TRANSFORMATION DETAILS

MicroSurvey Software products support coordinate systems that require specific files for certain coordinate transformations, including:

For Canada:

- NAD27←→ ATS77
- ATS77 ←→ NAD83(CSRS)
- NAD27←→ NAD83 (NTv2)
- NAD27←→ NAD83(CSRS)
- NAD83←→ NAD83(CSRS)

These transformations are required to use the *ATS77*, *NAD27* and *NAD83(CSRS)* Zones.

For USA:

- NAD27←→ NAD83 (NADCON)
- NAD83←→ NAD83(HARN)

These transformations are required to use the *NAD27* and *HARN* Zones.

Mapping Folder Path

The files are required to be placed at a very specific location inside the Mapping folder, which is at the location shown below.

Product	Operating System	Location
MicroSurvey CAD (similar for inCAD, embeddedCAD, etc)	Windows Vista or Later	C:\ProgramData\MicroSurvey\MSCAD\yyyy\mscad\Mapping\
FieldGenius (similar for EVR and Layout)	Windows Vista or Later	C:\ProgramData\MicroSurvey\FieldGenius\yyyy\Mapping\
FieldGenius (similar for EVR and Layout)	Win CE or Mobile	(Path may vary)\MicroSurvey FieldGenius\Programs\Mapping\
STAR*NET	Windows Vista or Later	C:\ProgramData\MicroSurvey\StarNet\V?\Mapping\
FieldGenius for Android	Android	Storage\FieldGenius\Mapping is accessed when using the Gridshift Library

Files to Copy

All available files are included in the ZIP folder, and must be placed into the correct folders: You should be able to copy all the contents of the Canada_USA ZIP folder directly into the main Mapping folder, as the sub-folders are already set up as required.

1. All files with **GDC** extension are to be copied to the main Mapping folder (not in any sub-folder)
    a. These files can be edited in a text editor to specify the filename to be used if multiple options exist across a region
2. All files with **GSB** (or DAT in some instances) extension are to be copied to:
    a. \Mapping\Canada for the NAD27 ←→ ATS77 transformations
    b. \Mapping\Canada\ATS77\ for the ATS77 ←→ NAD83(CSRS) transformations
    c. \Mapping\Canada\CSRS\ for the NAD83 ←→ NAD83(CSRS) transformations
    d. \Mapping\Canada\Nad27CsrsDirect\ for the NAD27 ←→ NAD83(CSRS) transformations
    e. \Mapping\Canada\NAD83\ for the NAD27 ←→ NAD83 (NTv2) transformations
3. All files with **LAS** and **LOS** extensions are to be copied to:
    a. \Mapping\USA\NADCON for the NAD27 ←→ NAD83 transformations
    b. \Mapping\USA\HARN\ for the NAD83 ←→ NAD83(HARN) transformations
4. If additional or new **GSB** files or **LAS** and **LOS** files are obtained from another source, edit the **GDC** file to point to the correct filename. Also if multiple files are available, make sure the **GDC** file is pointing towards the correct file.

Canada Specific Notes Regarding CSRS <--> Original Transformations:

Regional Notes:

For all provinces it is recommended that users create a free account at the NRCAN Coordinate Transformations page and download the latest version of the gridshift file for your region. In some cases MicroSurvey does not have permission to include the required gridshift file, so you must download a version. See notes below for specifics:

British Columbia

- Visit NRCAN Coordinate Transformations page and download BC_93_05.GSB to \Mapping\Canada\CSRS\
- replace \Mapping\Nad83ToCsrs.gdc with one configured for your region

Alberta

- The Alberta Gridshift is included in the CANADA_USA Mapping package
- replace \Mapping\Nad83ToCsrs.gdc with one configured for your region

Saskatchewan

- Visit NRCAN Coordinate Transformations page and download SK83-98.gsb to \Mapping\Canada\CSRS\
- replace \Mapping\Nad83ToCsrs.gdc with one configured for your region

Manitoba

- No CSRS gridshift available

Ontario

- The Mapping package is preconfigured to support Ontario, no further steps required

Quebec

- The Quebec Gridshift is included in the CANADA_USA Mapping package
- replace \Mapping\Nad83ToCsrs.gdc with one configured for your region

Quebec (ATS77)

- See Maritime Systems Notes:

New Brunswick (ATS77)

- See Maritime Systems Notes:

Nova Scotia (ATS77)

- See Maritime Systems Notes:

Prince Edward Island (ATS77)

- See Maritime Systems Notes:

Newfoundland

- Visit NRCAN Coordinate Transformations page and download NLCSRSV4A.GSB to \Mapping\Canada\CSRS\
- replace \Mapping\Nad83ToCsrs.gdc with one configured for your region

Maritime Systems Notes:

The majority of projections in use in the Canadian Maritime provinces are available as predefined coordinate systems in all MicroSurvey products. All the systems mentioned in this article are found in the "Canadian Systems" group when you select a system for your drawing, project or STAR*NET adjustment.

Some of the systems have specific applications in mind. For example, a system may be created with the assumption that you have constrained your survey to a particular datum (sometimes a historical one.) Some systems are configured to apply a grid based (GSB) datum shift to your measured values in order to update positions from the ATS77 datum to the CSRS (NAD83) datum.

The table below summarizes these characteristics. Further below there are explanations on where to find the mapping folder in MicroSurvey Products.

Stereographic Double Systems

System	Projection	Origin	False Northing	False Easting	Survey is assumed to be constrained to datum:	Datum Shift (if any)

PrinceEdwardIsland83	Stereographic Double	47 15 00 N, 63 00 00 W	800,000 m	400,000 m	NAD83	
NewBrunswick	Stereographic Double	46 30 00 N, 66 30 00 W	800,000 m	300,000 m	ATS77	
NewBrunswick83	Stereographic Double	46 30 00 N, 66 30 00 W	7,500,000 m	2,500,000 m	NAD83	

Transverse Mercator Systems

System	Projection	Central Meridian	False Easting	Survey is assumed to be constrained to datum:	Datum Shift (if any)
NovaScotia4	Transverse Mercator	61 30 00 W	4,500,000 m	ATS77	
NovaScotia5	Transverse Mercator	64 30 00 W	5,500,000 m	ATS77	
Nova Scotia 83-1997 Zn4	Transverse Mercator	61 30 00 W	14,500,000 m	NAD83 (CSRS epoch 1997)	
Nova Scotia 83-1997 Zn5	Transverse Mercator	64 30 00 W	15,500,000 m	NAD83 (CSRS epoch 1997)	
Nova Scotia 83-2010 Zn4	Transverse Mercator	61 30 00 W	24,500,000 m	NAD83 (CSRS epoch 2010)	
Nova Scotia 83-2010 Zn5	Transverse Mercator	64 30 00 W	25,500,000 m	NAD83 (CSRS epoch 2010)	
Nova Scotia ATS77 Zn4 (NAD83(CSRS)1997)	Transverse Mercator	61 30 00 W	4,500,000 m	ATS77	\mapping**NS778301.gsb***will shift position to CSRS epoch 1997*
Nova Scotia ATS77 Zn5 (NAD83(CSRS)1997)	Transverse Mercator	64 30 00 W	5,500,000 m	ATS77	\mapping**NS778301.gsb***will shift position to CSRS epoch 1997*

Nova Scotia ATS77 Zn4 (NAD83(CSRS)2010)	Transverse Mercator	61 30 00 W	4,500,000 m	ATS77	Mapping**NS778302.gsb***will shift position to CSRS epoch 2010*
Nova Scotia ATS77 Zn5 (NAD83(CSRS)2010)	Transverse Mercator	64 30 00 W	5,500,000 m	ATS77	Mapping**NS778302.gsb***will shift position to CSRS epoch 2010*
New Brunswick ATS77.UTM-19N(NAD83(CSRS)2010	Universal Transverse Mercator	69 00 00 W	500,000 m	ATS77	\mapping\Canada\CSRS**NB7783v2.GSB**
New Brunswick ATS77.UTM-20N(NAD83(CSRS)2010	Universal Transverse Mercator	63 00 00 W	500,000 m	ATS77	\mapping\Canada\CSRS**NB7783v2.GSB**

The mapping package is preconfigured to support all Maritime systems described above. It is recommended that users create a free account at the NRCAN Coordinate Transformations page and download the latest version of the gridshift file for your region.

Selecting a CSRS or Original System

MicroSurvey Products include a selection of UTM and MTM systems in all required zones which reference the NAD83 CSRS datum. The Coordinate system Group and/or naming structure of the system allows you to determine how it will function. Use the tables below as a guide to selecting a coordinate system to suit your purpose and procedures:

Product: FieldGenius for Windows

Mapping Folder: Windows Tablets: C:\ProgramData\MicroSurvey\FieldGenius\yyyy\Mapping\	Name includes (CSRS) ie: MTM/83/CSRS-07 ie: UTM83/CSRS-18N	Name includes (Original) ie: MTM/83/Original-07 ie: UTM83/Original-18N

Win CE or Mobile: (Path may vary)\MicroSurvey FieldGenius\Programs\Mapping\		
Found in Canadian Systems group and: Name DOES NOT include "GNSS" or system is found in "Canadian Systems" group ie: Canadian Systems | MTM/Original-07 ie: Canadian Systems | UTM83/CSRS-18N	Gridshift is applied in a positive direction *	No gridshift applied
Found in "Canadian Systems for GNSS" Group and: Name includes "GNSS" or system is found in "Canadian Systems for GNSS" group ie: Canadian Systems for GNSS | MTM/Original-07/GNSS ie: Canadian Systems for GNSS | UTM83/CSRS-18N/GNSS	Gridshift is applied in a negative direction **	No gridshift applied

Product: FieldGenius for Android

Mapping folder: \\Internal Storage\FieldGenius\Mapping (Direct Download via Gridshift Library within the program)	Name includes (CSRS) ie: Canada/MTM NAD83(CSRS) for GNSS | MTM83/CSRS-07/GNSS ie: Canada/UTM NAD83(CSRS) | UTM83/CSRS-18N	Name includes (Original) ie: MTM/83/Original-07 ie: UTM83/Original-18N
Name DOES NOT include "GNSS" ie: Canada/MTM NAD83(Original)|MTM83/Original-07 ie: Canada/UTM NAD83|UTM83/Original 18N ie: Canada/UTM NAD83(CSRS) | UTM83/CSRS-18N	Gridshift is applied in a positive direction *	No gridshift applied
Name includes "GNSS" ie: Canada/MTM NAD83(CSRS) for GNSS | MTM83/CSRS-07/GNSS ie: Canada/UTM NAD83(CSRS) for GNSS | UTM83/CSRS-18N/GNSS ie: Canada/UTM NAD83 for GNSS | UTM83/Original-18N/GNSS	No gridshift applied	Gridshift is applied in a positive direction *

Product: STAR*NET

Mapping folder: C:\ProgramData\MicroSurvey\StarNet\V?\Mapping\ IMPORTANT NOTE: *Regardless of coordinate system group or name, a transformation or gridshift will only be applied under the following conditions*: 1. A P or PH record which defines a Lat/Long couplet is read and converted to a mapping	Name includes (CSRS) ie: MTM/83/CSRS-07 ie: UTM83/CSRS-18N	Name includes (Original) ie: MTM/83/Original-07 ie: UTM83/Original-18N

coordinate 2. A coordinate system is selected and Project Options | Select Ellipsoid to Use is set to "WGS84"		
Found in Canadian Systems group and: Name DOES NOT include "GNSS" or system is found in "Canadian Systems" group ie: Canadian Systems | MTM/Original-07 ie: Canadian Systems | UTM83/CSRS-18N	Gridshift is applied in a positive direction *	No gridshift applied
Found in "Canadian Systems for GNSS" Group and: Name includes "GNSS" or system is found in "Canadian Systems for GNSS" group ie: Canadian Systems for GNSS | MTM/Original-07/GNSS ie: Canadian Systems for GNSS | UTM83/CSRS-18N/GNSS	No gridshift applied	Gridshift is applied in a positive direction *

Product: MicroSurvey CAD, embeddedCAD, inCAD or SurveyTools

Mapping Folder: C:\ProgramData\MicroSurvey\(Product)\yyyy\mscad\Mapping\	Name includes (CSRS) ie: MTM/83/CSRS-07 ie: UTM83/CSRS-18N	Name includes (Original) ie: MTM/83/Original-07 ie: UTM83/Original-18N
Found in Canadian Systems group and: Name DOES NOT include "GNSS" or system is found in "Canadian Systems" group ie: Canadian Systems | MTM/Original-07 ie: Canadian Systems | UTM83/CSRS-18N	Gridshift is applied in a positive direction *	No gridshift applied
Found in "Canadian Systems for GNSS" Group and: Name includes "GNSS" or system is found in "Canadian Systems for GNSS" group ie: Canadian Systems for GNSS | MTM/Original-07/GNSS ie: Canadian Systems for GNSS | UTM83/CSRS-18N/GNSS	No gridshift applied	Gridshift is applied in a positive direction *

* Positive direction equates to:

From: NAD83(Original) ----> To: NAD83(CSRS)

**Negative Direction equates to:

From: NAD83(CSRS) -----> To: NAD83(Original)

NAD27 ←→ NAD83(Original) Transformation Notes

Canada

The Mapping package is preconfigured to apply the Ntv2_0.gsb gridshift as provided by Natural Resources Canada when a NAD27 to NAD83(Original) gridshift is required. MicroSurvey recommends that users create a free account at the NRCAN Coordinate Transformations page and download the latest version of the gridshift file for your region. Save it to .\Mapping\Canada\NAD83.

United States

Users in the United States must reconfigure the product to apply NADCON las and los files as provided by the National Geodetic Survey.

1. Download this preconfigured gdc file and replace .\mapping\Nad27ToNad83.gdc
2. (Optional but recommended) Visit the NGS NCAT Page and ensure the latest versions of Nadcon las and los files are installed in .\Mapping\USA\NADCON