Kuka SA Robot Driver Deployment

Procedure

**Requirements for PC Running SA RobotDriver (Remote Access Computer)**

Windows XP

.NET v.2 with Service Pack 1

Localization Settings – Must use ‘.’ as decimal point, not ‘,’  
  
**Recommended Setup**

**You will need to connect a monitor, keyboard, mouse, and (optionally) a USB extension to the controller. The USB extension is for easy transfer of the required files listed above to the controller.**

**Network connection under VxWorks**

**Description** Direct data exchange with VxWorks allows greater performance during data

transfer.

􀂄 KR C2 ed05: requires a KUKA network card (option).

􀂄 KR C2 sr: requires a KUKA network card (option).  
  
  
  
**Network connection under VxWorks**

**Advantages**􀂄 The direct connection to VxWorks reduces the load on the robot controller,

since data exchange no longer uses the shared memory network.

􀂄 Bypassing the shared memory network shortens the transmission distance,

thus enabling faster data transmission.

􀂄 With a point-to-point connection there is no risk of data collisions on the

bus, thus enabling faster data transmission.

**Modifying the IP address for KSS 5.x**

**Precondition**􀂄 User group “Expert”  
 From Kuka Teach Pendand HMI, select Configure >> User Group  
 Press “Log On”

Select “Expert”

Press “Log On”

Password is “kuka” (all lower case)

NOTE: The controller has a time out, after which it will return the User Group to Operator.

􀂄 Windows interface (CTRL+ESC) – To get into Windows XP running on Controller  
**Procedure**1. Open the file C:\Windows\vxWin.ini.

2. Modify the controller’s IP address under e={......}.

3. Save and close.

4. Reboot the robot controller.  
  
  
  
Files Needed  
  
**You will need to back up ALL files that are already on the controller before editing, such as $config.dat. This file contains global variable declarations, and will render the robot inoperable if corrupted. The KRL files, like SAKRL, MoveToFrame, MovetojointSet, etc. will be new to the controller unless upgrading the SA Robot Driver.**

**XML Channel configuration and Data format files (C:\KRC\Roboter\INIT)**

RAC.xml

RAC+.xml

XmlApiConfig.xml (set tcp/ip address and port of remote access computer – secondary fixed ip on remote computer)

**KRL Client Communication (C:\KRC\Roboter\KRC\R1\Program)**

SAKRL.dat

SAKRL.src

**KRL Client motion programs (called by SAKRL.SRC C:\KRC\Roboter\KRC\R1\Program)**

MoveToFrame.SRC and .DAT

MoveToJointSet.SRC and .DAT

HitEStop.SRC

**VxWorks Communication Configuration (C:\Windows)**

vxWin.ini (robot controller VxWorks tcp/ip address modified under e={……})

**Server application and data format files on remote computer (all in SA install)**

SARobotDriver.exe (uses PC’s secondary fixe ip address for KRL/XML connection)

KukaCoreInterface.dll

SA Robot Driver.exe.manifest

RACData.xml

**Global Data (c:\KRC\Roboter\KRC\R1\System)**

$config.dat

Running SA Robot Driver on the Kuka KR C2  
  
**1) On the Teach Pendant, make sure the program SAKRL (.krl) is selected.**

**2) On the Teach Pendant, in the lower left of the window, ensure that the “S” (submit interpreter status) indicator is green, the “I” (I/O status for Drives/Motors) is green, and the “R” (program run status) is either yellow or black.**

**Press the “I” motor enable button on the teach pendant near the E-Stop button if the “I” indicator is not green.  
Go to the Program menu, and select “Reset Program” if the R indicator is yellow or black.  
  
  
3) Add your robot model to SA, and run SA Robot Driver.exe. Press “Connect”, and select the Kuka robot from the drop down. You’ll see a progress dialog, informing you that the interface is waiting for a connection to SAKRL.  
  
4) On the Teach Pendant, press and hold the green “Start” button (bottom of teach pendant). Hold until the robot has completed the move to the Kuka home position.  
  
5) The Program Run State Indicator “R” in the lower left teach pendant window should be red. Now press the green “Start” button again. The Program Run Indicator “R” should now be green, and the “waiting for connection” on the pc should go away. You are now running the robot driver.  
  
6) You should ALWAYS perform a joint space move OUT of the Kuka home position first, because it is a singularity.**

When Customer Has a Rail  
  
**Default Setup**We do not currently support rail motion control in the SA Robot Driver. The default behavior in this case, is that the robot will move to the zero position on the rail when it receives a motion command from the SA Robot Driver. Therefore, you must ensure that the robot is at the zero (or home) position on the rail before running the SA Robot Driver.

**Recommended Setup**We do not currently support rail motion control in the SA Robot Driver. However, Kuka can assist the customer in setting up their system so that commands from the SA Robot Driver will have no effect on the rail position. That makes it possible for the robot to be moved to a given rail position with other software, and the SA Robot Driver will run the system at that rail position without changing it. This for example, is the setup at Leica HQ in Switzerland.  
 **To Test**To see whether the system has the Recommended Setup, simply move the rail in external control software to a position a little a way from the zero or home postion. Make certain the path to the home position is clear, and run the SA Robot Driver. If the first position move causes the robot to move to the zero rail position, then the recommended setup has not been implemented on that system.