

# ReniKey software for Siemens controllers

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## Caution – Software safety

The software you have purchased is used to control the movements of a machine tool. It has been designed to cause the machine to operate in a specified manner under operator control, and has been configured for a particular combination of machine tool hardware and controller.

Renishaw has no control over the exact program configuration of the controller with which the software is to be used, nor over the mechanical layout of the machine. Therefore, it is the responsibility of the person putting the software into operation to:

- ensure that all machine safety guards are in position and are correctly working before commencement of operation;
- ensure that any manual overrides are disabled before commencement of operation;
- verify that the program steps invoked by this software are compatible with the controller for which they are intended;
- ensure that any moves which the machine will be instructed to make under program control would not cause the machine to inflict damage upon itself or upon any person in the vicinity;
- be thoroughly familiar with the machine tool and its controller, understand the operation of work co-ordinate systems, tool offsets, program communication (uploading and downloading) and the location of all emergency stop switches.

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**IMPORTANT:** This software makes use of controller variables in its operation. During its execution, adjustment of these variables, including those listed within this manual, or of tool offsets and work offsets, may lead to malfunction.

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## Contents

Introduction .....	3
General information .....	3
Installation .....	4
Installation notes .....	4
Retrofit installation process .....	5
Configuration of L6000 macro (retrofit) .....	6
Configuration details .....	6
Configuration of L6010 macro (retrofit) .....	7
Configuration details .....	7
OEM installation process .....	8
Configuration of RENIKEY macro (OEM) .....	9
Configuration details .....	9
Configuration of REN_SUB macro (OEM) .....	10
Configuration details .....	10

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## Introduction

ReniKey software has been designed to simplify the partnering process between an RMI-Q interface and a Renishaw radio probe. The application also provides an easy solution for partnering multiple radio probes with a single RMI-Q interface.

The traditional partnering process involves removing power to the RMI-Q interface, setting the required radio probe to acquisition mode and then reinstating the power. Using ReniKey, power removal to the RMI-Q is not necessary. This eliminates the requirement to power the machine tool off and on. Additionally, a simple edit within the software allows multiple radio probes to be partnered to a single RMI-Q.

ReniKey works by commanding multiple instances of a machine M-code in a defined sequence with different dwell times. This variation allows the acquisition of different probe systems.

The ReniKey software is in two folders on the installation disc. Select the correct folder to install based on CNC machine tool control and installation situation: OEM or retrofit. Programs must be edited and executed for each probe. This programming guide describes the necessary edits.

## General information

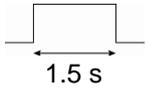
This software package contains two versions of the ReniKey software – OEM and retrofit.

**OEM** – The programs RENIKEY and REN\_SUB are stored in the protected “Manufacturing cycles” area and no R parameters are used.

**Retrofit** – This version of the software uses R parameters. Programs L6000 and L6010 are stored in the “Part Programs” area. The range of R parameters used is R0 – R22.

# Installation

## Installation notes



The M-code(s) selected to partner the probe(s) should be free from any PLC checking that could prevent rapid turn on/off of the M-code. The time taken for the M-code(s) to complete should not exceed 1.5 seconds.

**Where dedicated start is used** – the M-code chosen for probe on/off should be used during the ReniKey partnering process.

**Where common start is used** – typically the M-code chosen for probe start (P1) should be used during the ReniKey partnering process. However, if this is not possible, a select M-code (P2, P3) can be used.

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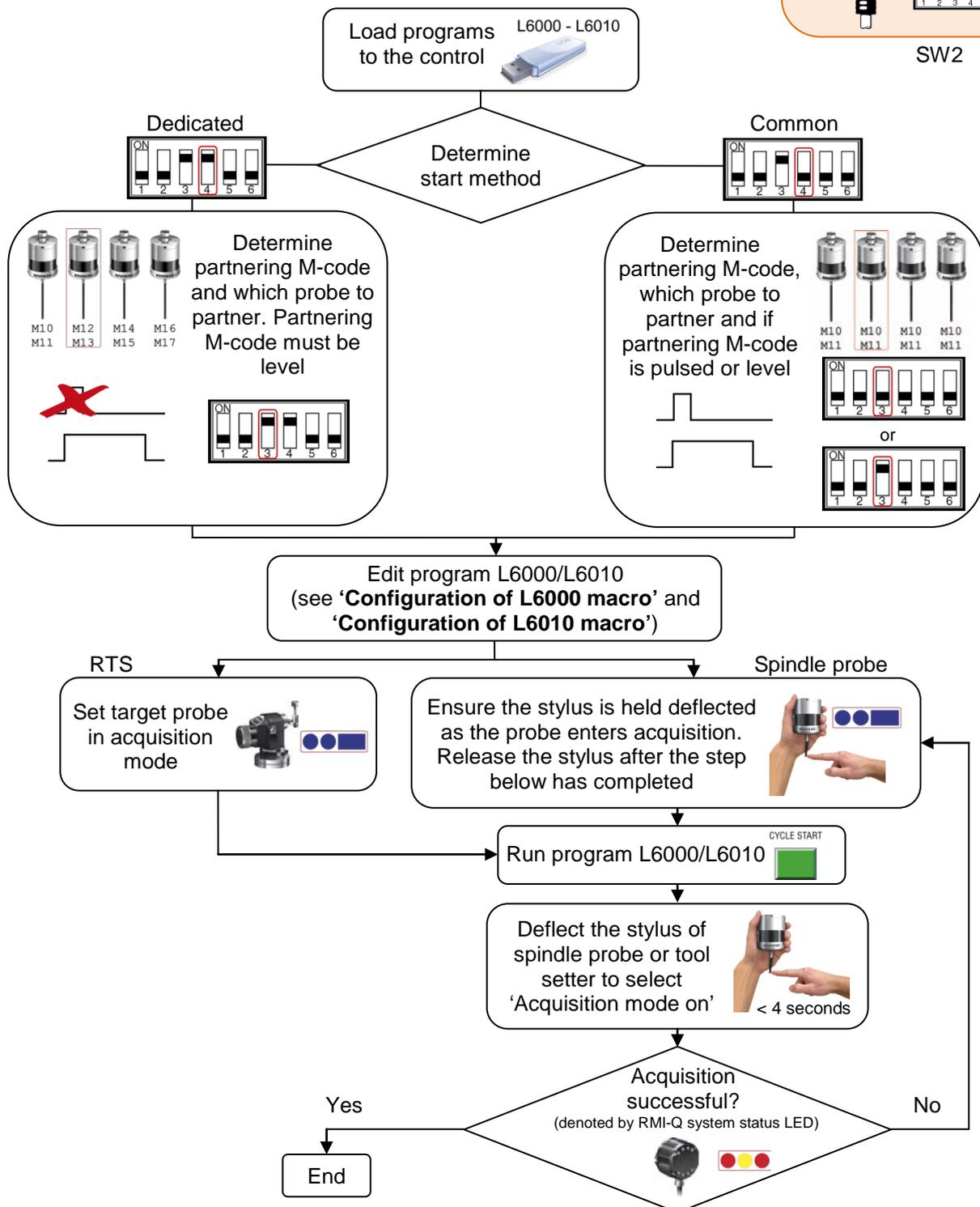
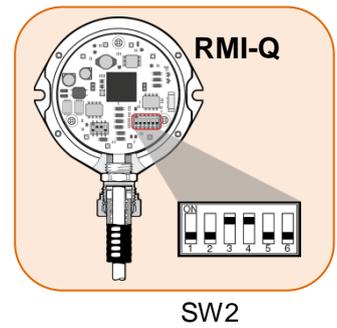
**NOTE:** If using a select M-code for partnering, the start LED will not flash. However, ReniKey will still function correctly.

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If ReniKey fails to acquire the probe for any reason, please refer to the RMI-Q installation guide (H-5687-8504) for detailed partnering instructions.

# Retrofit installation process

The following flowchart details the Retrofit installation process.



## Configuration of L6000 macro (retrofit)

### Description

This cycle is used to configure the software that will subsequently put the RMI-Q into acquisition mode, clear a designated probe or clear all probes.

### Example

```
%_N_RENIKEY_MPF
EXTERN L6010(REAL,REAL,REAL)
;RMIQ V2.1
STOPRE
;BEGIN PGM RENIKEY
R3=2;          1=PULSED 2=LEVEL                ***Edit
1
R20=4;         PROBE NUMBER 1-4                ***Edit
2
R22=1;         1=ACQUIRE 2=CLEAR PROBE 3=CLEAR ALL PROBES ***Edit
3
.....
```

### Configuration details

Select M-code style, 1=pulse type, 2=level type.

#### \*\*\*Edit 1 – R3=2; 1=PULSED 2=LEVEL

Set to either 1 or 2, depending on whether the machine has pulsed or level M-codes.

#### \*\*\*Edit 2 – R20=4; PROBE NUMBER 1-4

Probe number to be acquired by the RMI-Q – 1, 2, 3 or 4.

#### \*\*\*Edit 3 – R22=1; 1=ACQUIRE 2=CLEAR PROBE 3=CLEAR ALL PROBES

Functionality of the ReniKey:

1. Acquire probe.
2. Clear probe.
3. Clear all probes.

---

## Configuration of L6010 macro (retrofit)

### Description

This cycle is used to configure the software that controls the probe on/off signal as either an M-code or digital I/O.

### Example

```
PROC L6010(REAL_AA,REAL_BB,REAL_CC)
DEF REAL _RENI[30]
STOPRE:
  _RENI[2]=_AA
  _RENI[3]=_BB
  _RENI[4]=_CC
  $A_OUT[1]=1;PROBE ON**EDIT THIS LINE      ***Edit 1
STOPRE:
IF _RENI[3]=2 GOTOF LN2
G4F=_RENI[4]
LN2:
STOPRE:
  $A_OUT[1]=0;PROBE OFF**EDIT THIS LINE     ***Edit 2
  G4F=_RENI[2]
RET
```

### Configuration details

#### \*\*\*Edit 1 – \$A\_OUT[1]=1; PROBE ON

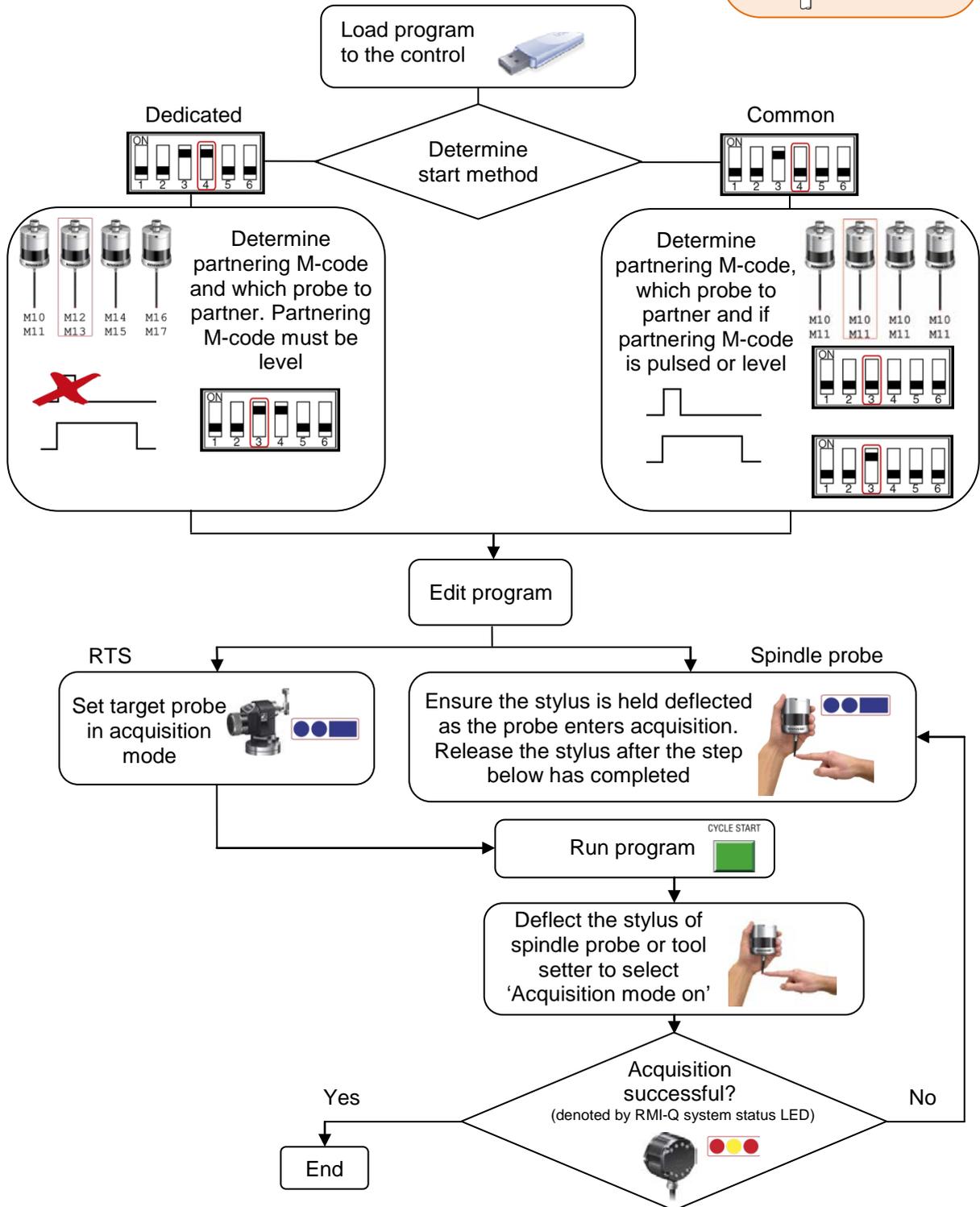
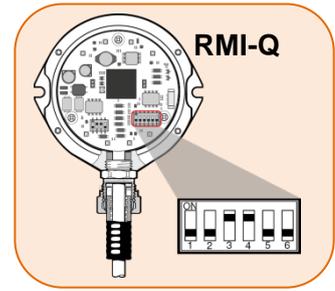
Used for designating the probe on function, typically M-code or \$A\_OUT function.

#### \*\*\*Edit 2 – \$A\_OUT[1]=0; PROBE OFF

Used for designating the probe off function, typically M-code or \$A\_OUT function.

# OEM installation process

The following flowchart details the OEM installation process.



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## Configuration of RENIKEY macro (OEM)

### Description

The program RENIKEY must be configured before starting the ReniKey process. The probe number and mode must be set as described below.

**Format:** RENIKEY(probe number, mode)

**Example:** RENIKEY(4,1)

This will acquire probe four.

### Configuration details

Probe number:

1. Probe one
2. Probe two
3. Probe three
4. Probe four

Mode:

1. Acquire probe
2. Clear probe
3. Clear all probes

---

**NOTE:** The ReniKey program must be stored in the 'manufacturing cycle' area in the control.

---

## Configuration of REN\_SUB macro (OEM)

### Description

This cycle is used to configure the software that controls the probe on/off signal as either an M-code or digital I/O.

### Example

```

PROC REN_SUB(REAL _AA,REAL _BB,REAL _CC)
DEF REAL _RENI[30]
STOPRE
_RENI[2]=_AA
_RENI[3]=_BB
_RENI[4]=_CC
$A_OUT[1]=1;PROBE ON**EDIT THIS LINE          ***Edit 1
STOPRE
IF _RENI[3]==2 GOTOF LN2
G4F=_RENI[4]
LN2:
STOPRE
$A_OUT[1]=0;PROBE OFF**EDIT THIS LINE        ***Edit 2
G4F=_RENI[2]
RET

```

### Configuration details

#### \*\*\*Edit 1 – \$A\_OUT[1]=1; PROBE ON

Used for designating the probe on function, typically M-code or \$A\_OUT function.

#### \*\*\*Edit 2 – \$A\_OUT[1]=0; PROBE OFF

Used for designating the probe off function, typically M-code or \$A\_OUT function.

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**NOTE:** The REN\_SUB program must be stored in the 'manufacturing cycle' area in the control.

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**Renishaw plc**  
New Mills, Wotton-under-Edge,  
Gloucestershire, GL12 8JR  
United Kingdom

**T** +44 (0)1453 524524  
**F** +44 (0)1453 524901  
**E** uk@renishaw.com  
[www.renishaw.com](http://www.renishaw.com)

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