United States Department of Agriculture
Agricultural Marketing Service
Federal Grain Inspection Service

Criteria & Specifications

July 1, 2015

ATTACHMENT A:
MOISTURE METER AUTOMATED DATA COLLECTION REQUIREMENTS

Contents

1. PURPOSE

This document specifies the technical requirements, information collected and order the information should be transmitted for automatically capturing and storing data from the Federal Grain Inspection Service (FGIS) approved moisture meter(s). This document supports FGIS Directive 9290.16, “Inspection Data Warehouse (IDW) for Grain Program Services,” and the data required for moisture and test weight per bushel (National Type Evaluation Program, NTEP, only) calibration maintenance which is a requirement for FGIS approval as a Unified Grain Moisture Algorithm (UGMA) – Compatible moisture meter, *UGMA Criteria and Checklist Ver 5 2015.pdf*.

2. TRANSMISSION REQUIREMENT AND FILE STRUCTURE

The manufacturer is responsible for configuring the meter to transmit the fields in the order listed in Attachment 1. Each instrument will be shipped with a package that includes a cable necessary to transfer data from the instrument to the workstation using either an RS-232 serial or USB format, as well as complete instructions on connection and configuration of the instrument to transmit the required data fields.

The data must be transmitted in real time. All fields are delimited with Pipe (|) and no tabs. If a field does not contain data, then a double quote (“”) must be transmitted for that field. Data types are character, integer, decimal, and memo. For purposes of this document, integer and decimal are not binary: they are ASCII strings representing valid integer and decimal numbers.

The meter operating system shall recognize the standard barcode and/or QR code formats for user inputs.

FGIS is responsible for obtaining the software package on the receiving computer that prepares the data for transferring to either a database within FGIS Online or designated laboratory information management system.

3. FILE CONTENT

Attachment 1 contains the required fields to be transmitted from the approved moisture meter(s), field name (used by FGIS), format, length, field definition and the order the fields are to be transmitted. Attachment 2 contains the standardized grain names and the abbreviations used in FGIS Online (IDW). The moisture meter(s) are required to transmit the required fields beginning July 1, 2015 on the meters located at the FGIS National Grain Center.

FGIS will notify the manufacturers of the approved moisture meters when all moisture meters within the official inspection system will be required to transmit the data per this document. FGIS anticipates providing the manufacturers with a one year advance notice for this requirement.

Attachment 1. Delimited Field Definitions

Order	Field Name	Format	Length	Value	Definition
1	Sample ID* (ID)	Char	16		FGIS generated ID entered either manually or by barcode
2	**Operator*, +**	**Char**	**10**		**Licensed inspector number, entered either manually or barcode**
3	Date	Char	8	YYYYMMDD	Date of analysis
4	Time	Char	8	HH:MM:SS	Time of analysis, 24 hour format
5	Grain Type (Grain)	Char	12	Ex. Barley 6Row	Standardized Grain Names, see Attachment 2, column 2 Grain Type (Disp. Grain Name)
6	Moisture (M)	Integer or Decimal	5	xx.x or xx.xx	xx.x is for certification and xx.xx is for check test and calibration review in units of % moisture
7	Test weight (TW)	Integer or Decimal	5	xx.x or xx.xx	xx.x is for certification (for Official Commercial Inspection Service only) and xx.xx is for calibration review (for NTEP only) in units of lb/bu
8	Sample Temperature (STemp)	Integer or Decimal	4	xx.x	In units of °C
9	Calibration ID (Cal)	Char	16	Ex. BAR 130415 or 20130501N	
10	Serial Number (SN)	Char	16	Ex. 1213693 or 1807-00810	
11	Measured Dielectric Constant (DC)	Decimal	5	x.xxx	Dielectric constant with unit normalization but without model/ grainspecific loading corrections
12	Density-Corrected Dielectric Constant (DCDC)	Decimal	5	x.xxx	Density-corrected dielectric constant incorporating all unit normalization factors and model/grain-specific loading corrections
13	Sample Mass (mass)	Integer or Decimal	5	xxx.x	In units of grams

Note: *For the July 1, 2015, deadline the current practice of either maintaining or blanking out the previous input is acceptable. Prior to these requirements being implemented on all moisture meters within the official inspection system, manufacturers will need to update their software to blank out both the Sample ID and Operator after each analysis.

+For the July 1, 2015 deadline, the Operator output field will use double quotes (“”). Prior to these requirements being implemented on all moisture meters within the official inspection system, manufacturers will need to update their software to incorporate a user entered “Operator” field. The “Operator” field must clear after each analysis.

****If a model does not use this format for the basic measurement, then double quotes (“”) must be transmitted.**

Order	Field Name	Format	Length	Value	Definition
14	Grain Abbrev. (Abbrev)	Char	4		Abbreviations used in FGISOnline, see Attachment 2 column 3
15	Ambient Temperature (ATemp)	Integer or Decimal	4	xx.x	In units of °C
16	Empty Cell Weight (tare)	Integer	8	xxxxxxxx	Empty Cell Magnitude
17	Troubleshooting1** (TS1)	Integer	5	xxxxx	Basic measurement that is used to calculate measured dielectric constant. May be null for a specific model.
18	Troubleshooting2** (TS2)	Integer	5	xxxxx	Basic measurement that is used to calculate measured dielectric constant. May be null for a specific model.
19	Troubleshooting3** (TS3)	2 doubles or char	50	Ex. 48.0622675921036-5.12474945466884i	Basic measurement (complex number) that is used to calculate measured dielectric constant. May be null for a specific model.
20	Software Version (Ver)	Char	25-50	Ex. 5.0, 2.4, 2.2	
21	Error Log Information (Log)	Memo		Ex. SAMPLE_WEIGHT_TOO_LOW	

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****If a model does not use this format for the basic measurement, then double quotes (“”) must be transmitted.**

Attachment 2. Standard Grain Names and Abbreviations

Grain/Commodity	Grain Type (Disp. Grain Name)	Grain Abbrev.
Major (NTEP) Grains		
Barley, Six-Rowed	Barley 6Row	SRB
Barley, Two-Rowed	Barley 2Row	TRB
Corn	Corn	C
Oats	Oats	O
Rice, Long Grain Rough	Rice LG Ruf	LRUF
Rice, Medium Grain Rough	Rice MG Ruf	MRUF
Sorghum	Sorghum	SORG
Soybeans	Soybeans	SB
Sunflower Seed (Oil-Type)	Sunflower	SF
Wheat, Durum	Durum	DUWH
Wheat, Hard Red Spring	Wheat HRS	HRS
Wheat, Hard Red Winter	Wheat HRW	HRW
Wheat, Hard White	Wheat HW	HDWH
Wheat, Soft Red Winter	Wheat SRW	SRW
Wheat, Soft White	Wheat SW	SWW
Minor (Non-NTEP) Grains		
Beans, Baby Lima	BN Baby Lima	BLB
Beans, Black	BN Black	BLKB
Beans, Blackeye	BN Blackeye	BEB
Beans, Cranberry	BN Cranberry	CRAN
Beans, Kidney	BN Kidney	DB
Beans, Garbanzo (Chickpeas)	BN Garbanzo	GB
Beans, Great Northern	BN Grt Nrthn	GNOR
Beans, Large Lima	BN Lrg Lima	LLB
Beans, Pea	BN Pea	PEAB
Beans, Pink	BN Pink	PINK
Beans, Pinto	BN Pinto	PINT
Beans, Small Red	BN Small Red	SMRB
Beans, Small White	BN Small Wht	SWB
Beans, Yelloweye	BN Yelloweye	YELB

Grain/Commodity	Grain Type (Disp. Grain Name)	Grain Abbrev.
Buckwheat	Buckwheat	BUCK
Buckwheat Groats	Buckwheat Gr	WBWG
Canola	Canola	K
Flaxseed	Flaxseed	FLAX
Hulless Barley	Barley Hless	NSG
Hulless Oats	Oats Hless	NSG
Lentils	Lentils	LDF
Mustard Seed, Brown	Mustard Brn	MS
Mustard Seed, Oriental	Mustard O	MS
Mustard Seed, Yellow	Mustard Y	MS
Peas, Mottled	Peas, Mottled	MTDP
Peas, Smooth Dry	Peas Smooth	SGDP
Peas, Split	Peas, Split	SPEA
Peas, Wrinkled Dried	Peas Wrinkld	WRDP
Popcorn	Popcorn	PS
Rapeseed	Rapeseed	RAPE
Rice, Brewers Milled	Rice BMR	BMR
Rice, Brewers Milled Parboiled	Rice BMRP	BMR
Rice, Long Grain Brown	Rice LGBR	LGBR
Rice, Long Grain Brown Parboiled	Rice LGBRP	LGBR
Rice, Long Grain Milled	Rice LGMR	LGMR
Rice, Long Grain Milled Parboiled	Rice LGMRP	LGMR
Rice, Medium Grain Brown	Rice MGBR	MGBR
Rice, Medium Grain Milled	Rice MGMR	MGMR
Rice, Medium Grain Milled Parboiled	Rice MGMRP	MGMR
Rice, Screenings Milled	Rice SMR	SMR
Rice, Second Head Milled	Rice SHMR	SHMR
Rice, Second Head Milled Parboiled	Rice SHMRP	SHMR
Rice, Short Grain Brown	Rice SGBR	SGBR
Rice, Short Grain Milled	Rice SGMR	SGMR
Rice, Short Grain Rough	Rice SG Ruf	SRUF
Rye	Rye	RYE
Safflower Seed	Safflower	SAF
Sunflower Seed (Confectionary)	Sunflwr Conf	CSF
Triticale	Triticale	TRIT
Quality Control		
Check Test Moisture	CheckTest or Check Test	CTM