	Linux	
Komunikační rozhraní	Ethernet,RS-232C, USB HID	Software	DobotStudio	
Procesorová platforma	ARM Cortex-A9 +ARM Cortex-M4+ FPGA			



DOBOT
Share Creating Pleasure

DOBOT-M1

ControlTech

M1Studio-V1.0.4 >> C:/Program Files/M1Studio/config/pbstore/Playback_Test_PV_01.playback

Settings Tools Help



Playback Script

Infinite Loop

Loop
 DynRatio %

 1% 200%

Index	Name	Type	Content
0		OUTPUT	OUT18=0V
1		MOVJ	To(154.0141, 298.2269, 96.0000, 22.6511), Vel/Jerk(20%, 50%), ArmOrientation(Right)
2		MOVJ	To(154.0141, 298.2269, 69.0000, 22.6511), Vel/Jerk(20%, 50%), ArmOrientation(Right)
3		OUTPUT	OUT17=0V
4		MOVJ	To(154.0141, 298.2269, 96.0000, 22.6511), Vel/Jerk(20%, 50%), ArmOrientation(Right)
5		MOVJ	To(78.1350, -386.5726, 96.0000, -161.1687), Vel/Jerk(50%, 50%), ArmOrientation(Left)
6		MOVJ	To(78.1350, -386.5726, 69.0000, -161.1687), Vel/Jerk(20%, 50%), ArmOrientation(Left)
7		OUTPUT	OUT17=24V
8		MOVJ	To(78.1350, -386.5726, 96.0000, -161.1687), Vel/Jerk(20%, 50%), ArmOrientation(Left)
9		WAIT	Pause 1.00 S
10		MOVJ	To(78.1350, -386.5726, 69.0000, -161.1687), Vel/Jerk(20%, 50%), ArmOrientation(Left)
11		OUTPUT	OUT17=0V
12		MOVJ	To(78.1350, -386.5726, 96.0000, -161.1687), Vel/Jerk(20%, 50%), ArmOrientation(Left)
13		MOVJ	To(154.0141, 298.2269, 96.0000, 22.6511), Vel/Jerk(50%, 50%), ArmOrientation(Right)
14		MOVJ	To(154.0141, 298.2269, 69.0000, 22.6511), Vel/Jerk(20%, 50%), ArmOrientation(Right)
15		OUTPUT	OUT17=24V
16		MOVJ	To(154.0141, 298.2269, 96.0000, 22.6511), Vel/Jerk(20%, 50%), ArmOrientation(Right)
17		WAIT	Pause 1.00 S

- Add At Last
- Insert Before Selected Row
- OverWrite Selected Row

Enable Hand Hold Teach

Add Motion Command

PTP

Vel %

Jerk %

Add Wait Command

s

Add I/O Command

Output Trigger

Apply DynRatio

Operation Panel

X Joint1

Y Joint2

Z Joint3

R Joint4

Joint

J1+ J2- J3+ J4-

Vel %

Acc %

Motor: Power:



DOBOT
Share Creating Pleasure

DOBOT-M1

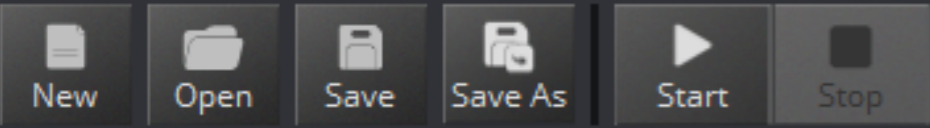
ControlTech

M1Studio-V1.0.4 >> C:/Program Files/M1Studio/config/bystore/Example.blockly

Settings Tools Help



Playback Script **Blockly**



- Logic
- Loops
- Math
- Text
- Lists
- Colour
- Variables
- Functions
- ▼ DobotAPI**
 - Basic
 - Config
 - Motion
 - I/O

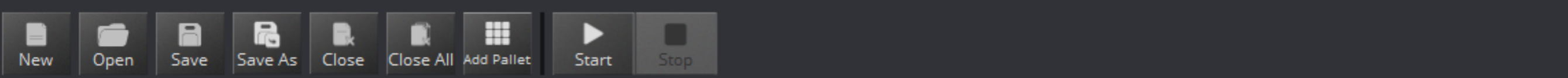
```
Set Coordinate Speed VelocityRatio 20 JerkRatio 50
Set Jump Params JumpHeight 20 ZLimit 200
repeat while true
do
  Set Arm Orientation Left
  Jump To X 223 Y 276 Z 60
  Set Arm Orientation Right
  Jump To X 223 Y 276 Z 60
  Set Arm Orientation Right
  Go to X 258 Y 177 Z 120
```



DOBOT
Share Creating Pleasure

DOBOT-M1

ControlTech



Search:

TEST_PV_PETvicka_barvy1

- + Other
- QueueCmd
 - ? dType.GetQueuedCmdCurrentIndex(api)
 - ? dType.SetQueuedCmdStartExec(api, cmd)
 - ? dType.SetQueuedCmdStopExec(api, cmd)
 - ? dType.SetQueuedCmdForceStopExec(api, cmd)
 - ? dType.SetQueuedCmdClear(api, cmd)
- Pose
 - ? dType.GetPose(api)
- Alarms
 - ? dType.GetAlarmsState(api, maxLevel)
 - ? dType.ClearAllAlarmsState(api)
- ArmOrientation
 - ? dType.SetArmOrientation(api, arm, orientation)
 - ? dType.GetArmOrientation(api)
- JOG
 - ? dType.SetJOGCommonParams(api, speed, accel)
 - ? dType.GetJOGCommonParams(api)
 - ? dType.SetJOGCmd(api, isjoint, cmd)
- PTP
 - ? dType.SetPTPJumpParams(api, jumpMode, cirPoint)
 - ? dType.GetPTPJumpParams(api)
 - ? dType.SetPTPCommonParams(api, ptpMode, x, y, z, r)
 - ? dType.GetPTPCommonParams(api)
 - ? dType.SetPTPCmd(api, ptpMode, x, y, z, r)
- ARC
 - ? dType.SetARCCmd(api, ptpMode, x, y, z, r)

```

25 while not (dType.GetIODI(api, 19)[0]) == 0: # Cekani na stisk tlacitka
26     pass
27 if (dType.GetIODI(api, 20)[0]) == 1:
28     break
29 dType.SetArmOrientation(api, 1, 1)
30 dType.SetPTPCmd(api, 0, 79.55, 189, 27, 331, 1)
31 close_grip()
32 dType.SetArmOrientation(api, 1, 1)
33 dType.SetPTPCmd(api, 0, 162, 314, 89, 331, 1)
34 print(dType.GetIODI(api, 17)[0])
35 print(dType.GetIODI(api, 18)[0])
36 dType.SetWAITCmdEx(api, 1000, 1)
37 while (dType.GetIODI(api, 18)[0]) == 1 and (dType.GetIODI(api, 17)[0]) == 1:
38     pass
39 print(dType.GetIODI(api, 17)[0])
40 print(dType.GetIODI(api, 18)[0])
41 if (dType.GetIODI(api, 18)[0]) == 1 and (dType.GetIODI(api, 17)[0]) == 0:
42     dType.SetArmOrientation(api, 0, 1)
43     dType.SetPTPCmd(api, 0, x1, y, z, r, 1)
44     open_grip()
45     x1=x1-35
46 elif (dType.GetIODI(api, 18)[0]) == 0 and (dType.GetIODI(api, 17)[0]) == 1:
47     dType.SetArmOrientation(api, 0, 1)
48     dType.SetPTPCmd(api, 0, x2, y2, z, r, 1)
49     open_grip()
50     x2=x2-35
51 elif (dType.GetIODI(api, 18)[0]) == 0 and (dType.GetIODI(api, 17)[0]) == 0:
52     dType.SetArmOrientation(api, 0, 1)
53     dType.SetPTPCmd(api, 0, x3, y3, z, r, 1)
54     open_grip()
55     x3=x3-35

```

api : The object of Dobot Library.

cirPoint : List of transition position
 cirPoint[0] : Value of x-axis
 cirPoint[1] : Value of y-axis
 cirPoint[2] : Value of z-axis
 cirPoint[3] : Value of r-axis

toPoint : List of target position
 toPoint[0] : Value of x-axis

ÚCHOPNÉ HLAVICE PRO ROBOTY

Pneumatické

Paralelní pohyb



2 čelisti, 3 čelisti, 4 čelisti

Úhlový pohyb



Standardní, 100°, samosvorné

Vakuové

Přísavky



Samostatné, s držákem, bezkontaktní

S vestavěným
ejektorem



Servo



2 prsty, 3 prsty

Magnetické



ÚCHOPNÉ HLAVICE PRO ROBOTY

Magnetické

ControlTech

PERFORMS OPTIMALLY, WHERE OTHERS DON'T
MHM-X6400 Series

- Handle with reliability and safety
- Reduce your cycle time
- Get great usage flexibility

