iPendant Navigation Manual:

## Emergency stop:

Makes the robot stop immediately by applying brakes. Use it only when necessary as the brakes wear down. There’s also an E-stop on the controller.

* Press down on the button to activate it.
* Twist it to the right to release.

If a slow and gradual halt is required, press HOLD on the iPendant.

## TP on/off

Below the E-stop button. It should be ON to access any function in the Teach Pendant (Set-ups, calibration, programs etc) and OFF when running in AUTO mode.

## Deadman switch

The 2 yellow bars behind the iPendant. 3 modes are available: Fully released, halfway pressed, fully pressed. Only the middle mode activates control.

## Jogging

Select the desired frame, press the deadman switch+SHIFT and keep them pressed, clear errors with RESET and move with the XYZ buttons on the iPendant.

Make sure that movement authority is granted by the robot. No jogging is allowed if the Fault light is ON (red). This authority can be heard by the click of the relays.

## Modes of operation:

T1/T2/AUTO

* Teaching the robot is possible in T1 and T2 modes. This has limited speed.
* AUTO mode allows program execution in full speed.

### Robot needs to be mastered before program can start.

Menu>> Next>> System>> Master/Cal>> Zero position Master>> Jog to its origin position with the markings provided>>Calibrate

#### Master/Cal doesn’t show up? No problem.

In Menu>> Next>>System>>Variable: Set $MASTER\_ENB to 1

### Then it probably wants you to set DCS Parameters. To do this:

Menu>> Next>> System>> DCS

Password: 1111

## Set-up of coordinate frames:

Menu🡪Setup🡪Frames🡪Insert frames

In the same page: other (=F3)🡪Jog/User/Tool frames can be selected

### Coordinate frames:

Describe all names below

* Press the COORD button. (for jogging) Modes available: World, Tool, Joint, JGFRM, USER
* Press Shift+COORD to change the Tool, Jog and User numbers for Auto mode program.

## Reboot:

* One iPendant has cycle power via: FCTN🡪Next🡪Cycle power
* The other iPendant needs to be rebooted manually from the controller.

Turn off, wait for 3 seconds, turn it back on. The motors need some time to stop and restart.

## In case another program is still loaded which stops new programs from loading:

Function🡪 Abort (All)

## To Backup into USB:

Select🡪next🡪save as🡪to device (choose device) USB disk (UD1:)

## To get files from USB:

Menu🡪file🡪file🡪util🡪set device🡪USB disk (UD1:)🡪choose your file🡪Load (=F3)

## Viewing current position of Robot:

Menu🡪 next🡪 Position🡪 Change between coordinate frames (F2/F3/F4)

## Ethernet set-up:

Menu🡪SETUP🡪Host Comm🡪TCP/IP🡪Insert the required information

To connect the computer to the controller directly, the IP address should be manually set in the computer (no DHCP), needs to also be input in LOCAL or Shared Internet addresses on the iPendant.

* Local mode is known only the respective robot.
* Shared mode allows exchange of information among robots.

# System Variables:

## To set a Default program:

Menu🡪 next🡪 System🡪Variables🡪$TP\_DEFPROG🡪 Select the program you want.

## To set remote master:

$RMT\_MASTER:

* 0=User operator panel
* 1=CRT/KB
* 2=Host Computer
* 3=no remote device

## To send raw pulse encoder positions, angle, velocity to program/PLC:

* $SCR\_GRP🡪 Detail🡪 $SCR\_GRP[1]🡪Detail🡪$MCH\_POS\_X/Y/Z/W/P/R (Choose between cartesian and joint coordinates)
* $SCR\_GRP🡪 Detail🡪 $SCR\_GRP[1]🡪Detail🡪$MCH\_SPD

## When the robot is in REMOTE mode, the production start method needs to be specified:

* Menu🡪SETUP🡪Prog Select🡪Program Select mode to OTHER/PNS/RSR/STYLE
* When OTHER is selected: Detail (=F3)🡪select the program under $shell\_wrk.$cust\_name

After changing the mode, a reboot is necessary.

# iRvision:

## To calibrate:

Menu🡪Utilities🡪iRvision🡪Robot Generated Grid Calib🡪 Position (=F3)🡪Record or note down the position manually of XYZ-WPR.

## To look at live data:

Menu🡪Utilities🡪iRvision🡪 Automatic Grid Frame Set🡪LIVE(=F3).

The clarity of the image can be adjusted by changing the focus on the camera.

## Profibus/Profinet conversion:

The interface used on M-3iA/6S is Hilscher NL-51N-DPL. The conversion can be made by first downloading SYCON.Net (add link here)

# Making programs:

Select🡪Create🡪options🡪Keyboard (=F5) 🡪 Give a name🡪EDIT (=F3)

## Writing the program:

EDIT🡪NEXT🡪POINT where joint and line points can be inserted

EDIT🡪INST This has instructions for the program

## Editing the program:

EDIT program🡪 ECMD

Refer (Robot’s whispering manual)