SYNCRO
STANDARD COMMUNICATION WITH OFFICE SYSTEM
ver 0.4

Table of the updates to the interface

Eliminato il campo "Allarmi attivi" del comando ST perché non utilizzato su Syncro - Deleted field "Active Alarms" from ST command because not used	12-12-2005		Icilio Disperati
Aggiunto codice di errore 3100 "Impossibile aggiungere la Qualità" - Adde error code 3100 "impossible add the quality"	28-06-2006		Andrea Bello
Inserite Singole descrizioni delle carte e relative grammature - Added single description of paper and gremmage	09-11-2006		Fazzi R.
Aggiunto Comando SE - Adde "SE" command	09-11-2006		Fazzi R.
Modificato comando SE con l'aggiunta della commessa su ogni livello. - Modified "SE" command adding "Job Number" for each level	22-12-2006		Andrea Grassi
Aggiunto il comando TM per la sincronizzazione di data e ora - Added "TM" command for syncronizing the date and time	05-01-2007		Andrea Grassi
Sostituito 'SPDE' con 'Syncro'. Corretti collegamenti ipertestuali alle appendici. - Sobstituted the word "SPDE" with "SYNCRO"	10-04-2007		Andrea Grassi
Aggiunta gestione comandi TD e TI - Added "TD" and "TI" commands	18-12-2007		Andrea Bello
Al comando TM è stata aggiunta la dicitura che può essere eseguito solo se Syncro è fuori produzione. - Added comment on "TM" command: it is possible just when line is not running and Idle shift is active	12-03-2008		Andrea Grassi
Apportate due correzioni a descrizioni non corrette - Corrected some descriptions	12-05-2008		Andrea Grassi

Aggiunti Errori Non Gestiti (Da 4000 a 4004) - Added som not error non present before (from 4000 to 4004)	28-05-2008		P.Massaro
Inserito comandi per Database Cut to Pattern - Added command for Cut-To.Patter managment	12-08-2008		Fazzi R.
Modificata comando PE per ricezione codice Cut to pattern - Modified "PE" command for receiving Cut-To-Patter information	12-08-2008		Fazzi R.
Aggiornate descrizioni di metri prodotti e scarto su VE e TD - Added description of produced meters and scrap for "VE" and "TD" commands	05-09-2008		Massaro P.
Sostituito byte con carattere - Sobstitued the word "byte" with "character"	26-09-2008		Grassi A.
Eliminata la colonna "End of production summary" nella tabella Balance/account di pagina 22 - Deleted the column "End production summary" from the table "Balance/Account" in page 22	15/12/08		Grassi Andrea
Aggiunte note sul campo "paper" and "paper grammage" - Added some notes about "paper" and "paper grammae"	10-09-2009		Massaro P.
Agiunto comando SB richiesto dal gestionale SIRIO - Added command "SB"	22-09-2009		Massaro P.
Aggiunto il commento dell'operatore ai dati restituiti con il comando DW - Added the comment for the answer to "DW" command	02-02-2010		Andrea Grassi
Assegnata descrizione all'errore 1124 (fogli per pila) - Added description "stack too high" for error code 1124	22-02-2010		Massaro P.
Inserita Immagine per inserimento Cut To Pattern - Added some explication and figures for Cut-To-Pattern managment	06-04-2010		Massaro P.
Inserita nota per le opzioni di cordonatura (utilizzabili solo con Twin400) - Added note in "Twin 400" positioning option appendix	15-04-2010		Grassi Andrea
Aggiunto commnento all'errore "2003" (è utilizzato sia per il Run Id 1 che Run Id 2) -	06-10-2010		P. Massaro

Added commen on error "2003" (used for "Run Id 1" and "Run Id 2" error)			
Corretto il collegamento ipertestuale che rimanda al blocco dati delle risposte ai comandi OE, LI, LP - Corrected the link for for going to commands "OE", "LI" and "LP"	05-10-2010	18a	Andrea Grassi
Rimosso posizionamento Normal-Reverse per il cordone Linpac + Aggiunto commento relativo alla versione di protocollo da impostare su Syncro - Deleted the "Normal-Revers" positioning from possible selection on "Linpac" scorer + Added comment about version of protocol on Syncro system setting	16-02-2011	18b	P.Massaro
Rivista la descrizione del campo 'Saldo-Acconto / Balance' quando eseguito con il comando VE - Reviewed the assignment of 'Balance' field on VE command	10-05-11	18c	P.Massaro
Aggiunte considerazioni sulla configurazione del cut-to-pattern: ogni posizione della tacca Kx (K0....K9) deve essere uguale o maggiore del valore minimo imposto dalla scheda di taglio - Added some considerations about cut-to-pattern configuration: each mark position (K0...K9) must be equal or higher than minimum value imposed by cut-board-card	07-11-11	18d	P.Massaro
Aggiunta estensione per l'upload dei file di testo Aggiunti metri quadri di rifilo totale nel comando TD - Added the extension for the upload of text file Added the square meters of total trim in the TD command	01-12-2011	19a	A. Grassi
Aggiunte considerazioni relative al CODICE QUALITA' (univocità dell'informazione) - Added comments about Quality Code Field (must be unique)	08-02-2012	19b	P.Massaro
I codici di errore 1124 e 119 erano entrambi riferiti all'altezza della pila. Ora il codice 119 è ancora riferito all'altezza della pila, il codice 1124 è un generico errore di validazione. - The error codes 1124 and 119 both were related to the stack height. Now the code 119 is still related to the stack height, the code 1124 is a generic validation error	15-05-2012	20a	Andrea Grassi
1. Revisione della descrizione del campo 'Carta' introducendo l'assegnazione "NOT_USED" e indicando di dovere differenziare in maniera univoca ogni tipo di carta. 2. Revisione della descrizione del campo "Composizione" indicando di creare codici univoci controllando anche le differenze			

tra le carte. -	15-05-2012	21a	P.Massaro
1. Revision of 'Paper' field description including the assignment of "NOT_USED" value for Canetè production and indicating to differentiate each papers with unique code. 2. Revision of 'Board grade' field description indicating to identify a Unique codification checking also differentiation of 'Paper'			
Aggiunti dettagli del comando "DP" per ricevere I dati del pattern quando la taglierina è BHS Corretta la descrizione del campo "Run Id 2" - Added description regarding "DP" command for receiving the pattern information in case of BHS's Cut-Off-Knife Corrected the description of "Run Id 2" field	19-10-2012	22a	P.Massaro
Cambiato Logo Fosber Changed the Fosber logo	23/10/2012	23a	Sighieri Giovanni
Precisato il significato della window-after e della window-before. Indicati quali sono i campi obbligatori nel comando DP. Made clear the meaning of the window-after and the windows after. Indicated the mandatory fields in the DP command.	30/11/2012	24a	Andrea Grassi
Chiariti i valori di contrasto per il cut-to-pattern automatico e semi-automatico. Made clear the values of contrast for the automatic and semi-automatic cut-to-pattern.	20/12/2012	25a	Andrea Grassi Paolo Massaro
Aggiunto il significato della risposta DU al comando CA Added the meaning of the DU answer to the CA command	02/05/2013	25b	Gabriele Raffaelli
Aggiunta Cut To Pattern copertina superiore Added Cut To Pattern From Upper	30/05/2013	25c	Gabriele Raffaelli
Modificata la gestione del comando TM (par.1.8) Modified the management of TM command (par.1.8)	17/04/2014	25c	Damiano Porcella
Rivista descrizione del campo 'Contatore Scarichi / Number Of Downloading' per i comandi SB ed SE in caso di eventi di scarico rilevati con i segnali elettrici - Description review for 'Contatore Scarichi / Number Of Downloading' field into SE and SB data block when Stacker's discharge are detected via hardware signals	20/01/2015	25d	Paolo Massaro
Rivista sezione "Struttura del messaggio". In particolare sono stati inseriti i tipi di campo (alfanumerico, decimale ecc).	25/09/2015	25e	Stefano Togneri
Comando "SE": Non erano valorizzati correttamente i campi "Da" / "A" a partire	29/03/2016	25f	Paolo Massaro

Reason	date	Version	Approved
della voce "Numero di fogli per pila" (Incongruenza riscontrata solamente nella versione ITALIANA del documento) - "SE" command description: Starting from field "Number sheets per stack" the informations "From" / "To" were not properly filled (error encountered only on ITALIAN version of document)			
Corretta la descrizione del numero massimo di identificativi ritornati dai comandi LD/LE - Modified the description of the identification's max number returned by the LD/LE commands.	27/04/2016	25g	Gabriele Raffaelli
(Modifiche valide solamente per il documento in lingua inglese) Corrette le traduzioni relative alle descrizioni dei codici di errore - Clarified some translations of errors codes descriptions	29/09/2016	25h	Paolo Massaro
Eliminato il comando "LP" dal titolo di alcuni capitoli perché non esiste - "LP" command deleted from some chapter's titles because not supported	10/10/2016	25i	Gabriele Raffaelli

Version of the associated software

As per internal procedures, any modification made to the software will generate a new version of the interface document.	Type	First Version With All Usable Command	
	PC	Syncro 3.4.27a	
	PLC		
	C_ASSI		
	T_SCREEN		
approved			**date**	

TABLE OF CONTENTS

1. STANDARD OFFICE PROTOCOL

<mark>Current protocol version on syncro supervisor: **0.4**</mark>

This protocol allows to interchange information between the Fosber system (SYNCRO) and offices.

The SYNCRO is a "slave": during the communication it waits for commands. We report the sequence of communication events, hereunder:

1. SYNCRO waits for commands from planning system;
2. Tests the command to verify if the request can be satisfied, and if yes, it carries it out;
3. Answers to the planning system. If the operation cannot be carried out, the answer contains an error code.

The planning system must respect this sequence: it must wait for the SYNCRO's answer, before it sends an other command.
Usually SYNCRO sends the answer in 3 sec but, in some cases (PC turned off, program not running, noise on the line ....), the answer does not arrive to the planning system. If after 10 sec the planning system has not received an answer, it can assume that the command has been lost; it can then resend a new command (frame).

The characters are transmitted and received in ASCII format. The receipt of characters mode can be set in UNICODE format (Optional)

1.1 COMMUNICATION PARAMETERS

This section describes the physical link between the 2 systems; planning system and SYNCRO.
SYNCRO provides two communication ways: via serial or via network.
One way excludes the other: it is not possible to connect a netwok and a serial link at the same time.
The *default* parameters of standard communication of SYNCRO are reported below:

1.1.1   SERIAL

Description	Data/Value
Communication type	RS232, RS422
Baud rate	9600
Parity	None (N)
Data bit	8
Stop bit	1

1.1.2   NETWORK

The network communication uses a *socket* configured on UDP/IP standard protocol. The default parameters of standard communication of SYNCRO are reported below:

Description	Data/Value
Network protocol	UDP/IP
Remote IP address	10.151.151.160
Local IP address	10.151.151.1
Subnet Mask	255.255.255.0
Remote port	60001
Local port	60000

1.2 MESSAGE STRUCTURE

Message structure table

Composition of structure.	Nr. Character	Type	Note
STX	1 character	H	ASCII/Unicode 02 Hex
COMMAND	2 character	A	
ID (Related to Run id 1 field)	4 character	N	
DATA BLOCK	Variable		There are some commands that have not a data block. For this types of command, immediately after the ID, must be sent the MESSAGE N°
MESSAGE N°	2 character	N	See note 4 for details
CHECKSUM	2 character	H	See Appendix A: Checksum calculation for details
ETX	1 character	H	ASCII/Unicode 03 Hex

1.2.1 LEGEND FOR THE DATA FIELDS TABLES

Values of the columns Type.

    N   =   decimal number
    B   =   binary number
    H   =   hexadecimal number
    A   =   alphanumeric number

1.2.2 NOTES

1.   The message length depends on the length of the DATA BLOCK field;
2.   Fill in the empty fields with spaces (ASCII/Unicode 20Hex);
3.   Each field must be aligned to the left;
4.   The MESSAGE N° field, is used to connect the command with its own answer. SYNCRO copies this value in the output frame string. Because of delays on the network, the SYNCRO answer could arrive after the communication's time out, whilst the planning system could have sent a new command. The MESSAGE N° field solves this ambiguity.

1.3 CUT TO PATTERN DATABASE MAINTENANCE

Each data field begins with two characters that identify the meaning of the data (tag), continues with the value combined with the data. Each field have a fixed number of characters.

1.3.1   DESCRIPTION OF THE COMMANDS

This paragraph contains the description of the commands.

Description of commands table

COMMAND	USE	Behaviour
DP	DP	Every time a new Cut to Pattern Record will send from the planning system

1.3.2   ADD OR UPDATE CUT TO PATTERN (DP COMMAND)

This message enters a new quality into the SYNCRO database. Before a format can be downloaded, the associated Cut to Pattern must be transmitted. If a Cut to Pattern already exists within the SYNCRO database it will be updated.

1.3.2.1 FOSBER'S CUT-OFF-KNIFE MODEL "MASTER 21.30"

Fields description table of the "DP" command

TAG	Num char.	Min Val	Max Val	Type	UM	Description
KM*	1	0	2	N	-	Type of Preprint Paper: 1 = Cut to Mark, 2 = Cut to Pattern
KI*	16	-	-	A	-	Cut to Pattern Code Identifier (max 16 characters)
KC*	1	1	4	N	-	Identifies the contrast type on cut to pattern Photocell. **For the automatic cut to patten**: 1 = Black marks on white background, 2 = Black marks on yellow or beige or grey background. **For the semi-automatic cut to patten**: 1 = Dark On Course, 2 = Light On Course, 3 = Dark On Fine, 4 = Light On Fine.
KS*	1	0	1	N	-	Specifies whether the pattern starts: 0=with light, 1=with dark background
KO	4	-100	9999	N	Mm	Specifies what is the position where the cut is made referred to the end of the pattern; this value is negative on cut lead, it's positive on cut delay.
K0*	3	1	999	N	mm	Distance start pattern - start 1° mark (See Appendix G)
K1*	3	0	999	N	mm	Distance start pattern - end 1° mark(See Appendix G)
K2*	3	0	999	N	mm	Distance start pattern - start 2° mark (See Appendix G)
K3	3	0	999	N	mm	Distance start pattern - end 2° mark (See Appendix G)
K4	3	0	999	N	mm	Distance start pattern - start 3° mark(See Appendix G)
K5	3	0	999	N	mm	Distance start pattern - end 3° mark
K6	3	0	999	N	mm	Distance start pattern - start 4° mark (See Appendix G)
K7	3	0	999	N	mm	Distance start pattern - end 4° mark (See Appendix G)

TAG	Num char.	Min Val	Max Val	Type	UM	Description
K8	3	0	999	N	mm	Distance start pattern - start 5° mark (See Appendix G)
K9	3	0	999	N	mm	Distance start pattern - end 5° mark (See Appendix G)
KB	4	0	9999	N	mm	If not zero, it enables the reading of the photoeye for that distance before the supposed cut point.
KA	4	0	9999	N	mm	If not zero, it enables the reading of the photoeye for that distance after the supposed cut point.
KW	4	0	2800	N	mm	Lateral Position of Cut to Pattern in mm. The value is related to the trim slit on the left side.

* These fields must have a value for the command to be accepted.

<u>Note</u>: to insert the cut-to-pattern option into an order it is necessary to use the field "Notes" into the PE command (see chapter 1.4.1.2 and 7 for details).

1.3.2.2 BHS'S CUT-OFF-KNIFE

Fields description table of the "DP" command

TAG	Num char.	Min Val	Max Val	Type	UM	Description
KM	1	1	1	N	-	Fixed value = "1"
KI	16	-	-	A	-	Cut to Pattern Code Identifier (max 16 characters)
KC	1	1	1	N	-	Fixed value = "1"
KS	1	1	1	N	-	Fixed value = "1"
KO	4	-100	100	N	Mm	Offset to move the cut before/after respect an origin indicated by BHS (positive/negative indicated by BHS)
K0	3	0	0	N	mm	Fixed value = "0"
K1	3	0	999	N	mm	(Compulsory.) Dimension of 1st mark (First mark = the one that cut-off-knife retrieve when board is moving from Slitter Scorer to Cut-Off-Knife)
0 (Zero) between K2 and K9 to indicate that no more marks are required						
K2	3	0	999	N	mm	Dimension of gap between 1st and 2nd mark
K3	3	0	999	N	mm	Dimension of 2nd mark (First mark = the one that cut-off-knife retrieve when board is moving from Slitter Scorer to Cut-Off-Knife)
K4	3	0	999	N	mm	Dimension of gap between 2nd and 3rd mark
K5	3	0	999	N	mm	Dimension of 3rd mark (First mark = the one that cut-off-knife retrieve when board is moving from Slitter Scorer to Cut-Off-Knife)
K6	3	0	999	N	mm	Dimension of gap between 3rd and 4th mark
K7	3	0	999	N	mm	Dimension of 4th mark (First mark = the one that cut-off-knife retrieve when board is moving from Slitter Scorer to Cut-Off-Knife)
K8	3	0	999	N	mm	Dimension of gap between 4th and 5th mark
K9	3	0	999	N	mm	Dimension of 6th mark (First mark = the one that cut-off-knife retrieve when board is moving from Slitter Scorer to Cut-Off-Knife)

TAG	Num char.	Min Val	Max Val	Type	UM	Description
KB	4	0	9999	N	mm	'Window size' to disable the photocell reading before the mark/pattern for a specified length
KA	4	0	0	N	mm	Fixed value = "0"
KW	4	0	9999	N	mm	Lateral Position of Cut to Pattern in mm respect to trim slit

1.3.2.3   ANSWER TO REQUEST OF CUT TO PATTERN COMMANDS (DP)

Description of answers

COMANDO	ID	Data Block	Behaviour
OK	Space (ASCII/Unicode 20 Hex)	34 spaces (ASCII/Unicode 20 Hex)	SYNCRO success.
CK	Space (ASCII/Unicode 20 Hex)	34 spaces (ASCII/Unicode 20 Hex)	Checksum error.
RF	Space (ASCII/Unicode 20 Hex)	34 spaces (ASCII/Unicode 20 Hex)	The system cannot carry out the command.
DF	Four spaces (ASCII/Unicode 20 Hex)	See next chapter	Data block value error.

1.3.2.4   DATA BLOCK FOR ANSWERS TO CUT TO PATTERN COMMANDS

DATA BLOCK description

Description	Index From	to	Length	Type	Comment
Head					
Error code	1	4	4	A	Error code. See Appendix B: Error codes table for details
Free	5	34	30	A	Free

1.4 MANIPULATION LIST COMMANDS

1.4.1 SENDING OF MANIPULATION LIST COMMANDS DETAILS (PLANNIG SYSTEM -> SYNCRO)

1.4.1.1 *PROGRAMMING AND DELETING COMMANDS (PE, IE, ME, CA, CT)*

The columns COMMAND, ID and DATA BLOCK that are in the *Commands description table*, below indicates the way to give a value to the COMMAND, ID and DATA BLOCK fields, related to the *Message structure table*, described in the previous chapter.

Commands description table

COMMAND	ID	DATA BLOCK	Behaviour
PE*	"0000" (ASCII/Unicode 30Hex)	See next chapter	SYNCRO stores the order immediately after the last in the list.
IE*	Run id 1** of the coupling after which input the one in validity phase	See next chapter	By running the order list, SYNCRO seeks for one having the same Run id 1 as the one specified in the ID field of the present command. If it does not find it, it returns an error message, otherwise stores the coupling in sending phase, immediately after the one located by the RunId1.
ME	Run id 1** of the order to modify	See next chapter	By running the order list, SYNCRO seeks for one having the same Run id 1 as that specified in the ID field on the present command. If it does not find it, returns an error message, otherwise overwrites the data of the found order with those of the validity phase order.
CA	Run id 1** of the order to delete	This command has not a data block	By running the order list, SYNCRO seeks for one having the same Run id 1 as the one specified in the ID field of the present command. If it does not find it, it returns an error message, otherwise deletes it.
CT	Run id 1** of the order whose to begin to delete. SYNCRO does not allow to delete the 1st and 2nd order in queue.	This command has not a data block	By running the order list, SYNCRO seeks for one having the same Run id 1 as the one specified in the ID field of the present command. If it does not find it, returns an error message, otherwise deletes all the next orders until the last in the list, starting from the one found by the RunId1.

* If the planning system sends the PE or IE command and the list is full, SYNCRO answers with an error message.
** The Run id 1 is the first field of the data structure described in the next chapter, is sent by the planning system and represents the primary key of the order in the SYNCRO's list. This value must be between 1000 and 8999 and must be univocal.

1.4.1.2 *PROGRAMMING COMMAND DATA BLOCK (PE, IE, ME, OE, LI, LO)*

DATA BLOCK description table

Description	Index From	to	Length	Type	Comment
Head					
Run id 1 *	1	4	4	N	Program identification code sent by Host (1000->8999)**
Run id 2 *	5	15	11	A	Code visualized on Syncro screen**
Flute *	16	18	3	A	Flute registration code**
Board grade	19	54	36	A	Board identification ***
Reel's width *	55	58	4	N	Reel's width in mm
Type of trim *	59	59	1	A	Type of trim (1=Normal, 2=Absent)**. Value allowed: Normal='1' (ASCII/Unicode 31Hex);

					Absent='2' (ASCII/Unicode 32Hex).
Scoring gap distance	60	62	3	N	Requested distance value, between the profiles of the scorers on the upper roll, compared to the profiles of the scorers on the lower roll, in 1/10mm.
Grammage	63	66	4	N	Weight (in grams) per square meter [g/m²]
Paper 1	67	78	12	A	Unique paper code **
Paper 2	79	90	12	A	Unique paper code **
Paper 3	91	102	12	A	Unique paper code **
Paper 4	103	114	12	A	Unique paper code **
Paper 5	115	126	12	A	Unique paper code **
Paper 6	127	138	12	A	Unique paper code **
Paper 7	139	150	12	A	Unique paper code **
Paper 1 Grammage	151	153	3	N	Grammage of paper **
Paper 2 Grammage	154	156	3	N	Grammage of paper **
Paper 3 Grammage	157	159	3	N	Grammage of paper **
Paper 4 Grammage	160	162	3	N	Grammage of paper **
Paper 5 Grammage	163	165	3	N	Grammage of paper **
Paper 6 Grammage	166	168	3	N	Grammage of paper **
Paper 7 Grammage	169	171	3	N	Grammage of paper **
Order 1					**leftmost order**
Order number	172	183	12	A	Customer's order number code
Customer	184	213	30	A	Customer's name
Destination	214	243	30	A	Destination address
Customer's town	244	263	20	A	Destination town
City code	264	265	2	A	Customer's city code
Customer's code	266	277	12	A	Customer's code on planning system

Level *	278	278	1	A	Working lever **.
					Values allowed:
					  Upper = 'U' (ASCII/Unicode 55Hex);
					  Medium = 'M' (ASCII/Unicode 4DHex);
					  Lower = 'L' (ASCII/Unicode 4CHex).

Sheet length *	279	282	4	N	Length of the sheet in mm
Quantity *	283	287	5	N	Number of sheets in the order
Outs *	288	288	1	N	Number of sheets per cut
Sheet width *	289	292	4	N	Width of sheet in mm
Scorers' dimensions *	293	391	99	N	Scorers' dimensions per box, separated by spaces, in mm

Index of scorers' group *	392	392	1	A	Index of scorers' group**.
					 Values allowed:
					  'A' (ASCII/Unicode 41Hex);
					  'B' (ASCII/Unicode 42Hex);
					  'C' (ASCII/Unicode 43Hex);
					  'D' (ASCII/Unicode 44Hex)

Type of positioning *	393	393	1	A	Way in which scorers are positioned**.
					Values allowed:
					  Normal offset = '/' (ASCII/Unicode 2FHex);
					  Point to point offset = 'X' (ASCII/Unicode 58Hex);
					  Reverse offset = '\' (ASCII/Unicode 5CHex);
					  Centred = '–' (ASCII/Unicode 2DHex)

Sheets per stack	394	397	4	N	Number of sheets for each stack
Stacks per pallet *	398	399	2	N	Number of stacks for each pallet

Bundle/Pallet	400	400	1	N	Type of outlet on take off.
					Values allowed:
					  Pallett = '0' (ASCII/Unicode 30Hex);
					  Bundle = '1' (ASCII/Unicode 31Hex).

Take off side	401	401	1	N	Discharge side of terminal take off.
					Values allowed:
					  Right = '0' (ASCII/Unicode 30Hex);
					  Left = '1' (ASCII/Unicode 31Hex);
					  Front = '2' (ASCII/Unicode 32Hex).

Sending of pallet	402	402	1	A	Place to send the pallet Values allowed: Trasformation='T' (ASCII/Unicode 54Hex); Delivery='S' (ASCII/Unicode 53Hex); Other='A' (ASCII/Unicode 41Hex).
Material handling line	403	404	2	A	Line to which must be sent the pallet (1-99)
Name of the box factory machine	405	419	15	A	Name of the machine in the box factory to which the pallet is destined to.
Balance	420	420	1	A	Balance of order production: Values allowed: Total = 'T' (ASCII/Unicode 54Hex); Partial = 'P' (ASCII/Unicode 50Hex); Waste = 'X' (ASCII/Unicode 58Hex).
Delivery date	421	428	8	A	Order delivery date (YYYYMMDD)
Product code	429	436	8	A	Code of the product
Data to print 1	437	472	36	A	General data to print on the label
Data to print 2	473	487	15	A	General data to print on the label
Data to print 3	488	547	60	A	General data to print on the label
Data to print 4	548	557	10	A	General data to print on the label
Pallet width	558	561	4	N	Width of pallet to insert under the optimised stacks
Pallet length	562	565	4	N	Length of pallet to insert under the stacks
Number of pallet per width	566	567	2	N	Number of pallet to put together
Number of pallet per length	568	569	2	N	Number of pallets to put together
Double	570	570	1	N	Double in optimisation. Values allowed: No = '0' (ASCII/Unicode 30Hex); Yes = '1' (ASCII/Unicode 31Hex).
Type of binding	571	571	1	N	Type of pallet binding. Values allowed: None = '0' (ASCII/Unicode 54Hex); Plastic strap = '1' (ASCII/Unicode 50Hex); Plastic strap + protection = 'X' (ASCII/Unicode 58Hex).
Binding code	572	572	1	N	Binding code
Number of edge-protections	573	574	2	N	Number of edge-protection sheets to be binded.
Notes	575	604	30	A	Notes for the operator

Order 2

Order number	605	616	12	A	Customer's order number code
Customer	617	646	30	A	Customer's name
Destination	647	676	30	A	Destination address
Customer's town	677	696	20	A	Destination town
City code	697	698	2	A	Customer's city code
Customer's code	699	710	12	A	Customer's code on planning system
Level *	711	711	1	A	Working lever **. Values allowed: Upper = 'U' (ASCII/Unicode 55Hex); Medium = 'M' (ASCII/Unicode 4DHex); Lower = 'L' (ASCII/Unicode 4CHex).
Sheet length *	712	715	4	N	Length of the sheet in mm
Quantity *	716	720	5	N	Number of sheets in the order
Outs *	721	721	1	N	Number of sheets per cut

Sheet width *	722	725	4	N	Width of sheet in mm
Scorers' dimensions *	726	824	99	N	Scorers' dimensions per box, separated by spaces, in mm

Index of scorers' group *	825	825	1	A	Index of scorers' group**.
					Values allowed:
					  'A' (ASCII/Unicode 41Hex);
					  'B' (ASCII/Unicode 42Hex);
					  'C' (ASCII/Unicode 43Hex);
					  'D' (ASCII/Unicode 44Hex)

Type of positioning *	826	826	1	A	Way in which scorers are positioned**.
					Values allowed:
					  Normal offset = '/' (ASCII/Unicode 2FHex);
					  Point to point offset = 'X' (ASCII/Unicode 58Hex);
					  Reverse offset = '\' (ASCII/Unicode 5CHex);
					  Centred = '–' (ASCII/Unicode 2DHex)

Sheets per stack	827	830	4	N	Number of sheets for each stack
Stacks per pallet *	831	832	2	N	Number of stacks for each pallet

Bundle/Pallet	833	833	1	N	Type of outlet on take off.
					Values allowed:
					  Pallett = '0' (ASCII/Unicode 30Hex);
					  Bundle = '1' (ASCII/Unicode 31Hex).

Take off side	834	834	1	N	Discharge side of terminal take off.
					Values allowed:
					  Right = '0' (ASCII/Unicode 30Hex);
					  Left = '1' (ASCII/Unicode 31Hex);
					  Front = '2' (ASCII/Unicode 32Hex).

Sending of pallet	835	835	1	A	Place to send the pallet
					Values allowed:
					  Trasformation='T' (ASCII/Unicode 54Hex);
					  Delivery='S' (ASCII/Unicode 53Hex);
					  Other='A' (ASCII/Unicode 41Hex).

Material handling line	836	837	2	A	Line to which must be sent the pallet (1-99)
Name of the box factory machine	838	852	15	A	Name of the machine in the box factory to which the pallet is destined to.

Balance	853	853	1	N	Balance of order production:
					Values allowed:
					  Total = 'T' (ASCII/Unicode 54Hex);
					  Partial = 'P' (ASCII/Unicode 50Hex);
					  Waste = 'X' (ASCII/Unicode 58Hex).

Delivery date	854	861	8	N	Order delivery date (YYYYMMDD)
Product code	862	869	8	N	Code of the product
Data to print 1	870	905	36	A	General data to print on the label
Data to print 2	906	920	15	A	General data to print on the label
Data to print 3	921	980	60	A	General data to print on the label
Data to print 4	981	990	10	A	General data to print on the label
Pallet width	991	994	4	N	Width of pallet to insert under the optimised stacks
Pallet length	995	998	4	N	Length of pallet to insert under the stacks
Number of pallet per width	999	1000	2	N	Number of pallet to put together
Number of pallet per length	1001	1002	2	N	Number of pallets to put together

Double	1003	1003	1	N	Double in optimisation.
					Values allowed:
					  No = '0' (ASCII/Unicode 30Hex);
					  Yes = '1' (ASCII/Unicode 31Hex).

Type of binding	1004	1004	1	N	Type of pallet binding.

					Values allowed: None = '0' (ASCII/Unicode 54Hex); Plastic strap = '1' (ASCII/Unicode 50Hex); Plastic strap + protection = 'X' (ASCII/Unicode 58Hex).
Binding code	1005	1005	1	N	Binding code
Number of edge-protections	1006	1007	2	N	Number of edge-protection sheets to be binded.
Notes	1008	1037	30	A	Notes for the operator
Order 3					
Order number	1038	1049	12	N	Customer's order number code
Customer	1050	1079	30	N	Customer's name
Destination	1080	1109	30	A	Destination address
Customer's town	1110	1129	20	A	Destination town
City code	1130	1131	2	A	Customer's city code
Customer's code	1132	1143	12	A	Customer's code on planning system
Level *	1144	1144	1	N	Working lever **. Values allowed: Upper = 'U' (ASCII/Unicode 55Hex); Medium = 'M' (ASCII/Unicode 4DHex); Lower = 'L' (ASCII/Unicode 4CHex).
Sheet length *	1145	1148	4	N	Length of the sheet in mm
Quantity *	1149	1153	5	N	Number of sheets in the order
Outs *	1154	1154	1	N	Number of sheets per cut
Sheet width *	1155	1158	4	N	Width of sheet in mm
Scorers' dimensions *	1159	1257	99	N	Scorers' dimensions per box, separated by spaces, in mm
Index of scorers' group *	1258	1258	1	A	Index of scorers' group**. Values allowed: 'A' (ASCII/Unicode 41Hex); 'B' (ASCII/Unicode 42Hex); 'C' (ASCII/Unicode 43Hex); 'D' (ASCII/Unicode 44Hex)
Type of positioning *	1259	1259	1	A	Way in which scorers are positioned**. Values allowed: Normal offset = '/' (ASCII/Unicode 2FHex); Point to point offset = 'X' (ASCII/Unicode 58Hex); Reverse offset = '\' (ASCII/Unicode 5CHex); Centred = '–' (ASCII/Unicode 2DHex)
Sheets per stack	1260	1263	4	N	Number of sheets for each stack
Stacks per pallet *	1264	1265	2	N	Number of stacks for each pallet
Bundle/Pallet	1266	1266	1	N	Type of outlet on take off. Values allowed: Pallett = '0' (ASCII/Unicode 30Hex); Bundle = '1' (ASCII/Unicode 31Hex).
Take off side	1267	1267	1	N	Discharge side of terminal take off. Values allowed: Right = '0' (ASCII/Unicode 30Hex); Left = '1' (ASCII/Unicode 31Hex); Front = '2' (ASCII/Unicode 32Hex).
Sending of pallet	1268	1268	1	A	Place to send the pallet Values allowed: Trasformation='T' (ASCII/Unicode 54Hex); Delivery='S' (ASCII/Unicode 53Hex); Other='A' (ASCII/Unicode 41Hex).
Material handling line	1269	1270	2	A	Line to which must be sent the pallet (1-99)
Name of the box factory machine	1271	1285	15	A	Name of the machine in the box factory to which the pallet is destined to.

Balance	1286	1286	1	A	Balance of order production:
					Values allowed:
					  Total = 'T' (ASCII/Unicode 54Hex);
					  Partial = 'P' (ASCII/Unicode 50Hex);
					  Waste = 'X' (ASCII/Unicode 58Hex).

Delivery date	1287	1294	8	A	Order delivery date (YYYYMMDD)
Product code	1295	1302	8	A	Code of the product
Data to print 1	1303	1338	36	A	General data to print on the label
Data to print 2	1339	1353	15	A	General data to print on the label
Data to print 3	1354	1413	60	A	General data to print on the label
Data to print 4	1414	1423	10	A	General data to print on the label
Pallet width	1424	1427	4	N	Width of pallet to insert under the optimised stacks
Pallet length	1428	1431	4	N	Length of pallet to insert under the stacks
Number of pallet per width	1432	1433	2	N	Number of pallet to put together
Number of pallet per length	1434	1435	2	N	Number of pallets to put together

Double	1436	1436	1	N	Double in optimisation.
					Values allowed:
					  No = '0' (ASCII/Unicode 30Hex);
					  Yes = '1' (ASCII/Unicode 31Hex).

Type of binding	1437	1437	1	N	Type of pallet binding.
					Values allowed:
					  None = '0' (ASCII/Unicode 54Hex);
					  Plastic strap = '1' (ASCII/Unicode 50Hex);
					  Plastic strap
					  + protection = 'X' (ASCII/Unicode 58Hex).
					  Sheet to strap

Binding code	1438	1438	1	N	Binding code
Number of edge-protections	1439	1440	2	N	Number of edge-protection sheets to be binded.
Notes	1441	1470	30	A	Notes for the operator

* These fields must have a value for the order to be accepted.
** For further details, see notes below

Field specifications:
Each field must be aligned to the left.
Header data field details
Field Run id 1: it is a numerical value that identifies an order. It is assigned by the planning system, it must be a numerical value between 1000 and 8999 and must be univocal in both SYNCRO lists (SYNCRO has a list for the orders to be produced and another list for the finished orders: the Run id 1 is the database key). The manual inserted orders have an identifier between 9000 and 9999.
Field Run id 2: it is an alphanumeric value that identifies the order on for operator (it's shown on Syncro screen).
This field is composed by two informations (Example: 1299602)..
Starting from left:
         - All the characters are except the last two - most right - represents the "First Part".
         - The last two characters will compose the "Second Part".
The "First Part" indicate Wet-End identify (also called "Program Code"). In our example is 12996.
The "Second Part" corresponds to the sequence of Dry-End order that is included into the entire Wet-End order. Usually it is a progressive numerical value. In our example "02" indicates that this is the second order Dry-End of Order Wet-End 12996.
Field Flute: it is an order code made by capital letters (from ASCII/Unicode 41Hex to ASCII/Unicode 5Ahex). If the order of the letters changes, SYNCRO assumes that the flute type changes too (i.e.: AB is different from BA, BCE from BEC, etc.).

Field <u>Paper</u>. Unique paper code (is. K2, T). The first paper code is the bottom liner.
Office system has to send the papers positions sequentially starting from bottom liner position.

Example:
- Flute C usually is worked on Single Facer 1 (most near to Dry-End machines).
- Quality "C/TEST" is a quality of "Flute C"
- Office system wants send the papers configuration for quality "C/TEST"

Office system has send:

Grammage	Weight (in grams) per square meter [g/m²]
Paper 1	Insert the code for bottom liner paper
Paper 2	Insert the code for flute paper (even if at the end will be worked on splicer 4)
Paper 3	Insert the code for upper liner paper (even if at the end will be worked on splicer 5)
Paper 4	Spaces
Paper 5	Spaces
Paper 6	Spaces
Paper 7	Spaces
Paper 1 Grammage	Grammage of bottom liner paper
Paper 2 Grammage	Grammage of flute paper (even if at the end will be worked on splicer 4)
Paper 3 Grammage	Grammage of upper liner paper (even if at the end will be worked on splicer 5)
Paper 4 Grammage	Spaces
Paper 5 Grammage	Spaces
Paper 6 Grammage	Spaces
Paper 7 Grammage	Spaces

The same example is valid also if "Flute C" will be worked on different Single Facer. The system automatically will associate the paper to correct splicer when the orders will run.

IMPORTANTI NOTES:
1. Each Paper, even if is part of same family (example 'Kraft'), but has a minimum difference from each other, must be codified with unique ID.

Discrimination characteristics could be: family, weight, but we could indicate also

- Presence of printing/marks on the paper (even if the paper is coming from supplier or the printing is applied during the production)

- Presence of different printing/marks

- Presence of paraffin on paper (even if the paper is coming from supplier or the paraffin is applied during the production)
      ....
      ....
      ....

2. In case od 'Canetè' production, where 'Paper 1' should be missing, it must be identified with **NOT_USED** codification (upper case sensitive)

Field <u>Paper Grammage</u>. Grammage of paper in gr/m2 (is. 125). Also for this filed are valid the consideration about sequentiality made for field "Paper"

*** Field <u>Board grade</u>

Is a string that indicates the type of paper used for a specific board. SYNCRO inputs this data in a data base that contains other ones, personalized by the operator, useful for the optimization Fosber's slitter scorer work. This data can also be visualized on SYNCRO pages and can be printed upon requested, on a label for the bundle.

Board grade codification MUST BE UNIQUE, this means that the code must be differentiated if Flutes and/or Paper/weight are different and/or type of production is particular (example 'Canetè' production type)

Regarding 'Paper Differentiation' see 'IMPORTANT NOTES' into 'Paper field description'

Here some example of NOT UNIQUE BOARD GRADE (so not correct!):

Quality Code XYZ123 associated to BC Flute and Papers K100, T200, K120
Quality Code XYZ123 associated to BC Flute and Papers T100, K130, K120
Quality Code XYZ123 associated to BC Flute and Papers NOT_USED, T200, K120
Quality Code XYZ123 associated to EB Flute and Papers K100, T200, K120

Field <u>Type of trim</u>: it is a numeric field that can assume the following values; normal=1 or absent=2. For normal we mean that the slitter scorer must trim the board. For absent we mean that the slitter scorer must not trim the board. Some slitter scorers do not have this option. In this case, valorise the field with the digit '1'.

<u>Order data field details</u>

The Orders 1, 2, 3 are positioned from left towards right compared to the board's running direction; the working level is specified in the <u>Level</u> field of the order and can assume the values: L=Lower level, M=Medium level, U=Upper level, according to the following rule:

1.   If the dry end line is mono level, SYNCRO allows to insert only the 'U' character;
2.   It the dry end line is double level, SYNCRO allows to insert only the 'U' or 'L' character;
3.   If the dry end line is triple level, SYNCRO allows to insert the whole set 'U', 'M' or 'L'.

Field <u>Index of scorers' group</u>: it specifies from which group of scorers, to get the scorers to be positioned on the order. The correspondence with the type of scorers is carried out during the installation phase. See Appendix D: Scorer Type – positioning type for details.

Field <u>Type of positioning</u>: a type of scorer may have more than one type of positioning. For example, an offset type scorer allows 3 types of positioning (Normal, Point to point, Reverse), but does not allow the centred type of positioning. A male female type of scorer only allows the centred type of positioning: cannot be positioned as the Normal, Point to point or Reverse. See Appendix D: Scorer Type – positioning type for details.

The <u>data</u> is in YYYYMMDD format (i.e. 10 June 1998 = 19980610).

Field <u>scorers' dimensions</u> are represented in mm and are quotes relative to the box' width (see AppendiX C: SCORING MEASURES for further details).

The <u>Note</u> field can contain various information in agreement with the internal enabling to SYNCRO. See Appendix F: Notes Field for details

1.4.2 DETAILS ABOUT THE ANSWER TO MANIPULATION LIST COMMANDS (SYNCRO -> PLANNING SYSTEM)

1.4.2.1 ANSWERS TO PROGRAMMING AND DELETING COMMANDS (PE, IE, ME, CA, CT)

Description of answers

COMMAND	ID	DATA BLOCK	Behaviour
OK	Four spaces (ASCII/Unicode 20 Hex)	34 spaces (ASCII/Unicode 20 Hex)	SYNCRO success.
CK	Four spaces (ASCII/Unicode 20 Hex)	34 spaces (ASCII/Unicode 20 Hex)	Checksum error.
DF	Four spaces (ASCII/Unicode 20 Hex)	See next chapter	Data block value error.
DU	Four spaces (ASCII/Unicode 20 Hex)	34 spaces (ASCII/Unicode 20 Hex)	- Run id 1 setup unique code duplication error. - Setup not found error in case of "CA" command answering.
RF	Four spaces (ASCII/Unicode 20 Hex)	See next chapter	The system can not carry out the command.

1.4.2.2 DATA BLOCK FOR ANSWERS TO PROGRAMMING AND DELETING COMMANDS

DATA BLOCK description

Description	Index From	to	Length	Type	Comment
Head					
Error code	1	4	4	A	Error code. See Appendix B: Error codes table for details
Free	5	34	30	A	Free

1.5 INTERROGATION COMMANDS

1.5.1   INTERROGATION COMMANDS OF THE SETUP'S DATA (PLANNING SYSTEM -> SYNCRO)

1.5.1.1   COMMANDS OF VERIFY ORDERS IN THE LIST (OE, LI, LO)

Command description

COMMAND	ID	DATA BLOCK	Behaviour
OE	"0000" (ASCII/Unicode 30Hex)	This command has not a data block	SYNCRO returns the information related to the working setup. If there is not any working setup, SYNCRO returns an error.
LI	Run id 1* of setup for which the planning system requests data.	This command has not a data block	Running the setup list, SYNCRO seeks one having the same Run id 1 as specified in the ID field on the present command. If it does not find it, it returns an error message, otherwise returns the setup information.
LO	Index** of SYNCRO's list.	This command has not a data block	SYNCRO returns the information of the setup stored in index position.

* The Run id 1 is the first field of the data structure described in the DATA BLOCK in paragraph 1.4.1.2, that is sent by the planning system and represents the primary key of the order in the SYNCRO's list. This value must be between 1000 and 8999 and must be univocal.

** The index represent the position in the set up list, from which the planning system requests information. The first setup (the current) has index = 1, the next has index 2 and so on. This field must be formatted on 4 digits by placing some '0' (ASCII/Unicode 30Hex) to fill the string. For instance, for the current, the index is = "0001"

1.5.2   ANSWERS TO INTERROGATION COMMANDS REGARDING THE SETUP'S DATA (SYNCRO -> PLANNING SYSTEM)

The data block answers of these commands, has the same format of the data block of the PE, IM, ME commands.

1.5.2.1   ANSWERS TO VERIFY ORDERS IN THE LIST COMMANDS (OE, LI, LO)

Description of answers

COMMAND	ID	DATA BLOCK	Behaviour
OK	Four spaces (ASCII/Unicode 20 Hex)	See DATA BLOCK description in paragraph 1.4.1.2	SYNCRO success.
CK	Four spaces (ASCII/Unicode 20 Hex)	See DATA BLOCK description in paragraph 1.4.1.2	Checksum error.
RF	Four spaces (ASCII/Unicode 20 Hex)	See DATA BLOCK description in paragraph 1.4.1.2	The system cannot carry out the command.

1.5.3   INTERROGATION COMMANDS OF ID OF ORDER LIST (PLANNING SYSTEM -> SYNCRO)

1.5.3.1   CHECK COMMANDS OF ORDER'S SEQUENCE IN LIST

Description of commands

COMMAND	ID	DATA BLOCK	Behaviour
LD	"0000" (ASCII/Unicode 30Hex)	This command has not a data block	Returns the first 500 Run id 1 in the list of order working.
LE	"0000" (ASCII/Unicode 30Hex)	This command has not a data block	Returns the first 500 Run id 1 of orders carried out.

1.5.4   ANSWERS TO INTERROGATION COMMANDS REGARDING ID OF ORDER LIST (SYNCRO -> PLANNING SYSTEM)

1.5.4.1   ANSWERS TO VERIFY SEQUENCE ID OF ORDERS IN LIST

Answer description

COMMAND	ID	DATA BLOCK	Behaviour
OK	Four spaces (ASCII/Unicode 20 Hex)	See next paragraph	SYNCRO success.
CK	Four spaces (ASCII/Unicode 20 Hex)	See next paragraph	Checksum error.
RF	Four spaces (ASCII/Unicode 20 Hex)	See next paragraph	The system cannot carry out the command.

1.5.4.2   DATA BLOCK OF ANSWERS TO VERIFY SEQUENCE OF ORDERS IN LIST

Data block description of answers to list (LD, LE Command)

Description	Index From to	Length	Type	Comment
Head				
Number of orders in the list	1 3	3	N	Number of orders in the list
Run Id 1 (1) + mod Id(1)	4 9	4+2	N	Run id1 code of 4 characters sent from Host (1000->9999) used to identify the order in the orders list + 2 characters about the modification's number applied to the order by the operator/office
Run Id 1 (2) + mod Id(2)	10 15	4+2	N	"
. . .	. . . . . .	. . . . . .		" " "
Run Id 1 (500) + mod Id(500)	2998 3003	4+2	N	"

Note: *if the number of orders in the list is less than 500 then spaces are inserted until the total data block length reaches the maximum of 3+500*6=3003 characters.*

1.6 REQUEST SURVEY DATA COMMANDS

This type of commands controls of record of the list of finished orders, by using the FIFO method: the first record stored is also the first returned. These commands work in pairs: one is used to read the information of FIFO list and the other is used to delete the record just read and to move the list pointer by one position forward. Once the planning system has read all records, SYNCRO will return the RF because it can not carry out the command. It is not possible to read again a previous deleted record.

1.6.1 REQUEST PRODUCTION SETUP DATA COMMANS (PLANNING SYSTEM -> SYNCRO)

1.6.1.1 REQUEST PRODUCTION DATA COMMANDS FOR CLOSED SETUP (VE, RE)

Command description

COMMAND	ID	DATA BLOCK	Behaviour
VE	"0000" (ASCII/Unicode 30Hex)	This command has not a data block	Information regarding the last survey not yet read.
RE	"0000" (ASCII/Unicode 30Hex)	This command has not a data block	Cancellation and putting forward in the survey list

1.6.2 ANSWER TO REQUEST COMMANDS OF PRODUCTION ORDERS DATA (SYNCRO -> PLANNING SYSTEM)

1.6.2.1 ANSWER TO REQUEST PRODUCTION DATA COMMANDS FOR CLOSED SETUP (VE, RE)

Descrizione risposte

COMMAND	ID	DATA BLOCK	Behaviour
OK	Four spaces (ASCII/Unicode 20 Hex)	See next paragraph	SYNCRO success.
CK	Four spaces (ASCII/Unicode 20 Hex)	See next paragraph	Checksum error.
RF	Four spaces (ASCII/Unicode 20 Hex)	See next paragraph	The system cannot carry out the command.

1.6.2.2 DATA BLOCK OF ANSWERS TO REQUEST COMMNADS OF PRODUCTION ORDERS DATA

VE answer DATA BLOCK description

Description	Index From	to	Length	Type	Comment
Head					
Run Id 1	1	4	4	N	Run code sent from Host (1000->9999) Used to identify the orders inside the order list
Modifications Id	5	6	2	N	Number of modifications carried out by the operator (00 no mod, 01 one mod....)
Run Id 2	7	17	11	A	Run code visualized on Syncro screen
Shift manager	18	22	5	A	Shift manager
Start Date	23	30	8	N	Start date YYYYMMDD
End Date	31	38	8	N	End date YYYYMMDD
Start Time	39	46	8	A	Start time hh:mm:ss
End Time	47	54	8	N	End time hh:mm:ss

Shift Id	55	55	1	A	Working shift
Number of people per shift	56	57	2	N	Number of people engaged for plant shift
Stop time	58	65	8	A	Stop time on the order (hh:mm:ss)
Number of stops	66	70	5	A	Number of Stops during order production
Worked time	71	78	8	A	Order working total time (hh:mm:ss) (= working time: does not include stop time)
Sheets for upper stack	79	83	5	N	Number of sheets (theoretical) per stack for upper stacker
Sheets for medium stack	84	88	5	N	Number of sheets (theoretical) per stack for medium stacker
Sheets for lower stack	89	93	5	N	Number of sheets (theoretical) per stack for lower stacker
Board width	94	97	4	N	Board width (mm)
Wet-end meters	98	106	9	N	Linear meters produced at double backer
Theoretical meters to be produced	107	111	5	N	Theoretical meters to product
Flute type	112	114	3	A	Flute type
Flute composition code	115	150	36	A	Flute composition code
Average production speed	151	154	4	N	Average production speed
Run Id 1	155	158	4	N	Run id 1

Order 1					**from left to right**
Order number	159	170	12	A	Order number
Box width	171	174	4	N	Box width
Box length	175	178	4	N	Box length
Scorers' measures	179	277	99	N	Scoring tools measures
Outs	278	278	1	N	Number of sheets per cut
Sheets carried out	279	284	6	N	Good sheets
Scrap sheets	285	290	6	N	Scrap sheets
Balance	291	291	1	A	Order number balance (see table; the returned values are the ones relative to the columns indicated with the summary)

Sending of pallet	292	292	1	A	Place to send the pallet
					Values allowed:
					  Trasformation = 'T' (ASCII/Unicode 54Hex);
					  Delivery = 'S' (ASCII/Unicode 53Hex);
					  Other = 'A' (ASCII/Unicode 41Hex).

Material handling line	293	294	2	A	Line to which send the pallet (1-99)
Name of the box factory machine	295	309	15	A	Name of the machine to which the pallet is destined

Order 2					
Order number	310	321	12	A	Order number

Box width	322	325	4	N	Box width
Box length	326	329	4	N	Box length
Scorers' measures	330	428	99	N	Scoring tools measures
Outs	429	429	1	N	Number of sheets per cut
Sheets carried out	430	435	6	N	Good sheets
Scrap sheets	436	441	6	N	Scrap sheets
Balance	442	442	1	A	Order number balance (see table; the returned values are the ones relative to the columns indicated with the summary)

Sending of pallet	443	443	1	A	Place to send the pallet
					Values allowed:
					  Trasformation = 'T' (ASCII/Unicode 54Hex);
					  Delivery = 'S' (ASCII/Unicode 53Hex);
					  Other = 'A' (ASCII/Unicode 41Hex).

Material handling line	444	445	2	A	Line to which send the pallet (1-99)
Name of the box factory machine	446	460	15	A	Name of the machine to which the pallet is destined

Order 3

Order number	461	472	12	A	Order number
Box width	473	476	4	N	Box width
Box length	477	480	4	N	Box length
Scorers' measures	481	579	99	N	Scoring tools measures
Outs	580	580	1	N	Number of sheets per cut
Sheets carried out	581	586	6	N	Good sheets
Scrap sheets	587	592	6	N	Scrap sheets
Balance	593	593	1	A	Order number balance (see table; the returned values are the ones relative to the columns indicated with the summary)

Sending of pallet	594	594	1	A	Place to send the pallet
					Values allowed:
					  Trasformation = 'T' (ASCII/Unicode 54Hex);
					  Delivery = 'S' (ASCII/Unicode 53Hex);
					  Other = 'A' (ASCII/Unicode 41Hex).

Material handling line	595	596	2	A	Line to which send the pallet (1-99)
Name of the box factory machine	597	611	15	A	Name of the machine to which the pallet is destined

Free

Free	612	645	34	A	Free: fill with spaces (ASCII/Unicode 20Hex)

Balance/account Table

As sent by Sched. Syst.	Normal Summary			Shift change Summary	
Balance T	T	Q.ty produced > Q.ty ordered – 100[m]	I	Q.ty produced > Q.ty ordered – 100[m]
	N	Q.ty produced < Q.ty ordered – 100[m]	M	Q.ty produced < Q.ty ordered – 100[m]
Account P	P	Q.ty produced > Q.ty ordered – 100[m]	L	Q.ty produced > Q.ty ordered – 100[m]
	N	Q.ty produced < Q.ty ordered – 100[m]	M	Q.ty produced < Q.ty ordered – 100[m]
Waste X	A		B	

Note:
The order between two shifts is divided in two parts, each part is a summary record. The Q.ty (Quantity) produced relative to the record before the shift change, is between the starting of the order and the shift change event; the Q.ty produced relative to the record after the shift change is between the shift change event and the end of the order.

The first column refers to the 'Balance' field of the programming commands (PE), the next three columns indicated with 'Summary' refer to the returning code of the   'Balance' field of the summary commands (VE). The detailed description of the meaning of the returned symbols are reported below:

End of Production = in this way we indicate the moment in which the operator requests the system to carry out the end of production operation: the acquisition and registration of production data functions are disenabled. At the same time, the production report closes (registration of interrupted data)).
Shift Change = in this way we indicate the moment in which the operator requests the shift change.

The summary:
Normal when it refers to the order change and assumes the values (T,P,N,A)
Shift change when it refers to the above-mentioned shift change and assumes the values (I,L,M,B)
End of Production when it refers to the above-mentioned end of production and assumes the values
as Shift change (I,L,M,B)

When the summary is marked with N,M,S we mean that the order change has been carried out, at least one hundred meters before the programmed end of order.

Glossary:
Q.ty produced represents the amount produced between two production events
Production event the following events are called in this way:
order change;
shift change;
start of production;
end of production.
Q.ty ordered represents the requested quantity of product for one specific order.
Example.1
The diagram below shows an order between two shifts. The ordered quantity is 4010 m, the total production of the order is 4000m: 1000 on shift 1, 3000 on shift 2.

Order change (Shift 1)   Shift change   Order change (Shift 2)
_ _ _ _ |1st part 1000 m (T,P→M / X→B) | 2nd part 3000 m (T,P→N / X→A) | _ _

Example.2
The diagram below shows an example of an order between two shifts. The ordered quantity is 4010 m; the total production of the order is 4000m: 3950 on shift 1, 50 on shift 2.

 Order change (Shift 1)   Shift change   Order change (Shift 2)
_ _ _ _ |1st part 3950 m (T→I / P→L / X→B) | 2nd part 50 m (T→T / P→P / X→A) | _

Example.3
The diagram below shows an example of an order that lasts more than one o more shifts; in this case the number of records produced depends on the number of shifts carried out. In this example the ordered quantity is 80000 m.

Order change (Shift 1)   Shift change   Shift change   Order change (Shift 2)
_ _ _ _ │ 10000 m (T,P→M / X→B) │ 30000 m (T,P→M / X→B)   40000 m (T,P→N / X→A) │ _ _ _ _

Example. 4
The diagram below shows an example of an end of production event with completed order: the production will start again with a different order. The ordered quantity of last order (the order closing production) is 1000 m, the order produced 1010m. The ordered quantity of the first order (the order starting production) is 1200 m.

Order change   End of production Start of production   Order change
_ _ │ 1010 m (T→Q / P→R / X→B) │   │ 1200 m   (T→T / P→P / X→A) │ _ _ _ _ _ _

Example. 5
The diagram below shows an end of production event with an order that has not been completed: The production will start again with the same order. The ordered quantity is 4000 m, the line produced 1010 during shift 3, 3000 during shift 1.

Order change   End of production   Start of production   Order change
_ _ │ 1010 m (T, P, X→M) Shift 3 │   │ 3000 m   (T,P→N / X→A) Shift 1 │ _ _ _ _ _ _

1.6.3   REQUEST DRY - END STOP TIME COMMANDS (PLANNING SYSTEM -> SYNCRO)

1.6.3.1   REQUEST DRY- END STOP TIME COMMANDS (DW, RW)

Commands Description

COMMAND	ID	DATA BLOCK	Behaviour
DW	"0000" (ASCII/Unicode 30Hex)	This command has not a data block	Record on last stop not yet read.
RW	"0000" (ASCII/Unicode 30Hex)	This command has not a data block	Deleting and increasing in the stop list

1.6.4   ANSWER TO REQUEST OF DRY END STOP TIME COMMANDS (SYNCRO -> PLANNING SYSTEM)

1.6.4.1   ANSWER TO REQUEST OF DRY END STOP TIME COMMANDS (DW, RW)

Description of answers

COMMAND	ID	DATA BLOCK	Behaviour
OK	Four spaces (ASCII/Unicode 20 Hex)	See next paragraph*	SYNCRO success.
CK	Four spaces (ASCII/Unicode 20 Hex)	See next paragraph*	Checksum error.
RF	Four spaces (ASCII/Unicode 20 Hex)	See next paragraph*	The system cannot carry out the command.

* RW has not a data block.

1.6.4.2   DATA BLOCK FOR ANSWERS TO REQUEST OF DRY END STOP TIME COMMANDS (DW)

DATA BLOCK description to the DW command answer

Description	Index From	to	Length	Type	Comment
Head					
Code that cause of stoppage	1	4	4	A	Code relative to cause of stoppage foreseen by the customer
Description that cause of stoppage	5	24	20	A	Description of the cause, input by the customer
Stopping area's code	25	28	4	A	Code of the area foreseen by customer
Description of stopping area	29	48	20	A	Description of the area (input by customer)
Stoppage time	49	56	8	A	Time that stoppage lasts (hours :minutes :seconds)
Start date	57	64	8	A	Date in which stoppage started (YYYYMMDD)
End date	65	72	8	A	Date in which stoppage ended (YYYYMMDD)
Start time	73	80	8	A	Time in which stoppage started (hours :minutes :seconds)
End time	81	88	8	A	Time in which stoppage ended (hours :minutes :seconds)
Order's code	89	92	4	A	Order code in which stoppage began
Modifications	93	94	2	N	Order's number of modifications
Shift	95	95	1	A	Shift in which the stoppage began

| Comments | 96 | 295 | 200 | A | Comments added by the operator |
| Free | 296 | 345 | 50 | A | Free |

1.6.5 REQUEST DRY - END SHIFT COMMANDS (PLANNING SYSTEM -> SYNCRO)

1.6.5.1 REQUEST DRY- END SHIFT COMMANDS (TD, TI)

Commands Description

COMMAND	ID	BLOCCO DATI	Behaviour
TD	"0000" (ASCII/Unicode 30Hex)	This command has not a data block	Record on last Shift not yet read.
TI	"0000" (ASCII/Unicode 30Hex)	This command has not a data block	Deleting and increasing in the Shift list

1.6.6 ANSWER TO REQUEST OF DRY END SHIFT COMMANDS (SYNCRO -> PLANNING SYSTEM)

1.6.6.1 ANSWER TO REQUEST OF DRY END SHIFT COMMANDS (TD, TI)

Description of answers

COMANDO	ID	BLOCCO DATI	Behaviour
OK	Quattro spazi (ASCII/Unicode 20 Hex)	See next paragraph*	SYNCRO success.
CK	Quattro spazi (ASCII/Unicode 20 Hex)	See next paragraph*	Checksum error.
RF	Quattro spazi (ASCII/Unicode 20 Hex)	See next paragraph*	The system cannot carry out the command.

* TI has not a data block.

1.6.6.2 DATA BLOCK FOR ANSWERS TO REQUEST OF DRY END SHIFT COMMANDS (TD)

DATA BLOCK description to the TD command answer

Description	Index From	to	Length	Type	Comment
Testata					
Shift ID	1	1	1	A	Shift ID
Shift chief	2	16	15	A	Shift chief
N° of people in the shift	17	18	2	A	N° of people in the shift
Start date	19	26	8	N	Start date (YYYYMMDD)
End date	27	34	8	N	End date (YYYYMMDD)
Start time	35	42	8	A	Start time (hh:mm:ss)
End time	43	50	8	A	End time (hh:mm:ss)
Average speed	51	54	4	N	Average speed (m/m)
Total dry-end meters	55	63	9	N	Total meters produced at the dry-end
Total good meters2	64	72	9	N	Total good meters2
FREE	73	81	9	A	FREE
Total scrap meters at the auxiliary knife	82	89	8	N	Total scrap meters at the auxiliary knife
Total scrap meters2	90	97	8	N	Total scrap meters2
Square meters of total trim	98	105	8	A	Square meters of total trim

Running time	106	113	8	N	Running time (sec)
FREE	114	121	8	A	FREE
Stops number	122	129	8	N	Stops number
Number of DRY order changes	130	135	6	N	Number of order changes
Number of Quality changes	136	141	6	N	Number of Quality changes
Number of Flute changes	142	147	6	N	Number of Flute changes
FREE	148	180	33	A	FREE

1.7 REQUEST FOR LINE STATE COMMANDS

This kind of command is used to monitor the state of the dry - end.

1.7.1 REQUEST LINE STATUS COMMANDS (PLANNING SYSTME -> SYNCRO)

1.7.1.1 REQUEST OF LINE STATUS ("ST" COMMAND)

Descrizione comandi

COMMAND	ID	DATA BLOCK	Behaviour
ST	"0000" (ASCII/Unicode 30Hex)	This command has not a data block	Status information

1.7.1.2 REQUEST OF LINE STATUS ("SE" COMMAND)

Descrizione comandi

COMMAND	ID	DATA BLOCK	Behaviour
SE	"0000" (ASCII/Unicode 30Hex)	This command has not a data block	Status information

1.7.1.3 REQUEST OF LINE STATUS AS OLD SPDE PROGRAM ("SB" COMMAND)

Descrizione comandi

COMMAND	ID	DATA BLOCK	Behaviour
SB	"0000" (ASCII/Unicode 30Hex)	This command has not a data block	Status information

1.7.2 ANSWER TO REQUEST OF LINE STATE COMMANDS (SYNCRO ->PLANNING SYSTEM)

1.7.2.1 ANSWERS TO REQUEST OF LINE STATE

Descrizione risposte

COMMAND	ID	DATA BLOCK	Behaviour
OK	Four spaces (ASCII/Unicode 20 Hex)	See next chapter	SYNCRO success.
CK	Four spaces (ASCII/Unicode 20 Hex)	See next chapter	Checksum error.
RF	Four spaces (ASCII/Unicode 20 Hex)	See next chapter	The system cannot carry out the command.

1.7.2.2 DATA BLOCK FOR ANSWERS TO REQUEST OF LINE STATE ("ST" COMMAND)

Dry end status DATA BLOCK description

Description	Index From	to	Length	Type	Comment
Head					
Number of orders in the waiting job list	1	3	3	N	Number of orders in the waiting job list

Present speed	4	7	4	N	Present speed
Average speed	8	11	4	N	Average speed
Meters produced from the beginning of the order	12	20	9	N	Meters produced by the Dry – End (passed thru the Cutting Knife) from the beginning of the order
Current run id	21	24	4	N	Current run id
Next run id	25	28	4	N	Next run id
Total good meters	29	37	9	N	Total good meters (calculated using the good Cutting Knife cuts)
Total scrap meters	38	46	9	N	Total scrap meters (calculated using the bad Cutting Knife cuts)
Free	47	62	16	N	Free

1.7.2.3   *DATA BLOCK FOR ANSWERS TO REQUEST OF LINE STATE ("SE" COMMAND)*

Data block description for actual dry-end status ("SE" Command)

Description	Index From	to	Length	Type	Comment
Head					
Number of orders in the waiting job list	1	3	3	N	Number of orders in the waiting job list
Actual speed	4	7	4	N	Actual speed
Average speed	8	11	4	N	Average speed
Linear Meters produced from the beginning of the order	12	20	9	N	Meters produced from the beginning of the order arriving from double backer
Current run id1	21	24	4	N	Current run_id1 sent by host (1000 - 9999)
Next run id1	25	28	4	N	Next run id1 sent by host (1000 - 9999)
Total good meters	29	37	9	N	Total good meters from the beginning of shift
Total scrap meters from shift's start	38	46	9	N	Total scrap meters from shift's start
Free	47	62	16	N	Free
Rest meters	63	71	9	N	Rest meters to board paper change
Level 1				**Lowest level**	
Run id 1	72	75	4	N	Order code on stacker's platform (run_id1 1000 - 9999)
Order number	76	87	12	N	Order number on the stacker's platform
Nr of discharges	88	89	2	N	The value is between 0000 and 9999. It's incremented every time a discharge is made. When the value is 9999, next will start from 0000. The

					manual expulsion are not included into the counting. ==NOTE:== ==In case of expulsion detected by hardware signal with the stacker== ==If this field value is "0", all information regarding the discharge has not to be used by the host cause It means that:== ==- Currentrly the machine is not working on this level== ==or== ==- Machine still has to execute a discharge for the order present on machine== ==So no printing has to be executed by the host.==
Out	90	91	2	N	Sheets out each cut
Number sheets per stack	92	95	4	N	Number of sheets on discharged stack
Aoc	96	96	1	N	Whether it is the last stack

Level 2

Run id 1	97	100	4	N	Order code on stacker's platform (run_id1 1000 - 9999)
Order number	101	112	12	N	Order number on the stacker's platform
Nr of discharges	113	114	2	N	The value is between 0000 and 9999. It's incremented every time a discharge is made. When the value is 9999, next will start from 0000. The manual expulsion are not included into the counting. ==NOTE:== ==In case of expulsion detected by hardware signal with the stacker== ==If this field value is "0", all information regarding the discharge has not to be used by the host cause It means that:== ==- Currentrly the machine is not working on this level== ==or== ==- Machine still has to execute a discharge for the order present on machine== ==So no printing has to be executed by the host.==
Out	115	116	2	N	Sheets out each cut
Number sheets per stack	117	120	4	N	Number of sheets on discharged stack
Aoc	121	121	1	N	Whether it is the last stack

Level 3

Order number on platform	122	125	4	N	Order code on stacker's platform (run_id1 1000 - 9999)
Order number	126	137	12	N	Order number on the stacker's platform

Nr of discharges	138	139	2	N	The value is between 0000 and 9999. It's incremented every time a discharge is made. When the value is 9999, next will start from 0000. The manual expulsion are not included into the counting. ==NOTE:== ==In case of expulsion detected by hardware signal with the stacker== ==If this field value is "0", all information regarding the discharge has not to be used by the host cause It means that:== == - Currentrly the machine is not working on this level== ==or== == - Machine still has to execute a discharge for the order present on machine== ==So no printing has to be executed by the host.==
Out	140	141	2	N	Sheets out each cut
Number sheets per stack	142	145	4	N	Number of sheets on discharged stack
Aoc	146	146	1	N	Whether it is the last stack

Warning: the SE command can be used only if the STACKER is Fosber Terminal 20.20 or Terminal400

Note 1: The level data are related to the last discharge signal received from the machine after Syncro System startup. Until this, the value's are not valorized.

Note 2: the discharge counters will put to 1 at Syncro System startup or after a last discharge made from the machine.

1.7.2.4 DATA BLOCK FOR ANSWERS TO REQUEST OF LINE STATE ("SB" COMMAND)

Data block description for actual dry-end status – OLD SPDE PROGRAM ("SB" Command)

Description	Index From	to	Length	Type	Comment
Head					
Number of orders in the waiting job list	1	3	3	N	Number of orders in the waiting job list
Actual speed	4	7	4	N	Actual speed
Average speed	8	11	4	N	Average speed
Linear Meters produced from the beginning of the order	12	20	9	N	Meters produced from the beginning of the order arriving from double backer
Current run id1	21	24	4	N	Current run_id1 sent by host (1000 - 9999)

Current Run id 2	25	40	16	A	Code visualized on Syncro screen
Next run id1	41	44	4	N	Next run id1 sent by host (1000 - 9999)
Next Run id 2	45	60	16	A	Code visualized on Syncro screen
Total good meters	61	69	9	N	Total good meters from the beginning of shift
Total scrap meters from shift's start	70	78	9	N	Total scrap meters from shift's start
Free	79	94	16	N	Free
Rest meters	95	103	9	N	Rest meters to board paper change
Free	104	153	50	A	Free

Order 1   **From Left To Rigth**

Order Number	154	173	20	A	Customer's order number code
Good Sheets Done	174	179	6	N	Number Of Good Sheets Produced Until This Time
Scrap Sheets	180	185	6	N	Number Of Scrap Sheets Produced Until This Time
Default Ones	186	191	6	N	Number DEFAULT Sheets Produced Until This Time
Stacker Lower Level Data					
Run id 1	192	195	4	N	Order code of last discharged order (run_id1 1000 - 9999)
Out	196	197	2	N	Sheets out each cut of last discharged order
Number sheets per discharge	198	201	4	N	Number of sheets of last discharged order
Aoc	202	202	1	N	Whether it is the last stack of last discharged order
Number Of Downloading	203	206	4	N	The value is between 0000 and 9999. It's incremented every time a discharge is made. When the value is 9999, next will start from 0000. The manual expulsion are not included into the counting. ==NOTE:== ==In case of expulsion detected by hardware signal with the stacker== ==If this field value is "0", all information regarding the discharge has not to be used by the host cause It means that:== - ==Currentrly the machine is not working on this level== ==or== - ==Machine still has to execute a discharge for the order present on machine== ==So no printing has to be executed by the host.==

Order Number	207	226	20	A	Order Number of last discharged order
Downloading level	227	227	1	A	Every time is: "L".
Free	228	241	14	A	To replace with spaces

Order 2   **From Left To Rigth**

Order Number	242	261	20	A	Customer's order number code
Good Sheets Done	262	267	6	N	Number Of Good Sheets Produced Until This Time
Scrap Sheets	268	273	6	N	Number Of Scrap Sheets Produced Until This Time
Default Ones	274	279	6	N	Number DEFAULT Sheets Produced Until This Time
Stacker Middle Level Data					
Run id 1	280	283	4	N	Order code of last discharged order (run_id1 1000 - 9999)
Out	284	285	2	N	Sheets out each cut of last discharged order
Number sheets per discharge	286	289	4	N	Number of sheets of last discharged order
Aoc	290	290	1	N	Whether it is the last stack of last discharged order
Number Of Downloading	291	294	4	N	The value is between 0000 and 9999. It's incremented every time a discharge is made. When the value is 9999, next will start from 0000. The manual expulsion are not included into the counting. NOTE: In case of expulsion detected by hardware signal with the stacker If this field value is "0", all information regarding the discharge has not to be used by the host cause It means that: - Currentrly the machine is not working on this level or - Machine still has to execute a discharge for the order present on machine So no printing has to be executed by the host.
Orde Number	295	314	20	A	Order Number of last discharged order
Downloading level	315	315	1	A	Every time is: "M".
Free	316	329	14	A	To replace with spaces

Order 3   **From Left To Rigth**

| Order Number | 330 | 349 | 20 | A | Customer's order number code |
| Good Sheets Done | 350 | 355 | 6 | N | Number Of Good Sheets Produced |

					Until This Time
Scrap Sheets	356	361	6	N	Number Of Scrap Sheets Produced Until This Time
Default Ones	362	367	6	N	Number DEFAULT Sheets Produced Until This Time
Stacker Upper Level Data					
Run id 1	368	371	4	N	Order code of last discharged order (run_id1 1000 - 9999)
Out	372	373	2	N	Sheets out each cut of last discharged order
Number sheets per discharge	374	377	4	N	Number of sheets of last discharged order
Aoc	378	378	1	N	Whether it is the last stack of last discharged order
Number Of Downloading	379	382	4	N	The value is between 0000 and 9999. It's incremented every time a discharge is made. When the value is 9999, next will start from 0000. The manual expulsion are not included into the counting. NOTE: In case of expulsion detected by hardware signal with the stacker If this field value is "0", all information regarding the discharge has not to be used by the host cause It means that: - Currentrly the machine is not working on this level or - Machine still has to execute a discharge for the order present on machine So no printing has to be executed by the host.
Orde Number	383	402	20	A	Order Number of last discharged order
Downloading level	403	403	1	A	Every time is: "U".
Free	404	417	14	A	To replace with spaces

Warning: the SB command can be used only if the STACKER is Fosber Terminal 20.20 or Terminal400

Note 1: The level data are related to the last discharge signal received from the machine after Syncro System startup. Until this, the value's are not valorized.

Note 2: the discharge counters will put to 1 at Syncro System startup or after a last discharge made from the machine.

1.8 TIME AND DATE SYNCHRONIZATION COMMAND

This command is used to synchronize time and date between Syncro and the Scheduling System. When Syncro gets the command, if possible, changes the system date and time according to the received values; if it is not

possible then the date and time are not changed. The command can be executed only if Syncro is out of production and when the difference among old and new system time is less than 24 hours.

COMMAND	ID	DATA BLOCK	Behaviour
TM	"0000" (ASCII/Unicode 30Hex)	See next chapter	Syncro, if possible, changes the system date and time according to the received values

1.8.1   TIME AND DATE SYNCHRONIZATION COMMAND DATA BLOCK

Description	Index From	to	Length	Type	Comment
Year	1	4	4	N	4-digit year
Month	5	6	2	N	Month
Day	7	8	2	N	Day of the month
Hour	9	10	2	N	Hour (0-24)
Minutes	11	12	2	N	Minutes
Seconds	13	14	2	N	Seconds

Note: The Time adjustment must be related to the Greenwich Time.

1.8.2   DATA BLOCK FOR ANSWERS TO TIME AND DATE SYNCHRONIZATION COMMAND

Description of answers

COMMAND	ID	DATA BLOCK	Behaviour
OK	Four spaces (ASCII/Unicode 20 Hex)	34 spaces (ASCII/Unicode 20 Hex)	SYNCRO has changed date and time.
RF	Four spaces (ASCII/Unicode 20 Hex)	34 spaces (ASCII/Unicode 20 Hex)	SYNCRO has NOT changed date and time.

1.9 INITIALIZING THE COMMUNICATIONS, LOGON

Regarding the SYNCRO communication standard office protocol: initialising procedures of the communication, are not foreseen.

2. APPENDIX A: CHECKSUM CALCULATION

The checksum is calculated on the part of the string, from the STX character to the MESSAGE N°. The checksum is 2-character long and is the result of XOR of ASCII/Unicode value of each character with its previous ones.

See the example written in BASIC, reported below:

```
Function Checksum(str_in as String) as String
Dim temp as Integer
Dim i as integer

  temp = 0
  FOR i = 0 TO Len(str_in)
    temp = temp Xor Asc(Mid$(str_in, i, 1))
  NEXT i
  Checksum = Right$("00"+ Hex$(temp),2)

End Function
```

where:

str_in   represents the string where to calculate the checksum. It starts from STX to MESSAGE N°;
checksum   is the function's value that is returned to the caller (contains the checksum value).

Or see the example VISUAL C++, reported below:

```
unsigned char CalcModbusLRC(char *buffer, size_t size)
{
  register unsigned char lrc = 0;
    while (size--)
      lrc ^= *buffer++;
  return( (unsigned char) ((lrc & 0xFF) ) );
}
```

3. APPENDIX B: ERROR CODES TABLE

Error code table

CODE	DESCRIPTION
100	order code missing
101	roll height error
102	flute absence error
103	flute's code error
104	Wrong minimum width of the box
105	Level missing
106	at least one quote for the scorers is absent
107	Wrong type of scorers
108	Requested an absent type of scorer
109	Error in reading the scorers' string
110	orders' total width wrong
111	number of boxes requested wrong
112	minimum trim wrong
113	maximum trim wrong
114	
115	
116	more than one order for the same lever
117	order length absent
118	error: order's number of sheets absent
119	Too many sheets per stack in one or more orders
120	Error: few sheets for stack
121	Error: wrong pallet destination
122	Error: wrong optimization value
123	Error: type of trim selected not allowed from machine
124	Excessive number of sheets
125	"Waste" order is not possible
126	Excessive order width on upper level
127	Excessive order width on medium level
128	Excessive order width on lower level
150	Number of boxes per cut missing
151	Paper missing
152	Error of level not enabled for the order
153	Wrong character in "order" code
154	Box length measure wrong
155	Cut-To-Mark setting missing
156	Cut-To-Mark not present on machine
157	Different measures for different orders on same level
158	Data missing in order

159	Wrong box width in order
160	Box length missing in order
161	Too many boxes per order
162	Number of sheets per order missing
163	Length optimisation value wrong
164	Cut-To-Mark data not valid
165	Continuous stacking data not valid
166	Table insert data error
167	Cut-To-Mark has being set differently for two formats on same level
168	Pattern code has being set differently for two formats on same level
169	Cut to pattern offset mark -cut wrong
170	Photoeye contrast field out of range.
171	"Window before mark" data field out of range
172	"Window after mark" data field out of range
173	L1..L10 cut to pattern error
174	First read FTC field out of range.
200	Measures calculation
201	Blade/s position/s error
202	Score/s position/s error
203	Too many scores of the same type requested.
204	Too many type of scores requestet
205	Sum of the boxes width is more than the paper width
206	Too many type of scores forced on auxiliary shaft.
207	Too many scorers forced on auxiliary shaft
208	Wrong scores forcing on auxiliary shaft
209	Wrong characters in scoring measures
210	Wrong positioning in Slitter-Scorer
211	Score/s requested on auxiliary shaft not present/s
212	Teletwin score offset error
213	Too many scores close
1100	operation in progress
1101	sharpening is in progress
1114	lubrication is in progress
1102	Blade sharpening impossible
1103	blades axis 1 in work
1104	blades axis 2 in work
1105	scorers axis 1 in work
1106	scorers axis 2 in work
1107	scorers auxiliary axis in work
1108	order change in progress
1109	robot is moving
1110	machine is in E stop
1111	machine is in F stop
1112	machine is in normal stop

1113	sending of data refused
1115	machine in maintenance
1116	current on positioning
1117	current is working
1118	current positioned
1119	order does not exist
1120	Machine reset has not been carried out
1121	Machine reset in progress
1122	Orders list
1123	communication error
1124	Order not valid
1125	flute does not exist
1126	when machine is on manual, we can only read its state
1127	too many blades or too many tandem scores
1128	Two consecutive orders using auxiliary shaft
1129	Data block length error
1130	Command not managed
1131	Operation not managed
1132	Shift number error (this number must be included from 1 to 4)
1133	Error: the shift is now running
1134	Wrong character in "Shift manager" field
1135	Wrong character in "Shift manager" field
1136	"Number of people" needs a numeric character
1137	Wrong date format
1138	Wrong time format
1139	Operation not available: line running
2000	impossible to carry out the operation
2001	Requested data doesn't exist
2002	order's position in the list is less than 2
2003	univocal code value is wrong (Run Id 1 or/and Run Id 2)
2004	reports to be sent back do not exist
3000	Wrong data in "Cut To Pattern" field
3100	Can't add the quality;
4000	STX And/Or ETX Not Found
4001	"ID" value for this command must be "0"
4002	Data Block Length wrong
4003	Run Id wrong
4004	wrong Position

4. APPENDIX C: SCORING MEASURES

The string containing the scoring measures is made up of a series of as many *scoring items* as the scorers required for the box, space separated, and of a *final control item* preceded by a space.

Each *scoring item* is made up of compulsory data and other optional data in the following way:
1. **Scoring measure** (**compulsory**): numeric data indicating the distance (in mm) of the scorer form the previous one on its left (for the first scorer, the distance is related to the previous slit on its left). It is possible put leading zeros to get a fixed number of figures.
2. **Scorer type (optional)**: uppercase alphabetic character ('A', 'B', 'C' …) that identifies the scorer type to be used. In case of default, the scorer type specified among the order data is used.
3. **Positioning type (optional)**: lowercase alphabetic character ('m', 'p', 'r', 'n', 'v', 'w', 't') that identifies the positioning type to be used. In case of default, the positioning type specified among the order data is used. The following positioning types are available:
   - 'm'= male-female or central;
   - 'p'= point to point;
   - 'r'= reverse offset;
   - 'n'= normal offset;
   - 'v' normal reverse;
   - 'w' = teletwin;
   - 't' = tear tape.

   Note: The tear tape positioning type ('t') is not related to a scorer and it is used for visualization purpose only.

4. **Scoring gap (optional)**: numeric data preceded by the '+' character (ASCII/Unicode 0x2B); it indicates the scoring gap to be used. In case of default, the scoring gap specified among the order data is used.
5. **Teletwin offset (optional)**: numeric data preceded by the '-' character (ASCII/Unicode 0x2D); it indicates the offset for the Teletwin scorers to be used. In case of default, the scoring gap specified among the order data is used. This option can be added only if the scorer is a Telewin one.
6. **Shaft (optional):** numeric data preceded by the '*' character (ASCII/Unicode 0x2A); it indicates the scorer shaft that the scorer must be on: '1' stands for Shaft1, '2' for Shaft2 and '3' for Auxiliary shaft. In case of default, the shaft is automatically chosen in order to match the scorer requirement as well as try to minimize the number of used shafts and alternate them between one setup and the next. WARNING! The use of this option can bring to not valid setups.

The *final control item* is made up as follows:
7. **Control measure (compulsory)**: numeric data that indicates the distance (in mm) of the scorer from the next slit on its right. It is possible put leading zeros to get a fixed number of figures. The sum of all scoring measures plus the control measure equals the box width.

WARNING! The use of these options is possible only when the slitter scorer is Fosber Twin 400. The use of them with other slitterscorer types can have unpredictable effects.

WARNING! The use of options should be made with careful attention, because it can brings to not valid setups.

NOTE. In case no scorer is required in the box, the scoring string is made up of *final control* item only, that equals the box width.

Example 1: scoring string without options.

"175 300 175"
There are 2 scorers.
The first one is at distance175 from the left edge of the box.
The second is at distance 300 form the first one.
The box width is 175+300+175=650.
The scorer type, the positioning type, the scoring gap and the Teletwin offst of both scorers are specified among the order data.
The shaft that the scorer is positioned on is automatically chosen.

Example 2: scoring string with options.

"150 70B 85 100Am+55*3 200"

There are 4 scorers.

The first one is at distance 150 from the left edge of the box; the other data related to this scorer are specified among the order data. The shaft is automatically chosen.

The second one is at distance 70 from the first one; it is a scorer of type B; the other data related to this scorer are specified among the order data. The shaft is automatically chosen.

The third scorer is at distance 85 from the second one; the other data related to this scorer are specified among the order data. The shaft is automatically chosen.

The fourth scorer is at distance 100 from the third; it is a scorer of type A, with a male-female positioning and scoring gap 55; the other data related to this scorer are specified among the order data. The scorer is positioned on the auxiliary shaft.

The box width is 150+70+85+100+200=605
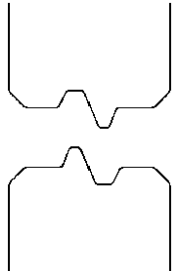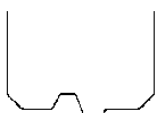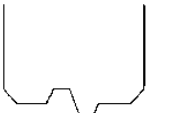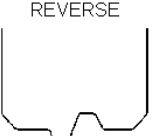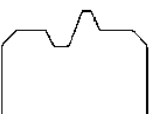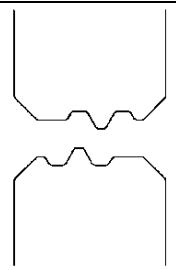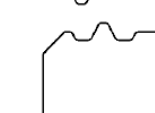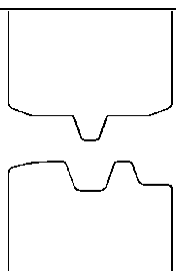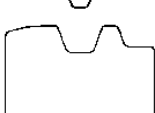
5. APPENDIX D: SCORER TYPE – POSITIONING TYPE
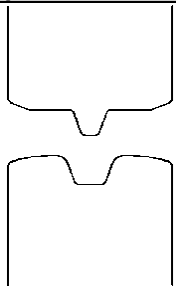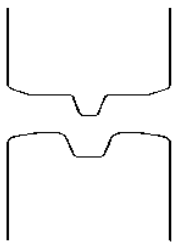
The **type of scorer** is a capital letter that identifies one of the *scoring units* that are on the machine.
For *scoring units* we mean, the entire couple of scorers (a scorer on the upper roll and the corresponding scorer on the lower roll) alike, adjoining on an axis of the machine
Each *type of scorer,* according to the class to which it belongs to, can be positioned in one or more different ways, called **type of positioning,** represented by a small letter.
The table below shows the type of possible positioning for each *class of scorers*:

Class of Scorer	Mechanical profiles	Type of positioning	
Offset		Normal ("n") Reverse ("r") Normal Reverse ("v") Point to Point ("p")	
Linpac		Normal ("n") Reverse ("r") Point to point ("p")	
Western		Male-Female ("m") Point to Point ("p")	

Class of Scorer	Mechanical profiles	Type of positioning	
Male-Female (Male-Male, Male-Flat, 5 Points)		Male-Female("m")	CENTRALE
Teletwin		Normal ("n") Reverse ("r") Normal Reverse ("v") Point to Point ("p") Teletwin ("w")	
Teletwin USA		Normal ("n") Reverse ("r") Normal Reverse ("v") Point to Point ("p") Teletwin ("w")	

Note: The tear tape ("t") type of positioning is not referred to a scorer and is present only to use for visualization.

6. APPENDIX E: ORDERS

Inside of the couplings, the orders are arranged in the following way: the first order is the one that will be positioned on the left side compared to the paper going direction; the next orders, if present, are placed side by side immediately on the right of the previous one. The working level is a data that must be specified in the order to send it to the high, low or medium level. Normally, we see to send the order that is on the operator's side, to the low level, in order to facilitate the control of the quality on the stacker or to simplify the removal of the board operations, in case of a jam-up.

The numbering of the level depends upon how many there are on the line.
- Single level line: only level 1 exists
- Double level line: 1 represents the low level ; 2 represents the upper one;
- Triple level line: 1 represents the low level; 2 represents the medium level; 3 represents the upper one;
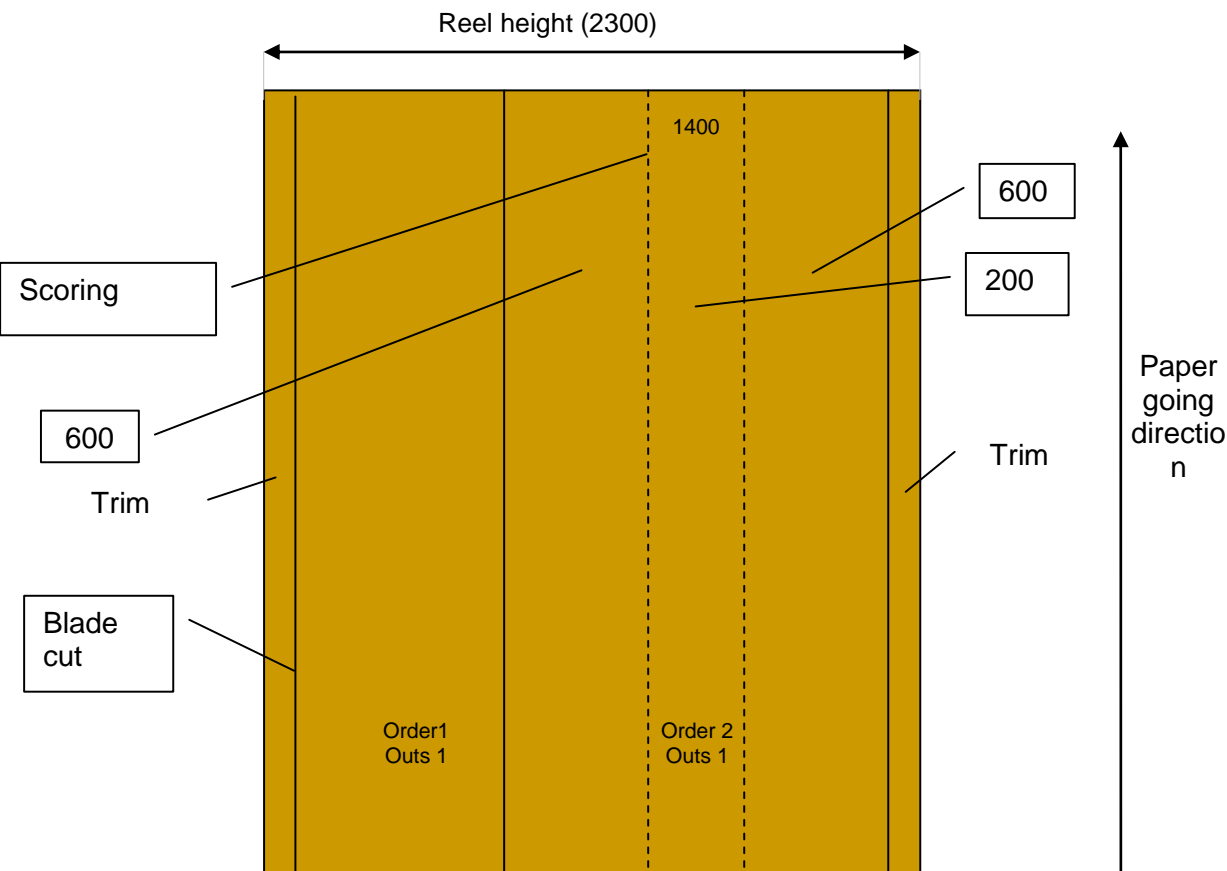
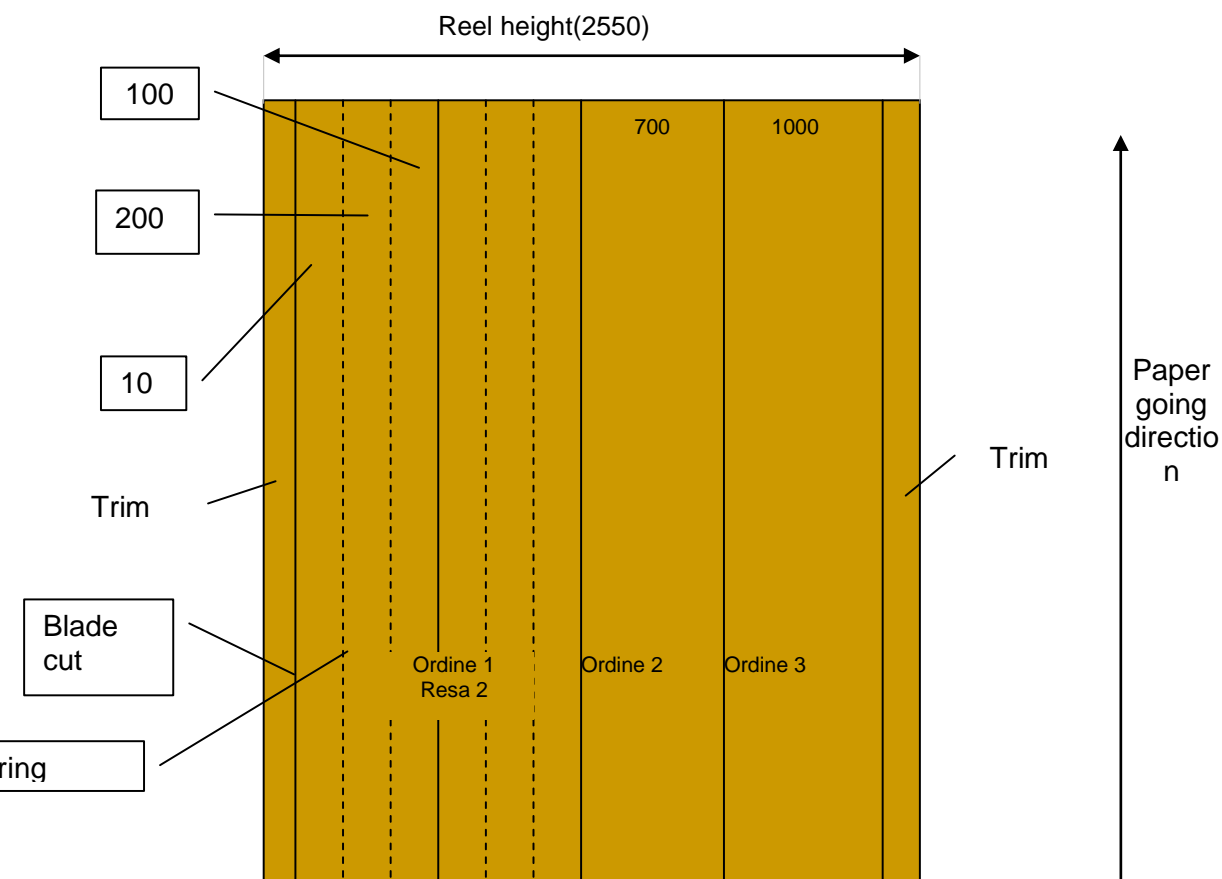## 6.1 EXAMPLE OF COUPLING WITH 2 ORDERS

Reel height =2300 mm
Trim = 100 mm
Order 1= 800 X 1 Not scored
Order 2= 1400 X2 (scorers: 600 200 600)

6.2 EXAMPLE OF COUPLING WITH 3 ORDERS

Reel height =2550 mm
Trim = 50 mm
Ordine 1= 400 X 2 (scorers:100 200 100)
Order 2= 700 X1 Not scored
Order 3 = 1000 X 1 Not scored

Reel height(2550)
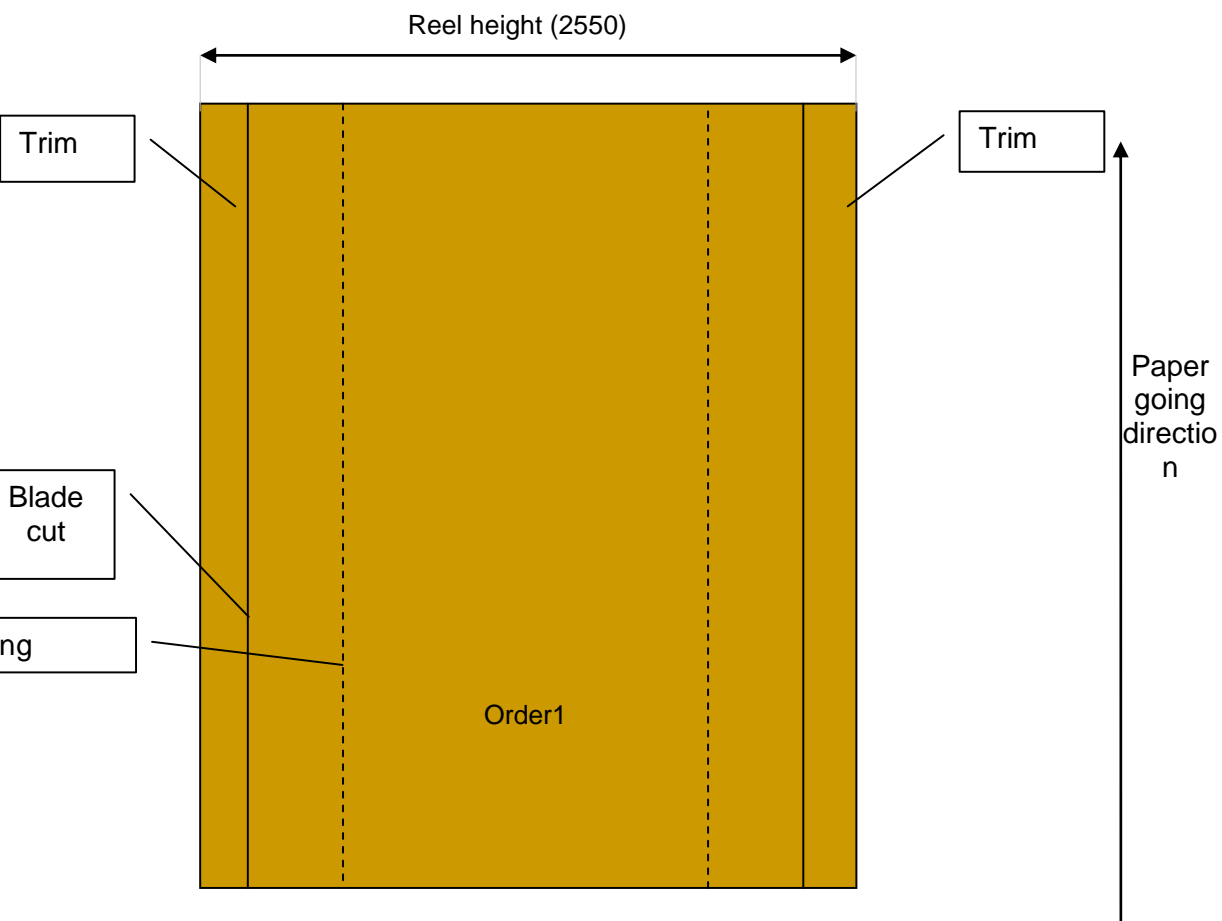
100

200

10

Trim

Blade
cut

ring

700   1000

Paper
going
directio
n

Trim

Ordine 1
Resa 2

Ordine 2

Ordine 3

6.3 EXAMPLE OF COUPLING WITH 1 ORDER

Reel height = 2550 mm
Trim = 50 mm
Order 1 = 2500 X 1 (scorers: 250 2000 250)

Reel height (2550)

Trim

Trim

Blade
cut

ng

Paper
going
directio
n

Order1

7. APPENDIX F: NOTES FIELD

If the line is configured with one or more of the options reported below, it is possible to use the NOTE field, in the way indicated in this appendix, to command the enabling of the option during the production of the order.

Options:
01. Cut-to-mark
02. Continuous stacking
03. Presence of table
04. Cut-to-pattern

SYNCRO will analyze the "note" field according to the above-mentioned optional.

"Note" field internal structure:

Description	Index From	A	Length	Type	Comment
Note					
Cut-to-mark	1	1	1	A	'X' = Yes Any other character = No
Continuous stacking	2	2	1	A	'X' = Yes Ogni altro carattere = No
Presence of table	3	3	1	A	'X' = Yes Any other character = No
Cut-to-pattern	4	30	26	A	The character 4 will be 'X' in case of 'Cut to pattern' picture located on "Lower Liner Side". The character 4 will be 'Y' in case of 'Cut to pattern' picture located on "Upper Liner Side". Any other character = No If enabled: The characters from 5 - 20 will be available for the cut-to-pattern code

Every part of the 'Note' field will be interpreted only when the corresponding optional is enabled. Some examples of possible uses of the "note" field as follows:
Example. 1
Supposing only to enable the 'Cut to mark' optional, we would have character 1 = 'X' whilst characters 2 - 30 can be used for the real operator notes.
("X absolute priority storage. 2")
Example. 2
Supposing only to enable the 'Continuous stacking', we would have character 2 = 'X' whilst characters 3 - 30 can be used for the real operator notes.
(" X absolute priority storage. 2")
Example. 3
Supposing only to enable the 'Table' optional, we would have character 3 = 'X' whilst characters 4 - 30 can be used for the real operator notes.
(" X absolute priority storage. 2")
Example. 4
Supposing only to enable the 'Cut to pattern' optional, we would have character 4 = 'X' whilst characters 5 - 30 will count the 'Cut to pattern' code
(" X0120378434883435")
 Example. 5
Supposing only to enable the 'Cut to pattern from Upper' optional, we would have character 4 = 'Y' whilst characters 5 - 30 will count the 'Cut to pattern' code
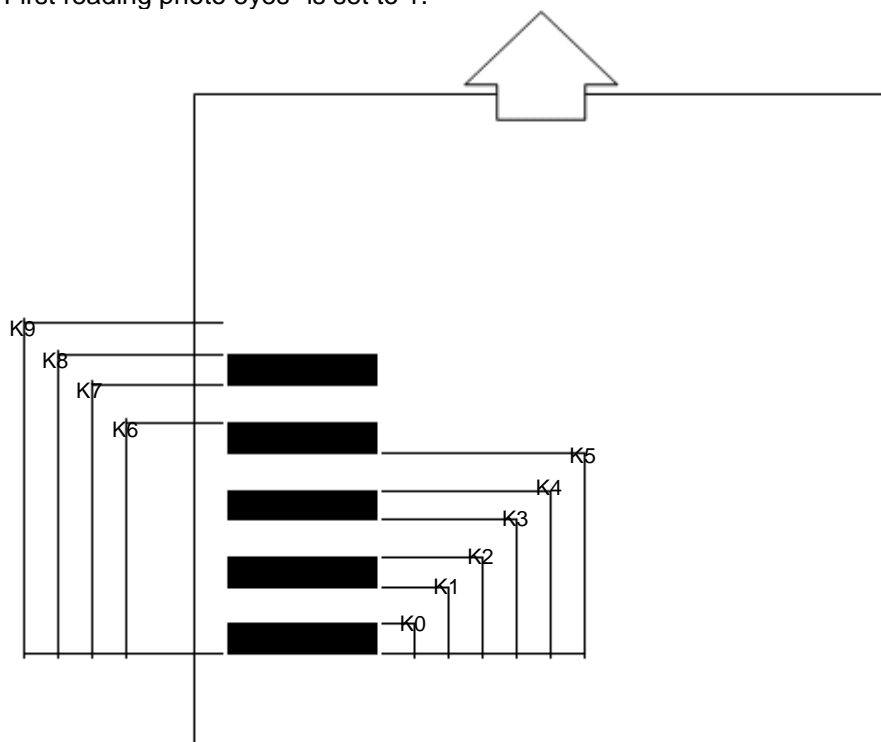(" Y0120378434883435")

8. APPENDIX G: CUT TO PATTERN DISTANCES

The follow picture show the reference to the distances K0, K1,…, K9 in the case of the first mark is light. The parameter "First reading photo eyes" is set to 0 (zero).
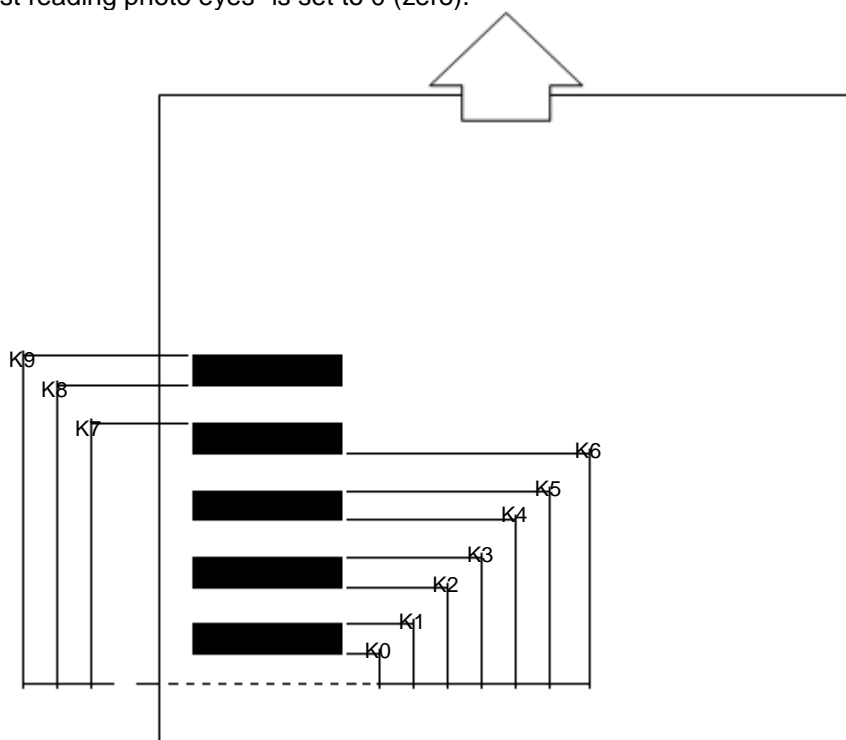
The follow picture show the reference to the distances K0, K1,…, K9 in the case of the first mark is dark. The parameter "First reading photo eyes" is set to 1.

Each mark position K0...K9 must be valorized following these rules:

-          Values of positions have to be referred in "mm"
-          Values of positions have to be valorized as Integer (not decimal)

-          First position (K0) must be always valorized (value >= "Minimum value readable from Cut-Board-Device")

-          Each valid position must be valorized wiith a value higher than previous position data and equal or higher than "Minimum value readable from Cut-Board-Device"

-          Nexts Not valid position must be valorized with 0 (Zero)

"Mimimum value readable from Cut-Board-Device (mm)" is calculated as (5/64) * Max Values Of "Kx" (Rounded)

Example:

K0 = 3

K1 = 10

K2 = 20

K3 = 30

K4 = 40

 = 0,078125 (5/64) * 40 (K4) = 3,125 ===> Rounded to "4"

"Mimimum value readble from Cut-Board-Device" = 4

In our example K0 is lower than 4, so the pattern will be refused.

9. APPENDIX H: TEXT FILES EXTENSION

If explicitly requested, Syncro can be configured in such a way that it writes production report data onto text files; this feature is available for

1.   Order production report (like an answer to a **VE** command)
2.   Shift report (like an answer to a **TD** command)
3.   Downtime report (like an answer to a **DW** command)
4.   Stacker discharge (like an answer to a **SE** command)
5.   Extended stacker discharge (like an answer to a **SB** command)

When there is a new production report available, Syncro writes it in a new text file, in a format that is the same as the answer of the related command. **The only difference is that the message number is always zero**.
The file remains available for the office planning system and must be deleted by planning system as soon as it has read and/or copied it. **Syncro never deletes any of these files**

Warning! There is a maximum number of report files (usually it is set to 500): if this number of files is reached into the folder, no new file is generated.
Warning! If the text file extension is activated, the commands **VE**, **RE**, **TD**, **TI**, **DW**, **RW** will not be available anymore through the network socket channel.

The files, that are created in a shared folder whose name depends on the report type, are named according to the following format:

DD-MM-YYYY_hh.mm.ss.uuu.EXT

where
DD = the day of the month when the file is created
MM = the month
YYYY = the year
hh = the hour
mm = the minutes
ss = the seconds
uuu = the milliseconds
EXT = an extension that depends on the report type

Order Production report
File extension: **ORD**
Shared folder: **Shared\OfficeRecording_ORDER**

Shift report
File extension: **SHT**
Shared folder: **Shared\OfficeRecording_SHIFT**

Downtime report
File extension: **DWT**
Shared folder: **Shared\OfficeRecording_DOWNTIME**

Stacker discharge
File extension: **DIS**
Shared folder: **Shared\OfficeRecording_DISCHARGE_SE**

Extended stacker discharge
File extension: **DIS**
Shared folder**: Shared\OfficeRecording_DISCHARGE_SB**

The shared folders are accessible in read and write mode through the following account:
user name: **office**
password: **office**