UMC600IS and IQ 700IS Indicators

Setting up Custom Transmits (Smart I/O)

This document addresses questions regarding custom transmits for the UMC600IS and IQ 700IS weight indicators. It serves as a supplement to the manuals for both indicators to give you a better understanding of this particular feature.

If you have experience with configuring the IS indicators' options or custom transmits, you may want to skip over the first few sections and go to *Planning Custom Transmits and Macros*. The summary is useful as a quick reference if you are in the field trying to set up the custom transmit for the very first time.

Enabling Option 7

Put the indicator into option configuration mode by closing front panel DIP switches 2 and 3. If all of the options are turned off, the display shows dashes (------). Press and hold the ENTER key on the keypad until the word *OPtIon* appears on the display.

Release the ENTER key and the display changes to *O P . I o F*, indicating that you are at option 1 and that it is currently turned off (*o F* indicates the option is off, *o n* indicates that the option is on).

At this point, the ZERO key steps forward through the options and the TARE RECALL key steps backward through the options. For instance, if you press the ZERO key once, the display shows *O P .2 o F*, indicating that option 2 is currently turned off. Press the ZERO key again and the display shows *O P .3 o F*. Now press the TARE RECALL key to step back to option 2. Press the ZERO key until the display reads *O P .7 o F*. Press the NET/GROSS key to turn on option 7.

Custom Transmit Files

The UMC600IS/IQ700IS indicator has two custom transmit files for Port 1 (there is a third file - file 7.4 - for Port 1, but it is reserved for future use). Each of the custom transmit files may contain up to 30 character codes. If you need a custom transmit to print more than 30 character codes, you need to use the custom transmit macros which are explained in a later section. The codes may be any of the ASCII codes or parameter control codes from the UMC600IS/IQ700IS manual.

The following sub-sections call out what each file is used for:

File 7.1: Gross Weight Data on Port 1

File 7.1 is used to customize the format of the gross weight. This changes the way the printout appears when the indicator is in the normal mode and the gross weight is on the display.

File 7.2: Net Weight Data on Port 1

File 7.2 is used to customize the net data (for example, gross, tare and net weights).

NOTE: You must have a tare weight (press the TARE key) in order for File 7.2 to be printed. Without a tare weight, the indicator defaults to printing File 7.1 or the standard printout if File 7.1 does not contain a custom transmit or an invalid custom transmit.

File 7.4: Special on Port 1

File 7.4 is currently reserved for future use by Condec.

Macro Files

There may be times when you need to print more than the 30 character codes that are allowed in the custom transmit files (7.1 - 7.4). To do custom transmits larger than 30 character codes, the indicator provides eight macro files (7.9 - 7.16) that may be called in from the custom transmit files. This is done by putting a parameter code of 600, 601, 602, 603, 604, 605, 606 or 607 in your custom transmit files. Each macro file can contain up to 30 character codes. You can, however, call more than one macro in your custom transmit or even call the same macro more than once. Any codes that you can enter into the custom transmits can also be entered into the macro files. A string of up to 250 characters may be printed by using a custom transmit and any combination of macro files.

Planning Custom Transmits and Macros

Let's start with a very simple example. Suppose that you want to print the time and date on the weight tickets using the indicator's custom transmit feature (you must enable and configure the time and date option: option 3). The example uses normal weigh mode.

Although it is not absolutely necessary to write out the codes first, you may find this advisable the first few times until you get the hang of doing custom transmits. These pages could also be put into the job files for later reference (in case the indicator has to be replaced for example).

Make sure to denote the specific file you are working on and add some sort of file description. The indicator formats the output according to the File 7.1 when the gross weight is on the display. It is used to print the gross weight only. You should not attempt to print the tare or net weights in File 7.1 (you must use File 7.2 for gross/tare/net prinouts). If you attempt to print the net or tare weights from File 7.1, the indicator will consider that to be an invalid file and print the gross weight data using its default format.

Open the manual to the Parameter Code Command Chart (see Table 6 on page 6). This chart lists special codes that are not actually sent to the printer, but instead tell the indicator to send one of its internal parameters such as weight data and time and date. All of the parameter control codes are numbers above 127. The indicator uses an eight data bit word, meaning that it can only send ASCII characters 1-127 (0 is a NULL and ignored by the indicator). The parameter control codes tell the indicator to print one of the indicator's parameters or to call one of the macro files.

At this point, it is recommended that you get your indicator, printer (hook up per instructions), and manual and follow along, or read first and then go through programming with the indicator.

NOTE: Parameters 200-223 are used in the normal mode.

Enter the Option Configuration Mode, then use the ZERO key to advance to Option 7. The display shows *OP7 of*. Press the GROSS/NET key to turn Option 7 ON. Press the TARE key to advance to File 7.1. Turn on File 7.1 by pressing the LB/KG CONV key. To access the first line of the file press 1SET POINT key. The display shows *01 XXX*. The left two digits show the line number of your file. The right three digits display the ASCII equivalent of the character you enter. Refer to the ASCII Control Code Chart or the Parameter Control Code Chart for the ASCII Code you wish to enter. To initiate the print, enter a "Start of Text" character in line 1. Press 2, then press ENT. (An alternative way to enter the STX {002} character is to press 2 then advance to the next entry by pressing 1SET POINT, but you will not see the code you just entered). The display momentarily shows *ENTER*, then shows *01 002*. Since we want to print Time and Date with our weight data, press keys 4, 0, 0 then ENT. (This tells the indicator to print the time and date as you have it set up in Option 3) Display shows *02 400* Press 1 SET POINT to advance to line 3. Time and date are on one line, so we end it with a Carriage Return/Line Feed (CR/LF). Press 1,3 then ENT. The display shows *03 013*.

NOTE: Leading zeroes are not required.

Press 1SET POINT to advance to line 4. The display shows *04 000*. Press 1, 0 and ENT. The display shows *04 010*. Press 1 SET POINT for line 5. According to the Parameter Control Code Chart 200 will print the weight as we have it set up in parameter 14. Press 2, 0, 0 and ENT. The display shows *05 200.* Advance to the next line, enter the code for carriage return, next line is line feed. Now to end this file, press 9, 9, 9 and ENT. To review the file, press the 2 SET POINT key. With each press of this key we step back one line. Check against Table 1.

Line Number	Code	Code Definition
01	002	STX (start of text)
02	400	Time and date
03	013	Carriage return (CR)
04	010	Line Feed (LF)
05	200	Gross Wt. "LB/KG GR"
06	013	Carriage Return (CR)
07	010	Line Feed (LF)
08	999	End of file

Table 1. Print File 7.1 (7.1, T/D, Gross Wt.)

In the GROSS mode, press PRINT to produce a ticket in this format:

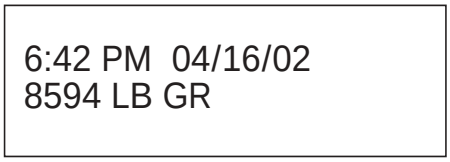

Figure 1. Sample Print from File 7.1

NOTE: If the control code 400 is used in a custom print, you MUST enable and set OPTION 3.

You can readily see that the sample print format doesn't exceed 30 lines of code. Let's add a company name or logo to the ticket. We can do this by setting up a MACRO. This MACRO can be called into any format we set up by using the correct Parameter Control Code. According to the Parameter Control Code Chart, if this information is to be used in a print format, enter a code 600 - call Macro 1.

Use the following example:

GLEN CO inc. (line 1)
GLENWOOD MN. (line 2)
Time/Date (line 3)
Format 1: GROSS weight (line 4)
Format 2: GROSS (ln 4), TARE (ln 5), NET (ln 6)

Line Number	Code	Code Definition
01	002	STX (start of text)
02	600	call MACRO 1 (File 7.9)
03	400	Print Time and Date
04	013	Carriage return
05	010	Line feed
06	200	Gross wt. “LB/KG GR”
07	013	Carriage return
08	010	Line feed
09	999	END OF FILE

Table 2. Print File 7.1 Example (7.1, Co. Logo, T/D, Gross Wt.)

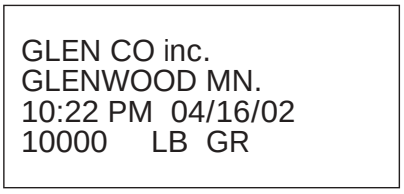

Figure 2. Sample Print from File 7.1

Line Number	Code	Code Definition
01	002	STX (start of text)
02	600	call MACRO 1 (File 7.9)
03	400	Print Time and Date
04	013	Carriage return
05	010	Line feed
06	220	Gross wt. “LB/KG GR”
07	013	Carriage return
08	010	Line feed
09	220	Tare wt. “LB/KG TR”

Table 3. Print File 7.2 Example (7.2, Co. Logo, T/D, GR, TR, NT)

Line Number	Code	Code Definition
10	013	Carriage return
11	010	Line feed
12	210	Net wt. “LB/KG NT”
13	013	Carriage return
14	010	Line feed
15	999	END OF FILE

Table 3. Print File 7.2 Example (7.2, Co. Logo, T/D, GR, TR, NT) (Continued)

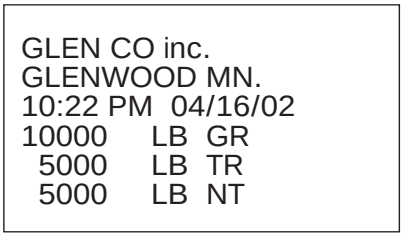

Figure 3. Sample Print from File 7.2

Line Number	Code	Code Definition
01	071	G alphabetic character
02	076	L alphabetic character
03	069	E alphabetic character
04	078	N alphabetic character
05	032	SP (space)
06	067	C alphabetic character
07	079	O alphabetic character
08	032	SP (space)
09	105	i alphabetic character
10	110	n alphabetic character
11	099	c alphabetic character
12	046	. (period)
13	013	Carriage return (CR)
14	010	Line feed (LF)
15	071	G alphabetic character
16	076	L alphabetic character
17	069	E aphabetic character

Table 4. File 7.9 Macro 1

Line Number	Code	Code Definition
18	078	N alphabetic character
19	087	W alphabetic character
20	079	O alphabetic character
21	079	O alphabetic character
22	068	D alphabetic character
23	032	SP (space)
24	077	M alphabetic character
25	078	N alphabetic character
26	046	. (period)
27	013	Carriage return (CR)
28	010	Line feed (LF)
29	999	End of MACRO, return to main file

Table 4. File 7.9 Macro 1 (Continued)

NOTES:

- *When necessary, the start of text (STX) character tells the printer that data is being transferred for printing.*
- *A macro doesn't repeat the start of text character. Only the main file has a start of text.*
- *Macros can be called as many times as needed in a print file.*
- *The code 999 serves as END OF FILE as well as RETURN TO MAIN PRINT FILE command.*
- *Files and MACROS have a maximum of 30 lines each.*
- *If the indicator is in the GROSS mode, it will print File 7.1. If the indicator has a tare value entered and is in the net mode, it will print File 7.2.*
- *It is a good idea to write out the custom print format you want on a worksheet, then enter it into the indicator. Keep this in your records for that indicator - if something happens to the indicator, you will not have to recreate the custom print format.*

Depending on the type of printer that you are using, you could also send special code sequences to the printer itself as long as the ASCII codes are 127 or lower. For example, with the Epson TM-295 printer, you could include the code sequence to release the paper (ASCII characters 27, then 113) after the ticket is printed. Different printers have different commands that are available using special codes like this. For more information about printer codes, refer to the documentation that was supplied with the printer.

There is one code that we have not discussed yet but may come in handy if you are working with an older printer, such as a Hecon tape printer: Code 700, which the IS indicator interprets as "DELAY PER SETUP." Some older printers may have limited buffering capability or memory enough for just a few lines of text. Therefore, it is very easy to overrun the printer and you can lose an entire line of text or get several lines garbled together. To prevent this, insert a code 700 between the carriage return and the line feed. This causes the indicator to pause for the amout of time specified in parameter 14.2 (see manual). A delay of 1 or 2 seconds should be adequate for most of these printers.

Entering the Custom Transmits and Macros

Now that we have seen some examples of planning custom transmits and macros, let's enter the first two example files and see what we get.

Follow the chart in Section 2 of the indicator manual to connect the printer through the I/O barrier to port 1 of the IS indicator.

NOTE: If the printer can not provide an active current loop to retrieve the information from the barrier, you must install an interface unit that can and will output the format used by your printer.

Enable option 7 if it is not already enabled (as described in the first section of this document "Enabling Option 7"). You can then select the desired custom transmit file (we will enter files 7.1 and 7.2 from the first example) using the TARE and TARE RECALL keys. The TARE key takes you forward and the TARE RECALL key goes backwards. With *O P .7 o N* displayed, press the TARE key once to bring up file 7.1 (you will see *7 . 1. O F F* displayed). If you go too far, simply use the TARE RECALL key to go backwards. Now turn on custom transmit by pressing the lb/kg CONV key if it is not already enabled.

In the same way that the TARE and TARE RECALL keys step through the custom transmit files, the 1 SETPOINT and 2 SETPOINT keys will step forward and backward through the individual characters in the file (the lines on your worksheet). Press the 1 SETPOINT key to display the first character of file 7.1. If the custom transmit has never been configured before, the memory used to store the codes may be in a "random" state. Do not be surprised if you find a bunch of codes that do not seem to make any sense. Enter File 7.1 per Table 2. Exit setup mode.

If the indicator is not displaying the gross mode, press the NET/GROSS key to display the gross weight. Attach a weight simulator to the indicator, then dial the weight up to 500 pounds and press the PRINT key. You get a ticket with the described format:

```
10:22 PM  04/16/02
500 LB GR
```

Figure 4. Print Example

Enter File 7.2 per Table 3 on page 3 and File 7.9 Table 4 on page 3. Tare the indicator then dial the weight up to 800 pounds and press the PRINT key.

```
GLEN CO inc.
GLENWOOD MN.
10:22 PM  04/16/02
1300 LB GR
500 LB TR
800 LB NT
```

Figure 5. Print Example

The first time you pressed the PRINT key, a ticket was printed using custom transmit file 7.1. With a tare weight in the indicator and the net weight on the display, the ticket was printed using custom transmit file 7.2. Although this may seem rather obvious, we have received a few phone calls from technicians who insisted that the custom transmit was not working properly when they simply had not done a tare or are not in the net mode.

Summary

The following are some general points summarizing what is covered in this document.

- Custom transmits are configured using option 7 of the indicator.
- Close DIP switches 2 and 3 to enter option configuration mode.
- If the display shows "------" with switches 2 and 3 closed, press and hold ENT for the option menu.
- ZERO steps forward through the options.
- NET/GROSS toggles the option on or off.
- TARE steps forward through the option's subparameters (7.1, 7.2, 7.3, etc.).
- TARE RECALL steps backward through the options and subparameters.
- Lb/kg CONV toggles subparameters on and off.
- 1 SETPOINT steps forward through the codes in a custom transmit or macro.
- 2 SETPOINT steps backward through the codes in a custom transmit or macro.
- Files 7.1 and 7.2 print the gross data and net data in normal mode on port 1.
- Custom transmit files may contain up to 30 codes.
- Macros (7.9 - 7.16) may be called by your custom transmit files to print custom transmits up to 250 characters long.
- You may use any of the ASCII codes and parameter control codes, found in the back of this document or in the UMC600IS/IQ700IS manual.
- You may use any of the control codes listed in your printer's programming guide as long as those codes are between 1 and 127 inclusive.
- Parameters 600-607 call macros 1-8, respectively, from your custom transmit files.
- Parameter 700 causes the UMC600 to pause for the delay period specified in parameter 14.2 (refer to the indicator manual).
- Parameters 400-402 print the time and/or date according to option 3 setup.
- To enter a code into a file, enter the code number and press the ENT key to enter it or 1 SETPOINT to enter the code and move on to the next code.
- To insert a code, press the ENT key to move all of the codes from the current code on one place to the right, making an open space (a null code 0) that you may replace by typing the new code and pressing either the ENT or 1 SETPOINT key.
- To delete a code from the table, select the code using the 1 SETPOINT and 2 SETPOINT keys, then press the CE key.

Tables

Port Number	File Number	Normal Mode
1	7.1	Gross Weight Data
1	7.2	Gross/Tare/Net Weight Data
1	7.4	Special

Table 5. UMC600IS Custom Transmit Files

Code Number	Description	Code Number	Description
200	Gross Wt. “LB/KG GR”	400	Time & Date per setup
201	Gross Wt. “LG/KG”	401	Time per setup
202	Gross Wt.	402	Date per setup
203	Gross Wt. (no 0 blanking)	600	Macro file 1 (File 7.9)
210	Net Wt. “LB/KG NT”	601	Macro file 2 (File 7.10)
211	Net Wt. “LN/KN”	602	Macro file 3 (File 7.11)
212	Net Wt.	603	Macro file 4 (File 7.12)
213	Net Wt. (no 0 blanking)	604	Macro file 5 (File 7.13)
220	Tare Wt. “LB/KG TR”	605	Macro file 6 (File 7.14)
221	Tare Wt. “LT/KT”	606	Macro file 7 (File 7.15)
222	Tare Wt.	607	Macro file 8 (File 7.16)
223	Tare Wt. (no 0 blanking)	700	Delay per setup (parameter 14.2)
300	Status character (m=motion, etc.)	999	End of file

Table 6. UMC600IS Parameter Code Command Chart

Control		Control		Symbols		Numbers	
Character	Code	Character	Code	Character	Code	Character	Code
NUL	000	DLE	016	SP	032	0	048
SOH	001	DC1	017	!	033	1	049
STX	002	DC2	018	"	034	2	050
ETX	003	DC3	019	#	035	3	051
EOT	004	DC4	020	$	036	4	052
ENQ	005	NAK	021	%	037	5	053
ACK	006	SYN	022	&	038	6	054
BEL	007	ETB	023	‘	039	7	055
BS	008	CAN	024	(	040	8	056
HT	009	EM	025	)	041	9	057
LF	010	SUB	026	*	042	:	058
VT	011	ESC	027	+	043	;	059
FF	012	FS	028	,	044	<	060
CR	013	GS	029	-	045	=	061
SO	014	RS	030	.	046	>	062
SI	015	US	031	/	047	?	063

Table 7. ASCII Control Code Chart 1

Upper Case		Upper Case		Lower Case		Lower Case	
Character	Code	Character	Code	Character	Code	Character	Code
@	064	P	080	`	096	p	112
A	065	Q	081	a	097	q	113
B	066	R	082	b	098	r	114
C	067	S	083	c	099	s	115
D	068	T	084	d	100	t	116
E	069	U	085	e	101	u	117
F	070	V	086	f	102	v	118
G	071	W	087	g	103	w	119
H	072	X	088	h	104	x	120
I	073	Y	089	i	105	y	121
J	074	Z	090	j	106	z	122
K	075	[	091	k	107	{	123
L	076	\	092	l	108	|	124
M	077	]	093	m	109	}	125
N	078	^	094	n	110	~	126
O	079	_	095	o	111	DEL	127

Table 8. ASCII Control Code Chart 2